

AP 5101

Figure 1001-8

Three Mile Island Nuclear Station
Special Operating Procedure

SIDE 1

SOP No. Z-93, Rev. 2
(From SOP Log Index)

Unit No. 2

Date 5/25/79

1. Title REACTOR BUILDING SUMP LEVEL MEASUREMENT

2. Purpose (Include purpose of SOP)

List steps for installing and operating reactor building sump level indicator.

3. Attach procedure to this form written according to the following format

A. Limitations and Precautions

1. Nuclear Safety
2. Environmental Safety
3. Personnel Safety
4. Equipment Protection

Attached

NRC

B. Prerequisites

C. Procedure

4. Generated by TSPG Date 5/25/79

Duration of SOP - Shall be no longer than 90 days from the effective date of the SOP or (a) or (b) below - whichever occurs first.

(a) SOP will be cancelled by incorporation into existing or new permanent procedure submitted by H.P.J.

(b) SOP is not valid after _____
(fill in circumstances which will result in SOP being cancelled)

6. (a) Is the procedure Nuclear Safety Related?

If "yes", complete Nuclear Safety Evaluation (Side 2 of this Form) Yes No

(b) Does the procedure affect Environmental Protection?

If "yes", complete Environmental Evaluation (Side 2 of this Form) Yes No

(c) Does the procedure affect radiation exposure to personnel?

If "yes", complete Radiation Exposure Evaluation (Side 2 of this Form) Yes No

NOTE: If all answers are "no", the change may be approved by the Shift Supervisor. If any questions are answered "yes", the change must be approved by the Unit Superintendent.

7. Review and Approval

Approved - Shift Supervisor

P. Witten 5-25-79

Date

Reviewed - List members of PORC contacted

J.D. Party 5/25/79

Date

R.P. Warren 5/25/79 J.F. Paulig 5/25/79

Date

J.E. Morck 5/25/79 R.W. Bengal 5/25/79

Date

Approved - Unit Superintendent

G.E. Gundersen 5/25/79

Date

8. J.P. is Cancelled

Shift Supervisor/Shift Foreman

Date

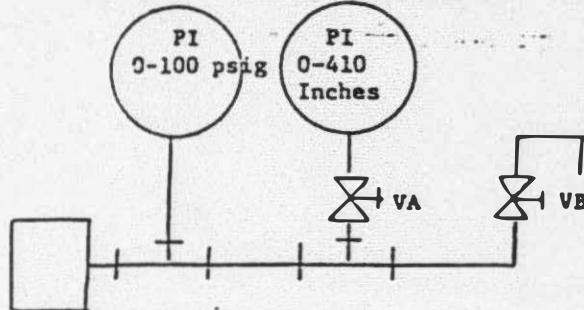
TABLE OF CONTENTS

- 1.0 References
- 1.1 Drawings Applicable for Operation
- 1.2 Operating Procedures Applicable for Operation
- 1.3 Manufacturer Instruction Manuals
- 1.4 Applicable System Descriptions
- 2.0 Limits and Precautions
- 3.0 Prerequisites
- 4.0 Procedure
- Appendix A - Valve Line Up
- Appendix B - Calculation of RB Water Level

- 1.0 : References
- 1.1 Drawings Applicable for Operation
- 1.1.1 Decay Heat Removal Flow Diagram, B & R Dwg. 2026
- 1.1.2 Decay Heat Removal Piping Drawings, B & R Dwg 2179 and 2180
- 1.1.3 Decay Heat Removal Piping Isometrics, B & R Dwg 2179-DH-46
- 1.2 Operating Procedures Applicable for Operation.
- None
- 1.3 Manufacturer's Instruction Manuals - NA
- 1.4 Applicable System Descriptions
- 1.4.1 Decay Heat Removal, SD-20.
- 1.5 Curves, Tables, Etc.
- 1.5.1 None
- 2.0 Limits and Precautions
- 2.1 Equipment
- 2.1.1 Eight foot steel tape. (Roll up type)
- Administrative
- 2.2.1 All health physics precautions should be observed when entering, performing the installation and leaving the Aux Bldg and Decay Heat Pit.
- 2.2.2 The Decay Heat Removal System should not be operated when personnel are in the pit.
- 2.2.3 Isolate both Heise gages after taking readings
- a. Shut V2 for Rx Bldg pressure Heise
- b. Shut DH-V201B and DH-V202B for Rx. Bldg sump level Heise
- 2.2.4 If dose rate readings are too high to allow entry (as determined by HP) to take level reading, a camera may be set up to allow remote readings of the pressure gauge.

- 3.0 Prerequisites
- 3.1 Calculate stay times based on last dose rate measure in the pit.
- 3.2 The Decay Heat Removal System has not been operated.
- Heise gage has been properly calibrated.
- 3.4 Obtain and assemble a Heise gage with a vent valve and an adapter for a 1/2" T.O.E. (3PT) pipe as shown below.

Carboy filter unit with Charcoal/Hepa filter



Heise gage 0 - 410 inches
Do not open VA unless pressure on
0-100 psig gage is less than 10 psig.

1/2" TOE Adapter

- 3.5 Heise gage assembly hydroed to 150 psig, and leaks repaired (test bench hydro)
- 3.6 Communications established with the Control Room and the DHR pit.
- Heise gage (-3.6 to 30 psi) installed on to Reactor Building Pressure.sensing line per Figure 2 as follows:
- 3.7.1 Close V2 and V3 as shown on Figure 2.
- 3.7.2 Install Heise Gauge assembly.
- 3.7.3 Open V2 and V3 and compare Heise indication with Control Room Indication.
- 3.8 Jog control installed on valves DHV-6B and DHV-5B.
- 3.9 Unit/Station Superintendent's permission has been obtained to open DHV-6B. 10.2
- 3.10* Heise gage recording within its operation range. 10.2
- 4.0 Procedure
- 4.1 Installation and initial reading.
- 4.1.1 Measure DHR pit dose rates and if within acceptable limits (as determined by HP) enter the pit and perform valve lineup for manual valves in accordance with Appendix A.

*Prerequisite for continuous shift monitoring.

- 4.1.2 Screw Heise Gage assembly on DH-V5B
- DH-V201B and DH-V202B. (See 3.4)
- 4.1.3 Close valves VA and VB on Heise gage assembly (see 3.4)
- 4 Instruct control room to open DH-V5B
- 4.1.5 Check shut DH-V202B and Open DH-V201B. Check connections for leaks
- 4.1.6 Open DH-V-202B and check connections for leaks. If the connections leak, shut DH-V202B and DH-V201B and attempt to stop the leak; repeat step 4.1.5.
- 4.1.7 If there are no leaks fully open DH-V201B and DH-V202B.
- 4.1.8 Crack open Heise Gage vent (VB - see 3.4) and vent the suction line to DH-P-1B into unit with charcoal filters and Repa filter
- 4.1.9 When venting is complete, shut the Heise Gage vent (VB - see 3.4) and instruct the Control Room to shut DH-V5B. (0-100psig) pressure gage should be greater than 25 psig.
- 4.1.10 Measure and record on Appendix B the distance between the center of the Decay Heat Pump suction line and the center of the Heise Gage using 8 foot steel tape.
- IN CONTROL ROOM*
- CAUTION: VERIFY BWST LEVEL DOESN'T DROP DURING NEXT STEP!
- 4.1.11 Station HP's (prior to opening DH-V6B) with telecensors downstream of DH-V6B (toward RB spray pump and DHR pump) monitoring radiation levels. (monitor pipe surface radiation levels at locations shown on Figure 3.)
- 4.1.12 Set up to monitor/record pressure on 0-100psig gage (see 3.4) when DH-V6B is opened. (Use TV camera if available)
- 4.1.13 Nonessential personnel leave DHR pit and request control room to crack open DH-V6B.

Note: NRC is to be notified prior to opening DH-V6B

Note: Warning is to be placed on RWT that personnel are not to remain in DHR pit and personnel are briefed by US

4.1.13 continued

DH-V6B should be left open only long enough to obtain steady state pressure readings (per 4.1.14) on both the 0-100 psig and Heise gage.

Note: DH-V6B should be closed immediately if teletester

radiation levels reach or exceed 10R/HR. Then exit the area.

Note: DH-V6B should not be left open longer than one hour.

4.1.14 Observe decrease in pressure on 0 - 100 psig gage. When pressure stabilizes (expected pressure \approx 8 psig), measure the DHR pit dose rates and if within acceptable limits (as determined by HP) ~~and then~~ and open valve VA (see 3.4) to valve in Heise gage.

Record Heise gage reading when stabilized.

4.1.15 Have the control room to shut DH-V6B.

4.1.16 Shut DH-V202B and DH-V201B and VA (see 3.4)

4.1.17 Remove carboy filter unit and leave DHR pit.

(if carboy unit is too hot to handle, shield the unit and leave it in the DHR pit).

4.1.18 Read and record reactor bldg pressure.

a. Unisolate Heise (open V2)

b. Read and record data.

c. Isolate Heise (close V2)

4.1.19 Perform water level calc. IAW Appendix B.

4.2 Continuous Shift Monitoring.

4.2.1 Monitor the water level pressure Heise gage to assure that it does not exceed its operating range.

NOTE: Should the Heise gage be over-ranged, it will require recalibration.

4.2.1 Upon shift monitoring of water level pressure requirement, crack open DH-V6B.

4.2.2 NOTE: DH-V6B should be closed immediately if teletester radiation levels reach or exceed 10R/hr, then exit the area. DH-V6B should be closed immediately on loss of offsite power.

4.2.3

4.2.3 Read and record reactor building pressure.

4.2.4 Record water level and containment air Heise gage readings once stabilized.

4.2.5 Have control room shut DH-V6B.

4.2.6 Perform water level calculation IAW Appendix B.

4.2.7 For completion of shift monitoring refer to 4.1.16.

4.3

Subsequent Information

NOTE: This procedure is not intended to cause an inflow of RB sump water into the auxiliary building DMR system piping.

Occurrence of high radiation levels during this procedure is indicative of incorrect system lineup or un-anticipated system leakage. In this event, (i.e., measure levels increase to $\geq 10R/hr$), the immediate action is to close DH-V6B.

Subsequent action will be covered by a special procedure prepared for the circumstances encountered. They may include establishing a flow path which will flush contaminated water back into the RB sump.

VALVE LINE UP

<u>VALVE NO.</u>	<u>DESCRIPTION</u>	<u>POSITION</u>	<u>INITIALS</u>
JU-V63	RB Sump Iso.	Shut	_____
.5B	BWST Iso.	Shut	_____
DH-V201B (M)	Test Conn.	Shut	_____
DH-V202B (M)	Test Conn.	Shut	_____
DH-V1213 (M)	Test Conn.	Shut	_____
DH-V101B (M)	X Conn.	Shut	_____
DH-V102B	DH-P-1B Suction Iso.	Shut	_____
BS-V3B	BS-P-1B Suction Iso.	Shut	_____
DHV-101A (M)	Sump Cross-Connect	Shut	_____
DHV-110 (M) *	Fuel X-Fer Canal Drain	Shut	_____
	Line Isolation	Shut	_____
DHV-100B	Cross-Connect to DHP-1A	Shut	_____

Manual Valves

Note: It is assumed the RB Sump Pit is inaccessible, therefore DH-V302, DH-V235 and DH-V236 were not included in the valve lineup.

* If accessible

APPENDIX B

Calculation of RB water level.

$$\text{Elevation of water} = 272 + CL + (P_{DH} - P_{RB}) / 144Nf$$

272 = Elevation of DH Pump suction line.

~~CL = Distance of Heise gage above the center-line of the DH pump suction line
in feet.~~

P_{DH} = Pressure gage reading in DH pit.

P_{RB} = Pressure gage reading in the reactor bldg.

Nf = Specific volume of water in the RB sump.

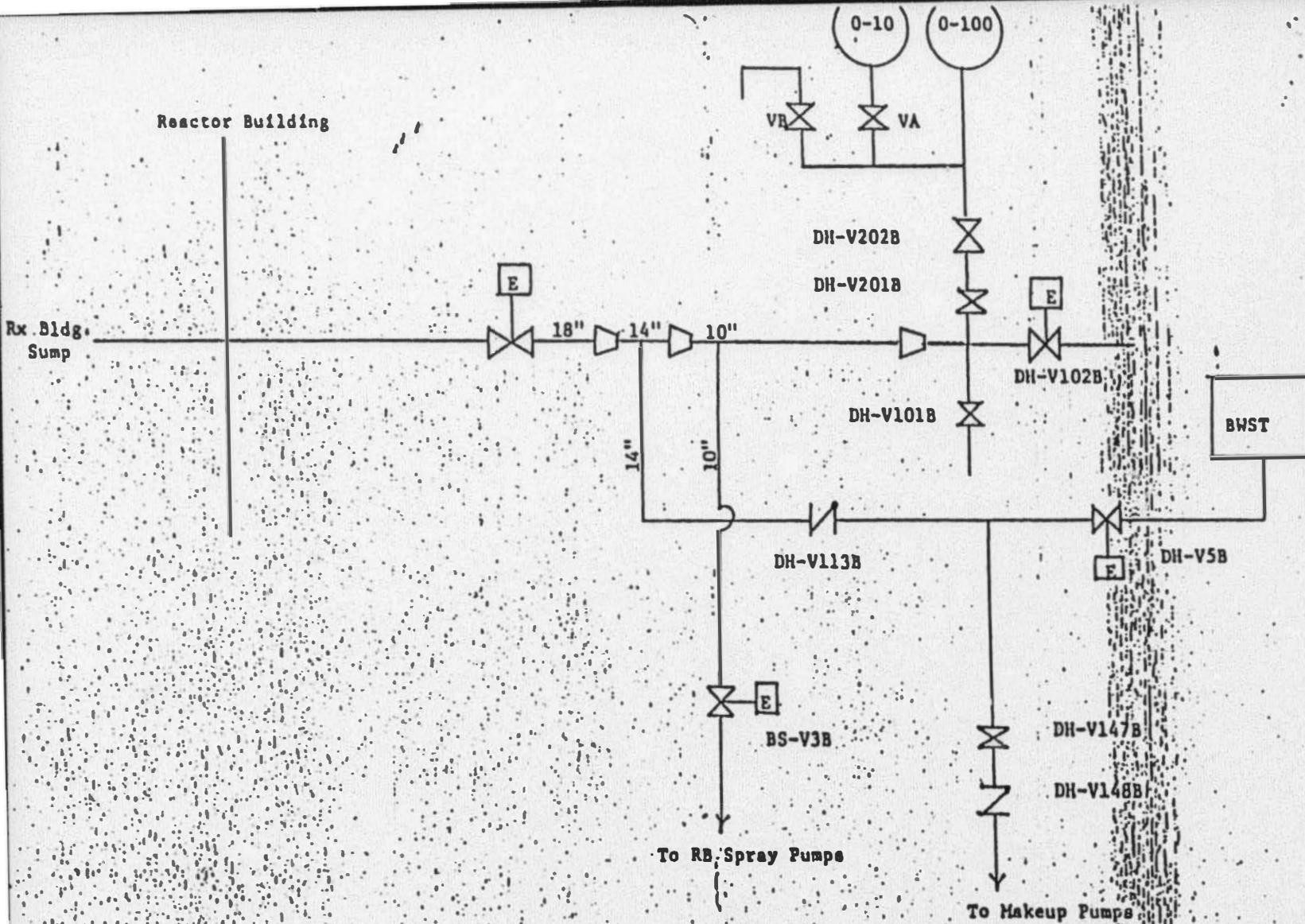


FIGURE 1

D	BS - PS - 3571	BS - PS - 3570
E	BS - PS - 3254	BS - PS - 3253
F	BS - PS - 3257	BS - PS - 3256
G	BS - PS - 3988	BS - PS - 3987

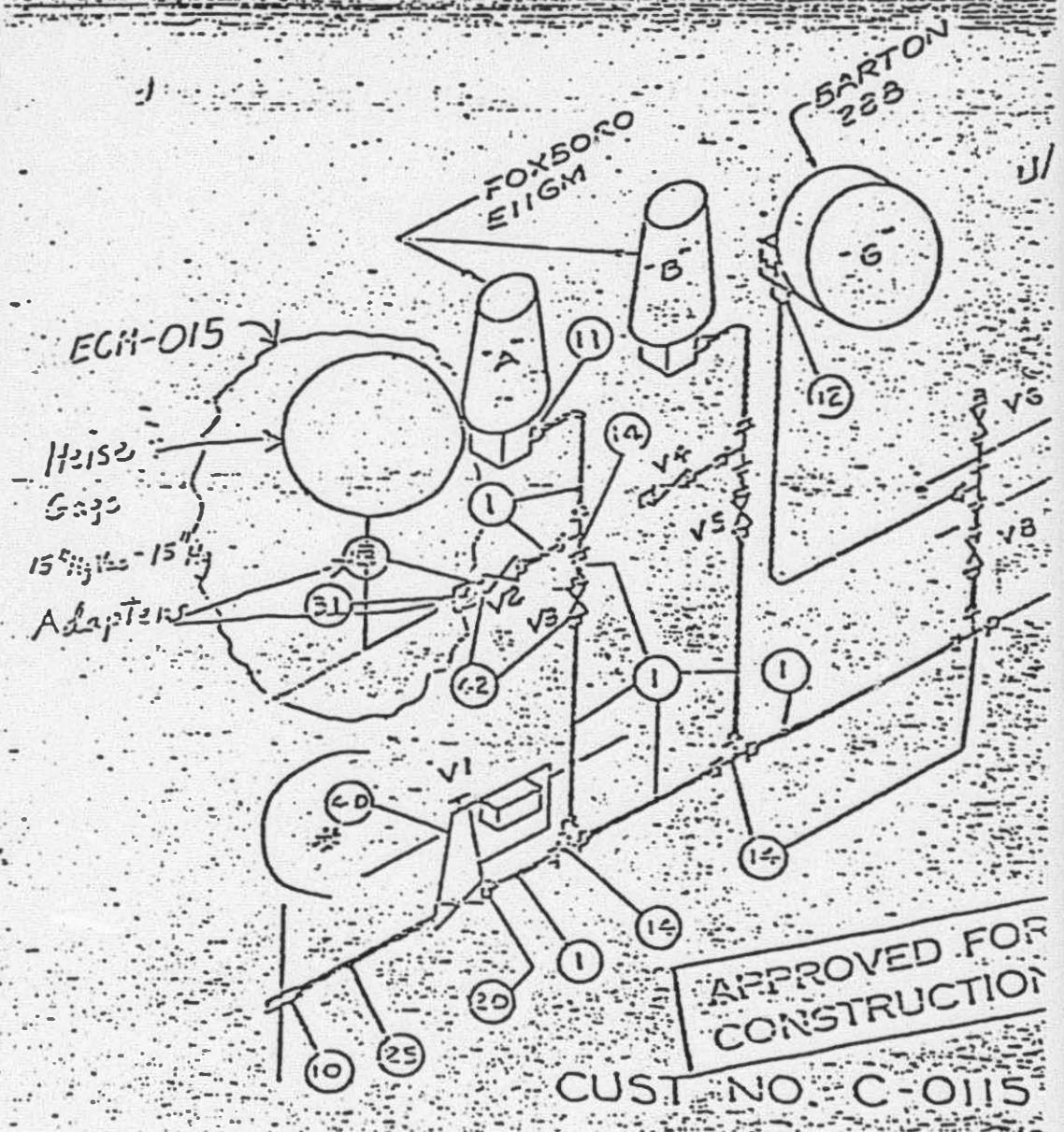


Figure 2