NEI 07-10 Generic FSAR Template Guidance for Process Control Program (PCP)

Revision 1

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 This Process Control Program (PCP) Description identifies the administrative and operational controls for waste processing, process parameters, and surveillance requirements which assure that the final waste product meets the requirements of applicable Federal, State and Disposal Site waste form requirements for burial at a 10 CFR 61 licensed Low Level Waste (LLW) disposal site. The mobile radioactive waste processing system conforms to Regulatory Guidance 1.143 and Generic Letters applicable to wet solid waste. The PCP comply with 10 CFR 61.55 and 10CFR 61.56 for wet solid wastes. The PCP present the methods that liquid, wet and dry solid waste are processed and disposed in accordance to 10 CFR Part 61 and packaged and transported in accordance with 10 CFR Part 20,10 CFR Part 71 and 49 CFR Parts 171-180.

2.0 APPLICABILITY

2.1 The Process Control Program is applicable to the Solid Waste Management System in the solidification of liquid or wet radioactive wastes or the dewatering of wet radioactive wastes to be shipped for direct burial to a 10 CFR Part 61 licensed disposal site.

Radioactive waste shipped off-site for processing are not required to be solidified or dewatered to meet disposal requirements and are not subject to the solidification or dewatering requirements of the PCP.

2.2 The Process Control Program is only applicable to Mixed Waste when it is solidified for disposal at a 10 CFR Part 61 disposal site.

2.3 The Process Control Program identify that incidental levels of waste petroleum-based oil contained in radioactive waste meets the disposal site requirement for shipment.

2.4 The Process Control Program identifies required implementing procedures for radioactive waste interim storage of liquid or wet waste to meet the current requirements final waste form for free standing liquids.. .

3.0 REFERENCES

3.1 Regulatory Requirements

3.1.1 10 CFR Part 20, "Standards for Protection Against Radiation."

3.1.2 10 CFR Part 50, Appendix A, General Design Criterion 60, "Control of Releases of Radioactive Materials to the Environment." General Design Criterion 64, "Monitoring Radioactivity Releases."

3.1.3 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste."

3.1.4 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

3.1.5 40 CFR Part 266" Storage, Treatment, Transportation, and Disposal of Mixed Waste"

3.1.6 Licensed radioactive waste burial site

3.1.7 State hazardous waste regulations

3.2 Regulatory Guidance

3.2.1 NUREG-0144, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants.

3.2.2 NUREG-0800, SRP 11.4, "Solid Waste Management Systems"

3.2.3 NUREG-0800, Branch Technical Position 11-3 "Design Guidance for Solid Radioactive Waste Management Systems Installed in Light-Water-Cooled Nuclear Power Reactor Plants"

3.2.4 Generic Letter 89-01, "Guidance for the Implementation of Programmatic Controls For RETS in The Administrative Controls Section of Technical Specifications and the Relocation of Procedural Details of Current RETS to the Offsite Dose Calculation Manual or Process Control Program"

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

3.2.6 USNRC, Branch Technical Position, "Technical Position on Waste Form ", Rev. 1, January, 1991 and HPPOS-290, "Waste Form Technical Position, Revision 1"

3.2.7 Issuance of Final Technical Position on Concentration Averaging and Encapsulation, Revision in Part to Waste Classification Technical Position , January 17, 1995

3.2.8 ANSI 55.6, "Liquid Radioactive Waste Processing Systems for Pressurized Water Reactor Plants"

3.2.9 ANSI/ANS 40.37-1993, "Mobile Radioactive Waste Processing Systems"

3.2.10 Regulatory Guide 8.8, "Information Relevant to Ensuring That Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable."

3.2.11 Generic Letter 80-009, "Low Level Radioactive Waste Disposal."

3.2.12 Generic Letter 81-038, "Storage of Low Level Radioactive Wastes at Power Reactor Sites."

3.2.13 Information Notice 87-07, "Quality Control of Onsite Dewatering / Solidification Operations By Outside Contractors"

3.2.14 IE Bulletin 79-19, "Packaging, Transport and Burial of Low-Level Radioactive Waste"

3.2.15 Information Notice 90-31, "Update on Waste Form and High Integrity Containers Topical Report Review Status, Identification of Problems with Cement Solidification, and Reporting of Waste Mishaps"

3.3 Programmatic References –Site Specific

3.3.1 Technical Specifications 5.0 Administrative Controls

3.3.2 Site Specific Licensee Commitments

3.3.3 Site Specific FSAR

3.3.4 Site Quality Assurance Program

3.3.5 Vendor Quality Assurance Program

3.3.6 Plant Process Control Program Procedures for Specific Waste Processing Methods such as Dewatering, Solidification, or HIC Integrity Verification.

3.3.7 Plant implementation procedures on 10 CFR Part 61 waste form, waste classification and waste characterization.

3.3.8 Plant procedures on the requirements for interim storage for processed waste.

4.0 PROCESS DESCRIPTION GUIDLINES

4.1 Responsibilities

Each licensee will designate a site organization to be the owner, sponsor and administrator for the PCP. Examples of the organizations PCP responsibility include review and approval of revisions; document administration; PCP technical content; and supporting the site compliance with the PCP

4.2 Administration of the PCP and Support Documents

Any changes to the Process Control Program or implementing procedures require a review to assure that the requirements of the SRP Sections 11.4 and 11.5, BTP 11-3, 10 CFR 20, 61, and 71, 49 CFR 171-180, state regulations, disposal and process facility waste acceptance criteria, and other requirements governing the disposal of solid radioactive waste (contained in the references to this plan), are met. PCP changes will sent to the NRC in the sites Annual Radioactive Effluent Report for the period in which the changes were implemented.

Implementing procedures shall be developed, approved, and maintained for performing the activities in support of the PCP. Examples of functions included in site specific implementation procedures are: Sampling, analysis, scaling of difficult to measure radionuclides, and waste classification of to waste type and waste form; Process controls and parameters for processing "wet wastes" for land disposal and for processing Waste Class B and C wastes; Processing and disposal of "mixed waste" which is a waste containing both radioactive material and other hazardous characteristics; Processing and disposal of "mixed waste"; Control and acceptance of vendor waste processing equipment and processes for site and offsite processing of radioactive waste; and: Preparing radioactive material for shipment, preparation of the uniform radioactive waste manifests, preparation of shipping papers, notifications, shipment security, container specifications and inspections, vehicle inspections, proper loading and shoring of shipments, radioactive survey requirements and limitations for radioactive material shipments, and verification of compliance with disposal and processor site acceptance criteria. Include conformance to Regulatory Guide 1.143 and Generic Letters 80-009 and 81-039; Maintaining waste disposal records as required by 10 CFR 20.2108 and reporting information on radioactive waste disposal. .

4.3 Approval Process for QA Approved Suppliers

Any supplier providing PCP services will be reviewed and approved prior to providing those services. The site will identify the criteria that the waste processor will meet for the services provided. Examples of criteria include the vendors PCP Topical Reports or equivalent, radioactive material license, state licensing, compliance with DOT regulations for packaging, shipment, packages, transportation…

4.4 PCP Requirements for Vendor Processes and Services

The vendor supplied processes for solidification or dewatering will have a Topical Report or other certification documenting appropriate, approval of the process and associated containers used. The vendor approved for solidification or dewatering services will have NRC or appropriate regulatory certification documenting compliance with waste form requirements of the final product. The vendor Topical Report or equivalent will certify that the final product conforms to the appropriate waste form for Class A, B, or C waste.

Any vendor supplied high integrity containers (HIC's) will have a NRC or appropriate regulatory approved report documenting compliance with waste form requirements.

Each container of processed waste shall be classified as Class A, B or C waste using a site specific 10 CFR Part 61 Waste Form, Waste Classification and Waste Characterization Implementation Program (Reference 3.3).

Vendors providing PCP services on-site will meet the applicable requirements of the PCP and quality assurance requirements identified by the site contract. The vendor equipment will meet the design, construction, operation and quality assurance provisions of NRC BTP 11-3 (Reference 3.2.3) and Regulatory Guide 1.143 (Reference 3.2.5).

Vendors providing PCP services offsite will meet the requirements of their PCP process and applicable quality assurance requirements.

4.5 PCP Solidification Process Description

Waste solidification will be performed to approved procedures that ensure all applicable regulatory and disposal site criteria are met. The specific waste processing technology and method and process parameters used to process waste are described in site procedures. The parameters should include (depending on the type of waste):

Waste pH; water content; oil content; waste density; content of chelating agents; ratio of stabilization agent to chemical additives by types of wastes; waste form; Mixer speed; Mixing time; Curing time; Pre-solidification hazardous waste characterization; Specific Activity and gamma analysis.

The minimum solidification acceptance criteria will include free standing liquid; physical criteria and chemical criteria based on the disposal site. A representative sample of the waste to be solidified will be obtained for bench scale testing based on a frequency identified by the disposal site. The process parameters should include any of the above parameters that are applicable.

4.6 PCP Dewatering Process Description

The methods used for removal of liquid from wet waste for final disposal will comply with the specific disposal site requirements where the waste is being disposed.

Dewatering of wet wastes will be performed in a manner equivalent to the process guidelines described below using approved procedures with enough detail to implement applicable requirements.

Mechanical filters (e.g., cartridge, bag, membrane) are dewatered so that accumulation of free standing liquid in the disposal container do not approach disposal site limits. The method of dewatering will be in accordance with a previously defined, evaluated and documented process.

Dewatering of "slurried" wet wastes (e.g., resin, carbon, Zeolite, filter precoat, filter backwash, sludge) removes the interstitial liquid from solids such that the disposal container meets the applicable regulatory and burial free standing liquid criteria for disposal.

4.7 Acceptability

The solidification and dewatering process product will be verified and documented to meet the PCP Acceptance Criteria requirements for that process. Verification may include bench scale test, full scale test, verification of PCP process compliance, or verification of the amount of free-standing liquid is within disposal site criteria for the container.

Product verification failures shall be documented, reported if required, investigated and remedial actions taken. Any misuse, mishaps, or failure of a waste form or container will be reported to responsible site personnel for action.

5.0 DEFINITIONS

{Later}