MONTICELLO NUCLEAR GENERATING PLANT

3144 (4 ACD-11.01)
Revision 2, 10/16/89

PROCESS CONTROL PROGRAM REVISION SUMMARY SHEET

Changes to the process control program are to be made in accordance with Technical Specification 6.5.D. The following form documents the revision process. (Attach additional pages as necessary). This form should be completed by the person making the change.

1. Description of the change ". . . sufficiently detailed information to totally support the rationale for change without benefit of additional or supplemental information".
   Changed only to include dewatering of 24-inch pressure vessels under PCP section 4.0.

2. Determination that the change does not reduce the overall conformance of the solidified waste product to existing criteria for solid-waste, including review of Section 4.0 of the Process Control Plan. Does not impact any other waste forms or sections of PCP Fully conforms to existing Free Standing water criteria are met at burial sites.

3. Change reviewed and found acceptable by Operations Committee.
   Date: 25 July 1991 Meeting Number: 1512
   Comments: None

4. A copy of the information provided in items 1, 2 and 3 above, and the revised Process Control Program shall be provided to Nuclear Support Services for submittal to the NRC with the Semi-annual Radioactive Effluent Release Report for the period in which the changes were made. (For changes made between January 1, and June 30, submit to NSS by July 31. For changes made between July 1 and December 31, submit by January 31.).
   Material Submitted: Gerald A Bye Date: 1 January 1992

5. List procedures that require revision due to changing the PCP.

NUMBER	TITLE	DATE REVISED
None		

NOTE: Completed form to be forwarded to the Document Control Supervisor for filing.

C/plr

PROCESS CONTROL PROGRAM

Prepared By: [signature]		Date: 12-18-90
Reviewed By: [signature]		Date: 1/4/91
User Review By: Benjamin R. James		Date: 12-18-90
QA Review By: [signature]		Date: 12/18/90
ALARA Coord Review By: [signature]		Date: 12/18/90
OC Review Required: Yes	Mtg No. 1512	Date: 7/25/91
Approved By: [signature]		Date: 8/2/91

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4.1 Purpose

To establish the process parameters which will provide reasonable assurance that the material after dewatering and packaging will meet or exceed the requirements of the burial sites, 10 CFR Part 61 and all applicable state and federal shipping requirements.

4.2 Applicability

This section of the PCP is applicable to the dewatering of spent resins and other filter media containing less than one percent oil by volume.

4.3 References

CNSI Drawing, C-340-E-500, "P&ID, RDS-1000"
CNSI Topical Report, RDS-25506-01-P, "RDS-1000 Radioactive Waste Dewatering System,"
CNSI Procedure, QA-TP-005, "Hydrostatic Test Requirements
CNSI Procedure, FO-OP-022, "Ecodex Prer. at/Powdex/Solka-Floc/ Diomaceous Earth Dewatering Procedures"
CNSI Procedure, FO-OP-0..4, "Set up and Operating Procedure for the RDS-1000 unit"
CNSI Procedure, DM-OP-022, "Process Control Program for the CNSI Demineralization System"
CNSI Dewatering Topical, CNSI-DW-1118-01-P
CNSI Procedure, FO-OP-025, "Dewatering Procedure for CNSI 24-inch Diameter Pressure Vessels"

4.4 Description of System

The Rapid Dewatering System, RDS-1000 (Figures 4.1 and 4.2), developed by Chem-Nuclear Systems, Inc. (CNSI), is a self-contained system for accelerated dewatering of particulate waste material. The system provides for simple operation and measurable end-points. The RDS-1000 is compatible with steel liners and high integrity containers (HICs), which are used to process waste slurry, and 24" pressure vessels filters, which are used to purify liquid streams.

The system uses a positive displacement pump to remove all free-standing liquid from the container. For liners and HICs, a closed loop, high velocity air flow and moisture separator are then employed to rapidly remove the remaining liquid. The extracted liquid is returned to the plant.

4.5 System Operation

4.5.1 Steel Liner or HIC Dewatering

Slurry is pumped to a liner (or HIC) through an automatic waste inlet valve. The remotely controlled fill operation is viewed via a video monitor on the control panel. A remote level control system detects and monitors the waste level in the liner, minimizing operator exposure. There is also an independent level control in the fill head. A high level signal from either level control will automatically close the waste inlet valve. The operator can also manually close the inlet valve if necessary.

A dewatering pump is activated to remove excess liquid during the waste transfer process and to aid in compacting the media during the initial gross dewatering.

After all waste has been transferred into the liner and gross dewatering is complete, the blower is turned on and air is recirculated through the liner and moisture separator. The temperature of the material in the line is monitored to ensure that thermal limits are not exceeded. A relief valve, which vents through a HEPA filter to the plant offgas system, is provided should the liner become pressurized. Air flow is maintained until the liner meets the specified acceptance criteria.

4.5.2 24-Inch Pressure Vessel Dewatering

The 24-inch pressure vessels are constructed with inlet, outlet and vent ports. Dewatering is accomplished by connecting the RDS-1000 pump to the outlet port and performing a series of 8-hour pumping and 8-hour standing cycles. The number of cycles is specified by CNSI according to the fliter media. During the final pumping cycle, the discharge of the pump is directed to a collection device and the total liquid is measured with a graduated cylinder. Acceptance criteria, which ensure that free-standing liquid criteria are met, are listed in CNSI procedure FO-OP-025, according to the type of pressure vessel.

4.6 ALARA

The dewatering system was designed with ALARA as one of the major design criterion. The occupational exposure received from operation of this system will be minimized by the following features:

a. Flushing provisions in the fillhead, plant stand moisture separator, and piping system.

b. Remote location of the control panel

c. Operation with liner in a shi[illegible]ask, as necessary.

d. Automatic control of the waste inlet valve with redundant shutdown controls to prevent overfilling the liner.

e. Quick disconnect hose fittings and fillhead anchors.

f. HEPA filtration of all discharge air.

g. Stainless steel components designed for easy decontamination with a minimum of crud traps.

4.7 Sampling

For waste which is pumped to a liner in slurry form, representative samples are collected from a sample point on the waste transfer line. Qualitative and quantitative data are developed through gamma analysis of the sample, correlation factors for non-gamma emitting isotopes and knowledge of the total volume of waste.

For 24-inch pressure vessels, qualitative data are developed through gamma analysis of the liquid waste stream in which the filter was used. Dose rates on the exterior of the pressure vessel are used to quantify the activity of gamma emitters and correlation factors are then used to calculate the total activity.

Figure 4.1 RDS 1000 Process Flow Diagram

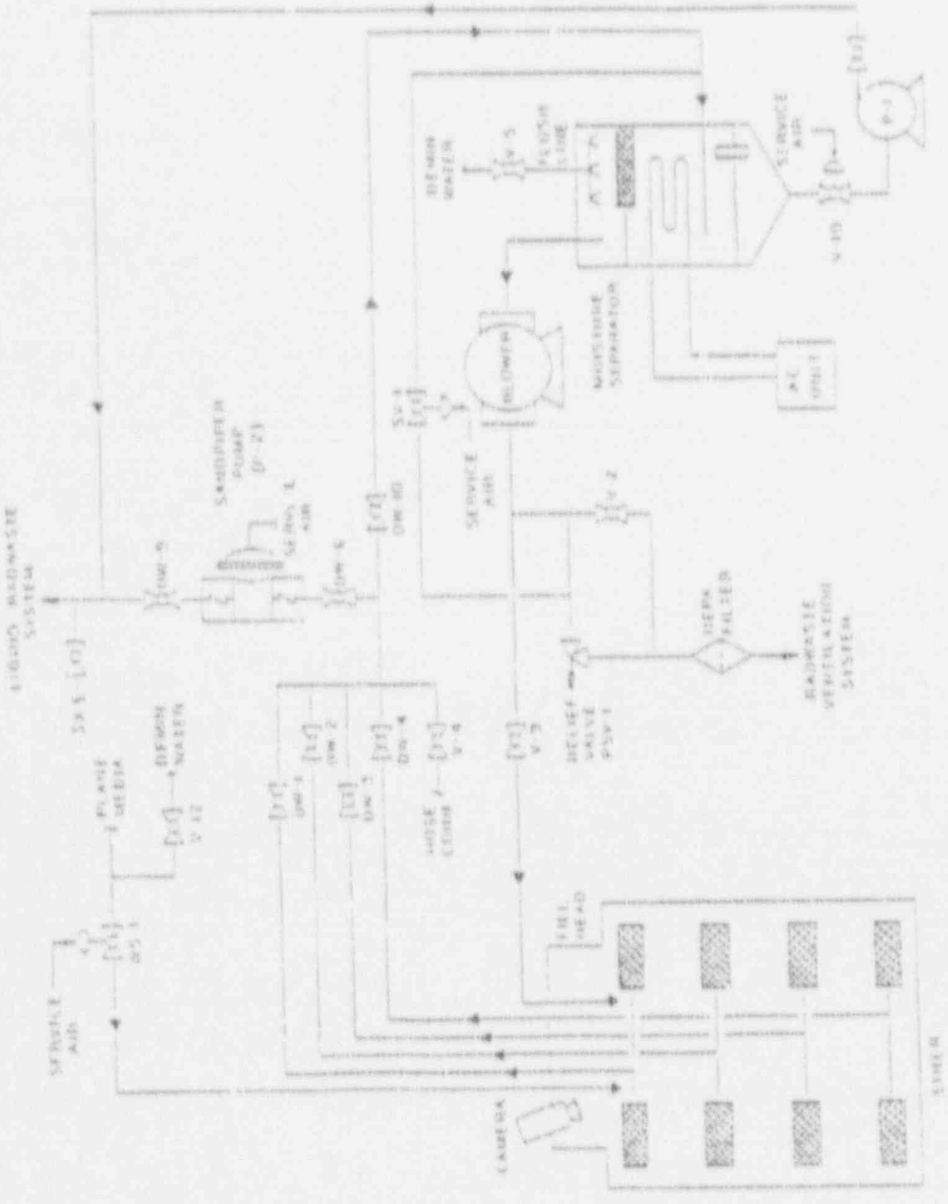

Figure 4.2 Typical Precoat Dewatering Liner Internals For HICS or Steel Liners