

Edwin I. Hatch Nuclear Plant Solid Radioactive Waste Process Control Program

February 1992, Revision 3

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Georgia Power

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SOLID RADIOACTIVE WASTE PROCESS CONTROL PROGRAM
FOR THE
GEORGIA POWER COMPANY
EDWIN I. HATCH NUCLEAR PLANT

FEBRUARY 1992, REVISION 3

E. I. HATCH NUCLEAR PLANT
SOLID RADIOACTIVE WASTE PROCESS CONTROL PROGRAM

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J. A. Wehrenberg	Manager, Nuclear Plant Support - Hatch Southern Company Services Inverness Center Building 42 Birmingham, Alabama	16

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G. W. Robson	Supervisor, Document Control Inverness Center Building 40, 5th Floor Birmingham, Alabama	20

EDWIN I. HATCH NUCLEAR PLANT
SOLID RADIOACTIVE WASTE PROCESS CONTROL PROGRAM

I. PURPOSE

The processing of radioactive waste for disposal at a licensed radioactive waste burial site requires that the waste be appropriately analyzed, processed, and packaged, presenting a final waste form that is acceptable for transportation and burial at a licensed radioactive waste disposal site. The purpose of this Process Control Program is to document the radioactive waste processing methods and the quality control steps that are taken at the Edwin I. Hatch Nuclear Plant to verify compliance with applicable regulatory requirements and, in particular, to assure an acceptable waste product meeting the applicable waste stability characteristics of 10 CFR 61.56. NRC Generic Letter 89-01 allows nuclear power plant licensees to transfer procedural details formerly contained in Technical Specification 3.15.3 (Unit 1) and 3.11.3 (Unit 2) to the Process Control Program. These procedural details, along with associated definitions and reporting requirements, are included in the Hatch Nuclear Plant Process Control Program as Appendix A.

At Plant Hatch, the routine processing systems that generate radioactive waste requiring offsite disposal are:

1. The reactor water cleanup system.
2. The condensate cleanup system.
3. The spent fuel pool cleanup system.
4. The liquid radwaste system.

All of these systems employ the use of either ion exchange resins or the powdered ion exchange resins as the processing medium. Spent resins are dewatered in an appropriate liner based on the waste class and burial site criteria. In addition to these processing systems, two other types of radioactive waste that are routinely processed are the compactible and noncompactible trash (DAW) and slightly radioactively contaminated oils.

This Process Control Program addresses the processing of these types of waste and the measures in place to assure the generation of an acceptable waste product. Operating criteria for spent resin transfer to an appropriate liner and in-liner dewatering are addressed, as are also the criteria for the processing of DAW (compactible and noncompactible trash) and miscellaneous contaminated liquids (including oils).

II. REGULATORY OVERVIEW

All waste processing, packaging, and shipping are conducted in accordance with approved procedures to assure compliance with applicable federal, state, and burial-site requirements. Waste processed for disposal is evaluated per approved plant procedures for compliance with:

1. Waste classification requirements of 10 CFR 61.55.
2. Waste characteristic requirements of 10 CFR 61.56.
3. Manifest reporting requirements of 10 CFR 20.311.

Waste is packaged in containers meeting or exceeding the requirements for both transportation and disposal. Shipments are conducted in accordance with the requirements of 49 CFR 172-177 and 10 CFR 71.

All waste processing is performed in a manner consistent with the principles of ALARA. The procedures that have been developed to cover waste processing operations address appropriate radiation safety measures, such as job preplanning, radiation source shielding, and job prerequisites and material requirements so as to minimize stay times.

III. DEWATERING OF RESINS

The processing of the liquid streams by ion exchange resins (bead or powdered) results in a waste product that is most appropriately dewatered in a suitable disposable liner (carbon steel or high-integrity container). Prior to

transfer of the spent resin to a liner, a sample is collected and analyzed by gamma spectroscopy to quantify the radioactive material concentration. Based on this information, the waste is appropriately classified in accordance with approved procedures per the criteria of 10 CFR 61.55. If a sample of the resins cannot be collected prior to transfer to a liner due to either design or operational limitations, a sample collected after transfer or an external radiation level measurement may be used in accordance with approved procedures for determining waste class.

The dewatering process is conducted in accordance with approved procedures with appropriate operating parameters to assure a waste product with as little freestanding water as possible but, in no case, in excess of 1 percent by volume (i.e., meeting the waste stability criteria of 10 CFR 61.56). The specifics of the dewatering process vary depending upon the type of dewatering process employed* and the type of resin (bead or powdered). However, the common approach to dewatering is the removal of essentially all interstitial water. Appropriate verifications (dependent upon the process method) are conducted to assure an acceptable waste form.

IV. PACKAGING OF DAW (COMPACTIBLE AND NONCOMPACTIBLE TRASH)

All radioactively contaminated trash is appropriately packaged, surveyed, and labeled prior to shipment for disposal. Bagged wastes are opened to assure exclusion of unacceptable waste products, such as water and oil. Compactible trash is processed by compaction to reduce the volume of the waste; noncompactible materials are segregated and normally packaged separately. After packaging, the waste containers are stored awaiting shipment. Container integrity is verified by visual examination (post-compaction and pre-shipment) to assure an acceptable waste package for transportation and an acceptable waste form for disposal.

* The dewatering process at Plant Hatch is a contractor-supplied system. Refer to Section VI for the process controls that are applicable.

V. PROCESSING OF MISCELLANEOUS LIQUIDS (OIL)

Periodically, it may become necessary to process slightly radioactively contaminated liquids, including oil, for offsite disposal. These liquid wastes are either processed by absorption or solidification. Absorption is accomplished using at least twice as much absorbent as is necessary to completely absorb the liquid; only an absorbent approved by the burial site is used. Any solidification of liquids is conducted in accordance with approved plant procedures or a contractor-supplied solidification procedure that has been specifically developed for the solidification process. (Refer to Section VI for the use of a contractor or contractor-supplied process for waste processing.)

The solidification of liquids (including oils) utilizing the onsite mixing unit is conducted in accordance with approved operating procedures and parameters. As appropriate, test samples are conducted every tenth batch to verify the pre-established mixing ratios. Sampling is accomplished in accordance with approved plant procedures to assure that the samples are representative of the waste being processed. Any unacceptable products require a re-evaluation of the mixing ratios; any unacceptable waste containers are identified (by visual inspection), and appropriate actions are taken to assure that the waste as shipped meets the applicable waste stability requirements of 10 CFR 61.56. Additionally, all containers of the solidified waste are inspected prior to closure to assure a solidified matrix absent of any freestanding water.

VI. USE OF CONTRACTOR FOR WASTE PROCESSING

Contractor-supplied process and/or service may be used at Plant Hatch for the processing of radioactive waste for offsite disposal. For the operation of such a process, it may be desirable to use process control measures and procedures developed by the contractor specifically for the system or process. Therefore, previously addressed process control measures for a particular type waste may be superseded by contractor-supplied measures, as appropriate.

Prior to the use of a contractor-supplied process or service for waste processing at Plant Hatch, a management review of the contractor's process control and procedures is performed to assure an operation compatible with plant operation and in accordance with regulatory requirements. Contractor-supplied waste processing shall be performed in areas with features and/or controls adequate to contain inadvertent spills and overfills.

For the processing of waste that is intended to be shipped for disposal at a licensed radioactive waste burial site, additional precautions are taken to assure a final waste product that meets the appropriate waste stability requirements of 10 CFR 61.56. In particular, the following items, as applicable, are to be documented by the contractor (or Plant Hatch manuals or procedures) prior to utilization for waste processing:

- A general description of the solidification or dewatering process, including type solidification agent (if applicable), major process equipment and interface with plant equipment, types of waste that can be processed, and operating parameters.
- Process control measures that provide for the verification of the generation of a suitable waste product, including items (as may be appropriate for the process method), such as representative sampling, laboratory tests, and acceptance criteria.
- Specifically approved procedures for the operation of the process equipment that will assure operation within the bounds as delineated by the process control measures.
- Appropriate acceptance criteria for evaluating the acceptability of the final waste product.

Waste products will be verified as meeting the criteria for disposal prior to final closure of the container.

APPENDIX A

SOLID RADWASTE DEFINITIONS, PROCEDURAL DETAILS, AND REPORTING REQUIREMENTS PER NRC GENERIC LETTER 89-01

This Appendix to the Hatch Nuclear Plant (HNP) Process Control Program (PCP) contains the definitions, procedural details, and reporting requirements pertaining to solid radioactive waste formerly presented in the HNP Technical Specifications. These definitions, procedural details, and reporting requirements have been transferred to the PCP in accordance with NRC Generic Letter 89-01. In the body of the text of this Appendix, terms that have been specifically defined appear in all capital letters to indicate that these terms have specific definitions. The definition of PROCESS CONTROL PROGRAM and the discussion of changes and approval of changes to the PCP are presented in HNP Technical Specifications and also are included in Appendix A for convenience.

A.1 DEFINITIONS

A.1.1 OPERABLE - OPERABILITY

A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation; controls; normal and emergency electrical power sources; cooling or seal water; lubrication of other auxiliary equipment that is required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

A.1.2 PROCESS CONTROL PROGRAM

The PROCESS CONTROL PROGRAM (PCP) shall be implemented by procedures which contain the current formulas, sampling, analyses, test, and determinations to be made to ensure that processing and packaging of solid radioactive wastes based on demonstrated processing of actual or simulated wet solid wastes will be accomplished in such a way as to assure compliance with 10 CFR Parts 20, 61, and 71, State regulations, burial-ground requirements, and other requirements governing the disposal of solid radioactive waste.

A.1.3 SOLIDIFICATION

SOLIDIFICATION shall be the conversion of wet radioactive wastes into a form that meets shipping and burial-ground requirements.

A.2 CHANGES TO THE PROCESS CONTROL PROGRAM

Changes to the PCP shall meet the following requirements:

1. They shall be documented, and records of reviews performed shall be retained as required by Technical Specification 6.10.2.o. This documentation shall contain the following:
 - a. Sufficient information to support the change together with the appropriate analyses or evaluations justifying the change(s).
 - b. A determination that the change will maintain the overall conformance of the solidified waste product to existing requirements of Federal, State, or other applicable regulations.
2. They shall become effective after review and acceptance by the PRB and the approval of the General Manager - Nuclear Plant.

A.3 SOLID RADIOACTIVE WASTE SYSTEM

A.3.1 Solid Radioactive Waste System Control

The solid radwaste system shall be used in accordance with the PROCESS CONTROL PROGRAM to provide for the SOLIDIFICATION of wet solid wastes and for the SOLIDIFICATION and packaging of other radioactive wastes, as required, to ensure that they meet requirements of 10 CFR Parts 20 and 71, prior to shipment of radioactive wastes from the site.

A.3.2 Applicability

This requirement applies at all times.

A.3.3 Actions

A.3.3.1 With the requirements of 10 CFR Parts 20 and 71 not satisfied, suspend shipments of defective containers of solid radioactive wastes from the site.

A.3.3.2 For Unit 1: When the ACTION statement or other requirements of this control cannot be met, steps need not be taken to change the Operational Mode of the unit. Entry into an Operational Mode or other specified condition may be made if, as a minimum, the requirements of the ACTION statement are satisfied.

For Unit 2: The provisions of Technical Specifications 3.0.3 and 3.0.4 are not applicable.

A.3.4 Surveillance Requirements

The PROCESS CONTROL PROGRAM shall be used to verify the SOLIDIFICATION of wastes prior to shipment.

A.3.5 Bases

The OPERABILITY of the solid radwaste system ensures that the system will be available for use whenever solid radwastes require processing and packaging before being shipped offsite. This control implements the requirements of 10 CFR Part 50.36(a) and General Design Criterion 60 of Appendix A to 10 CFR Part 50. The process parameters included in establishing the PROCESS CONTROL PROGRAM may include, but are not limited to, waste type, waste pH, waste/liquid/solidification agent/catalyst ratios, waste oil content, waste principal chemical constituents, and mixing and curing times.

A.4 REPORTS

A.4.1 Semiannual Radioactive Effluent Release Report*

The Semiannual Radioactive Effluent Release Report, submitted in accordance with Technical Specification 6.9.1.8, shall include a summary of the quantities of solid radwaste released from the units as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with

* Reporting requirements presented in this section address only solid radioactive wastes. For a comprehensive presentation of reporting requirements pertaining to the Semiannual Radioactive Effluent Release Report, see the Plant Hatch Offsite Dose Calculation Manual.

data summarized on a 6-month basis following the format of Appendix B thereof. For each type of solid radwaste shipped offsite during the report period, the report shall include the following information:

- a. Container volume.
- b. Total curie quantity (specify whether determined by measurement or estimate).
- c. Principal radionuclides (specify whether determined by measurement or estimate).
- d. Type of waste (such as spent resin, compacted dry waste, evaporator bottoms).
- e. Type of container (such as LSA, type A, type B, large quantity).
- f. Solidification agent (such as cement).

A.4.2 Monthly Operating Report

Major changes to the solid radioactive waste treatment system shall be reported to the Nuclear Regulatory Commission in the Monthly Operating Report for the period in which the evaluation was reviewed and accepted by the PRB.