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DAVIS-BESSE NUCLEAR POWER STATION - UNIT 1
TEMPORARY MODIFICATION REQUEST
ED 6926

SECTION 1

PROCEDURE TITLE AND NUMBER
MAIN FEEDWATER SYSTEM SP1106.07

REASON FOR CHANGE

STEP 8.2.1 INCORRECTLY DIRECTS PERFORMANCE OF VALVE LINEUP LIST D

CHANGE

STEP 8.2.1 CHANGE VALVE LINEUP LIST D TO VALVE VERIFICATION LIST D

IS PROCEDURE REVISION REQUIRED Yes [X] No [ ] If no, this modification is valid until ____

PREPARED BY S Hillabrant	DATE 3/23/85
APPROVED BY S Hillabrant	DATE 3/23/85
APPROVED BY S Wise	DATE 3/23/85
SUBMITTED BY (Section Head) W S Ohm	DATE 4/1/85
RECOMMENDED BY (SRB Chairman)	DATE APR 3 1985
QA APPROVED BY (Manager of Quality Assurance) N/A	DATE
APPROVED BY (Station Superintendent)	DATE APR 3 1985

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DAVIS-BESSE NUCLEAR POWER STATION - UNIT 1
TEMPORARY MODIFICATION REQUEST
ED 6926

SECTION 1

PROCEDURE TITLE AND NUMBER
MAIN FEEDWATER SP 1106.07.B

REASON FOR CHANGE
To provide procedural precautions and instructions to personnel regarding the control and operating limitations of Whitney three-way ball isolation valves in the Main Turbine Lube Oil System and the Main Feed Pump Lube Oil System. This modification, in conjunction with another modification to SP 1106.02.5, will allow voiding of Standing Order No. 13-1.

CHANGE
1) ADD NEW 2.1:

~~The Main Turbine Lube Oil System and the Main Feed Pump Turbine Lube Oil System has Whitney 3-way Ball Isolation Valves installed on many of the pressure switches in the system.~~

~~These valves are "Lock-Wired" in the position to make the associated pressure switches operable.~~

~~Before any person shall break the lock-wire or change the position of the Three-Way Valve, permission must be obtained from the Shift Supervisor. When maintenance and/or testing is completed, the valves must be returned to the "In Service" position and lock-wired again. This is absolutely necessary, as inadvertant isolating of these pressure switches could cause considerable damage to the Main Turbine or Main Feed Pump Turbine(s).~~

2) CHANGE PRESENT 2.1 TO 2.2

IS PROCEDURE REVISION REQUIRED Yes ☑ No ☐ If no, this modification is valid until _____

PREPARED BY	J. E. Hilland	DATE 2/11/85
APPROVED BY	D Snyder	DATE 2/11/85
APPROVED BY	Dad K. Bro	DATE 2/11/85
SUBMITTED BY (Section Head)	W S Thomas	DATE 2-13-85
RECOMMENDED BY (SRB Chairman)	D. W. Briden	DATE 2/15/85
QA APPROVED BY (Manager of Quality Assurance)	N/A	DATE
APPROVED BY (Station Superintendent)		DATE 2/15/85

Ops

Davis-Besse Nuclear Power Station

Unit No. 1

System Procedure SP 1106.07

Main Feedwater System

NUCLEAR SAFETY RELATED

Record of Approval and Changes

Prepared by Larry Bladel and J. Dennis and R. Zemenski — 2/5/74 Date

Submitted by Terry D Murray Section Head — 6/24/76 Date

Recommended by Jack Crews SRB Chairman — 6/25/76 Date

QA Approved N A [illegible] Manager of Quality Assurance — Date

Approved by Jack Crews Station Superintendent — 6/28/76 Date

Revision No.	SRB Recommendation	Date	QA Approved	Date	Sta. Supt. Approved	Date
1	T D Murray	11/30/76	N A [illegible]		[illegible]	12/6/76
2	Q. Elard	8/30/77	NA		[illegible]	9/1/77
3	[illegible]	2/12/80	NA		T D Murray	3/7/80
4	R M Carr	8/19/80	NA		T D Murray	8/21/80
5	[illegible]	12/29/81	NA		T D Murray	2/12/82
6	[illegible]	1/25/83	NA		T D Murray	2/28/83
7	[illegible]	7/5/84	NA		[illegible]	8/13/84
8	[illegible]	DEC - 4 1984	NA		Plant Manager Approval/Date [illegible]	12/14/84

1. PROCEDURE

To provide a procedure for operation of the Feedwater System in the following modes:

MODE	SECTION
Feedwater Cleanup	5
Feedwater System Startup and Normal Operation	6
Feedwater System Shutdown	7
Feedwater System Layup During a Plant Shutdown and Cooldown	8

The Feedwater System consists of the following major components:

1. Booster Feed Pumps (BFP) (2)
2. Main Feed Pumps (MFP) (2)
3. Main Feed Pump Turbines (MFPT) (2)
4. HP Heaters (2) strings of 3 each
5. Main Feedwater Control Valves (2)
6. Startup Feedwater Control Valves (2)

The BFP, MFP and MFPT will be referred to as one unit, MFP, throughout this procedure.

The flow path of the Feedwater System is as follows: from the deaerator outlet to the suction of the BFP then the suction of the MFP. The outlet from the MFP's goes into a common header before feeding the two strings of HP Heaters. The discharge of the heaters goes to a common header which splits to supply feedwater to the two (2) steam generators through a main control valve and/or a startup control valve.

Prior to the filling of the steam generators for plant startup and operation, the feedwater quality will have to be brought into chemistry specification acceptable for use in the steam generators. Before starting cleanup of the Feedwater System, the MFP will be placed on turning gear and warmed up.

The cleanup is accomplished by circulating condensate from the hotwell through the following components as follows:

1. Condensate Pumps
2. No. 1 LP Heaters
3. Condensate Polishing Demineralizer
4. No. 2 LP Heaters
5. Deaerator Heaters
6. Deaerators
7. MFP's
8. HP Feedwater Heaters
9. Feedwater Control Valves

The feedwater is circulated by a MFP through the HP Heaters, feedwater control valves to the condenser hotwell through recirculation valve, FW 523. A velocity of ~2 fps (condensate pump flow of about 6000 gpm) should be maintained through the major piping system during the initial phase of cleanup. The deaerator will be on level control during this time.

After the initial velocity flush of feedwater system, the MFP will be placed in standby and the SUFP will be started using HIS 579. Auxiliary steam pressure in the deaerator is increased to 2.3 psig to heat the feedwater to a higher temperature for O_2 removal (pegging steam). The feedwater cleanup will be terminated when it has reached the desired specifications for steam generator fill.

When the steam generators are to be filled, the Startup Feed Pump (SUFP) will be started and feedwater from the deaerator storage tanks will be added to the steam generators to bring them up to the startup level of 96% - 99% on the operate range. During steam generator warmup, the startup control valve mini line bypass will be fully open. Steam generator level will be controlled with the steam generator drain valve bypass from the Control Room. When the turbine bypass valves open to maintain OTSG pressure at 870 psig during plant startup the startup feedwater control valves are throttled to maintain 35% to 70% on SG operate level prior to going critical and when OTSG feedwater chemistry is within specifications, the OTSG's are drained to low level limit. At approximately 1% power a MFP is placed on line and the SUFP is stopped.

Below 25% power, feedwater flow is controlled to maintain the steam generator levels at the fixed low level limits. Between 25 and 100% power, the steam generator levels are allowed to vary with power and feedwater flow to achieve the desired heat transfer rate from the primary to secondary system. Feedwater flow is controlled by using the main and startup feedwater control valves, controlled by loop feedwater demand signals. The main feedwater pump turbine speed is controlled by the total feedwater demand signal and a feedwater control valve ΔP signal. The total feedwater demand signal is used to drive the main feedwater pump turbine to a speed that should provide adequate feedwater flow. MFPT speed is fine tuned by use of the feedwater control valve ΔP. This feedback insures that the pumps are running at a speed that always provides a ΔP across the feedwater control valve. Less than 30 psid across the feedwater control valve initiates a "FW Valve ΔP Low" alarm in the control room indicating that MFPT discharge pressure is too low.

Prior to reaching 55% reactor power, the second MFP will have to be started and will be in the recirculating mode at minimum speed. Above this power both MFP's will be operating.

Normal OTSG operating conditions (100% power and flow):

1.	Pressure (primary/secondary)	2155/910 psig
2.	Temperature (primary)	608°F (in)
		556°F (out)
	(secondary)	461°F (in)
		570°F (out)
3.	Flow (primary/secondary)	74/5.88 MLB/HR per loop

A list of Feedwater Heater Resets and Reset locations is provided on Attachment 1.

2. LIMITATIONS AND PRECAUTIONS

2.1 The limitations and precautions associated with this procedure are listed with the section of the procedure they are directly related to.

3. REFERENCES

3.1 Procedures

3.1.1 Condensate System Procedure, SP 1106.16

3.1.2 Operational Chemical Control Limits, PP 1101.04

3.1.3 Plant Startup, PP 1102.02

3.1.4 Plant Shutdown and Cooldown, PP 1102.10

3.1.5 OTSG Fill, Drain and Layup, SP 1106.08

3.1.6 Deaerators, SP 1106.17

3.1.7 Feedwater Heaters, SP 1106.18

3.1.8 LP FW Heaters, SP 1106.19

3.1.9 Main Feed Pump and Turbine, SP 1106.20

8| 3.2 TED NQAM (Nuclear Quality Assurance Manual)

3.3 Bechtel Drawings (P&ID's)

3.3.1 M006-B, Feedwater System

3.3.2 M007, Steam Generator Secondary System

3.3.3 M003, Main Steam and Reheat System

3.3.4 M006-A, Condensate System

3.3.5 M020, Auxiliary Steam System

6 3.4 USAR, Chapter 10, Section 10.4.7

4. PREREQUISITES

4.1 Feedwater System is filled and/or vented (Enclosure 1, Feedwater 6 System Elevation Diagram). The Shift Supervisor will direct filling and venting operations. Depending on the layup conditions, the Feedwater System may require only venting prior to startup.

4.2 The remaining prerequisites associated with this procedure are listed with the sections of the procedures to which they apply.

5. FEEDWATER CLEANUP

NOTE: The Feedwater Cleanup will be done in conjunction with the Plant Startup Procedure, PP 1102.02.

5.1 Prerequisites

_____5.1.1 Plant startup has progressed to a point where the main turbine and MFPT's are on gear, a condensate pump is in service, two condensate polisher(s) are in service, at least two circ pumps are operating, the gland steam seal and turbine drains are in service, vacuum has 6 been established in the main condenser and the OTSG's are in wet layup (see Plant Startup Procedure PP 1102.02, Section 5).

_____5.1.2 The MFP's are in the standby condition as per SP 1106.20, Main Feed Pump and Turbine Operating Procedure.

_____5.1.3 Ensure Valve Verification List A is completed. Attachment 2 may be used to assist in locating valves.

5.2 Limitations and Precautions

5.2.1 25% flow (2.8 MPPH) is required for initial stages of cleanup (three to four hours). A single condensate polishing demineralizer is only good for 5324 gpm (2.66 MPPH). Therefore, it is necessary to have two polishers in service.

6 5.2.2 If a MFPT is used during oxygen removal, pegging steam flow must be controlled to prevent exceeding Auxiliary Boiler capacity. Sufficient steam must be available to supply the steam seal header (approximately 32,000 lb/hr), and steam jet air ejector (approximately 4,290 lb/hr) and to run a MFPT (approximately 10,000 lb/hr).

5.2.3 During feedwater cleanup, if the Control Room alarm annunciates for the condensate polishers on High ΔP of

25 psi, shift to one of the standby polishers and have the Chem Lab precoat the expended polisher per condensate polisher procedure, SP 1106.22, Condensate Demineralizers.

5.3 Procedure

_____5.3.1 Check closed the Main and Startup Feedwater Control Valves.

_____SP6A
_____SP6B
_____SP7A
_____SP7B

6 _____5.3.2 Open FW 104 and throttle FW 33 to obtain 2 to 3 K gpm (1.5 MPPH) condensate flow.

_____5.3.3 Perform Valve Lineup List B, Feedwater Cleanup Lineup.

_____5.3.4 Lineup auxiliary steam to the Main Feed Pump Turbines.

_____ 1. Place steam traps ST41, ST42, and ST43 in the Startup Mode.

_____ 2. Slowly open AS177, Auxiliary Steam to MFPT Stop Valves.

_____ 3. Slowly open AS270, MFPT Auxiliary Steam Supply Valve.

NOTE: It is necessary to manually throttle the Auxiliary Steam to the MFPT to 185 psig.

6 _____ _____ 5.3.5 Roll a Main Feed Pump up to approximately 200 psi discharge pressure or sufficient speed to show adequate recirc flow per Attachment 6.

NOTE: The Main Feed Pump will be discharging through the recirculation line to the deaerator until FW cleanup is established.

_____ _____5.3.6 If during FW cleanup, it is necessary to increase Main Feed Pump speed greater than 1030 RPM, close the first stage drain valve from the Control Room on Main Feed Pump 1-1 (1-2) using HIS 1950 (HIS 1944).

6 NOTE: Main Feed Pump speed should be held less than 1030 RPM until its oil temperature is increased to 110°F.

____ ____5.3.7 Start the 25% flush flow by performing either one of the following:

____ ____ 1. Slowly crack open FW166 and throttle as necessary to obtain 1.4 MPPH on each HP FW heater group 1 and 2 flow indicators FI580 and FI581. (2.8 MPPH total flow.)

____ ____ 2. Open FW163 SG 1 FW Cleanup Recirc Valve to condenser and FW164 SG 2 FW Cleanup Recirc to condenser. Then slowly open FW loop 1 and 2 startup control valves using H/A stations ICS33B and ICS33A respectively to obtain 1.4 MPPH on each loop 1 and loop 2 Startup FW flow indicators FI SP3B and FI SP3A.

NOTE: It may be necessary to increase the operating Main Feed Pump speed, using the manual pistol grip HS 805D (806D) to maintain 200 psig discharge pressure on the Main Feed Pump. Coordinate this with increasing FW flow. Also the deaerator drain (FW33) may need to be closed or throttled to prevent condensate pump run out.

8

____ ____5.3.8 Maintain loop 1 and 2 FW flow to 1.4 MPPH on loop 1 and loop 2 FW flow indicators.

____ ____5.3.9 During the 25% flow flush, there may be insufficient Auxiliary Steam capacity to maintain all the Auxiliary Steam loads. The operator will have to closely monitor the 235 psig steam header pressure gauge in the Control Room (PI 1659).

____ ____5.3.10 Monitor condensate polisher performance during FW cleanup. If limit of high ΔP (25 psid) or high conductivity (0.5 umho/cm) is reached, place a standby polisher in service and precoat the extended polisher per Condensate Polishers Procedure, PP 1106.22.

NOTE: If polishers are being rapidly depleted on conductivity due to feed and condensate system wet layup chemicals, the conductivity limit can be extended to 1.0 μmho/cm with C&HP concurrence.

____ ____5.3.11 Continue the 25% flow flush until the C&HP Section determiner by sampling that the FW iron content is less than 100 ppb at the outlet of the HP FW heaters.

_____5.3.12 Shutdown the running Main Feed Pump per SP 1106.20.

NOTE: If the first stage drain valve was closed on the MFP, open it at this time.

_____5.3.13 Repeat Steps 5.3.5 through 5.3.11 using the other MFP train.

8| _____5.3.14 If using Step 5.3.7.1, close FW166 and open FW170 until total FW flow is approximately .15 MPPH (300 GPM). If using Step 5.3.7.2, slowly throttle loop 1 and 2 startup control valves until total FW flow is approximately .15 MPPH (300 GPM).

8|

NOTE: If the first stage drain valve was closed on the MFP, open it at this time.

_____5.3.16 Place the startup feed pump in service per SP 1106.27.

_____5.3.17 Throttle to obtain 300 gpm (.15 MPPH).

NOTE: If the SUFP is NOT available, use a MFPT for 0_2 removal. If using a MFPT, flow can be greater than 300 gpm. At the Shift Supervisor's discretion, a MFPT can be used instead of the SUFP. (The SUFP is the preferred method.)

_____5.3.18 Place pegging steam on the deaerator and slowly heatup the deaerators.

_____5.3.19 Increase pegging steam pressure until 2.3 psig is reached on both deaerators.

_____5.3.20 Place ST 14 and ST 15 in the startup mode. (These traps will be kept in the startup mode with the bypasses open.)

_____5.3.21 It may be necessary to throttle flow through FW 33 at this time to allow deaerator heating to occur. Control flow on FW 33 to turn over Deaerator H_20, heatup the system, and maintain within the Auxiliary Boiler steam flow capacity.

8|

NOTE: Ensure that both MFP's warmup lines are in service. Trend MFP suction temperature computer points T-044 and T-051 to ensure both deaerators heatup together.

_____5.3.22 When the feedwater system and deaerator have reached

temperature equilibrium at approximately 220°, open the outside deaerator vents approximately 1/4 turn open.

NOTE: When setting the deaerator vents, ensure "play" in the valve is taken up.

_____5.3.23 Circulate the FW in this manner until the Chem & HP Department determines by sampling that the FW at the outlet of the HP FW Header meets the applicable specifications of PP 1101.04 or the following:

7

O_2 <7 ppb FE <100 ppb Cond <0.5 μmho/cm

_____5.3.24 When the FW is cleaned up, throttle back on FW33 to reduce the loads on the Aux Boiler but avoid throttling back to the point where the condensate line starts to water hammer due to low flow.

_____5.3.25 Notify C&HP to place one of the polishers in "Hold".

6. FEEDWATER SYSTEM STARTUP AND NORMAL OPERATION

6.1 Prerequisites

_____6.1.1 Condensate System is in operation as per SP 1106.16.

_____6.1.2 Feedwater cleanup has been completed as per this procedure, Section 5.

_____6.1.3 MFPT is on turning gear as per SP 1106.20, Main Feed Pumps and Turbine Operating Procedure.

_____6.1.4 OTSG level is 250 ± 50 inches of full range. (35% to 70% on the operate range.)

6.2 Limitations and Precautions

6.2.1 The Steam generator shall be considered dry when the startup range level indication decreases to or below 8 inches. This condition will require manual actuation of auxiliary feedwater and injection of same through the auxiliary nozzles until minimum level is established, at which time normal feedwater flow through the main nozzles may be restored. The main feedwater nozzles are not to be used when the OTSG is in the dry condition as this may cause thermal shocking of the lower tubesheet.

6.2.2 The maximum OTSG heatup and cooldown rate is 100°F/hr.

6.2.3 Maximum temperature difference between feedwater line temperature and steam generator lower downcomer temperature is 350°F, when using the main feedwater nozzles. This difference can be calculated by using "LWR DNCMR TEMP" TI SP8B (TI SP8A) and "MAIN FW TEMP" TI SP1 located on the Control Room Feed Pump Console.

6 6.2.4 Just before reaching 180°F RCS temperature, establish the FW minimum bypass flow. Open FW 612 and FW 601 (Main FW Stop Valves), then locally open FW 139 for loop 1 and FW 44 for loop 2. FW minimum bypass flow of greater than or equal to 32 gpm should be maintained when RCS temperature is greater than or equal to 180°F. This flow must be maintained until 5% power is exceeded. FW temperature must be maintained greater than 90°F.

6.2.5 Minimum OTSG operating water level is 35 inches on the Startup Range.

6.2.6 The OTSG minimum level is 25.6 inches (SFRCS Low Level Trip Setpoint).

6.2.7 Minimum allowable feedwater temperature to the main feed nozzles is 90°F, except when secondary side filling conditions exist as per SP 1106.08, SG Secondary Side Fill, Drain and Layup.

(TS 3.4.5) 6.2.8 Maximum OTSG operating water level is 84% of operating range (348" on Full Range instrumentation) while in modes 1 through 4.

6.2.9 Steam generator fill water chemistry must be in accordance with PP 1101.04, Operational Chemical Control Limits.

6.2.10 Steam Generator level indications are dependent on containment temperature. Because an elevated reference leg temperature causes the indicated level to be higher than the actual level, calibration curves must be used to correctly determine Steam Generator level. These curves are given in Attachment 3 for Startup Range, Attachment 4 for Operate Range, and Attachment 5 for Full Range. Each range includes reference leg temperatures from 68 - 250°F, as measured by containment temperature indicators TI 1356, TI 1357, TI 1358, or computer points T 298, T 302, and T 306.

The conditions need be considered only under accident

conditions which cause high containment temperature. Also note that pressurizer and core flood tank levels will be similarly affected by containment temperature.

6.3 Procedure

____6.3.1 Conditions are as follows:

1. The OTSG's are being maintained at less than or equal to 84% (preferably at 35% to 70%) on the Operate Range by throttling S/G 1-1 (1-2) Drain Line Isolation Bypass Valve MS 611A (MS 603A) or S/G 1-1 (1-2) Drain Line Isolation Valves MS 611 (MS 603).

2. The SUFP is in operating supplying mini feed through FW 139 and FW 44 to the OTSG main feed nozzles.

3. At least one MFP is in standby condition.

4. Vacuum is established in the main condenser.

5. The main turbine is on gear.

6. One condensate pump is in service and one polisher also.

____6.3.2 When plant startup has progressed to the point where the fourth RCP has been started and the turbine bypass valve begins to dump steam to the condenser to maintain 870 psig in the main steam lines (Tave @ 530°F), increase feedwater flow using the startup control valve to maintain 35% to 70% on the operate range. Use FIC ICS 33B in hand for SG 1-1 and FIC ICS 33A in hand for SG 1-2.

6

CAUTION: If SUFP discharge pressure is less than 900 psig or if full load amps of 44 amps is exceeded, it will be necessary to start a MFP to maintain SG level.

6 ____6.3.3 Just prior to going critical place the steam generators on low level limits by performing the following steps.

NOTE: If a delay occurs in going critical or going to Mode 1 after Steam Generators are on low level limits, it may be necessary to raise Steam Generator levels to 250 ± 50 inches on SG full range level instruments (35% to 70% on operate range) and perform a fill,

soak and drain sequence to maintain Steam Generator water chemistry. If Steam Generator water chemistry is NOT within spec, the reactor may not be taken above 5% power until it is in spec. To place the Steam Generators on low level limit control, perform the following steps.

____ 1. Place Loop 1 Feedwater Demand H/A Station (ICS 32B) in AUTO.

NOTE: Ensure the Feedwater ratio on the ΔT_c controller (ICS 30) is at 50%.

____ 2. Place Loop 2 Feedwater Demand H/A Station (ICS 32A) in AUTO.

____ 3. Place Loop 1 Main Feedwater Valve H/A Station (ICS 35B) in AUTO.

____ 4. Place Loop 2 Main Feedwater Valve H/A Station (ICS 35A) in AUTO.

____ 5. Level FW flow off to hold constant SG levels of 250 ± 50 inches on the SG full range level instruments (35% to 70% on the operate range).

____ 6. Using the Steam Generator drain valves, decrease SG levels.

____ 7. When the SG levels approach minimum level (35" in the startup range instruments), place the Startup Feedwater Valve H/A Station's meter selector switch from "POS" to "MEAS VAR".

CAUTION: Steam Generator automatic low level limit is blocked when the Startup Feedwater Valve H/A Stations are in Hand. SG level of 26.5" will initiate steam line rupture isolation and aux feedwater start. Drain SG's very slowly below 45".

____ 8. When SG level reaches the low level limit (35") on ICS SG 1 (2) ON LO LVL LIMIT alarm will annunciate in the Control Room. Adjust SG drains to hold SG level at 35" and use the Startup Feedwater Valve H/A Station to adjust SG level as necessary. The SG drains should be just cracked open or closed.

____ 9. When SG level has steadied out at 35" and no error exists in "MEAS VAR" (as indicated by the meter reading 50%), place the Loop 1 and 2 Startup Feedwater Valve H/A Stations in "AUTO" ICS 33B and ICS 33A respectively and place the Delta Tc Controller (ICS 30) H/A Station in "AUTO" with a FW ratio of 50%.

____ 10. Slowly close the SG drains MS 603A, MS 611A, MS 603, and MS 611 if not already closed. Also close the reach rod SG lower tube sheet drains in Containment, MS 863 on SG 1-1 and MS 889 on SG 1-2, and in the Turbine Building close the SG Drains to the Condenser, MS 873, SG 1-1 Drain to LP Condenser and MS 895, SG 1-2 Drain to HP Condenser. Refer to AD 1839.02 for locked valves.

____6.3.4 At approximately 1% power, place the Standby Main Feed Pump on line per SP 1106.20 Main Feed Pump and Turbine Procedure.

____6.3.5 Increase MFPT speed as necessary to overcome SUFP discharge pressure.

____6.3.6 When the MFP is providing flow to OTSG's, stop the SUFP per SP 1106.27 SUFP operating procedure.

7 NOTE: SUFP suction valves (FW91 or FW32), SUFP discharge valve (FW106) and the TPCW valves to SUFP coolers (CW196 and CW197) must be shut and the close power fuses for SUFP Brkr (AD210) must be removed after SUFP is shutdown.

____6.3.7 Close FW 33 and FW 104.

____6.3.8 At approximately 15% reactor power, main block valves FW 779 and FW 780 will open and feedwater control valves, SP6A and SP6B, will start to control feed flow.

7 NOTE: If FW 779 or FW 780 bind and remain closed, vent the bonnet of FW 799 through bonnet vent valves FW 800 and FW 801 or vent the bonnet of FW 780 through bonnet valves FW 802 and FW 803.

____6.3.9 A second MFP will be started at 450 MW generator load according to SP 1106.20, MFP and T System Procedure.

NOTE: A list of Feedwater Heater Resets and Reset locations is provided on Attachment 1.

7. FEEDWATER SYSTEM SHUTDOWN

7.1 Prerequisites

_____7.1.1 It is designed to shutdown the plant as per PP 1102.04 Plant Shutdown and Cooldown.

7.2 Limits and Precautions

7.2.1 See Section 6.2

7.3 Procedure

_____7.3.1 At 450 MWe decreasing take either 1-1 or 1-2 MFP off the line per SP 1106.20 Main Feed Pump and Turbine Operating Procedure.

_____7.3.2 After all regulating rods and safety rod groups except group 1 are inserted as per PP 1102.10 Plant Shutdown and Cooldown, place Main Feedwater and Startup Feedwater control valves (ICS 35A and B and ICS 33A and B) in hand and slowly increase and maintain OTSG levels to between 35% and 70% on the Operate Range. Maintain less than a 100°F/hr cooldown rate.

NOTE: When any Main or Startup Feedwater control valve is placed in hand, the Rapid Feedwater Reduction (RFR) portion of the ICS will no longer target feedwater flow or MFPT speed on a reactor trip.

_____7.3.3 Perform Valve Lineup List E to lineup OTSG drains to the condenser.

NOTE: If required as an aid in controlling SG level, position SG tube sheet drain valve bypass valve(s) MS 611A (MS 603A) from the CTRM Panel C5721. If it is planned to remain in Mode 3, at the Shift Supervisor's discretion, only lower tube sheet drains MS 863 and MS 889 need to be opened. If so, "INFO TAG" HIS 611A and HIS 603A in the Control Room. These are controlled per AD 1839.02, Locked Valves. Inform the Shift Supervisor that for multiple Containment entries, ST 5061.05 is required every 72 hours and should be completed per I&C's ST

schedule. Place the due date and time for ST 5061.05 on the plant equipment status board.

NOTE: If the water in the Steam Generators is out of spec, start the following sequence: fill, soak (approximately two hours), and drain Steam Generators. Continue this procedure until the water in the SG's is within spec. If the chemistry is out of limits after eight hours, the system must be cooled to less than 400°F.

LIMITS:		
	Cl	1.0 ppm max
	Sodium	2.0 ppm max
	Cation Conductivity	10.0 umho/cm
	Silica	2.0 ppm max

_____7.3.4 When decay heat load is low enough and when necessary for proper SG level control, transfer from the MFPT to the Startup Feedwater Pump (SUFP) by performing the following: If Turbine Bypass valves go closed in auto or have to be closed to stop or limit cooldown, place SUFP on and take off MFPT. If the SUFP is not available, transfer the MFPT to auxiliary steam.

NOTE: With one MFPT operating at required speed and the feedwater control valves in hand, exercise caution when transferring from the MFPT to the SUFP. The feedwater control valve delta P change may necessitate feedwater valve repositioning to maintain SG level at 35% to 70% on the operate range. Loss of feedwater pressure could actuate the steam and feedwater rupture control system.

The capacity of the SUFP is approximately 1.3% of full power. Depending on core power history decay heat may be as high as 1.7% one hour after reactor shutdown. The total feedwater flow (FI SP3A and SP3B) should be less than approximately 100,000 lb/hr when changing over from the MFPT to the SUFP.

___ 1. Start the SUFP as per SP 1106.27

___ 2. Open FW 106 SUFP discharge to the HP FW heaters and check closed FW 102.

___ 3. Place operating MFPT Bailey Station (MGU ICS 36B or ICS 36A) in hand and decrease it to the low

8| speed stop. While decreasing speed, ensure SUFP discharge pressure is maintained above 900 PSIG and SUFP amps is maintained below 44 amps.

8| _____ 4. Observe SUFP amps, discharge pressure, feedwater control valve delta P (PDI SP5B, SP5A) and OTSG level.

8| _____7.3.5 Transfer MFPT control from ICS to MDT-20 per SP 1106.20.

_____7.3.6 Decrease MFPT speed until green "LSS" limit illuminites using manual pistol grip HS 805D (HS 806D).

_____7.3.7 Place MFPT on turning gear as per MFPT Operating Procedure SP 1106.20. Lineup (or ensure it is lined up) auxiliary steam to the MFPT's to provide a backup pump(s) to the SUFP.

_____7.3.8 If Main Feedwater System is being used to achieve natural circulation during cooldown, increase both OTSG levels to approximately 60% to 70% on the operate range to provide maximum natural circulation. This step is performed after the Decay Heat pumps are started but prior to stopping all RCP's.

_____7.3.9 When the RCS temperature is 200°F and prior to reaching 190°F, increase the OTSG levels to 97% to 99% on the operate range or to the level and temperature restrictions as per Enclosure 2.

_____7.3.10 Cooldown the deaerators and decrease feedwater temperature to prevent hot feedwater from keeping the OTSG's and RCS hot as cooldown progresses. The deaerator drain valve to the condenser FW 104 can be used to aid in decreasing FW temperature.

8. FEEDWATER SYSTEM LAYUP DURING A PLANT SHUTDOWN AND COOLDOWN

8.1 Prerequisites

_____8.1.1 The RCS has been cooled down to less than 200°F with the turbine bypass valves closed and feedwater minimum flow in service.

_____8.1.2 C&HP has been notified that sufficient quantities of hydrazine and ammonia must be available.

_____8.1.3 The Chemical Addition System is operable.

8.2 Procedure

_____8.2.1 Perform Valve Lineup List D being careful to maintain

SUFP amps less than 44 amps and discharge pressure greater than 900 PSIG.

____8.2.2 C&HP should sample and add hydrazine and ammonia as necessary to maintain hydrazine 200 ppm and no less than 50 ppm and ammonia 10 ppm and no less than 3 ppm.

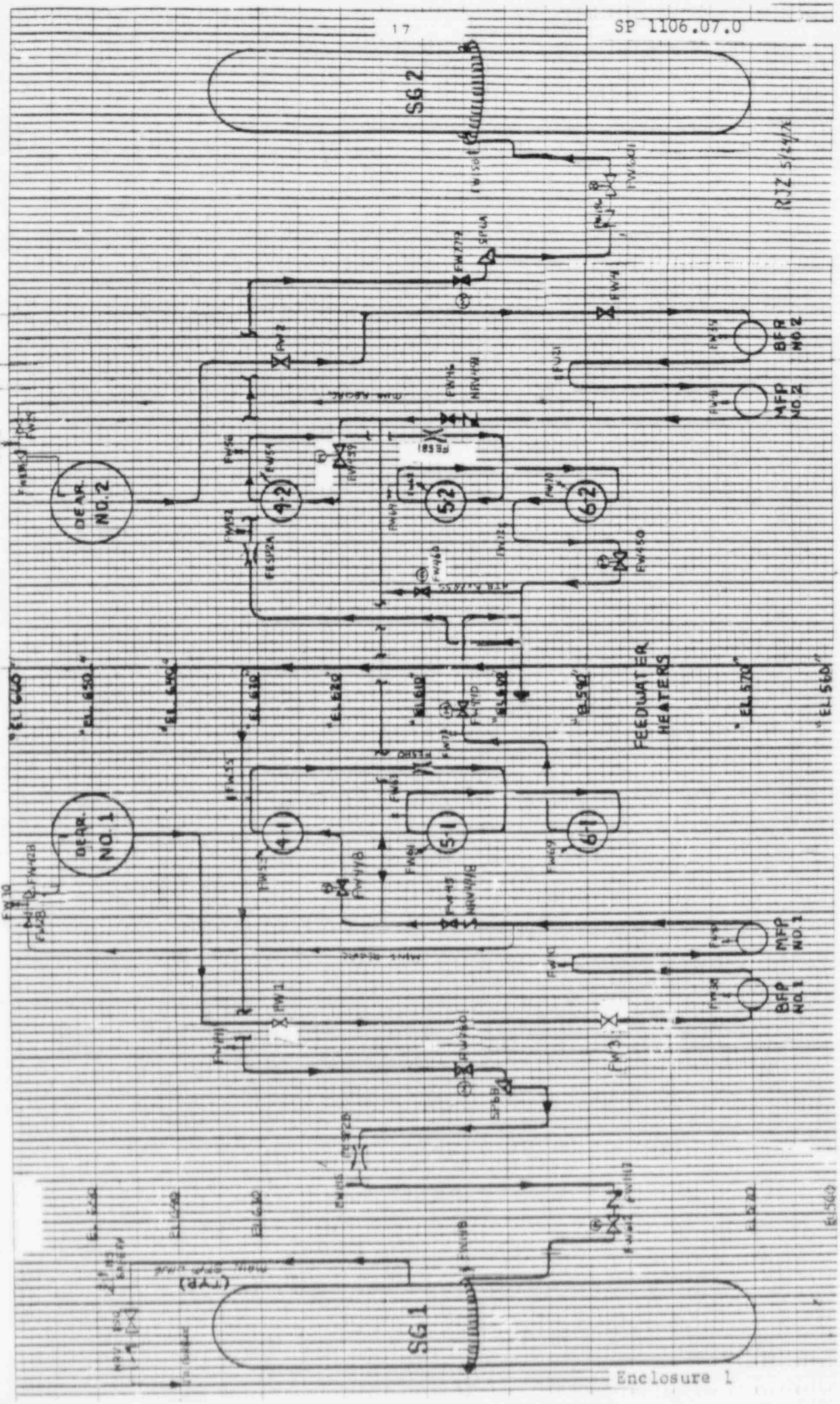
____8.2.3 The feedwater system should be recirculated for 16 hours at 360 GPM to obtain two turnovers of the feedwater system before sampling.

____8.2.4 When chemistry is in spec., the SUFP may be shutdown as per SP 1106.27 SUFP Operating Procedure.

7 NOTE: SUFP suction valves (FW91 or FW32), SUFP discharge valve (FW106) and the TPCW valves to SUFP coolers (CW197 and CW196) must be shut and the close power fuses for SUFP breaker (AD 210) must be removed after SUFP is shutdown.

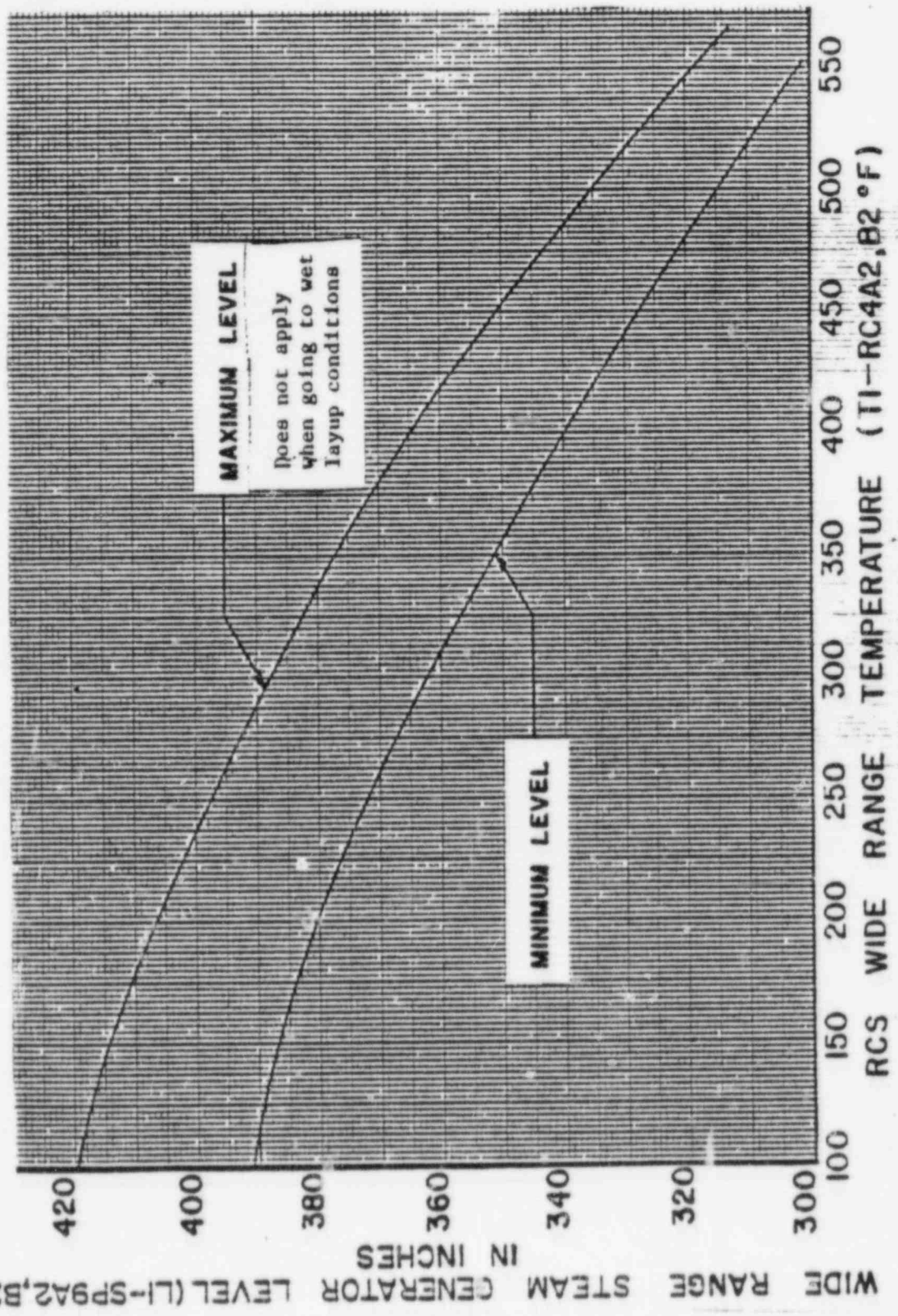
____8.2.5 Circulate the feedwater system as directed by C&HP when chemistry is out of spec using the SUFP.

FEEDWATER SYSTEM ELEVATION DIAGRAM



Enclosure 1

REQUIRED STEAM GENERATOR LEVEL BELOW 190°F



ENCLOSURE 2

(Fig. 8B of PP 1101.01)

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

4 Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
CONTROL ROOM				
HP FW Htr 1-1-6 FW Outlet Isolation	M-006B C-6	FW 440	Open	
4 HP FW Htr 1-1-4 FW Inlet Isolation Valve	M-006B E-6	FW 448	Open	
HP FW Htr 1-2-6 FW Outlet Isolation	M-006B C-8	FW 450	Open	
HP FW Htr 1-2-4 FW Inlet Isolation	M-006B E-7	FW 459	Open	
HP FW Htr FW Bypass Valve	M-006B C-7	FW 460	Closed	
S/G 1-2 Main FW Control Valve Isolation	M-007 H-5	FW 779	Open*	
S/G 1-1 Main FW Control Valve Isolation	M-007 H-9	FW 780	Open*	
S/G 1-2 Main FW Stop Valve	M-007 H-3	FW 601	Open*	
S/G 1-1 Main FW Stop Valve	M-007 H-11	FW 612	Open*	
ROOM 404 MAIN CORRIDOR (RACA)				
FW Loop 1 Flow Transmitter 2	M-007 H-8	FTSP2B2	In Service	
FW Loop 1 Flow Transmitter 1	M-007 H-8	FTSP2B1	In Service	
FW Loop 1 Flow Transmitter 2 Source	M-007 H-10	SP2B2A	Open	
FW Loop 1 Flow Transmitter 2 Source	M-007 H-10	SP2B2B	Open	
FW Loop 1 Flow Transmitter 1 Source	M-007 H-10	SP2B1A	Open	
FW Loop 1 Flow Transmitter 1 Source	M-007 H-10	SP2B1B	Open	
S/G 1-1 FW Hdr Vent Valve	M-007 H-11	FW 145	Closed	
CONTAINMENT				
FW Loop 1 Vent Inside Containment	M-007 C-12	FW 148	Closed	

*Closed during F.W. Cleanup.

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

	VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
	FW Loop 1 FW Ring Drains Inside CTMT	M-007 C-11	FW 149	Closed	
	FW Loop 1 FW Ring Drains Inside CTMT	M-007 C-11	FW 150	Closed	
	FW Loop 2 Vent Inside CTMT	M-007 C-1	FW 158	Closed	
	FW Loop 2 Ring Header Drains	M-007 C-1	FW 159	Closed	
	FW Loop 2 Ring Header Drains	M-007 C-1	FW 160	Closed	
	ROOM 303 MECHANICAL PENETRATION ROOM #3				
	Main FW 1 SG 1 Press	M-007 J-11	PDS2686A	In Service	
	Main FW 1 SG 1 Press	M-007 J-10	PDS2686B	In Service	
	Main FW 1 SG 1 Press	M-007 J-11	PDS2686C	In Service	
	Main FW 1 SG 1 Press	M-007 J-10	PDS2686D	In Service	
	SG 1-1 Wet Lay Up Recirc Line Instrument Tap	M-007 F-11	FW 2686D	Closed	
7	SG 1-1 Wet Lay Up Recirc Line Instrument Tap	M-007 F-11	FW 2686B	Closed	
	FW Loop 1 Hydro Test Pump Connection	M-007 H-12	MS 743	Closed	
	FW Loop 1 Drain Valve	M-007 H-12	FW 26	Closed	
	Mn FW 1 and SG 1 PDS 2686C and D Source Vlv	M-007 H-11	FW 2686F	Open	
	Mn FW 1 and SG 1 PDS 2686A and B Source Vlv	M-007 H-11	FW 2686E	Open	
	S/G 1-1 FW Hdr Drain Valve	M-007 H-11	FW 146	Closed	
	MFW to SG 1 PDS 2686C & D Source Valve	M-007 H-11	FW 2686C	Open	
7	MFW to SG 1 PDS 2686A & B Source Valve	M-007 H-11	FW 2686A	Open	
	ROOM 314 MECHANICAL PENETRATION ROOM #4				
7	SG 1-2 Wet Lay Up Recirc Line Instrument Tap	M-007 F-2	FW 2685D	Closed	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
SG 1-2 Wet Lay Up Recirc Line Instrument Tap	M-007 F-2	FW 2685B	Closed	
FW Loop 2 Hydrotest Pump Connection	M-007 H-2	MS 741	Closed	
FW Loop 2 Drain Valve	M-007 H-1	FW 157	Closed	
Mn FW 2 and SG 2 PDS 2685C and D Source Vlv	M-007 H-3	FW 2685E	Open	
Mn FW 2 and SG 2 PDS 2685A and B Source Vlv	M-007 H-2	FW 2685F	Open	
S/G 1-2 FW Hdr Drain Valve	M-007 H-3	FW 155	Closed	
ROOM 313 B.A. MIX TANK AND HATCH AREA				
S/G 1-1 FW Hdr Drain Valve	M-007 H-10	FW 144	Closed	
ROOM 707 DEAERATOR HEATER BAY				
Main Feed Pump 1-2 Recirculation Valve Outlet Bypass	M-006B D-10	FW 37	Closed	
Main Feed Pump 1-2 Recirculation Valve Isolation	M-006B G-9	FW 29	Sealed Open	
MFP 1-2 Min Flow Line Drain	M-006B D-10	FW 27	Closed	
Main Feed Pump 1-2 Recirculation Line Vent Valve	M-006B E-9	FW 31	Closed	
Main Feed Pump 1-2 Recirculation Valve	M-006B E-9	FW 438	In Service	
Main Feed Pump 1-2 Recirculation Valve Outlet Isolation	M-006B C-9	FW 35	Sealed Open	
Startup Feedwater Pump 1-1 Minimum Recirculation Division Valve	M-006B B-4	FW 98	Closed	
Startup Feedwater Pump 1-1 Minimum Recirculation Isolation	M-006B B-4	FW 96	Sealed Open	
Startup Feedwater Pump 1-1 Minimum Recirculation Isolation	M-006B B-5	FW 97	Sealed Open	
Main Feed Pump 1-1 Recirculation Valve Outlet Isolation	M-006B C-4	FW 34	Sealed Open	
Main Feed Pump 1-1 Recirculation Valve	M-006B E-4	FW 428	In Service	
Main Feed Pump 1-1 Minimum Flow Line Drain	M-006B C-6	FW 9	Closed	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

4 Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Main Feed Pump 1-1 Recirculation Line Vent	M-006B G-4	FW 30	Closed	
Main Feed Pump 1-1 Recirculation Valve Isolation	M-006B E-3	FW 28	Sealed Open	
Main Feed Pump 1-1 Recirculation Valve Outlet Bypass	M-006B D-3	FW 36	Closed	
ROOM 514 HEATER BAY 623'				
Deaerator Storage Tank 1-2 Outlet Isolation Valve	M-006B C-10	FW 2	Open	
S/G 1-2 FW Hdr Vent Valve	M-007 H-5	FW 152	Closed	
S/G 1-2 FW Loop 2 Flow Transmitter 1 Source	M-007 H-6	SP2A1A	Open	
S/G 1-2 FW Loop 2 Flow Transmitter 1 Source	M-007 H-6	SP2A1B	Open	
S/G 1-2 FW Loop 2 Flow Transmitter 2 Source	M-007 H-6	SP2A2A	Open	
S/G 1-2 FW Loop 2 Flow Transmitter 2 Source	M-007 H-6	SP2A2B	Open	
S/G 1-1 FW Hdr Vent Valve	M-007 H-8	FW 141	Closed	
HP FW Htr 1-1-4 Inlet Press Indication Source	M-006B E-6	FW 447	Open	
HP FW Htr 1-1-4 Outlet Line Vent	M-006B D-6	FW 55	Closed	
HP FW Htr 1-1-4 Outlet FW Press Indicator Source	M-006B E-6	FW 446	Open	
HP FW Htr 1-1-4 FW Side Vent Valve	M-006B E-5	FW 53	Closed	
HP FW Htr 1-1-4 FW Inlet Drain Valve	M-006B E-6	FW 51	Closed	
HP FW Htr 1-2-4 Outlet Line Vent	M-006B D-7	FW 56	Closed	
HP FW Htr 1-2-4 Outlet FW Press Indication Source	M-006B E-7	FW 456	Open	
HP FW Htr 1-2-4 FW Side Vent Valve	M-006B E-8	FW 54	Closed	
HP FW Htr 1-2-4 FW Inlet Line Drain	M-006B E-7	FW 52	Closed	
HP FW Htr 1-2-4 FW Inlet Press Indication	M-006B E-8	PI 458	In Service	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

4| Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
HP FW Htr 1-1-4 FW Inlet Press Indication	M-006B E-6	PI 447	In Service	
HP FW Htr 1-2-4 Outlet FW Press Indication	M-006B E-7	PI 456	In Service	
HP FW Htr 1-1-4 Outlet FW Press Indication	M-006B E-6	PI 446	In Service	
Deaerator Storage Tank 1-1 Outlet Isolation Valve	M-006B C-3	FW 1	Open	
ROOM 430 HEATER BAY AREA 603'				
MFP Outlet Hdr to Aux Stm Hdr Desuper Htr	M-006B F-7	FW 49	Open	
MFP 1-2 Discharge Isolation	M-006B F-7	FW 46	Open	
MFP 1-2 Discharge Hdr Drain	M-006B F-7	FW 48	Closed	
HP FW Htr 1-2-5 FW Outlet FW Press Ind	M-006B D-7	PI 454	In Service	
HP FW 1-1-5 Outlet FW Press Ind	M-006B D-6	PI 444	In Service	
HP FW Htr 1-2-5 FW Inlet Drain	M-006B D-7	FW 60	Closed	
HP FW Htr 1-2-5 FW Side Vent Valve	M-006B D-8	FW 62	Closed	
HP FW Htr 1-2-5 FW Outlet Line Vent Valve	M-006B D-8	FW 64	Closed	
HP FW Htr 1-2-4 FW Inlet Line Drain	M-006B F-7	FW 50	Closed	
HP FW Htr 1-2-5 FW Outlet FW Press Ind Source	M-006B D-7	FW 454	Open	
HP FW Htr 1-2-4 FW Inlet Press Indication Source	M-006B E-8	FW 458	Open	
HP FW Htr 1-1-5 Outlet FW Press Indication Source	M-006B D-6	FW 444	Open	
HP FW Htr 1-1-5 Outlet Line Vent Valve	M-006B D-5	FW 63	Closed	
S/G 1-1 Startup FW Control Valve Isolation	M-007 H-8	FW 142	Open	
S/G 1-1 FW Warm-Up Recirc Valve to Deaerator	M-007 H-8	FW 143	Closed	
HP FW Htr Train #2 FW Flow Ind Source	M-006B D-8	FW 581A	Open	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

	VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
	HP FW Htr Train #2 FW Flow Indication Source	M-006B D-8	FW 581B	Open	
7	HP FW Htr Train #1 FW Flow Indication Source	M-006B D-5	FW 580A	Open	
	HP FW Htr Train #1 FW Flow Indication Source	M-006B D-5	FW 580B	Open	
	Loop 1 Startup FW Flow Transmitter Source	M-007 H-9	SP3BB	Open	
	Loop 1 Startup FW Flow Transmitter Source	M-007 H-9	SP3BA	Open	
	S/G 1-1 Startup FW Control Valve Bypass	M-007 J-9	FW 139	Closed	
	S/G 1-1 Startup FW Control Valve	M-007 H-10	SP7B	In Service	
	S/G 1-1 Startup FW Control Valve Isolation	M-007 H-10	FW 161	Open	
	HP FW Htr 1-1-5 FW Inlet Drain	M-006B D-6	FW 59	Closed	
	HP FW Htr 1-1-5 FW Side Vent Valve	M-006B D-5	FW 61	Closed	
	MFP 1-1 Discharge Hdr Drain	M-006B E-6	FW 47	Closed	
	MFP 1-1 Discharge Isolation Valve	M-006B F-6	FW 45	Open	
7	SUFP 1-1 to Main FW Line Isolation	M-006B F-6	FW 106	Closed	
	S/G 1-1 Main FW Control Valve	M-007 H-10	SP6B	In Service	
	Loop 1 Main FW Control Valve Differential Pressure Transmitter Source	M-007 H-9	SP5B2A	Open	
	MFW Block Vlv FW 780 Bonnet Vent Valve	M-007 H-8	FW 803	Closed	
7	MFW Block Vlv FW 780 Bonnet Vent Valve	M-007 H-8	FW 802	Closed	
	S/G 1-1 FW Cleanup Recirculation to Condenser	M-007 J-10	FW 163	Closed	
	HP FW Htr 1-1-6 Outlet FW Press Indication Source	M-006B C-6	FW 442	Open	
	HP FW Htr 1-1-6 FW Outlet Line Vent	M-006B C-5	FW 71	Closed	
	Main Feedwater Line Cleanup to Condenser	M-007 H-7	FW 166	Closed	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
FW Mini Bypass to Cndsr Iso Vlv	M-007 E-2	FW 170	Closed	
S/G 1-2 Startup FW Control Valve Isolation	M-007 H-4	FW 162	Open	
S/G 1-2 Startup FW Control Valve	M-007 J-4	SP7A	In Service	
S/G 1-2 FW Loop 2 Flow Transmitter 1	M-007 H-6	FTSP2A1	In Service	
S/G 1-2 FW Loop 2 Flow Transmitter 2	M-007 H-6	FTSP2A2	In Service	
S/G 1-2 FW Cleanup Recirc Valve to Cond	M-007 J-3	FW 164	Closed	
Loop 2 Startup FW Flow Transmitter Source	M-007 J-4	SP3AB	Open	
Loop 2 Startup FW Flow Transmitter Source	M-007 J-4	SP3AA	Open	
S/G 1-2 Startup FW Control Valve Bypass	M-007 J-4	FW 44	Closed	
S/G 1-2 Startup FW Control Valve Isolation	M-007 H-5	FW 154	Open	
S/G 1-2 FW Warmup Recirc Valve to Deaerator	M-007 H-5	FW 153	Closed	
MFW Block Valve FW 779 Bonnet Vent Valve	M-007 H-4	FW 801	Closed	
MFW Block Valve FW 779 Bonnet Vent Valve	M-007 H-5	FW 800	Closed	
Loop #1 Main FW Control Valve Differential Pressure Transmitter Source	M-007 H-5	SP5A2A	Open	
S/G 1-2 Main FW Control Valve	M-007 H-4	SP6A	In Service	
Cleanup Recirc to Condenser Vent	M-007 K-10	FW 165	Closed	
ROOM 326 HEATER BAY AREA 585'				
FW Loop 2 Press Diff Switch Source	M-007 H-3	FW 2685C	Open	
FW Loop 2 Press Diff Switch Source	M-007 H-3	FW 2685A	Open	
Loop #1 Main FW Control Valve Differential Pressure Transmitter Source	M-007 H-3	SP5A2B	Open	
Main FW 2 and SG 2 Diff Press	M-007 J-3	PDS2685A	In Service	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Main FW 2 and SG 2 Diff Press	M-007 J-3	PDS2685B	In Service	
Main FW 2 and SG 2 Diff Press	M-007 H-3	PDS2685C	In Service	
Main FW 2 and SG 2 Diff Press	M-007 H-3	PDS2685D	In Service	
Loop #1 Main FW Control Valve Differential Pressure Transmitter	M-007 H-5	PDTSP5A1	In Service	
Loop #1 Main FW Control Valve Differential Pressure Transmitter	M-007 H-5	PDTSP5A2	In Service	
HP FW Htr FW Hdr Outlet Pressure Transmitter	M-006B B-6	PT 432	In Service	
Loop 2 Startup FW Flow Transmitter	M-007 J-4	FTSP3A	In Service	
SUFP 1-1 to Condenser Isolation	M-006B F-7	FW 102	Closed	
SUFP 1-1 Discharge Differential Press Source	M-006B J-1	FW 2657A	Open	
SUFP 1-1 Discharge Differential Press Source	M-006B J-1	FW 2657B	Open	
HP FW Htr FW Hdr Outlet Drain Valve	M-007 H-7	FW 140	Closed	
Startup FW Pump 1-1 Feed Line Vent Valve	M-006B F-7	FW 108	Closed	
7 Startup FW Pump 1-1 Feed Line Drain Valve	M-006B F-7	FW 107	Closed	
Ammonia Injection to HP FW Outlet Hdr Isol	M-006B B-6	SC 22	Closed	
HP FW Outlet Hdr Sample Valve	M-006B B-5	SS 33	Open	
HP FW Htr FW Hdr Outlet - Sample Valve	M-006B B-7	SS 31	Open	
HP FW Htr FW Hdr Outlet Pressure Transmitter Source	M-006B B-6	FW 432	Open	
HP FW Htr FW Hdr Outlet Sample Valve	M-006B B-8	SS 32	Open	
Ammonia Injection to FW Header Isolation	M-006B B-7	SC 24	Closed	
HP FW Htr 1-2-6 Outlet Line Drain	M-006B C-7	FW 73	Closed	
Loop 1 Main FW Control Valve Differential Pressure Transmitter	M-007 K-9	PDTSP5B1	In Service	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Loop 1 Main FW Control Valve Differential Pressure Transmitter	M-007 K-9	PDTSP5B2	In Service	
Loop 1 Startup FW Flow Transmitter	M-007 H-9	FTSP3B	In Service	
HP FW Htr Train #2 FW Flow Indication	M-006B D-8	FT 581	In Service	
HP FW Htr Train #1 FW Flow Indication	M-006B D-5	FT 580	In Service	
HP FW Htr 1-1-6 Outlet FW Press Indication	M-006B C-6	PT 442	In Service	
Loop 1 Main FW Control Valve Differential Pressure Transmitter Source	M-007 H-10	SP5B2B	Open	
HP FW Htr 1-1-4 Outlet Line Drain	M-006B D-6	FW 57	Closed	
HP FW Htr 1-1-6 FW Side Vent Valve	M-006B C-5	FW 69	Closed	
HP FW Htr 1-1-6 FW Side Drain Valve	M-006B C-6	FW 67	Closed	
HP FW Htr 1-1-5 FW Outlet Line Drain Valve	M-006B D-6	FW 65	Closed	
HP FW Htr 1-2-6 FW Outlet Press Indication Source	M-006B C-7	FW 452	Open	
HP FW Htr 1-2-6 FW Outlet Line Vent Valve	M-006B C-7	FW 72	Closed	
HP FW Heater 1-2-4 FW Outlet Line Drain	M-006B D-7	FW 58	Closed	
HP FW Heater 1-2-6 FW Side Vent Valve	M-006B C-8	FW 70	Closed	
HP FW Heater 1-2-5 FW Outlet Line Drain Valve	M-006B D-8	FW 66	Closed	
HP FW Heater 1-2-6 FW Side Drain Valve	M-006B C-7	FW 68	Closed	
HP FW Htr 1-2-6 FW Outlet Press Indication	M-006B C-7	PI 452	In Service	
ROOM 334-W AREA WEST OF CONDENSER 585'				
Deaerator Stg Tank 1-1 to BFP 1-1 Suction	M-005B D-2	FW 3	Sealed Open	
Fire Protection System to FW System Isolation	M-006B J-6	FP 28	Closed	

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Deaerator Stg Tanks to Condenser Globe Valve	M-006B F-9	FW 33**	Closed	
Deaerator Stg Tanks to Condenser Pent #51	M-006B F-8	FW 104**	Closed	
Deaerator Stg Tanks to Condensate Stg Tanks	M-006B F-8	FW 105	Closed	
SUFP 1-1 to Condenser Vent Valve	M-006B F-7	FW 103	Closed	
Deaerator Stg Tank 1-1 to 1-2 Outlet Crossover	M-006B D-3	FW 84	Open	
Deaerator Stg Tank 1-2 to 1-1 Outlet Crossover	M-006B G-10	FW 423	Throttled	
Deaerator Stg Tank 1-2 to BFP Suction	M-006B F-11	FW 4	Sealed Open	
MFP 1-2 Suction Line Vent Valve	M-006B G-9	FW 21	Closed	
Booster FW Pump 1-2 Discharge Flow Transmitter Source	M-006B G-9	FW 438A	Open	
Booster FW Pump 1-2 Discharge Flow Transmitter Source	M-006B G-9	FW 438B	Open	
MFP 1-1 Suction Line Drain Valve	M-006B G-3	FW 10	Closed	
FW Booster Pump 1-1 Discharge Flow Transmitter Source	M-006B G-3	FW 428A	Open	
FW Booster Pump 1-1 Discharge Flow Transmitter Source	M-006B G-3	FW 428B	Open	
ROOM 252 MAIN FEED PUMP PIT				
Booster FW Pump 1-1 Drain Valve	M-006B F-2	FW 6	Closed	
Booster FW Pump 1-1 Vent Valve	M-006B F-2	FW 38	Closed	
Booster FW Pump 1-1 Drain Valve	M-006B F-2	FW 111	Closed	
Booster FW Pump 1-1 Suction Instrument Source	M-006B F-1	FW 466	Open	
6 Booster FW Pump 1-1 Inlet Strainer Diff Pressure Indication Source	M-006B D-2	FW 464A	Closed	
Booster FW Pump 1-1 Inlet Strainer Diff Pressure Indication Source	M-006B D-2	FW 464B	Open	

**Open during feedwater startup.

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VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
MFP 1-1 Discharge Pressure Transmitter	M-006B G-7	PT 473	In Service	
MFP 1-1 Discharge Pressure Indication	M-006B H-7	PI 477	In Service	
MFP 1-1 Discharge Pressure Switch	M-006B H-7	PSH 506	In Service	
FW Booster Pmp 1-1 Discharge Flow Transmitter	M-006B G-3	FT 428	In Service	
6 Booster FW Pump 1-1 Suction Strainer Pressure Switch	M-006B D-2	PSL 464	In Service	
Seal Water Drain Tank to Cond Vent	M-006A F-2	FW 42	Closed	
MFP 1-1 Seal Wtr Drn Tk Level Control Valve	M-006B H-2	FW 485	In Service	
MFP 1-1 Seal Water Drain Tank Level Gage Src	M-006B H-2	FW 778A	Open	
MFP 1-1 Seal Water Drain Tank Level Gage Src	M-006B H-2	FW 778B	Open	
MFP 1-1 Seal Water Drain Tank Level Gage	M-006B H-2	LG 778	In Service	
MFP 1-1 Seal Water Drain Tank Level Switch Src	M-006B H-3	FW 474A	Open	
MFP 1-1 Seal Water Drain Tank Level Switch Src	M-006B H-3	FW 474B	Open	
MFP 1-1 Drain to Seal Water Drain Tank 1-1	M-006B H-3	FW 19	Open	
MFP 1-1 Seal Water Drain Tank Level Switches	M-006B H-3	LSL 474 & LSH 474	In Service	
MFP 1-1 Seal Water Drain Tank to Condenser	M-006B H-2	FW 485	In Service	
MFP Seal Wtr Drn Tk 1-1 Level Controller	M-006B H-2	LC 485	In Service	
MFP 1-1 Discharge Pressure Switch Source	M-006B H-7	FW 506	Open	
MFP 1-1 Discharge Pressure Transmitter Source	M-006B G-7	FW 473	Open	
MFP 1-1 Vent Valve	M-006B G-5	FW 40	Closed	
MFP 1-1 Discharge Pressure Indication Source	M-006B H-7	FW 477	Open	
Main FW Pump 1-1 Drain Valve	M-006B H-5	FW 12	Closed	

Sheet No. 12
of 14

VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
MFP 1-1 Seal Water Inlet Isolation Valve	M-006B G-6	CD 48	Open	
MFP 1-1 Seal Water Inlet Isolation Valve	M-006B G-6	CD 50	Open	
Main FW Pump 1-1 Drain Valve	M-006B H-5	FW 11	Closed	
Booster FW Pump 1-2 Drain Valve	M-006B H-10	FW 8	Closed	
Booster FW Pump 1-2 Discharge Indication Source	M-006B H-10	FW 486	Open	
Booster FW Pump 1-2 Vent Valve	M-006B G-10	FW 39	Closed	
Booster FW Pump 1-2 Drain Valve	M-006B H-10	FW 113	Closed	
Booster FW Pump 1-2 Suction Pressure Indication Source	M-006B G-11	FW 494	Open	
6 Booster FW Pump 1-2 Suction Strainer Differential Pressure Source	M-006B F-12	FW 490A	Closed	
Booster FW Pump 1-2 Suction Strainer Differential Pressure Source	M-006B F-12	FW 490B	Open	
6 Booster FW Pump 1-2 Suction Strainer Pressure Switch	M-006B F-12	PSL 490	In Service	
Seal Wtr Drn Tk 1-2 to Condenser Vent Valve	M-006A D-7	FW 75	Closed	
MFP 1-2 Seal Wtr Drain Tk Level Vent Valve	M-006B H-12	FW 395	In Service	
MFP 1-2 Seal Wtr Drain Tank Level Gage	M-006B H-12	LG 597	In Service	
MFP Seal Water Drain Tank 1-2 Level Switch Source	M-006B H-11	FW 493A	Open	
MFP Seal Water Drain Tank 1-2 Level Switch Source	M-006B H-11	FW 493B	Open	
MFP Seal Water Drain Tank 1-2 Level Gauge Valve	M-006B H-12	FW 597A	Open	
MFP Seal Water Drain Tank 1-2 Level Gauge Valve	M-006B H-12	FW 597B	Open	
MFP 1-2 Drain to Seal Water Drain Tank 1-2	M-006B H-9	FW 20	Open	
MFP Seal Water Drain Tank 1-2 Level Switches	M-006B H-11	LSL 493 & LSH 493	In Service	
MFP 1-2 Seal Water Drain Tank Level Controller	M-006B H-12	LC 395	In Service	

Sheet No. 13
of 14

VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

4 Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
MFP 1-2 Discharge Pressure Transmitter Source	M-006B G-7	FW 484	Open	
MFP 1-2 Discharge Pressure Indication Source	M-006B G-7	FW 482	Open	
MFP 1-2 Vent Valve	M-006B G-8	FW 41	Closed	
MFP 1-2 Discharge Pressure Switch Source	M-006B G-7	FW 582	Open	
MFP 1-2 Drain Valve	M-006B H-8	FW 14	Closed	
MFP 1-2 Seal Water Inlet Isolation Valve	M-006A G-7	CD 49	Open	
MFP 1-2 Seal Water Inlet Isolation Valve	M-006A G-8	CD 51	Open	
MFP 1-2 Drain Valve	M-006B H-8	FW 13	Closed	
MFP 1-2 Discharge Pressure Indication	M-006B G-7	PI 482	In Service	
Booster FW Pump 1-2 Discharge Flow Transmitter	M-006B G-9	FT 438	In Service	
MFP 1-2 Discharge Pressure Switch	M-006B G-7	PSH 582	In Service	
Booster FW Pump 1-2 Suction Pressure Indication	M-006B G-11	PI 494A	In Service	
Booster FW Pump 1-2 Suction Pressure Transmitter	M-006B G-12	PT 494	In Service	
Booster FW Pump 1-2 Discharge Pressure Transmitter	M-006B H-9	PT 486	In Service	
Booster FW Pump 1-2 Discharge Pressure Indication	M-006B H-9	PI 486A	In Service	
MFP 1-2 Discharge Pressure Transmitter	M-006B G-7	PT 484	In Service	
Feedwater to Condenser Recirculating Isolation Valve	M-006A G-5	FW 201	Closed**	
Feedwater to Condenser Recirculating Valve	M-006A F-5	FW 523	Closed**	
FW Booster Pump 1-1 Discharge Pressure Transmitter	M-006B F-2	PT 478	In Service	
Booster FW Pump 1-1 Disch Press Ind	M-006B F-2	PI 478A	In Service	

**Open during feedwater cleanup.

Sheet No. 14
of 14

VALVE VERIFICATION LIST A

Feedwater System
Startup and Normal Operations

4 Verification List Only - Consult Shift Supervisor Prior to Repositioning In Plant Valves

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Booster FW Pump 1-1 Suction Press Trans	M-006B F-1	PT 466	In Service	
Booster FW Pump 1-1 Suction Press Ind	M-006B F-1	PI 466A	In Service	
FW Booster Pump 1-1 Discharge Pressure Transmitter Source	M-006B F-2	FW 478	Open	

4 Reviewed by_____ Date_____
Shift Supervisor or Reactor Operator

VALVE LINEUP LIST B

Feedwater Cleanup Lineup

_____1. Open FW 523, FW Cleanup Recirculation to Condenser

_____2. Close FW 601, Loop 2 Main FW Stop (Mech Pent Room #4)

_____3. Close FW 612, Loop 1 Main FW Stop (Mech Pent Room #3)

_____4. Open FW 201, FW Cleanup Recirc Iso Valve (MFP Pit)

8|

_____5. Open FW 423, Deaer Xconn

8|

Reviewed by_____Date_____
Shift Supervisor or Reactor Operator

Sheet No. 1
of 1

VALVE VERIFICATION LIST D

Feedwater System
Wet Layup Valve List

4 Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID NO. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
SG 1-1 FW Warmup Iso (Htr Bay Area 603')	M-007 H-5	FW 153	Open	
SG 1-1 FW Warmup Iso (Htr Bay Area 603')	M-007 H-8	FW 143	Open	
SG FW Warmup Recirc to Deaer (657')	M-006A C-10	FW 203	Open	
SG FW Warmup Recirc to Deaer (657')	M-006A C-10	FW 202	Open	
SG FW Warmup Recirc to Deaer (670')	M-006A C-10	FW 205	Closed	
SG FW Warmup Recirc to Deaer (670')	M-006A C-10	FW 204	Closed	
SG FW Warmup Recirc to Deaer	M-006A C-10	FW 510	Open	

4 Reviewed by_____Date_____
Shift Supervisor or Reactor Operator

VALVE LINEUP LIST E

OTSG Drain Valve Lineup

1. Open the following valves in Containment

_____MS863 SG 1-1 lower tubesheet drain
_____MS864 SG 1-1 lower tubesheet drain
_____MS865 SG 1-1 lower tubesheet drain
_____MS866 SG 1-1 lower tubesheet drain
_____MS887 SG 1-2 lower tubesheet drain
_____MS888 SG 1-2 lower tubesheet drain
_____MS889 SG 1-2 lower tubesheet drain
_____MS890 SG 1-2 lower tubesheet drain

2. Open the following valves in the Turbine Building

_____MS873 SG 1-1 drain to LP Condenser
_____MS895 SG 1-2 drain to HP Condenser

F.W. HTR. HIGH LEVEL TRIP RESETS

1-1
(1) HD 300B (1-2 Norm Drn) 603' S of W end of 1-1 Htr
(2) GS 346 (Stm Seal Dump to 1-1 Htr CTRM-Pan C5721 Local-603' W of TBS's)

1-2
(1) AS 958 (Flash Tk Vent to #2 Htr's) 603' W of TBV's
ES 249 (LPFW Htr 1-2 Ext Drain to Cond) CTRM Pnl. C-5722

1-3
(1) AS 2076 (Flash Tk Drn to 1-3 Htr) 657' NE of 2-3 Htr
(2) ES 9845 (LPT 1-1 Ext NRV to 1-3 Htr) 657' E of 2-3 Htr
(3) HD 291B (1-4 Htr Norm Drn) 623' NW of 1-4 Htr (ES 298 must be reset first)
(4) ES 298A & B (LPT 1-1 Ext NRV's to 1-3 Htr) 603' E of N end of 2-5 Htr
ES 415 (FW Htr 1-3 Ext Drain) CTRM Pnl C-5722

1-4
(1) HD 271B (1-5 Htr Norm Drn) 623' NW of 1-4 Htr
(2) ES 382 (LPT 1-1 Ext NRV to 1-4 Htr) 603' Pit at SE corner of condenser
(3) ES 1654 (LPT Ext to 50# Hdr) 585' N of the Stat. Clng. Wtr. Unit
ES 417 (FW Htr 1-4 Ext Drn) CTRM Pnl. C-5722

1-5
(1) HD 261B (1-6 Htr Norm Drn) 603' SW of 2-5 Htr
(2) ES 264 (HPT Ext to 1-5 Htr) 603' SW of 2-5 Htr
(3) RD 1541B1 (1st Stg Drn Tk to 1-5 Htr) 585' NW of 1-6 Htr

1-6
(1) ES 256 (HPT Ext NRV to 1-6 Htr) 603' between HPT Exh to MSR 1-1
(2) RD 159B1 (2nd Stg Drn Tk 1-1 to 1-6 Htr) 585' W of the N end of 1-6 Htr
ES 252 (FW Htr 1-6 Ext Drn) CTRM Pnl C-5722

2-1
(1) HD 331B (2-2 Htr Norm Drn) 603' Handrail W of the SPE's
(2) GS 957 (Stm Seal Dump to 2-1 Htr) CTRM Pan. C5721 Local-603' W of TBV's

2-2
AS 958 (Flash Tk Vent to the #2 Htr's.) 603' W of the TBV's
ES 341 (LP FW Htr 2-2 Ext Drain to Cond) CTRM Pnl C-5722

2-3
(1) AS 2597 (Flash Tk Drn to 2-3 Htr) 657' NE of 2-3 Htr
(2) ES 9846 (LPT 1-1 Ext NRV to 2-3 Htr) 657' E of 2-3 Htr
(3) HD 381B (2-4 Htr Norm Drn) 623' NW of 1-4 Htr (ES 325 must be reset first)
(4) ES 325A & B (LPT 1-2 Ext NRV's to 2-3 Htr) 603' E of the N end of 2-5 Htr
ES 411 (FW Htr 2-3 Ext Drain) CTRM Pnl. C-5722

2-4
(1) HD 371B (2-5 Htr Norm Drn) 623' NW of 1-4 Htr
(2) ES 377 (LPT 1-2 Ext NRV to 2-4 Htr) 603' Handrail W of the SPE's
(3) ES 1654 (LPT Ext to 50# Hdr) 585' N of the Stat. Clng. Wtr. Unit
ES 409 (FW Htr 2-4 Ext Drain) CTRM Pnl C-5722

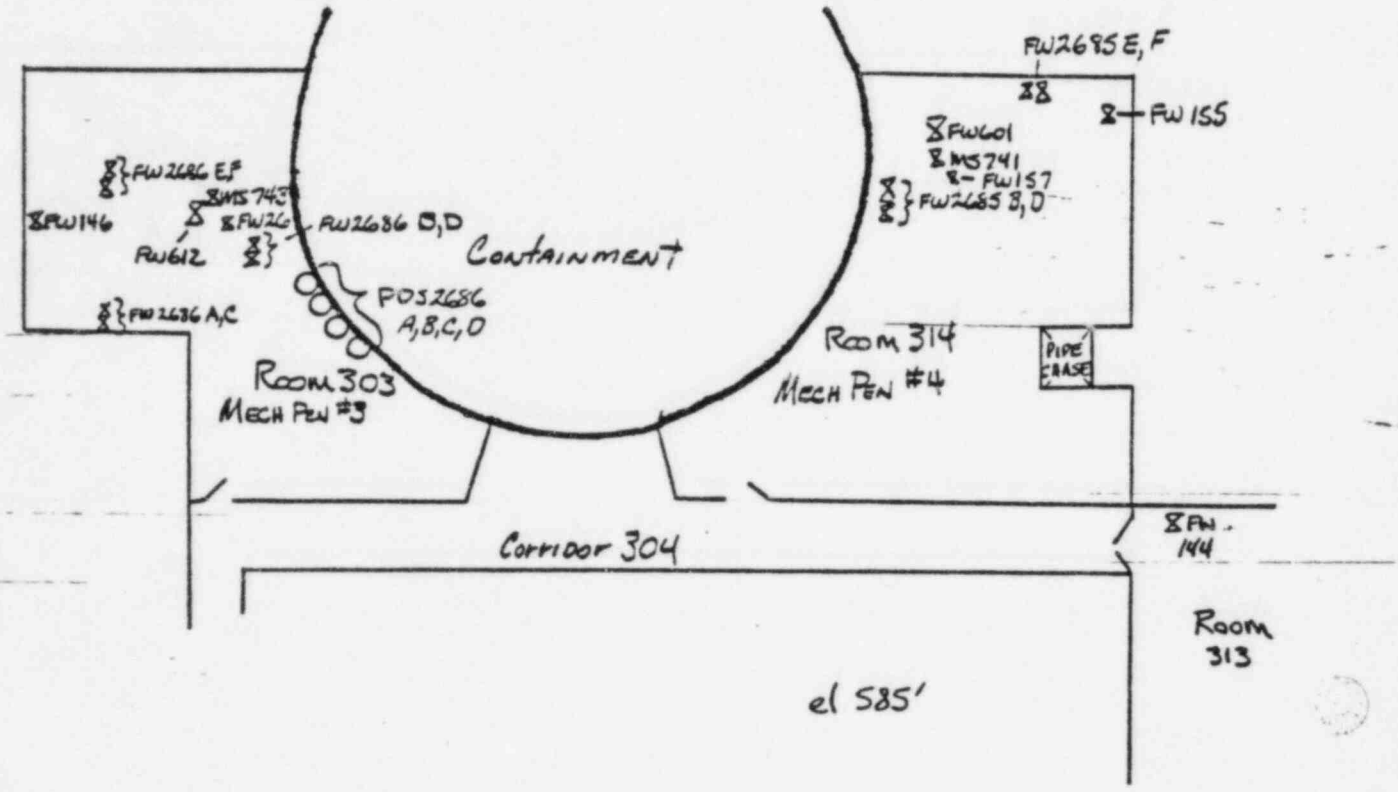
F.W. HTR. HIGH LEVEL TRIP RESETS

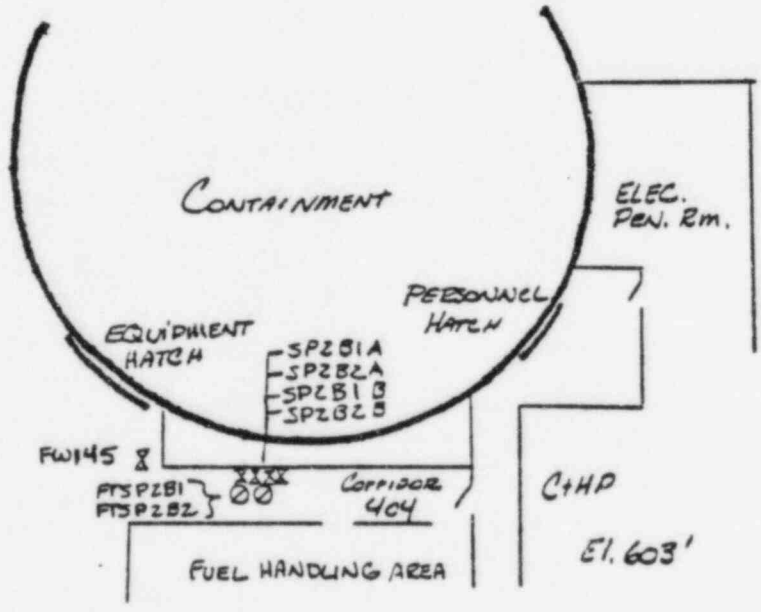
2-5

(1) HD 361B (2-6 Norm Drn) 603' SE of 2-5 Htr
(2) ES 370 (HPT Ext NRV to 2-5 Htr) 603' SE of 2-5 Htr
(3) RD 177B1 (1st Stg Drn Tk 1-2 to 2-5 Htr) 585' E of the N end of 2-6 Htr

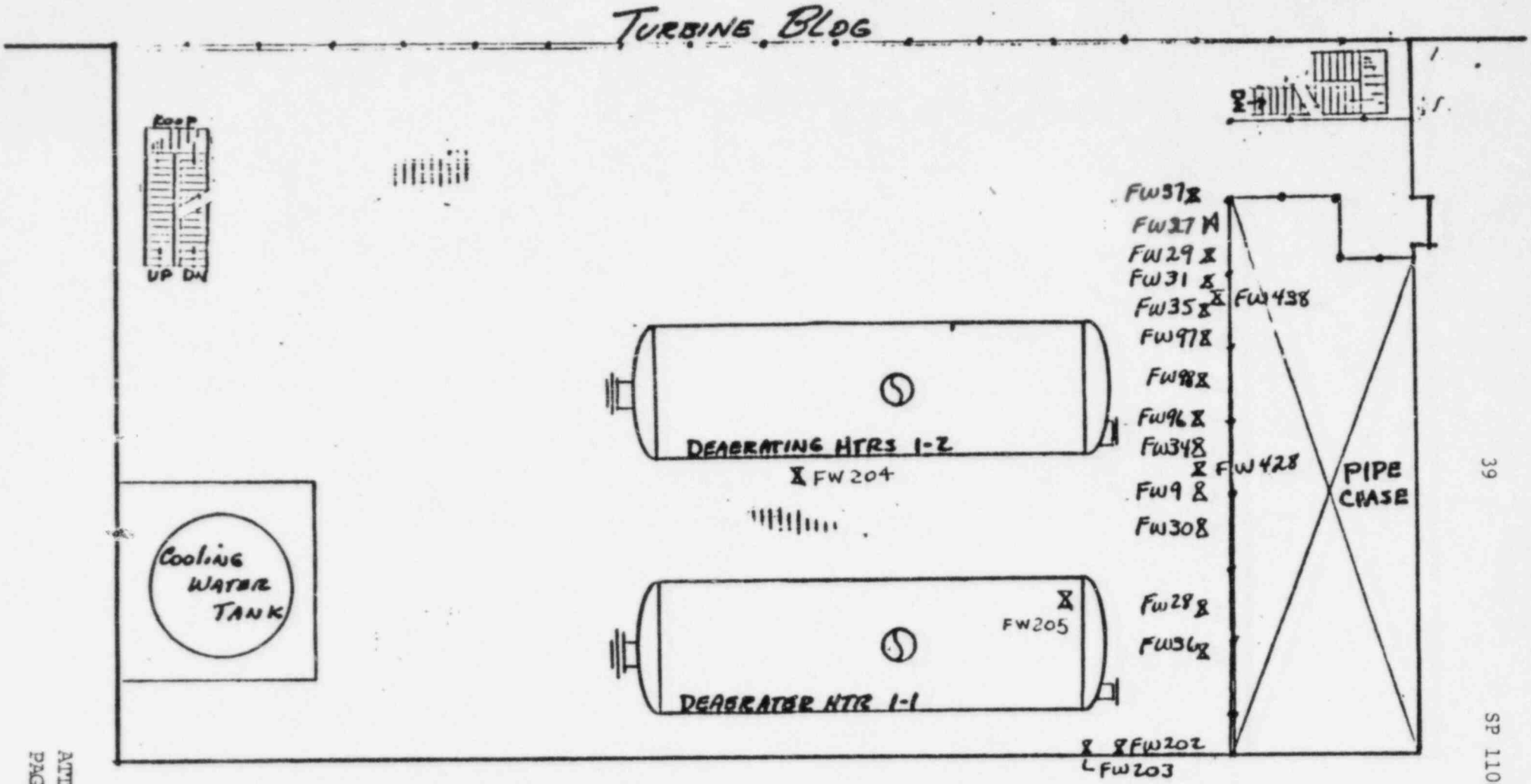
2-6

(1) ES 349 (HPT Ext NRV to 2-6 Htr) 603' Between HPT Exh to MSR 1-1
(2) RD 172B1 (2nd Stg Drn Tk 1-2 to 2-6 Htr) 585' E of the N end of 2-6 Htr
ES 413 (FW Htr 2-6 Ext Drain) CTRM Pnl C-5722





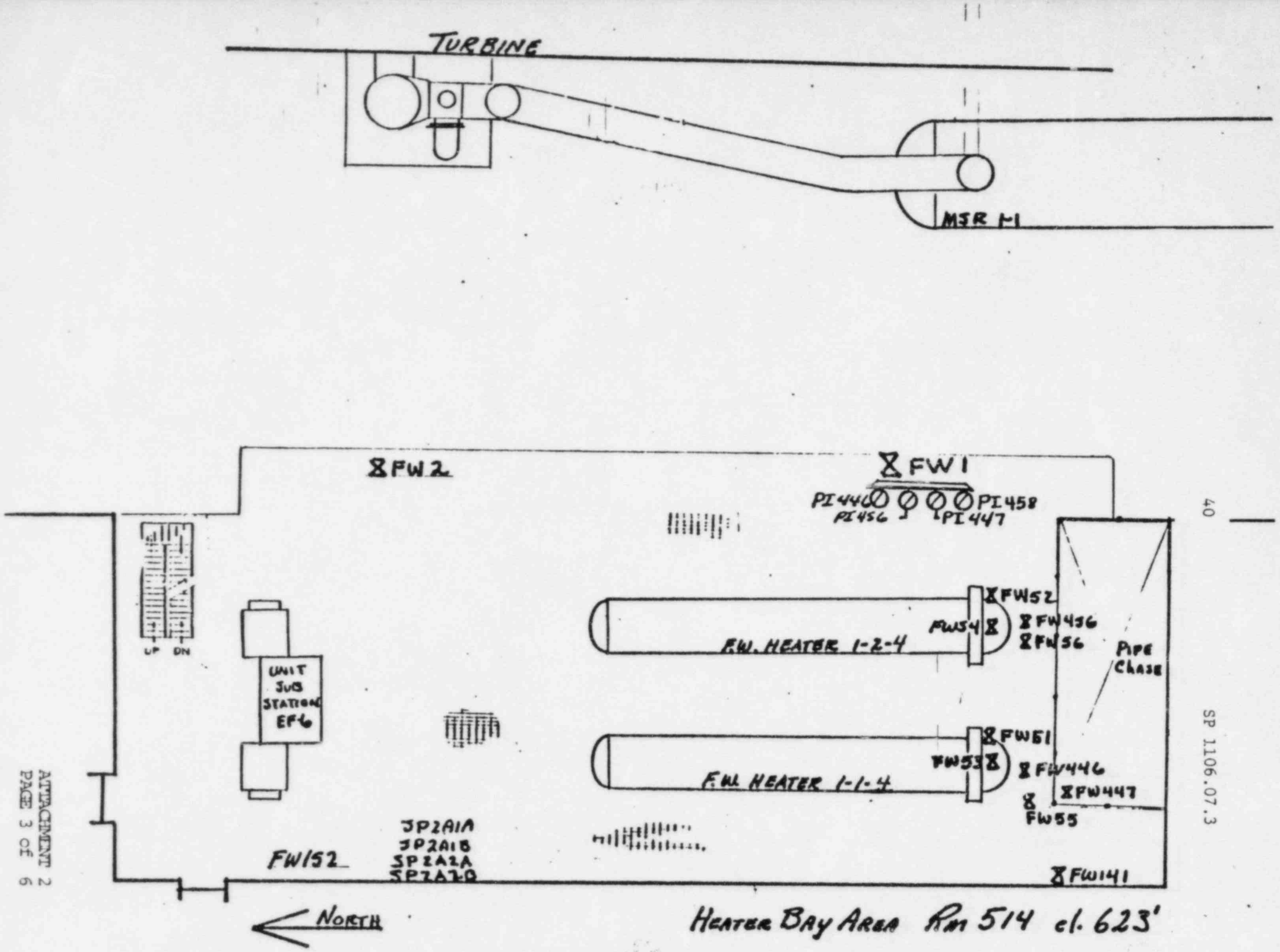
ATTACHMENT 2
PAGE 1 OF 6

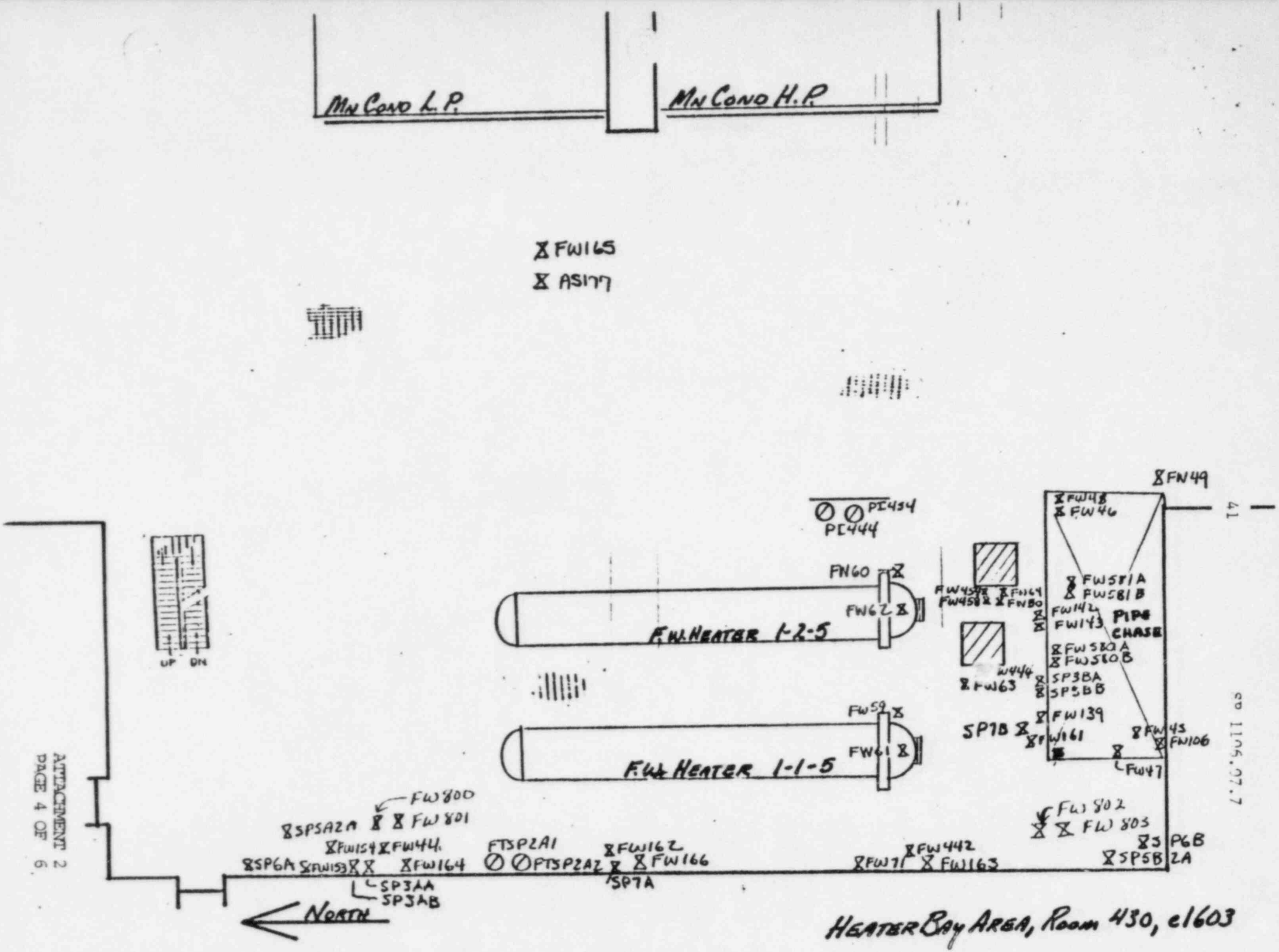


HEATER BAY AREA, RM 707, el 657'

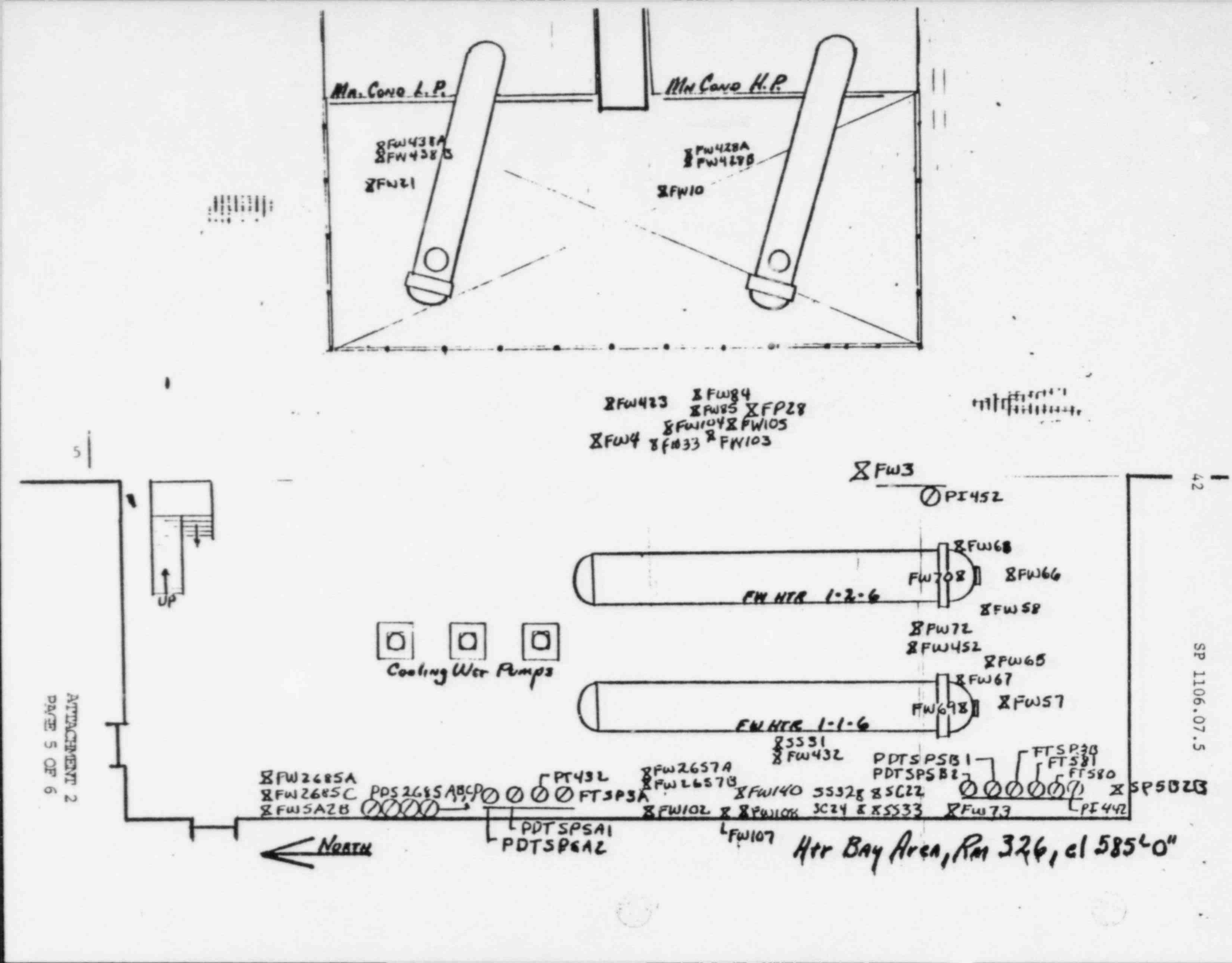
SP 1106.07.3

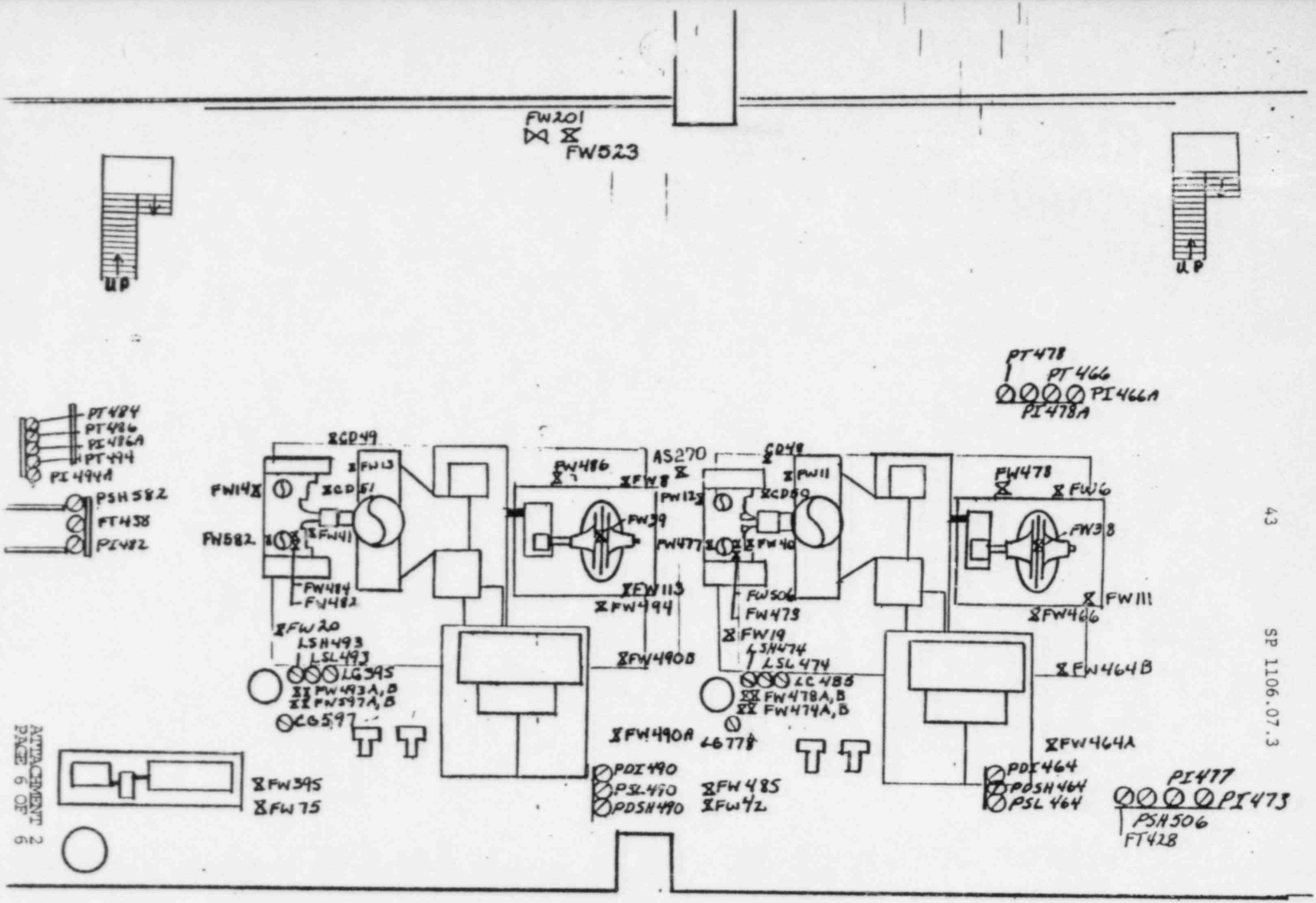
ATTACHMENT 2
PAGE 2 OF 6

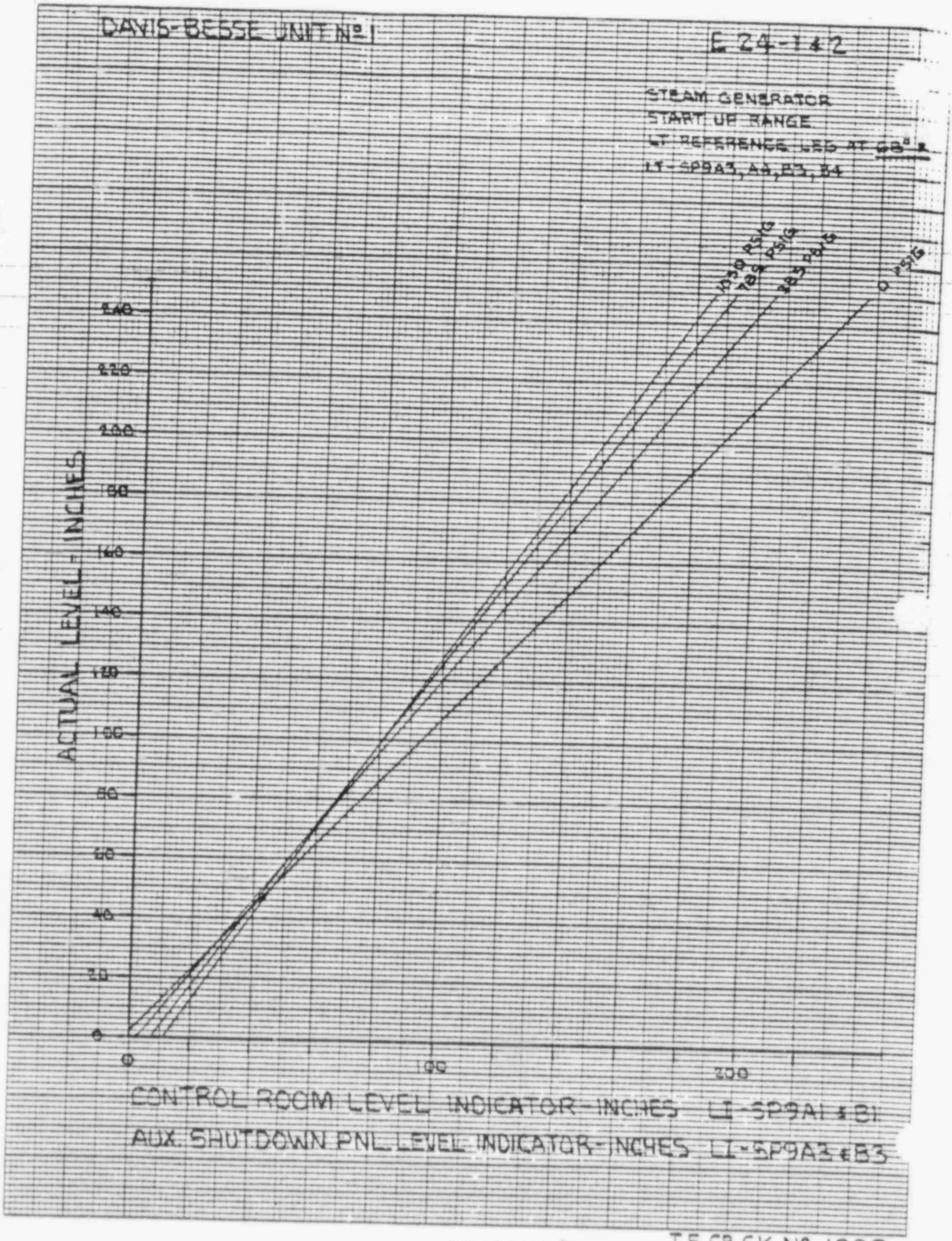

TURBINE
MSR M1
FW2
FW1
PI446
PI456
PI447
PI458
FW52
FW54
FW436
FW56
F.W. HEATER 1-2-4
PIPE CHASE
FW61
FW53
FW446
FW447
FW55
F.W. HEATER 1-1-4
UNIT SUB STATION EF-6
UP
DN
JP2A1A
JP2A1B
JP2A2A
JP2A2B
FW152
FW141
NORTH
HEATER BAY AREA Rm 514 el. 623'



ATTACHMENT 2
PAGE 4 OF 6


Mn. Cond L.P.
Mn Cond H.P.
FW438A
FW438B
FW21
FW428A
FW428B
FW10
FW423
FW84
FW85
FP28
FW104
FW105
FW4
FW33
FW103
5
FW3
PI452
FW68
FW708
FW66
FW HTR 1-2-6
FW58
FW72
FW452
FW65
FW67
FW698
FW57
FW HTR 1-1-6
SS31
FW432
Cooling Wtr Pumps
UP
FW2685A
FW2685C
FW5A2B
PDS2685ABCD
PT432
FT3P3A
FW2657A
FW2657B
FW140
SS32
SC22
FW102
FW107
PDTSPSA1
PDTSPSA2
PDTSPSB1
PDTSPSB2
FT3P3B
FT581
FT580
SP5B2B
SC24
SS33
FW73
PI442
NORTH
Htr Bay Area, Rm 326, el 585'-0"
42
SP 1106.07.5
ATTACHMENT 2
PAGE 5 OF 6


FW201
FW523
UP
UP
PT478
PT466
PI466A
PI478A
PT484
PT486
PI486A
PT494
PI494A
PSH582
FT438
PI482
CD49
FW13
FW14
CD51
FW582
FW41
FW484
FW482
FW20
LSH493
LSL493
LG595
FW493A,B
FW597A,B
LG597
FW486
FW8
FW39
FW12
FW477
AS270
CD48
FW11
CD50
FW40
FW478
FW6
FW38
FW111
FW466
FW506
FW479
FW19
LSH474
LSL474
LC485
FW478A,B
FW474A,B
LG778
FW494
FW490B
FW490A
PDI490
PSL490
PDSH490
FW485
FW42
FW464B
FW464A
PDI464
PDSH464
PSL464
PI477
PI473
PSH506
FT428
FW395
FW75
Main Feed Pump Pit Rm 252
ATTACHMENT 2
PAGE 6 OF 6
SP 1106.07.3
43



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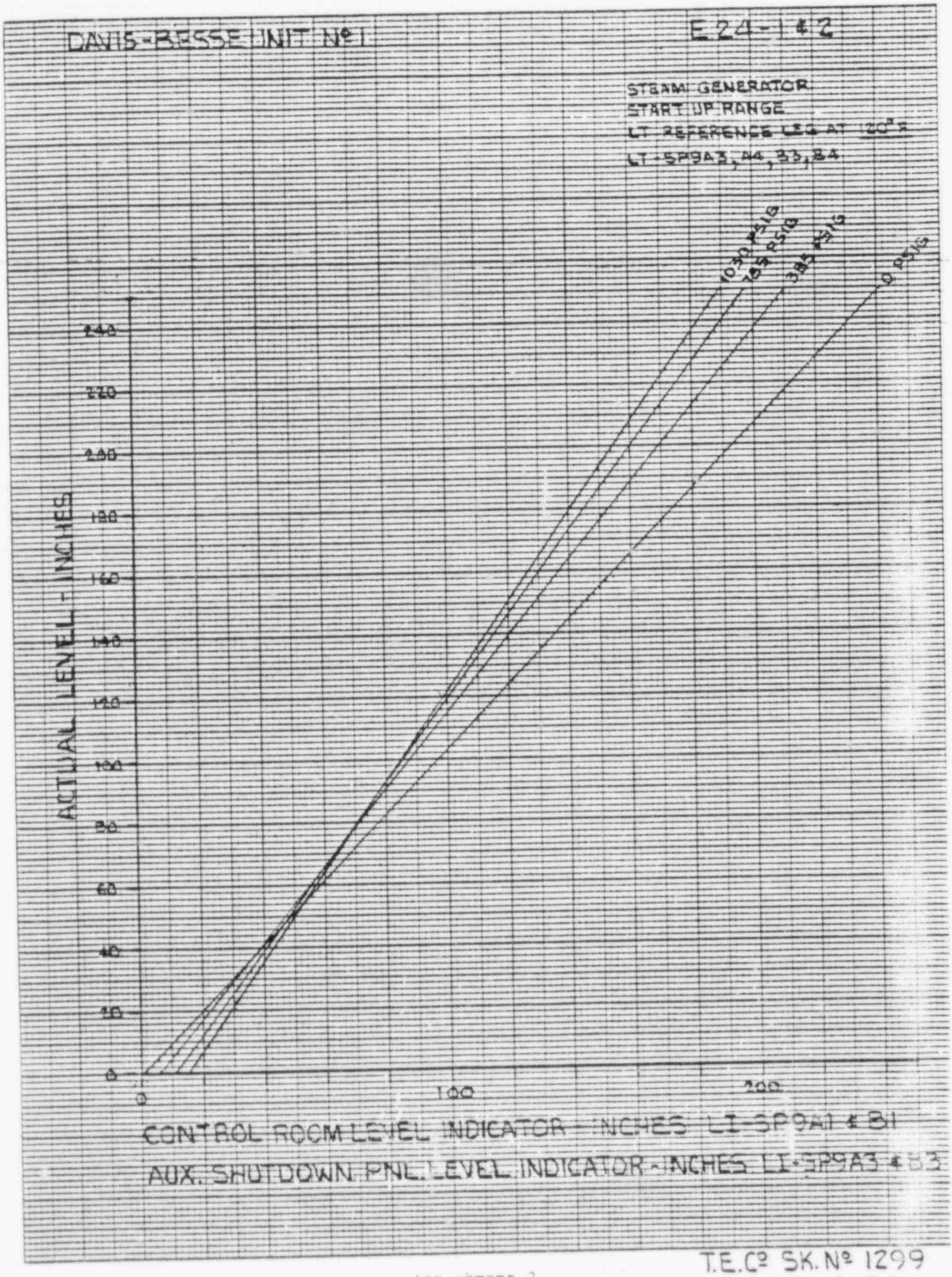
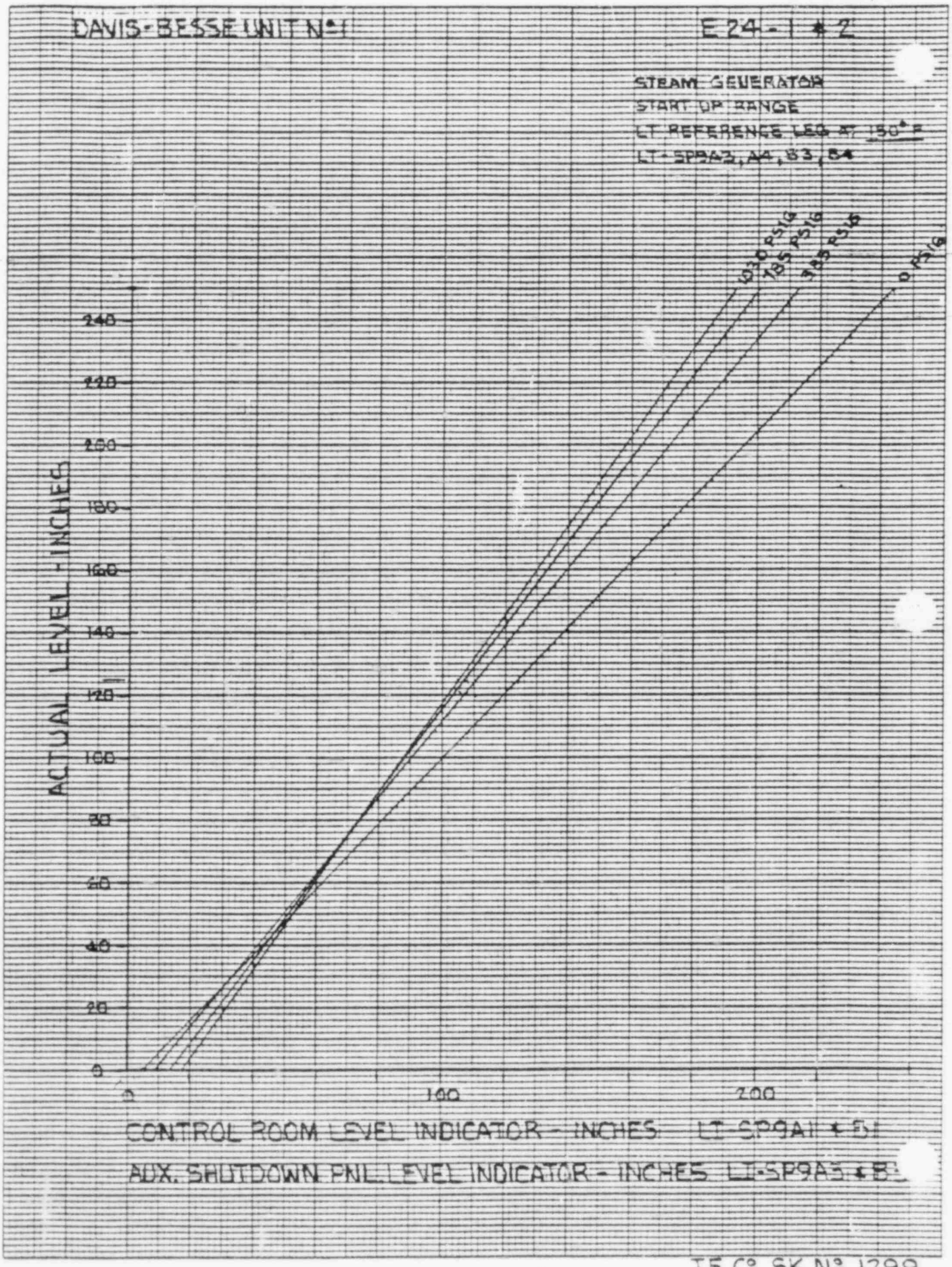
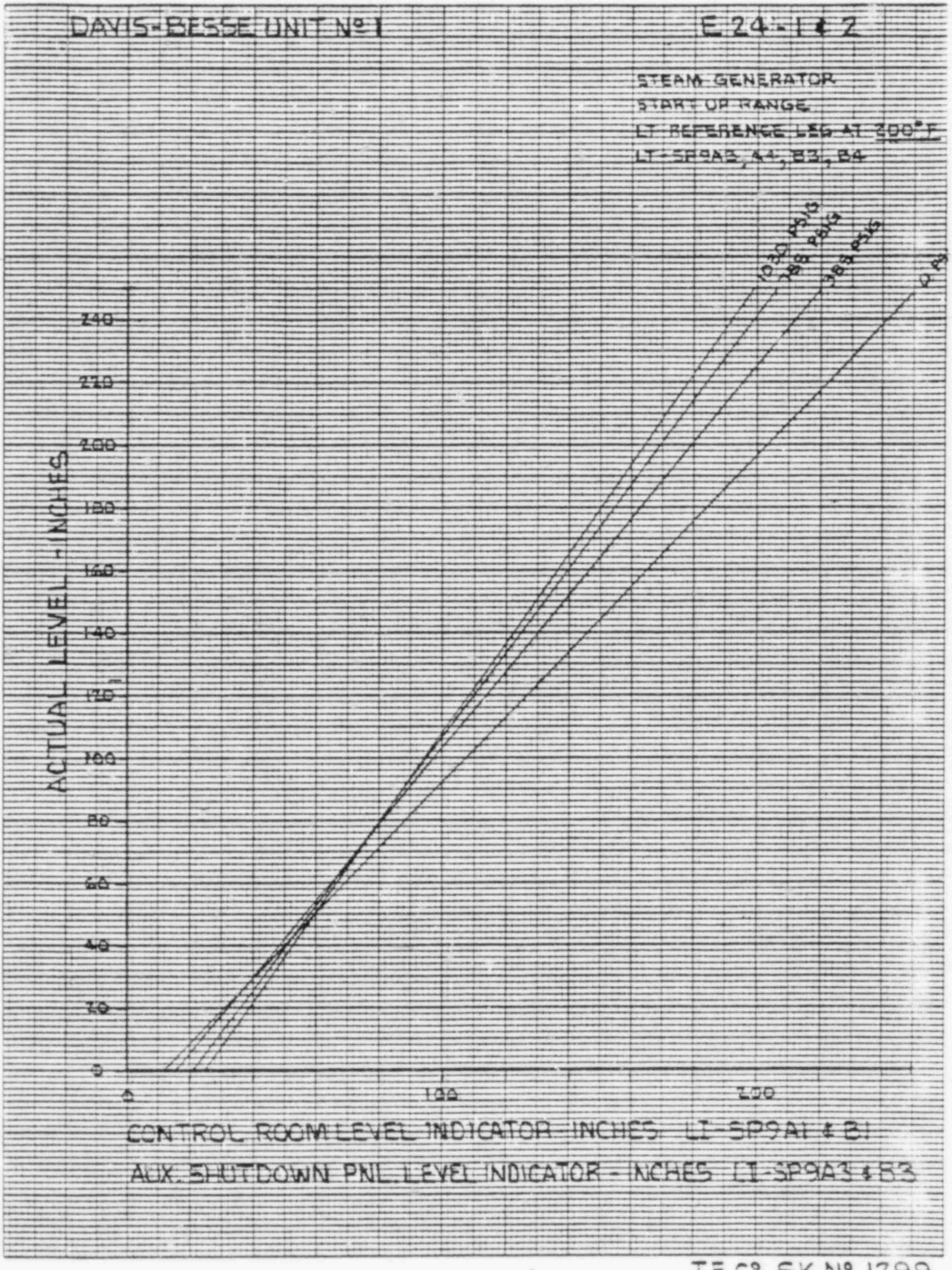
SH. 1 OF 5


DAVIS-BESSE UNIT Nº 1
E 24 - 1 & 2
STEAM GENERATOR
START UP RANGE
LT REFERENCE LEG AT 20°F
LT-SP9A3, A4, B3, B4
1030 PSIG
785 PSIG
385 PSIG
0 PSIG
ACTUAL LEVEL - INCHES
240
220
200
180
160
140
120
100
80
60
40
20
0
0
100
200
CONTROL ROOM LEVEL INDICATOR - INCHES LI-SP9A1 & B1
AUX. SHUTDOWN PNL. LEVEL INDICATOR - INCHES LI-SP9A3 & B3
T.E.Cº SK. Nº 1299
SH. 2 OF 5



T.E.C° SK. N° 1299
SH. 3 OF 5



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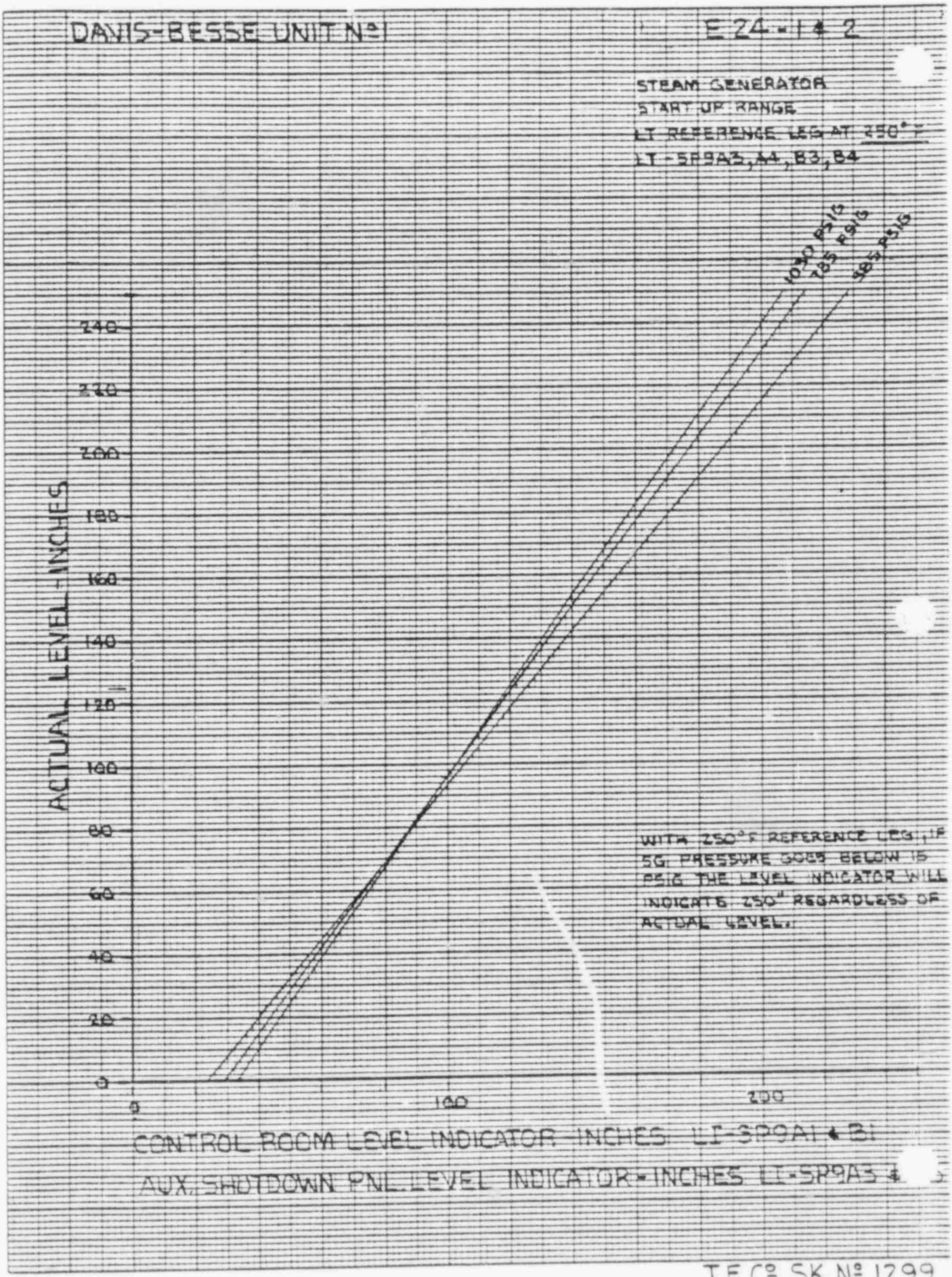
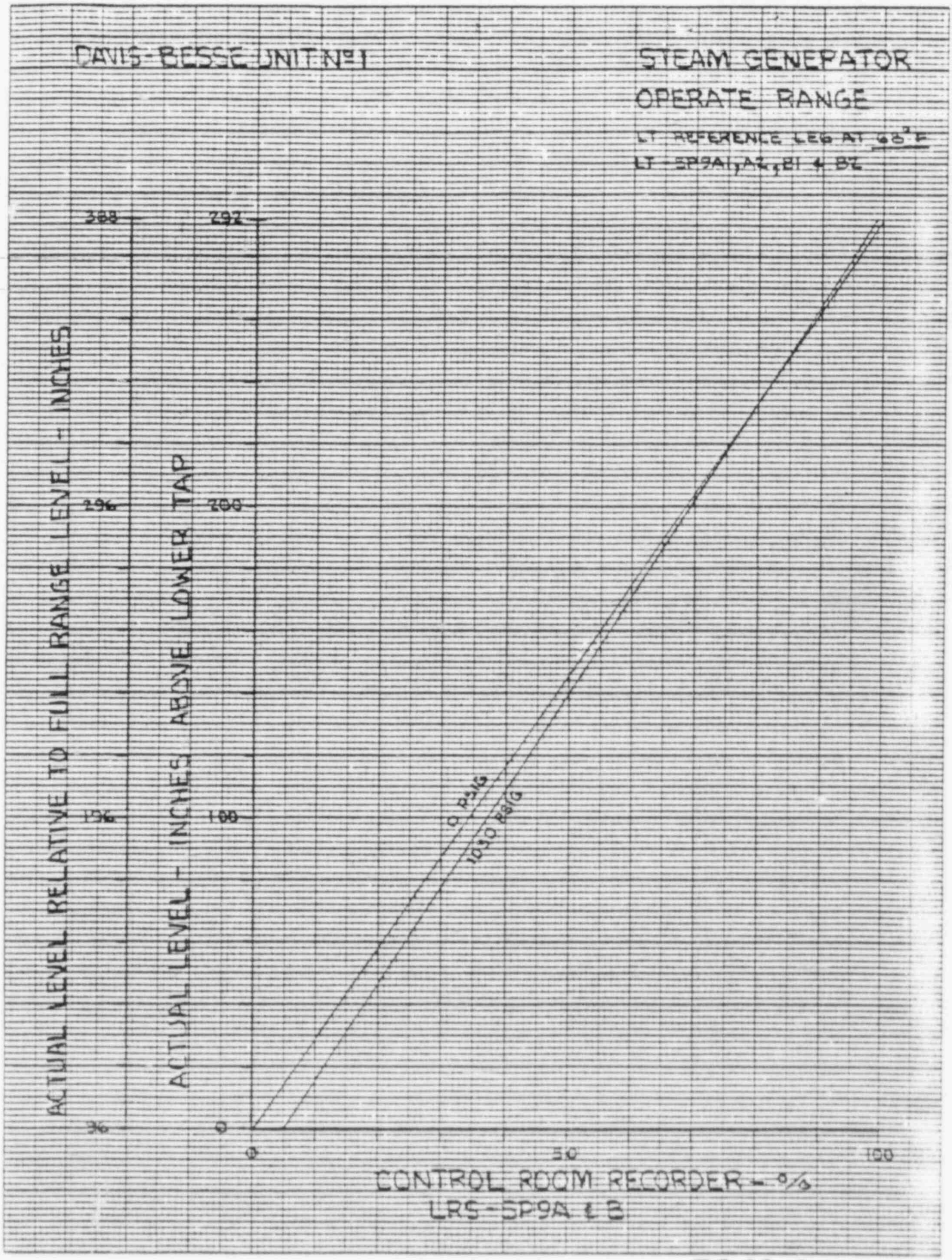
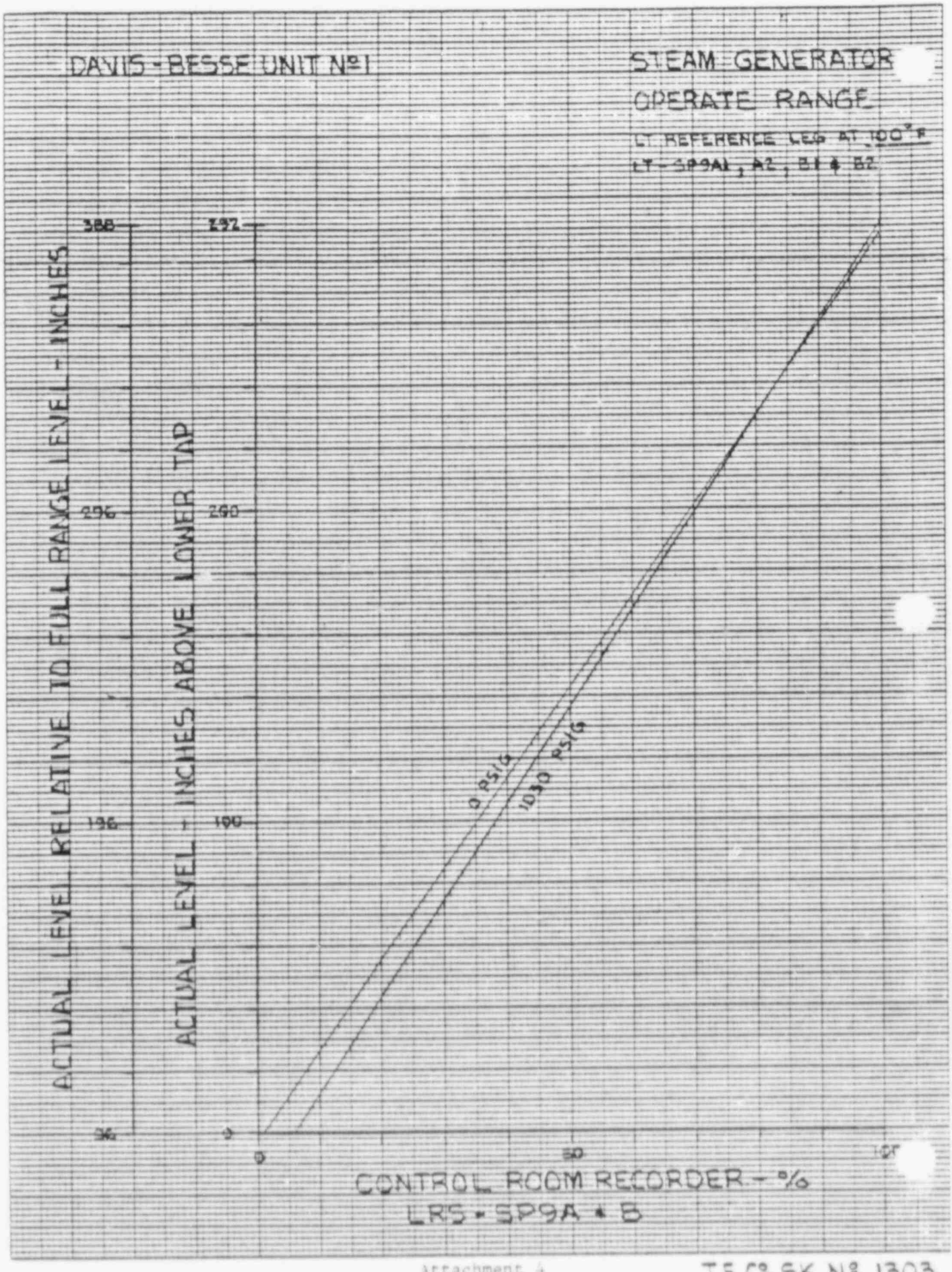
SH. 4 OF 5


DAVIS-BESSE UNIT Nº1
E 24-1 & 2
STEAM GENERATOR
START UP RANGE
LT REFERENCE LEG AT 250° F
LT-SP9A3,A4,B3,B4
1030 PSIG
785 PSIG
585 PSIG
ACTUAL LEVEL-INCHES
240
220
200
180
160
140
120
100
80
60
40
20
0
0
100
200
WITH 250° F REFERENCE LEG, IF SG PRESSURE GOES BELOW 15 PSIG THE LEVEL INDICATOR WILL INDICATE 250" REGARDLESS OF ACTUAL LEVEL.
CONTROL ROOM LEVEL INDICATOR-INCHES LI-SP9A1 & B1
AUX. SHUTDOWN PNL. LEVEL INDICATOR-INCHES LI-SP9A3 &
T.E.Cº SK. Nº 1299
SH. 5 OF 5



T.E.C² SK. Nº 1303
SH. 1 OF 6



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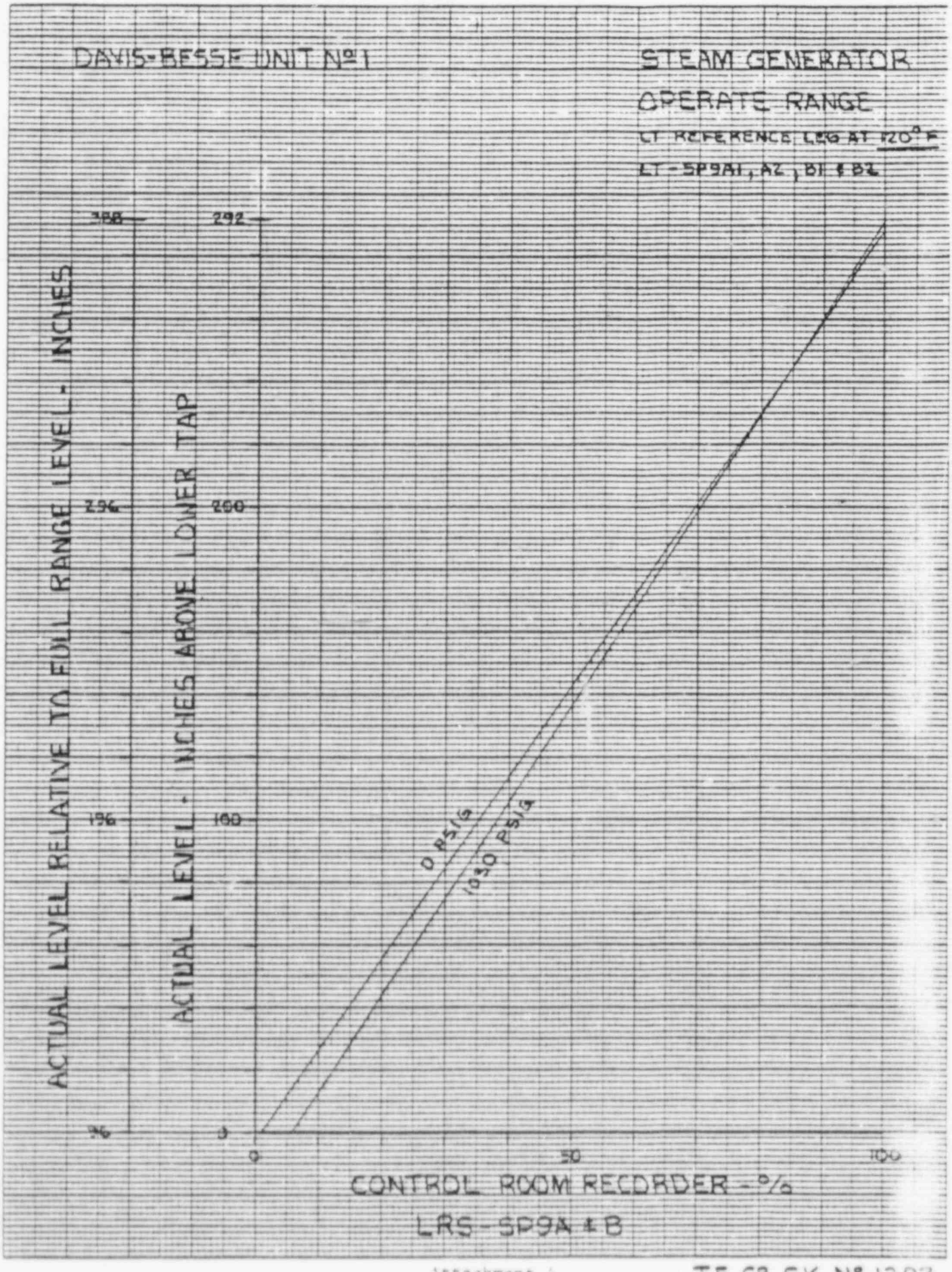
SH. 2 OF 6



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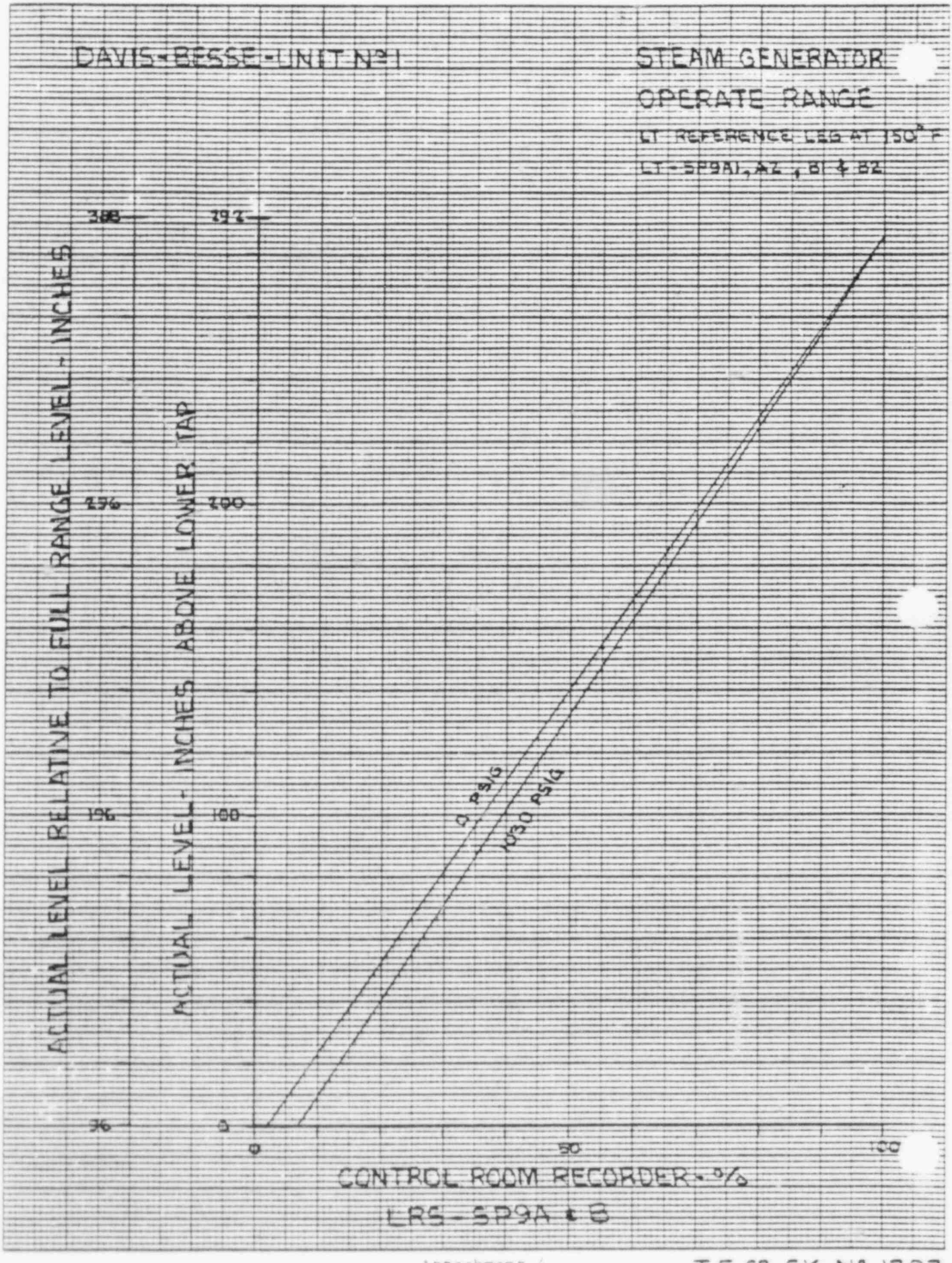
SH. 3 OF 6



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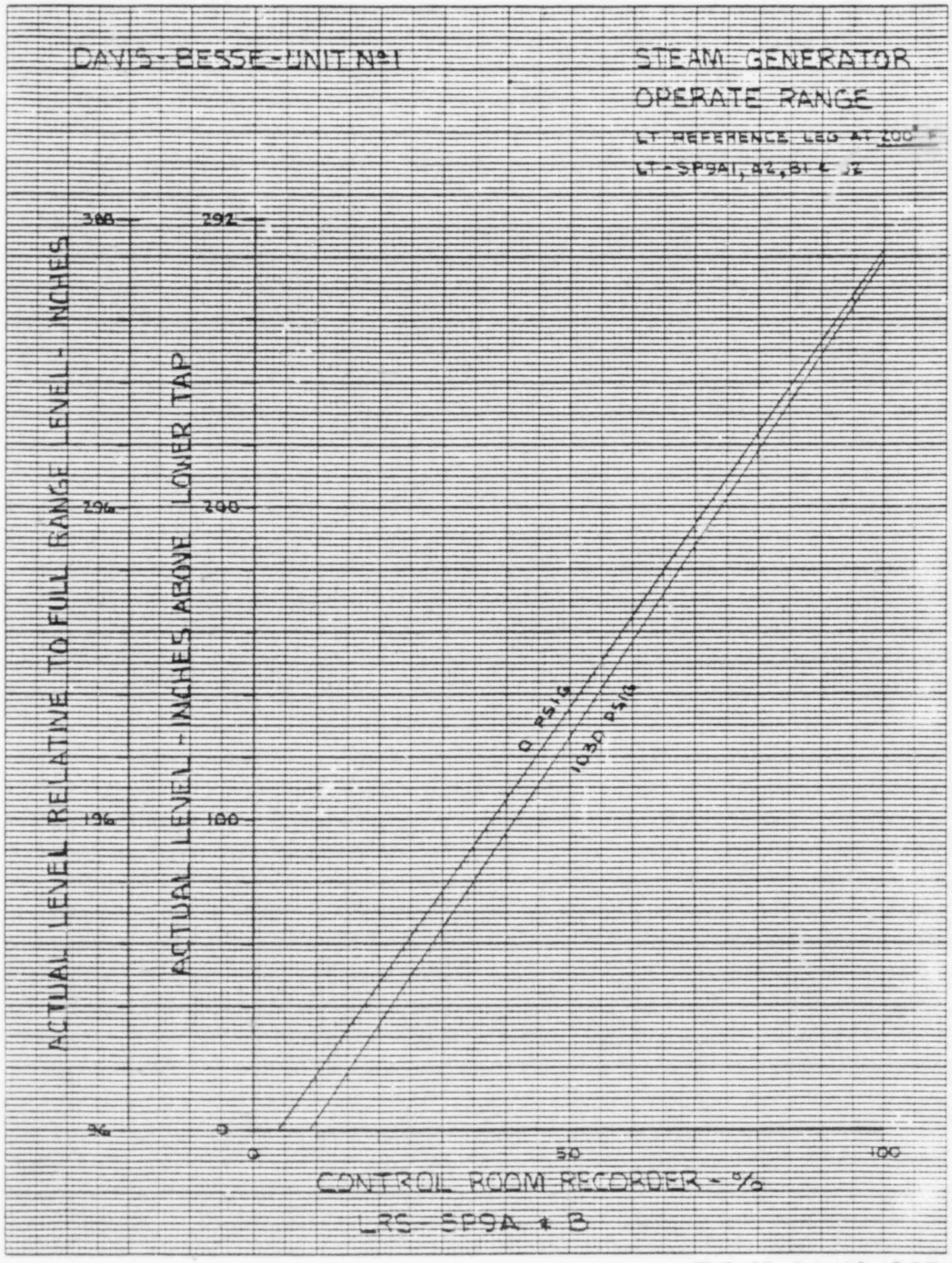

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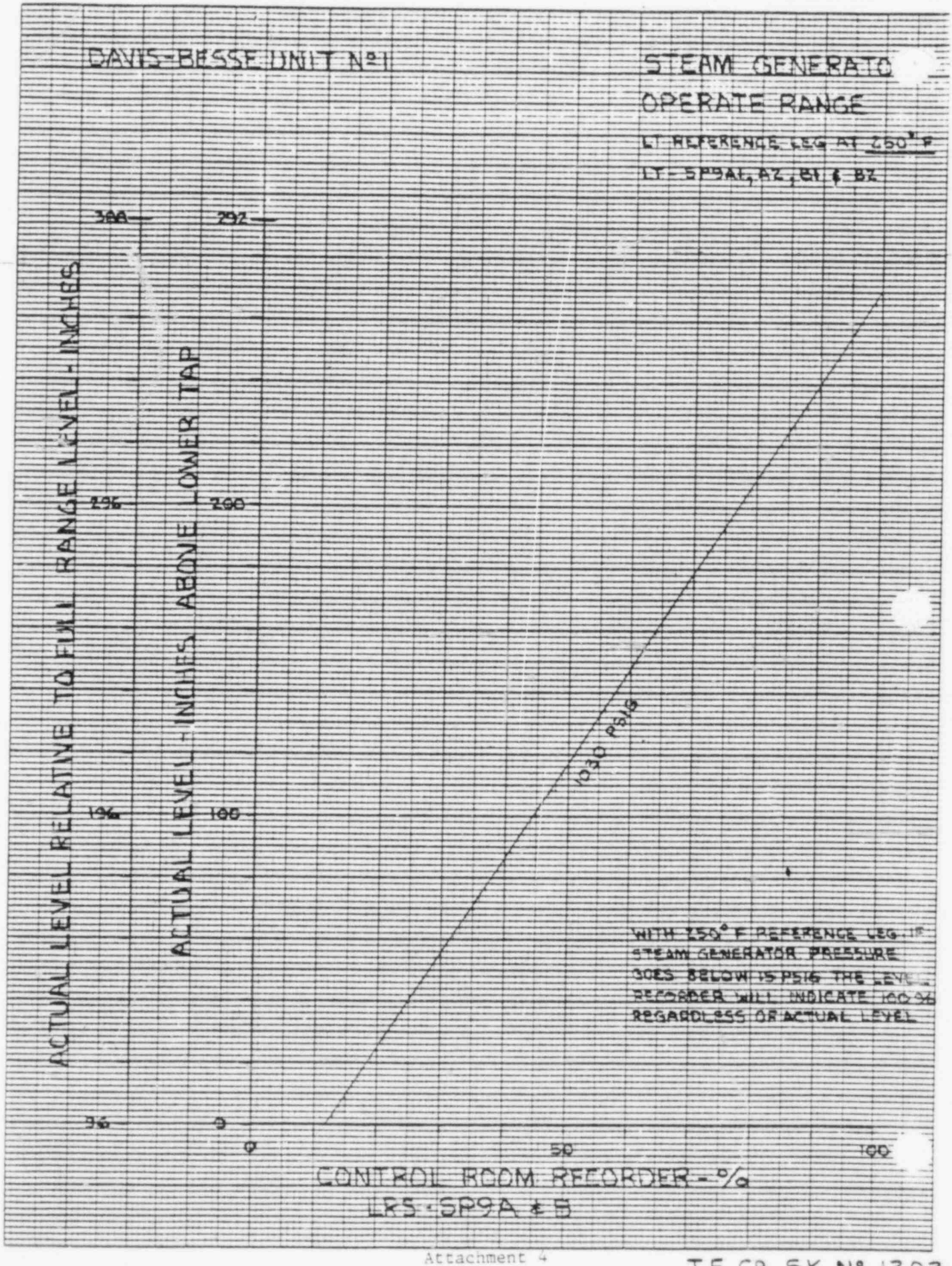
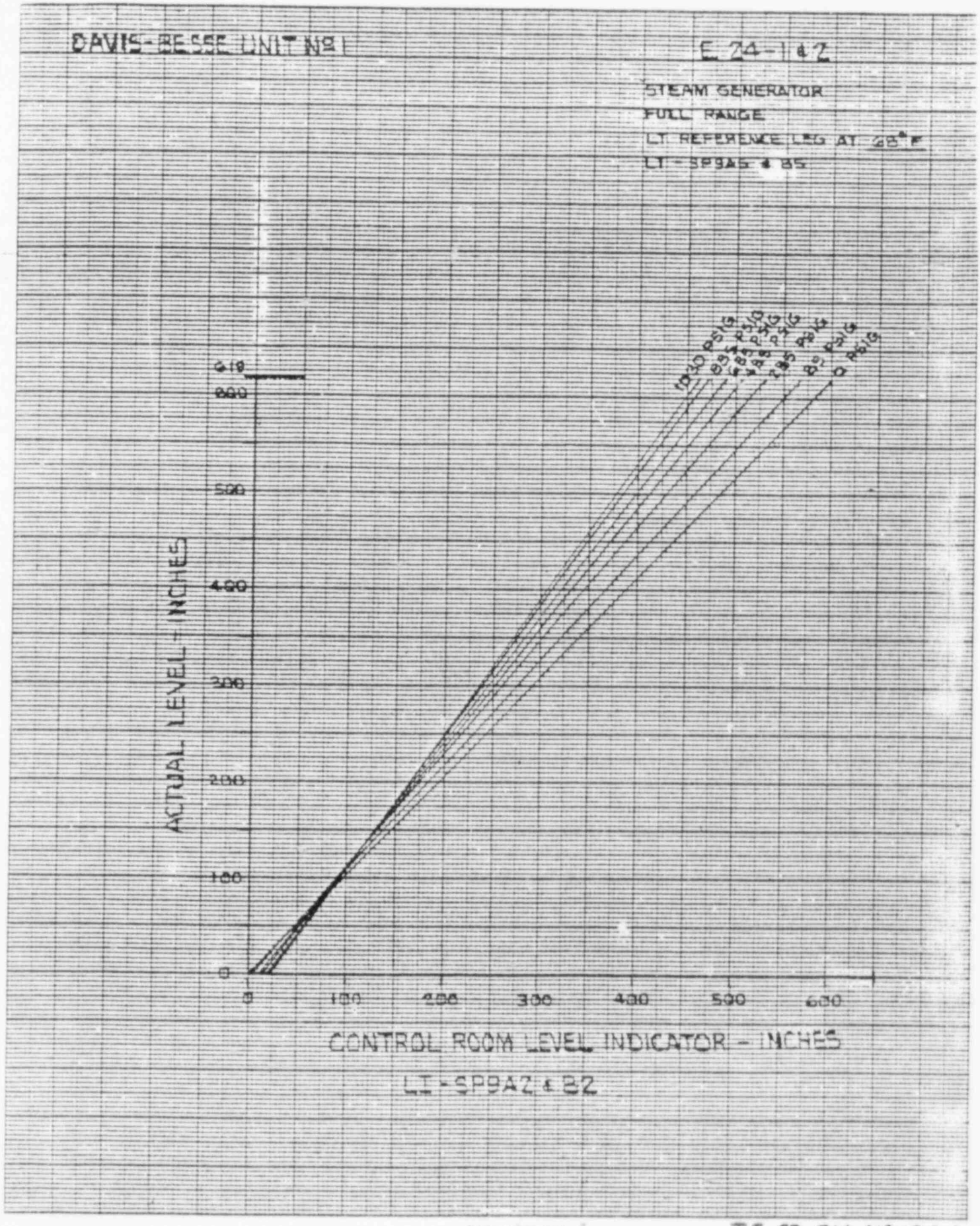
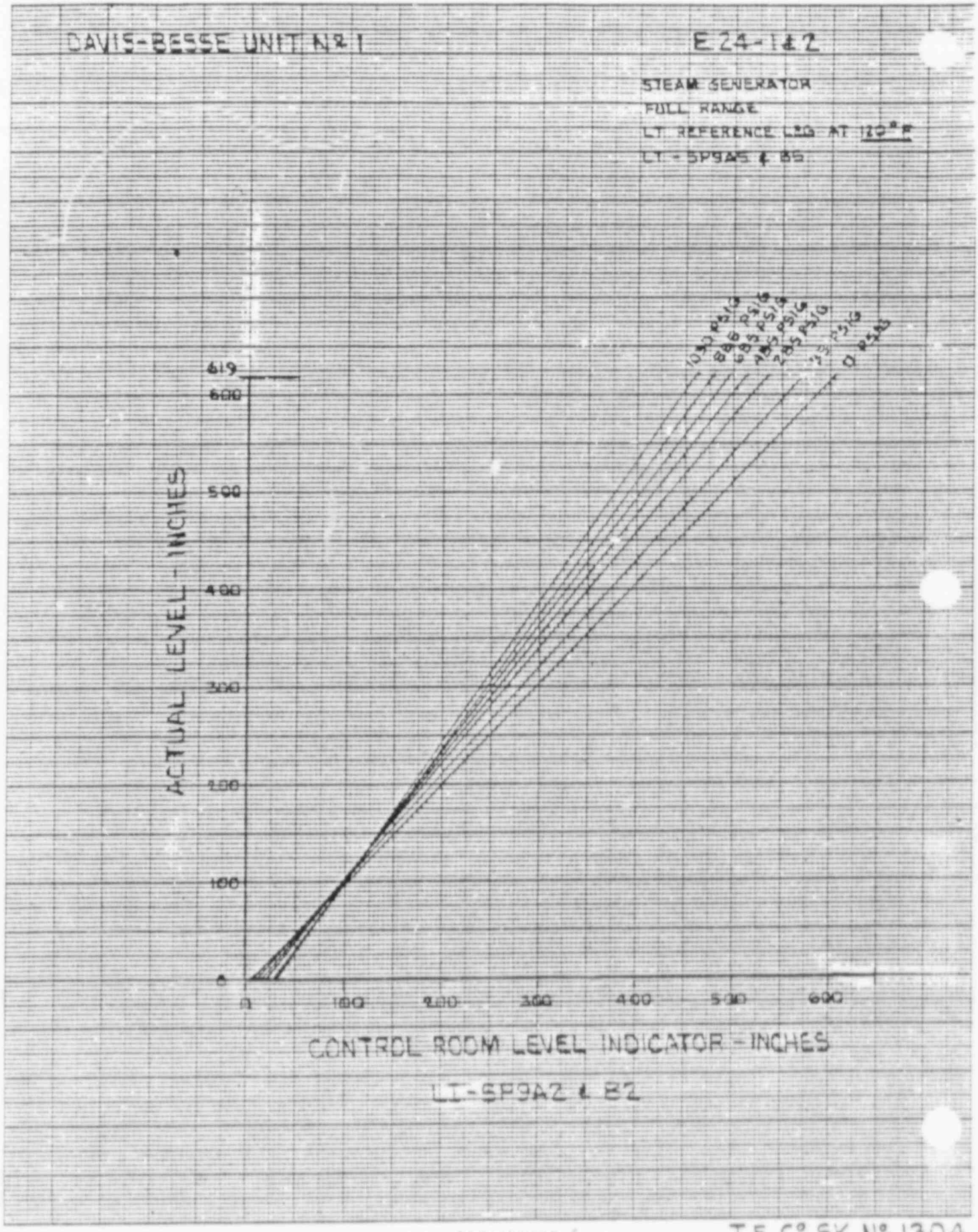
SH. 5 OF 6



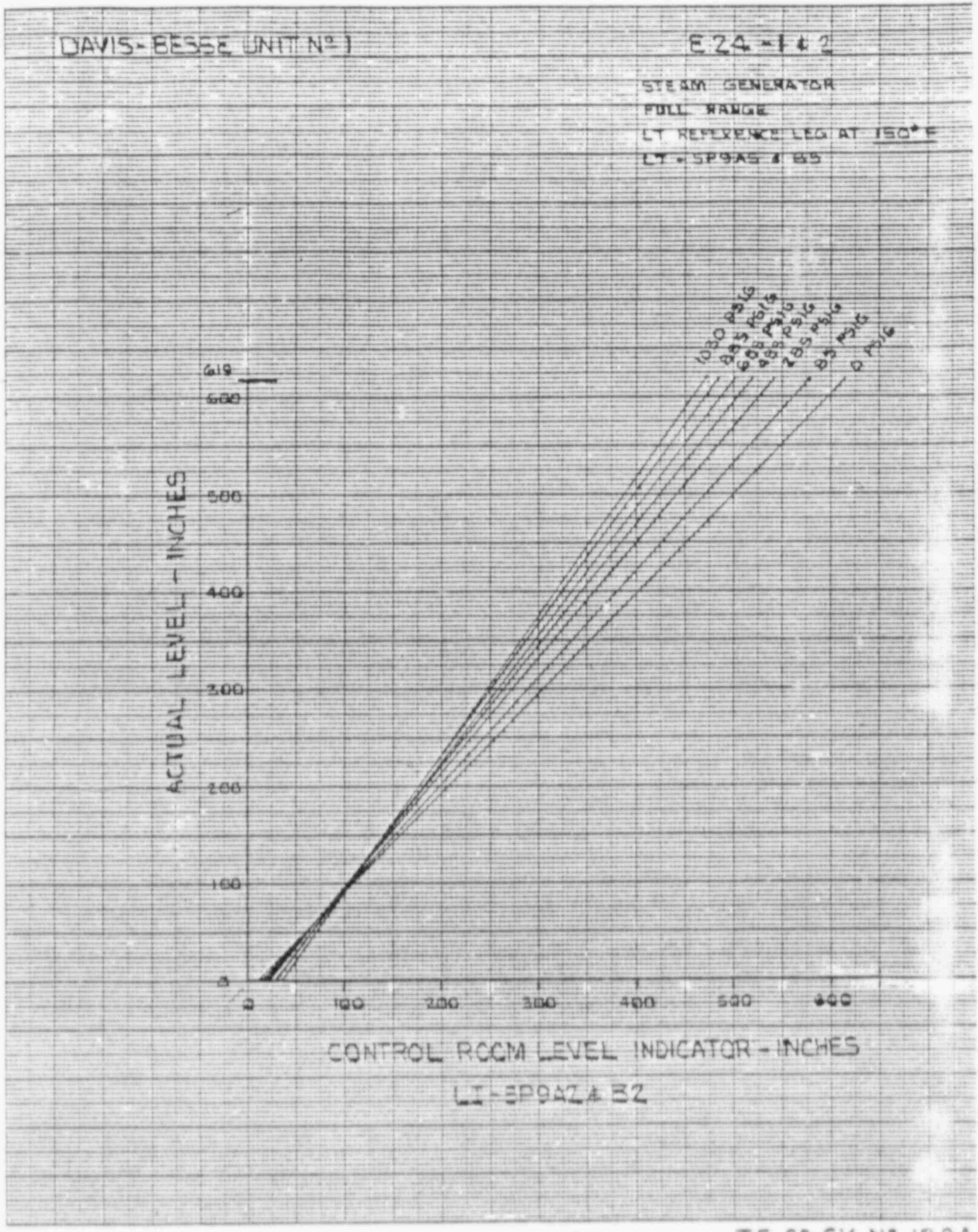
T.E.Co SK.Nº 1303
SH. 6 OF 6



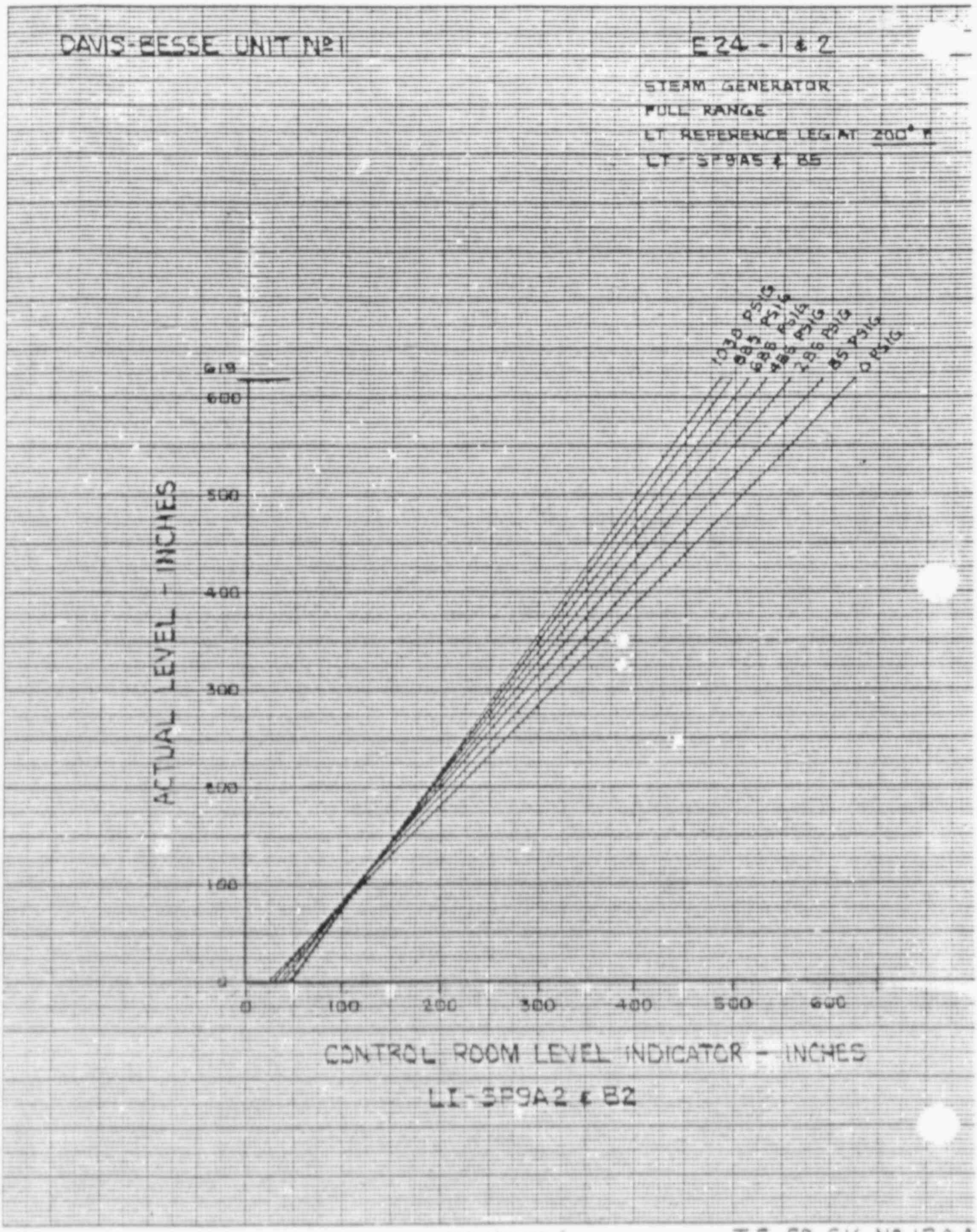
T.E.C² SK. Nº 13
SH. 1 OF 5



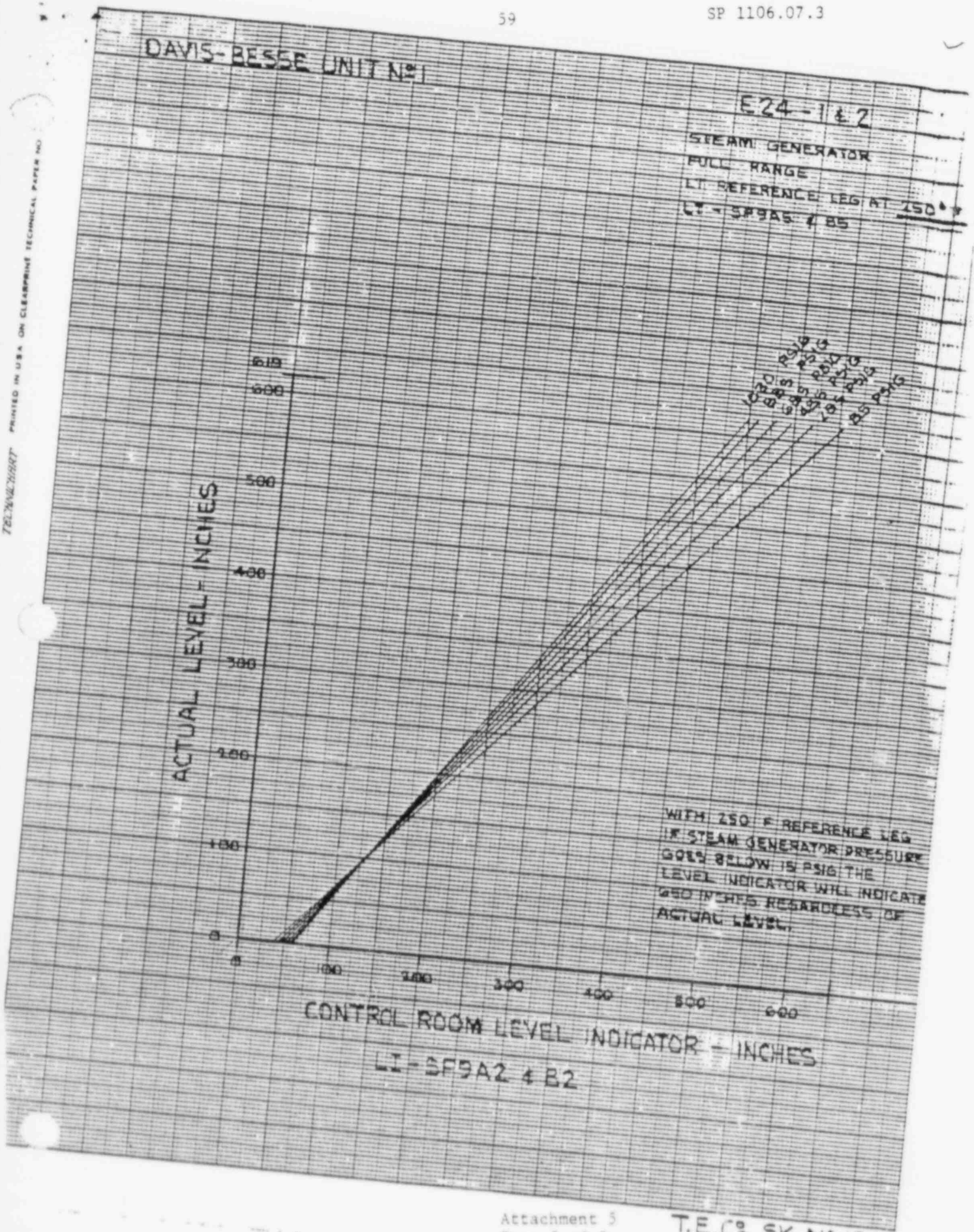
T.E.C° SK. N° 1304
SH. 2 OF 5



T.E.Cº SK. Nº 1304
SH. 3 OF 5



T.E.Cº SK. Nº 1304
SH. 4 OF 5



T.E.Cº SK. Nº 1304
SH. 5 OF 5