

Attachment III

New York Power Authority
Indian Point 3 Nuclear Power Plant
Docket No. 50-286

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PROCESS CONTROL PROGRAM FOR STABILIZATION
OF RADIOACTIVE LIQUID WASTES, RESINS AND FILTERS

1.0 OBJECTIVE

To assure that liquid wastes, resins and filters generated at Indian Point No. 3 are properly processed to meet current burial site criteria.

2.0 REFERENCES

- 2.1 10CFR 20, 30, 61, 71.
- 2.2 49CFR171, 172, 173, 178.
- 2.3 RE-RWI-9.11, "Radioactive Material Shipments".
- 2.4 Barnwell Site Criteria.
- 2.5 Barnwell (South Carolina) Burial Site License.
- 2.6 Richland (Washington) Burial Site License.
- 2.7 RE-RWI-9.1, "Demineralizer Liquid Waste Processing System".
- 2.8 NUS Document No. PS-53-0378, Rev. 0, "NUS Process Services Corp. Topical Report on Radwaste Solidification System".
- 2.9 Chem-Nuclear Systems, Inc. Topical Report CNSI-2 (4313-01354-OIP-A), "Solidification System".
- 2.10 NUREG-0800, "Standard Review Plan for Light Water Reactors".
- 2.11 NUREG-75/087.
- 2.12 Branch Technical Positions on Waste Form and Classification.

3.0 COMMITMENTS

- 3.1 All liquid wet wastes and sludges will be solidified prior to shipment offsite. All plant spent resins and spent cartridge filters will be put into HICs (High Integrity Containers) and dewatered to burial site limits prior to shipment offsite.
- 3.2 All containers, shipping casks and methods of packaging will meet applicable DOT, NRC, state and burial site regulations and criteria for burial.
- 3.3 All radioactive wastes will be shipped to a licensed burial site in accordance with applicable NRC, DOT and state regulations, including the burial site regulation requirement.

4.0 DISCUSSION

The Indian Point No. 3 Process Control Program is written to satisfy regulatory requirements and to assure that burial site criteria for waste for classification content and free-standing liquid are met. Indian Point No. 3 does not presently have an installed solidification system, thus liquid wastes are normally processed through contracted demineralizer services.

Additional wet wastes generated on site are oily wastes, installed spent bead resins, spent cartridge filter elements and sludges. Oily wastes and sludges are solidified utilizing contracted services. Spent bead resins and spent cartridge filters are put into HICs and dewatered.

5.0 ALARA

ALARA considerations are addressed in all phases of solidification process and all other processes involving handling, packaging and transfer of any type or form of radioactive waste (wet, dewatered or dry). All spent resins, spent filter cartridges and sludges are processed within shields (normally the shipping cask). Portable demineralizers are shielded when in service or in storage awaiting shipment. Radiation exposure and other Health Physics requirements are controlled by the issuance of a Radiation Exposure Authorization (REA) for each job.

6.0 PROCESS CONTROL PROGRAM

6.1 Solidification of liquid and oily wastes; New York Power Authority/ Contractor Interaction:

The New York Power Authority will assure that the solidification contractor/vendor documents the following in writing prior to processing of liquid and oily wastes.

- 6.1.1 A general description of the laboratory mixing of a sample of the waste to arrive at process parameters prior to commencing the solidification process.
- 6.1.2 A general description of the solidification process including type of solidification agent, process control parameters, parameter boundary conditions, proper waste form properties, and assurance the solidification systems are operated within the established process parameters.
- 6.1.3 A general description of sampling of at least one representative sample from every tenth batch to ensure solidification and the action to be taken if the sample fails to verify solidification.
- 6.1.4 The provisions to verify the absence of free-standing liquid.
- 6.1.5 The provisions to reprocess containers in which free-standing liquids are detected.
- 6.1.6 For solidification processes that are exothermic, the process control parameters that must be met prior to capping the container.

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- 6.1.3 A general description of sampling of at least one representative sample from every tenth batch to ensure solidification and the action to be taken if the sample fails to verify solidification.
- 6.1.4 The provisions to verify the absence of free-standing liquid.
- 6.1.5 The provisions to reprocess containers in which free-standing liquids are detected.
- 6.1.6 For solidification processes that are exothermic, the process control parameters that must be met prior to capping the container.

6.2 Spent bead resins and spent cartridge filters will be placed in High Integrity Containers (HICs) and dewatered.

6.2.1 Laboratory mixing of waste sample: not applicable.

6.2.2 General description of the solidification process:

HICs are currently constructed out of cross linked polyethylene, provided with dewatering internals, and are also padded if spent cartridge filters are to be shipped.

Each supplier of the HIC provides process control parameters and parameter boundary conditions which are incorporated into the Indian Point No. 3 operating procedures and submitted to the Plant Operating Review Committee (PORC) for approval prior to commencing work. The supplier is also required to provide test data that documents that the dewatering criteria is met. This will assure that the HIC is operated within established process parameters.

6.2.3 A general description of sampling of at least one representative sample to verify solidification: not applicable.

6.2.4 The provisions to verify the absence of free liquid:

The loss of suction by the dewatering pump indicates that no free-standing water exists.

6.2.5 The provisions to reprocess containers in which free liquids are detected:

The HICs are dewatered following several pump and stand cycles. These are continued until no liquid is removed from the container.

6.2.6 This process is not an exothermic process. There are temperature limits which must be met prior to capping the container. These temperature limits are required by the certificate of compliance which is issued for the HIC.

6.3 Liquid waste processing through contractor demineralizers: The following criteria are to be met:

6.3.1 Laboratory mixing of waste sample: not applicable.

6.3.2 A general description of the solidification process: The demineralizer system consists of pressure vessels filled with resin or other filter media, process pumps, a sampling station, dewatering skid and shields for the pressure vessels. The influent and effluent activities are monitored to ensure that specific activity of the resin is within acceptable limitations, and that liquid release limits to the environment are not exceeded. Generally the total effluent activity is restricted to less than 10^{-5} uCi/ml. To assure the system is operated within established process parameters, the contractor procedures are PORC approved.

6.3.3 Representative sample to verify solidification: not applicable.

6.3.4 The provisions to verify the absence of free liquid:

The provisions to reprocess containers in which free liquids are detected.

The pressure vessels are dewatered in accordance with approved procedures (Ref. 2.7). The system uses a vacuum pump to pull heated air at high flow rates through the pressure vessels to strip water from the media and remove the water from the vessel. Vessels are dewatered until no water is collected for two hours. For activated carbon representative dewatering cycles on successive days is required.

6.3.5 This process is not exothermic. Hence there are no process control parameters needed to be met prior to capping the container.

7.0 ATTACHMENTS

The attached Figure 1 depicts the liquid waste processing and dewatering system.

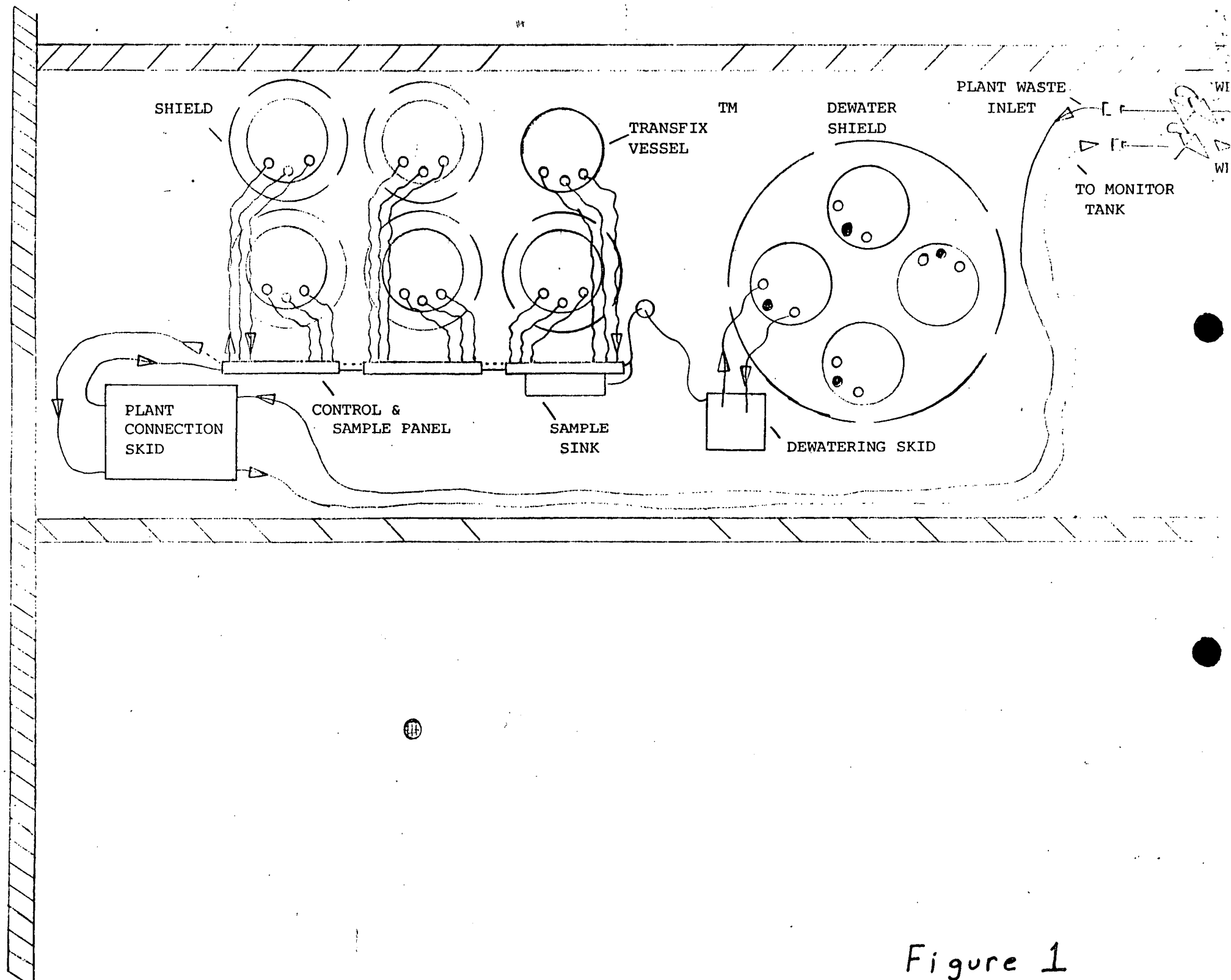


Figure 1