

ATTACHMENT 13

Process Control Program Manual, Revision 3

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NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION UNIT 1

REVISION 03

UNIT 1 RADWASTE PROCESS CONTROL PROGRAM

TECHNICAL SPECIFICATION REQUIRED

Approved by:
R. B. Abbott

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Plant Manager - Unit 1

12/16/97
Date

CONTROLLED

THIS IS A FULL REVISION

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Page No. Change No.

Page No. Change No.

Page No. Change No.

Coversheet .

i

ii

1

2

3

4

5

6

7

8

9

10

11

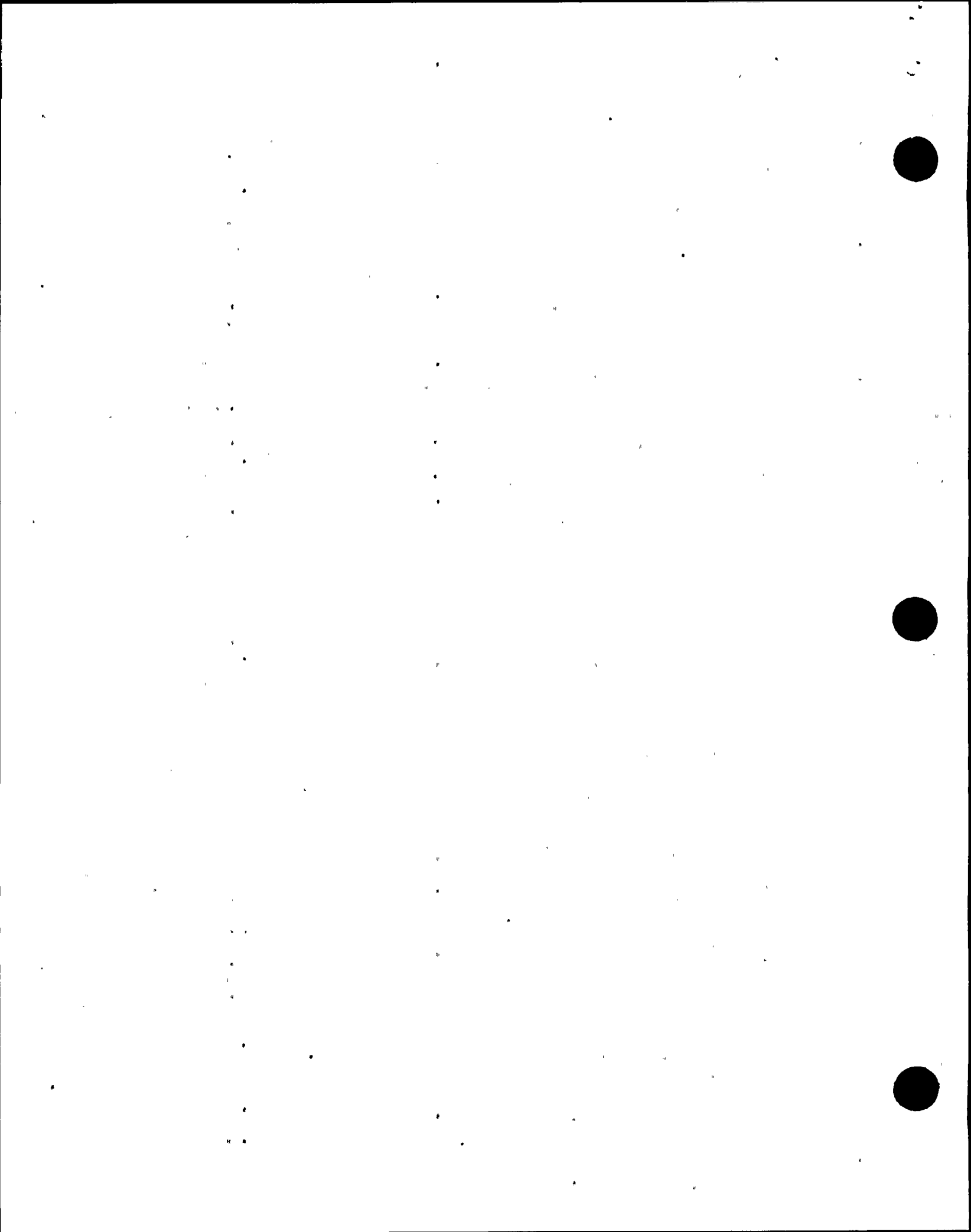
12

13



TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 PURPOSE	1
2.0 RESPONSIBILITIES	1
3.0 PROGRAM	1
4.0 RADIOACTIVE WASTES	3
5.0 DEFINITIONS	6
6.0 REFERENCES	6
ATTACHMENT 1: UNIT 1 RADWASTE PROCESS CONTROL PROGRAM IMPLEMENTING PROCEDURES	9
ATTACHMENT 2: SOLID WASTE SOURCES	11
9.0 SPENT RESIN STORAGE TANK	12
10.0 CONTAMINATED OIL	12



1.0 PURPOSE

To describe the methods for processing, packaging, transporting, and storing low-level radioactive waste and provide assurance of complete stabilization of various radioactive wastes in accordance with applicable NRC & DOT regulations and guidelines.

2.0 RESPONSIBILITIES

2.1 The Plant Manager is responsible for:

2.1.1 Ensuring the Unit 1 Radwaste Process Control Program provides for the health and safety of the general public as it applies to Radwaste Management.

2.1.2 Reviewing and approving changes to the Unit 1 Radwaste Process Control Program in accordance with the applicable Technical Specification.

2.2 The Manager Operations is responsible for the content and maintenance of this program.

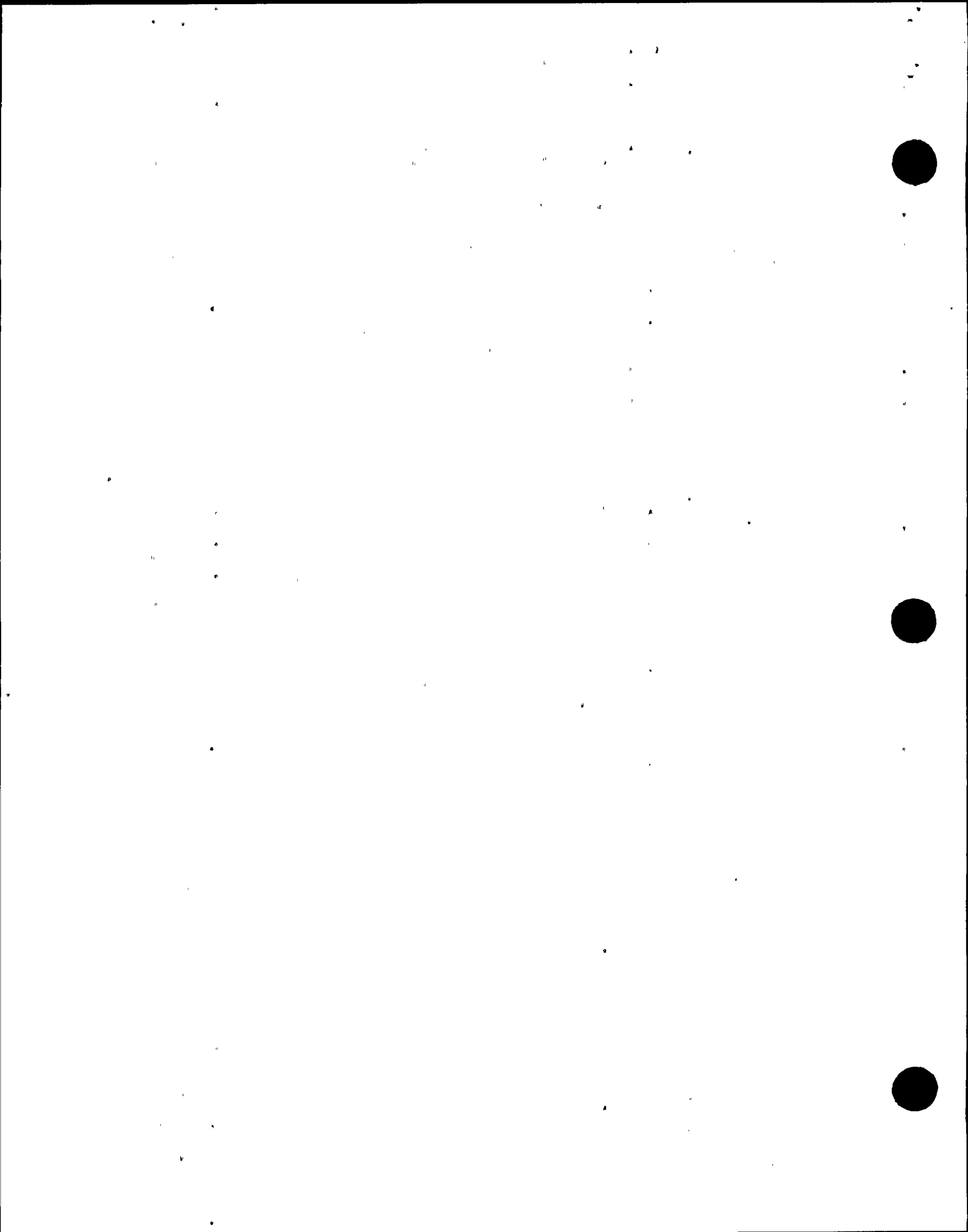
2.3 The General Supervisor Radwaste is responsible for overall implementation of the Radwaste Process Control Program.

3.0 PROGRAM

3.1 System Description

3.1.1 General

- a. The Solid Waste Management System (SWMS) implemented by the procedures identified in the Unit 1 Radwaste Process Control Program Implementing Procedures (Attachment 1) collects, reduces the volume, dewateres and packages wet and dry types of radioactive waste in preparation for shipment off-site for further processing or disposal at a licensed burial site. The processing and storage methods used for interim storage are consistent with the present waste form stability requirements.
- b. Types of solid waste sources are identified in Solid Waste Sources (Attachment 2).



3.1.1 (Cont)

- c. Bead resins, powered resins and charcoal are dewatered using approved vendor equipment in:
 - 1. Vendor certified polyethylene containers, or
 - 2. Carbon steel liners, or a
 - 3. High Integrity Container (HIC)
- d. Concentrated wastes are processed off-site to dryness by an approved vendor.
- e. Evaporator bottoms are transferred to a liner in the Radwaste Truck bay for off-site processing by an approved vendor.
- f. Dry solid trash is collected in the Radwaste Facility, sorted, and sent off-site for further separation and processing.

3.1.2 Ventilation Systems

- a. The Radwaste Building Ventilation System provides filtered, conditioned outside air to various areas of the Radwaste Building and exhausts the air to the atmosphere through the Turbine Building stack. (The system maintains the building at a pressure below atmospheric to help prevent any unmonitored air leakage to the environment.)
- b. The Radwaste Solidification and Storage Building (RSSB) Ventilation System provides filtered, conditioned outside air to selected areas in the RSSB. Recirculation fans continuously filter and condition the air, and exhaust fans, taking a suction on the truck bays, exhaust the air to the Turbine Building stack. (The system maintains the building at a pressure below atmospheric to help prevent any unmonitored air leakage to the environment.)

3.1.3 Crane

- a. All liner movements are completed using a remote controlled/operated crane. The movements are facilitated by the use of remote controlled cameras and monitors.



3.1.3 (Cont)

- b. Liners are moved when required using a ceiling grid coordinated system for placement of the liner.
- c. When liners stored in the RSSB storage area are to be shipped, the liners scheduled for shipment are moved to the East-West Truck Bay and then loaded for transportation.

4.0 RADIOACTIVE WASTES

4.1 Waste Processing System

The General Supervisor Radwaste shall ensure:

- 4.1.1 Radioactive waste is processed using approved equipment with approved procedures.
- 4.1.2 Radioactive waste may be processed using approved vendor equipment and procedures.
- 4.1.3 Radioactive wastes are disposed of in the applicable approved containers.
- 4.1.4 Radioactive waste is transferred into shipping casks in accordance with NI-LWPP-4, Waste Transfers to a Shipping Cask and NI-WHP-4, Cask Loading Procedure.
- 4.1.5 Waste is transferred between units and placed in interim storage in accordance with approved procedures.

4.2 Solid Dry Radioactive Wastes (SDRW)

The General Supervisor Radwaste shall ensure:

- 4.2.1 Low Specific Activity (LSA) Solid Dry Radioactive Waste (SDRW) is collected and prepared in accordance with the applicable procedure, meeting 10CFR61, Sub Part D, Technical Requirements for Land Disposal Facilities and Final Waste Classification and Waste Form Technical Position Papers requirements.
- 4.2.2 SDRW is examined for liquids or items that could compromise the integrity of the package or violate the burial site license and/or criteria are removed or separated.
- 4.2.3 SDRW is shipped in containers meeting the transport requirements of 49CFR173.427, Transport Requirements for Low Specific Activity (LSA) Radioactive Materials.
- 4.2.4 Waste precluded from disposal in LSA boxes or drums, due to radiation limits, is disposed of in the applicable containers.



4.2.5 Waste segregation and volume reduction processing techniques are used for waste generated during operation, maintenance, and modifications.

4.2.6 Scrap metal is separated from waste, when possible, for on-site or off-site decontamination.

NOTE: Vendor services may be used for waste segregation and further volume reduction processes.

4.2.7 Waste is placed in interim storage in accordance with approved procedures.

4.3 Waste Classification/Characterization

4.3.1 The General Supervisor Radwaste shall ensure:

- a. The minimum waste classification/characteristic requirements identified in 10CFR61.56, Waste Characteristics, are satisfied.
- b. The radionuclide concentration determination methods and frequency are conducted in accordance with approved procedures.

4.3.2 The Manager Chemistry shall ensure the chemical and radionuclide content of waste is determined in accordance with the applicable Chemistry procedures.

4.3.3 The Manager Radiation Protection shall ensure classification of waste is performed in accordance with applicable Radiation Protection procedures for the packaging and transportation of radioactive material.

4.4 Administrative Controls

4.4.1 The General Supervisor Radwaste is responsible for overall administrative control of the Radwaste Process Control Program, ensuring:

- a. Changes to the Unit 1 Radwaste Process Control Program are submitted to the NRC in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made, and contain the information required by the applicable Technical Specification.
- b. Shipping manifests are completed and tracked to satisfy the requirements of 10CFR20.2006, Transfer for Disposal and Manifests, in accordance with Waste Handling Procedures.
- c. Temporary storage of solid radioactive material awaiting shipment in an area other than a designated area is done in accordance with the applicable radioactive material storage area.



4.4.1 (Cont)

- d. Interim storage of low level waste is performed in accordance with approved procedures.

4.4.2 The Nuclear Division Quality Assurance Program assures effective implementation of the Process Control Program, as follows:

NOTE: The Manager, Nuclear QA, Operations has the authority to stop work when significant conditions adverse to quality exist and require corrective action.

- a. Under the cognizance of the Safety Review and Audit Board (SRAB), the Process Control Program and implementing procedures for processing and packaging of radioactive waste are audited at least once every 24 months as required by the applicable Unit 1 Technical Specification.
- b. QA audits waste classification records to ensure compliance with 10CFR20.2006, Transfer for Disposal and Manifests.
- c. QA Inspectors performing Radwaste inspections receive documented training in Department of Transportation and NRC Radwaste Regulatory requirements.
- d. Management reviews results of QA audits.

4.4.3 The Nuclear Division Training Program assures personnel responsible for implementation of the Process Control Program are effectively trained in accordance with the applicable training procedures as follows:

- a. Qualification as a Radwaste Operator requires satisfactory completion of the Radwaste Operations Unit 1 Initial Training Program and participation in continued training, this includes:
 - 1. Demonstrating an acceptable level of skill and familiarity associated with Radwaste operations by achieving an average grade of 80 percent or above on written examinations.
 - 2. Receiving on-the-job training in accordance with applicable training procedures.
 - 3. Continued training conducted on a cyclical basis and includes a fundamental review of system modifications, revisions or changes to procedures, and changes or experiences in the nuclear industry.



4.4.3.a (Cont)

4. Individuals that demonstrate a significant deficiency in a given area of knowledge and/or proficiency (as identified during continued training) are placed in a remedial training program as directed by approved training procedures.

4.4.4 Training records and Waste Management records are maintained in accordance with applicable Quality Assurance procedures.

5.0 DEFINITIONS

5.1 The applicable Radwaste packaging, processing, and transportation definitions will be used in accordance with 49CFR171 and 49CFR Sub Part I.

6.0 REFERENCES

6.1 Licensee Documentation

6.1.1 Unit 1 Technical Specifications

- a. Section 3.6.16.c, Radioactive Effluent Treatment Systems
- b. Section 4.6.16.c, Radioactive Effluent Treatment Systems
- c. Section 6.5.2.11, Technical Review and Control
- d. Section 6.5.3.8.k, Audits of Facility Activities
- e. Section 6.9.1.e, Semiannual Radioactive Effluent Release Report

6.1.2 Unit 1 Radiological Effluent Technical Specifications, Amendment No. 66

6.1.3 Nine Mile Point Unit 1 Operating License No. DPR-63 (Docket No. 50-220)

6.1.4 QATR-1, Quality Assurance Program Topical Report for Nine Mile Point Nuclear Station Operations, Section 17.0, Quality Assurance Records.

6.1.5 UFSAR, Section XII.A, Radioactive Wastes

6.1.6 UFSAR, Section III.I, RSSB

6.1.7 Safety Evaluation 92-049, Rev. 04, Interim Storage



6.2 Standards, Regulations, and Codes

- 6.2.1 10CFR20, Standards for Protection Against Radiation
- 6.2.2 10CFR61, Sub Part D, Technical Requirements for Land Disposal Facilities and Final Waste Classification and Waste Form-Technical Position Papers
- 6.2.3 10CFR61.55, Waste Classification
- 6.2.4 10CFR61.56, Waste Characteristics
- 6.2.5 10CFR71, Packaging and Transportation of Radioactive Material, (Refer to applicable S-RPIPs for the packaging and transportation of radioactive material)
- 6.2.6 49CFR173, Shippers - General Requirements for Shipments and Packagings, (Refer to applicable S-RPIPs for the packaging and transportation of radioactive material)
- 6.2.7 49CFR173.427, Transport Requirements for Low Specific Activity (LSA) Radioactive Materials
- 6.2.8 NUREG-0133, Section 3.5, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants
- 6.2.9 NUREG-0473, Sections 3.11.3 and 6.14, Draft Radiological Effluent Technical Specifications for Boiling Water Reactors
- 6.2.10 NUREG-0800, Section 11.4, Standard Review Plan for Solid Waste Management Systems

6.3 Policies, Programs, and Procedures

- 6.3.1 NDD-LPP, Licenses, Plans, and Programs
- 6.3.2 NDD-OPS, Operations
- 6.3.3 NDD-RMP, Radioactive Material Processing, Transport, and Disposal
- 6.3.4 NIP-ECA-01, Deviation/Event Report
- 6.3.5 NIP-PRO-03, Preparation and Review of Technical Procedures
- 6.3.6 NIP-RMG-01, Records Management
- 6.3.7 NIP-TQS-01, Qualification and Certification
- 6.3.8 GAP-ALA-01, Site ALARA Program
- 6.3.9 GAP-INV-02, Control of Material Storage Areas
- 6.3.10 GAP-OPS-01, Administration of Operations



6.3.11 GAP-RPP-01, Radiation Protection Program

6.3.12 GAP-RPP-02, Radiation Work Permit

6.4 Supplemental References

6.4.1 Chem Nuclear Systems, Inc. Training and Requalification Procedure

6.4.2 Nuclear Regulatory Commission's Branch Technical Position of Waste Classification and Waste Form, May 1983

6.4.3 DER 1-94-00549

6.4.4 Structural Calculation S.2.3-R5252-Tank 01

6.4.5 Modification N1-91-033

6.4.6 Procedure N1-MFT-30



ATTACHMENT 1: UNIT 1 RADWASTE PROCESS CONTROL PROGRAM IMPLEMENTING PROCEDURES
(Sheet 1 of 2)

Waste Handling Procedures (WHPs)

N1-WHP-01	Technical Information Governing Packaging and Shipping of Radioactive Waste
N1-WHP-02	Required Documents for Radioactive Waste Shipments
N1-WHP-03	Cask Handling Procedure
N1-WHP-04	Cask Loading Procedure
N1-WHP-06	Van Handling Procedure
N1-WHP-07	Van Loading Procedure
N1-WHP-08	Sludge Removal and Decontamination Procedure
N1-WHP-09	Cement Solidification Procedure
N1-WHP-10	Removal of a Loaded Cask Liner
N1-WHP-12	Solid Dry Radioactive Waste Collection and Processing
N1-WHP-13	RSSB SECO Crane
S-WHP-1	Waste Transfer for Interim Storage

Liquid Waste Processing Procedures (LWPPs)

N1-LWPP-01	Liquid Waste Low Conductivity System
N1-LWPP-02	Liquid Waste High Conductivity System
N1-LWPP-03	Liquid Waste Discharge
N1-LWPP-04	Waste Transfers to a Shipping Cask
N1-LWPP-05	#12 Waste Concentrator System
N1-LWPP-06	Filter Sludge Processing System
N1-LWPP-07	Concentrated Waste Transfer System
N1-LWPP-08	Chemical Addition System
N1-LWPP-09	Fluidized Transfer Demineralization System (FTDS)



Liquid Waste Processing Procedures (LWPPs) (Cont'd)

N1-LWPP-11 Liquid Waste #12 Electric Boiler System
N1-LWPP-12 Radwaste Building Heating and Ventilation System
N1-LWPP-13 RSSB Heating, Ventilation & Air Conditioning System
N1-LWPP-14 Sump and Tank Cleaning Procedure

Radiation Protection Procedures (S-RPIPs)

S-RPIP-7.1 Movement and Storage of Radioactive Material on Site
S-RPIP-7.2 Receipt of Radioactive Material
S-RPIP-7.3 Determination of Shipment Type
S-RPIP-7.4 Cash Shipments
S-RPIP-7.5 Van and Flatbed Shipments
S-RPIP-7.7 Non-Waste Radioactive Shipments
S-RPIP-7.8 Shipping Documents

Chemistry Procedure (CSP)

N1-CTP-V400 Radioactive Solid Waste Analysis and Documentation
N1-CTP-V402 Radioactive Solid Waste Composites

Quality Assurance Procedure (QAPs)

QAP-ASU-18.20 Quality Assurance Surveillance Program
QAP-INS-10.30 Nuclear Quality Assurance Department Inspection Activities
QAP-ASU-18.10 Nuclear Audit Program

Training Procedures (NTPs)

NTP-TQS-108 Training for Chemistry Technicians, Radiation Protection Technicians, and Radwaste Operators



ATTACHMENT 2: SOLID WASTE SOURCES
(Sheet 1 of 3)

1.0 RADWASTE FILTERS

- 1.1 Mechanical Radwaste filters filter resin and crud (backwash material) from the Waste Collector Sub-System.
- 1.2 When a filter reaches a pre-determined differential pressure, the filter is backwashed into the filter sludge tank, which is then processed via the clarifier to the thickener tanks.

2.0 RADWASTE DEMINERALIZER

- 2.1 The Radwaste demineralizer is used as anionic exchange media for processing high quality water from the Waste Collector Tanks.
- 2.2 When determined the resin can NO longer be used, the depleted resin is pumped to the Spent Resin Tank.

3.0 CONDENSATE DEMINERALIZERS

- 3.1 The Condensate Demineralizers remove soluble and insoluble impurities from the condensate water to maintain reactor feedwater purity.
- 3.2 After it is determined these resins can NO longer be used, the depleted resins are pumped to the Radwaste Demineralizer or Spent Resin Tank.

4.0 THERMEX SYSTEM

- 4.1 Concentrated waste will be pumped to the Spent Resin Tank and dewatered or stored in a liner and eventually pumped to a transport liner in the Radwaste Truck bay for off-site processing.
- 4.2 Exhausted resin and charcoal are sluiced to the Spent Resin Tank, mixed to a homogenous mixture and then transferred to a liner in the truck bay for dewatering.
- 4.3 Exhausted Reverse Osmosis membranes will be processed as DAW.



5.0 FUEL POOL FILTER SLUDGE TANK

This tank receives the exhausted powdered filter media (resins) from the Fuel Pool Cleanup System, which is subsequently pumped to the Filter Sludge Tank for processing.

6.0 CLEANUP FILTER SLUDGE TANK

This tank receives the exhausted powdered filter media (resins) from the Reactor Cleanup System, which is subsequently pumped to the Filter Sludge Tank, Clarifier, or directly to a liner in the Radwaste Truck bay for processing.

7.0 FILTER SLUDGE STORAGE TANK

This tank receives waste from the Radwaste filters, Fuel Pool and Cleanup Sludge Tanks, Clarifier and Thickener Tank overflows, and Radwaste Floor Drain Sump #11. Tank discharge is to the Clarifier (Filter Sludge Thickener System) or directly to a liner in the Radwaste Truck bay for processing.

8.0 FILTER SLUDGE THICKENER TANKS (CLARIFIER)

Waste from the Filter Sludge Storage Tank or the Cleanup Filter Sludge Tank is pumped to the Clarifier, mixed with a flocculent and drained to the Thickener Tanks. The Thickener Tanks are pumped to a liner in the Radwaste Truck bay for processing.

9.0 SPENT RESIN STORAGE TANK

Exhausted resin from the Condensate Demineralizers, Radwaste Demineralizer, and THERMEX System are sluiced to the Spent Resin Tank. The tank is subsequently pumped to a liner in the Radwaste Truck bay for dewatering and further processing.

10.0 CONTAMINATED OIL

Oil from sources within Unit 1 that become contaminated is stored in containers to be shipped off-site for incineration.



11.0 COMPACTIBLE SOLIDS

- 11.1 Compactible low level trash is shipped off-site for vendor separation and processing.
- 11.2 Shoe covers, trash, contaminated paper from the Chemistry Lab, and similar materials are included in this category.

12.0 FILTERS AND MISCELLANEOUS ITEMS

Solid items with high dose rates are handled on a case-by-case basis, being disposed of by methods acceptable to the burial site or shipped off-site for vendor recovery or disposal.

13.0 WASTE EVAPORATOR

- 13.1 The Waste Evaporator processes low quality waste from the Floor Drain Collector System.
- 13.2 The Waste Evaporator is designed to concentrate waste to a 25% solid concentration, which may then be discharged to the Evaporator Bottoms Tank for transfer to the Radwaste Truck bay for vendor processing.

