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

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E.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, representing 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 E.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.

At Hatch, the routine processing systems that generate radioactive waste requiring off-site disposal are the reactor water clean-up system, condensate clean-up system, spent fuel pool clean-up system and the liquid radwaste system. All of these systems employ the use of either bead 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 compactable and non-compactable 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 (compactable and non-compactable 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) the waste classification requirements of 10 CFR 61.55; 2) the waste characteristic requirements of 10 CFR 61.56; and 3) the manifest reporting requirements of 10 CFR 20.311. Packaging of waste is in containers meeting DOT specifications and appropriate for the applicable waste class. 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 resin 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 free standing water as possible but in no case in excess of 1% by volume (i.e., meeting the waste stability criteria of 10 CFR 61.56). The specifics of the

dewatering process vary depending on 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 on the process method) are conducted to assure an acceptable waste form.

#### IV. Packaging of DAW (Compactable and Non-compactable 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. Compactable trash is processed by compaction to reduce the volume of the waste; non-compactable materials are segregated and normally packaged separately. After packaging the waste containers are stored awaiting shipment. Periodic inspection of the storage area is conducted to assure container integrity.

#### V. Processing of Oils

Periodically it may become necessary to process slightly radioactively contaminated oils for off-site disposal. These liquid wastes are either processed by absorption or solidification. Absorption is accomplished using at least twice as much absorbant as is necessary to completely absorb the liquid; only an absorbant 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 on-site mixing unit is conducted in accordance with approved operating procedures and parameters (HNP-8043 and HNP-8044). Per HNP-8043, test samples are conducted every tenth batch to verify the pre-established mixing ratios. Any unacceptable products

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

require a re-evaluation of the mixing ratios; any unacceptable waste containers are identified (by visual inspection) and appropriate actions taken to assure 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 absence of any free standing water.

#### VI. Use of Contractor for Waste Processing

Contractor supplied process and/or service may be used at Hatch for the processing of radioactive waste for off-site disposal. For the operation of such 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 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.

For 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 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; and
  
- appropriate acceptance criteria for evaluating the acceptability of the final waste product.