Process Control Program

for

Ginna Station

Rochester Gas and Electric Corporation
Revision 0

I. Introduction

The Radiological Effluent Technical Specifications require the establishment of a Process Control Program (PCP). The PCP herein is a manual outlining the method for processing wet solid wastes and for solidification of liquid wastes. It includes applicable process parameters and evaluation methods used at Ginna Station to assure compliance with the requirements of 10 CFR Part 71 prior to shipment of containers of radioactive waste from the site.

The Ginna PCP encompasses three types of solid wastes:

a. Cemented Evaporator Bottoms
b. Cemented Ultrafiltration Sludge
c. Dewatered Bead Resin

Two of these waste categories (a and b) are by-products of the same waste drumming system.

II. Cemented Evaporator Bottoms

A. General Description

The waste holdup tank, located in the auxiliary building, accepts liquid waste from all floor drains, regeneration wastes, certain system drains, resin sluice water, laundry and shower waste.

The liquid from the waste holdup tank is processed through either the ultrafiltration system or woven cuno type filters to the waste evaporator.

The waste evaporator processes all liquid waste from the waste holdup tank.

The other evaporator system which can be used as a backup system to process waste from the waste holdup tank or as normal "clean" CVCS drains, is the "Boric Acid Evaporator". The concentrates from this evaporator can be transferred to the waste evaporator feed tanks for disposal through the solidification system or to the concentrates holding tank for reuse.

The operation of the evaporators is controlled by several operating procedures, S-3.4C, D, E, and F for the boric acid evaporator and S-4.1A, B, and C for the waste evaporator operation. The parameters used to control the batch operations are boric acid concentration and gross degassed activity. These concentrations are limited by procedure although activity may be further limited by burial ground dose rate limits.

The drumming process is controlled by procedure S-4.1D. The only other chemical parameter which is controlled for solidification is the solution pH. A pH between 8.5 and 11.5 is required to insure that the cement will properly solidify. The drum package integrity is checked prior to use with a vacuum decay check.

The drum-filling operation is controlled by vacuum switches which close when the vacuum in the drum drops to a preset value. This allows approximately 25-30 gallons of waste to be dispensed to the drum. The amount of waste is also checked by noting the evaporator feed tank level before and after the dispensing process. A maximum finished package weight of 640 lbs. is used. If this is exceeded, the Health Physics Section is notified so the drum can be checked to confirm the absence of free water.

To insure that there is no free water in the completed waste package at least one filled drum is inspected each calendar quarter. This can be performed by removing the bung

from a drum and inverting for several hours. An alternative method is to drill a small hole in the bottom of a drum which has been stored for a significant period.

The preparation of the drum package prior to the addition of the waste is controlled by a maintenance procedure M-18.1. The Department of Transportation (DOT) Specification 17H drum is purchased by a QA order from various vendors. These drums are then filled with a mixture of cement and vermiculite mixed in an 8 to 1 weight ratio according to procedure M-18.1.

After the drumming process has been completed, the drums are weighed, surveyed, serialized and stored in the drum storage area. A log of the drums in the storage area is kept by the operators. Prior to shipment the drums are cleaned, resurveyed, and smeared. Low Specific Activity (LSA) labels are affixed to the drums prior to shipment to a burial facility in accordance with procedure RD-10 for the packaging and shipping of radioactive materials from Ginna Station.

III. Cemented Ultrafiltration Sludge

A. General Description

The ultrafiltration unit removes suspended solids from the waste stream and concentrates this material to a liquid sludge. This material is periodically drummed. Procedures S-4.1.23 and S-4.1.24 control the operation and drumming of the ultrafiltration system.

IV. Dewatered Bead Resin

A. General Description

Bead resin is used to remove chemical impurities and radioactive contamination from the reactor coolant, the chemical and volume control system, the spent fuel pool, and the liquid waste processing system.

When the resin is exhausted or reaches a radiation limit, the spent resin is sluiced to one of two 150 cubic foot spent resin storage tanks. After sufficient resin has been collected in one of the storage tanks, a QA order is initiated for use of a transport cask certified by the NRC for transporting greater than Type A quantities of radioactive material. Upon arrival on site, the transport cask is inspected using a Quality Control Inspection Procedure (QCIP) specific for each type of cask to ensure the cask meets all the requirements of the Certificate of Compliance and 10 CFR 71. A steel liner, which contains internal piping to completely dewater the resin, is installed in the cask. The cask is handled, loaded and unloaded using an M-18 series procedure specific for the model cask used. Piping is run from the drumming station to the manway in the top of the liner. Using procedure S-4.4, spent resin is then slurried from the spent resin storage into the liner with water used for sparging and mixing the resin and nitrogen gas pressure used to move the resin. A representative sample of the resin is obtained and the concentration of each radioisotope present is determined. From the volume of resin the liner, the number of curies of each radioisotope is calculated. After the resin is dewatered, the liner is capped and sealed and the top is put back on the cask. The cask is surveyed for radiation and contamination and properly labeled and marked as specified in procedure RD-10 for packaging shipment of radioactive materials. The RD-10 series includes instructions on any special requirements of the burial site to which the shipment is being sent. A radioactive shipment record is prepared and all necessary shipping papers and instructions are given to the carrier. The vehicle is placarded, the cask sealed with security seals, and the Quality Control inspection is completed. The resin is then transported to the burial site.