

NRC

REVO

AP 1001

Three Mile Island Nuclear Station
Special Operating Procedure

SIDE 1

SOP No. Z-93
(From SOP Log Index)

Form 1001-8

NOTE: Instructions and guidelines in AP 1001 must be followed when completing this form.

Unit No. 2
Date 4-16-79

1. Title RB SUMP LEVEL MEASUREMENT

2. Purpose (include purpose of SOP) LIST STEPS FOR INSTALLING AND OPERATING RB 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

B. Prerequisites

C. Procedure

4. Generated by DTM GETRICKS Date 4-10-79

5. 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 NA
- (b) SOP is not valid after NA
(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? 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

NRC Approval Not required for this Revision 4/15/79

Approved - Shift Supervisor [Signature] Date 4/16/79

Reviewed - List members of PORC contacted [Signature] Date 4/16/79

NRC W. M. [Signature] 4/14/79 2045 [Signature] 4/15/79 Rev 4/15 NRC to be informed prior to opening Date 4/16/79

KRA [Signature] 4/14/79 [Signature] 4/15/79 142045 [Signature] 4/16/79

Approved - Unit Superintendent [Signature] Date 4/16/79

8. SOP is Cancelled

Shift Supervisor/Shift Foreman _____ Date _____

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1. Title _____

2. Nuclear Safety Evaluation

Does this SOP:

- * (a) increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety? yes no
- * (b) create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report? yes no
- * (c) reduce the margin of safety as defined in the basis for any technical specification? yes no

Details of Evaluation (Explain why answers to above questions are "no". Attach additional pages if required.)

Evaluation By _____ Date _____

3. Environmental Impact Evaluation

Does this SOP:

- (a) possibly involve a significant environmental impact? yes no
- * (b) have a significant adverse effect on the environment? yes no
- * (c) involve a significant environmental matter or question not previously reviewed and evaluated by the N.R.C. yes no

Details of Evaluation

Evaluation By _____ Date _____

* NOTE: If these questions are "yes", the change must receive N.R.C. approval.

4. REVIEW (PORC review of evaluation is required only when requested by the Station Superintendent/Unit Superintendent. If this review is made, the PORC must contain two off-site members.)

1. _____

2. _____

Off-Site Members

PORC Chairman Signature

Date

Approval

Station Superintendent/Unit Superintendent

Date

REACTOR BUILDING WATER LEVEL MEASUREMENT

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1.2 Operating Procedures Applicable for Operation

1.3 Manufacturer Instruction Manuals

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3.0 Prerequisites

4.0 Procedure

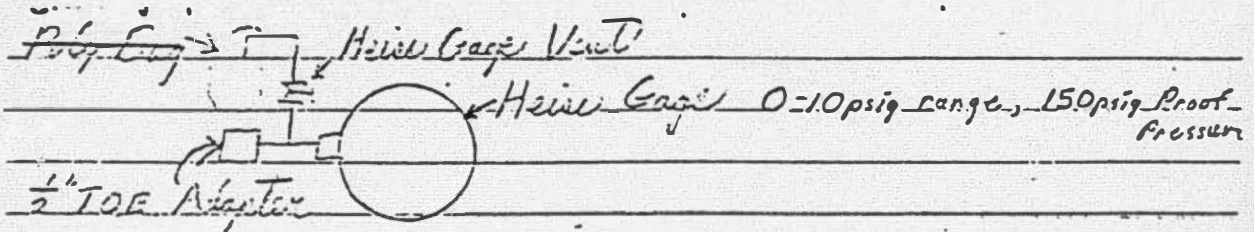
Appendix A - Valve Line Up

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 ^PDwgs 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 Manufacturers 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 ¹tape. (Roll up type)
 - 2.2 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 ^t 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 measured in the pit.
- 3.2 The Decay Heat Removal System has not been operated.
- 3.3 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. (NPT) pipe as shown below.

Carboy filter unit with Charcoal/Hepa filter



- 3.5 Hydro Heise gage assembly to 150 psig and repair any leaks.
- 3.6 Establish communications with the Control Room and the DHR pit.
- 3.7 Install -3.6 to 30 psi Heise 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.
 - 3.7.3 Open V2 and V3 and compare Heise indication with Control Room Indication.
- 3.8 Unit/Station Superintendent's permission has been obtained to open DH-V6^BD.
- 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 line up for manual valves in accordance with Appendix A.
 - 4.1.2 Screw Heise Gage assembly on 1/2" nipple downstream of valves DH-V201B and DH-V202B.

- 4.1.3 Instruct control room to open DH-V5B.
- 4.1.4 Check shut DH-V202B and Open DH-V201B.
- 4.1.5 Crack 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 4.1.4.
- 4.1.6 If there are no leaks fully open DH-V201B and then open DH-V202B two full turns.
- 4.1.7.a Crack open Heise Gage vent and vent the suction line to DH-P-1B into unit with charcoal filters & Hepa filter.
- 4.1.7.b When venting is complete shut the Heise Gage vent and instruct the Control Room to shut DH-V5B.
- 4.1.8 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.
- CAUTION: Verify BWST level doesn't drop during next step!
- 4.1.9 Determine if there is leakage through DH-V5B and/or DH-V^V₆B as follows:
- 4.1.9.1 Slowly crack open the Heise gage vent and vent until Heise gage indicates zero psig. Immediately close Heise gage vent.
- 4.1.9.2 Take three readings on the Heise gage at one hour intervals and record readings, date and time.
- NOTE: Personnel are not to remain in DHR pit between readings.
- 4.1.9.3 If the Heise gage pressure indication stabilizes at a pressure equivalent to the level in the BWST or remains at zero psig, continue the procedure at 4.1.10.
- 4.1.9.4 If the Heise gage pressure indication stabilizes at a pressure equivalent to the estimated water level in the Reactor Building, continue this procedure omitting statements which open and shut DH-V63.

NOTE: If the Heise gage pressure indication at the last

reading was not the same as the previous hours reading continue taking readings at hourly intervals until two consecutive readings are obtained which are in agreement prior to proceeding to step 4.1.10.

4.1.10 Leave DHR pit and request the 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 RWP that personnel are not to remain in DHR pit and personnel are briefed by HP.

NOTE: Jog control has been installed on DH-V6B.

4.1.11 Measure the DHR pit ^{and Carboy filter unit} dose rates and if within acceptable limits (as determined by HP) enter the pit, read and record the Heise Gage.

4.1.12 Shut DH-V202B and DH-V201B.

4.1.13 Instruct the control room to shut DH-V6B.

4.1.14 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).

4.1.15 Read and record reactor bldg pressure.

a. Unisolate Heise (open V2)

b. Read and record data.

c. Isolate Heise (close V2)

4.1.16 Perform water level calc. IAW Appendix B.

4.2 Subsequent Measurements.

NOTE: If step 4.1.9 determined that DH-V6B was leaking, it will not be necessary to open DH-V6B in step 4.2.1. Step 4.2.6 is also not applicable if DH-V6B is not opened.

4.2.1 Instruct the control room to crack open DH-V6B.

4.2.2 If dose rates are acceptable (as determined by HP) enter the DH Pit and open DH-V201B

4.2.3 Crack open DH-V202B and check for leaks at the connection.

If there are leaks, shut DH-V202B and DH-V201B and leave the DH Pit and instruct the control room to shut DH-V6B.

- 4.2.4 If there are no leaks open DH-V202B one full turn, read and record the gage indication.
- 4.2.5 Shut DH-V202B and DH-V201B, and leave the pit.
- 4.2.6 Instruct the control room to shut DH-V6B.
- 4.2.7 Read and record the Reactor Bldg pressure.
 - a. Unisolate Heise (Open V2)
 - b. Read & record data
 - c. Isolate Heise (shut V2)
- 4.2.8 Perform water level calc. in accordance with Appendix B.

APPENDIX A

VALVE LINE UP

<u>VALVE NO.</u>	<u>DESCRIPTION</u>	<u>POSITION</u>	<u>INITIALS</u>
DH-V6B	RB Sump Iso.	Shut	_____
D ^o V5B	BWST Iso.	Shut	_____
DH-V201B (M)	Test Conn.	Shut	_____
DH-V202B (M)	Test Conn.	Shut	_____
DH-V121B (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	_____

(M) 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.

APPENDIX B

Calculation of RB water level.

$$\text{Elevation of water} = 272 + C_{\frac{L}{L}} + (P_{\text{DH}} - P_{\text{RB}}) 144\text{Nf}$$

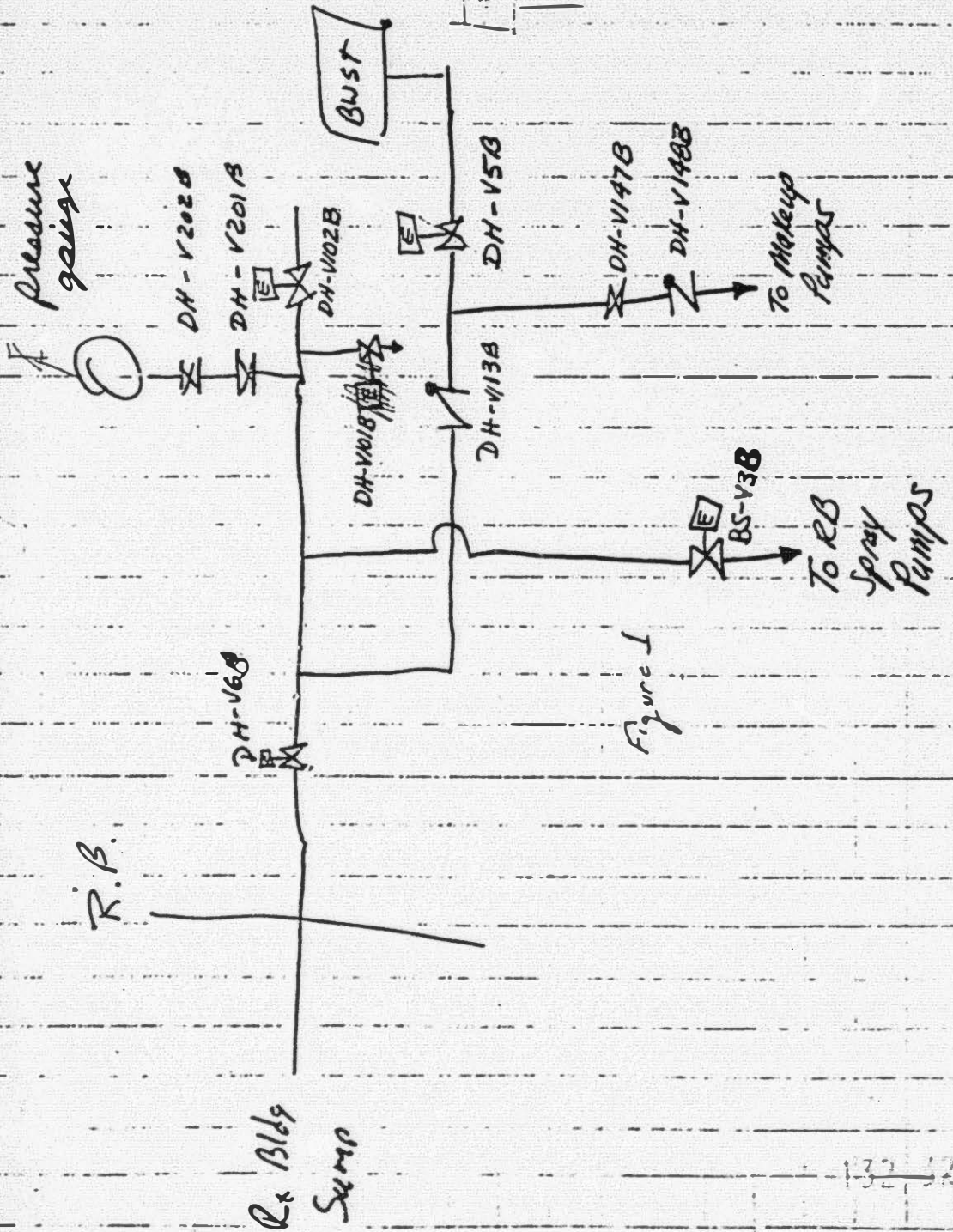
272 = Elevation of DH Pump suction line.

$C_{\frac{L}{L}}$ = 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.



B	DS-PT-4398-2	DS-PT-1412-2
C	DS-PS-3260	DS-PS-3259
D	DS-PS-3571	DS-PS-3570
E	DS-PS-3254	DS-PS-3253
F	DS-PS-3257	DS-PS-3256
G	DS-PS-3988	DS-PS-3987

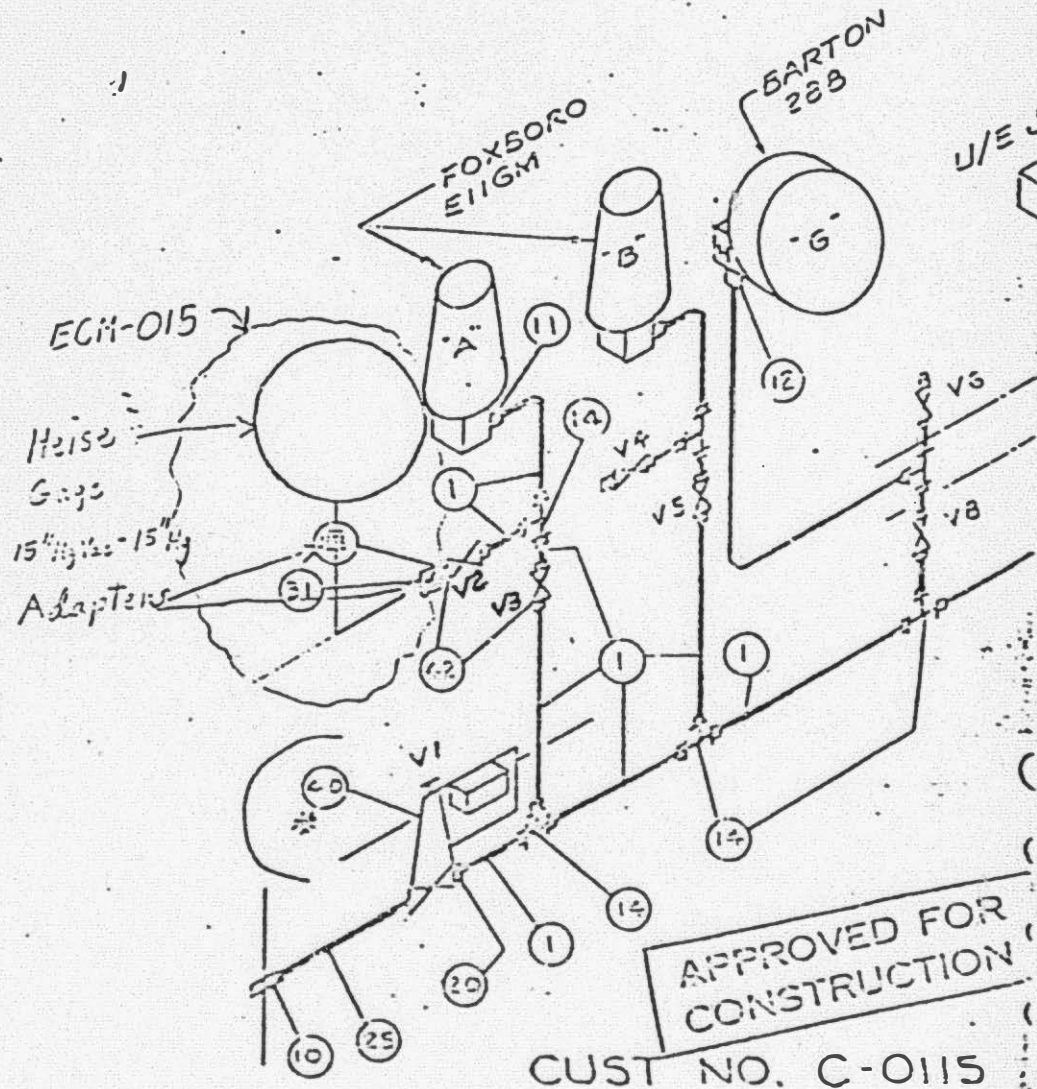


Figure 2

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