Process Control Program

for

Ginna Station

Rochester Gas and Electric Corporation
Revision 1, May 16, 1984

A001

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 five types of solid wastes:

a. Cemented Evaporator Bottoms
b. Cemented Ultrafiltration Sludge
c. Oily Waste
d. Dewatered Bead Resin
e. Filters

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

A radwaste sampling and analysis program has been instituted to assure compliance with 10CFR Part 61. Scaling factors have been developed to calculate concentrations of hard to measure isotopes from more easily determined isotopes. The scaling factors will enable concentrations of all required isotopes to be determined for each radwaste shipment.

All radioactive waste is shipped to a licensed burial site in accordance with applicable Nuclear Regulatory Commission, Department of Transportation, and State Regulations, including burial site regulation requirements.

To assure personnel exposure is minimized, ALARA considerations are addressed in all phases of the solidification process.

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 and the chemical drain tank.

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 currently controlled by procedure ST-81.1. The only chemical parameter which is controlled for solidification is the solution pH. A pH between 5.5 and 7.5 is required to insure that the cement will properly solidify in the least amount of time. If waste is to be drummed with the pH of the waste outside of these parameters a solidification test is performed to insure proper solidification may be achieved.

The drum filling is controlled by weight and/or level indication to control the amounts of liquid and cement to a predetermined ratio. This ratio is determined by performing a solidification test. For normal waste evaporator bottoms within the above pH requirements approximately 1 gal. of evaporator bottoms is solidified with 20 pounds of masonary cement and one pound of meta silicate as an accelerator. The minimal amount of accelerator limits the rate of the solidification process. The drums are not sealed until the solidification is verified complete and the drums are at ambient temperature. This is typically two weeks after drum filling.

The quality control section is notified prior to solidification and also prior to shipping so they may perform periodic surveillance on these processes. A minimum of 10% of all drums are visually checked for proper solidification by the QC section. If a drum is found which is not properly solidified the remaining drums in that batch are also checked. The drums are then set aside to give additional time for curing.

If the drum(s) still do not solidify, the material can be removed from the drum and mixed with more of the solidifying agent and allowed to cure.

An alternative to resolidification is to place the drum in an acceptable (to the burial site) overpack and ship to the burial site.

As a precaution, a lab test would also be performed on the next evaporator waste to insure there were no unknown matrix or chemical changes in the system which would cause the failure.

Also on one drum from approximately every tenth evaporator bottoms batch, a drum will be mechanically checked to insure that the total drum contents have properly solidified.

QC also monitors the drum loading and shipping to insure compliance with all shipping and burial regulations. After the drumming process has been completed, the drums are weighed, surveyed, serialized and stored in one of the drum storage areas. Prior to shipment the drums are cleaned, resurveyed, and labeled, in accordance with the RD-10 series procedures.

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 control the operation and drumming of the ultrafiltration system.

This process in general is the same as described for cemented waste evaporator bottoms.

IV. Oily Waste

A. General Description

Oily waste is solidified by methods acceptable to licensed burial sites. An approved method is to add an emulsifier to the oily waste, then water at a neutral pH. The mixture is then solidified by adding "Envirostone" gypsum cement. The method is described in the RD-10 series of procedures.

V. Spent Bead Resin

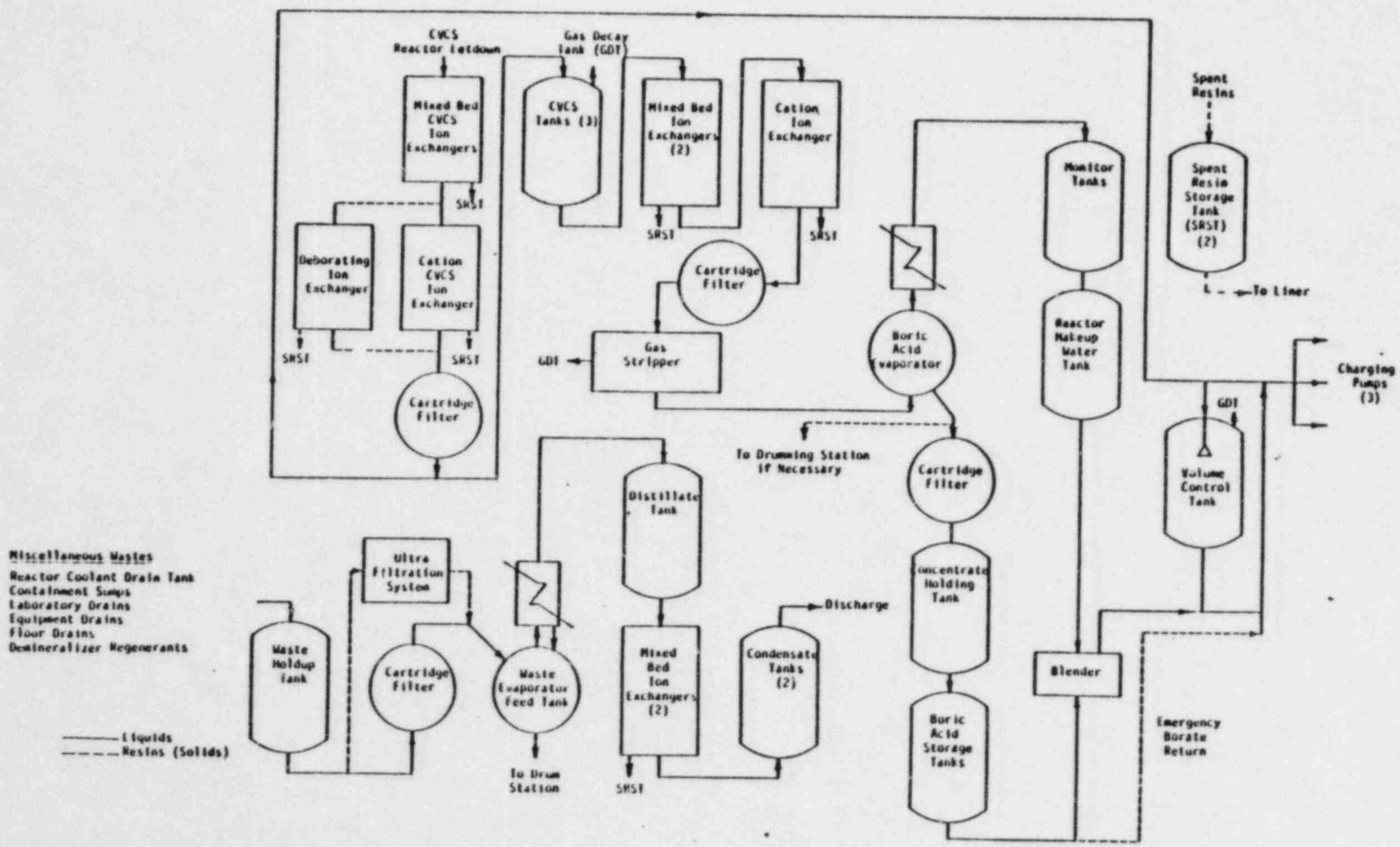
A. General Description

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 is calculated. After the resin is dewatered or cemented, 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 a RD-10 series procedure 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 complete. The resin is then transported to the burial site.

VI. Filters

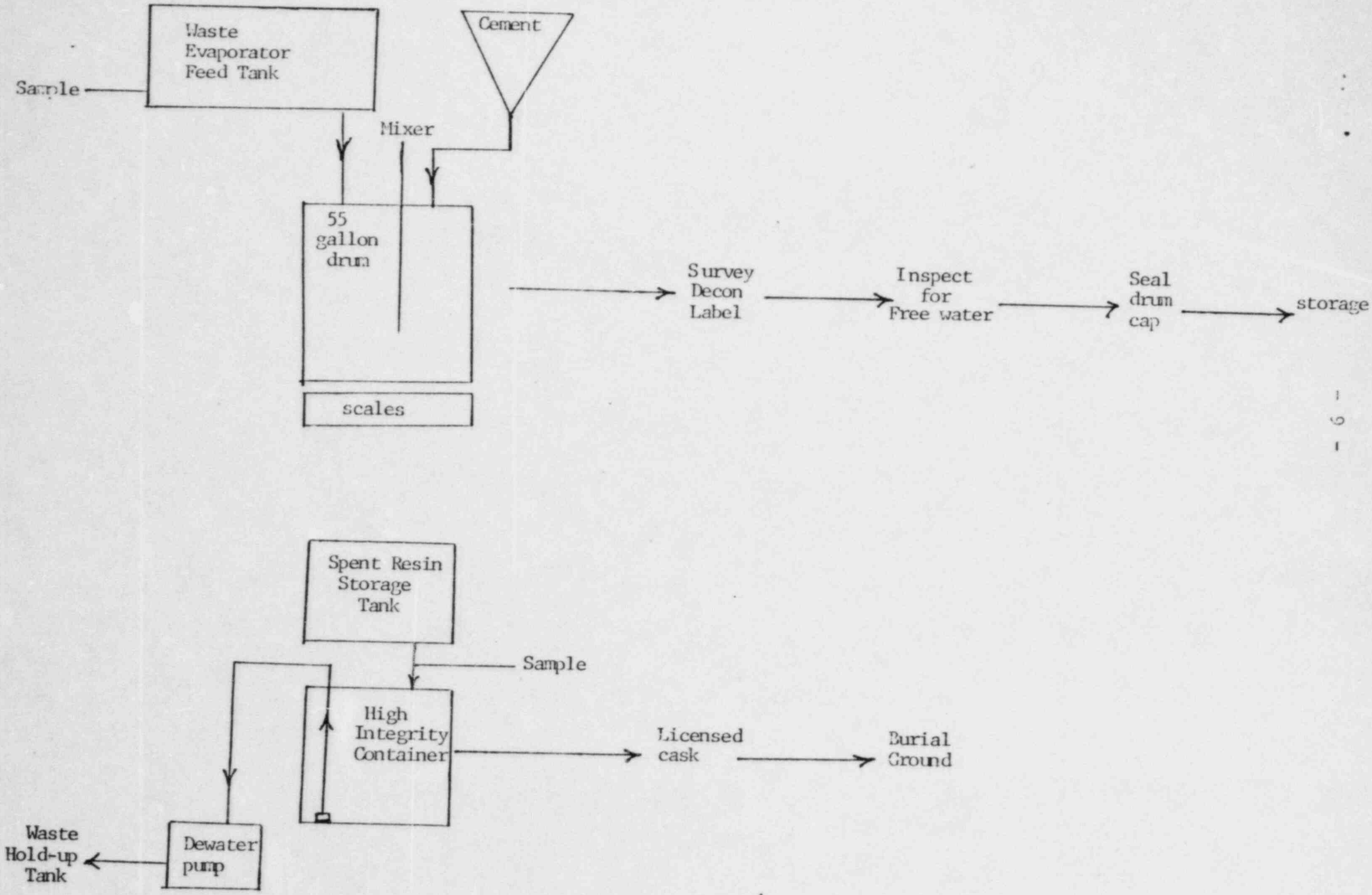
When filters become saturated or have a high dose rate, they are dewatered and then replaced. The spent filters are placed in a High Integrity Container or solidified in an approved media and shipped in accordance with 10CFR71, 10CFR61 and burial site licenses. The maximum dose rate allowed on the surface of the container is determined by the shielding of the package in which the container is shipped. Shipping requirements for specific packages are addressed in the M-18.6 series of procedures.



Operational Radwaste Diagram

R.E. Ginna

FIGURE 1



Waste Evaporator Feed Tank
Sample
Cement
Mixer
55 gallon drum
scales
Survey Decon Label
Inspect for Free water
Seal drum cap
storage
Spent Resin Storage Tank
Sample
High Integrity Container
Licensed cask
Burial Ground
Dewater pump
Waste Hold-up Tank

FIGURE 2

RG&E
ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649-0001

ROGER W. KOBER
VICE PRESIDENT
ELECTRIC & STEAM PRODUCTION

TELEPHONE
AREA CODE 716 546-2700

May 18, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Process Control Program
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Crutchfield:

In response to requests for additional information from members of the NRC Staff, enclosed is Revision 1 to the Ginna Process Control Program.

Very truly yours,

Roger W. Kober

Roger W. Kober

Enclosure

A001
1/1