William S. Orser
Senior Vice President

Detroit Edison

Fermi 2
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Newport, Michigan 48166
(313) 586-5201

August 28, 1992
NRC-92-0085

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

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) Appendix A, Facility Operating License No. NPF-43, Technical Specification 6.9.1.8

Subject: Semi-Annual Radioactive Effluent Release Report

The Semi-Annual Radioactive Effluent Release Report for Fermi 2 is attached. This report is being transmitted in compliance with Reference 2 and Regulatory Guide 1.21, Revision 1. The attached report covers the period from January 1 through June 30, 1992.

During this reporting period there were no instances of unmonitored or unplanned radioactive releases from the site.

Please direct any questions or requests for additional information to Joseph Pendergast, Compliance Engineer, at (313) 586-1682.

Sincerely,

cc: T. G. Colburn
A. B. Davis
M. P. Phillips
S. Stasek
Region III

IE48
1/1

DETROIT EDISON COMPANY

FERMI 2 NUCLEAR POWER PLANT

OPERATING LICENSE NO. NPF - 43

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

for the period of

January 1, 1992 through June 30, 1992

PREFACE

The Fermi 2 Nuclear Power Plant maintains a comprehensive program of monitoring and controlling the release of radioactive material from the site. The releases covered in this report are of three types: liquid releases, gaseous releases, and radioactive waste shipments.

In a liquid release, a tank containing radioactive water is sampled prior to discharge. Based on the analysis of this sample, both the amount of radioactivity in the tank and the potential radiation dose to a member of the public are determined, and these figures are compared to federal limits. In calculating the radiation dose, very conservative assumptions are used. For example, it is assumed that an individual eats 46 pounds of fish per year from Lake Erie directly offshore of the Fermi 2 plant. The tank may be released only after it is determined that no federal limits are exceeded. As the tank is released, the contents of the tank are diluted by clean water in a ratio of approximately 400 gallons of clean water to one gallon of tank water. The release is continuously monitored by radiation detectors. In the first half of 1992, there were no liquid releases. This is due to the fact that the plant has operated in a steady state condition since the second refueling outage ending in June 1991, and to Detroit Edison's continuing efforts to minimize liquid releases at Fermi 2.

Radioactive gaseous releases occur as part of the normal operation of Fermi 2. There are six ventilation system release points, or "stacks", each of which is monitored by a sophisticated radiation monitor which continuously extracts a sample from the stack effluent. Since any gaseous radioactive material is diluted by the building ventilation air flow, the stack concentrations are small. In fact, radioactive material is not detected in most stack samples. All sample results are compared with federal limits to ensure they are not exceeded. If the amount of radioactivity in the effluent of any stack approaches a federal limit, an alarm will be activated in the Fermi 2 control room to alert operations personnel. After evaluating the situation, the operators may choose to order increased sampling, shut down building ventilation, or divert the effluent stream to a special gaseous treatment system so that federal limits are not exceeded. In the first half of 1992, gaseous releases were comparable to levels seen in previous non-outage periods, reflecting stable operating conditions.

Radioactive shipments of solid waste from the Fermi 2 site consist of waste generated during water treatment, radioactive trash, and irradiated components. Federal regulations governing these shipments are extensive, and Fermi 2 also complies with internal procedures. Shipment destinations are either licensed burial sites or intermediate processing facilities. In the first half of 1992, Fermi 2 did not ship any radioactive waste due to the exclusion of Michigan licensees from the burial sites.

TABLE OF CONTENTS

1. INTRODUCTION

The Detroit Edison Fermi 2 Nuclear Power Plant is designed and operated in a manner which strictly controls and monitors the release of radioactive material to the environment in accordance with Nuclear Regulatory Commission (NRC) and Detroit Edison Company requirements. This Semiannual Radioactive Effluent Release Report for the January through June 1992 period, is submitted in accordance with Fermi 2 Technical Specification 6.9.1.8 and NRC Regulatory Guide 1.21. This report provides the following information required by those references:

1. Summation of the quantities of radioactive material (in the form of gases and liquids) released from the plant (Sections 8 and 9)

2. Summation of quantities of radioactive material contained in solid waste packaged and shipped for off-site disposal (Section 10)

3. Changes to the Process Control Program (PCP) (Section 12)

4. Changes to the Offsite Dose Calculation Manual (ODCM) (Section 14)

5. A list and description of any unplanned releases of radioactive materials to unrestricted areas (Section 6)

6. A list of any new locations for dose calculation or environmental monitoring identified by the land use census (Section 13)

7. A list of effluent monitors which were inoperable for a period longer than that specified in Technical Specifications 3.3.7.11 and 3.3.7.12, and an explanation of why the time limit was exceeded (Section 11)

8. A description of events leading up to any liquid holdup tanks exceeding the limit of Technical Specification 3.11.1.4 (Section 16)

9. A description of any major changes to radioactive waste treatment systems (Section 15)

2. REGULATORY LIMITS

The Nuclear Regulatory Commission limits on liquid and gaseous effluents are incorporated in the Fermi 2 Technical Specifications. These limits prescribe the maximum quantities and rates of release for radioactive effluents resulting from normal operation of Fermi 2. The limits are defined in several ways to limit the overall impact on persons living near the plant. The limits are described in the following sections.

A. Gaseous Effluents

1. Dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the site boundary shall be limited to the following:

   a. Noble gases

      Less than or equal to 500 mrem/year to the total body
      Less than or equal to 3000 mrem/year to the skin

   b. Iodine 131, 133, tritium, and for all radionuclides in particulate form with half lives greater than 8 days

      Less than or equal to 1500 mrem/year to any organ.

2. Air dose due to noble gases released in gaseous effluents to areas at and beyond the site boundary shall be limited to the following:

   a. Less than or equal to 5 mrads for gamma radiation
      Less than or equal to 10 mrads for beta radiation
      -During any calendar quarter

   b. Less than or equal to 10 mrads for gamma radiation
      Less than or equal to 20 mrads for beta radiation
      -During any calendar year

3. Dose to a member of the public from Iodine-131, 133, tritium, and all radionuclides in particulate form with half lives greater than 8 days in gaseous effluents released to areas at and beyond the site boundary shall be limited to the following:

   a. Less than or equal to 7.5 mrems to any organ
      -During any calendar quarter

   b. Less than or equal to 15 mrems to any organ
      -During any calendar year

B. Liquid Effluents

1. The concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in Title 10 of the Code of Federal Regulations Part 20 (Standards for Protection Against Radiation), 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 (.0002) microcuries/ml total activity.

2. The dose or dose commitment to a member of the public from radioactive materials in liquid effluents released to unrestricted areas shall be limited to the values in the following sections.

a. Less than or equal to 1.5 mrem to the total body
Less than or equal to 5 mrem to any organ
-During any calender quarter

b. Less than or equal to 3 mrem to the total body
Less than or equal to 10 mrem to any organ
-During any calender year

3. MAXIMUM PERMISSIBLE CONCENTRATION (MPC)

Fermi 2 Technical Specifications implement the MPC requirements of 10 CFR 20 and NRC Regulatory Guide 1.21 by means of the following limits:

A. Gases

The dose rate due to gaseous effluents is calculated in accordance with the Fermi 2 Offsite Dose Calculation Manual (ODCM). The maximum permissible dose rates for gaseous releases are defined in Fermi 2 Technical Specifications.

Technical Specification 3.11.2.1.a (Dose rate at the site boundary from noble gases):

-Less than or equal to 500 mrem/year to the total body
-Less than or equal to 3000 mrem/year to the skin

Technical Specification 3.11.2.1.b (Dose rate at the site boundary from I-131, I-133, and particulates with half lives greater than 8 days):

-Less than or equal to 1500 mrem/year to any organ

B. Liquids

Allowable liquid release rates are calculated in accordance with the Fermi 2 Offsite Dose Calculation Manual (ODCM). As required by Technical Specification 3.11.1.1, the maximum permissible concentrations (MPC) for liquids used for these calculations are taken from 10 CFR 20, Appendix B, Table II, Column 2. The most restrictive MPC is used in all cases. For dissolved and entrained gases the MPC of 2E-4 microcuries/ml is applied. This MPC is based on the Xe-135 MPC in air (submersion dose) converted to an equivalent concentration in water as discussed in the International Commission on Radiological Protection (ICRP) Publication 2.

4. AVERAGE ENERGY

The calculated site boundary dose rates for Fermi 2 are based on identification of individual isotopes and on use of dose factors specific to each identified isotope or a highly conservative dose factor. Average energy values are not used in these calculations, and therefore need not be reported.

5. MEASUREMENTS AND APPROXIMATIONS OF TOTAL ACTIVITY

As required by NRC Regulatory Guide 1.21, this section describes the methods used to measure the total radioactivity in effluent releases and to estimate the overall errors associated with these measurements. The effluent monitoring systems are described in Chapter 11.4 of the Fermi 2 Updated Final Safety Analysis Report (UFSAR).

A. Gaseous Effluents

1. Fission and Activation Gases

Samples are obtained from each of the seven plant radiation monitors which continuously monitor the six ventilation exhaust points and from the Offgas Vent Pipe which carries the gland seal condenser exhaust, mechanical vacuum pump exhaust, and treated offgas streams. The Offgas Vent Pipe effluent is released through one of the six ventilation exhaust points (the reactor building exhaust plenum). The fission and activation gases are quantified by gamma spectroscopy analysis of periodic samples.

The values reported in Section 9 are the sums of all fission and activation gases quantified at all monitored release points.

Considering the inherent variability in radiation measurement, the variability in effluent stream composition, and the uncertainties in effluent flow rate and instrument calibration, Detroit Edison estimates that the uncertainty of the fission and activation gas total release figures is less than plus or minus 8 percent.

2. Radioiodines

Samples are obtained from each of the seven plant radiation monitors, which continuously monitor the six ventilation exhaust points. The radioiodines are entrained on charcoal and then quantified by gamma spectroscopy analysis. For each sample the duration of sampling and continuous flow rate through the charcoal are used in determining the concentration of radioiodines. From the flow rate of the ventilation system a rate of release can be determined.

The values reported in Section 9 are the sums of all radioiodines quantified at all continuously monitored release points.

Considering the inherent variability in radiation measurements, the variability in effluent stream composition, and the uncertainty in sample and effluent flow rates, Detroit Edison estimates that the uncertainty of the total radioiodine release figures is less than plus or minus 5 percent.

3. Particulates

Samples are obtained from each of the seven plant effluent radiation monitors, which continuously monitor the six ventilation exhaust points. The particulates are collected on a filter and then quantified by gamma spectroscopy analysis. For each sample the duration of sampling and continuous flow rate through the filter are used in determining the concentration of particulates. From the flow rate of the ventilation system a rate of release can be determined.

Quarterly the filters from each ventilation release point are composited and then radiochemically separated and analyzed for Strontium (Sr)-89/90 using various analytical methods. If found these radionuclides are reported as total particulate activity.

The values reported in Section 9 are the sums of all particulates quantified at all monitored release points.

Considering the inherent variability in radiation measurements, the variability in effluent stream composition, and the uncertainties in instrument calibration and in sample and effluent flow rates, Detroit Edison estimates that the the uncertainty of the total particulate release figures is less than plus or minus 3 percent.

4. Tritium

Samples are obtained for each of the seven plant effluent radiation monitors which continuously monitor the six ventilation exhaust points. The sample is passed through a bottle containing water and the tritium is "washed" out to the collecting water. Portions of the collecting water are analyzed for tritium using liquid scintillation counting techniques. For each sample, the duration of sample and sample flow rate is used to determine the concentration. From the flow rate of the ventilation system a release rate can be determined.

The values reported in Section 9 are the sums of all tritium quantified at all monitored release points.

Considering the inherent variability in radiation measurement, the variability in effluent stream composition, and the uncertainties in instrument calibration, sample and effluent flow rates, and collection efficiency, Detroit Edison estimates that the uncertainty of total gaseous tritium release figures is less than plus or minus 34 percent.

5. Gross Alpha

The gaseous particulate filters from the seven plant effluent radiation monitors are stored for one week to allow for decay of naturally occurring alpha emitters. These filters are then analyzed for gross alpha radioactivity by gas proportional counting, and any such radioactivity found is assumed to be plant related. The quantity of alpha emitters released can then be determined from sample flow rate, sample duration, and stack flow rate.

The values reported in Section 9 are the sums of all alpha emitters quantified at all monitored release points.

Considering the inherent variability in radiation measurements, the variability in effluent stream composition, and the uncertainties in instrument calibration and in sample and effluent flow rates, Detroit Edison estimates that the uncertainty of the total gaseous gross alpha release figures is less than plus or minus 10 percent.

B. Liquid Effluents

The liquid radwaste processing system and the liquid effluent monitoring system are described in the Fermi 2 UFSAR.

1. Fission and activation products

Before the contents of each holding tank is discharged to the environment, a representative sample of the tank's contents is taken and retained. The sample allows for the determination of radioactive material concentrations and establishes the rate at which the radioactive material can be discharged to the environment.

At the end of the calendar quarter a composite sample is made of all discharge samples taken during the quarter. This composite sample consists of portions of each discharge sample which are proportional to the volumes discharged. The composite sample is analyzed for Iron (Fe)-55 and Strontium (Sr)-89/90. Radiochemical separations and various analytical methods are used to quantify the amounts of Sr-89/90 and Fe-55.

As seen in Section 8, there were no liquid releases of radioactive material during the first and second quarters of 1992.

2 Tritium

Before the contents of each holding tank is discharged to the environment, a representative sample of the tank contents is taken and retained. At the end of the calendar month a composite sample is made of all discharge samples taken during the month. This composite sample consists of portions of each discharge sample which are proportional to the volumes discharged. The composite sample is analyzed for tritium by liquid scintillation counting.

As seen in Section 8, there were no liquid releases of radioactive material during the first and second quarters of 1992.

3 Dissolved and Entrained Gases

Prior to releasing liquid radioactive waste to the environment a sample is taken from the radwaste holding tank. This sample is representative of the tank's contents. The sample is examined using gamma spectroscopy to determine the dissolved and entrained noble gases.

As seen in Section 8, there were no liquid releases of radioactive material during the first and second quarters of 1992.

4 Gross Alpha

Before the contents of each holding tank is discharged to the environment, a representative sample of the tank's contents is taken and retained. At the end of the calendar month a composite sample is made of all discharge samples taken during the month. This composite sample consists of portions of each discharge sample which are proportional to the volumes discharged. The composite sample is analyzed for gross alpha radioactivity by gas proportional counting.

As seen in Section 8, there were no liquid releases of radioactive material during the first and second quarters of 1992.

6. ABNORMAL RELEASES

For the purpose of this report, an abnormal release is any release of radioactive material not performed in accordance with the Technical Specifications. No abnormal releases occurred during the reporting period.

7. BATCH RELEASES

As required by Regulatory Guide 1.21, a summary of data for batch releases must be provided in this report. During the January 1, 1992 through June 30, 1992 period, no batch liquid releases from radwaste holding tanks occurred.

The only batch gaseous releases from Fermi 2 are the venting or purging of the primary containment (drywell or torus) atmosphere. These venting or purging releases pass through the reactor building ventilation or standby gas treatment system and are monitored by the final effluent monitors for these pathways. Separate data on these venting or purging releases are not reported because the associated data are already included in the gaseous effluent release data (Section 5.A and Section 9).

8. LIQUID EFFLUENT SUMMARY

REPORT CATEGORY : SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER
TYPE OF ACTIVITY : ALL LIQUID EFFLUENTS
REPORTING PERIOD : QUARTER 1 AND QUARTER 2

During the first and second quarters of 1992, there were no liquid releases of radioactive material.

9. GASEOUS EFFLUENT SUMMARY

REPORT CATEGORY : SEMIANNUAL SUMMATION OF ALL RELEASES BY QUARTER
TYPE OF ACTIVITY : ALL AIRBORNE EFFLUENTS
REPORTING PERIOD : QUARTER 1 AND QUARTER 2

TYPE OF EFFLUENT	: UNIT	: QUARTER 1	: QUARTER 2
A. FISSION AND ACTIVATION GASES			
1. TOTAL RELEASE	: CURIES	: 1.17E+01	: 1.51E+01
2. AVERAGE RELEASE RATE FOR PERIOD	: uCi/sec	: 1.49E+00	: 1.92E+00
B. RADIOIODINES			
1. TOTAL IODINE - 131	: CURIES	: 1.00E-03	: 1.13E-03
2. AVERAGE RELEASE RATE FOR PERIOD	: uCi/sec	: 1.27E-04	: 1.44E-04
C. PARTICULATES			
1. PARTICULATES (HALF-LIVES>8 DAYS)	: CURIES	: 5.37E-04	: 8.67E-04
2. AVERAGE RELEASE RATE FOR PERIOD	: uCi/sec	: 6.83E-05	: 1.10E-04
3. GROSS ALPHA RADIOACTIVITY	: CURIES	: 1.22E-06	: 1.17E-06
D. TRITIUM (Note: N.D. = No activity detected)			
1. TOTAL RELEASE	: CURIES	: N.D.	: N.D.
2. AVERAGE RELEASE RATE FOR PERIOD	: uCi/sec	: N.A.	: N.A.

9. GASEOUS EFFLUENT SUMMARY (continued)

REPORT CATEGORY :SEMIANNUAL AIRBORNE CONTINUOUS RELEASES
TYPE OF ACTIVITY :FISSION GASES, IODINES, AND PARTICULATES
REPORTING PERIOD :QUARTER 1 AND QUARTER 2

		MIXED MODE RELEASES	
NUCLIDE	UNIT	QUARTER 1	QUARTER
PARTICULATES			
Cr-51	CURIES	3.04E-04	5.58E-04
Co-58	CURIES	5.21E-06	3.84E-06
Co-60	CURIES	8.74E-06	1.15E-05
Na-24	CURIES	4.77E-05	3.36E-04
Zn-65	CURIES	5.76E-06	2.85E-06
Tc-99m	CURIES	8.35E-04	2.69E-03
Ba-139	CURIES	1.62E-01	2.50E-01
Ba-140	CURIES	1.43E-04	2.07E-04
La-140	CURIES	2.16E-04	2.33E-04
Y-91m	CURIES	1.06E-03	1.42E-03
Sr-91	CURIES	2.27E-03	4.47E-03
Rb-89	CURIES	1.49E-01	2.09E-01
Cs-138	CURIES	7.98E-02	9.89E-02
Br-82	CURIES	1.89E-05	9.84E-05
Ba-13?	CURIES	*<9.9E-12	1.21E-05
Te-131m	CURIES	6.66E-05	*<8.0E-12
Sr-89	CURIES	7.00E-05	7.11E-05
Sr-90	CURIES	6.88E-07	1.02E-06
Cs-134	CURIES	*<3.6E-14	*<3.6E-14
Cs-137	CURIES	*<4.7E-14	*<4.7E-14
Ce-141	CURIES	*<3.1E-14	*<3.1E-14
Ce-144	CURIES	*<1.2E-13	*<1.2E-13
Total for Period	CURIES	3.96E-01	5.68E-01

* Less than the Lowar Limit of Detection (LLD), i.e. the maximum sensitivity of measurement in units of microcuries per milliliter (uCi/ml)

9. GASEOUS EFFLUENT SUMMARY (continued)

REPORT CATEGORY : SEMIANNUAL AIRBORNE CONTINUOUS RELEASES
TYPE OF ACTIVITY : FISSION GASES, IODINES, AND PARTICULATES
REPORTING PERIOD : QUARTER 1 AND QUARTER 2

		MIXED MODE RELEASES	
NUCLIDE	UNIT	QUARTER 1	QUARTER 2
FISSION AND ACTIVATION GASES			
Ar-41	CURIES	9.67E-01	1.24E+00
Xe-135m	CURIES	1.09E+00	1.18E+00
Xe-138	CURIES	3.09E+00	2.99E+00
Xe-135	CURIES	3.85E+00	2.54E-01
Kr-85m	CURIES	*<2.0E-08	8.36E-02
Xe-137	CURIES	2.56E+00	9.36E+00
Kr-87	CURIES	1.59E-01	*<5.8E-08
Total for Period	CURIES	1.17E+01	1.51E+01
IODINES			
I-131	CURIES	1.00E-03	1.13E-03
I-132	CURIES	4.49E-03	4.95E-03
I-133	CURIES	6.52E-03	7.30E-03
I-135	CURIES	6.25E-03	4.76E-03
Total for Period	CURIES	1.83E-02	1.81E-02

* Less than the Lower Limit of Detection (LLD), i.e. the maximum sensitivity of measurement in units of microcuries per milliliter (uCi/ml)

10. SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. Solid Waste Shipped Offsite for burial or disposal (not irradiated fuel): No shipments in this reporting period.

B. Irradiated Fuel Shipments: No shipments in this reporting period.

11. RADIATION INSTRUMENTATION

Fermi 2 Technical Specifications 3.3.7.11, Radioactive Liquid Effluent Monitoring Instrumentation, and 3.3.7.12, Radioactive Gaseous Effluent Monitoring Instrumentation, require that those monitors which exceed the time specified for out of service status be reported in the next Semiannual Effluent Release Report. During this reporting period, January through June of 1992, the time specified in the action statements for these monitors was not exceeded.

12. CHANGES TO THE PROCESS CONTROL PROGRAM (PCP)

As required by the Fermi 2 license, the operator (Detroit Edison) is required to establish a program that will reasonably assure the complete processing of radioactive wastes. This program assures that processed wastes are completely solidified and are free of standing water. Changes to the PCP Manual are provided to document changes to established conditions and to ensure that controls are in place to assure that radioactive waste is solidified. During this reporting period, January through June of 1992, no changes were made to the PCP manual.

During the previous reporting period, July through December of 1991, a complete rewrite of the PCP Manual was approved (Revision 13). Subsequently, a minor change to the PCP Manual was approved (Revision 14) which changed the name of Chem Nuclear Systems Incorporated procedure SD-OP-090-48306 (formerly SD-OP-090) to reflect the fact that a Fermi-specific version of this procedure had been approved. Revision 14 of the PCP Manual was included in the Semiannual Effluent Release Report for second half of 1991, but the supporting documentation for changes to Revisions 13 and 14 was not included. In addition, a review of the 1988 Semiannual Radiological Effluent Report determined that supporting documentation for changes to Revisions 11 and 12 to the PCP Manual was not included. Accordingly, Appendix A provides change documentation for Revisions 11, 12, 13, and 14.

Revisions 11, 12, 13, and 14 were reviewed prior to their effective dates and the determination was made that the changes did not reduce the overall conformance of the solidified waste product to existing criteria. The Onsite Review Organization reviewed these changes to the PCP Manual and found the changes acceptable prior to each revision's effective date.

13. CHANGES TO DOSE CALCULATION AND ENVIRONMENTAL MONITORING LOCATIONS

During this reporting period, January through June of 1992, there were no changes to dose calculation or environmental monitoring locations.

14. CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM)

During this reporting period, January through June of 1992, the ODCM was not revised.

15. MAJOR CHANGES TO RADIOACTIVE WASTE SYSTEMS

During this reporting period, January through June of 1992, there were no major changes to the liquid, gaseous, or solid radioactive waste treatment systems.

16. LIQUID HOLDUP TANKS EXCEEDING LIMITS

Fermi 2 Technical Specification 3.11.1.4 requires that the quantity of radioactive material contained in any outside temporary tank shall be limited to 10 curies, excluding tritium and dissolved or entrained noble gases. During this reporting period, January through June of 1992, this activity limit for such tanks was not exceeded.

APPENDIX A: CHANGES TO PROCESS CONTROL PROGRAM MANUAL

PCP MANUAL

REVISION 11

SUPPORT DOCUMENTATION

PROCESS CONTROL PROGRAM CHANGE REQUEST

DTC: TMOPER
File: 1715

Change Requested by: CRAIG T. WEBER Date: 2/16/88

Change requested to PCP, Rev. 10 (FOR Revision 11)

Department/Section: Nuclear Production - Radwaste

Change (Attach markups of the PCP): Changed Quality Assurance Auditor requirement ~~after~~ criteria from QAPR 24 To EMD CH-1, RC-1, RC-3 and AS-1.

Reason for Change/Justification (include sufficiently detailed information to totally support the rationale for the change. Attach additional sheets if necessary): Administrative Change only. The requirements of QAPR 24 have been replaced by the following EMD's: CH-1, RC-1, RC-3, AS-1.

Review Performed by: [signature] Date: 2/15/88
General Supervisor, Radwaste

The Superintendent, Operations has determined, as evidenced by his signature below, that this change does not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes.

Approved by: [signature] Date: 3/15/88
Superintendent, Operations

Recommended by: [signature] Date: 3-15-88
OSRO Chairman

Approved by: [signature] Date: 3-15-88
Plant Manager

POM 12.000.108 (SR), Attachment 2, 053187

END

FERMI 2 PROCESS CONTROL PROGRAM

The Fermi 2 Process Control Program (PCP) covers the following distinct processes for solidification or dewatering of radioactive waste. These processes are described below:

1. For the solidification of radioactive waste using the Fermi 2 Permanent Solid Radwaste System, Fermi 2 will follow the PCP described in Attachment 1.

2. For the dewatering of radioactive powdered resins in steel containers using the Hittman Nuclear Incorporated Temporary Radwaste Processing System, Fermi 2 will follow the PCP described in the Hittman Nuclear Document STD-PCP-03-001 Revision 3.

3. For the dewatering of radioactive bead resins in steel containers using the Hittman Nuclear Incorporated Temporary Radwaste Processing System, Fermi 2 will follow the PCP described in the Hittman Nuclear Document STD-P-04-002 Revision 5.

4. For the dewatering of radioactive powdered resins in Radlok™ High Integrity Containers (HIC's) using the Hittman Nuclear Incorporated Temporary Radwaste Processing System, Fermi 2 will follow the PCP described in the Hittman Nuclear Document STD-PCP-03-002 Revision 1.

5. For the dewatering of radioactive powdered and bead resins in steel containers and HIC's using the Chem-Nuclear Incorporated Temporary RDS-1000 Dewatering System, Fermi 2 will follow the PCP described in Attachment 2.

6. For the solidification of radioactive powdered resin, filter sludge, and activated carbon using the Hittman Nuclear Incorporated Temporary Radwaste Processing System, Fermi 2 will follow the PCP described in the Hittman Nuclear Document F475-P-007 Revision 4.

NOTE: The Hittman Nuclear documents referenced above contain proprietary information, are not published as Fermi 2 documents, and are available from the General Supervisor, Radwaste.

Licensing Commitment Review: The following commitments are listed against this procedure: 6546, 6547

Action has been taken to ensure these commitments have not been negated.

Signature of Originator _____ Date 2/16/88

ARMS - INFORMATION SERVICES

Date approved: 3/15/88 Release authorized by: _____

Procedure Change Requests incorporated: Change dated 2/16/88

DTC TMOPER DSN PCP MANUAL Rev 11 Date MAR 17 1988

PIS _____ PIS _____ File 1715 Recipient _____

The General Supervisor - Radwaste is responsible for the implementation of the Fermi 2 PCP. Nuclear Quality Assurance will audit the solidification and dewatering of radioactive waste including record keeping activities in accordance with Fermi Management Policy and Directives (FMDs) CH-1, RC-1, RC-3, and AS-1. 11

Recommended: Craig Thaler — 3/15/88
General Supervisor - Radwaste — Date

Noted: [signature] — 3/15/88
Superintendent - Operations — Date

Approved: [signature] — 3-15-88
OSRO Chairman — Date

PCP MANUAL

REVISION 12

SUPPORT DOCUMENTATION

PROCESS CONTROL PROGRAM CHANGE REQUEST

DTC: TMOPER
File: 1715

Change Requested by: CRAIG T. WEBER Date: 7/28/88

Change requested to PCP, Rev. 11 (For Revision 12)

Department/Section: Nuclear Production - Radwaste

Change (Attach markups of the PCP): Delete all references to using Hittman Nuclear Dev. as an onsite vendor for performing processing activities. Hittman Nuclear & processing has been replaced by Chem Nuclear Sys. Inc. as the selected contractor.

Reason for Change/Justification (Include sufficiently detailed information to totally support the rationale for the change. Attach additional sheets if necessary): Hittman Nuclear Dev. equipment and process devices are no longer onsite. All waste processing being Hittman Nuclear Dev. has been dispositioned.

Review Performed by: Craig Tucker Date: 7/28/88
General Supervisor, Radwaste

The Superintendent, Operations has determined, as evidenced by his signature below, that this change does not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes.

Approved by: W.M.J. Date: 8-9-88
Superintendent, Operations

Recommended by: P. Tudor Date: 8-9-88
OSRO Chairman

Approved by: D.K. Gee Date: 8-9-88
Plant Manager

POM 12.000.108 (SR), Attachment 2, 033187

END

FERMI 2 PROCESS CONTROL PROGRAM

The Fermi 2 Process Control Program (PCP) covers the following distinct processes for solidification or dewatering of radioactive waste. These processes are described below

1. For the solidification of radioactive waste using the Fermi 2 Permanent Solid Radwaste System, Fermi 2 will follow the PCP described in Attachment 1. 12

2. For the dewatering of radioactive powdered and bead resins in steel containers and HIC's using the Chem-Nuclear Incorporated Temporary RDS-1000 Dewatering System, Fermi 2 will follow the PCP described in Attachment 2. 12

The General Supervisor - Radwaste is responsible for the implementation of the Fermi 2 PCP Nuclear Quality Assurance will audit the solidification and dewatering of radioactive waste including record keeping activities in accordance with Fermi Management Policy and Directives (FMDs) CH-1, RC-1, RC-3, and AS-1.

Recommended: Craig Thiebe — General Supervisor - Radwaste — 7/28/88 — Date

Noted: [illegible] — Superintendent - Operations — 8/1/88 — Date

Approved: [illegible] — DSRO Chairman — 8/9/88 — Date

Licensing Commitment Review: The following commitments are listed against this procedure 6546, 6547

Action has been taken to ensure these commitments have not been negated

Craig Thiebe — Signature of Originator — 7/28/88 — Date

ARMS - INFORMATION SERVICES

Date approved: 08/09/88 Release authorized by: D. Davis

Change numbers incorporated: N/A

DSN PCP MANUAL Rev. 12 Date AUG 15 1988

DTC ~~TPPLAN~~ TPPLAN File 1715.01 Recipient

MJM

PCP MANUAL

REVISION 13

SUPPORT DOCUMENTATION

Revision 13

LICENSING CHANGE REQUEST

LCR 91-1-1713-PCP

Revision 0 Page 1 of 24

PART 1: UFSAR, PLAN, OR PROGRAM REVISION [ ]NA

A) Document: Process Control Program

B) Section(s), Table(s), Figure(s), etc. Affected: Full (Procedural) Program rewrite

C) Reason for Change: ① Update document for new use of Foam 2 Asphalt System ② Revised to incorporate changes due to NRC Technical Position on Waste Form, Rev 1.

D) Reference and Source Documents (Identify)

EDP
PDC
ABN
DER 91-0073 (Tech Position entered into Foam Proc.)
Test
Effectiveness Review (Attached) [✓]Yes [ ]No
Other UFSAR Section 11.0, NRC Technical Position on Waste Form Rev 1.
Drawings, Design Calculations, Correspondence, etc.

Tech Spec 3/4.11.3, Section 6
Procedure
SE (Attached)
PE (Attached)
Drawing No.

PART 2: OPERATING LICENSE CHANGES [✓]NA

A) Document
[ ] Operating License [ ] Tech Specs [ ] Environmental Protection Plan

B) Section(s), Table(s), Figure(s), etc. Affected

C) Reference and Source Documents Attached
[ ] No[illegible] [ ] Other [ ] [illegible]arked-up pages
[ ] Significant Hazards Consideration [ ] Environmental Evaluation
[ ] Environmental Impact/Categorical Exclusion [ ] Justification

D) Is UFSAR change required?
[ ] Yes [ ] No LCR No.

E) Priority [ ]NA
NRC approval required by (date)

Explanation

F) NRC Letter No.

G) Amendment No.

PART 3: APPROVALS

A) Originator: Chris L. Hurley — Date 9-16-91

B) Technical Expert
[ ]See Attached: Chris L. Hurley — Date 9-18-91

C) Nuclear Generation Unit Head: [illegible] — Date 9-18-91

D) General Director, Nuclear Engineering
[✓]NA [ ]See Attached — Date

E) Plant Manager
[ ]See Attached: Robert McKeon — Date 9/18/91

F) Other — Date

G) Director, Nuclear Licensing
[ ]See Attached: [illegible] — Date 9/23/91

H) OSRO
[ ]NA [ ]See Attached: Robert McKeon — Date 9/18/91

I) NSRG
[✓]NA [ ]See Attached — Date

Form FIP-RA2-01 Att 1 P1/1 120590

DTC: [ ] TDLCR [ ] TCLCR File: [ ] 1701 03 [ ] 1735

EFFECTIVENESS REVIEW

Reference LCR 91/1-11731-1090

Revision Page 2 of 4

********** PART 1: UFSAR [✓]NA **********

A) Quality Assurance Program

[ ]Yes [ ] No Does the change(s) cease to satisfy the criteria of 10CFR50, Appendix B or reduce UFSAR program commitments previously accepted by the NRC?

Provide the basis for each change on Attachment 2, Page 2.

B) Fire Protection Program

[ ]Yes [ ] No Does the change(s) adversely affect the ability to achieve and maintain safe shutdown in the event of a fire?

Provide the basis for each change on Attachment 2, Page 2.

****** PART 2: RADIOLOGICAL EMERGENCY RESPONSE PREPAREDNES PLAN [✓]NA **********

A) [ ] Yes [ ] No Does the change(s) decrease the effectiveness of the RERP Plan?

[ ] Yes [ ] No Does the RERP Plan, as changed, cease to meet the standards of 10CFR50.47(b) and 10CFR50 Appendix E?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 3: SECURITY PLANS [✓]NA **********

A) Document

B) [ ] Yes [ ] No Does the change(s) decrease the effectiveness of the Physical Security Plan or Security Personnel Training and Qualification Plan prepared pursuant to 10CFR50.34(c) or 10CFR73?

[ ] Yes [ ] No Does the change(s) decrease the effectiveness of the first four categories of Informational Background, Generic Planning Base, Licensee Planning Base, and/or responsiblity matrix of the Safeguards Contingency Plan prepared pursuant to 10CFR50.34(d) or 10CFR73?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 4: PROCESS CONTROL PROGRAM [ ]NA **********

A) [ ] Yes [✓] No Does the change(s) reduce the overall conformance of the solidified waste product to existing criteria for solid wastes in accordance with Technical Specification 6.13?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 5: ODCM [✓]NA **********

A) [ ] Yes [ ] No Does the change(s) reduce the accuracy or reliability of the dose calculations or setpoint determinations in in accordance with Technical Specification 6.14?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 6: APPROVALS **********

A) Originator Chris L. Hanby Date 9/13/91

B) Technical Expert Chris L. Hanby Date 9/13/91

C) Quality Assurance (For Security Plans only) N/A Date

D) OSRO (Not required for UFSAR Changes) Robert McKeon Date 9/18/91

Form FIP-RA2-01 Att 2 1/2 120590 DTC: [ ] TDLCR [ ] TCLCR [ ] TMPLAN File: [ ] 1701.03 [ ] 1735 [ ] 1715.03

EFFECTIVENESS REVIEW DOCUMENTATION

Reference LCR 91-1173-PCP

Revision Page 3 of 4

Document Process control Program 91-173-PCP

Listed below is each change by section and page; the reason for the change; and the basis for concluding that the revised plan or program continues to satisfy the criteria for that plan or program.

Section/Page	Change	Basis
See attached		

Form FIP-RA2-01 Att 2 P2/2 120590

DTC: [ ] TDLCR [ ] TCLCR [ ] TMPLAN

File: [ ] 1701.03 [ ] 1735 [ ] 1715.03

LCR-91-173-PCP
Page 4 of 4

PROCESS CONTROL PROGRAM
TECHNICAL REVIEW

1. Section titles were incorporated into the PCP manual to coincide with the Fermi 2 Writers Guide. The addition of the titles in themselves did not change the technical content.

2. The removal of the Fermi 2 Asphalt Processing System (Attachment 1) of the PCP was done in answer to DER 91-0073, NRC Technical Position on Waste Form Revision 1. The Fermi 2 Asphalt system has not been in operation. This non-use and considerations for the Asphalt system are clearly stated in Safety Evaluation 88-0186. No unreviewed Safety concern.

   The RACTS commitment (06546) states that the PCP is the controlling document for the Fermi 2 and Chem-Nuclear System. The PCP will remain as the controlling document for all processing of solidified radwaste as stated in Technical Specification 6.13.2.

   The RACTS commitment (06547) state that the General Supervisor is responsible for controlling the PCP. Since the last revision of the PCP the staff position of Superintendent - Radioactive Waste has been appointed. It was determined that the most senior position of the Radwaste organization shall be responsible for the implementation of the PCP. This does not pose a safety concern. Licencing has bben notified of the change to the one time commitment and will make note of it.

3. The use of contractor processing and solidification in the OSSF was covered in detail with the 1988 revision to the UFSAR. Safety Evaluation 88-0186 and Design Calculation 4945 cover solidification and use of vendor equipment in the OSSF. There were no unreviewed safety questions. Since the process methodologies used are still the same - there are no unreviewed safety concerns now.

4. The testing documentation of the Chem-Nuclear RDS-1000 Dewatering Unit was removed from the Fermi 2 PCP. The testing documentation is part of the Chem-Nuclear topical reports that are reviewed and approved by the NRC. In place of the testing documentation of the RDS-1000 was added the Procedure and Acceptance Criteria section of the PCP. These two sections ensure we meet the requirements of 10CFR61 and the burial site criteria.

FERMI 2
PROCESS CONTROL PROGRAM

Revision Summary:

1) Deleted Solidification of Radioactive Waste using the Fermi 2 Asphalt Solid Radwaste System.
2) Added requirements for compliance with the NRC Technical Position on Waste Form, Revision 1.
3) Changed format to include References, Definitions, Responsibilities, Procedure, and Acceptance Criteria Sections.
4) Removed Attachment 1 (Dewatering Using the RDS-1000).

Implementation Plan:

1) This revision goes into effect upon approval.
2) Ongoing work may proceed using previous revision.
3) Procedures Coordination shall issue a Notice of New/Revised Procedures to communicate this change.
4) No additional training is required.

Attachments - None

Enclosures - None

ARMS - INFORMATION SERVICES

Date approved Sept 19 1991 Release authorized by: Chris L. Hunty

Change numbers incorporated: NA

DSN PCP MANUAL Rev 13 Date

DTC TMPLAN File 1715.01 Recipient

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose

The Fermi 2 Process Control Program provides reasonable assurance that all Radwaste processed at Fermi 2 will be processed so that the final product will be suitable for both transportation to a disposal facility and disposal at that facility.

1.1.1 The Fermi 2 Process Control Program contains/controls the sampling, analyses, testing and formulation determinations to be made to ensure that the processing and packaging of solid radioactive waste will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61 and 71 plus State, Burial Site and other requirements governing the disposal of solid radioactive waste. Process parameters specified may include, but are not limited to, waste pH, oil content, water content, solids content, ratio of solidification agent to waste and/or necessary additives for each type of anticipated waste, and the acceptable boundary conditions for the process parameters shall be identified for each waste type, based on laboratory scale and full scale testing or experience.

1.1.2 Change Control - The Fermi 2 Process Control Program also specifies the controls over changes in waste processing methodologies to ensure that any revised methodology is adequate to meet the requirements of 1.1.1.

1.1.3 Reporting - The Fermi 2 Process Control Program specifies the required regulatory reports regarding solid waste shipments and changes to the solid radwaste processing system.

1.1.4 Records - The Fermi 2 Process Control Program specifies the required records regarding reviews performed for changes to the Program.

1.2 Regulatory Basis

1.2.1 10CFR20.311 d(3) requires that all radwaste generators conduct a quality control program to assure compliance with 10CFR61.55 and 61.56.

1.2.2 10CFR50, Appendix A, General Design Criterion 60, specifies that a nuclear power plant shall be designed to handle radioactive solid waste produced during normal reactor operation, including anticipated operational occurrences.

1.2.3 10CFR61.56 specifies minimum waste form requirements for all radwaste, as well as specifications for stability when this is required by regulations or disposal site criteria.

1.2.4 The Nuclear Regulatory Commission's Technical Position on Waste Form, Revision 1, provides guidance on waste form test methods and results acceptable to the NRC staff for implementing the 10CFR61.56 waste form requirements.

1.3 Administrative Controls

1.3.1 All waste processing methodologies requiring stability in accordance with reference 2.3 included in the Fermi 2 Process Control Program shall be in compliance with the Nuclear Regulatory Commission's Technical Position on Waste Form, Revision 1. In some cases, the Nuclear Regulatory Commission has granted interim approval to a methodology, pending final approval. It is acceptable to use such methodologies when accompanied with an NRC interim approval cover letter.

1.3.2 Licensee initiated changes to the Fermi 2 Process Control Program shall be processed and documented in accordance with Fermi 2 Technical Specification 6.13.2.

1.4 Semiannual Radioactive Effluent Release Report

1.4.1 Solid radwaste shipment data and discussions of major changes to the solid radioactive waste system shall be included in the Semiannual Radioactive Effluent Release Reports in accordance with Technical Specification 6.9.1.8.

1.5 Records

1.5.1 Reviews performed for changes to the Fermi 2 Process Control Program shall be retained in accordance with Technical Specification 6.10, Record Retention.

2.0 REFERENCES

2.1 NRC Technical Position on Waste Form, Revision 1

2.2 10CFR20, Standards for Protection against Radiation

2.3 10CFR61, Licensing Requirements for Land Disposal of Radiative Material

2.4 Fermi 2 10CFR61 Compliance Program Manual

2.5 Technical Specification 6.10, Record Retention

2.6 Technical Specification 6.13.2, Licensee-Intitiated Changes to the PCP

2.7 Technical Specification 6.15, Licensee-Intitiated Major Changes to Radioactive Liquid, Gaseous, and Solid Waste Treatment Systems

2.8 UFSAR Chapter 11, Radioactive Waste Management

2.9 NE-85-0722, Nuclear Engineering Letter to NRC concerning Fermi 2 Process Control Program

2.10 NUREG - 0800, Section 11.2, Liquid Waste Management Systems

2.11 NUREG - 0800, Section 11.4, Solid Waste Management Systems

2.12 Safety Evaluation 88-0186, Revision 1, Present Use of Radwaste System Equipment

2.13 Safety Evaluation 91-0015, Temporary Storage of Mixed Waste in the Onsite Storage Facility (OSSF)

2.14 Design Calculation 4945, UFSAR Update Analysis for the Present Radwaste System Operations

2.15 Generic Letter 81-38, Storage of Low-Level Radioactive Wastes at Power Reactor Sites

2.16 Regulatory Guide 1.143, Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants

2.17 Utility Nuclear Waste Management Group (UNWMG) PCP Guidelines, LLW-86-65

2.18 Chem-Nuclear Topical Report CNSI-2 (4313-01354-01) Mobile Cement Solidification System

2.19 Chem-Nuclear Waste Form Topical Report, WM 97, WM 98, WM 101

2.20 CNSI RDS-1000 Radioactive Waste Dewatering System Topical Report, RDS-25506-01-P-A, Revision 1

2.21 CNSI Procedure FO-AD-002, Operating Guidelines for Use of Polyethylene High Integrity Containers

2.22 CNSI Procedure FO-OP-032-483, Set Up and Operating Procedure for the RDS-1000 Unit at Detroit Edison - Fermi 2

2.23 CNSI Procedure SD-OP-003, Process Control Program for Solidification of Stable Waste Forms

2.24 CNSI Procedure SD-OP-048, Process Control Program and Operating Procedure for In-Situ Solidification of Suspended Objects

2.25 CNSI Procedure SD-OP-063, Set Up and Operating Procedure for the Cement Solidification Unit

2.26 NSI Procedure SD-OP-064, Operating Procedure for the Portable Cement Solidification Unit No. 125

2.27 CNSI Procedure SD-OP-090, Process Control Program for Cement Solidification of Oily Sludges and Oil Residues

2.28 CNSI Procedure SD-OP-097, Process Control Program for Cement Solidification of Unstable Waste

2.29 CNSI Procedure SD-OP-098, Waste Solidification in Chem-Nuclear Systems, Inc. Polyethylene High Integrity Container

2.30 Regulatory Guide 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Material in Liquid and Gaseous Effluents from Light-Water-Cooled- Nuclear Power Plants, Revision 1, June 1974

3.0 RESPONSIBILITIES

3.1 The Superintendent of Radwaste/designee is responsible for the implementation of the Fermi 2 Process Control Program and ensuring the Vendors Process Control Program meets the requirements set forth by the NRC and that those Programs are approved by the OSRO prior to use.

3.2 The Radwaste Supervisor is responsible for interfacing with contracted vendors. The purpose of this interface is to ensure the timely and efficient processing of waste forms generated at Fermi 2.

3.3 All personnel working under this procedure shall know their responsibilities to the ALARA Program.

3.4 The Vendor and General Supervisor, Radwaste are to ensure that the general design of the processing equipment is in accordance with the vendors topical report and that this equipment is installed, and tested in accordance with Reference 2.25 for Solidification and 2.22 for Dewatering.

3.5 The Vendor and Radwaste Supervisor are to ensure that the chemicals and/or materials used in a particular waste processing method are equal to or better than that which is required by the Vendor's approved Process Control Program.

4.0 DEFINITIONS

4.1 Batch

An isolated quantity of feed waste to be processed having essentially constant physical and chemical characteristics (i.e., the amount of waste contained within a tank). If new waste is added to the waste being processed then a new batch is created and further sampling is required.

4.2 Dry Active Waste (DAW)

Any dry radioactive material (i.e. contaminated tools, equipment, clothing, trash, etc.)

4.3 Dewatering

The process of removing liquids from wet radioactive waste so that the form of waste is suitable for disposal.

4.4 Encapsulation

The process of encapsulating, in cement, solid radioactive waste which is non-uniform in size and cannot normally be homogeneously mixed (i.e., filters, sources, etc.)

4.5 Free Standing Liquid

Liquid which is still visible after processing, or liquid drainable from the low point of a punctured container.

4.6 High Integrity Container (HIC)

A container which provides stability for the type of waste being processed in accordance with Reference 2.3.

4.7 Prequalification Test Sample

Test conducted on laboratory samples to demonstrate the ability to produce an acceptable waste form using the type of wet waste and solidification agent expected.

4.8 Production Test Sample

A sample used to demonstrate the ability of the onsite solidification agent and waste batch to produce an acceptable waste form using the parameters identified in the PCP.

4.9 Waste Classification

The determination of waste class as outlined in Reference 2.3 (2.4) by radionuclide isotopic analysis and/or scaling factors between easy-to-measure isotopes and the difficult-to-measure isotopes.

4.10 **Wet Radioactive Waste**

Any radioactive liquid or liquid/solid slurry which does not meet the burial site requirements for free standing liquids (i.e. sludge, non-dewatered resin, evaporator bottoms, contaminated oil etc.)

5.0 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE

5.1 Solid Radwaste shall stay within the Limiting Conditions for Operation in accordance with Technical Specification 3/4 11.3, Solid Radioactive Waste Treatment.

6.0 REPORTING REQUIREMENTS

6.1 Reporting Condition of Non-Acceptance

6.1.1 Documentation of the following will be required in accordance with FIP-RA1-01, "General Regulatory Reporting Requirements," and FIP-RA1-02, "Notifications."

1. The failure of high integrity containers used to ensure a stable waste form. Container failure can be evidenced by changed container dimensions, cracking, or damage resulting from mishandling (e.g., dropping or impacting against another object).

2. The misuse of high integrity containers, evidenced by a quantity of free liquid greater than 1% of container volume or other misuse as prohibited by 10CFR61.56.

3. The production of a solidified Class B or C waste form that has any of the following characteristics:

   a. Contains free liquid in quantities exceeding 0.5% of the volume of the waste.

   b. Contains waste with radionuclides in concentrations exceeding those considered during waste form qualification testing accepted by the regulatory agency, which could lead to errors in assessment of waste class.

   c. Contains a significantly different waste loading than that used in qualification testing accepted by the regulatory agency.

   d. Contains chemical ingredients not present in qualification testing accepted by the regulatory agency, and those quantities are sufficient to unacceptably degrade the waste product and cannot be pretreated prior to Solidification.

   e. Shows instability as evidenced by crumbling, cracking, spalling, voids, softening, disintegration, nonhomogeneity or dimensional changes.

   f. Evidence of processing phenomena that exceeded the limiting processing conditions identified in applicable topical reports on process control programs (e.g., foaming, temperature extremes, premature or slow hardening and production of a volatile material).

6.2 Solid radwaste shipment data and discussions of major changes to the solid radioactive waste system shall be included in the Semiannual Radioactive Effluent Release Reports in accordance with Technical Specification 6.9.1.8, Semiannual Radioactive Effluent Report.

6.3 Licensee-initiated major changes to the radioactive waste systems (liquid, gaseous, and solid) shall be reported in accordance with Technical Specification 6.15, Major Changes to Radioactive Liquid, Gaseous, and Solid Waste Treatment Systems.

7.0 PROCEDURE

7.1 General Requirements

7.1.1 All processing of radioactive waste shall be done under an approved Process Control Program for the type of waste being processed.

7.1.2 All solidification, dewatering and sampling activities performed inside the RCA shall have an RWP in accordance with FIP-RC1-01, "Accessing and Working in Radiologically Controlled Areas."

7.1.3 The Quality Control functions will be Audited by the Fermi 2 QA Department in accordance with FIP-AS1-01, "Audits and Surveillances."

7.1.4 All HICs used at Fermi 2 for disposal of radioactive waste will be approved for the type of waste being processed. This approval will be based on the chemical and physical limitations of the container. Each HIC will be certified that it meets the acceptance criteria set by the Certificate of Compliance.

7.1.5 Reference 2.4 provides instructions for developing scaling factors necessary for ensuring compliance with 10 CFR 61.

7.1.6 Preparation of manifest and shipping paperwork shall be in accordance with NPP-RC3-01, "Radwaste Shipping Operations."

7.1.7 All documents shall be maintained in accordance with FIP-RM1-01, "Records Management."

7.1.8 With solidification or dewatering not meeting disposal site and shipping and transportation requirements, take Action in accordance with Technical Specification 3/4 11.3, Solid Radioactive Waste Treatment.

7.2 Solidification Requirements

7.2.1 For high activity waste being solidified, where handling of the full sized Production Test Sample could result in personnel radiation exposure that is in consistent with the ALARA principles, a reduced sample size (25 ml) may be used.

7.2.2 A Production Test Sample shall be solidified from at least every tenth solidification from the same batch.

7.2.3 As a minimum the PCP for stable Cement Solidification Process shall require annually:

1. A Production Test Sample selected from the most recent production level solidification batch will be subjected to the testing requirements in Appendix A, Section II of the NRC Technical Position on Waste Form, Revision 1.

7.2.4 Unstable Waste shall meet the following criteria:

1. Resist penetration

2. Free standing monolith

3. No free standing water

7.3 Dewatering Requirements

7.3.1 As a minimum the PCP for Dewatering shall include and/or reference documentation necessary to ensure the dewatering process and equipment being used will produce a waste form that will meet the disposal facilities requirement for free standing liquids.

7.4 Encapsulation Requirements

7.4.1 As a minimum the PCP for Encapsulation shall include and/or reference documentation necessary to ensure the Encapsulation process and equipment being used will produce a waste form that will meet the disposal facilities requirement as stated in step 7.2.4.

7.5 Solidification Process Control Program

7.5.1 Sampling

1. Obtain a representative sample of the waste batch. This sample will be used to determine the actual process formulation for solidification. Record this information as required by the PCP.

NOTE: To keep personal radiation exposure ALARA, the sample taken may be used for both test solidification and chemistry isotopic analyses.

2. Chemistry shall obtain a representative sample of the waste batch in accordance with "Chemistry Specification". This sample will be used for radiochemical analysis and to determine the quantity of oil in the batch of waste. Record this information as required by the PCP.

7.5.2 Waste Classification

1. Prior to Solidification a Waste Classification will be determined by the Shipping Supervisor. Record this information as required by the PCP.

NOTE: The Waste Classification and Production Test Solidification may be performed at the same time.

7.5.3 Production Test Solidification

1 Radwaste will perform a test solidification of the waste batch in accordance with the PCP. Prior to the test solidification, Chemistry will obtain the pH of the waste. The pH of the waste will be adjusted, as necessary, to ensure it is within the desired range for the PCP to be performed. The pH will be adjusted using the guidelines specified in the PCP.

2. If pretreatment of the batch of waste is necessary, the test sample shall receive the required pretreatment prior to the test sample solidification.

3. If the oil content of the waste batch is greater than 1% by volume, secure solidification operations and notify the Radwaste Supervisor. If the oil content of the waste batch is greater than 8% by volume then the solidification must be done using Reference 2.27.

4. If the initial Production Test Sample from a batch of waste fails to verify solidification, obtain representative samples from the same batch of that wet waste until at least 3 consecutive initial Production Test Samples demonstrate solidification prior to full scale solidification.

7.6 Dewatering Process Control Program

7.6.1 Sampling

1. Chemistry shall obtain a representative sample of the waste batch in accordance with "Chemistry Specification." This sample will be used for radiochemical analysis and to determine the quantity of oil in the batch of waste. Record this information as required by the PCP.

7.6.2 Waste Classification

1. Waste Classification will be determined by the Shipping Supervisor. Record this information as required by the PCP.

7.7 Encapsulation Process Control Program

High activity filters, Irradiated Components and other material which may require encapsulation

7.7.1 Sampling

Chemistry shall obtain a sample of the waste to be encapsulated. This sample will be either a qualitative or a quantitative sample. This sample will be used for radiochemical analysis and to determine the quantity of oil in the waste.

7.7.2 Waste Classification

1. Prior to encapsulation, a waste classification will be determined by the Shipping Supervisor.

8.0 ACCEPTANCE CRITERIA

8.1 Solidification Process Control Program

8.1.1 The test sample will be considered acceptable if it meets:

1. Free standing liquid requirements for the disposal facility

2. Stability requirements if it is evident from the physical appearance that the test sample will maintain its shape if removed from the container

8.1.2 Once the test sample demonstrates an acceptable waste form and waste classification is acceptable for near surface burial, solidification may be performed as per formulas stated in the PCP and the applicable Operating procedures. The container shall be considered acceptable if it meets the solidification limitations set forth in the PCP and the disposal site requirements for free standing liquids.

8.1.3 Once solidification is completed the container will be stored in accordance with NPP-RC3-03, "Use of the Onsite Radwaste Facility," while waiting for shipment.

8.2 Dewatering Process Control Program

8.2.1 The container shall be considered acceptable if it meets the dewatering limitations set forth in the PCP and the disposal site requirements for free standing liquids.

8.2.2 The dewatering results will be recorded in accordance with Reference 2.22.

8.2.3 Once dewatering is completed the container will be stored in accordance with NPP-RC3-03, "Use of the On Site Radwaste Facility," while waiting for shipment.

8.3 Encapsulation Process Control Program

8.3.1 The waste form will be considered acceptable if it meets the test requirements as outlined in the PCP and the free standing liquid requirements for the disposal site.

9.0 DOCUMENTATION

9.1 The data sheets will be included in the file copy of the shipping package, as required by the applicable shipping procedure.

END

PCP MANUAL

REVISION 14

SUPPORT DOCUMENTATION

Revision 14

LICENSING CHANGE REQUEST

LCR 1 7 1 1 - 1 8 1 8 - 1 P C P

Revision 14 Page 1 of

**********PART 1: UFSAR, PLAN, OR PROGRAM REVISION [ ]NA **********

A) Document Process Control Program

B) Section(s), Table(s), Figure(s), etc. Affected
Reference Section

C) Reason for Change Want to use Ferrous specific process parameters for 0.1 Solid Section

D) Reference and Source Documents (Identify)

EDP
PDC
ABN
DER
Test
Effectiveness Review (Attached) [✓]Yes [ ]No
Other
Drawings, Design Calculations, Correspondence, etc.

Tech Spec
Procedure
SE (Attached)
PE (Attached)
Drawing No.

********** PART 2: OPERATING LICENSE CHANGES [✓]NA **********

A) Document
[ ] Operating License [ ] Tech Specs [ ] Environmental Protection Plan

B) Section(s), Table(s), Figure(s), etc. Affected

C) Reference and Source Documents Attached
[ ] NA [ ] Other [ ] Marked-up pages
[ ] Significant Hazards Consideration [ ] Environmental Evaluation
[ ] Enviromental Impact/Categorical Exclusion [ ] Justification

D) Is UFSAR change required?
[ ] Yes [ ] No LCR No.

E) Priority [ ]NA
NRC approval required by (date):

Explanation

F) NRC Letter No.

G) Amendment No.

********** PART 3: APPROVALS **********

A) Originator Chris L. Hayes Date 11/5/91

B) Technical Expert
[ ]See Attached Chris L. Hayes Date 11/5/91

C) Nuclear Generation Unit Head Date 11-8-91

D) General Director, Nuclear Engineering
[✓]NA [ ]See Attached Date

E) Plant Manager
[ ]See Attached Date

F) Other
Date

G) Director, Nuclear Licensing
[ ]See Attached Date 11/7/91

H) OSRO
[ ]NA [ ]See Attached Date 11/12/91

I) NSRG
[✓]NA [ ]See Attached Date 11/12/91

Form FIP-RA2-01 Att 1 P1/1 120590

DTC [ ] TDLCR [ ] TCLCR [ ] TMDLAN

File [✓] 1701.03 [ ] 1735 [ ] 1715.03

EFFECTIVENESS REVIEW

Reference LCR 91-1-18851-PCP

********** PART 1: UFSAR [✓] NA **********

A) Quality Assurance Program

[ ] Yes [ ] No — Does the change(s) cease to satisfy the criteria of 10CFR50, Appendix B or reduce UFSAR program commitments previously accepted by the NRC?

Provide the basis for each change on Attachment 2, Page 2.

B) Fire Protection Program

[ ] Yes [ ] No — Does the change(s) adversely affect the ability to achieve and maintain safe shutdown in the event of a fire?

Provide the basis for each change on Attachment 2, Page 2.

***** PART 2: RADIOLOGICAL EMERGENCY RESPONSE PREPAREDNES PLAN [✓] NA *****

A) [ ] Yes [ ] No — Does the change(s) decrease the effectiveness of the RERP Plan?

[ ] Yes [ ] No — Does the RERP Plan, as changed, cease to meet the standards of 10CFR50.47(b) and 10CFR50 Appendix E?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 3: SECURITY PLANS [✓] NA **********

A) Document

B) [ ] Yes [ ] No — Does the change(s) decrease the effectiveness of the Physical Security Plan or Security Personnel Training and Qualification Plan prepared pursuant to 10CFR50.34(c) or 10CFR73?

[ ] Yes [ ] No — Does the change(s) decrease the effectiveness of the first four categories of Informational Background, Generic Planning Base, Licensee Planning Base, and/or responsiblity matrix of the Safeguards Contingency Plan prepared pursuant to 10CFR50.34(d) or 10CFR73?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 4: PROCESS CONTROL PROGRAM [ ] NA **********

A) [ ] Yes [✓] No — Does the change(s) reduce the overall conformance of the solidified waste product to existing criteria for solid wastes in accordance with Technical Specification 6.13?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 5: ODCM [✓] NA **********

A) [ ] Yes [ ] No — Does the change(s) reduce the accuracy or reliability of the dose calculations or setpoint determinations in in accordance with Technical Specification 6.14?

Provide the basis for each change on Attachment 2, Page 2.

********** PART 6: APPROVALS **********

A) Originator Chris L. Hurst — Date 11/5/91

B) Technical Expert Chris L. Hurst — Date 11/5/91

C) Quality Assurance (For Security Plans only) N/A — Date

X **D) OSRO** (Not required for UFSAR Changes) M.C. Sutton — Date 11/12/91

DTC: [ ] TDLCR [ ] TCLCR [ ] TMPLAN

File: [ ] 1701.03 [ ] 1735 [ ] 1715.03

EFFECTIVENESS REVIEW DOCUMENTATION

Reference LCR 121-1518-PCP

Revision Page 3 of

Document Process Control Program

Listed below is each change by section and page, the reason for the change, and the basis for concluding that the revised plan or program continues to satisfy the criteria for that plan or program.

Section/Page	Change	Basis
2.0	Change procedure to be Form II specific	To provide specific direction. See inspection by PCA.
	Changed reference to reference a Form II that specific procedure vs a generic vendor procedure	The procedure was enhanced to make it a Form II specific vendor procedure. No changes were made to the procedure that affected the solidified waste product. Therefore, changing the reference in the PCP to the new procedure has no effect on the waste product's ability to meet criteria.

CAH 11/7/91

Form FIP-RA2-01 Att 2 P2/2 120590

DTC: [ ] TDLCR [ ] TCLCR [ ] TMPLAN

File: [ ] 1701.03 [ ] 1735 [ ] 1715.03

FERMI 2
PROCESS CONTROL PROGRAM

Revision Summary:

1) Cancelled procedure SD-OP-090.
2) Added procedure SD-OP-090-48306, Process Control Program for Cement Solidiifcation of Oil, Oily Sludges, and Oil Rasidues at Fermi II.

Implementation Plan:

1) This revision goes into effect upon approval.
2) Ongoing work may proceed using previous revision.
3) Procedures Coordination shall issue a Notice of New/Revised Procedures to communicate this change.
4) No additional training is required.

Attachments - None

Enclosures -

ARMS - INFORMATION SERVICES

Date approved: 11-12-91 Release authorized by: [signature]

Change numbers incorporated: NA

DSN PCP MANUAL Rev 14 Date NOVEMBER 13 1991

DTC TMPLAN File 1715.01 Recipient

2.22 CNSI Procedure FO-OP-032-483, Set Up and Operating Procedure for the RDS-1000 Unit at Detroit Edison - Fermi 2

2.23 CNSI Procedure SD-OP-003, Process Control Program for Solidification of Stable Waste Forms

2.24 CNSI Procedure SD-OP-048, Process Control Program and Operating Procedure for In-Situ Solidification of Suspended Objects

2.25 CNSI Procedure SD-OP-063, Set Up and Operating Procedure for the Cement Solidification Unit

2.26 NSI Procedure SD-OP-064, Operating Procedure for the Portable Cement Solidification Unit No. 125

2.27 CNSI Procedure SD-OP-090-48306, Process Control Program for Cement Solidification of Oil, Oily Sludges and Oil Residues at Fermi II.

2.28 CNSI Procedure SD-OP-097, Process Control Program for Cement Solidification of Unstable Waste

2.29 CNSI Procedure SD-OP-098, Waste Solidification in Chem-Nuclear Systems, Inc. Polyethylene High Integrity Container

2.30 Regulatory Guide 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Material in Liquid and Gaseous Effluents from Light-Water-Cooled- Nuclear Power Plants, Revision 1, June 1974