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Davis-Besse Nuclear Power Station

Unit No. 1

System Procedure SP 1104.66

Borated Water Storage Tank Operating Procedure

NUCLEAR SAFETY RELATED

Record of Approval and Changes

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QA Approved N/A (Quality Assurance Director) — (Date)

Approved By Jack Evans (Station Superintendent) — 5/6/75 (Date)

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1. PURPOSE

1.1 The purpose of this procedure is to provide a step-by-step procedure for the operation of the Borated Water Storage Tank (BWST) in the following modes:

Mode	Section
Filling Operation	4
Normal Operation	5
Heating Operation	6

1.2 System Description

The BWST is located outside the shield and auxiliary buildings. It contains a minimum of 482,778 gallons or 37 feet 4 inches indicated level (refer to the Tank Curve, Enclosure I) of water having a minimum concentration of 1,800 ppm boron at a temperature not less than 35°F. It is used to fill the refueling canal during refueling and to supply the borated water for emergency cooling to the containment spray system, low pressure injection system and high pressure injection system. It also supplies makeup water to the spent fuel pool cooling systems.

(TS 3.1.2.9.b)

The tank is provided with an external heating system to protect from freezing in winter. The heating system will be initiated by the operator before the water temperature in the tank has decreased to 50°F. For BWST temperatures less than 60°F, a minimum of 8 containment vacuum breakers shall be operable. For BWST temperatures greater than or equal to 60°F, a minimum of 6 containment vacuum breakers shall be operable. The design criteria of the containment vacuum breakers with containment spray initiation requires a minimum BWST temperature of 35°F. The BWST water temperature should be maintained greater than 50°F to ensure a reasonable temperature margin. The heating system is equipped with a pressure switch which shuts down the recirculation pump and closes its suction isolation valve if pump discharge pressure decreases below 20 psig.

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The heating system should be removed from operation before the BWST water temperature reaches 70°F. The BWST water temperature should not be greater than 90°F. A 90°F water temperature was one of the initial conditions assumed in the Containment Pressure Transient Analysis Break Spectrum of the USAR (6.2.1.3.2). The BWST design temperature is 125°F.

For control purposes, level indicators and temperature indicators are installed on the tank which are alarmed in the control room. There are four level transmitters, two low level alarms, a low-low level alarm, a local indicator and four control room level indicators. All four level channels are required for

normal operation. The control room alarms are as follows: BWST LVL LO SFAS CH 1, BWST LVL LO SFAS CH 2, BWST TEMP LO 1534, BWST RECIRC HX OUT TEMP LO, and BWST RECIRC HX FLOW LO. These alarms are located on annunciator Panel 003. BWST LO LO LVL, XFER TO EMER SUMP, is located on annunciator Panel 005.

The four level transmitters for SFAS Channels 1, 2, 3, and 4, LT-1525A, B, C, and D respectively, are surrounded by a polyurethane box containing a thermostatically controlled heater to prevent freezing. In addition, all the associated source lines and valves are provided with heat tracing.

A sample connection is provided on the 24" outlet pipe connection for water quality control. The purity of the water can be maintained by circulating through the spent fuel pool cleanup system.

Addition of makeup borated and demineralized water is available through the use of the borated water storage tank recirculating pump.

When filling the BWST up to the desired level, it will be necessary to compute the amount of boric acid (in gallons) and the amount of demineralized water or primary water (in gallons) that needs to be added. Refer to Section 4.2.1 of this procedure for the formula used for the computation of these amounts.

2. PRECAUTIONS AND LIMITATIONS

2.1 BWST low level setpoint is 8.0 ft. H_2O (indicated level). This allows adequate margin for manual switching by the operator (the decay heat removal pump suction to the containment vessel emergency sump) before the BWST empties, thus preventing the possibility of cavitation of the decay heat removal pump. At 4.5 feet, there is approximately 58,195 gallons of usable water available. With maximum safety features operating (approximately 12,800 gpm), 4.5 minutes are available for switching operation. The closure time of the valves is approximately one minute.

2.2 Do not add boric acid to the BWST when the reactor coolant system is being borated or deborated as BW 363 (Boric Acid Addition Tanks to Makeup Filter Isolation Valve) is to be left open and would allow unexpected boric acid to enter the makeup tank.

2.3 Whenever the BWST system is inoperable because of failure, repair work in progress, or routine maintenance on the system, the operator is to turn IL 4810, "BWST SYS" ON using HS 4810 on panel C5717. This light is to remain illuminated as long as the system is inoperable.

2.4 BWST heater operation will be required before the temperature of the water in the tank reaches 50°F.

12 2.5 DO NOT operate the BWST heater with an outlet water temperature greater than 90°F unless authorized by the Shift Supervisor.

2.6 If the BWST water temperature is approaching 50°F, ensure that the freeze protection equipment is energized. The freeze protection equipment is powered from the essential instrumentation busses Y1 and Y4 as follows:

INSTRUMENT AND ASSOCIATED PIPING	SFAS CHANNEL	FREEZE PROTECTION PANEL	BUS	BREAKER
LT-1525A	1	CFP03Q	Y1	Y113
LT-1525B	2	CFP04Q	Y2	Y220
LT-1525C	3	CFP05Q	Y3	Y310
LT-1525D	4	CFP06Q	Y4	Y411

2.7 The BWST water temperature should never be greater than 90°F or less than 50°F. The BWST heater should be removed from service when the water temperature reaches 70°F.

2.8 If an SFAS actuation occurs, the following requirements apply:

2.8.1 DO NOT OVERRIDE ANY SAFETY EQUIPMENT EXCEPT AS LISTED BELOW:

1. IF PLANT CONDITIONS ARE STABLE AT NORMAL OPERATING OR HOT STANDBY CONDITIONS AFTER A TRANSIENT WITH NO EVIDENCE OF AN RCS LEAK, SYSTEMS MAY BE BYPASSED WITH THE SHIFT SUPERVISOR'S PERMISSION.

2. IF THERE ARE ANY QUESTIONABLE CONDITIONS OR ANY SIGN OF AN RCS LEAK, NO SAFETY SYSTEM SHOULD BE BYPASSED WITHOUT APPROVAL OF STATION MANAGEMENT (STATION SUPERINTENDENT OR HIS DESIGNEE).

2.8.2 IF AN SFAS SIGNAL TO SOME ESF EQUIPMENT IS "BLOCKED" (I.E. OVERRIDDEN), THAT EQUIPMENT IS INCAPABLE OF RESPONDING TO EITHER ANY SUBSEQUENT AUTOMATIC ACTUATION SIGNAL OR THE SFAS SYSTEM-LEVEL MANUAL ACTUATE ("TRIP") PUSHBUTTON ON PANEL C5717. BEFORE AN OPERATOR "BLOCKS" ANY SFAS SIGNAL, HE MUST ASSURE THAT THE SAFETY FUNCTION OF THAT EQUIPMENT IS NO LONGER NEEDED. AFTERWARD THE OPERATOR IS TOTALLY RESPONSIBLE FOR THE PROPER OPERATION OF THAT EQUIPMENT, INCLUDING REACTUATION IF REQUIRED, UNTIL THE "BLOCK" IS REMOVED.

REACTUATION, SUBSEQUENT TO A "BLOCK", CAN BE ACCOMPLISHED TWO WAYS. FIRST, AT THE EQUIPMENT LEVEL, "BLOCKED" EQUIPMENT WILL RESPOND TO THE INDIVIDUAL CONTROL

SWITCHES FOR THAT PIECE OF EQUIPMENT. SECOND, AT THE SFAS SYSTEM LEVEL, OPERATION OF THE SYSTEM-LEVEL "RESET" PUSHBUTTON ON PANEL C5717 WILL CLEAR ANY OUTPUT LOGIC BLOCKS IN THE SYSTEM (OUTPUT LOGIC "BLOCKS" ARE THE BLOCK SWITCHES NEXT TO THE SAM LIGHTS AND ON THE OUTPUT MODULES). THE EQUIPMENT WILL THEN RESPOND TO THE SYSTEM-LEVEL MANUAL ACTUATE ("TRIP") PUSHBUTTON AND TO AUTOMATIC ACTUATION SIGNALS. FOR GUIDANCE ON RESETTING THE SFAS AFTER A REAL OR ERRONEOUS TRIP, SEE SECTION 4 OF EP 1202.06, LOSS OF RC AND RC PRESSURE.

3. REFERENCE

3.1 Administrative Procedure AD 1839.00, Station Operation

3.2 Bechtel P&ID M-010B, Makeup Water System, Sh. 2

3.3 Bechtel P&ID M-020, Auxiliary Steam System

3.4 Bechtel P&ID M-033, Decay Heat Removal System and Emergency Core Cooling Systems

3.5 Bechtel P&ID M-035, Spent Fuel Pool Cooling System

3.6 Bechtel P&ID M-045, Chemical Addition Systems

3.7 Elementary Wiring Diagram E-52B, Sh. 51 (Borated Water Recirc. Pump) and Sh. 52 (Borated Water Recirc. Suction Valve)

12| 3.8 Davis-Besse USAR, Section 6.2.1, 6.3.1 and 9.3.5 (Containment Vessel Functional Design, Decay Heat Removal and Low Pressure Injection System Description) and Volumes 8 and 9 (NRC Questions and Answers)

3.9 System Procedure SP 1104.42, Spent Fuel Pool

3.10 EP 1202.06, Loss of RC and RC Flow

3.11 Davis-Besse Nuclear Power Station Unit 1 Technical Specifications 3.1.2.8, 3.1.2.9 and 3.5.4

4. FILLING PROCEDURE

The purpose of this section is to provide a step-by-step procedure for filling the BWST with primary water or demineralized water and boric acid.

4.1 Prerequisites

_____4.1.1 Valve Lineup has been performed in accordance with Valve Verification List A.

_____4.1.2 Verify that the primary water or the demineralized water system is in operation in accordance with SP 1106.21 (Condensate, Demin., Primary Water Storage and Transfer Operating Procedure).

_____4.1.3 MCC E11D is energized with breaker BE 1185 closed for Boric Acid Pump 1-1 (MCC F11D is energized with breaker BF 1169 closed for Boric Acid Pump 1-2). 9

NOTE: This prerequisite is not required if using the Boric Acid Concentrates Storage Tank Transfer Pumps.

_____4.1.4 If the contents of the Boric Acid Concentrates Storage Tank are to be used, the contents are ready to be transferred as per Clean Liquid Radwaste, SP 1104.29, Section 12.

4.2 Procedure

_____4.2.1 Compute the amount of boric acid and the amount of demineralized water or primary water needed to bring the BWST up to the desired level using the following formulas:

$$B_2 = \frac{C_f B_f - C_3 B_3}{C_2} \qquad B_1 = B_f - B_3 - B_2$$

B_1 = Amount of demin. or primary water (gals.)
B_2 = Amount of boric acid (gals.) at concentration C_2
B_f = Desired volume in BWST (gals.)
B_3 = Initial volume in BWST (gals.)
C_2 = Boron concentration of boric acid (ppm boron)
C_f = Final desired concentration in BWST (ppm boron)
C_3 = Initial concentration of boron in BWST (ppm boron)

Example: It is desired to increase BWST conditions from 300,000 gallons of 1800 ppm boron to 360,000 gallons 2000 ppm boron using 8750 ppm boron solution.

$$B_2 = \frac{C_f B_f - C_3 B_3}{C_2} = \frac{(2000)(360{,}000)-(1800)(300{,}000)}{8750}$$

$$= \frac{(2 \times 10^3)(3.6 \times 10^5)-(1.8 \times 10^3)(3 \times 10^5)}{8.75 \times 10^3}$$

= 20,571 gallons at 8750 ppm boron

$B_1 = B_f - B_3 - B_2 = 360,000 - 300,000 - 20,571$

= 39,429 gallons of water must be added.

____4.2.2 Before pumping boric acid from the Boric Acid Addition Tanks (BAAT's), verify that sufficient boric acid will remain in the BAAT's to meet the requirements of Technical Specifications 3.1.2.8 and 3.1.2.9. 9

____4.2.3 Verify Boric Acid Addition Tanks 1-1 and 1-2 Normal Valve Lineup as per SP 1104.03, R.C. Chemical Addition Operating Procedure. If pumping the concentrates storage tank to the BWST, perform "Valve Lineup List P" of SP 1104.29.

NOTE: With plant operating in Modes 1 through 4 and BAAT's used as a boron injection flow path, there is no need to verify the BAAT normal lineup prior to pumping boric acid to the BWST. 9

____4.2.4 Place BWST heater and recirculation pump in service per section 6.1 of this procedure (ensure tank is not empty).

____4.2.5 Open MU 360 (BAAT 1-1 to BWST Recirc Lines).

CAUTION: Do NOT add boric acid to BWST while borating or deborating the RCS.

____4.2.6 Set MU 23 (Boric Acid Pump(s) Auto Discharge Control Valves) to get a 25 gpm flow rate.

NOTE: Flow rate is normally 25 GPM but can be adjusted from 0-60 GPM when desired by adjusting BA Pump Auto Discharge Control Valve MU23 hand controller on control room panel C5702. Return the flow rate to 25 GPM when through.

____4.2.7 If using the Boric Acid Pump 1-1 (1-2), start the pump using HIS MU50A (HIS MU50B) located on control room panel C5702 or, if desired, the Boric Acid Concentrates Storage Tank Transfer Pumps 1-1 (1-2) may be used by closing HIS1768 (HIS2817) located on radwaste control panel C1702. Let the pump run for the length of time computed by the following formula:

$$T = \frac{B_2}{\text{Flow Rate}}$$

T = Length of time pump is operated (min)
B_2 = Amount of boric acid being added (gal)
Flow Rate = Flow rate of boric acid

____4.2.8 Stop Boric Acid Pump 1-1 (1-2) using HIS MU50A (HIS MU50B) located on control room panel C5702 or Concentrates Transfer Pump 1-1 (1-2) using Control Switch HIS1768 (HIS2817) located on the Radwaste Control Panel and close MU23 (Boric Acid Pump(s) Auto Discharge Control Valve) and MU360 (Boric Acid Addition Tank 1-1 to BWST Recirc. Line).

NOTE: If pumping from Concentrates Storage Tank, return valves to normal per "Valve Lineup List P" of SP 1104.29.

____4.2.9 Add the determined amount of water, B_1, from Step 4.2.1 of this procedure by opening DW70 (Demin. Water to the BWST) for demineralized water or open PW35 (Primary Water to BWST) to the desired level. Start a primary water transfer pump or a demineralized water transfer pump, whichever one is needed, if for some reason they are not operating. To add demin. water to the BWST, stop the BWST recirc. pump, then close BW-8. Throttle DW70 to obtain desired flow rate. The Flow Rate (gpm) x Time (min) = Total gallons of demin. water. Then close DW70, open BW8, and restart the BWST recirc. pump.

____4.2.10 Recirculate the BWST for 48 hours as directed by Section 6.1 of this procedure.

____4.2.11 Have Chem & HP personnel run a boron test. The analysis must be greater than or equal to 1800 ppm.

____4.2.12 After the BWST has been recirculated for 48 hours, stop recirculation as per Section 6.2 of this procedure. Ensure, however, that the borated water and outside air temperature are both greater than 50°F prior to doing so.

Section 4 Completed by_____Date_____

5. NORMAL OPERATION

The purpose of the BWST during normal operation is to provide storage of the contents of the refueling canal and transfer pit for refueling and to provide makeup water for the spent fuel pool. During emergency

operation, the BWST provides borated water for high pressure injection, low pressure injection, and containment spray.

5.1 Prerequisites

(TS 3.1.2.9b) ____5.1.1 Boron concentration is between 1800 and 2200 ppm with chemistry and radiochemistry values as specified by PP 1101.04, Operational Chemical Control Limits, Section 16 (BWST).

(TS 3.1.2.9b) ____5.1.2 Normal operating volume is 482,778 gal. (37 feet 4 inches indicated level) to 550,000 gal (42 feet 3 inches indicated level).

(TS 3.1.2.9b) ____5.1.3 A minimum solution temperature of 35°F.

____5.1.4 Valve lineup performed in accordance with Valve Verification List A.

5.2 Procedure

____5.2.1 If it is desired to fill the BWST to maintain normal operating level, refer to Section 4 (Filling Operation) of this procedure.

____5.2.2 When the BWST water temperature approaches 50°F, refer refer to Section 6 (Heater Operation) of this procedure.

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____5.2.3 When the BWST water temperature reaches 70°F perform the following steps.

1. Refer to Section 6.2 of this procedure to remove the BWST heater from service.

2. Due to stratification, recirc. the BWST using either a Decay Heat Removal Pump or Containment Spray Pump. This will mix the BWST sufficiently to provide an accurate overall water temperature. This recirculating can increase the overall BWST water temperature by 10°F or higher.

CAUTION: Even with the large capacity of the BWST, the heat transfer capability of the BWST heater is such that the water temperature can increase from 50°F to 90°F in just a matter of hours. Also, the outside weather conditions can change to cause the once balanced conditions in the BWST to inadvertently change leading to excessive heating.

____5.2.4 If the BWST water temperature goes above 90°F, the temperature could be reduced quicker by using DH system to recirc. the BWST per ST 5051.10, "DH/LPI Pump and Check Valve Test".

NOTE: The CCW loop supplying the essential loads should be cut in to the DH cooler. If the loop supplying the non-essential loads were used it could damage the RCP seals since the CCW loop will have to be cooled down in order to reduce the BWST water temperature below 90°F. To reduce the CCW temperature first place the CCW Heat Exchanger Outlet Control Valves (SW1424, SW1434 or SW1429 for CCW Hx 1-1, 1-2 or 1-3 respectively) in manual. Then SW could be cut in as needed to cool down CCW so that it approaches the SW temperature.

6. HEATER OPERATION

The purpose of this section is to provide a step-by-step procedure for operating the BWST heater in two modes. (1) placing the BWST heater in service when the water temperature in the BWST is approaching 50°F or lower, and (2) taking the BWST heater out of service before the water temperature goes above 70°F. 12

Mode	Section
Placing BWST Heater in Service	6.1
Taking BWST Heater Out of Service	6.2

6.1 Placing BWST Heater in Service

6.1.1 Prerequisites

____1. 15 PSIG Auxiliary Steam is available to the BWST Heater.

NOTE: This prerequisite is not necessary if it is only desired to recirculate tank contents.

____2. MCC E22B is energized with both BE 2264 (for BW 2688, BWST Recirc. Pump Suction Isolation Valve) and BE 2283 (for Borated Water Recirculation Pump 1-1) closed.

6.1.2 Procedure

____1. Open BW 7 (BWST to Spent Fuel Pool Pumps or BW Recirculation Pump 1-1).

_____2. Start the Borated Water Recirculation Pump 1-1 using HIS 1613 on control room panel C5718 and leave in the "AUTO" position.

NOTE: If it is only desired to recirculate, do not perform the next steps.

_____3. Warmup the BWST heat exchanger by slowly opening AS 85 (BWST Heat Exchanger 1-1 Steam Control Bypass Valve).

12 CAUTION: DO NOT operate the BWST heater with a outlet water temperature greater than 90°F (as monitored on computer point T060) unless otherwise directed by the Shift Supervisor.

_____4. Open AS 1615 (BWST Heat Exchanger 1-1 Steam Cont. Valve) using local control switch HIS 1615.

_____5. Close AS 85 (BWST Heat Exchanger 1-1 Steam Control Bypass Valve).

_____6. Ensure that ST 22 (BWST Heat Exchanger 1-1 Steam Trap) Steam Trap Bypass is open.

_____7. Using BW 19 (BWST Heater Outlet Throttle Valve), throttle flow to maintain desired temperature in the BWST. Borated Water Recirculation Pump 1-1 capacity is 200 GPM.

Section 6.1 Completed by_____Date_____

6.2 Taking BWST Heater Out of Service

6.2.1 Prerequisites

1. None

6.2.2 Procedure

_____1. Close AS 1615 (BWST Heat Exchanger 1-1 Steam Cont. Valve) using local control switch HIS 1615.

_____2. Place ST 22 (BWST Heat Exchanger 1-1 Steam Trap) in the startup mode by opening the steam trap bypass.

_____3. Stop the Borated Water Recirculation Pump 1-1 using HIS 1613 located on control room panel C5718.

_____4. Close BW 7 (BWST to Spent Fuel Pool Pumps or Borated Water Recirculation Pump 1-1).

Section 6.2 Completed by_____Date_____

Sheet No. 1 of 3

VALVE VERIFICATION LIST A
BWST Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

	VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
12	AUXILIARY BUILDING 585' LEVEL CORRIDOR BETWEEN #3 & 4 MPR				
	BWST to SFP Pumps Vent Valve	M-035 D-3	BW20	Closed	
	BWST Isolation to SFP Pumps	M-035 E-3	BW21	Closed	
	BWST Heater to SFP Pumps	M-035 E-4	BW29	Closed	
	BWST Heater Outlet Vent Valve	M-035 E-4	BW23	Closed	
12	565' LEVEL CTMT ROOM AUXILIARY BUILDING				
	Vent to Clean Waste Monitor Tk Rm Drain Valve	M-033 A-13	BW25	Closed	
12	AUXILIARY BUILDING 565' LEVEL CORRIDOR TO #1 MPR				
	BWST Recirc Pump Isolation Suction Side	M-035 G-5	BW2688	Open	
	Flush Connection	M-035 G-5	BW10	Closed	
	Inlet to PI 1624 Source Valve	M-035 G-6	BW1624	Open	
	BWST to BW Recirc Pump 1-1 Isolation Valve	M-035 F-2	BW8	Open	
	BWST Htr Drain Valve	M-035 F-5	BW18	Closed	
	Source Valve to PS 2687	M-035 F-4	BW2687	Open	
	BWST Htr Outlet Pressure Switch	M-035 F-4	PS2687	In Service	
	BWST Htr Outlet Throttle Valve	M-035 F-3	BW19	Throttled	
	BWST Heat Exchanger 1-1 Vent Valve	M-020 E-11	AS317	Closed	
	BWST Heat Exchanger 1-1 Drain Valve	M-020 F-11	AS87	Closed	
	15 PSIG Aux. Stm Hdr. Press. Source Indicator	M-020 E-11	AS1607	Open	
	Steam to BWST Heat Exchanger 1-1 Press Ind.	M-020 E-11	PI1607	In Service	
12	BWST Heat Exchanger 1-1 Stm Cont Inlet Iso	M-020 E-11	AS84	Open/ Closed	
	BWST Heat Exchanger 1-1 Stm Cont. Bypass Valve	M-020 E-11	AS85	Closed	

*Controlled per AD 1839.02

Sheet No. 2 of 3

VALVE VERIFICATION LIST A
BWST Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

	VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
	BWST Recirc Pump Suction Pressure Indicator	M-035 G-6	PI1624	In Service	
	BWST Recirc Pump Casing Drain Valve	M-035 G-6	BW11	Closed	
	Flush Connection	M-035 G-6	BW13	Closed	
	Inlet to PI 1614 Source Valve	M-035 F-6	BW1614	Open	
	BWST Recirc Pump Disch. Pressure Indicator	M-035 F-6	PI1614	In Service	
	BWST Recirc Pump Isolation Disch. Side	M-035 G-7	BW15	Open	
12	BWST Recirc. Pump to SFP Purification	M-035 G-7	BW16	Closed[1]	
	Source Valve to FIS 1621	M-035 F-7	BW1621A	Open	
	Source Valve to FIS 1621	M-035 F-6	BW1621B	Open	
	BWST Htr Inlet Flow Indicating Switch	M-035 F-6	FIS1621	In Service	
	BWST Htr Inlet Isolation Valve	M-035 F-5	BW17	Open	
	BWST Heat Exchanger 1-1 Stm Cont Outlet Iso Vlv	M-020 E-11	AS86	Open	
	BWST Heat Exchanger 1-1 Stm Cont. Valve	M-020 E-11	AS1615	Closed	
	BWST Heat Exchanger 1-1 Stm Inlet Stm Trap	M-020 E-11	ST122	In Service	
	BWST Heat Exchanger 1-1 Steam Trap	M-020 F-10	ST22	Start-up Mode	
12	HPI Pump 1-1 Recirc Drain Valve BWST Htr Recirc Return Line	M-035	BW27	Closed	
	IN BWST PIT				
	BWST Sample Isolation Valve	M-033 C-11	SS13	Open	
	BWST Outlet Isolation Valve	M-033 C-12	DH79	Locked Open*	
	BWST to SFP Pumps or BW Recirc Pump Vent	M-033 B-12	BW30	Closed	
12	BWST to SFP Pumps or BW Recirc Pump	M-033 B-13	BW7	Closed[2]	

*Controlled per AD 1839.02
[1]Valve may be open if BWST on recirc
[2]Valve may be throttled if BWST on SFA Purification

Sheet No. 3
of 3

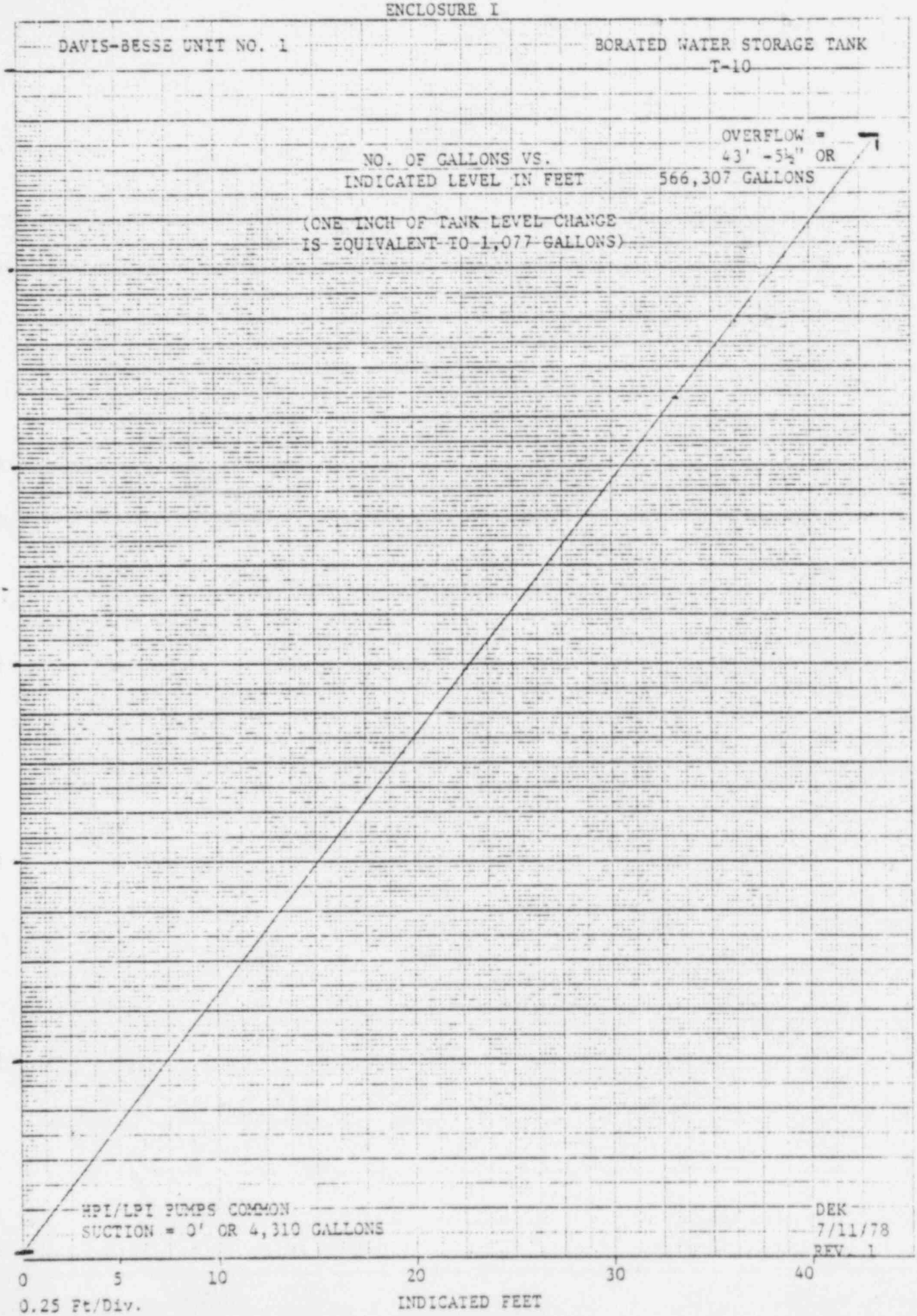
VALVE VERIFICATION LIST A
BWST Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

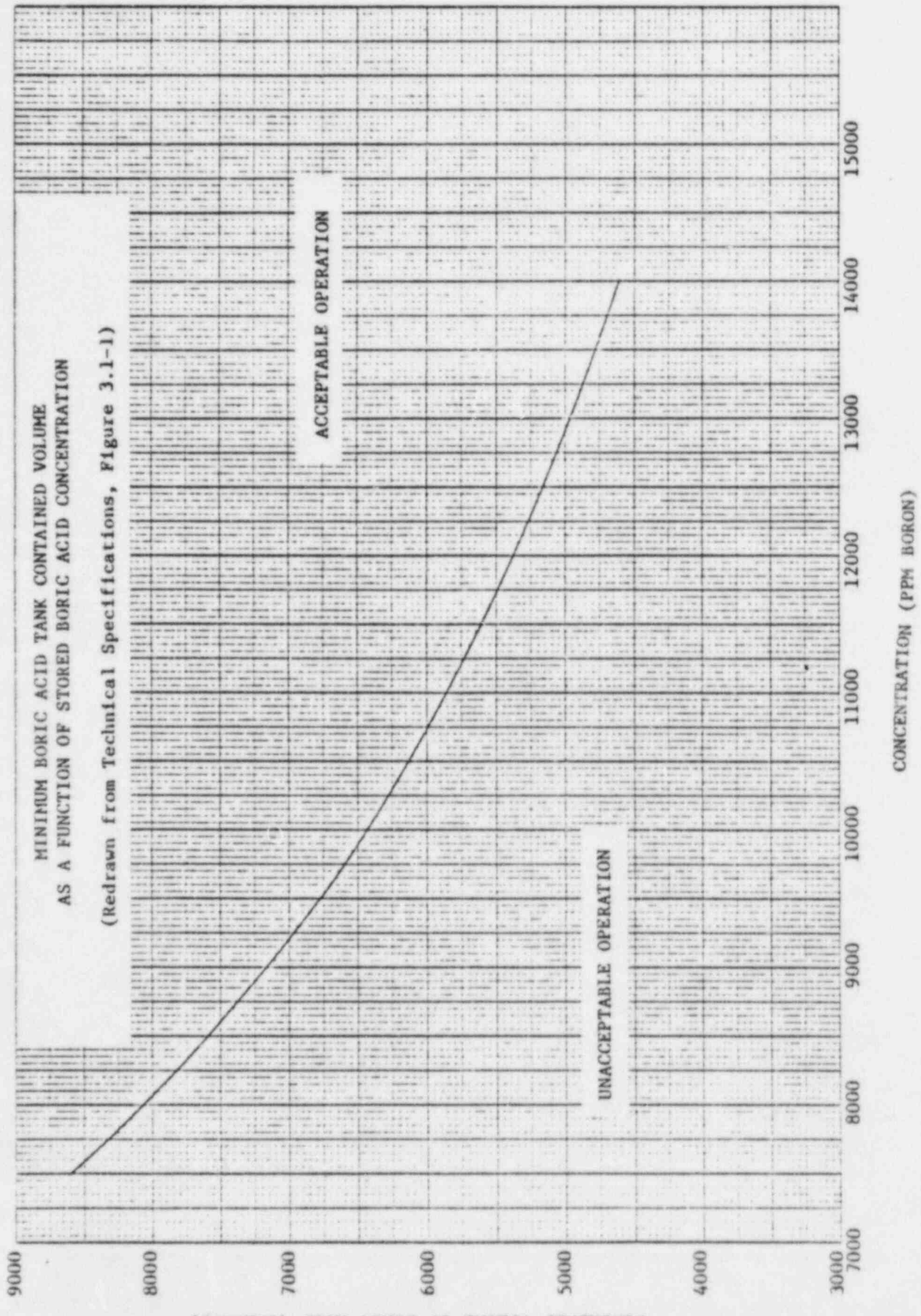
VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
12| ON OUTSIDE BWST 585' LEVEL				
BWST Drain Valve	M-033 C-11	BW6	Locked Closed	
BWST Level Transmitter Source Valve	M-033 B-11	BW1525A	Open	
BWST Level Transmitter - SFAS Channel 1	M-033 B-11	LT1525A	In Service	
BWST Level Transmitter Source Valve	M-033 B-11	BW1525B	Open	
BWST Level Transmitter - SFAS Channel 2	M-033 B-11	LT1525B	In Service	
BWST Level Transmitter Source Valve	M-033 B-12	BW1525C	Open	
BWST Level Transmitter - SFAS Channel 3	M-033 B-12	LT1525C	In Service	
BWST Level Transmitter Source Valve	M-033 B-12	BW1525D	Open	
BWST Level Transmitter - SFAS Channel 4	M-033 B12	LT1525D	In Service	

*Controlled per AD 1839.02

ENCLOSURE I


DAVIS-BESSE UNIT NO. 1
BORATED WATER STORAGE TANK
T-10
NO. OF GALLONS VS.
INDICATED LEVEL IN FEET
(ONE INCH OF TANK LEVEL CHANGE
IS EQUIVALENT TO 1,077 GALLONS)
OVERFLOW =
43' -5½" OR
566,307 GALLONS
HPI/LPI PUMPS COMMON
SUCTION = 0' OR 4,310 GALLONS
DEK
7/11/78
REV. 1
THOUSANDS OF GALLONS
2500 GAL/DIV.
0
100
200
300
400
500
600
0
5
10
20
30
40
0.25 Ft/Div.
INDICATED FEET

ENCLOSURE II



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