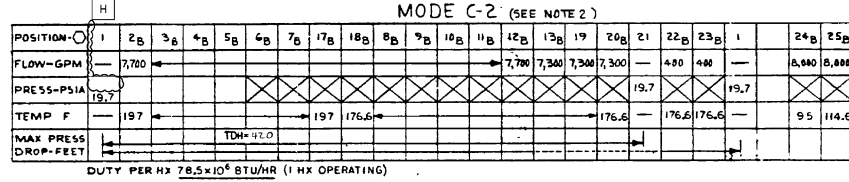
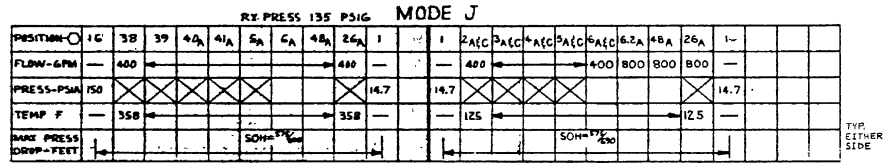
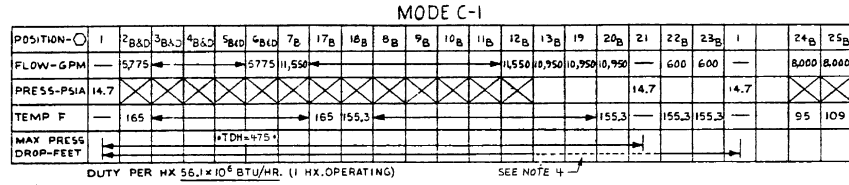
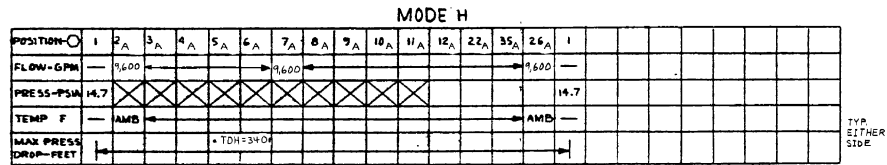
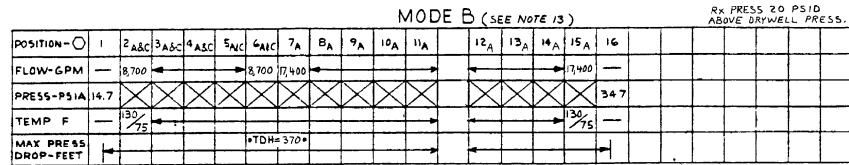
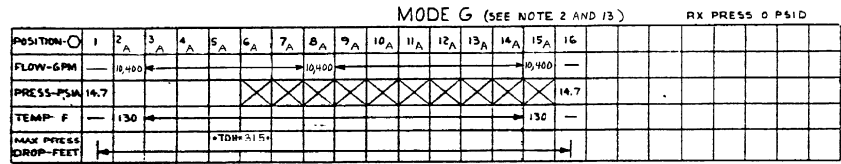
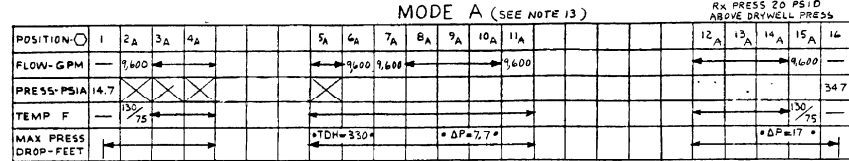
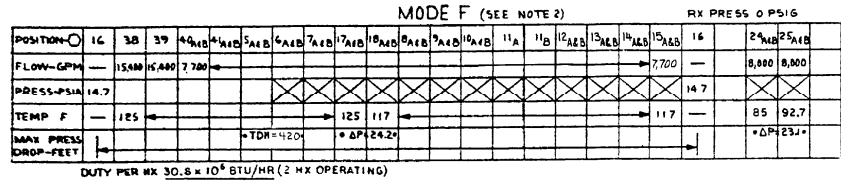


FCF 238x128 BA, E1-H20



Modes:

- A. ACCIDENT W/ RECIRC LINE BREAK IN SIDE II WITH ONE PUMP OPERATION AND STRAINER 90% PLUGGED. (20 PSID)
- B. ACCIDENT W/ RECIRC LINE BREAK IN SIDE II WITH TWO PUMP OPERATION AND STRAINER 50% PLUGGED. (20 PSID)
- C-1. POST ACCIDENT CONTAINMENT SPRAY W/ HEAT REJECTION WITH TWO-PUMP OPERATION AND STRAINER 90% PLUGGED. (NORMAL SUPPRESSION POOL TEMPERATURE)
- C-2. POST ACCIDENT CONTAINMENT SPRAY W/ HEAT REJECTION WITH ONE-PUMP OPERATION AND STRAINER 90% PLUGGED. (PEAK SUPPRESSION POOL TEMPERATURE)
- D-1. DELETED.
- D-2. DELETED.
- E. NORMAL SHUTDOWN AFTER BLOWDOWN TO MAIN CONDENSER (SEE NOTE 8)
- F. CONTINUATION OF NORMAL SHUTDOWN FROM PLANT MODE E (0 PSIG) & FUNCTIONAL TEST FOLLOWING SHUTDOWN
- G. ACCIDENT W/ RECIRC LINE BREAK IN SIDE II WITH STRAINER 90% PLUGGED AND ONE PUMP OPERATION, MAXIMUM RUNOUT CONDITIONS (0 PSID)
- H. RHR SYSTEM TEST DURING PLANT OPERATION
- J. MINIMUM FLOW BYPASS MODE

NOTES

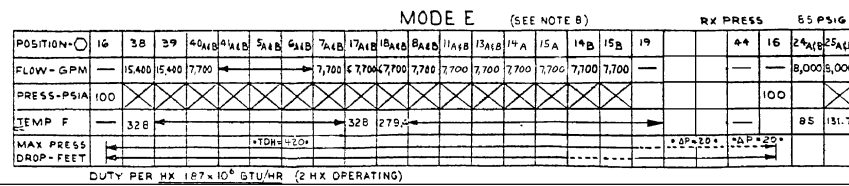
- 1. EMPTY DATA BLANKS ARE TO BE FILLED IN BY OTHERS (BASED ON HIS ARRGT'S) AND SUBMITTED TO BWRSD FOR REVIEW. IF SIDE I AND SIDE II ARE NOT SYMMETRICALLY ARRANGED, VALVES FOR BOTH SHALL BE SUBMITTED. SEE SHEET 2
- 2. THE MINIMUM PUMP NPSH AVAILABLE DURING MODE C-2, E, OR G MUST BE 3 FEET GREATER THAN PUMP REQUIREMENTS. ADEQUATE NPSH SHALL BE DETERMINED BASED ON POOL TEMPERATURE OF 207°F AND CONTAINMENT PRESSURE OF 4.2 PSIG. FOR MODE C2 AND 165°F AND CONTAINMENT PRESSURE OF 2.0 PSIG. FOR MODE G, AND THE SUCTION STRAINER BEING PLUGGED WITH THE MAXIMUM POST-ACCIDENT DEBRIS LOADS.
- 3. ELEVATIONS ARE NOT INCLUDED IN ΔP VALVES GIVEN ELEVATIONS SHALL BE INCLUDED WHEN DETERMINING FINAL VALVES FOR THE EMPTY DATA BANKS.
- 4. DASHED LINES INDICATES FLOW DOES NOT PASS THROUGH THESE POINTS
- 5. SERVICE WATER CROSS-TIE SHALL BE SIZED TO FLOW 3200 GPM REH SH 2 (J-II)
- 6. LINE SHALL BE SIZED BASED ON FLOW TO FUEL POOL SH 2 (B-5)
- 7. TABLE 1 INDICATES VALVE POSITIONS DURING VARIOUS MODES OF OPERATION
- 8. SHUTDOWN OPERATION (MODE E) MAY BE INITIATED AT A MAXIMUM REACTOR VESSEL PRESSURE OF 175 PSIG
- 9. DELETED.
- 10. DELETED.
- 11. THE WEIGHT OF WATER IN THE SHUTDOWN COOLING SUBSYSTEM PIPING, INCLUDING THE HEAT EXCHANGERS AND PUMPS, SHALL NOT EXCEED 225,000 LBS AT 70°F TO PREVENT DILUTION OF STANDBY LIQUID CONTROL NEUTRON ABSORBER BELOW MINIMUM REQUIREMENTS.
- 12. VALVE F010 SHALL BE PERMANENTLY CLOSED (POWER DISCONNECTED) UNLESS THE REACTOR IS IN THE COLD SHUTDOWN CONDITION.
- 13. FLOWS SHOWN FOR MODE A AND B ARE THE MINIMUM ALLOWABLE (TRUE) FLOW, FOR MODE G IS THE MAXIMUM ALLOWABLE MEASURED FLOW.

TABLE 1-VALVE POSITION CHART. SEE NOTE 7. Grid showing valve positions for Modes A through J.

0 - VALVE OPEN
- VALVE THROTTLED
P - STRAINER PLUGGED
BLANK SPACE INDICATES VALVE IS CLOSED
T - VALVE THROTTLED TO CLOSED
O - T - VALVE OPENED TO THROTTLED

TABLE 2-LIMITING LINE LOSSES

MODE A 4-15
MODE B NONE
MODE C 13-20-21 & 22-23-1
MODE C-1 1-2-5
MODE C-2
MODE D-1
MODE D-2
MODE E NONE
MODE E 19-4-4
MODE F 16-3B-4-1
MODE G 1-2-5
MODE H 12-22-33-24-1
MODE J 6-4-8



LEGEND

RX PRESS - REACTOR VESSEL PRESSURE
SHW - SHUT OFF HEAD (PUMPS)
REFERENCE DOCUMENT

REVISED TO INC. ASB... (REVISIONS CONTINUED AT LEFT)

Revision history table with columns for revision number, date, and description. Includes a signature block for Edwin I. Hatch and a stamp from Southern Company Services, Inc.

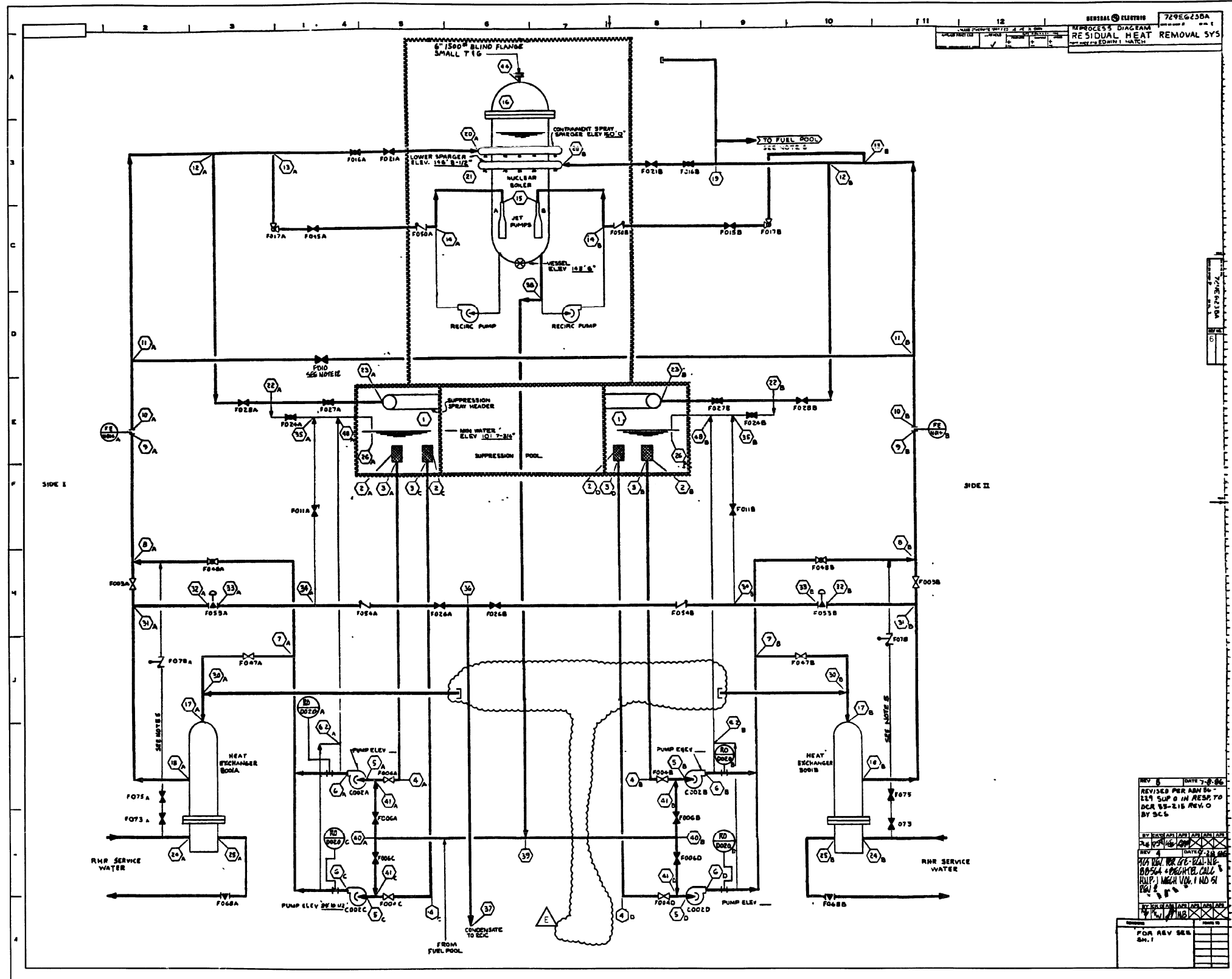
729E623BA
REV. NO. 8

General information section including Plant (HATCH), Unit (1), Title (PROCESS DIAGRAM RESIDUAL HEAT REMOVAL SYSTEM), Vendor (GENERAL ELECTRIC), and Drawing Number (S-15304 H).

THIS DWG. PART OF VENDOR MANUAL N/A

Revisions table with columns for revision number, date, and description. Includes a signature block for Edwin I. Hatch and a stamp from Southern Company Services, Inc.

SERIAL 729EG25BA
PROCESS DIAGRAM
RESIDUAL HEAT REMOVAL SYS



CAD AutoCAD S15305

Southern Company Services, Inc.
FOR

PLANT:	HATCH
UNIT:	1
TITLE:	PROCESS DIAGRAM RESIDUAL HEAT REMOVAL SYS.
VENDOR:	GENERAL ELECTRIC
P.O.#:	PEH-002
S-15305 E	

REV 5 (DATE 7-8-96)
REVISED PER ABN 94-0031-002.
REV 4 (DATE 7-8-96)
REV 3 (DATE 7-8-96)
REV 2 (DATE 7-8-96)
REV 1 (DATE 7-8-96)

FOR REV SEE SM.1

THIS DWG. PART OF
VENDOR MANUAL N/A

TAB/SECT. N/A
PAGE N/A
FIGURE N/A

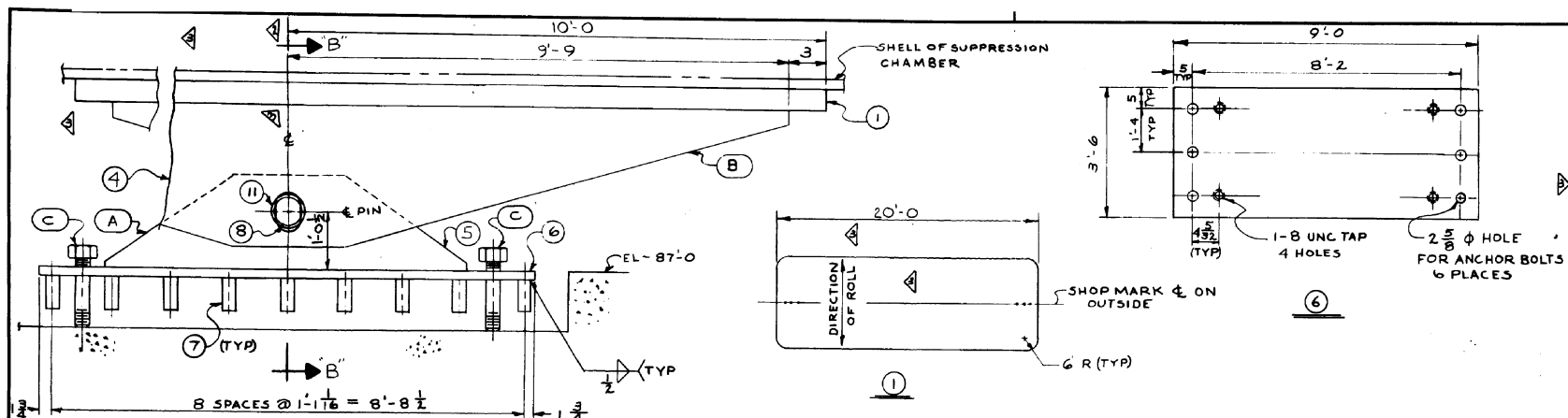
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BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	

REVISION E DATE 7-8-96
REVISED PER ABN 94-0031-002.

REVISION D DATE 7-9-93
SCANNED, VERIFIED BY: I.N.
REVISED PER WCN 92-0007-004

(VENDOR REV. 7 BY SCS)

(VENDOR REV. 6 BY SCS)



SHIP PC	MARK	ASSM PC	DESCRIPTION	LENGTH FT.	IN.	SPEC.
4	207-A		LOWER TIES ASSY			
	207-5	16	R SKX 2 (CF 82 X 25'-0) C12	9	0	SA516 GR 70
	207-6	4	R 42 X 2 (CF 111 X 21'-0) C2 (207-5) C2 (207-5)	9	0	SA516 GR 70
	207-7	36	R 4 X 2 (55 X 18'-2) C36 SEE DWG. C-3	3	6	SA516 GR 70
4	207-B		UPPER TIES ASSY			
	207-1	4	R 240 X 1 1/2 (CF 63 1/2 X 20'-1) C2 ROLL	2	6 3/4	*
	207-2	4	R SKX 2 (CF 128 1/2 X 31'-7) C4 (207-2) C6 (207-3) SEE DWG. C-3			SA516 GR 70
	207-3	8	R SKX 2 C/W (207-2) C2 (207-4)			SA516 GR 70
	207-4	8	R SKX 2 (CF 128 1/2 X 31'-7) C8 (207-4) C2 (207-3) SEE DWG. C-3			SA516 GR 70
10	207-C		LEVELING BOLT ASSY			
	207-9	16	1 φ ROD THD. FULL LENGTH	1	3	A36
	207-10	16	1-8 UNC HEAVY HEX NUT			A307
8	207-11		R 10 QDX 7 1/16 I.D. X 1/2			A183-C
4	207-8		7 φ PIN PER SK	2	4 1/2	A108 SK II

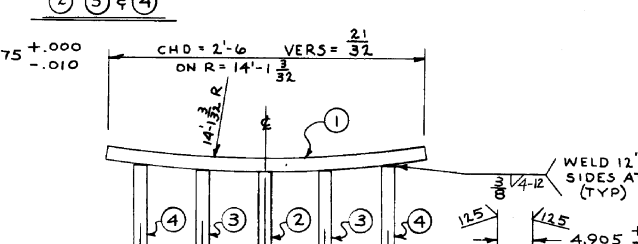
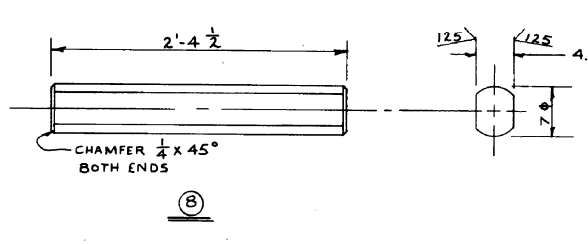
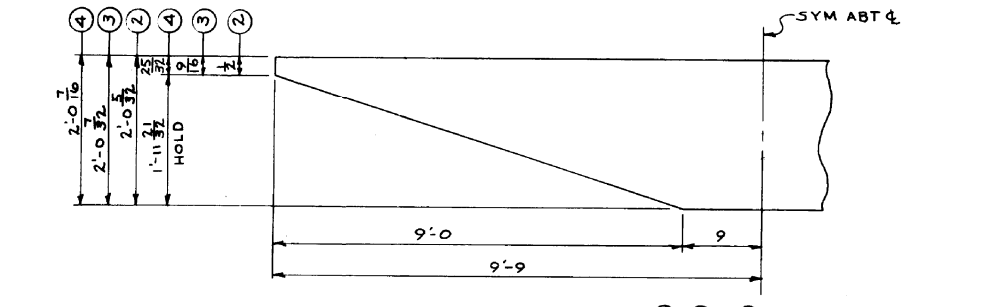
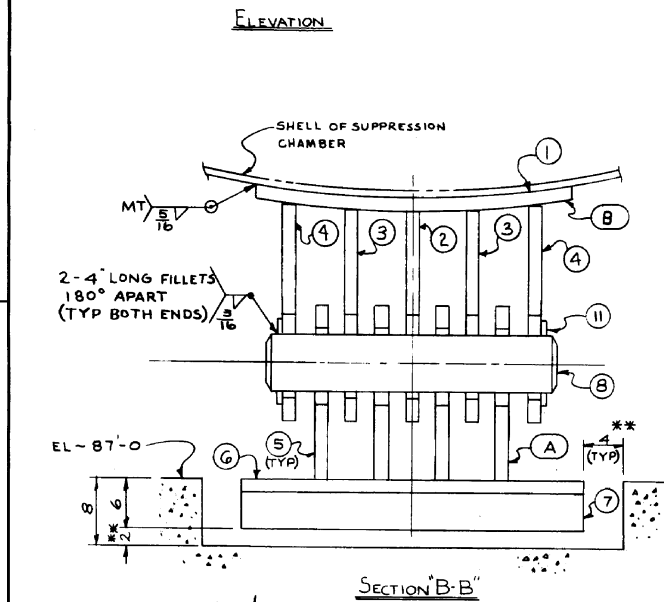
* SA516 GR 70 TO SA 300 (M5504 B)

NOTES

(1) PLACE EARTHQUAKE TIES ON FOUNDATION BEFORE STARTING ERECTION OF SUPPRESSION CHAMBER SHELL. GROUTING TO BE DONE BY OTHERS. SEE DWG. F-1 FOR GROUTING INSTRUCTIONS.

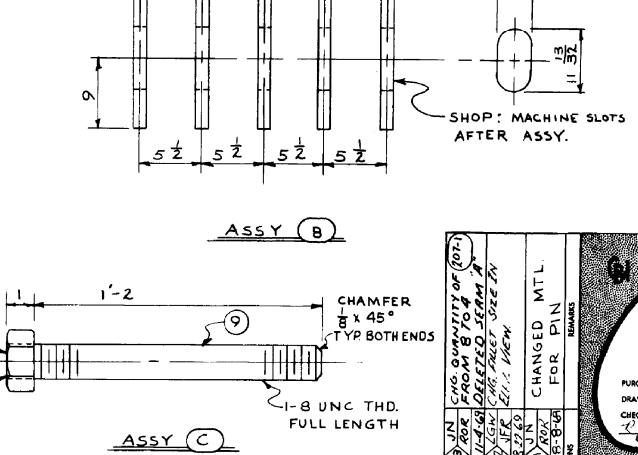
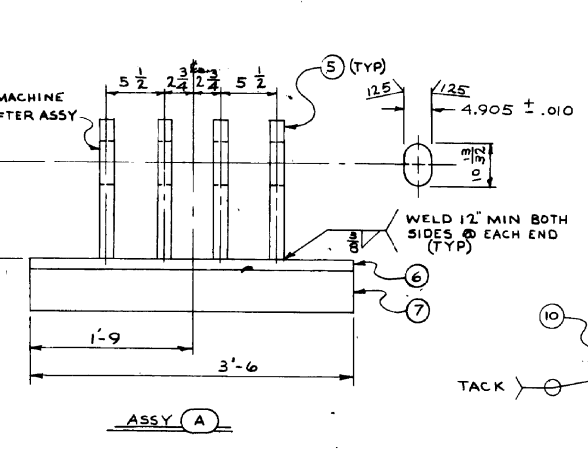
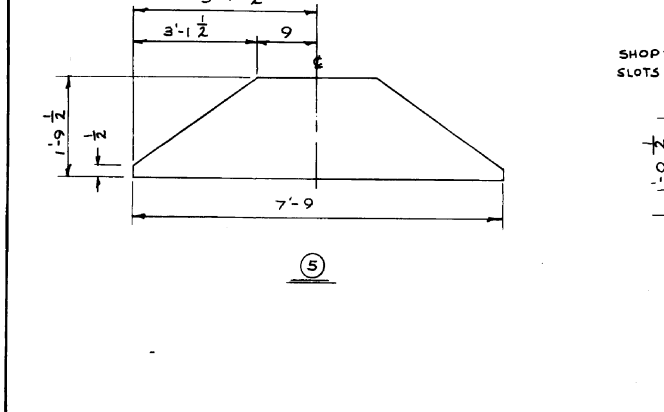
(2) IN AREAS THAT ARE INACCESSIBLE TO MT EQUIPMENT, PT MAY BE SUBSTITUTED FOR MT.

** THIS AREA MUST BE COMPLETELY CLEAR OF REINFORCING RODS.



REVIEWED PER CORPORATE Q.A. PLAN RELEASED FOR USE
R. B. B. / R. B. B.
CERTIFIED BY DATE 8-8-69
UPDATED BY REV 3 DATE 11-19-69

EDWIN I. HATCH NUCLEAR PLANT
REACTOR BUILDING CONTAINMENT VESSEL
GEORGIA POWER CO., BAXLEY, GA.



CHANGED MTL FOR PIN

CHICAGO BRIDGE & IRON COMPANY
EARTHQUAKE TIES

PURCHASER NO. PEH-154 CONTRACT NO. 69-4153
DRAWN BY J.N. DATE 7-7-69
CHECKED BY R.L.N. DATE 7-8-69
ENGINEERING COORDINATOR DWG NO. 207 REV 3

6511 10-502815329
TITLE: EARTHQUAKE TIES -A

JOB: EDWIN I. HATCH NUCLEAR PLANT-UNIT 1
MFR. CB&I P. O. PEH-154
REQ. CLASS 3-A-5

REV 3

Revision 0 Reviewed by Southern Services, Inc. and returned without comment by letter dated 7-30-69 and signed by P. Fischer
Microfilm 8-29-77

COORDINATING PRINT

FROM	DATE
CIVIL	
STRUCT	
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MECH	
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VENDOR'S DRAWING REVIEW

1 No comment - Mfg. may proceed.
2 Comments as noted - Make changes and resubmit drawing per comments.
3 Review not required - Mfg. may proceed.

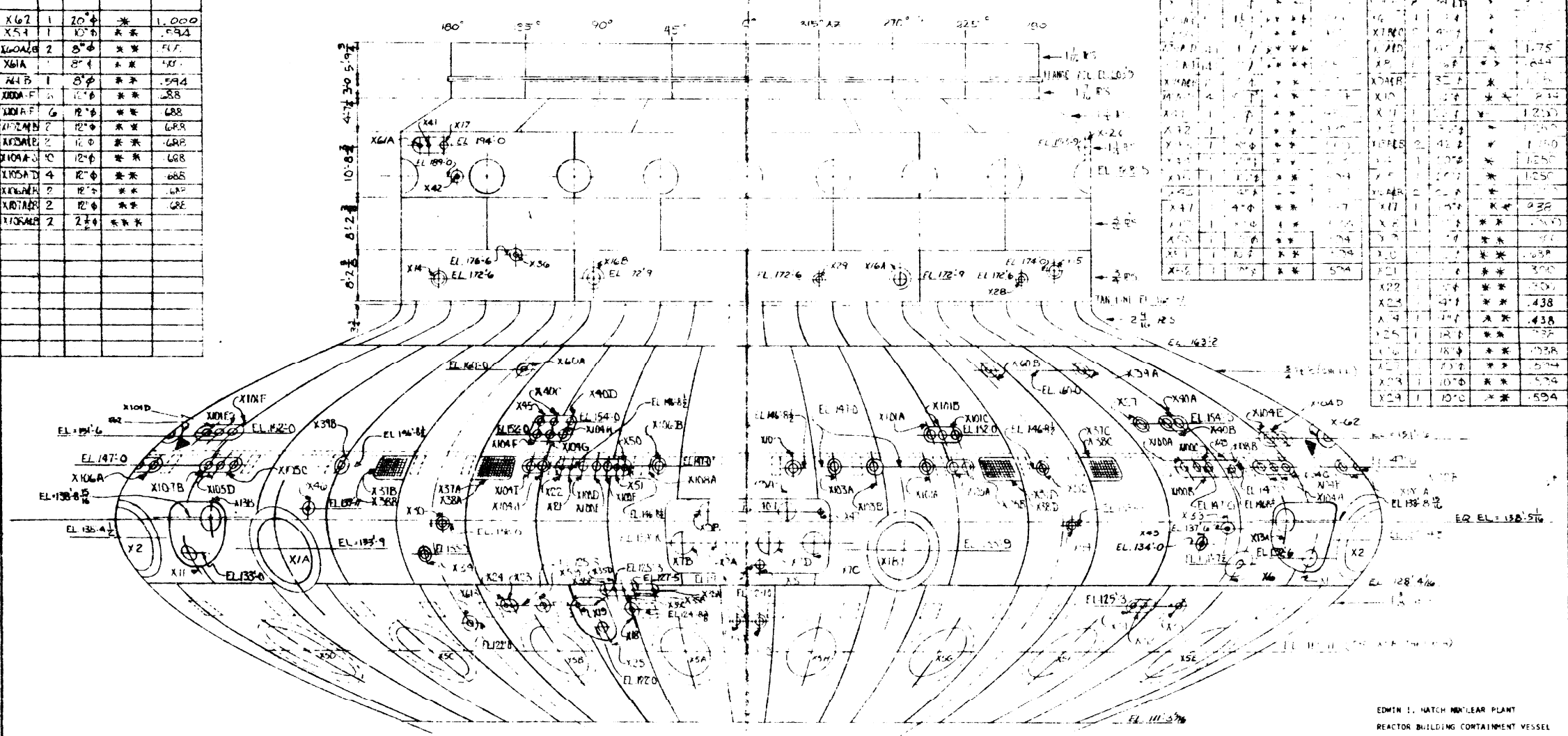
Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.
By R.M. BECHTEL Date 11-19-69

JOB NO. 6511 BECHTEL ASSOCIATES POWER & INDUSTRIAL DIVISION P. O. BOX 607 GAITHERSBURG, MD.

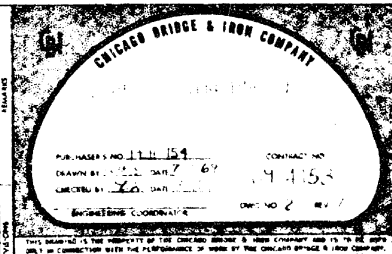
DRYWELL PENETRATIONS				
DRYWELL NO.	NO.	SIZE	MATERIAL	MIN. THK.
X54	1	10"	***	.594
X62	1	10"	***	.594
X54	1	10"	***	.594
X62	1	10"	***	.594
X54	1	10"	***	.594
X62	1	10"	***	.594
X54	1	10"	***	.594
X62	1	10"	***	.594
X54	1	10"	***	.594
X62	1	10"	***	.594
X54	1	10"	***	.594
X62	1	10"	***	.594
X54	1	10"	***	.594

* SASH GR TO SA 300 (MSS 504 B)
 ** SA 333 GR1 (MSS 516 B)
 *** SA 475 TYPE 304
 **** SA 312 TYPE 304 SS.

DRYWELL NO.		NO.		SIZE		MATERIAL		MIN. THK.	
X10A	1	10"	1	10"	***	1.000			
X10B	1	10"	1	10"	***	1.000			
X10C	1	10"	1	10"	***	1.000			
X10D	1	10"	1	10"	***	1.000			
X10E	1	10"	1	10"	***	1.000			
X10F	1	10"	1	10"	***	1.000			
X10G	1	10"	1	10"	***	1.000			
X10H	1	10"	1	10"	***	1.000			
X10I	1	10"	1	10"	***	1.000			
X10J	1	10"	1	10"	***	1.000			
X10K	1	10"	1	10"	***	1.000			
X10L	1	10"	1	10"	***	1.000			
X10M	1	10"	1	10"	***	1.000			
X10N	1	10"	1	10"	***	1.000			
X10O	1	10"	1	10"	***	1.000			
X10P	1	10"	1	10"	***	1.000			
X10Q	1	10"	1	10"	***	1.000			
X10R	1	10"	1	10"	***	1.000			
X10S	1	10"	1	10"	***	1.000			
X10T	1	10"	1	10"	***	1.000			
X10U	1	10"	1	10"	***	1.000			
X10V	1	10"	1	10"	***	1.000			
X10W	1	10"	1	10"	***	1.000			
X10X	1	10"	1	10"	***	1.000			
X10Y	1	10"	1	10"	***	1.000			
X10Z	1	10"	1	10"	***	1.000			
X11	1	10"	1	10"	***	1.000			
X12	1	10"	1	10"	***	1.000			
X13	1	10"	1	10"	***	1.000			
X14	1	10"	1	10"	***	1.000			
X15	1	10"	1	10"	***	1.000			
X16	1	10"	1	10"	***	1.000			
X17	1	10"	1	10"	***	1.000			
X18	1	10"	1	10"	***	1.000			
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X45	1	10"	1	10"	***	1.000			
X46	1	10"	1	10"	***	1.000			
X47	1	10"	1	10"	***	1.000			
X48	1	10"	1	10"	***	1.000			
X49	1	10"	1	10"	***	1.000			
X50	1	10"	1	10"	***	1.000			
X51	1	10"	1	10"	***	1.000			
X52	1	10"	1	10"	***	1.000			
X53	1	10"	1	10"	***	1.000			
X54	1	10"	1	10"	***	1.000			



REVIEWED PER CORPORATE QA
 RELEASED FOR USE
 CERTIFIED BY: [Signature]
 DATE: 5/24/70
 UPDATED BY: [Signature] DATE: 2/27/70



MAY 27 1970

6511 10-5028-043F
 TITLE
 JOB
 MFR C361
 FEB-154
 CLASS 3-A-5

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DESIGNER'S CHECKLIST

ENDORSE DRAWING REVIEW

REVISIONS

JOB NO 6511 BECHTEL ASSOCIATES POWER & INDUSTRIAL DIVISION P.O. BOX 507 GAITHERSBURG, MD

515422F

DWG# 5

6511 10-502 S15520B
 TITLE SUPPRESSION CHAMBER
 PENET. SCH. AND ORIENTATION
 JOB EDWIN T. HATCH NUCLEAR PLANT-UNIT 1
 MFR. CB&I P.O. PEH-154
 REQ. CLASS 3-A-5

Revision 3
 Revised by Southern Services, Inc. and returned without comment by letter dated 11/13/69

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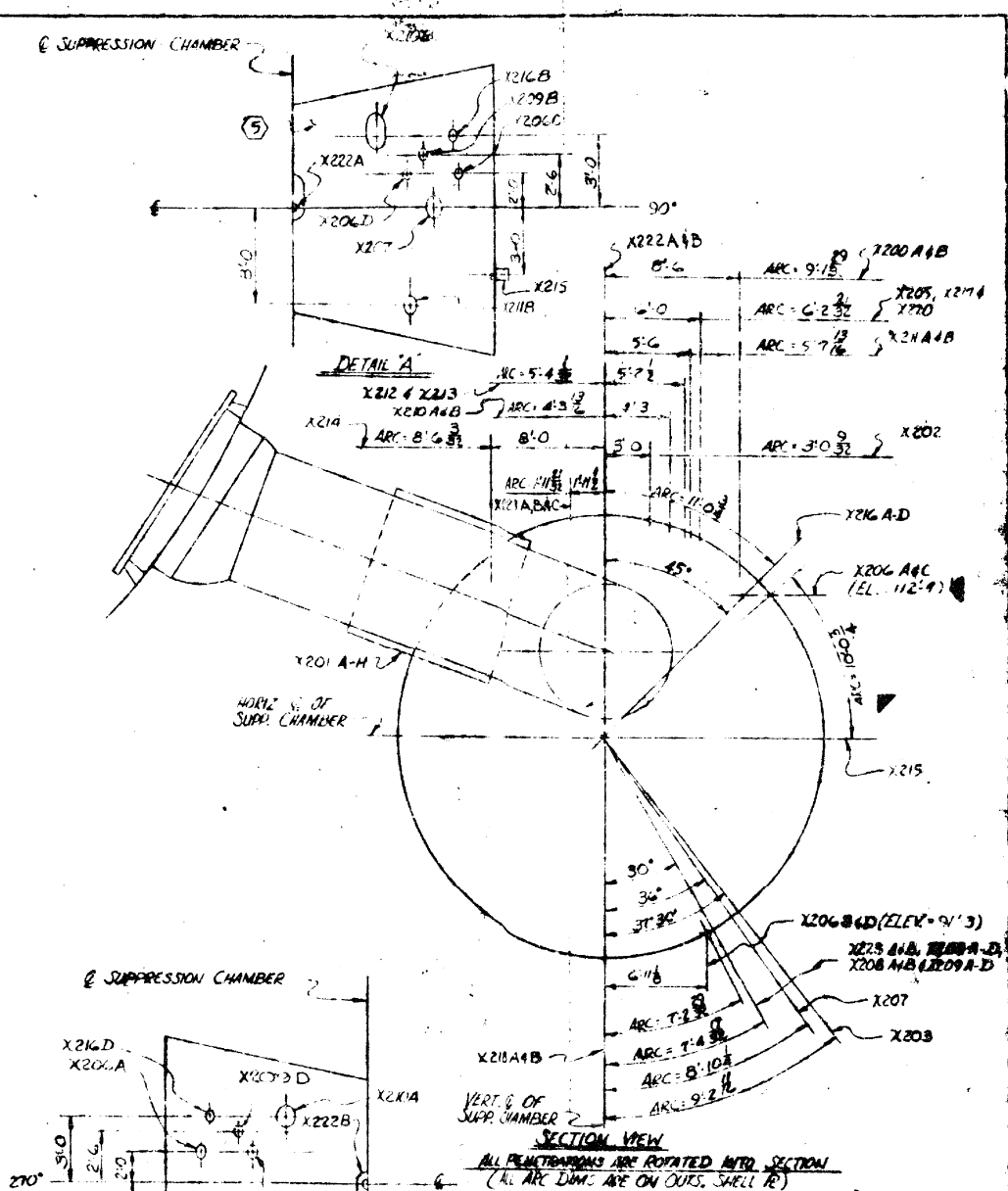
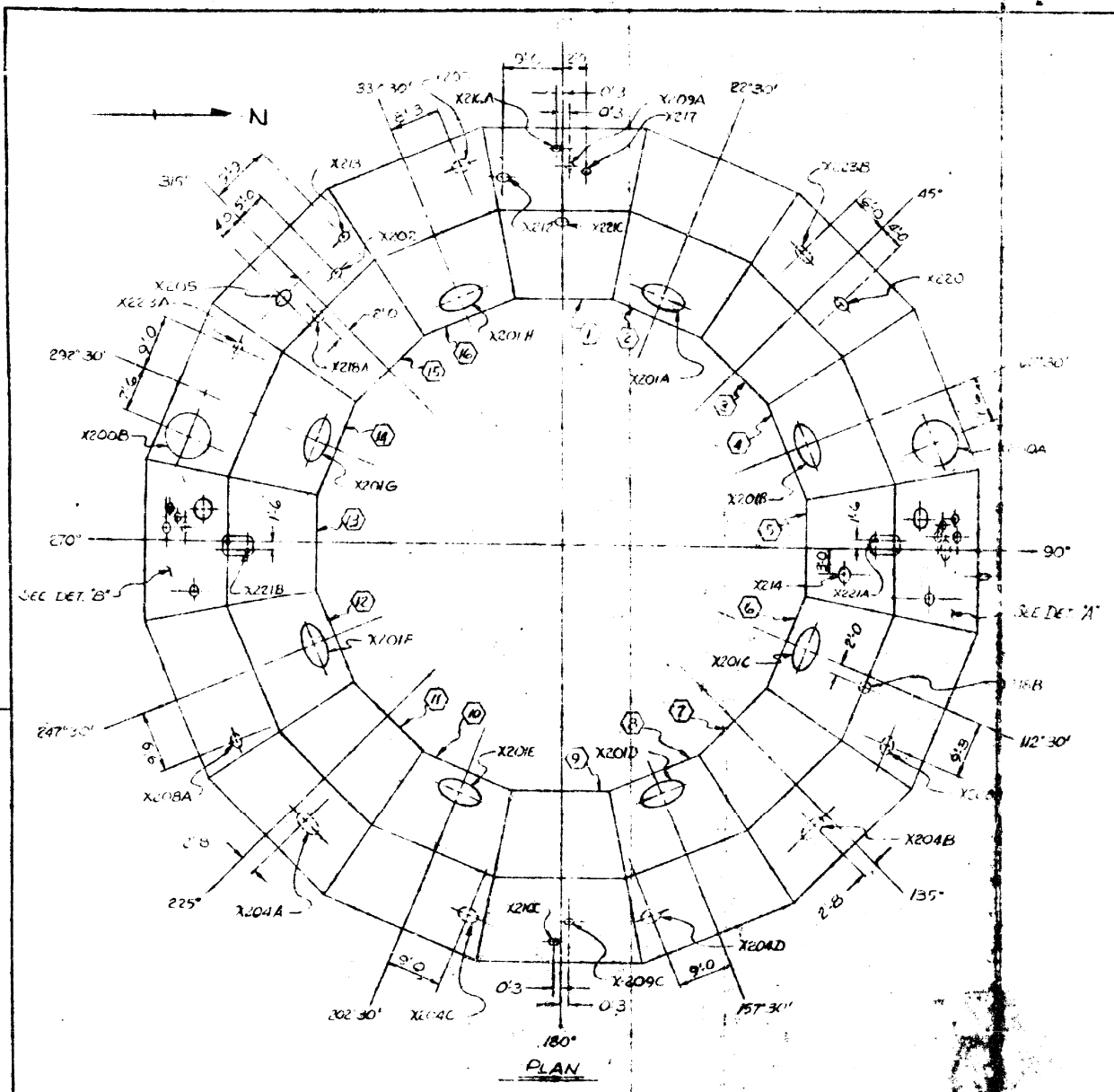
VENDOR'S DRAWING REVIEW

1 No comment - Mfg. may proceed.
 2 Comments as noted - Make changes and resubmit drawing per comments.
 3 Review not required - Mfg. may proceed.

Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.
 By 7/23 Date 5/12/69
 BECHTEL

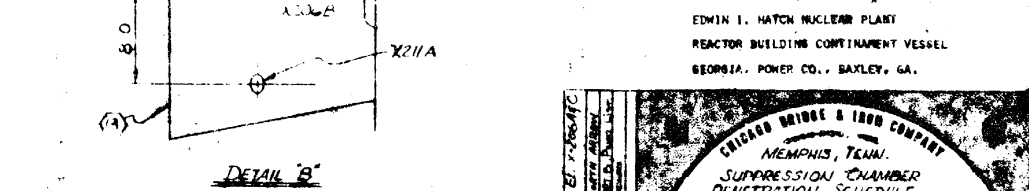
JOB NO. **6511** BECHTEL ASSOCIATES
 POWER & INDUSTRIAL DIVISION
 P. O. BOX 607 GAITHERSBURG, MD.

S15520B



LIST OF SUPPRESSION CHAMBER PENETRATIONS

UNIT MARK	SIZE	NO. REQ'D	NO. INST.	MAT'L	SPARES	UNIT MARK	SIZE	NO. REQ'D	NO. INST.	MAT'L	SPARES
X200A	18	2	1	0.179	**	X209A	1	4	0.179	**	225
X200B	18	2	1	0.179	**	X209B	1	4	0.179	**	225
X200C	18	2	1	0.179	**	X209C	1	4	0.179	**	225
X200D	18	2	1	0.179	**	X210A	16	2	0.643	**	225
X200E	18	2	1	0.179	**	X210B	16	2	0.643	**	225
X200F	18	2	1	0.179	**	X210C	16	2	0.643	**	225
X200G	18	2	1	0.179	**	X210D	16	2	0.643	**	225
X200H	18	2	1	0.179	**	X210E	16	2	0.643	**	225
X200I	18	2	1	0.179	**	X210F	16	2	0.643	**	225
X200J	18	2	1	0.179	**	X210G	16	2	0.643	**	225
X200K	18	2	1	0.179	**	X210H	16	2	0.643	**	225
X200L	18	2	1	0.179	**	X210I	16	2	0.643	**	225
X200M	18	2	1	0.179	**	X210J	16	2	0.643	**	225
X200N	18	2	1	0.179	**	X210K	16	2	0.643	**	225
X200O	18	2	1	0.179	**	X210L	16	2	0.643	**	225
X200P	18	2	1	0.179	**	X210M	16	2	0.643	**	225
X200Q	18	2	1	0.179	**	X210N	16	2	0.643	**	225
X200R	18	2	1	0.179	**	X210O	16	2	0.643	**	225
X200S	18	2	1	0.179	**	X210P	16	2	0.643	**	225
X200T	18	2	1	0.179	**	X210Q	16	2	0.643	**	225
X200U	18	2	1	0.179	**	X210R	16	2	0.643	**	225
X200V	18	2	1	0.179	**	X210S	16	2	0.643	**	225
X200W	18	2	1	0.179	**	X210T	16	2	0.643	**	225
X200X	18	2	1	0.179	**	X210U	16	2	0.643	**	225
X200Y	18	2	1	0.179	**	X210V	16	2	0.643	**	225
X200Z	18	2	1	0.179	**	X210W	16	2	0.643	**	225



REVIEWED PER CORPORATE Q.A. PLAN
 RELEASED FOR USE
 R. B. B...
 CERTIFIED BY... DATE 1-2-70
 UPDATED BY REV. 3 DATE 2/22/69

EDWIN T. HATCH NUCLEAR PLANT
 REACTOR BUILDING CONTAINMENT VESSEL
 GEORGIA POWER CO., BAXLEY, GA.

CHICAGO BRIDGE & IRON COMPANY
 MEMPHIS, TENN.
 SUPPRESSION CHAMBER
 PENETRATION SCHEDULE
 AND ORIENTATION

PROCESSED BY PEH-154
 DRAWN BY L.G.H. DATE 12-2-69
 CHECKED BY M.P.S. DATE 12-3-69
 CONTRACT NO. 69-4153
 BECHTEL COORDINATOR

E-234-270

K11-1001
 6511 10-302 51523B
 RPV General Arrangement
 P. O. # PEH-2
 REVISION CLASS 3A-1
 51552

SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	GEN.	REVISED AND BROUGHT UP TO DATE	J.K.C. 10/23/83	J.K.C.
2	E-2	123 1/2" DIM WAS 122 1/2"	J.K.C. 10/23/83	J.K.C.
3	D-34	ADDED PCS # 322-10 AND 322-11	J.K.C. 10/23/83	J.K.C.

RECORD SET
 RETURN PROMPTLY

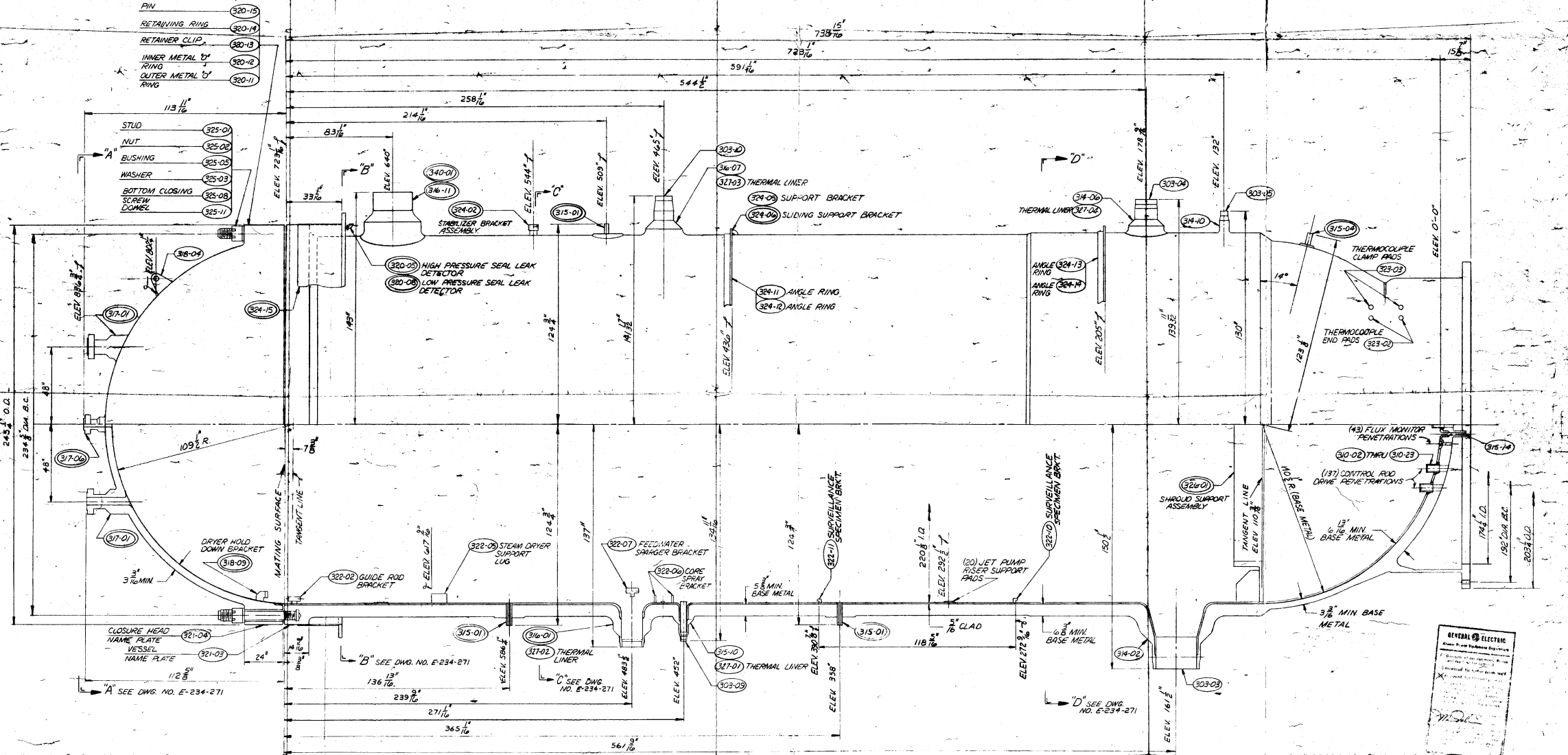
COORDINATING PRINT

NO.	DATE	INITIALS

VENDOR'S DRAWING REVIEW

AS SUPPLIED - No. 1000000
 AS SUPPLIED - No. 1000000
 AS SUPPLIED - No. 1000000
 AS SUPPLIED - No. 1000000

DATE: 10/23/83
 BY: J.K.C.
 CHECKED BY: J.K.C.



NOZZLE SCHEDULE

ISSY OR PC #	QUANTITY	SERVICE	NAME
314-02	2	RECIRCULATION	OUTLET NOZZLE
314-06	10	RECIRCULATION	INLET NOZZLE
314-10	2	JET PUMP	INSTRUMENTATION NOZZLE
315-01	6	INSTRUMENTATION	NOZZLE
315-10	1	C.R.D. HYD. SYSTEM	RETURN NOZZLE
316-04	1	CORE	DIFFERENTIAL PRESSURE NOZZLE
316-07	2	CORE	SPRAY NOZZLE
316-01	4	FEEDWATER	NOZZLE
316-11	3	STEAM	OUTLET NOZZLE
340-01	1	STEAM	OUTLET NOZZLE
315-14	1	DRAIN	NOZZLE
317-01	2	INSTRUMENTATION	NOZZLE
317-06	1	VENT	NOZZLE

DESIGN INFORMATION

DESIGN PRESSURE	1250 PSIG
DESIGN TEMPERATURE	515 F.
NORMAL OPERATING PRESSURE	1005 PSIG
NORMAL OPERATING TEMPERATURE	546 F.
WEIGHTS (CALCULATED)	
WEIGHT OF VESSEL	1,000,577 LBS
WEIGHT OF HEAD	115,601 LBS
STUDS, NUTS & WASHERS	24,008 LBS
TOTAL	1,150,646 LBS

GENERAL NOTES

- ALL DIMENSIONS AND ANGLES ARE REFERENCE AND ARE NOT TO BE USED FOR FABRICATION. SEE FABRICATION DRAWINGS FOR WORKING DIMENSIONS / TOLERANCES.
- ALL FABRICATION SHALL BE IN ACCORDANCE WITH ASME CODE SECTION III.

CONTRACT	REF. DWG. #1	REF. DWG. #2	REF. DWG. #3	REF. DWG. #4
3167	B-230-483	A-230-161	A-230-162	A-230-163

GEOMETRIC TOLERANCES FOR MACHINED SURFACES UNLESS SPECIFIED ON FACE OF DRAWING

SYM	GEOMETRY	TOL.	SYM	GEOMETRY	TOL.
—	FLATNESS	0.001/IN	—	ANGULARITY	SEE DWG.
—	STRAIGHTNESS	0.001/IN	—	RUNOUT	SEE DWG.
—	ROUNDNESS	SEE DWG.	—	TRUE POSITION	SEE DWG.
—	CYLINDRICITY	SEE DWG.	—	CONCENTRICITY	0.010 TIR
—	PROFILE OF LINE	SEE DWG.	—	SYMMETRY	SEE DWG.
—	PROFILE OF SURFACE	SEE DWG.	—	—	—
—	PARALLELISM	0.010/IN	—	—	—
—	PERPENDICULARITY	0.010/IN	—	—	—

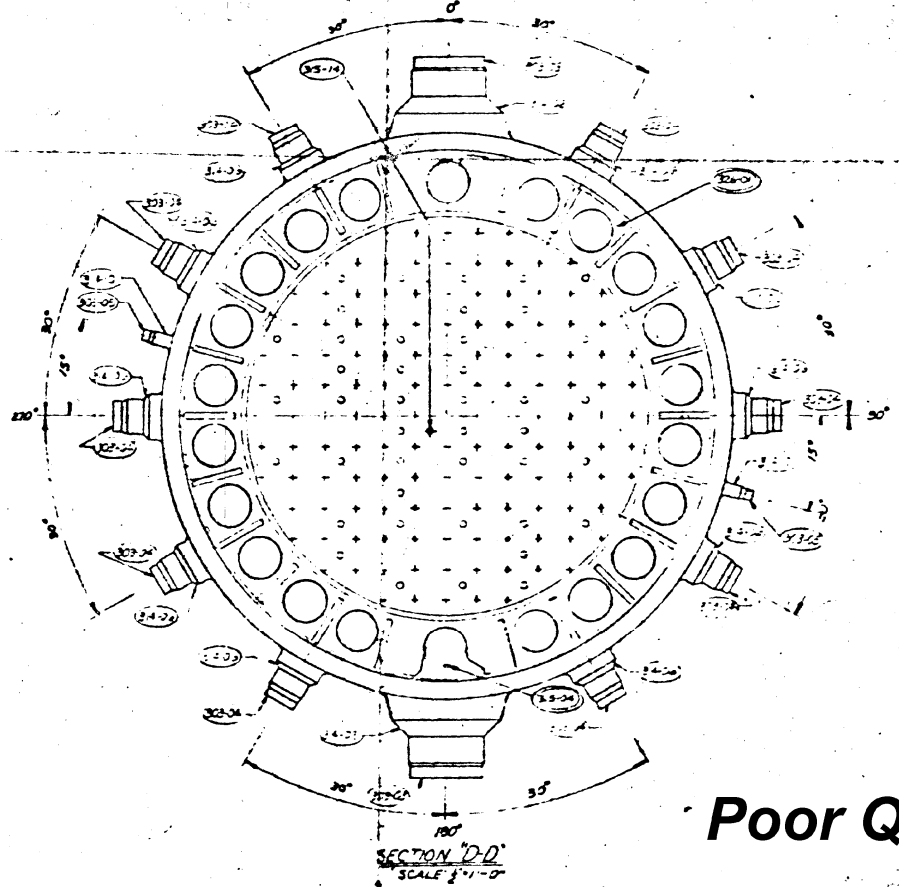
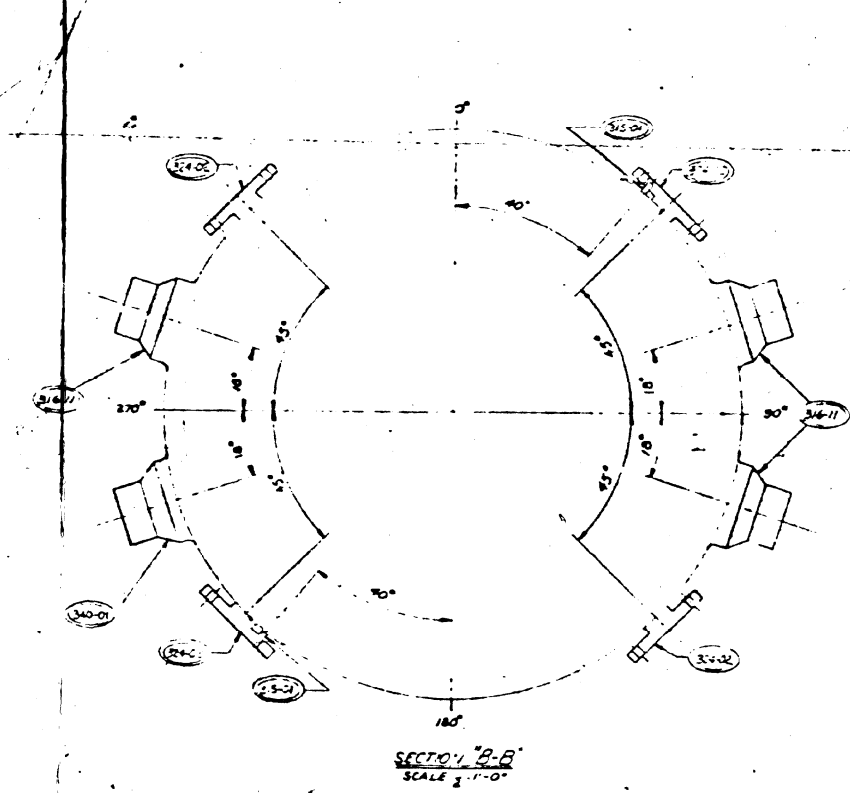
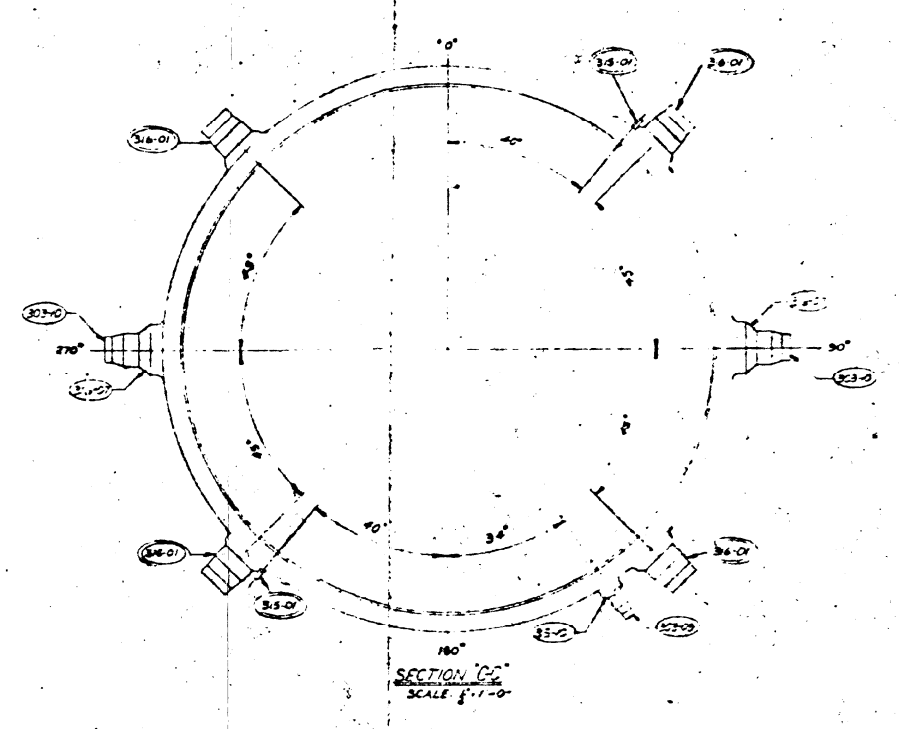
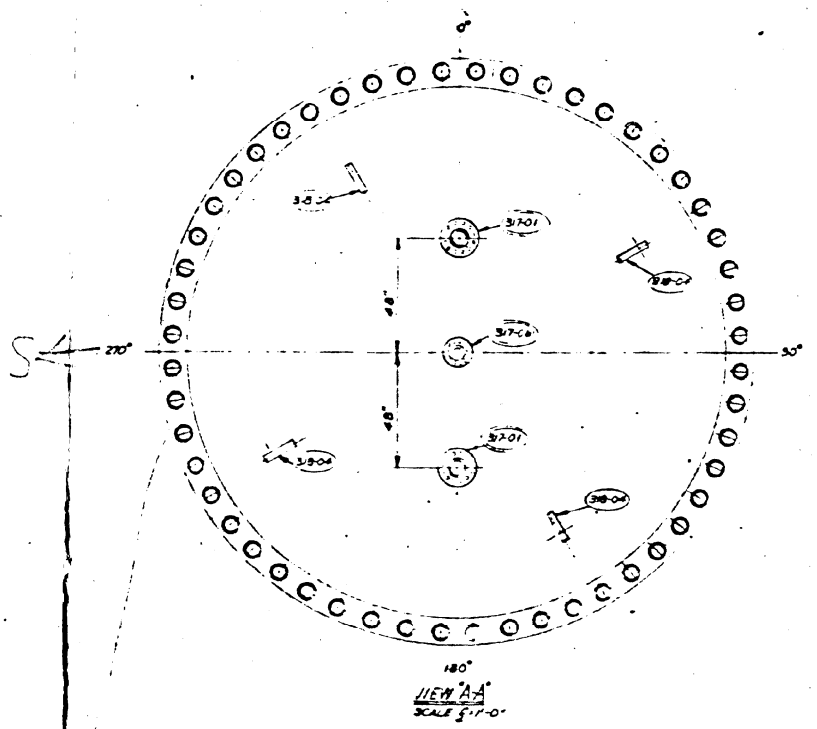
LIST OF MATERIAL - QUANTITIES FOR	NOMENCLATURE	MATERIAL	MATERIAL SPEC.
COMBUSTION ENGINEERING, INC. CHATTANOOGA DIVISION	GENERAL ARRANGEMENT ELEVATION		
FOR: 218" I.D. BWR			
DATE: 10/23/83			
BY: J.K.C.			
CHECKED BY: J.K.C.			
DATE: 10/23/83			
DATE: 10/23/83			
DATE: 10/23/83			
DATE: 10/23/83			

S15523B

1983-115-4

E-234-271

B11-A001 E-234-271
 6511-01 10-502 S15524A
 RPU GEN. ARRGT-PLAN
 EDWIN I. HATCH NUCLEAR PLANT-UNIT 1
 CE PEH-2
 3-A-1
 Revis. Certified



REV. NO.	DESCRIPTION	DATE	APPROVED

CERTIFIED
 BY
 APPROVED

1983-11-2

Poor Quality Original

VENDOR'S DRAWING REVIEW

- No comment - Mfg. may proceed.
- Comments as noted. Make changes and resubmit.
- Changes not required. Mfg. may proceed.

DATE: 5-14-72
 BY: E. J. Ray

JOB NO. 6511 BECHTEL ASSOCIATES
 POWER & INDUSTRIAL DIVISION
 P. O. BOX 607 GAITHERSBURG, MD.

GENERAL NOTES
 1. SEE DIMS E-234-271 FOR LOCATIONS WHERE SECTIONS ARE TAKEN.
 2. ALL DIMENSIONS & ANGLES ARE REFERENCE AND ARE NOT TO BE USED FOR FABRICATION. SEE FABRICATION DRAWINGS FOR WORKING DIMENSIONS AND TOLERANCES.

CONTRACT	REV. NO.	REV. DATE	REV. BY	REV. DESCRIPTION
3167	1	8-230-483	A-270-11	A-230-22

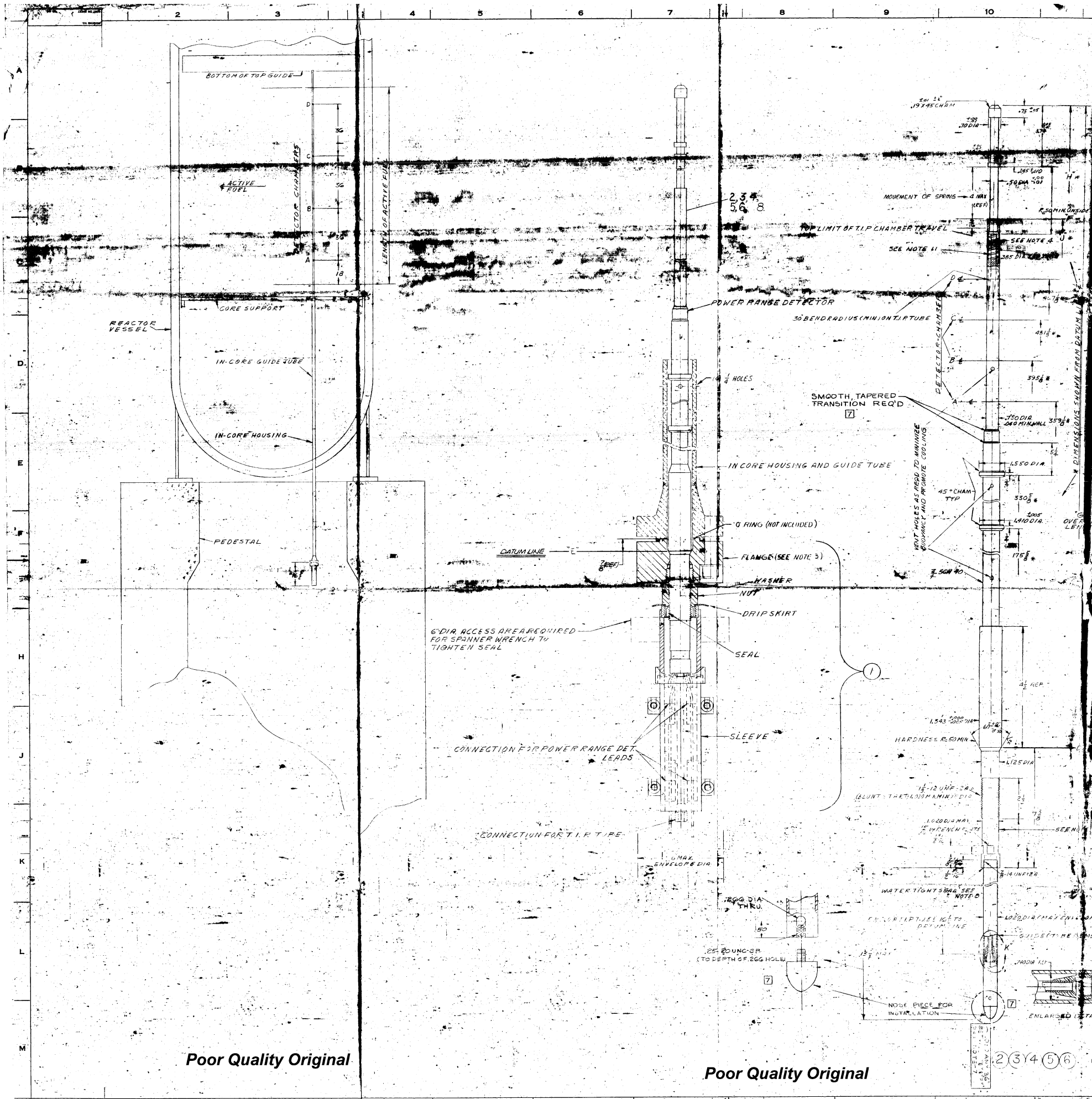
CONTRACT	REV. NO.	REV. DATE	REV. BY	REV. DESCRIPTION
3167	1	8-230-483	A-270-11	A-230-22

ALL DIMENSIONS APPLY AT REFERENCE TEMP. OF 10° F.
 FINISH UNLESS NOTED
 TOLERANCE ON FRACTIONS AS SHOWN UNLESS NOTED

DATE: 5-14-72
 DATE: 5-14-72
 DATE: 5-14-72

GENERAL ARRANGEMENT
 PLAN
 FOR:
 2.8' I.D. BWR
 E 234-271

SCALE: 1/4" = 1'-0"



NAME	VENDOR	VENDOR IDENT. NO.	MPL NO.
1. PRM. INSTALL. HARDWARE	NID	237K65TGI	718, 2-1-104
2. POWER RANGE DETECTOR		129B3620G3	
3. POWER RANGE DETECTOR		129B3620G4	719
4. POWER RANGE DETECTOR		129B3620G5	
5. POWER RANGE DETECTOR		129B3620G9	2-1-104
6. POWER RANGE DETECTOR		129B3620G8	

NAME	VENDOR	VENDOR IDENT. NO.	MPL NO.
POWER RANGE DETECTOR		129B3620G10	719
POWER RANGE DETECTOR	NID	129B3620G11	719

PROJECT	PART NO.	SPEC. NO.
729E993	237K65TGI	718
729E993	129B3620G3	719
729E993	129B3620G4	719
729E993	129B3620G5	719
729E993	129B3620G9	719
729E993	129B3620G8	719
729E993	129B3620G10	719
729E993	129B3620G11	719

- NOTES:
- MATERIAL (EXCEPT SPRING) SHALL BE TP 304, F304 OR TP 316 STAINLESS STEEL. SPRING SHALL BE INCONEL 718. MATERIAL FOR PARTS TO BE JOINED BY WELDING SHALL BE SPECIFIED PER ASME SECTION III, SHALL BE SPECIFIED FOR THE FOLLOWING CASES:
 - ASME SA 312
 - ASME SA 312
 - ASME SA 312
 - ASME SA 249
 - ASME SA 249
 - ASME SA 249
 - ASME SA 249
 - ASME SA 249
 - UNIT SHALL BE DESIGNED, FABRICATED, TESTED AND STAMPED AS A PRIMARY VESSEL PER SECTION III, CLASS 1, UNLESS OTHERWISE SPECIFIED IN THE VESSEL CODE (STAMP ON CODE PLATE) AND THE SPECIFICATION AS SHOWN IN TABLE ABOVE.
 - FLANGE OF RT-1 SHALL BE DESIGNED TO MATCH WITH RT-1171884 AND SHALL BE FABRICATED AND EXAMINED IN ACCORDANCE WITH USAS 818.5 AND ASME BOILER AND PRESSURE VESSEL CODE, SECT. III.
 - MARK WITH WELD SYMBOL ON BLOW THROUGH DIE STAMPING AREA INDICATED APPLICABLE TO NO. OR OTHER PRODUCT IDENTIFICATION.
 - ALL PARTS SHALL BE VAPOR DEGREASED PRIOR TO ASSEMBLY PER G.E. #5050110 (REV. 10/70).
 - CLEAN WITH ACETONE. DO NOT WASH HEAVILY IN CLEAN CLEAN SOLVENTS. DO NOT USE IN CLEANING DURING STORAGE AND SHIPMENT. SOLVENTS MUST BE USED IN THE WASH TUBS OR BATHS.
 - MAY BE REWORKED TO FLAT SURFACE TO MEET THIS REQUIREMENT.
 - DETACHABLE JOINT TO BE WASHED, RINSED, 110°F. OF WATER.
 - FLANGE SHALL BE NO STAGNANT BETWEEN THE POWER RANGE DET. TOR AND THE FLANGE OF RT-1 AFTER A CHECK Y IN THE REACTION AT MAX. REACTOR PRESSURE.
 - THE ENVIRONMENT BELOW THE FLANGE SHALL BE:
 - A. NORMAL OPERATION: 10°F AVERAGE - 508°F MAX.
 - B. TRANSMISSION (REACTOR) FOR 15 MINUTE: 10°F AVERAGE - 508°F MAX.
 - C. TRANSMISSION (REACTOR) FOR 10 MINUTE: 10°F AVERAGE - 508°F MAX.
 - SPRING TO BE DESIGNED FOR A MINIMUM 170 SPRING UNLOADINGS FROM 20 TO 10 LBS AT 175°F.
 - 5 LBS. PRE-LOAD
 - 2 LBS./IN. RESILIENT
 - 21 LBS. MAX. LOAD

ITEM	QTY	UOM	DESCRIPTION
1	1	EA	FLANGE
2	1	EA	WASHER
3	1	EA	NUT
4	1	EA	DRIP SKIRT
5	1	EA	SEAL
6	1	EA	SLEEVE
7	1	EA	FLANGE
8	1	EA	WASHER
9	1	EA	NUT
10	1	EA	DRIP SKIRT
11	1	EA	SEAL
12	1	EA	SLEEVE

GENERAL ELECTRIC
 729E993
 POWER RANGE MONITORING UNIT
 UNIT - REACTOR MON. SYS.
 PURCHASED PART
 729E993
 PEH-2
 CLASS 3-D
 729E993
 2-1-104, 81-D193

REVISIONS
 1. 729E993
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Poor Quality Original

Poor Quality Original

Poor Quality Original

QTY	NAME	VENDOR	IDENT. NO.	MPL. NO.
1	SRM/IRM DRIVE UNIT	N.I.D.	291X-15661	714, 11-102, B11-D192
2	MOTOR MODULE	N.I.D.	125-2747	708, T-11, C51-501
3	MOTOR MODULE	N.I.D.	125-2747	708, T-11, C51-501
4	DRY TUBE	N.I.D.	886D38063	105, 2-1-100
5	DRY TUBE	N.I.D.	886D38063	105, 2-1-100
6	DRY TUBE	N.I.D.	886D38063	105, 2-1-100
7	DRY TUBE	N.I.D.	886D38063	105, 2-1-100
8	DRY TUBE	N.I.D.	886D38063	105, 2-1-100
9	DRY TUBE	N.I.D.	886D38063	105, 2-1-100
10	DRY TUBE	N.I.D.	886D38063	105, 2-1-100
11	MOTOR MODULE	N.I.D.	125-2747	708, T-11, C51-501

SRM/IRM DRY TUBE

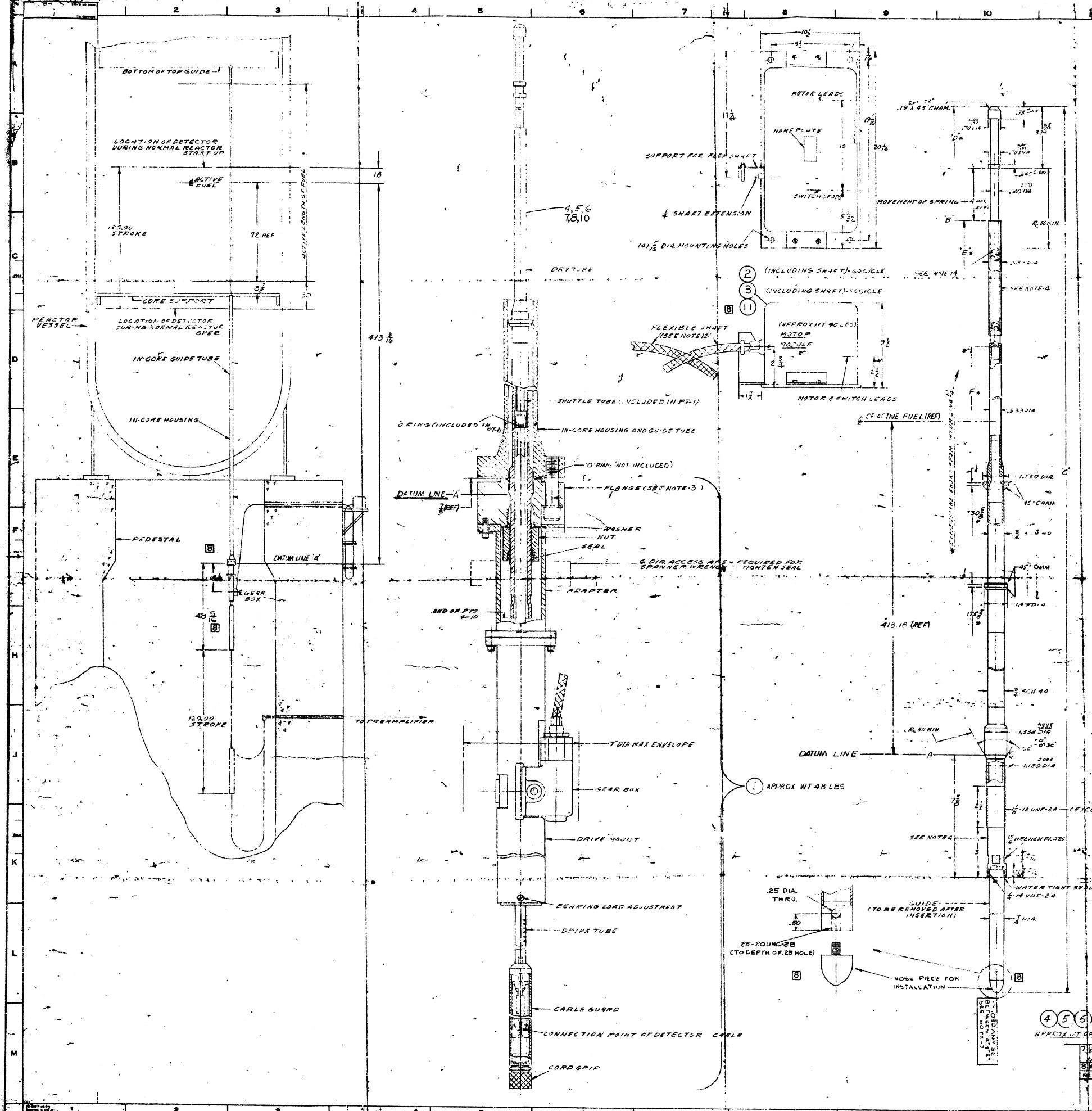
PROJECT	DWG. NO.	SPEC. NO.
DRY TUBE	729E946	2141524
ADJUST. PIE	2141525	2141525
FLANGE	2141526	2141526
DRY TUBE	2141527	2141527
WATER TIGHT SEAL	2141528	2141528
WATER TIGHT SEAL	2141529	2141529
WATER TIGHT SEAL	2141530	2141530
WATER TIGHT SEAL	2141531	2141531
WATER TIGHT SEAL	2141532	2141532
WATER TIGHT SEAL	2141533	2141533
WATER TIGHT SEAL	2141534	2141534
WATER TIGHT SEAL	2141535	2141535
WATER TIGHT SEAL	2141536	2141536
WATER TIGHT SEAL	2141537	2141537
WATER TIGHT SEAL	2141538	2141538
WATER TIGHT SEAL	2141539	2141539
WATER TIGHT SEAL	2141540	2141540
WATER TIGHT SEAL	2141541	2141541
WATER TIGHT SEAL	2141542	2141542
WATER TIGHT SEAL	2141543	2141543
WATER TIGHT SEAL	2141544	2141544
WATER TIGHT SEAL	2141545	2141545
WATER TIGHT SEAL	2141546	2141546

- MATERIAL (EXCEPT SPRING) SHALL BE TO 304 F143 1/4" THK 316 STAINLESS STEEL. SPRING SHALL BE INCOEL X-750. MATERIAL FOR PARTS REQUIRING DESIGN PER SOME CODE SECTION 111, SHALL BE SPECIFIED AS FOLLOWS:
 - ASME SA 312 PIPE, SEAMLESS, TP 316, ASME SA 312
 - ASME SA 312 FIVE, SEAMLESS, TP 316, ASME SA 312
 - ASME SA 249 TUBING, TO DIM 104, ASME SA 249
 - ASME SA 213 TUBING, TO DIM 104, ASME SA 213
 - ASME SA 213 TUBING, TO DIM 104, ASME SA 213
 - ASME SA 213 TUBING, TO DIM 104, ASME SA 213
 - ASME SA 213 TUBING, TO DIM 104, ASME SA 213
 - ASME SA 213 TUBING, TO DIM 104, ASME SA 213
 - ASME SA 213 TUBING, TO DIM 104, ASME SA 213
- EXCEPT PART 101'S SHALL BE TO 1/2" THK OF STAINLESS STEEL. THE STEEL AND STAMPED AT APPROPRIATE VESSEL PER SECTION 111, CLASS 3 OF ASME BOILER AND PRESSURE VESSEL CODE (EXCEPT AS NOTED) AND PER SPECIFICATION 4.4.4 IN TABLE ABOVE.
- FLANGE OF PT. 1 SHALL BE WELDED TO WALL WITH 1/2" DIA. 111.1084 AND SHALL BE FABRICATED AND EXAMINED IN ACCORDANCE WITH ASME B1.3.2 AND ASME B1.3.1. THE WELD SHALL BE TO 1/2" THK. THE WELD SHALL BE TO 1/2" THK.
- WATER TIGHT SEAL SHALL BE AS FOLLOWS:
 - APPLICABLE PT. 1, WATER TIGHT SEAL SHALL BE AS FOLLOWS:
 - APPLICABLE PT. 2, WATER TIGHT SEAL SHALL BE AS FOLLOWS:
- ALL PARTS SHALL BE DEGREASED BEFORE TO ASSEMBLY. PER E.G., #50381011 OR CLEANED BY SHOWN APPROVED METHOD WITH HALOGENATED COMPOUND.
- CLEAN WITH ALCOHOL. ASSEMBLY AND WRAP TIGHTLY IN CLEAN POLYETHYLENE TO PREVENT CONTAMINATION DURING STORAGE AND SHIPMENT. CAUTION: DO NOT USE ANY ADHESIVE TAPE ON BARE METAL.
- MAY BE STRAIGHTENED IN HORIZONTAL PLANE SURFACE TO MEET THIS REQUIREMENT.
- DETACHABLE JOINT BETWEEN PT. 1 AND PT. 2 SHALL BE TO 1/2" THK.
- THERE SHALL BE NO LEAKAGE BETWEEN THE DRY TUBE AND THE FLANGE OF PT. 1 AFTER ASSEMBLY IN THE REACTOR AT 30. NEWTON PRESSURE.
- THE SRM/IRM UNIT SHALL INSERT THE DRY TUBE AND SHUTTLE TUBE OF PT. 1 AT SPEED OF NOT LESS THAN 977 IN./MIN. AND NOT GREATER THAN 6 FT./MIN.
- UNIT SHALL HAVE A MINIMUM LIFE OF AT LEAST 3000 STRIKES UNDER AMBIENT ENVIRONMENTAL CONDITIONS.
- DRY TUBE SHALL BE TO 1/2" THK.
- ENVIRONMENTAL BEYOND THE FLANGE SHALL BE:

 - A. NORMAL OPERATING TEMPERATURE - 150 F. MAX.
 - B. NORMAL OPERATING HUMIDITY - 95% MAX. UP TO 30 MINUTES
 - C. ABNORMAL OPERATING HUMIDITY - 95% MAX. UP TO 15 MINUTES
 - D. MAXIMUM OPERATING SPEED - 100 FT./MIN.
 - E. MAXIMUM OPERATING PRESSURE - 100 PSIG MAX.

- SPRING TO BE DESIGNED TO WITHSTAND SPRING UNLOADING FROM 20 TO 10 LBS. OF FORCE.

PIN	C	D	E	F
4	509	488	453	470
5	519	492	457	474
6	510	491	456	473
7	516	497	462	479
8	517	496	461	478
9	517	496	461	478
10	514	493	458	475

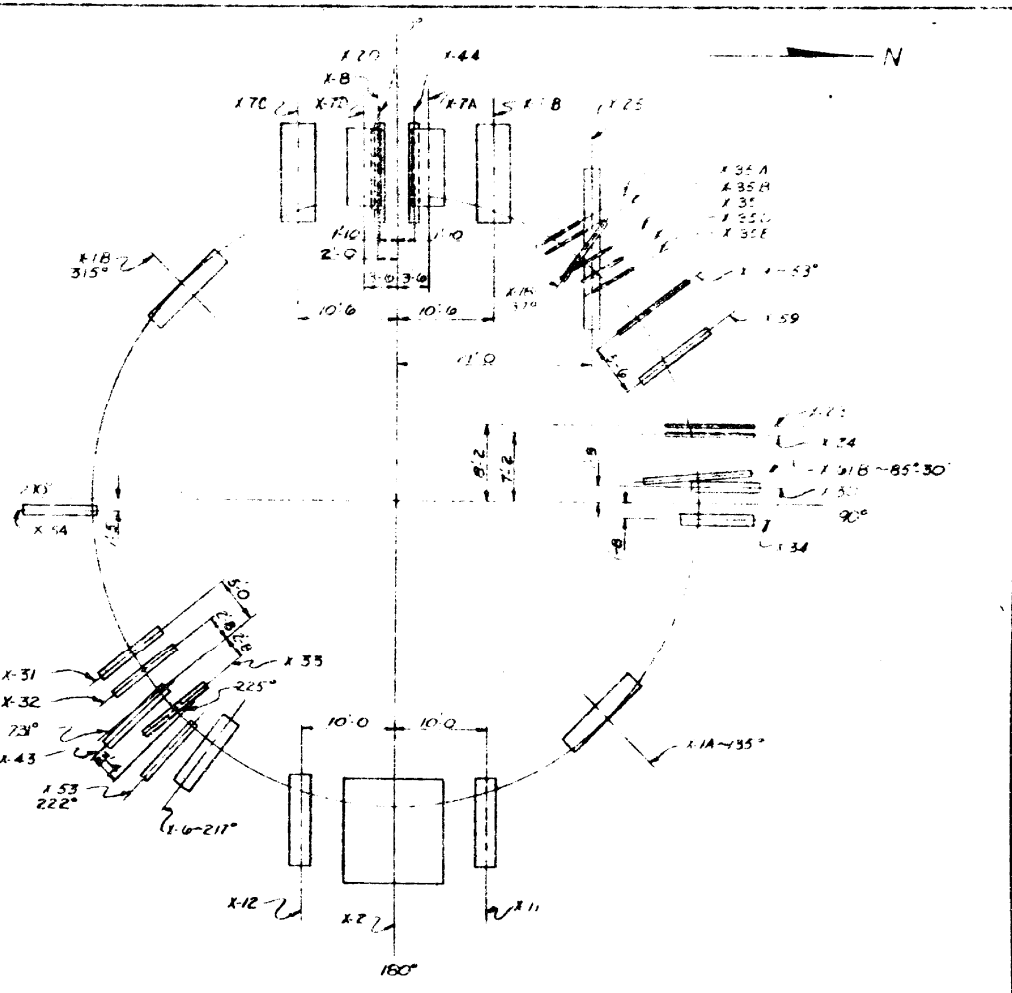


APPROX. WT OF EACH ONE PART - 30 LBS

REV. NO.	DATE	BY	CHKD.	DESCRIPTION
1	11-22-54	W.K.	W.K.	ISSUED FOR FAB
2	12-22-54	W.K.	W.K.	ISSUED FOR FAB
3	1-10-55	W.K.	W.K.	ISSUED FOR FAB
4	2-10-55	W.K.	W.K.	ISSUED FOR FAB
5	3-10-55	W.K.	W.K.	ISSUED FOR FAB
6	4-10-55	W.K.	W.K.	ISSUED FOR FAB
7	5-10-55	W.K.	W.K.	ISSUED FOR FAB
8	6-10-55	W.K.	W.K.	ISSUED FOR FAB
9	7-10-55	W.K.	W.K.	ISSUED FOR FAB
10	8-10-55	W.K.	W.K.	ISSUED FOR FAB

REVISIONS
 APPROVED: *[Signature]*
 PREPARED BY: SA JOSE
 DATE: 11-1-54

CUSTOMER MK.	SINGLE PENETRATIONS		BELOW EQUATOR		EQUATOR		SPARE
	SIZE	CB&I DWG. NO.	ELEV.	PENET. AZ. 'B'	ANG. I. 'A'	ELEV. 'C'	
X-30	10" φ	46	138'-0"	87° 03'-47"	0° 44'-35"	138'-0"	X-30-E-B
X-54	10" φ	48	138'-0"	267° 30'-06"	0° 44'-35"	138'-0"	X-54-E-B
X-53	10" φ	48	137'-6"	221° 31'-33"	1° 34'-24"	137'-6"	
X-2	122" I.D.	159	135'-4 1/2"	180°	5° 22'-27"	135'-4 1/2"	
X-1A	120" I.D.	25	133'-9"	135°	8° 14'-56"	133'-9 1/2"	
X-1B	120" I.D.	25	133'-9"	315°	8° 14'-56"	133'-9 1/2"	
X-34	10" φ	44	133'-0"	92° 58'-42"	9° 35'-39"	133'-0 1/2"	X-34-E-B
X-6	24" I.D.	57	131'-7 1/2"	217°	17° 03'-36"	131'-7 1/2"	
X-59	10" φ	45	125'-3"	63° 38'-43"	23° 51'-52"	125'-3 3/4"	X-59-E-B
X-33	10" φ	45	125'-3"	225° 51'-41"	23° 51'-52"	125'-3 3/4"	X-33-E-F
X-18	3" φ	41	124'-8 5/8"	37°	24° 03'-27"	124'-8 5/8"	
X-20	12" φ	44	122'-10"	356° 19' 21"	28° 20'-26"	122'-10 1/2"	
X-44	12" φ	44	122'-10"	3° 40'-39"	28° 20'-26"	122'-10 1/2"	
X-61B	8" φ	41	122'-0"	85° 30'	30° 17'-29"	122'-0 1/2"	
X-43	8" φ	66	134'-0"	230° 56'-11"	46° 44'	134'-0 1/2"	
MULTIPLE PENETS. BELOW EQUATOR							
X-11	26" φ	51	133'-0"	156° 44'-45"	SEE NOTE ①	133'-5 1/2"	
X-12	36" φ	50	132'-6"	203° 43'-18"	SEE NOTE ②		
X-7A	42" φ	35	134'-10"	0°	SEE NOTE ③		
X-7B							
X-7C							
X-7D							
X-8	16" φ		131'-4"				
X-35A-E	1 1/2" φ	47	127'-5"	28° 48'-42"	19° 03'-51"	127'-5 1/2"	
X-23 & X-24	4" φ	44	125'-3"	75°	23° 51'-52"	125'-3 3/4"	
X-31 & X-32	10" φ	43	125'-3"	237° 05'	23° 51'-52"		
X-19	3" φ	45	125'-3"	53°	23° 51'-52"		
X-25	18" φ	45	122'-0"	53°	23° 51'-52"		

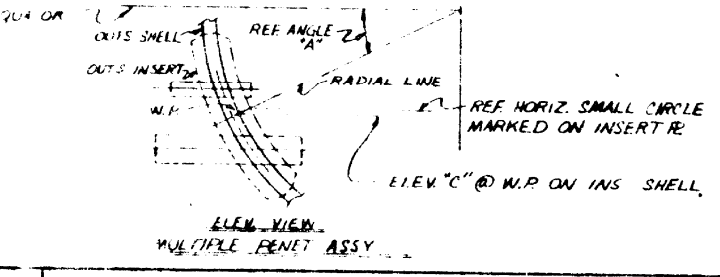
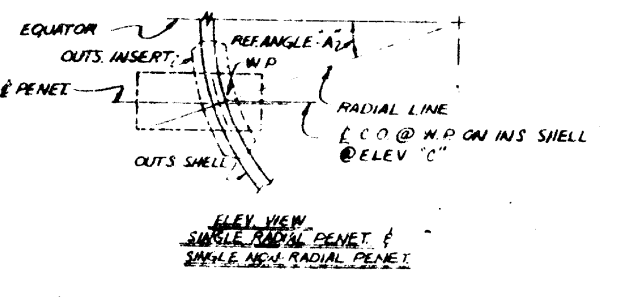
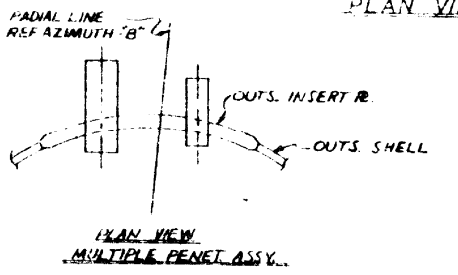
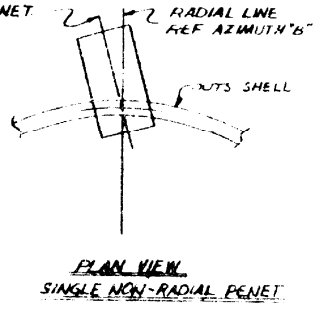
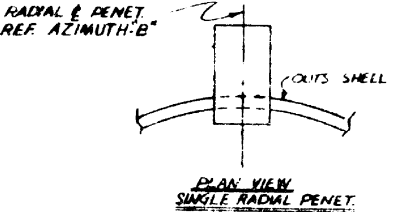


NOTES:

① X-11 IS IN AN INSERT WITH X-13B. THE INSERT STRADDLES THE EQUATOR & THE EQUATOR IS MARKED ON THE INSERT AS THE HORIZONTAL REF. LINE. X-13B IS LISTED ON DWG. 4 WITH PENETS. ABOVE THE EQUATOR.

② X-12 IS IN AN INSERT WITH X-13A. THE INSERT STRADDLES THE EQUATOR & THE EQUATOR IS MARKED ON THE INSERT AS THE HORIZONTAL REF. LINE. X-13A IS LISTED ON DWG. 4 WITH PENETS. ABOVE THE EQUATOR.

③ X-7A-D & X-8 ARE ASSEMBLED WITH X-9A & B & X-47. THE INSERT STRADDLES THE EQUATOR & THE EQUATOR IS MARKED AS THE HORIZONTAL REF. LINE. X-9A & B & X-47 ARE LISTED ON DWG. 4 WITH PENETS. ABOVE EQUATOR.



REVIEWED PER CORPORATE Q.A. PLAN
RELEASED FOR USE
CERTIFIED BY: [Signature] DATE: 2-10-70
UPDATED BY: REV. 2, DATED 2/2/70

EDWIN T. HATCH
REACTOR BUILDING CONTAINMENT VESSEL
GEORGIA POWER CO., DALYLET, GA.

CHICAGO BRIDGE & IRON COMPANY

PENETRATION SCHEDULE
PENETS. BY BELOW EQUATOR

CONTRACT NO. 69-4153
DATE: 1-1-70

6511 10-502 S15665B

TITLE:

JOB: EDWIN T. HATCH NUCLEAR PLANT-UNIT 1

MFR: CB&I P. O. PEH-154
REQ. CLASS 3-A-5

RECORD COPY

COORDINATING PRINT

FROM	DATE
CIVIL	
STRUCT	
ARCH	
MECH	
LAYOUT	
SLEC	
PROJ. ENG.	

VENDOR'S DRAWING REVIEW

1 No comment - Mfg. may proceed.

2 Comments as noted - Make changes and resubmit drawing per comments.

3 Review not required - Mfg. may proceed.

Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.

By: [Signature] BECHTEL Date: 2-10-70

JOB NO. 6511 BECHTEL ASSOCIATES
POWER & INDUSTRIAL DIVISION
P. O. BOX 607 GAITHERSBURG, MD.

S15665B

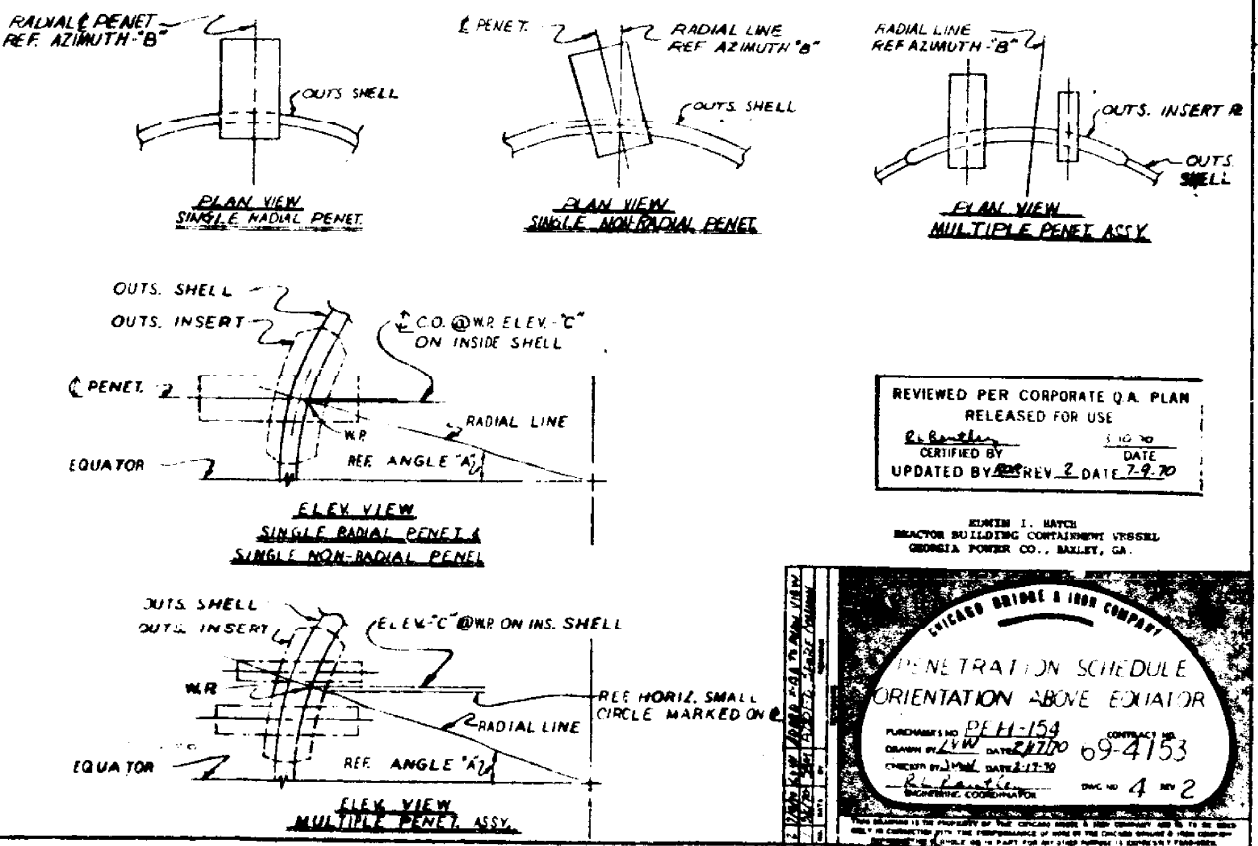
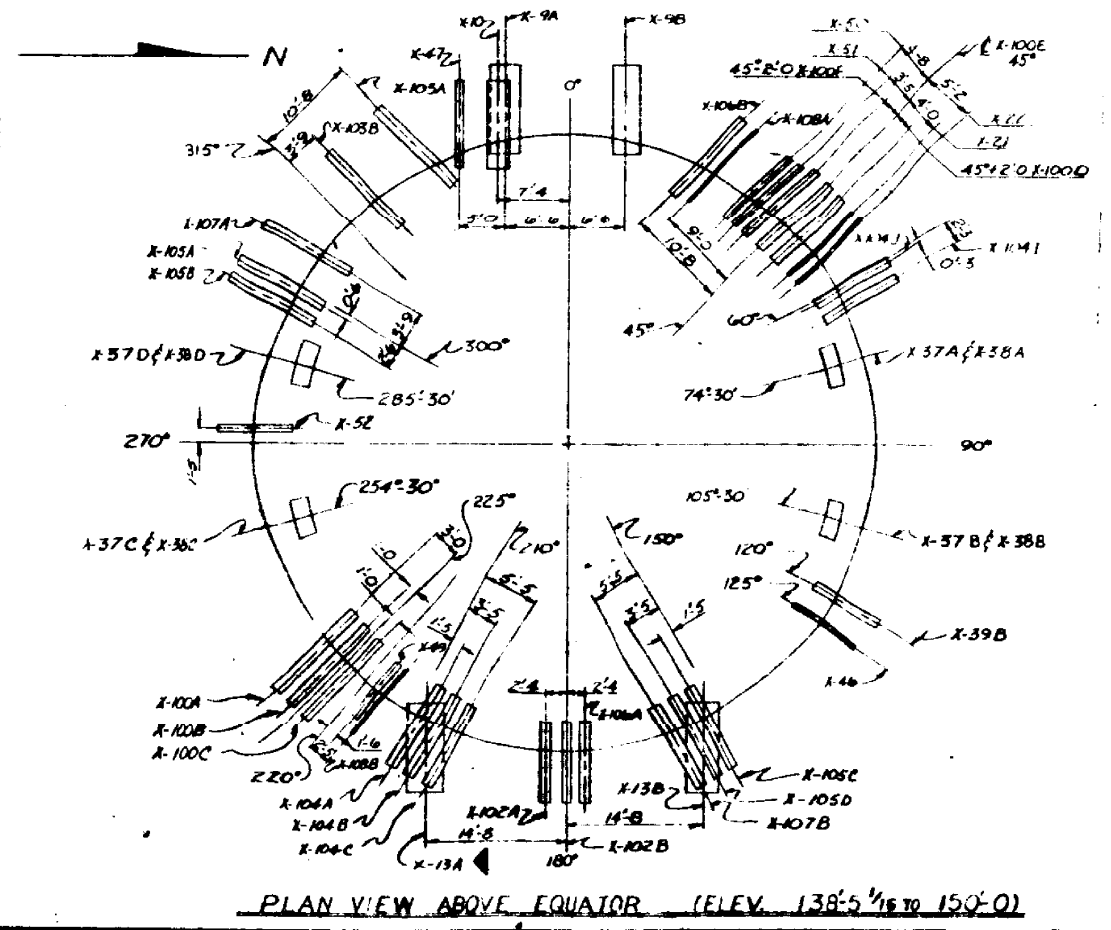
SINGLE PENETRATIONS ABOVE EQUATOR		ELEV. 138.5 TO 150.0	
CUSTOMER MK.	SIZE	DRG. NO.	ELEV.
X-39B	10"φ	50	146.8 1/2
X-52	10"φ	46	146.8 1/2
X-107-A	12"φ	56	147.0
X-103A	12"φ	55	147.0
X-103B	12"φ	56	147.0
X-12	16"φ	36	146.8 1/2
X-46	4"φ	46	139.11

MULTIPLE PENETRATIONS ABOVE EQUATOR		ELEV. 138.5 TO 150.0	
CUSTOMER MK.	SIZE	DRG. NO.	ELEV.
X-9A&B	32"φ	55	140.0
X-47	4"φ	35	140.0
X-13A	42"φ	50	138.8
X-13B	42"φ	51	138.8
X-37A&X-38A	7"φ	37	
X-37B&X-38B			
X-37C&X-38C			
X-37D&X-38D			

MULTIPLE PENETS. CONTINUED		ELEV. 138.5 TO 150.0	
CUSTOMER MK.	SIZE	DRG. NO.	ELEV.
X-106B	12"φ	56	147.0
X-108A	2 1/2"φ	56	147.0
X-50&X-51	10"φ	53	146.8 1/2
X-100DE&F	12"φ	56	147.0
X-18&X-22	3"φ	56	146.8 1/2
X-04I&J	12"φ	60	147.0
X-105C&D&X-107B	12"φ	55	147.0
X-102A&B&X-106A	12"φ	40	147.0
X-104AB&C	12"φ	52	147.0
X-100AB&C	12"φ	49	147.0
X-49	10"φ	56	146.8 1/2
X-108B	2 1/2"φ	56	147.0
X-105A&B	12"φ	60	147.0

- NOTES:
- X-9A&B & X-47 ARE ASSEMBLED WITH X-1A D & X-8. THE INSERT STRADDLES THE EQUATOR & THE EQUATOR IS MARKED AS THE HORIZ. REF. LINE. X-7A-D & X-8 ARE LISTED IN DWG. 3 WITH PENETS. BELOW EQUATOR.
 - X-13A IS IN AN INSERT WITH X-12. THE INSERT STRADDLES THE EQUATOR & THE EQUATOR IS MARKED AS THE HORIZ. REF. LINE. X-12 IS LISTED ON DWG. 3 WITH PENETS. BELOW EQUATOR.
 - X-13B IS IN AN INSERT WITH X-11. THE INSERT STRADDLES THE EQUATOR & THE EQUATOR IS MARKED AS THE HORIZ. REF. LINE. X-11 IS LISTED ON DWG. 3 WITH PENETS. BELOW EQUATOR.

CONTINUED



REVIEWED PER CORPORATE Q.A. PLAN
RELEASED FOR USE
CERTIFIED BY [Signature] DATE 1/10/70
UPDATED BY [Signature] DATE 7/9/70

CHICAGO BRIDGE & IRON COMPANY

PENETRATION SCHEDULE
ORIENTATION ABOVE EQUATOR

PURCHASE NO. PEH-154 CONTRACT NO. 09-4153
DRAWN BY L.V.W. DATE 12/70
CHECKED BY J.M.M. DATE 1/71
ENGINEERING COORDINATOR [Signature] DWG. NO. 4 REV. 2

6511 10-502 S15666 B
TITLE PENETRATIONS IN SHELLS
ORIENTATION ABOVE EQUATOR
JOB DORIN 1. HATCH NUCLEAR PLANT-UNIT 1
MFR. CB&I P.O. PEH-154
REQ. CLASS 3-A-5

Reviewed and Approved by Southern Services, Inc. and returned without comment by letter date 1/10/70

RECORD COPY

COORDINATING PRINT

FROM	DATE	ROUTE	INITIAL	DATE
CIVIL				
STRUCT.				
ARCH.				
MECH.				
LAYOUT				
ELEC.				
PRO. ENG.				

VENDOR'S DRAWING REVIEW

1 In comment - Mfg. may proceed.

2 Comments as noted. Make changes and resubmit drawing per comments.

3 Review not required. Mfg. may proceed.

Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.

By [Signature] BECHTEL Date 1/10/70

JOB NO. 6511 BECHTEL ASSOCIATES
POWER & INDUSTRIAL DIVISION
P. O. BOX 607 GAITHERSBURG, MD.

DWG 4-A

6511 10-502 S156

TITLE: PENET. SCHEDULE
ORIENTATION ABOVE EQUATOR

JOB: EDWIN I. HATCH NUCLEAR PLANT-UNIT 1

FR: CB&I

P. O. PEH-154
REQ. CLASS **3-A-5**

Revision _____ Reviewed by Southern Services, Inc. and returned without comment by letter dated _____ and signed by _____

Microfilm 9-2-77

SINGLE PENETRATIONS ABOVE EQUATOR (ELEV 150'-0 TO 163'-2)

CUSTOMER MK.	SIZE	CB&I DWG. NO.	ELEV.	PENET. AZ-B'	ANGLE-A"	ELEV.-C"	SPARE
X-62	20" φ	62	151'-6	180°	23°-42'-14"	151'-5 2/32	✓
X-27	10" φ	48	154'-0	233°	28°-36'-42"	153'-11 1/16	
X-60A	8" φ	62	160'-0	86°-28'-03"	41°-33'-06"	159'-11 3/4	✓
X-60B	8" φ	62		266°-28'-03"			✓
X-39A	10" φ	59		230°			

MULTIPLE PENETRATIONS ABOVE EQUATOR (ELEV 150'-0 TO 163'-2)

X-101A,B&C	12" φ	42	152'-0	300°	24°-40'-11"	151'-11 2/32	
X-101D,E&F		55		165°			
X-104D&E		42	151'-6	195°	23°-42'-14"	151'-5 2/32	✓
X-104F,G&H		54	152'-0	64°	26°-34'-46"	152'-11 9/16	
X-40C&D,X-45	10" φ	54	154'-0	64°	26°-34'-46"	152'-11 9/16	X-45
X-40A&B	10" φ	52	154'-0	225°	28°-36'-42"	153'-11 13/16	

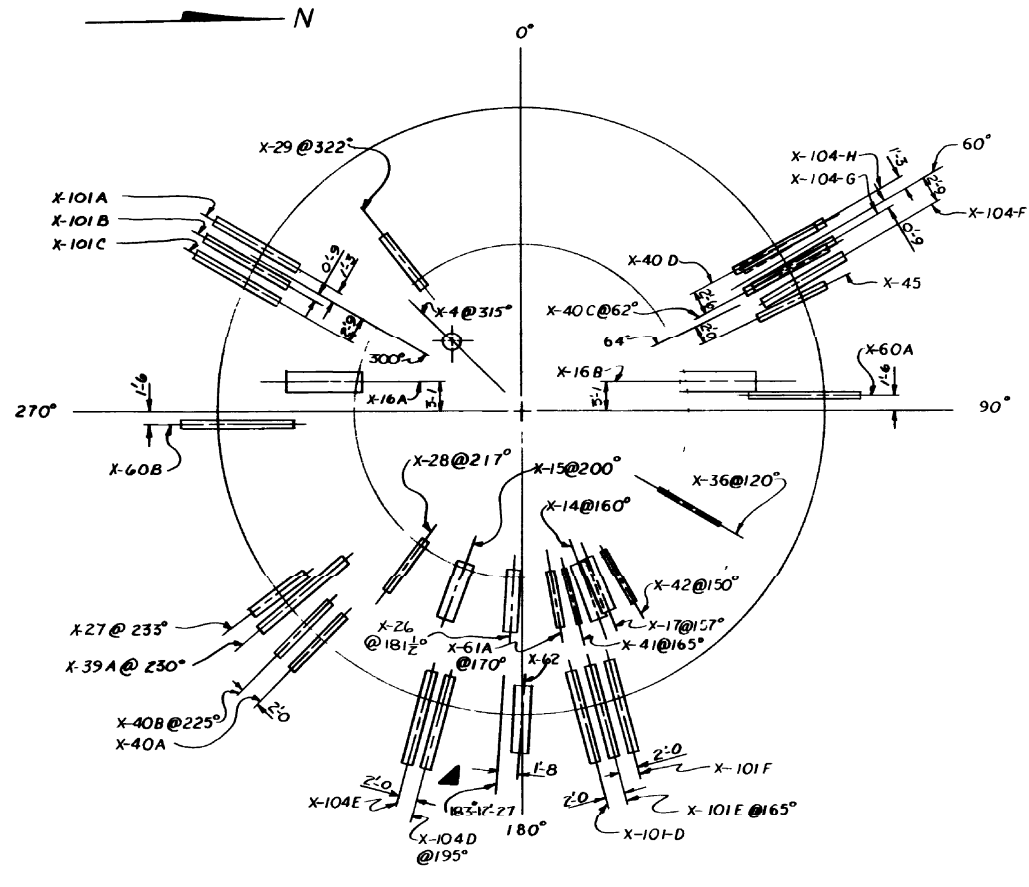
SINGLE PENETRATIONS IN DRYWELL CYLINDER

CUSTOMER MK.	SIZE	CB&I DWG. NO.	PENET. AZ-B'	ELEV.	SPARE
X-14	20" φ	39	160°	172'-6	
X-15	20" φ		200°	174'-0	✓
X-16A	26" φ		279°-57'-43"	172'-9	
X-16B	26" φ		80°-02'-17"	172'-9	
X-26	18" φ		181°-30'	193'-9	
X-28	10" φ		217°	172'-6	X-28E
X-29	10" φ		322°	172'-6	X-29F
X-36	6" φ		120°	176'-6	
X-42	6" φ		150°	189'-0	

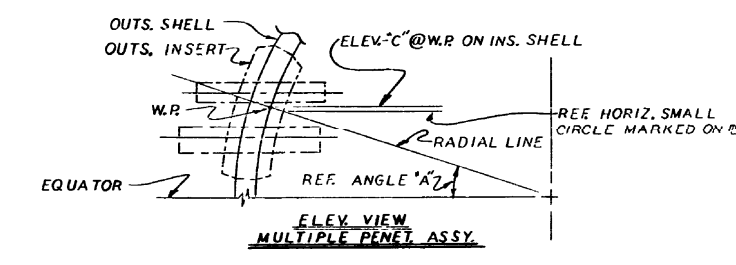
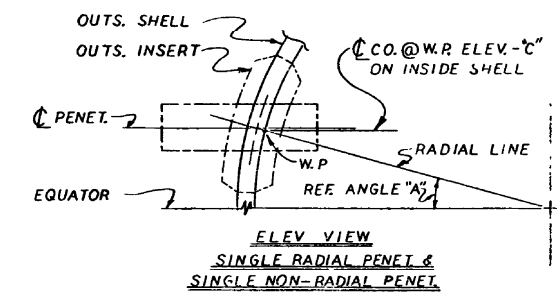
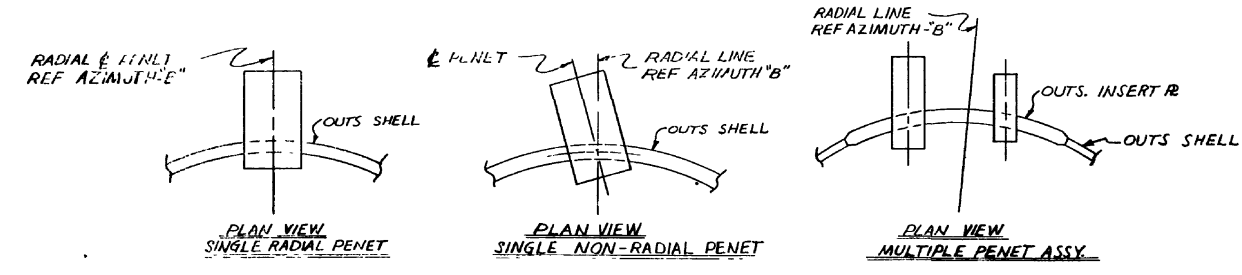
MULTIPLE PENETRATION IN DRYWELL CYLINDER

X-17	18" φ	40	157°	194'-0	
X-41	6" φ				
X-61A	8" φ				✓

X-4	24 I.D.	63	315°	TOP HEAD MANWAY	
-----	---------	----	------	-----------------	--



PLAN VIEW OF PENETS. ABOVE EQUATOR (ELEV. 150'-0 TO 163'-2) & PENETS. IN DRYWELL CYLINDER



REVIEWED PER CORPORATE QA PLAN RELEASED FOR USE
CERTIFIED BY P. Beatty DATE 3-20-70
UPDATED BY REV. 2 DATE 5-22-70

EDWIN I. HATCH
REACTOR BUILDING CONTAINMENT VESSEL
GEORGIA POWER CO., BAKLEY, GA.

CHICAGO BRIDGE & IRON COMPANY

PENET SCHEDULE
ORIENTATION ABOVE EQUATOR

PURCHASER'S NO. PEH-154 CONTRACT NO. 69-4153
DRAWN BY VW DATE 2/11/70
CHECKED BY JMW DATE 2/11/70
ENGINEERING COORDINATOR

DWG NO. 4-A-2

MAY 27 1970

COORDINATING PRINT

ROUTE	INITIAL	DATE
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MECH		
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ELEC		
PROJ ENG		

VENDOR'S DRAWING REVIEW

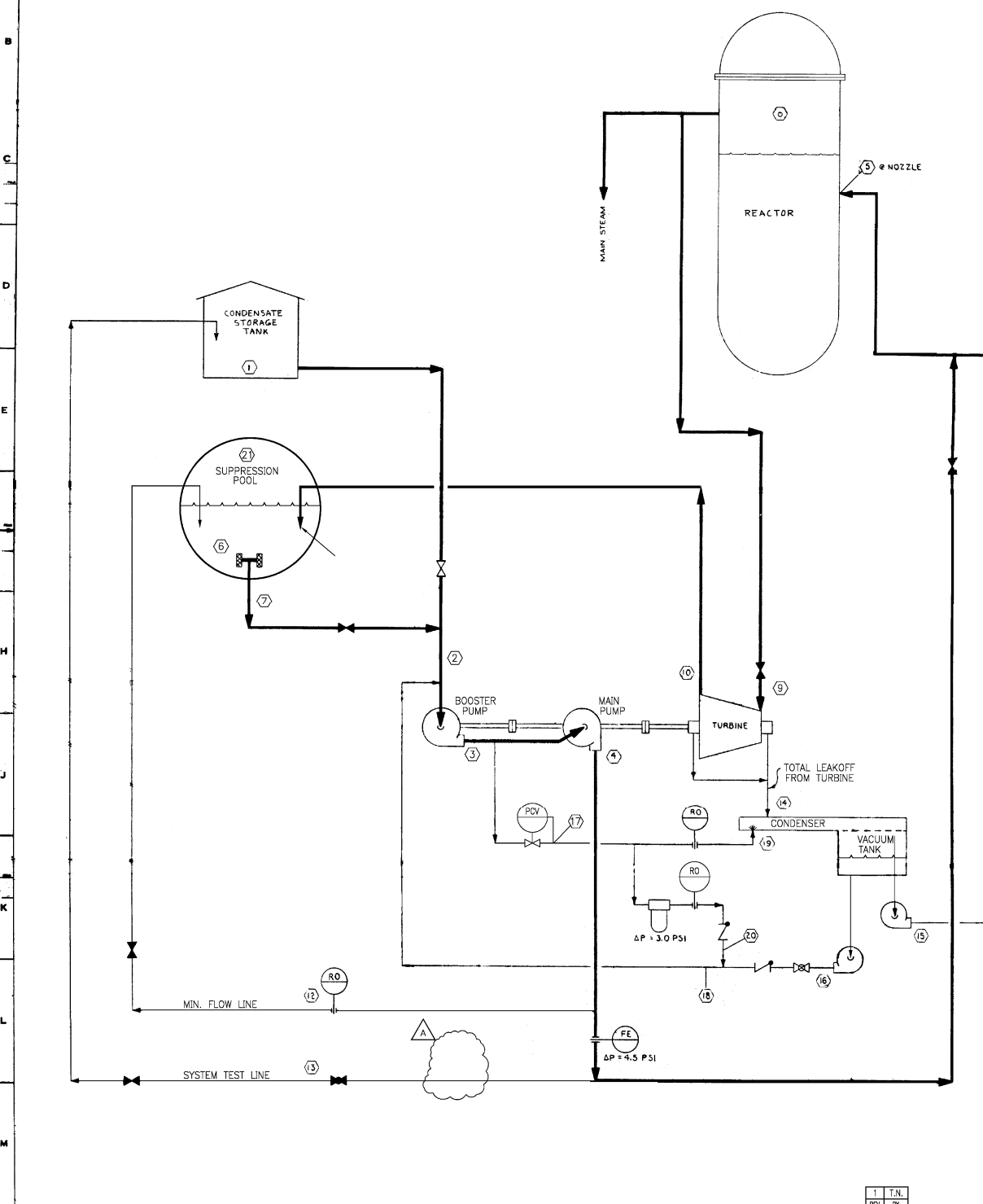
- No comment - Mfg. may proceed.
- Comments as noted - Make changes and resubmit drawing per comments.
- Review not required - Mfg. may proceed.

Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.

By H. J. H. Date 6-11-70
BECHTEL

JOB NO. **6511** BECHTEL ASSOCIATES
POWER & INDUSTRIAL DIVISION
P. O. BOX 607 GAITHERSBURG, MD.

- UNLESS OTHERWISE SPECIFIED THE FOLLOWING APPLIES TO THIS PROCESS DIAGRAM
- | APPLIES TO | REVISION | DATE | BY |
|--------------|----------|------|----|
| DESIGN | 1 | | |
| CONSTRUCTION | 2 | | |
| OPERATION | 3 | | |
| MAINTENANCE | 4 | | |
- NOTES:
- ATMOSPHERIC PRESSURE OF 14.7 PSIA WAS USED IN CALCULATIONS.
 - WATER FLOWS ARE SHOWN IN GPM, STEAM FLOWS IN 1000 LB/HR.
 - THE MAXIMUM POOL WATER TEMPERATURE FOR CONTINUOUS SYSTEM OPERATION WILL NOT EXCEED 140°F, HOWEVER, DUE TO POTENTIAL SHORT TERM OPERATION AT HIGHER TEMPERATURES, PIPING EXPANSION SHALL BE BASED ON 170°F.
 - THE FOLLOWING ADDITIONAL ACCIDENT OPERATING MODES ARE POSSIBLE:
 - SUCTION FROM CONDENSATE STORAGE, SUPPRESSION POOL AT LOW PRESSURE, REACTOR AT HIGH OR LOW PRESSURE.
 - SUCTION FROM SUPPRESSION POOL, SUPPRESSION POOL AT HIGH PRESSURE, REACTOR AT HIGH OR LOW PRESSURE.
 THESE POTENTIAL OPERATING MODES DO NOT CONTROL PIPE OR VALVE SIZING OR SPECIFICATION, AND NO DATA IS SHOWN.
 - DELETED
 - THE CONTROLLING MODES FOR LINE SIZING AND ARRANGEMENT ARE:
 - SUCTION FROM COND. STORAGE - - - - - MODE A
 - SUCTION FROM SUPPRESSION POOL - - - - - MODE C
 - PUMP DISCHARGE - - - - - MODE C
 - STEAM SUPPLY - - - - - MODE B
 - TURBINE EXHAUST - - - - - MODE A, C & D
 - TEST LINE - - - - - MODE E
 - COOLING SYSTEM - - - - - MODE A
 - THE PRESSURE LOCATION ③ IS ESTIMATED FROM PRELIMINARY PUMP DATA.
 - PUMP MINIMUM FLOW REQUIREMENT MAY OCCUR DURING ANY OPERATING MODE. 15 GPM MINIMUM DURING MODE A.
 - DELETED



MODE A ACCIDENT MODE: SUCTION FROM CONDENSATE STORAGE, REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT HIGH PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FLOW - SEE NOTE 2	4250	4300	4250	4250	0	0	187.8	187.3	187.3	0	0.5	0.05	20	70	70	20	50	0	0	0	0
PRESSURE - PSIA	14.7	85	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
TEMPERATURE °F	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

MODE B ACCIDENT MODE: SUCTION FROM CONDENSATE STORAGE, REACTOR AT LOW PRESSURE, SUPPRESSION POOL AT HIGH PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FLOW - SEE NOTE 2	4250	4300	4250	4250	0	0	109	109	109	0	0.5	0.05	20	70	70	20	50	0	0	0	0
PRESSURE - PSIA	14.7	85	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
TEMPERATURE °F	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

MODE C ACCIDENT MODE: SUCTION FROM SUPPRESSION POOL, REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT LOW PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FLOW - SEE NOTE 2	4250	4300	4250	4250	0	0	158.6	158.1	158.1	0	0.5	0.05	20	70	70	20	50	0	0	0	0
PRESSURE - PSIA	14.7	85	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
TEMPERATURE °F	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

MODE D ACCIDENT MODE: SUCTION FROM SUPPRESSION POOL, REACTOR AT LOW PRESSURE, SUPPRESSION POOL AT LOW PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FLOW - SEE NOTE 2	4250	4300	4250	4250	0	0	71.0	70.5	70.5	0	0.5	0.05	20	70	70	20	50	0	0	0	0
PRESSURE - PSIA	14.7	85	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
TEMPERATURE °F	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

MODE E TEST MODE: SUCTION FROM CONDENSATE STORAGE, REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT LOW PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FLOW - SEE NOTE 2	4250	4300	4250	4250	0	0	143	142.5	142.5	0	0.5	0.05	20	70	70	20	50	0	0	0	0
PRESSURE - PSIA	14.7	85	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170
TEMPERATURE °F	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

- N = THE PRESSURE AT THIS LOCATION DEPENDS UPON PIPING AND MAY BE VARIED WITHIN THE FOLLOWING LIMITS.
- LOCATION
- ② MINIMUM NPSH AT PUMP SUCTION = 21 FEET
 - ② TO ④ MAXIMUM PRESSURE RISE = 7820 FEET @ HIGH MODE
 - ⑤ MAXIMUM PRESSURE DROP BETWEEN LOCATIONS AND ⑥ = 15 PSI
 - ⑦ MAXIMUM PRESSURE = 65 PSIA
 - ⑧ SUFFICIENT PRESSURE TO RETURN TO SUPPRESSION POOL
 - ⑨ SUFFICIENT PRESSURE TO RETURN TO COND. STORAGE
 - ⑩ SUFFICIENT PRESSURE TO RETURN TO PUMP DURING OPERATION.

729E626BA
REV 1

CAD AutoCAD S16122

Southern Company Services, Inc.
PLANT: HATCH
UNIT: 1
TITLE: PROCESS DIAGRAM - HIGH PRESSURE COOLANT INJECTION SYSTEM

VENDOR: GENERAL ELECTRIC P.O.#: PEH-002
S-16122 B

THIS DWG. PART OF VENDOR MANUAL N/A

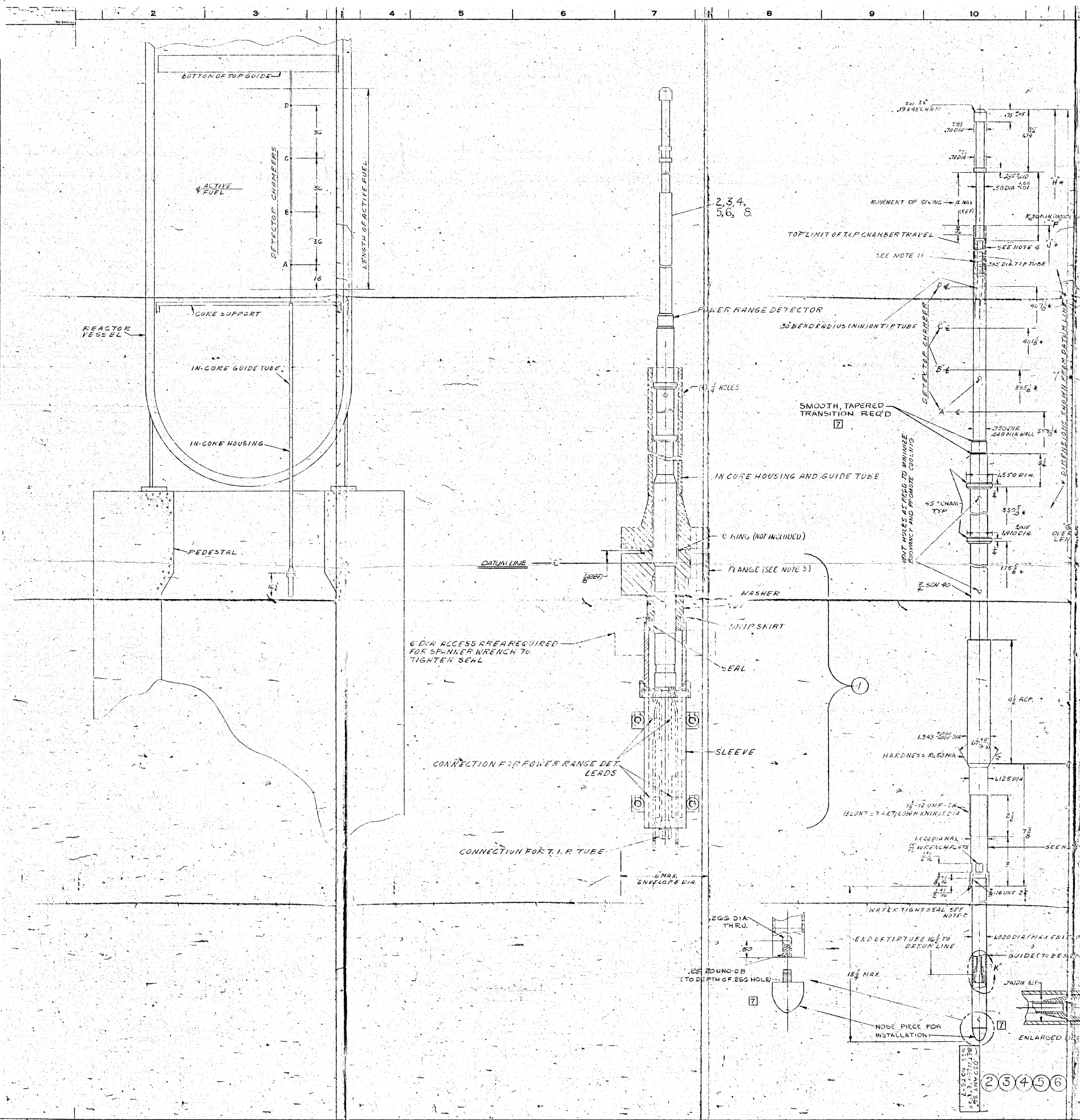
TAB/SECT. N/A
PAGE N/A
FIGURE N/A

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	
BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D

REVISION B DATE 10-27-99
REVISED PER REA HT-96660.

SEE MICROFILM FOR PREVIOUS REV. SIGNATURES.
(VENDOR REV. 2 BY SCS)

BY CHK'D HNB WKK



UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:

APPLIED PRACTICES	SURFACES	TOLERANCES UNLESS OTHERWISE SPECIFIED	FINISHES UNLESS OTHERWISE SPECIFIED	TEMPERATURES UNLESS OTHERWISE SPECIFIED	UNIT
✓	✓	±.005	201		POWER RANGE MONITORING UNIT
					BEST MADE FOR NEUTRON MONITORING SYSTEM
					PURCHASE PART

NO.	NAME	VENDOR	VENDOR IDENT. NO.	MPL. NO.
1	RAM. INSTALL. HARDWARE	NID	237X65761	718, 2-1-103, MLEDA
2	POWER RANGE DETECTOR		129B362063	
3	POWER RANGE DETECTOR		129B362064	719
4	POWER RANGE DETECTOR		129B362065	
5	POWER RANGE DETECTOR		129B362066	
6	POWER RANGE DETECTOR		129B362065	2-1-104
7				
8	POWER RANGE DETECTOR		129B362067	2-1-104, BII-D153
9	POWER RANGE DETECTOR		129B3620610	719
10	POWER RANGE DETECTOR	NID	129B3620611	719

POWER RANGE DETECTORS

PROJECT	PART NO.	SPEC. NO.
ENGLISH 233	729E9898	21A161
WELLS		21A167
WELLS		21A167
QUINCY TEST	70	21A167
MONTICELLO	74	21A167
FUKUSHIMA I	73	21A167
74 123	73	21A167
WARRANT SERVICE	76	21A167
MAN	75	21A167
COHEN CRYSTAL	79	21A167
7 PLUM	70	21A167
7 SUPERINA	78	21A167
7 LILCO	78	21A167
7 COOPER	70	21A167
7 ELL	74	21A167
7 FORTUNA 2	70	21A167
7 HATCH 1A2	75	21A167
7 HATCH 1A3	70	21A167
7 HATCH 1A4	78	21A167
7 E. FORTUNA 2	79E9898	21A161
7 CHINSHAN IAR	729E9898	21A161

NOTES:

- MATERIAL (EXCEPT SPRING) SHALL BE 304, 304L OR 316 STAINLESS STEEL. SPRING SHALL BE 304L V-T. MATERIAL FOR PARTS INCLUDING PLUGS FOR ASS. COOL. SECTION (11), SHALL BE SPECIFIED FOR THE FOLLOWING SPECIFICATIONS:
 B5097189 PIPE, STAINLESS TP 316, ASME SA 312
 B5097222 PIPE, STAINLESS TP 316, ASME SA 312
 B5097312 PIPE, STAINLESS TP 304, ASME SA 312
 B5097384 PIPE, STAINLESS TP 304, ASME SA 312
 B5097412 PIPE, STAINLESS TP 316, ASME SA 312
 B5097412 PIPE, STAINLESS TP 316, ASME SA 312
 B5097412 PIPE, STAINLESS TP 316, ASME SA 312
 B5097412 PIPE, STAINLESS TP 316, ASME SA 312
 B5097412 PIPE, STAINLESS TP 316, ASME SA 312
- UNIT SHALL BE DELIVERED, FABRICATED, TESTED AND STAGED AT A FACILITY VESSEL FOR SELECTION, CLEANING AND INSPECTION. A FACILITY VESSEL FOR SELECTION, CLEANING AND INSPECTION SHALL BE PROVIDED TO THE BUYER.
- FLANGE SHALL BE DELIVERED, FABRICATED, TESTED AND STAGED AT A FACILITY VESSEL FOR SELECTION, CLEANING AND INSPECTION. A FACILITY VESSEL FOR SELECTION, CLEANING AND INSPECTION SHALL BE PROVIDED TO THE BUYER.
- ALL PARTS SHALL BE VARNISHED AS SHOWN TO PROTECT AGAINST CORROSION.
- CLEAN WITH ALCOHOL AFTER ASSEMBLY AND CLAMP TIGHTLY IN CLEAN, CLEAR POLYETHYLENE TO PREVENT CORROSION. INSURE O-RINGS AND SEALS ARE PROPERLY SEATED AND DO NOT USE ANY SOLVENTS TO CLEAN O-RINGS.
- MAY BE STRAIGHTENED OR HORIZONTAL FLAT SURFACE TO 0.001" TYP. REQUIRED.
- DETACHABLE JOINT TO BE WATER-TIGHT UNDER 100 PSI OF WATER.
- THERE SHALL BE NO LEAKAGE BETWEEN THE POWER RANGE DETECTOR AND THE FLANGE OF P-1 AFTER ASSEMBLY IN THE REACTOR AT 100 PSI WATER PRESSURE.
- THE ENVIRONMENT BELOW THE FLANGE SHALL BE:
 A. NORMAL OPERATION: 137°F AVERAGE - 305°F MAX.
 B. ABNORMAL OPERATION: 300°F FOR 10 MINUTES - 1005°F MAX.
 C. 200°F FOR 10 HRS.
- SPRING TO BE DESIGNED FOR A MINIMUM 1000 SIKING UNLOADING FROM 20 TO 10 LBS AT 72°F.
 1 LBS. MAX. LOAD
 21 LBS. MAX. LOAD

NO.	G	H	J
2	509 1/8	485 1/2	450 1/2
3	512 1/8	492 1/2	454 1/2
4	512 1/8	491 1/2	453 1/2
5	516 1/8	497 1/2	463 1/2
6	516 1/8	496 1/2	462 1/2
7			
8	514 1/8	493 1/2	455 1/2
9	509 1/8	488 1/2	480 1/2
10	516 1/8	491 1/2	483 1/2

GENERAL ELECTRIC
 6511-2010-502
 POWER RANGE MONITORING UNIT
 ASME-NEUTRON MONITORING SYSTEM
 MODEL NO. 729E9898 PART 2
 P.O. PEH-22
 CLASS 3-D

211-2114

POOR QUALITY ORIGINAL

BEST SOURCE DOCUMENT AVAILABLE, MAY NOT BE OF MICROFILM QUALITY.

REVISIONS

NO.	DATE	DESCRIPTION	BY	CHKD
1	12/15/79	ISSUED FOR FABRICATION	W. J. B.	
2	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
3	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
4	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
5	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
6	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
7	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
8	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
9	1/10/80	ISSUED FOR FABRICATION	W. J. B.	
10	1/10/80	ISSUED FOR FABRICATION	W. J. B.	

MODE A (SEE NOTE 13) RX PRESS. 20 PSID ABOVE DRYWELL PRESSURE. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

MODE H. Table with columns for POSITION (1-26) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

REVISION SUMMARY table with columns for REVISION, SHEET, REV.

MODE B (SEE NOTE 13) RX PRESS. 20 PSID ABOVE DRYWELL PRESSURE. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

MODE J. Table with columns for POSITION (1-26) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

LEGEND: RX PRESS - REACTOR VESSEL PRESSURE; SOH - SHUTOFF HEAD (PUMPS)

MODE C-1. Table with columns for POSITION (1-25) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

MODE S. Table with columns for POSITION (1-46) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

DESIGN PRESSURE & TEMPERATURE, GIVEN BELOW, IS FOR INFORMATION ONLY & IS THE BASIS FOR DESIGN OF BURS SUPPLIED EQUIPMENT.

MODE C-2 (SEE NOTE 2). Table with columns for POSITION (1-25) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

DESIGN PRESSURE & TEMPERATURE chart for LPCI LINE (VIA HX BYPASS) and HX LINE SHUTDOWN SUCTION.

MODES: A. ACCIDENT W/REACTOR LINE BREAK IN SIDE II WITH TWO PUMP OPERATION AND STRAINER BOX PLUGGED.

MODE C-2 (SEE NOTE 2). Table with columns for POSITION (1-25) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

DESIGN PRESSURE & TEMPERATURE chart for STEAM TO HX, HEAD SPRAY LINE, and CONDENSATE TO POOL.

MODES: B. ACCIDENT W/REACTOR LINE BREAK IN SIDE II WITH TWO PUMP OPERATION AND STRAINER BOX PLUGGED.

MODE C-2 (SEE NOTE 2). Table with columns for POSITION (1-25) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

DESIGN PRESSURE & TEMPERATURE chart for CONTAINMENT SPRAY, SUPPRESSION SPRAY, and TEST LINE.

MODES: C-1. POST-ACCIDENT CONTAINMENT SPRAY W/HEAT RECOVERY (NORMAL SUPPRESSION POOL TEMPERATURES).

MODE E (SEE NOTE 2) RX PRESS. 85 PSIG (SEE NOTE 8). Table with columns for POSITION (1-45) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

TABLE 1 - VALVE POSITION CHART. Grid showing valve positions for various modes and positions.

TABLE 2 - LIMITING LINE LOSSES. Table showing limiting line losses for various modes.

NOTES: 1. EMPTY DATA BLANKS ARE TO BE FILLED IN BY SUBMITTER...

MODE F RX PRESS. 0 PSIG. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

MODE G (SEE NOTE 2 & 13) RX PRESS. 0 PSIG. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

LEGEND: P = STRAINER PLUGGED; BLANK SPACE INDICATES VALVE IS CLOSED; T-C = VALVE THROTTLED OR CLOSED; O = VALVE OPENED OR THROTTLED; O = VALVE OPEN; T = VALVE THROTTLED.

MODE F RX PRESS. 0 PSIG. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

MODE G (SEE NOTE 2 & 13) RX PRESS. 0 PSIG. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

LEGEND: P = STRAINER PLUGGED; BLANK SPACE INDICATES VALVE IS CLOSED; T-C = VALVE THROTTLED OR CLOSED; O = VALVE OPENED OR THROTTLED; O = VALVE OPEN; T = VALVE THROTTLED.

MODE G (SEE NOTE 2 & 13) RX PRESS. 0 PSIG. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

MODE G (SEE NOTE 2 & 13) RX PRESS. 0 PSIG. Table with columns for POSITION (1-16) and rows for FLOW-GPM, PRESS-PSIA, TEMP. °F, MAX. PRESS. DROP-FEET.

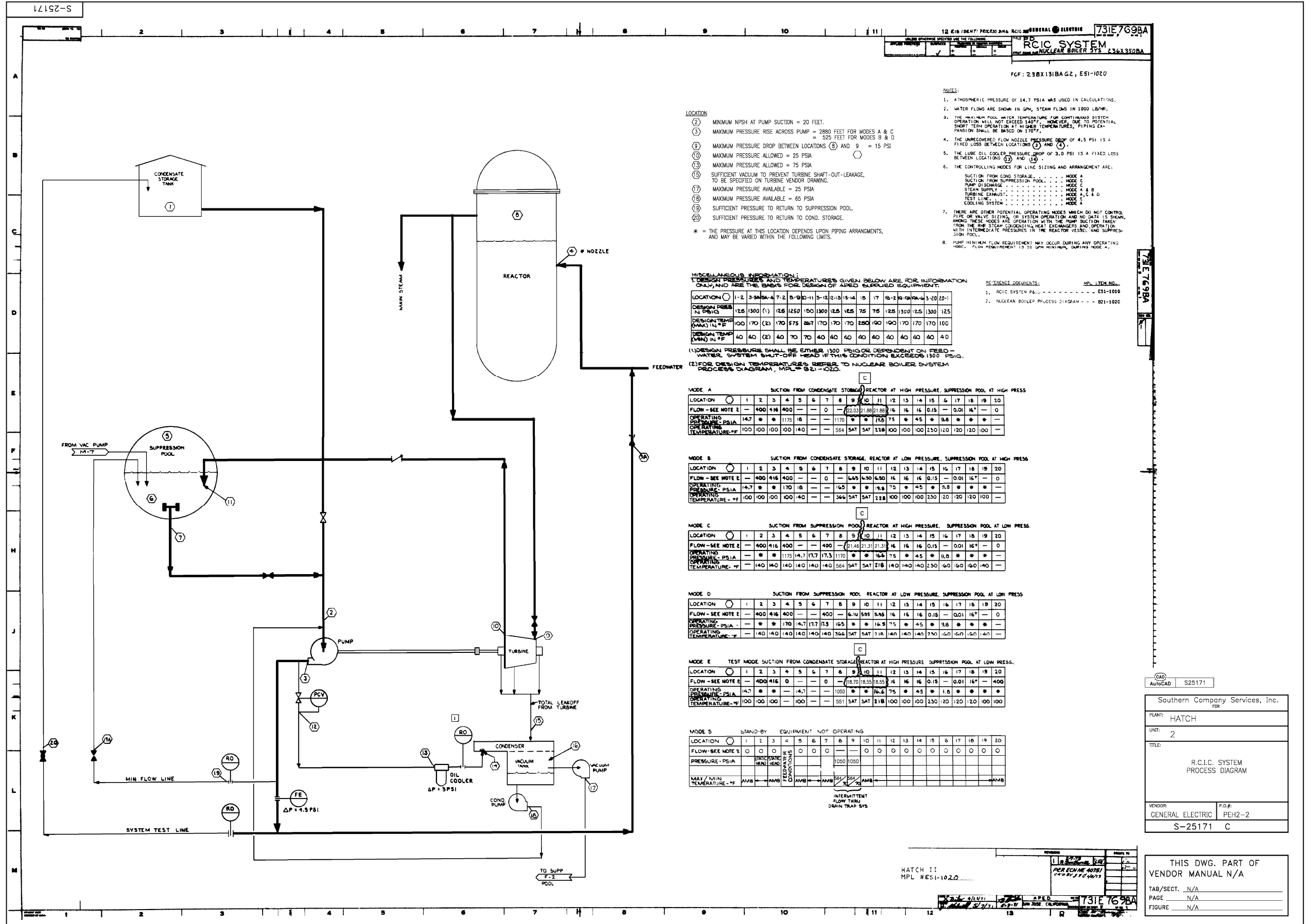
LEGEND: P = STRAINER PLUGGED; BLANK SPACE INDICATES VALVE IS CLOSED; T-C = VALVE THROTTLED OR CLOSED; O = VALVE OPENED OR THROTTLED; O = VALVE OPEN; T = VALVE THROTTLED.

REVISION table with columns for REVISION, DATE, and a grid for tracking changes.

Project information block including CAD (S25140), Southern Company Services, Inc., HATCH, UNIT: 2, TITLE: RESIDUAL HEAT REMOVAL SYSTEM PROCESS DIAGRAM, VENDOR: GE, P.O.#: PEH2-2, S25140 N.

THIS DWG. PART OF VENDOR MANUAL N/A. TAB/SECT. N/A. PAGE N/A. FIGURE N/A.

SEE MICROFILM FOR PREVIOUS REV. SIGNATURES. (VENDOR REV. 11 BY SCS). REV. PER REA HT-96660.



12 E18 (REV. 7-68) PROCESS DIAG. RCIC SYSTEM GENERAL ELECTRIC 731E7698A
 RCIC SYSTEM
 NUCLEAR BOILER SYS. 2-361350BA
 FCP: 2.3BX131BA G2, E51-1020

- NOTES:
1. ATMOSPHERIC PRESSURE OF 14.7 PSIA WAS USED IN CALCULATIONS.
 2. WATER FLOWS ARE SHOWN IN GPM, STEAM FLOWS IN 1000 LB/HR.
 3. THE MAXIMUM POOL WATER TEMPERATURE FOR CONTINUOUS SYSTEM OPERATION WILL NOT EXCEED 140°F. HOWEVER, DUE TO POTENTIAL SHORT TERM OPERATION AT HIGHER TEMPERATURES, PIPING EXPANSION SHALL BE BASED ON 170°F.
 4. THE UNRECOVERED FLOW NOZZLE PRESSURE DROP OF 4.5 PSI IS A FIXED LOSS BETWEEN LOCATIONS (3) AND (4).
 5. THE LUBE OIL COOLER PRESSURE DROP OF 3.0 PSI IS A FIXED LOSS BETWEEN LOCATIONS (13) AND (14).
 6. THE CONTROLLING MODES FOR LINE SIZING AND ARRANGEMENT ARE:
 SUCTION FROM COND. STORAGE MODE A
 SUCTION FROM SUPPRESSION POOL MODE C
 PUMP DISCHARGE MODE C
 STEAM SUPPLY MODE A & B
 TURBINE EXHAUST MODE A, C & D
 TEST LINE MODE C
 COOLING SYSTEM MODE A
 7. THERE ARE OTHER POTENTIAL OPERATING MODES WHICH DO NOT CONTROL PIPE OR VALVE SIZING, OR SYSTEM OPERATION AND NO DATA IS SHOWN. AMONG THESE MODES ARE OPERATION WITH THE TAMP SUCTON TAKEN FROM THE RHP STEAM CONDENSING HEAT EXCHANGERS AND OPERATION WITH INTERMEDIATE PRESSURES IN THE REACTOR VESSEL AND SUPPRESSION POOL.
 8. PUMP MINIMUM FLOW REQUIREMENT MAY OCCUR DURING ANY OPERATING MODE. FLOW REQUIREMENT IS 30 GPM MINIMUM, DURING MODE A.

MISCELLANEOUS INFORMATION:
 (1) DESIGN PRESSURES AND TEMPERATURES GIVEN BELOW ARE FOR INFORMATION ONLY, AND ARE THE BASIS FOR DESIGN OF APEP SUPPLIED EQUIPMENT.

LOCATION	1-2	3-4	5-6	7-8	9-10	11	12-13	14	15	17	18-19	20-21	22
DESIGN PRESS. IN PSIG	12.5	1300	(1)	12.5	150	1300	12.5	12.5	75	75	125	1300	125
DESIGN TEMP. (MAX) IN °F	100	170	(2)	170	575	267	170	170	250	100	100	170	170
DESIGN TEMP. (MIN) IN °F	40	40	(2)	40	70	70	40	40	40	40	40	40	40

- (1) DESIGN PRESSURE SHALL BE EITHER 1300 PSIG OR DEPENDENT ON FIELD WATER SYSTEM SHUT-OFF HEAD IF THIS CONDITION EXCEEDS 1300 PSIG.
 (2) FOR DESIGN TEMPERATURES REFER TO NUCLEAR BOILER SYSTEM PROCESS DIAGRAM, MPL # 821-1020.

MODE A SUCTION FROM CONDENSATE STORAGE REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT HIGH PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FLOW - SEE NOTE 2	400	416	400	—	0	—	22.33	27.89	21.59	16	16	16	0.15	—	0.01	16"	—	0	—	0
OPERATING PRESSURE - PSIA	14.7	*	1175	18	—	—	1170	*	116	75	*	45	3.8	*	*	*	*	*	*	*
OPERATING TEMPERATURE - °F	100	100	100	140	—	—	564	SAT	SAT	218	100	100	230	120	120	100	—	—	—	—

MODE B SUCTION FROM CONDENSATE STORAGE REACTOR AT LOW PRESSURE, SUPPRESSION POOL AT HIGH PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FLOW - SEE NOTE 2	400	416	400	—	0	—	6.55	6.30	6.50	16	16	16	0.15	—	0.01	16"	—	0	—	0
OPERATING PRESSURE - PSIA	14.7	*	170	18	—	—	165	*	16	75	*	45	3.8	*	*	*	*	*	*	*
OPERATING TEMPERATURE - °F	100	100	100	140	—	—	366	SAT	SAT	218	100	100	230	120	120	100	—	—	—	—

MODE C SUCTION FROM SUPPRESSION POOL REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT LOW PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FLOW - SEE NOTE 2	400	416	400	—	0	—	21.46	21.31	21.31	16	16	16	0.15	—	0.01	16"	—	0	—	0
OPERATING PRESSURE - PSIA	—	*	1175	14.7	17.3	17.3	1170	*	16	75	*	45	3.8	*	*	*	*	*	*	*
OPERATING TEMPERATURE - °F	—	140	140	140	140	140	564	SAT	SAT	218	100	100	230	120	120	100	—	—	—	—

MODE D SUCTION FROM SUPPRESSION POOL REACTOR AT LOW PRESSURE, SUPPRESSION POOL AT LOW PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FLOW - SEE NOTE 2	400	416	400	—	0	—	6.10	5.95	5.95	16	16	16	0.15	—	0.01	16"	—	0	—	0
OPERATING PRESSURE - PSIA	—	*	170	14.7	17.3	17.3	165	*	16	75	*	45	3.8	*	*	*	*	*	*	*
OPERATING TEMPERATURE - °F	—	140	140	140	140	140	366	SAT	SAT	218	100	100	230	120	120	100	—	—	—	—

MODE E TEST MODE SUCTION FROM CONDENSATE STORAGE REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT LOW PRESS.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FLOW - SEE NOTE 2	400	416	0	—	0	—	18.70	18.55	18.55	16	16	16	0.15	—	0.01	16"	—	0	—	0
OPERATING PRESSURE - PSIA	14.7	*	*	—	14.7	—	1050	*	16	75	*	45	3.8	*	*	*	*	*	*	*
OPERATING TEMPERATURE - °F	100	100	100	—	100	—	551	SAT	SAT	218	100	100	230	120	120	100	—	—	—	—

MODE S STAND-BY EQUIPMENT NOT OPERATING

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
FLOW - SEE NOTE 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRESSURE - PSIA	STATIC	STATIC	STATIC	STATIC	STATIC	STATIC	1050	1050	—	—	—	—	—	—	—	—	—	—	—	—
MAX / MIN TEMPERATURE - °F	AMB	AMB	AMB	AMB	AMB	AMB	564	564	—	—	—	—	—	—	—	—	—	—	—	—

HATCH II
 MPL # E51-1020
 731E7698A

Southern Company Services, Inc.
 AutoCAD S25171
 PLANT: HATCH
 UNIT: 2
 TITLE: R.C.I.C. SYSTEM PROCESS DIAGRAM
 VENDOR: GENERAL ELECTRIC P.O.#: PEH2-2
 S-25171 C

THIS DWG. PART OF VENDOR MANUAL N/A
 TAB/SECT. N/A
 PAGE N/A
 FIGURE N/A

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE		
BY CH'KD	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY CH'KD	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY CH'KD	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY CH'KD	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5

REVISION C DATE 6-3-99
 REVISED PER REA HT-96660.
 SEE MICROFILM FOR PREVIOUS REV. SIGNATURES.
 (VENDOR REV. 3 BY SCS)
 BY CH'KD APRR.1 APRR.2 APRR.3 APRR.4 APRR.5
 KB JWD HNB

MISCELLANEOUS INFORMATION:
1. DESIGN PRESSURES AND TEMPERATURES GIVEN BELOW ARE FOR INFORMATION ONLY, AND ARE THE BASIS FOR DESIGN OF ALL SUPPLIED EQUIPMENT.

Table with 2 columns: LOCATION (1-21) and DESIGN PRESSURE (PSIG) / DESIGN TEMPERATURE (MAX/MIN IN °F).

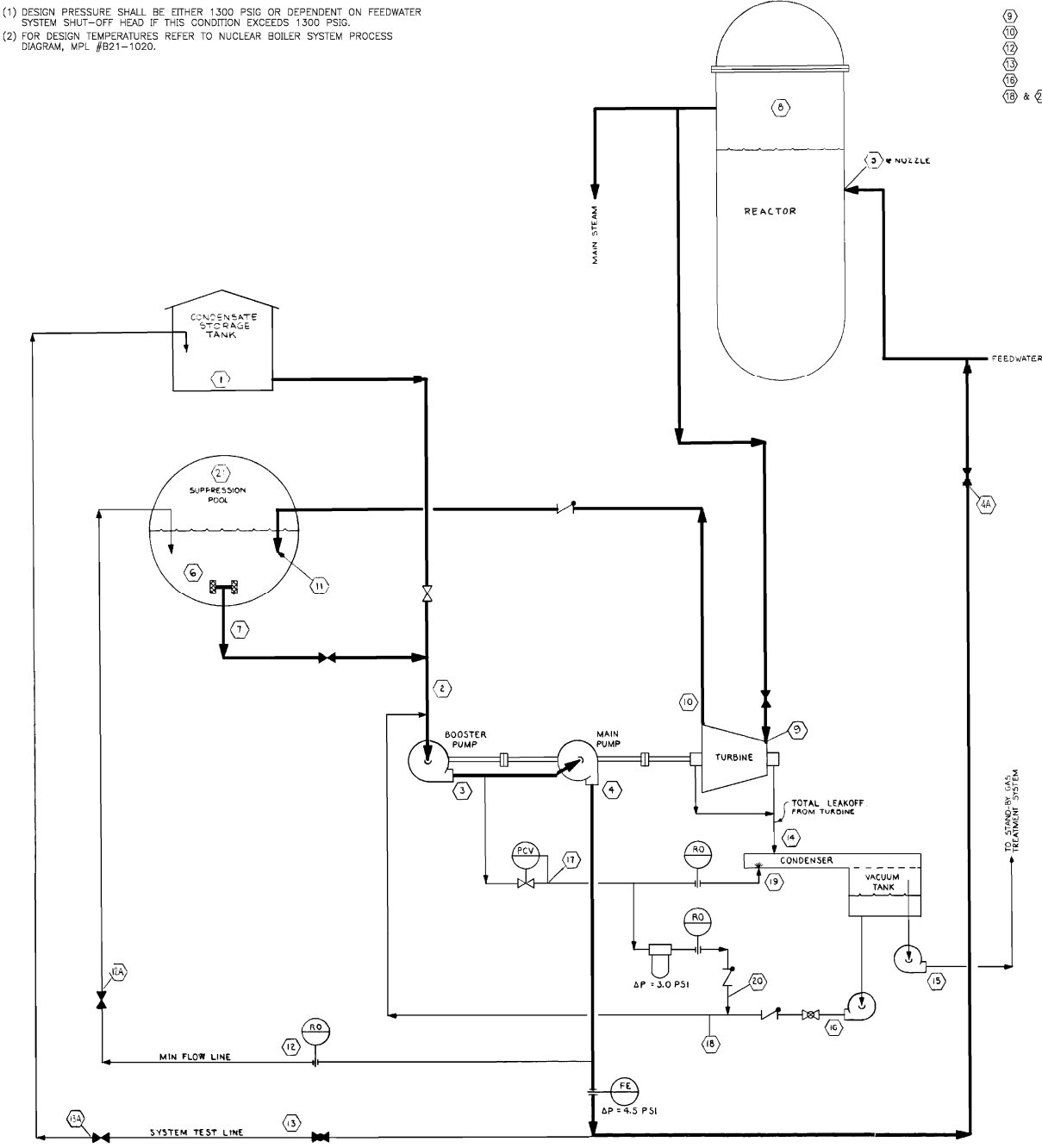
- (1) DESIGN PRESSURE SHALL BE EITHER 1300 PSIG OR DEPENDENT ON FEEDWATER SYSTEM SHUT-OFF HEAD IF THIS CONDITION EXCEEDS 1300 PSIG.
- (2) FOR DESIGN TEMPERATURES REFER TO NUCLEAR BOILER SYSTEM PROCESS DIAGRAM, MPL #B21-1020.

* = THE PRESSURE AT THIS LOCATION, DEPENDS UPON PIPING ARRANGEMENTS, AND MAY BE VARIED WITHIN THE FOLLOWING LIMITS.

- LOCATION (2) MINIMUM NPSH AT PUMP SUCTION = 21 FEET
- (2) TO (4) MAXIMUM PRESSURE RISE = 2880 FEET @ HIGH PRESS MODE = 325 FEET @ LOW PRESS MODE
- (9) MAXIMUM PRESSURE DROP BETWEEN LOCATIONS (8) AND (9) = 15 PSI
- (10) MAXIMUM PRESSURE = 65 PSIA
- (12) SUFFICIENT PRESSURE TO RETURN TO SUPPRESSION POOL
- (13) SUFFICIENT PRESSURE TO RETURN TO COND. STORAGE
- (16) MAXIMUM PRESSURE AVAILABLE = 65 PSIA
- (18) & (20) SUFFICIENT PRESSURE TO RETURN TO PUMP SUCTION DURING OPERATION

- NOTES:
1. ATMOSPHERIC PRESSURE OF 14.7 PSIA WAS USED IN CALCULATIONS.
2. WATER FLOWS ARE SHOWN IN GPM, STEAM FLOWS IN 1000 LB/MR.
3. THE MAXIMUM POOL WATER TEMPERATURE FOR CONTINUOUS SYSTEM OPERATION WILL NOT EXCEED 540°F, HOWEVER, DUE TO POTENTIAL SHORT TERM OPERATION AT HIGHER TEMPERATURES, PIPING EXPANSION SHALL BE BASED ON 570°F.
4. THE FOLLOWING ADDITIONAL ACCIDENT OPERATING MODES ARE POSSIBLE:
SUCTION FROM CONDENSATE STORAGE, SUPPRESSION POOL AT LOW PRESSURE, REACTOR AT HIGH OR LOW PRESSURE.
SUCTION FROM SUPPRESSION POOL, SUPPRESSION POOL AT HIGH PRESSURE, REACTOR AT HIGH OR LOW PRESSURE.
THESE POTENTIAL OPERATING MODES DO NOT CONTROL PIPE OR VALVE SIZING OR SPECIFICATION, AND NO DATA IS SHOWN.
5.
6. THE CONTROLLING MODES FOR LINE SIZING AND ARRANGEMENT ARE:
SUCTION FROM COND. STORAGE - - - - - MODE A
SUCTION FROM SUPPRESSION POOL - - - - - MODE C
PUMP DISCHARGE - - - - - MODE C
STEAM SUPPLY - - - - - MODE A & B
TURBINE EXHAUST - - - - - MODE A, C & D
TEST LINE - - - - - MODE E
COOLING SYSTEM - - - - - MODE A
7. THE PRESSURE AT LOCATION (2) IS ESTIMATED FROM PRELIMINARY PUMP DATA.
8. PUMP MINIMUM FLOW REQUIREMENT MAY OCCUR DURING ANY OPERATING MODE. FLOW REQUIREMENT IS 5.50 GPM, MINIMUM, DURING MODE A.

- REFERENCE DOCUMENTS:
1. HPCI SYSTEM PEID - - - - - MPL ITEM N.O.S. E41-1010
2. NUCLEAR BOILER PROCESS DIAGRAM - - - - - B21-1020



MODE A ACCIDENT MODE SUCTION FROM CONDENSATE STORAGE, REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT HIGH PRESS.

MODE B ACCIDENT MODE SUCTION FROM CONDENSATE STORAGE, REACTOR AT LOW PRESSURE, SUPPRESSION POOL AT HIGH PRESS.

MODE C ACCIDENT MODE SUCTION FROM SUPPRESSION POOL, REACTOR AT HIGH PRESSURE, SUPPRESSION POOL AT LOW PRESS.

MODE D ACCIDENT MODE SUCTION FROM SUPPRESSION POOL, REACTOR AT LOW PRESSURE, SUPPRESSION POOL AT LOW PRESS.

MODE E TEST MODE: SUCTION FROM CONDENSATE STORAGE, REACTOR AT HIGH PRESS, SUPPRESSION POOL AT LOW PRESS.

MODE S SYSTEM STAND BY EQUIPMENT NOT OPERATING

CAD AutoCAD S25176
Southern Company Services, Inc.
PLANT: HATCH
UNIT: 2
TITLE: PROCESS DIAG. HPCI SYSTEM
VENDOR: G.E. P.O.#: PEH2-2
S-25176 D

THIS DWG. PART OF VENDOR MANUAL N/A
TAB/SECT. N/A
PAGE N/A
FIGURE N/A

REVISION table with columns for REVISION, DATE, and description. Includes a signature block at the bottom right.

FCF: 238X129BA (E21-1020)

- NOTES:
- FINAL VALUES SHALL BE REPORTED "BY OTHERS" FOR ALL POINTS LISTED.
 - THE BYPASS FLOW IS APPROXIMATE AND WILL BE SPECIFIED BY THE PUMP VENDOR.
 - ONLY ONE CORE SPRAY LOOP IS SHOWN, THE SECOND LOOP IS IDENTICAL.
 - IN CONDITION II THE NET POSITIVE SUCTION HEAD (NPSH) AVAILABLE AT THE PUMP INLET (LOCATION 2) MUST BE 32 FEET.
 - IN CONDITION IV IN THE NET POSITIVE SUCTION HEAD (NPSH) AVAILABLE AT THE PUMP INLET (LOCATION 2) MUST BE EQUAL OR GREATER THAN 15 FT. ADEQUATE NPSH MUST BE DEMONSTRATED FOR PUMP OPERATION WITH POOL TEMPERATURE AT 206°F.
 - 100 GPM IS INCLUDED IN THE FLOW RATE GIVEN FOR MODE IV TO ALLOW FOR LEAKAGE IN THE REACTOR INTERNALS.
 - THE ΔP BETWEEN LOCATON (1) AND (2) WILL BE DETERMINED IN PRE-OPERATION TEST. THE ΔP WILL BE ADJUSTED TO MEET THE FLOW REQUIREMENTS OF CONDITION IV.
 - THE AVAILABLE NPSH IN CONDITION V SHALL BE EQUAL TO OR GREATER THAN 25 FT.

CONDITION I NORMAL SYSTEM TEST

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
FLOW GPM	N/A	4725	→	→	4725	0	0	4725	0	→	→	0
PRESS-PSIA	14.7				N/A	N/A		N/A	N/A			
TEMP-°F	AMB	→	→	→	AMB	N/A	N/A	AMB	N/A	N/A		N/A
SEE NOTE												
ΔP-FT.		●-633	●	●	8	●						

CONDITION II TEST USING CONDENSATE STORAGE TANK

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
FLOW GPM	N/A	6200	→	→	→	→	6200	0	0	6200	6200	6200
PRESS-PSIA	14.7						14.7					
TEMP-°F	N/A	95	→	→	→	→	95	N/A	N/A	95	95	95
SEE NOTE		4										
ΔP-FT.		●-590	●	●	14	●	●	●	●	341	●	

CONDITION III PUMP OPERATING ON BYPASS

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
FLOW GPM	N/A	475	475	0	→	→	→	0	475	0	0	0
PRESS-PSIA												
TEMP-°F	175	175	175						175			
SEE NOTE												
ΔP-FT.		●-900	●									

CONDITION IV CORE SPRAY INJECTING AT REACTOR PRESS

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
FLOW GPM	N/A	4725	→	→	→	→	4725	0	0	0	4725	4725
PRESS-PSIA	19.3						132.3					
TEMP-°F	175						175				175	175
SEE NOTE		5										
ΔP-FT.		●-633	●	●	●	●	14	●	●	●	18	●

CONDITION V CORE SPRAY INJECTING AT ZERO (0) REACTOR PRESS. DIFF.

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
FLOW GPM	N/A	4725	→	→	→	→	4725	0	0	0	4725	4725
PRESS-PSIA	14.7						14.7					
TEMP-°F	200						200				200	200
SEE NOTE		8										
ΔP-FT.		●-633	●	●	●	●	14	●	●	●	198	●

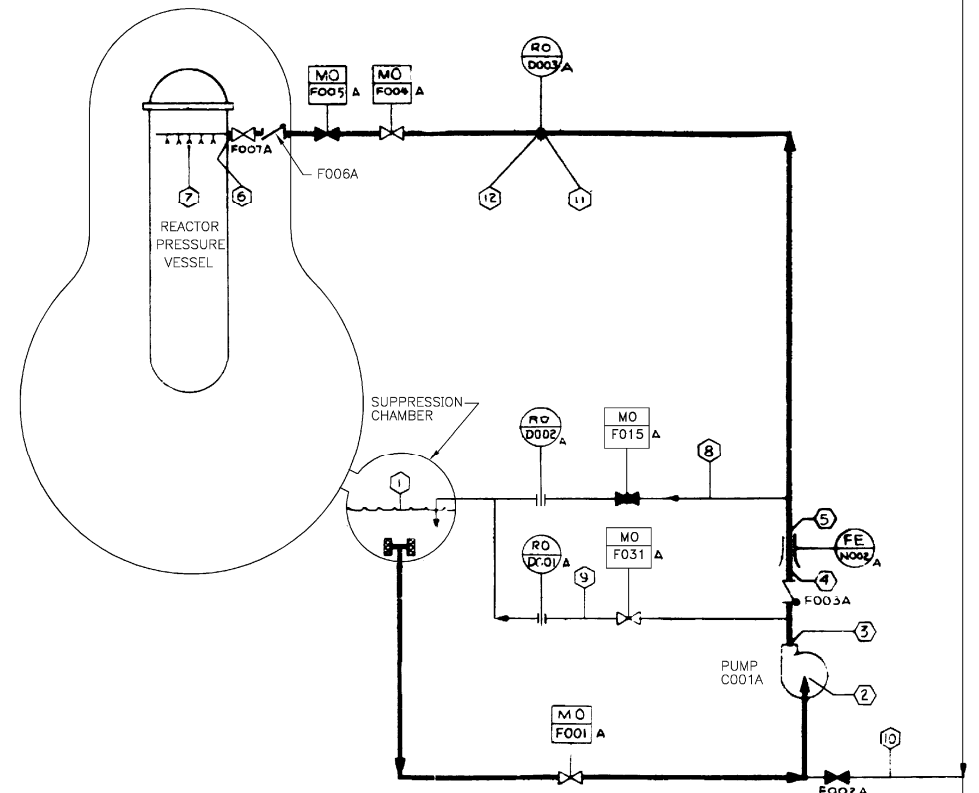
CONDITION VI ACCIDENT, SYSTEM INJECTION AT RUNDOUT

LOCATION	1	2	3	4	5	6	7	8	9	10	11	12
FLOW GPM	N/A	5900	→	→	→	→	5900	0	0	0	5900	5900
PRESS-PSIA	14.7						14.7					
TEMP-°F	175						175				175	175
MAX PRESS DROP-FT		●-523	●									

VALVE POSITIONS

CONDITIONS	VALVE NO				
	F001	F002	F005	F015	F031
I	O	C	C	P	C
II	C	O	O	C	C
III	O	C	C	C	O
IV	O	C	O	C	C
V	O	C	P	C	C
VI	O	C	O	C	C

O-FULL OPEN
 C-FULL CLOSED
 P-PARTIALLY OPEN



CORE SPRAY LOOP A
 (SEE NOTE 3)

S-25178

CAD AutoCAD S25178

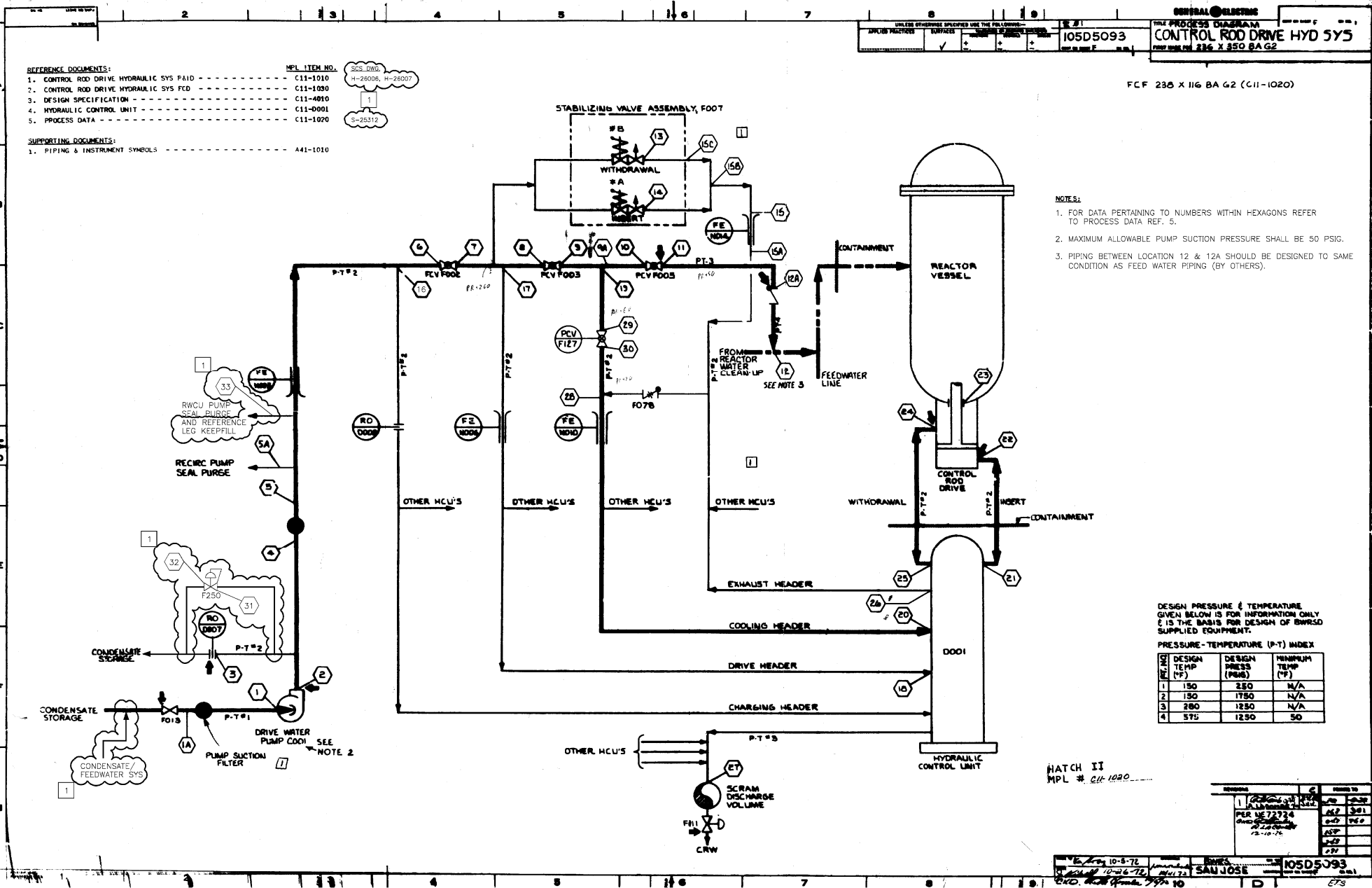
Southern Company Services, Inc.
 FOR
 PLANT: HATCH
 UNIT: 2
 TITLE: CORE SPRAY SYSTEM PROCESS FLOW DIAGRAM
 VENDOR: GE P.O.#: PEH2-000002
 S-25178 J

THIS DWG. PART OF
 VENDOR MANUAL N/A
 TAB/SECT. N/A
 PAGE N/A
 FIGURE N/A

161F338
 COUNT ON SHE. F SHE. NO. 1

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE
BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5

REVISION J DATE 6-3-99
 REV. PER REA HT-96660.
 SEE MICROFILM FOR PREVIOUS REV. SIGNATURES.
 (VENDOR REV. 8 BY SCS)
 BY CHK'D APPR.1 APPR.2 APPR.3 APPR.4 APPR.5
 KB JWD HNB



- REFERENCE DOCUMENTS:**
- 1. CONTROL ROD DRIVE HYDRAULIC SYS PAID ----- C11-1010
 - 2. CONTROL ROD DRIVE HYDRAULIC SYS FCD ----- C11-1020
 - 3. DESIGN SPECIFICATION ----- C11-4010
 - 4. HYDRAULIC CONTROL UNIT ----- C11-0001
 - 5. PROCESS DATA ----- C11-1020
- SUPPORTING DOCUMENTS:**
- 1. PIPING & INSTRUMENT SYMBOLS ----- 441-1010

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING:
 APPROX. PRACTICES: ✓
 TOLERANCES: ✓
 DIMENSIONS: ✓
 FINISHES: ✓
 MATERIALS: ✓
 105D5093
 CONTROL ROD DRIVE HYD SYS
 PIPING DIA. 2 1/2 X 3/80 BA G2

- NOTES:**
1. FOR DATA PERTAINING TO NUMBERS WITHIN HEXAGONS REFER TO PROCESS DATA REF. 5.
 2. MAXIMUM ALLOWABLE PUMP SUCTION PRESSURE SHALL BE 50 PSIG.
 3. PIPING BETWEEN LOCATION 12 & 12A SHOULD BE DESIGNED TO SAME CONDITION AS FEED WATER PIPING (BY OTHERS).

DESIGN PRESSURE & TEMPERATURE GIVEN BELOW IS FOR INFORMATION ONLY & IS THE BASIS FOR DESIGN OF SUPPLIED EQUIPMENT.

PRESSURE-TEMPERATURE (P-T) INDEX

INDEX	DESIGN TEMP (°F)	DESIGN PRESS (PSIG)	MINIMUM TEMP (°F)
1	150	250	N/A
2	150	1750	N/A
3	200	1250	N/A
4	575	1250	50

HATCH II
 MPL # C11-1020

NO.	DATE	BY	CHK'D	APP'D	REVISION
1	10-8-78	ASK	JGH	RCR	PER NE72724
2	12-26-78	ASK	JGH	RCR	REVISED PER ABN 99-0035-002

105D5093
 SAN JOSE
 EFS

CAD: S25311

Southern Company Services, Inc.
 FOR:

PLANT: HATCH

UNIT: 2

TITLE: PFD - CRD HYDRAULIC SYSTEM

VENDOR: P.O.#: PEH2-2

G.E. S-25311

THIS DWG. PART OF
 VENDOR MANUAL N/A

TAB/SECT. N/A

PAGE N/A

FIGURE N/A

REVISION	DATE
1	12-18-01

REVISED PER ABN 99-0035-002.

SEE MICROFILM FOR PREVIOUS REV. SIGNATURES.

BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5
RCR	JGH	ASK				

NOTES:

1. DEFINITION OF SYMBOLS

- / INDICATES CONDITIONS FOR FLOWRATE.
- ** INDICATES THE SAME CONDITION AS LISTED UNDER MODE A
- PR INDICATES REACTOR PRESSURE MEASURED IMMEDIATELY ABOVE THE CORE PLATE
- * INDICATES REVISED VALUE

2. MAXIMUM OPERATING TEMPERATURES

THE MAXIMUM SYSTEM OPERATING TEMPERATURES WILL NOT EXCEED 150°F FROM LOCATIONS 1 THROUGH 30 WITH THE FOLLOWING EXCEPTIONS:

	LOCATION	MAX. TEMP (°F)
MODE A	23	200
MODE C	23	546
	24	546
	25	280
	27	280
MODE D	23	200
	24	280
	25	280
	27	280

3. MODE A

- A. LOCATION 12 - THE REACTOR RETURN LINE PRESSURE SHALL NOT EXCEED PR + 50 psig WITH THE CRD COOLING WATER FLOWRATE AT 0.20 gal/min/drive. PRESSURE IN EXCESS OF PR + 50 psig UNDER THE ABOVE CONDITIONS WILL ADVERSELY AFFECT CRD OPERATION.
- B. LOCATION 16 - THE MAXIMUM ACCUMULATOR CHARGING PRESSURE SHALL NOT EXCEED 1510 psig, ACCUMULATOR PRESSURE IN EXCESS OF 1510 psig WILL CAUSE CRD DAMAGE DURING A SCRAM.
- C. LOCATION 20 - THE CRD COOLING WATER PRESSURE SHALL NOT BE LESS THAN PR + 15 psig FOR THE CONDITIONS INDICATED.
- D. LOCATION 23 - MAXIMUM DRIVE COOLING REQUIREMENTS WILL NOT EXCEED 0.34 gal/min/drive FOR THE CONDITIONS LISTED. MINIMUM DRIVE COOLING REQUIREMENTS WILL NOT BE LESS THAN 0.20 gal/min/drive.

4. MODE B

- A. LOCATIONS 13 AND 14 - INSERT VALVE F007-A CLOSURES ON DRIVE INSERT SIGNAL. WITHDRAW VALVE F007-B CLOSURES ON DRIVE WITHDRAW SIGNAL BUT DOES NOT STAY CLOSED DURING SETTILING.
- B. LOCATION 18 - THE CRD DRIVE WATER PRESSURE SHALL NOT BE LESS THAN PR + 250 psig FOR THE CONDITIONS INDICATED.

5. MODE C

- A. CONDITIONS LISTED FOR MODE C REPRESENT THOSE CONDITIONS WHICH EXIST AT 10 PERCENT OF THE FULL-STROKE INSERTION.
- B. THE 546°F TEMPERATURE LISTED IN NOTE 2 FOR MODE C, POSITION 23 AND 24, SHALL BE USED ONLY IN DETERMINING THE MINIMUM PIPE WALL THICKNESS IN VICINITY OF THE DRIVE HOUSING AND NOT IN DETERMINING STRESSES DUE TO THERMAL EXPANSION. IN DETERMINING MINIMUM WALL THICKNESS, IT MAY BE ASSUMED THAT THIS TEMPERATURE OCCURS LESS THAN 1 PERCENT OF THE OPERATING LIFE OF THE SYSTEM. SEE THE CRD HYDRAULIC SYSTEM DESIGN SPECIFICATION TO DETERMINE CYCLIC STRESSES DUE TO THERMAL EXPANSION.
- C. LOCATIONS 21 TO 22 - THE PRESSURE DROP FROM LOCATION 21 TO 22 SHALL NOT EXCEED 436 psi AT 90 gal/min FOR ANY CRD.
- D. LOCATION 23 - A NEGATIVE FLOWRATE INDICATES FLOW FROM THE REACTOR THROUGH THE DRIVE SEAL INTO THE CRD. THE MAXIMUM LEAK RATE FROM THE REACTOR CAN REACH 10 gal/min/drive.
- E. LOCATIONS 24 TO 25 - THE PRESSURE DROP FROM LOCATION 24 TO 25 SHALL NOT EXCEED 162 psi AT 29.6 gal/min FOR ANY CRD.
- F. RESPONSE TIME OF FCV-F002 IS SUCH THAT SCRAM IS COMPLETED BEFORE FCV-F002 STARTS TO CLOSE.
- G. SCRAM VENT VALVE F010 AND DRAIN VALVE F011 CLOSE WITH A SCRAM SIGNAL.

6. MODE D

- A. LOCATIONS 24 AND 25 - A NEGATIVE FLOWRATE HERE INDICATES A TRANSIENT CONDITION IN WHICH FLOW FROM THE WITHDRAW LINE PASSES THROUGH THE CRD AND INTO THE REACTOR. DURING SCRAM THE DRIVE ACTS AS A PUMP TO CHARGE THE SCRAM DISCHARGE VOLUME TO A PRESSURE ABOVE THAT OF THE REACTOR. IMMEDIATELY FOLLOWING SCRAM, THE WITHDRAW LINE WILL REJECT WATER TO THE VESSEL UNTIL THE LOSS OF THIS WATER REDUCES THE WITHDRAW LINE PRESSURE TO APPROXIMATELY THAT OF THE REACTOR.
- B. LOCATION 27 - THE SCRAM DISCHARGE VOLUME SHALL BE SIZED SO THAT THE RESULTING PRESSURE AFTER 100-PERCENT STROKE IS LESS THAN 65 psig.
- 7. MAXIMUM ALLOWABLE PUMP SUCTION PRESSURE SHOULD BE 50 psig.
- 8. PROCESS DIAGRAM 10505093 SHALL BE USED WITH AND FORM PART OF THIS PROCESS DATA. IF THERE ARE ANY CONFLICTS BETWEEN THE PROCESS DIAGRAM AND THIS PROCESS DATA, THE PROCESS DATA SHALL GOVERN.

MODE A. NORMAL OPERATION

LOCATION	1A	1	2	3	4	5	5A	6	7	8	9	10	11*	12*	13	14	15	16
FLOW, (gal/min)	88.6	88.6	88.6	20.0	68.6	68.6	10.0	58.6	58.6	52.6	52.6	12.0	12.0	12.0	2.0	4.0	6.0	0
PRES. (psig)	21.	19.	1460.	1460.	1438.	1430.	1430.	1427.	PR +260	PR +260	PR +60	PR +60	PR +50	PR +50	PR +20	PR +20	PR +20	1427.

LOCATION	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31**	32	33
FLOW, (gal/min)	/	/	40.6	.34	.34	.34	.34	0	/	0	0	46.6	40.6	40.6	30	30	6
PRES. (psig)	/	/	PR +60	PR +15	PR +14	PR +14	PR	PR	/	PR +20	0	PR +20	PR +60	PR +20	1454	97	1458

CONDITIONS: 1) DRIVES LATCHED, 2) PRESSURE OF REACTOR AT 1035 PSIG (STEAM DOME), 3) MAXIMUM COOLING FLOW TO DRIVES, MINIMUM REQUIRED PRESSURE AT POSITION 1A IS SHOWN, 4) PRESSURE AT LOCATION 16 SHALL NOT EXCEED 1510 PSIG.

MODE A SIZES THE COOLING WATER HEADERS.

MODE B. ROD INSERTION

LOCATION	1A	1	2	3	4	5	5A	6	7	8	9	10	11*	12*	13	14	15	16	17	18	19	20	21	22	23	
FLOW, (gal/min)	"	"	"	"	"	"	"	"	"	"	"	"	8.7	8.7	8.7	"	0	2.0	"	4.0	4.0	43.9	/	4.0	4.0	1.3
PRES. (psig)	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	PR +91	PR +90	"

CONDITIONS: 1) DRIVES INSERTING, 2) PRESSURE OF REACTOR AT 1035 PSIG (STEAM DOME), 3) MAX DRIVING FLOW TO DRIVES.

MODE B SIZES THE DRIVE WATER HEADERS.

LOCATION	24	25	26	27	28	29	30	31**	32	33
FLOW, (gal/min)	.7	.7	.7	"	46.6	43.9	43.9	30	30	6
PRES. (psig)	PR+20	PR+20	PR+20	"	PR +20	"	"	1454	97	1458

MODE C. SCRAM

LOCATION	1A	1	2	3	4	5	5A	6	7	8	9	10	11*	12*	13	14	15	16	17	18	19	20	21	22	23
FLOW, (gal/min)	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
PRES. (psig)	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"

CONDITIONS: 1) DRIVES SCRAMMING, 2) PRESSURE OF REACTOR AT 1035 PSIG (STEAM DOME), 3) FLOW BASE ON MAXIMUM ROD VELOCITY OF 85 IN./S.

MODE C SIZES THE INSERT AND WITHDRAW LINES.

LOCATION	24	25	26	27	28	29	30	31**	32	33
FLOW, (gal/min)	29.6	29.6	"	APPX 4055.	/	/	/	30	30	6
PRES. (psig)	258	94	"	7.6	"	"	"	1454	97	1458

MODE D. SCRAM COMPLETED

LOCATION	1A	1	2	3	4	5	5A	6	7	8	9	10	11*	12*	13	14	15	16	17	18	19	20	21	22	23		
FLOW, (gal/min)	200.	200.	200.	18.	180.	180.	10.	5	5	5	5	5	5	5	5	/	/	/	/	165.	/	/	/	/	1.28	1.28	1.74
PRES. (psig)	6.	-4.	1141.	1141.	1063.	1010.	1010.	987.	PR	PR	PR	PR	PR	PR	PR	/	/	/	/	987.	/	/	/	/	126.	126.	"

CONDITIONS: 1) SCRAMMING OF DRIVES COMPLETED, 2) PRESSURE OF REACTOR AT 0 PSIG (STEAM DOME), 3) MAXIMUM CRD SUPPLY PUMP FLOW.

NOTE - MINIMUM ACCUMULATION PRECHARGE PRESSURE IS 565 psig.

MODE D SIZES THE PUMP SUCTION LINE.

LOCATION	24	25	26	27	28	29	30	31**	32	33
FLOW, (gal/min)	-0.46	-0.46	/	0	/	/	/	0	0	6
PRES. (psig)	65 MAX	65 MAX	/	65 MAX	"	"	"	97	1141	1010

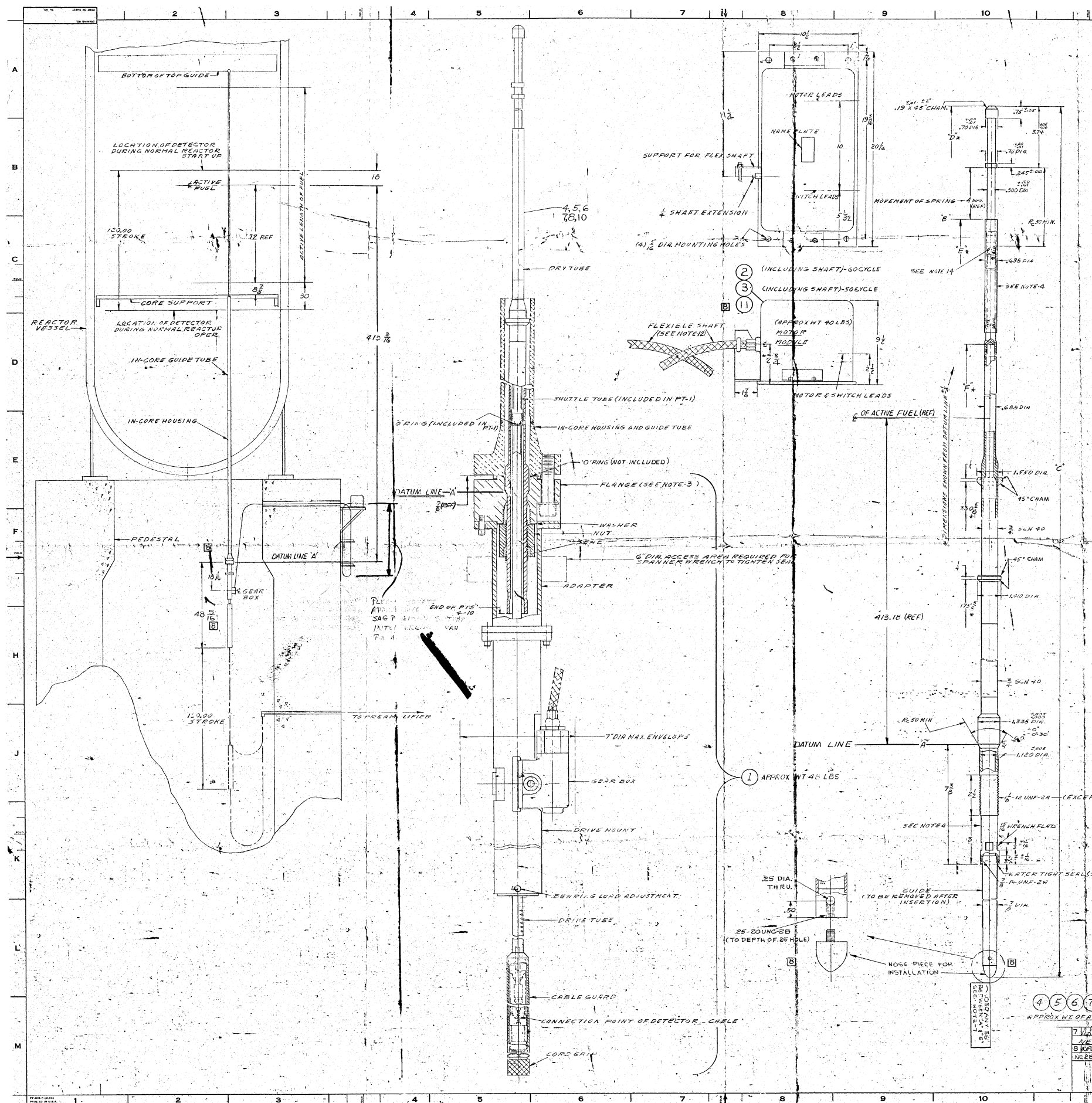
* WHEN F005 IS CLOSED, NODES 11 & 12 WILL HAVE 0 GPM FLOW.
 ** WHEN F005 IS OPEN, VALVE F250 (NODE 31) WILL MODULATE TO MAINTAIN SYSTEM PRESSURE BELOW 1450 PSIG (H.P. ALARM SETPOINT = 1480 PSIG)

CAD AutoCAD S-25312

Southern Company Services, Inc.
 for
 PLANT: HATCH
 UNIT: 2
 TITLE: PROCESS DATA CRD HYDRAULIC SYSTEM
 VENDOR: G.E. P.O.#: PEH2-2
 S-25312

THIS DWG. PART OF VENDOR MANUAL N/A
 TAB/SECT. N/A
 PAGE N/A
 FIGURE N/A

REVISION	1	DATE	12-18-01			
REVISED PER ABN 99-0035-002.						
SEE MICROFILM FOR PREVIOUS REV. SIGNATURES.						
BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5
RCR	JGH	ASK				



GENERAL ELECTRIC 729E946 SRM/IRM UNIT. Includes a parts list table with columns for NAME, VENDOR, VENT. IDENT NO., and MPL NO. Also includes technical notes, a table with dimensions C, D, E, F, and a revision table at the bottom.

Table with columns: REV. NO., DATE, BY, CHECKED. Contains revision information.

RECORD COPY

VENDOR'S DRAWING REVIEW table with checkboxes for various review criteria.

Microfilm 4/17/84

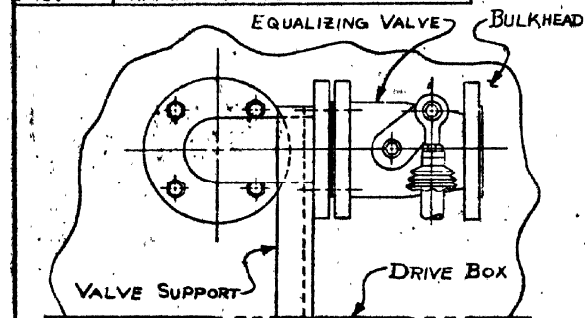
DWG. NO.	DESCRIPTION
150	LOCK STRUCTURAL ASSY.
151	INTERIOR BULKHEAD ASSY.
152	INTERIOR BULKHEAD DETAILS
153	EXTERIOR BULKHEAD ASSY.
154	EXTERIOR BULKHEAD DETAILS
155	LOCK STRUCTURAL DETAILS
156	STRUCTURAL MISC. DETAILS
157	INTERIOR DOOR ASSY.
158	EXTERIOR DOOR ASSY.
159	FLOOR ASSY. & DETAILS
160	TIE DOWN DETAILS
161	LIMIT SWITCH ASSY.
162	INSERT ASSY.
163	ELECTRICAL ASSY.
164	ELECTRICAL DETAILS
167	NAMEPLATE DETAIL

QTY	MARK	ASSEMBLY	DESCRIPTION	LENGTH	WEIGHT
1	100-A		LOCK SHIPPING ASSY.		
1	101-A		LOCK FINAL ASSY.		
4	160-A		TIE DOWN BOLT ASSY.		
10	160-C		TIE DOWN BOLT ASSY.		
2	55-A		MEDALLION ASSY.		
1	167-2		518B-A NAMEPLATE (STENCIL)	6.6	6.6
4	100-1		DRIVE SHAFTS 10 U-TYPE	0 0 3/8	4.8

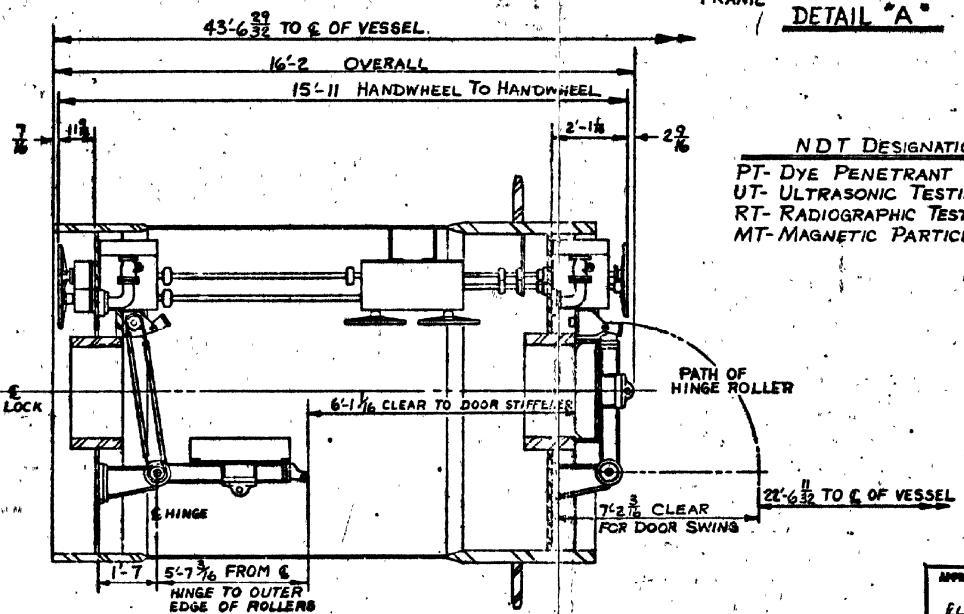
CB & I	100	
8511-20	10-502	S-26583E
TITLE: General Arrangement		
JOB: EDWIN I. HATCH NUCLEAR PLANT UNIT 2		
MFR: CHICAGO BRIDGE & IRON	P.O. REQ.	PEH-2-33 CLASS 3-A-5

Rev. 5

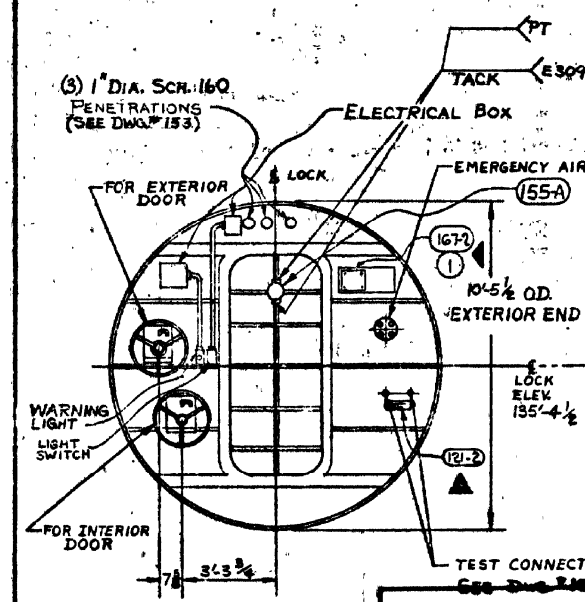
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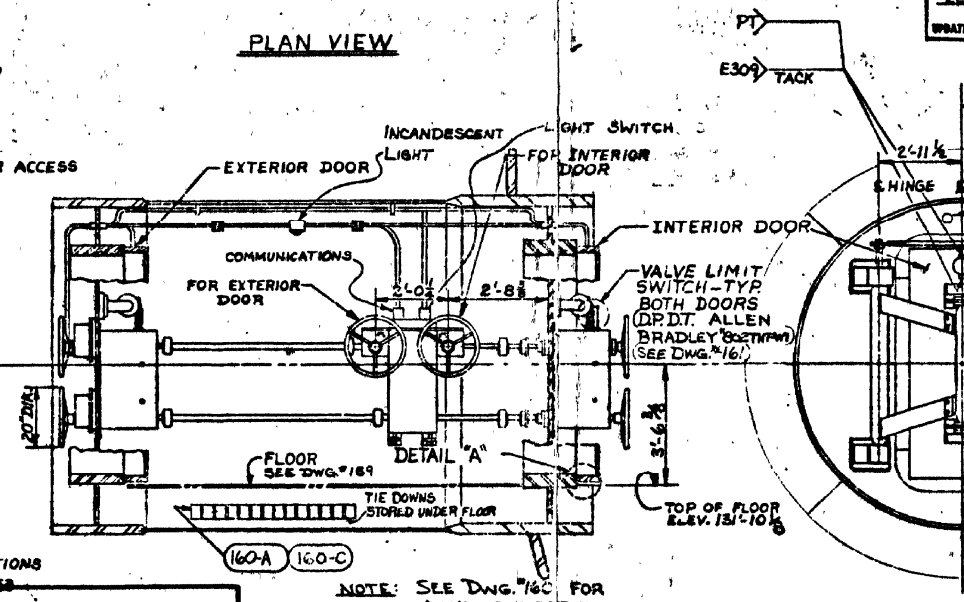
DETAIL D



PLAN VIEW

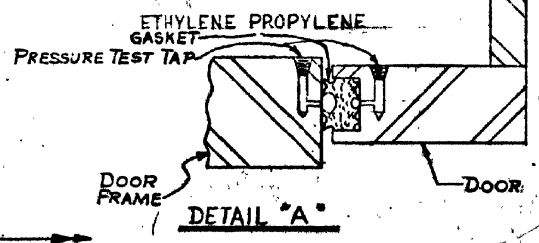


EXTERIOR END



ELEVATION VIEW

BEST SOURCE DOCUMENT AVAILABLE, MAY NOT BE OF MICROFILM-ABLE QUALITY.



DETAIL A

NDT DESIGNATIONS
 PT- DYE PENETRANT TESTING.
 UT- ULTRASONIC TESTING.
 RT- RADIOGRAPHIC TESTING.
 MT- MAGNETIC PARTICLE TESTING.

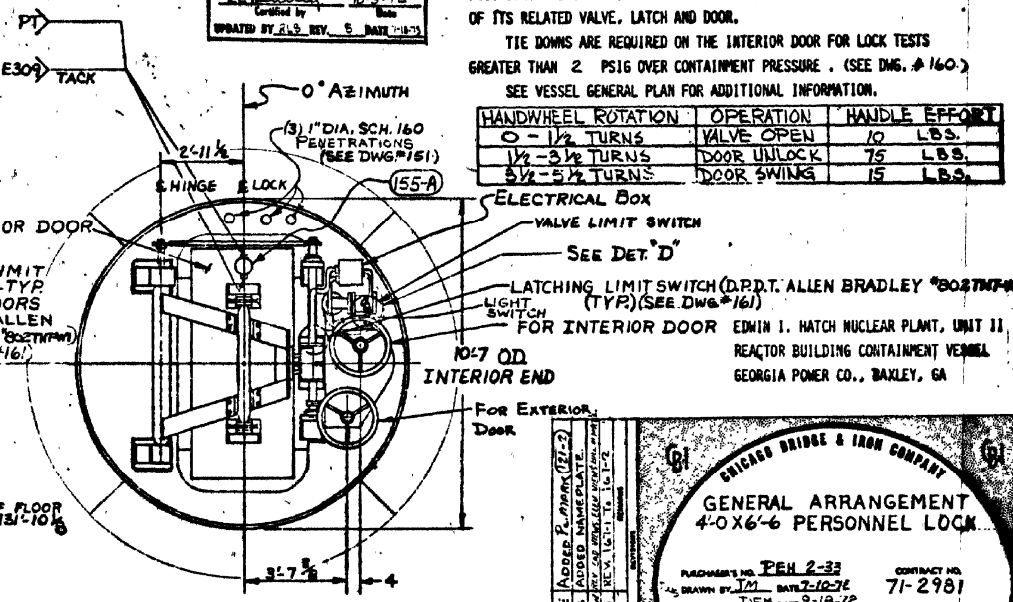
GENERAL NOTES:
 THE LOCKING MECHANISM IS DESIGNED TO SEAL THE DOOR AGAINST A PRESSURE OF 2 PSIG. THE DOORS AND LOCK ARE DESIGNED FOR A PRESSURE OF 56 PSIG EXISTING IN THE CONTAINMENT VESSEL OR THE CONTAINMENT VESSEL AND LOCK SIMULTANEOUSLY. BOTH DOORS AND VALVES CAN BE MANUALLY OPERATED FROM EITHER SIDE OF EITHER DOOR AND ARE MECHANICALLY INTER-LOCKED TO PREVENT OPENING BOTH DOORS AND VALVES AT THE SAME TIME. ONE DOOR AND VALVE CANNOT BE OPENED UNLESS THE OPPOSITE DOOR AND VALVE IS SEALED. THE OPERATING AND MAINTENANCE MANUALS DESCRIBE THE METHOD OF DELIBERATELY VIOLATING THE INTERLOCK.

THE OPERATION OF THE HANDWHEEL WILL PERFORM THE FOLLOWING FUNCTIONS:
 (1) ACTUATE THE MECHANICAL INTERLOCK TO BLOCK OPERATION OF THE OPPOSITE MECHANISM. (2) OPEN THE PRESSURE EQUALIZING VALVE. (3) UNLATCH THE DOOR. (4) SWING THE DOOR OPEN ON IT'S HINGE. THESE OPERATIONS ARE IN THE SEQUENCE AS DESCRIBED FOR OPENING A DOOR AND ARE REVERSED FOR CLOSING A DOOR. THE REMOTE OPERATOR ON THE OUTSIDE OF THE LOCK AT EACH DOOR WILL PERFORM THE ABOVE FUNCTIONS ON THE OPPOSITE DOOR.

LIMIT SWITCHES ARE SUPPLIED AT THE VALVE AND LATCH OPERATORS FOR EACH DOOR TO FACILITATE REMOTE INDICATION OF EACH DOOR AND VALVE POSITION. POSITION INDICATORS AT EACH HANDWHEEL DENOTE THE POSITION OF ITS RELATED VALVE, LATCH AND DOOR.

TIE DOWNS ARE REQUIRED ON THE INTERIOR DOOR FOR LOCK TESTS GREATER THAN 2 PSIG OVER CONTAINMENT PRESSURE. (SEE DWG. # 160.) SEE VESSEL GENERAL PLAN FOR ADDITIONAL INFORMATION.

HANDWHEEL ROTATION	OPERATION	HANDLE EFFORT
0 - 1/2 TURNS	VALVE OPEN	10 LBS.
1/2 - 3/4 TURNS	DOOR UNLOCK	75 LBS.
3/4 - 5/4 TURNS	DOOR SWINGS	15 LBS.



INTERIOR END

CHICAGO BRIDGE & IRON COMPANY

GENERAL ARRANGEMENT
 4'-0" X 6'-6" PERSONNEL LOCK

DESIGNED BY: J.M. DATE: 2-10-76
 CHECKED BY: J.E.M. DATE: 3-18-76
 CONTRACT NO. 71-2981
 DWG. NO. 100-5

VENDOR'S DRAWING REVIEW

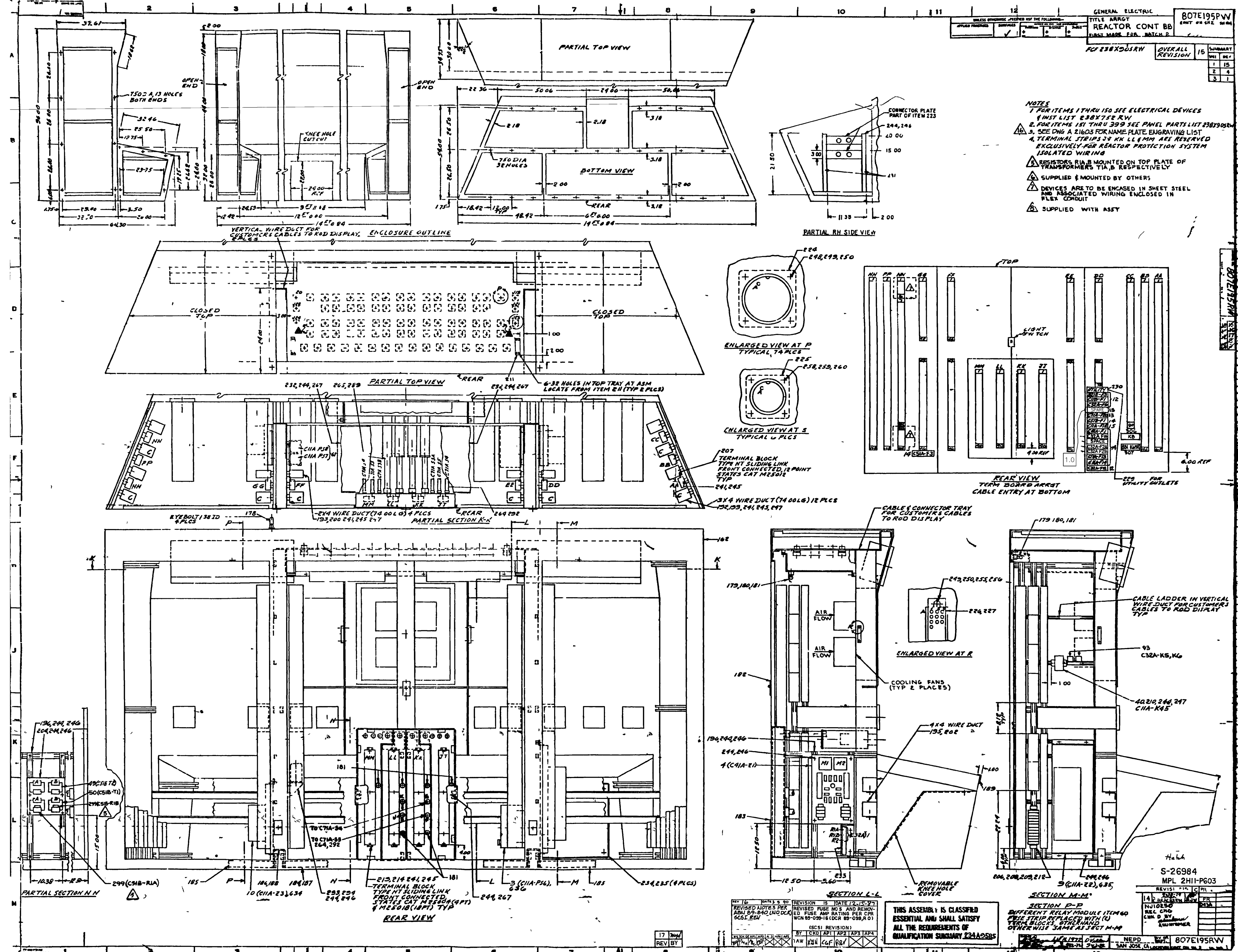
- Approved - Mfg. may proceed.
- Approved - Submit final dwg. - Mfg. may proceed.
- Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.
- Not approved - Correct and resubmit.
- Review not required - Mfg. may proceed.

Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.

By: *[Signature]* Date: 7-31-73

JOB NO. 8511 BECHTEL CORPORATION
 POWER & INDUSTRIAL DIVISION
 P.O. BOX 807 GAITHERSBURG, MD.

Microfilmed 5-4-84



REVISION	DATE	BY	CHK'D	APP'R
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2	4			
3	1			

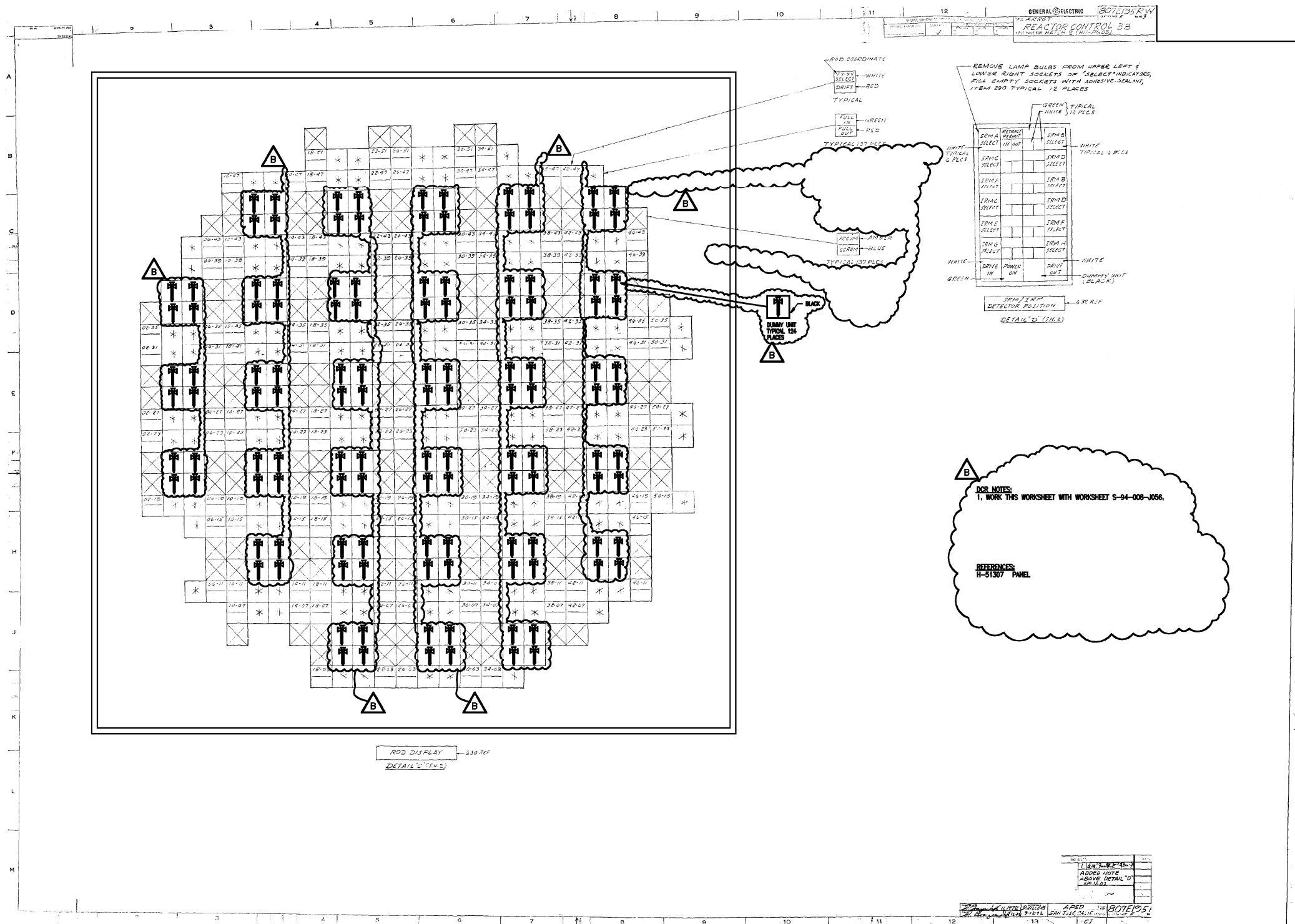
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REVISION	DATE	BY	CHK'D	APP'R
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REVISION	DATE	BY	CHK'D	APP'R
1	15			
2	4			
3	1			

THIS DWG. REFERENCED IN	Southern Nuclear Operating Company, Inc.		
VENDOR MANUAL N/A	FOR		
TAB/SECT. N/A	EDWIN I. HATCH NUCLEAR PLANT		
PAGE N/A	UNIT NO. 2		
FIGURE N/A	TITLE:		
VERSION 1.0	ARRGT. REACTOR CONTROL BB		
DATE 4-27-09	SHEET 1		
REVISOR BY SNC PER			
ABN 2040048501E696,			
VER. 1.0			
SEE MICROFILM FOR PREVIOUS VER. SIGNATURES			
BY	CHK'D	APP'R 1	APP'R 2
JLO	GDM	JMR	X
VENDOR: GE	DRAWING NO. S-26984	P.O.#: PEH2-002	



QID	S26986
PLANT	HATCH
UNIT	2
TITLE	ARRGT.-REACTOR CONT. BB
VENDOR	G.E.
P.O.#	PEH2-02
S-26986 B	

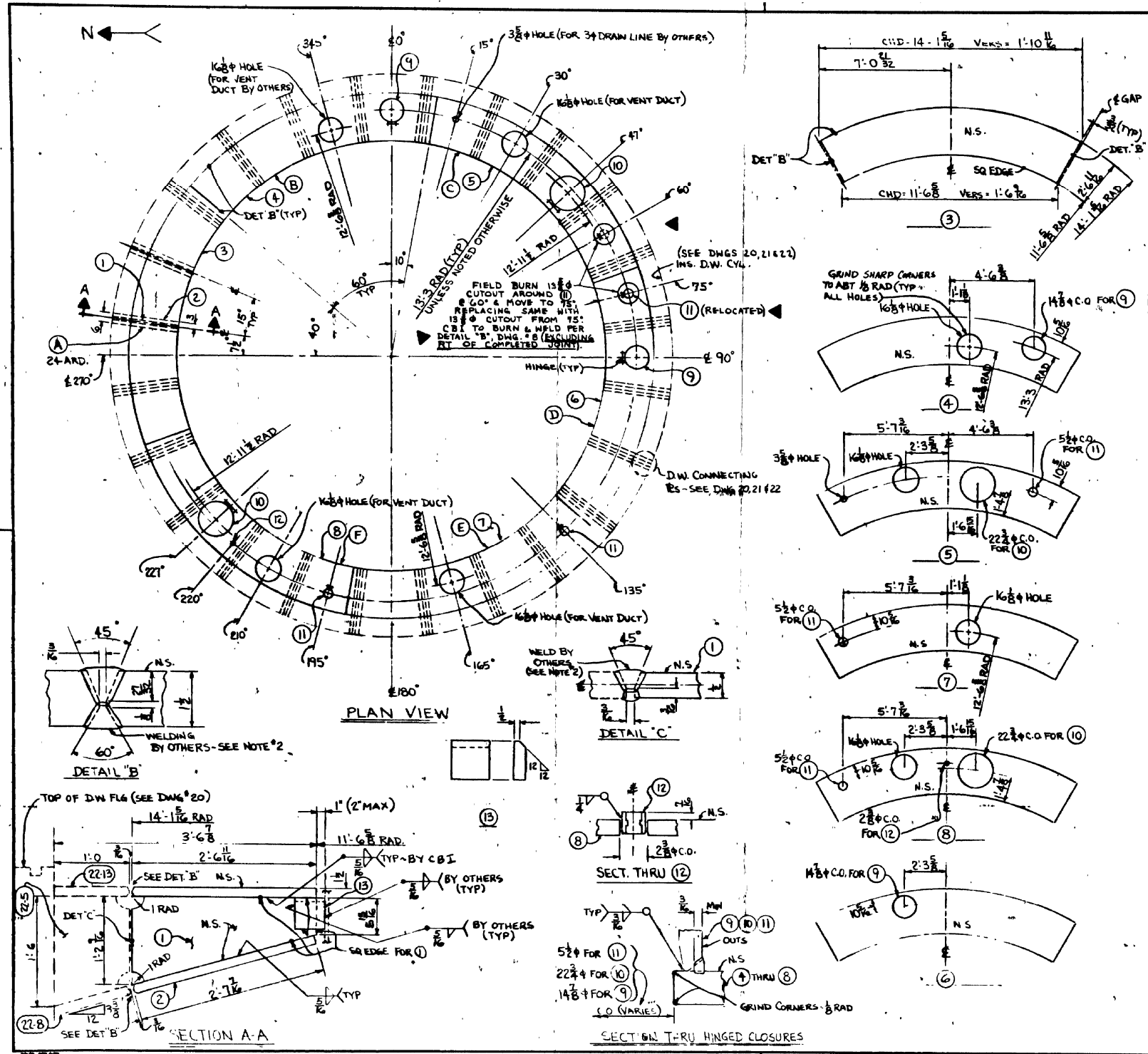
THIS DWG. PART OF
VENDOR MANUAL N/A

TAB/SECT. N/A
PAGE N/A
FIGURE N/A

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE
BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2	APPR.3	APPR.4	APPR.5	BY	CHK'D	APPR.1	APPR.2

REVISION B DATE 7-25-97
SCANNED; VERIFIED BY D.K.
REVISED PER ABN 94-0008-017.
(VENDOR REV. 2 BY SCS)
D.K. HEW CCS

BEST SOURCE DOCUMENT AVAILABLE, MAY NOT BE OF MICROFILM-ABLE QUALITY.



MARK	DESCRIPTION	LENGTH	QTY	UNIT	REQ.
24 96-A	WATER SEAL GUSSET ASSY				
96-1	R-SK X 1/2 (R-20 3/4 X 1/2 X 2-7 9/16)		2	7 1/2	A36 D
96-2	R-G X 1 1/2 X 1/2 X 1/2 X 1 1/2 X 2 1/8				A36 D
1 96-3	R-SK X 1 1/2 (R-85 1/2 X 14-2 1/2 9/16)				A36 D
1 96-B	WATER SEAL ASSY				
96-4	R-SK X 1 1/2 (R-85 1/2 X 14-2 1/2 9/16)				A36 D
96-9	1/2" T-BOLT HINGED CLOSURE, CLASS 75-TB WITH STD MATL - CARBON STEEL & BUNA-N O-RING - AND STD WT PIPE BEVEL (TUBE THICKNESS EQUAL)				
1 96-C	WATER SEAL ASSY				
96-5	R-SK X 1 1/2 (R-85 1/2 X 14-2 1/2 9/16)				A36 D
96-10	24" SPRING LOADED T-BOLT HINGED CLOSURE, CLASS 75-TB WITH STD MATL - CARBON STEEL & BUNA-N O-RING - AND STD WT PIPE BEVEL (TUBE THICKNESS EQUAL)				
96-11	1/2" T-BOLT HINGED CLOSURE, CLASS 75-TB WITH STD MATL - CARBON STEEL & BUNA-N O-RING - AND STD WT PIPE BEVEL (TUBE THICKNESS EQUAL)				
1 96-D	WATER SEAL ASSY				
96-6	R-SK X 1 1/2 (R-85 1/2 X 14-2 1/2 9/16)				A36 D
96-9	1/2" T-BOLT - (SAME AS 96-9) ABOVE				
1 96-E	WATER SEAL ASSY				
96-7	R-SK X 1 1/2 (R-85 1/2 X 14-2 1/2 9/16)				A36 D
96-11	1/2" T-BOLT - (SAME AS 96-11) ABOVE				
1 96-F	WATER SEAL ASSY				
96-8	R-SK X 1 1/2 (R-85 1/2 X 14-2 1/2 9/16)				A36 D
96-10	24" SPRING LOADED T-BOLT - (SAME AS 96-10) ABOVE				
96-11	1/2" T-BOLT - (SAME AS 96-11) ABOVE				
96-12	1 1/2" 6000 S.W. PIPE COUPLING				NOS 1 D
24 96-13	R 5 X 1 (BEVEL ONE EDGE)		0	5	A36 D

GENERAL NOTES

- DIMS & DETAILS OF RS (4) THRU (8) ARE THE SAME AS THOSE FOR RS (3) EXCEPT FOR CUTOUTS.
- FIELD TO ERECT THIS D.W. WATER SEAL IN PLACE, MATCH IT TO THE CORRESPONDING CONNECTING RS SHOWN ON DWG #20, REMOVE IT FROM THE DRYWELL AND STORE AT A SUITABLE PLACE IN THE FIELD WITH PROTECTIVE COVERING AS DIRECTED BY PURCHASER. ALL FIELD WELDING IS TO BE DONE BY OTHERS, UNLESS NOTED OTHERWISE.

APPROVED FOR NUCLEAR S.A. DRAWING RELEASED FOR USE
R. Bentley 4-6-73
 ISSUED BY ROR REV. 2 DATE 4-12-73

EDWIN I. HATCH NUCLEAR PLANT, UNIT 11
 REACTOR BUILDING CONTAINMENT VESSEL
 GEORGIA POWER CO., BAXLEY, GA.

CHICAGO BRIDGE & IRON COMPANY
WATER SEAL ASSEMBLY INSIDE D.W. CYLINDER
 PURCHASER'S NO. PEH 233 CONTRACT NO. 71-2981
 DRAWN BY SEE DATE 3-16-73
 CHECKED BY ROR DATE 3-16-73
 ENGINEERING COORDINATOR DWG NO 96 REV 2

2CB&I 96

6511-20	10-502	S-27793B
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TITLE: Water Seal Assembly Inside D.W. Cylinder

JOB: EDWIN I. HATCH NUCLEAR PLANT UNIT 2

MFR: CHICAGO BRIDGE & IRON P.O. PEH-2-33 REQ. CLASS 3-A-5

Rev. 2

RECORD COPY

VENDOR'S DRAWING REVIEW

- Approved - Mfg. may proceed.
- Approved - Submit final dwg. - Mfg. may proceed.
- Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.
- Not approved - Correct and resubmit.
- Review not required - Mfg. may proceed.

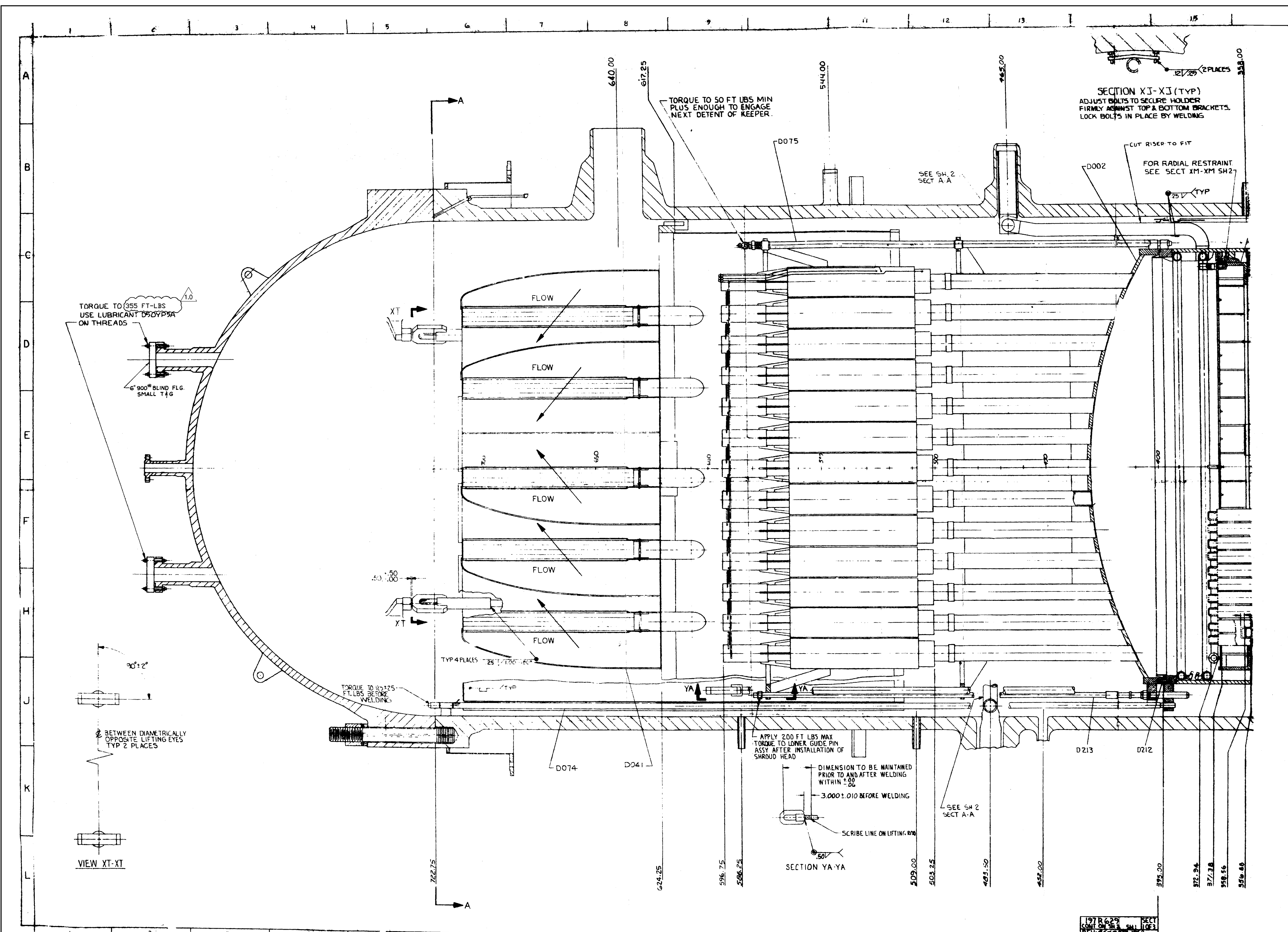
Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.

By *sw/* Date *7/3/73*

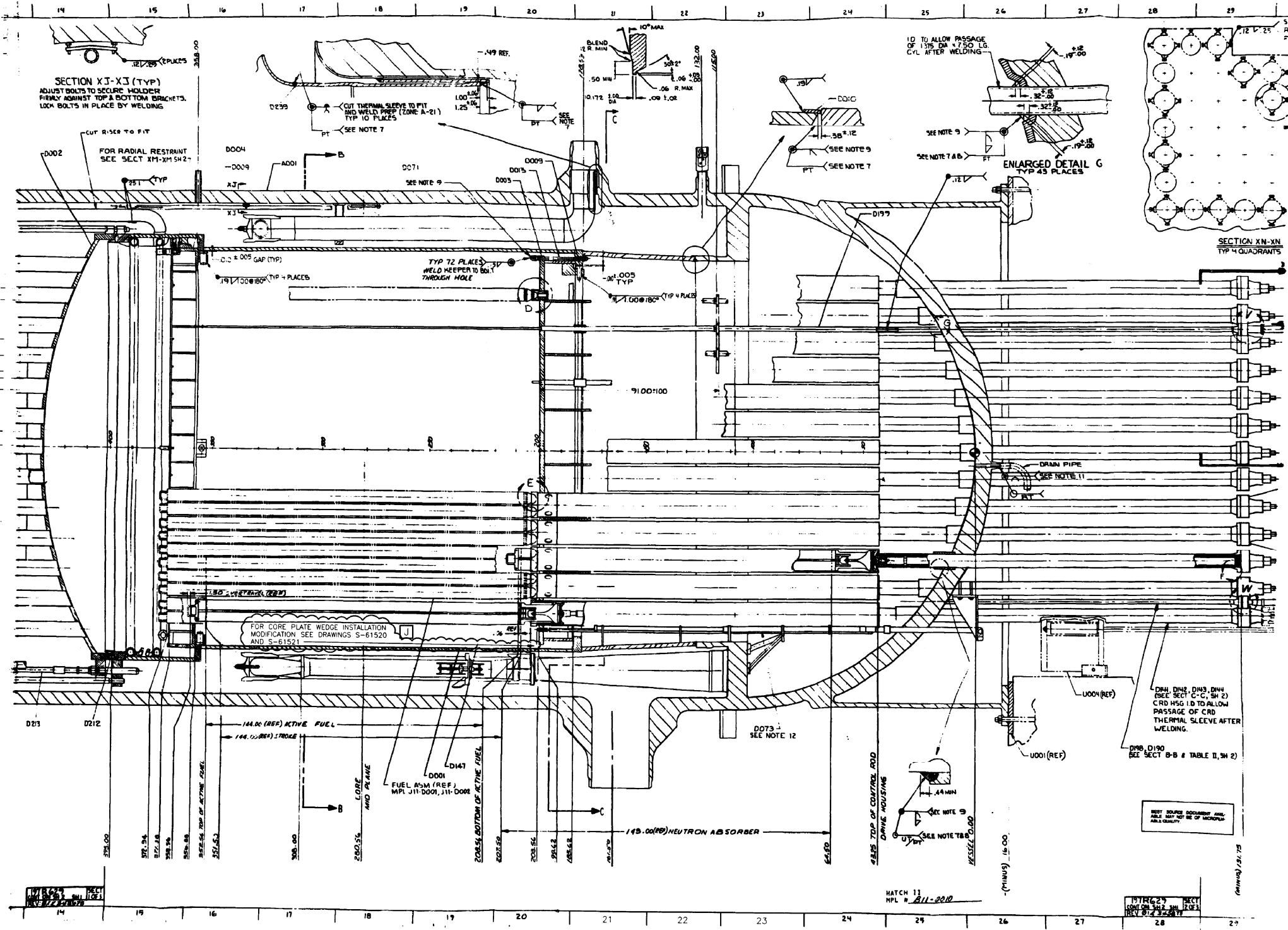
JOB NO. 6511	BECHTEL CORPORATION POWER & INDUSTRIAL DIVISION P.O. BOX 607 GAITHERSBURG, MD.
--------------	--

microfilmed 5/22/84

ISSUED DATE 1-7-93



THIS DWG. REFERENCED IN VENDOR MANUAL N/A		Southern Nuclear Operating Company, Inc.	
TAB/SECT. N/A		FOR	
PAGE N/A		E.I. HATCH NUCLEAR PLANT UNIT NO. 2	
FIGURE N/A		TITLE: REACTOR ASSEMBLY SUPERSEDES S25295	
VERSION 1.0	DATE 07/20/09	SEE MICROFILM FOR PREVIOUS VER. SIGNATURES	
REVISOR SNC PER ABN-H01315, VER. 1.0.	APPR. 1	APPR. 2	VENDOR: GE
BY	CHK'D	APPR. 1	APPR. 2
CYN	LRP	PML	X
DRAWING NO. S-28220			P.O.#: PEH2-000002



CAD
AutoCAD S18221

Southern Company Services, Inc.
FOR

PLANT: HATCH

UNIT: 2

TITLE: REACTOR ASSEMBLY
SH. 1 SEC. 2

VENDOR: GE P.O.# PEH2-2

S-28221 J

THIS DWG. PART OF
VENDOR MANUAL N/A

TAB/SECT: N/A

PAGE: N/A

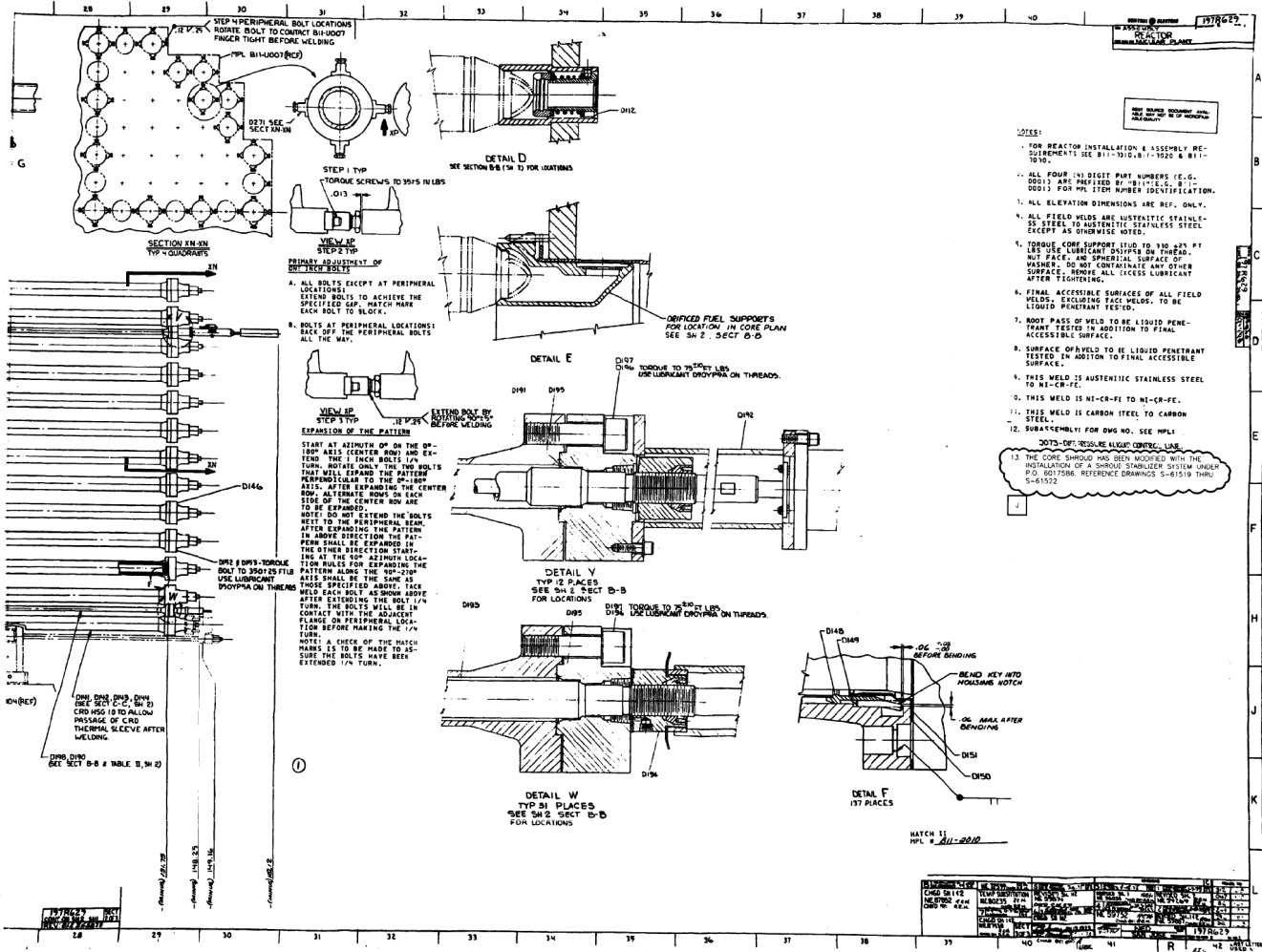
FIGURE: N/A

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE
BY CHK'D	APR 1	APR 2	APR 3	APR 4	APR 5	BY CHK'D	APR 1	APR 2	APR 3	APR 4	APR 5	BY CHK'D	APR 1	APR 2	APR 3	APR 4	APR 5

REVISION J DATE 3/28/76
SCANNED, VERIFIED BY BKJ
REVISED PER ABN 94-0052-001, CORE
SHROUD REPAIR

(VENDOR REV. 9 BY SCS)

BY CHK'D APR 1 APR 2 APR 3 APR 4 APR 5
BKJ VAW/ENL



NOTES:

- FOR REACTOR INSTALLATION & ASSEMBLY REQUIREMENTS SEE B-1-1-1000, B-1-1020 & B-1-1030.
- ALL FOUR DIGIT PART NUMBERS (E.G. 0001) ARE PREFIXED BY "B-1-1-1-001" FOR PPL ITEM NUMBER IDENTIFICATION.
- ALL ELEVATION DIMENSIONS ARE REF. ONLY.
- ALL FIELD WELDS ARE AUSTENITIC STAINLESS STEEL EXCEPT AS OTHERWISE NOTED.
- TORQUE CORE SUPPORT FLUD TO 330 ± 25 #F LUBRICANT DRIPPS ON TOWARD NUT FACE AND SPHERICAL SURFACE OF WASHER. DO NOT CONTAMINATE ANY OTHER SURFACE. REMOVE ALL EXCESS LUBRICANT AFTER TIGHTENING.
- FINAL ACCESSIBLE SURFACES OF ALL FIELD WELDS, EXCLUDING FACE WELDS, TO BE LIQUID PENETRANT TESTED IN ADDITION TO FINAL ACCESSIBLE SURFACE.
- SURFACE OF WELD TO BE LIQUID PENETRANT TESTED IN ADDITION TO FINAL ACCESSIBLE SURFACE.
- THIS WELD IS AUSTENITIC STAINLESS STEEL TO Ni-CR-Fe.
- THIS WELD IS Ni-CR-Fe TO Ni-CR-Fe.
- THIS WELD IS CARBON STEEL TO CARBON STEEL.
- SUB-ASSEMBLY FOR DWG NO. SEE PPL 1.
- DOTS ON RESOLVE ALONG CENTER LINE.
- THE CORE SHROUD HAS BEEN MODIFIED WITH THE INSTALLATION OF A SHROUD STABILIZER SYSTEM UNDER P.O. 6017086. REFERENCE DRAWINGS S-4519 (REV. S-6152).

Southern Company Services, Inc.

PLANT: HATCH

UNIT: 2

TITLE: REACTOR ASSEMBLY SH. 1 SEC. 3

REVISION: CE

DESIGNER: PEH-2

DATE: S-28222 J

THIS DWG. PART OF VENDOR MANUAL N/A

TAB/SECT: N/A

PAGE: N/A

FIGURE: N/A

REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE	REVISION	DATE
1		2		3		4		5		6		7		8	

REVISION 7 DATE 3-28-76

SCANNED, VERIFIED BY: BSG

REVISED PER AOH 94-0032-001. CORE SHROUD REPAIR

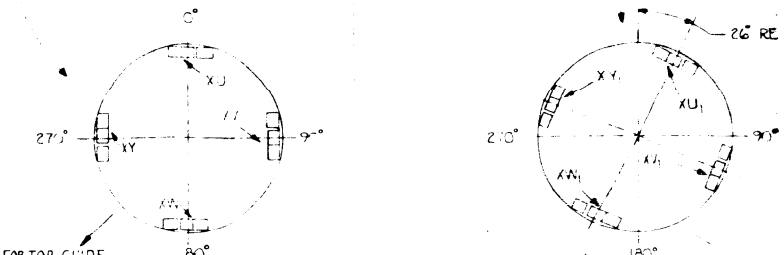
(VENDOR REV. 9 BY SCS)

RECORD COPY

Bechtel Power Corporation		Job No. 811	
Edwardsburg			
SUPPLIER DOCUMENT REVIEW STATUS			
STATUS:			
1	<input type="checkbox"/>	Work may proceed	
2	<input type="checkbox"/>	Minor non-conformances; Work may proceed	
3	<input type="checkbox"/>	Revisions and resubmit; Work may proceed as noted	
4	<input type="checkbox"/>	Correct and resubmit; Work may not proceed	
5	<input type="checkbox"/>	Review not required; Work may proceed	

Microfilm 4/6/68

REFERENCE LETTERS XU, XV, XW, XY, XU, XV, XWAY, INDICATE POINTS OF CONTACT OF ECCENTRIC ALIGNERS WITH SIDES OF SLOTS IN SHROUD. HOLD RELATIONSHIP SHOWN AS A SET. CONTACT POINTS MAY BE REVERSED AS LONG AS ALL POINTS ARE REVERSED. SEE SECTIONS A-A & B-B.

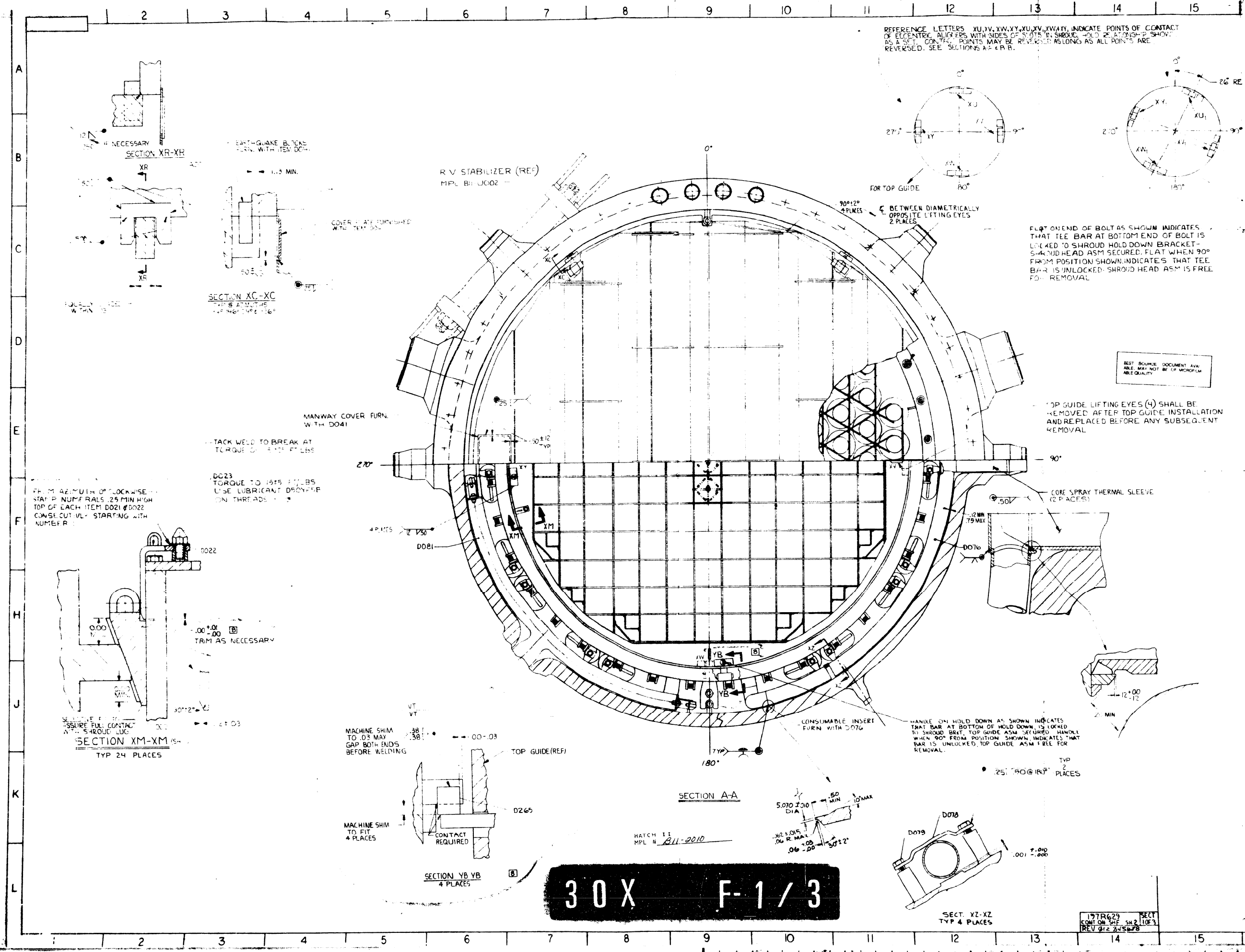


FLAT END OF BOLT AS SHOWN INDICATES THAT TEE BAR AT BOTTOM END OF BOLT IS LOCKED TO SHROUD HOLD DOWN BRACKET-SHROUD HEAD ASM SECURED. FLAT WHEN 90° FROM POSITION SHOWN INDICATES THAT TEE BAR IS UNLOCKED. SHROUD HEAD ASM IS FREE FOR REMOVAL.

BEST SOURCE DOCUMENT AVAILABLE MAY NOT BE OF MICROFILM QUALITY.

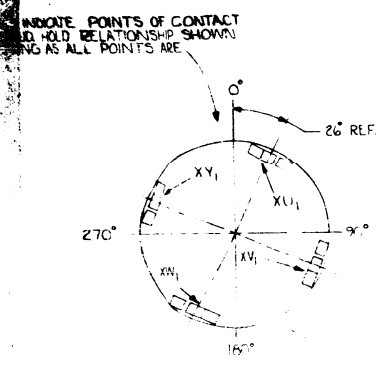
TOP GUIDE LIFTING EYES (4) SHALL BE REMOVED AFTER TOP GUIDE INSTALLATION AND REPLACED BEFORE ANY SUBSEQUENT REMOVAL.

HANDLE ON HOLD DOWN AS SHOWN INDICATES THAT BAR AT BOTTOM OF HOLD DOWN IS LOCKED TO SHROUD BRAT. TOP GUIDE ASM SECURED WHEN 90° FROM POSITION SHOWN INDICATES THAT BAR IS UNLOCKED. TOP GUIDE ASM FREE FOR REMOVAL.



30X F-1/3

1978629
CONT ON SHEET SH2 1083
REV @ 2 245478



LEGEND

- LOCAL RANGE POWER MONITOR
- INTERMEDIATE RANGE MONITOR
- ▲ DESIGN NEUTRON SOURCE
- △ SPARE NEUTRON SOURCE
- x SOURCE RANGE MONITOR

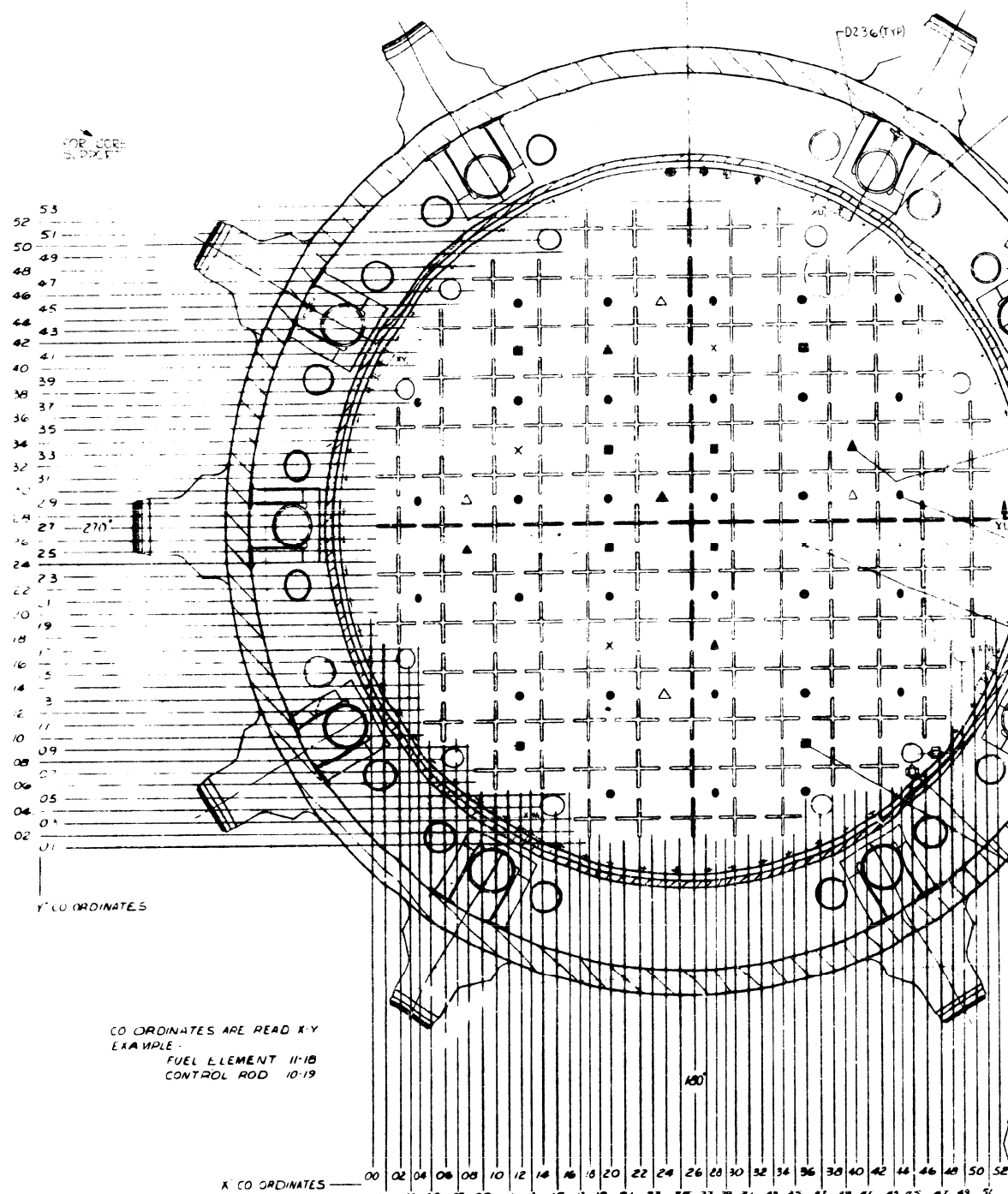
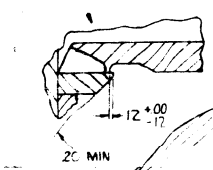
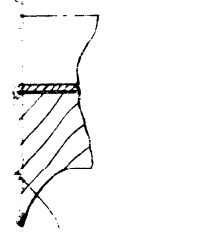
TABLE 3 - FUEL SUPPORT LOCATIONS

PART NO.	D154	D155	D156	D157	D158	D159	D160	D161	D162
CORE POSITION	ALL POSITIONS INDICATED	02-39, 14-47	38-47, 48-39	38-07, 44-15	06-15, 14-07	10-47, 18-51, 27-51, 24-54, 30-51, 34-51, 42-47	44-43, 50-22, 41-07, 34-03, 30-03, 24-03, 50-23, 50-17, 17-03, 15-03, 46-11, 0-07	02-19, 03-13, 02-27, 03-14, 02-35, 04-11, 06-43	

IND OF BOLT AS SHOWN INDICATED. BAR AT BOTTOM END OF BOLTS. SHROUD HOLD DOWN BRACKET LEAD ASM SECURED FLAT WHEN POSITION SHOWN INDICATES THAT TEE UNLOCKED. SHROUD HEAD ASM IS IN DVAL.

WIDE LIFTING EYES (4) SHALL BE ADDED AFTER TOP GUIDE INSTALLATION. BE PLACED BEFORE ANY SUBSEQUENT WVAL.

SPRAY THERMAL SLEEVE (ACES)

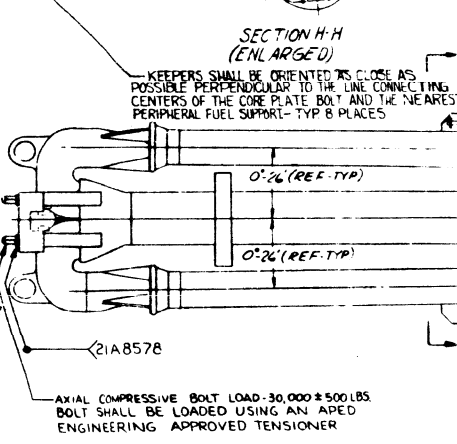
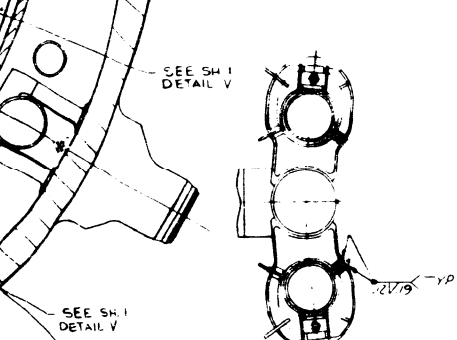
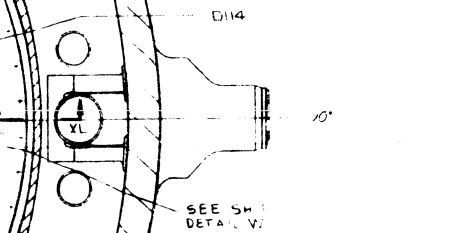
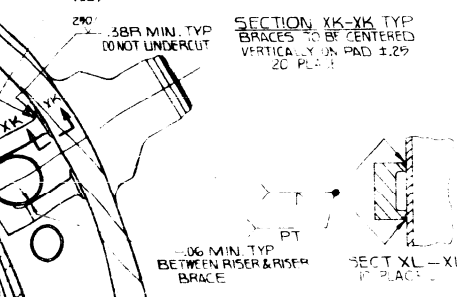
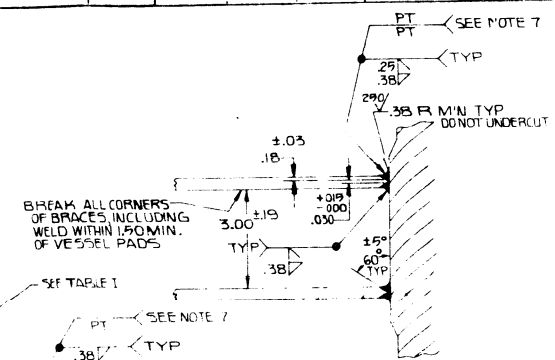


Y COORDINATES
53
52
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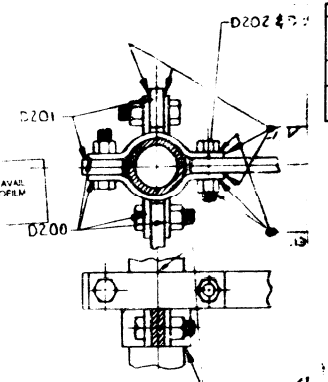
X COORDINATES
00 02 04 06 08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52
01 03 05 07 09 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51

CO ORDINATES ARE READ X-Y
EXAMPLE
FUEL ELEMENT 11-18
CONTROL ROD 10-19

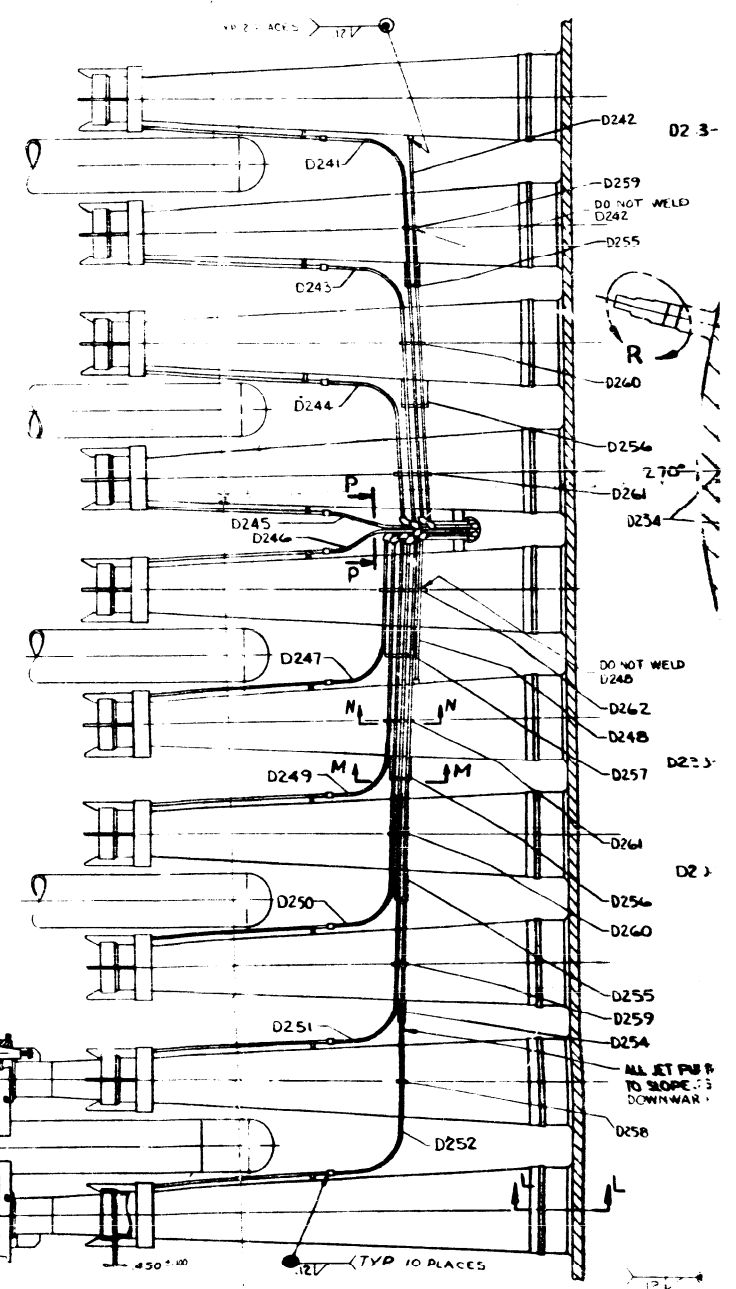
SECTION B-B



BEST SOURCE DOCUMENT AVAILABLE MAY NOT BE OF HIGHEST QUALITY



VIEW J
TYP WELD CLAMP



DEVELOPED VIEW AT K-K
2 PLACES

2811-0100 1978029
TITLE Fuel Support Assembly, Sheet 2-Cont. 2-
Supersedes 825296
JOB EDWIN HATCH NUCLEAR PLANT UNIT 2
MFR General Electric P.O. PER 2
REV. 8

RECORD COPY

Becthel Power Corporation
Gallatinburg Job No. 8511
SUPPLIER DOCUMENT REVIEW STATUS
1. Work may proceed
2. Submit final document. Work may proceed as noted.
3. Revise and resubmit. Work may proceed as noted.
4. Correct and resubmit. Work may not proceed.
5. Re-evaluated required. Work may proceed.
Permission to proceed does not constitute acceptance or approval of design details, calculations, materials, test methods or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.
By: _____ Date: _____
Signature: _____

Microfilmed 6/1/80

30X F-2/3

HATCH 11
MPL # 811-2010

1978029
CONT. SHEET SHEET 3
REV. 01/28/80

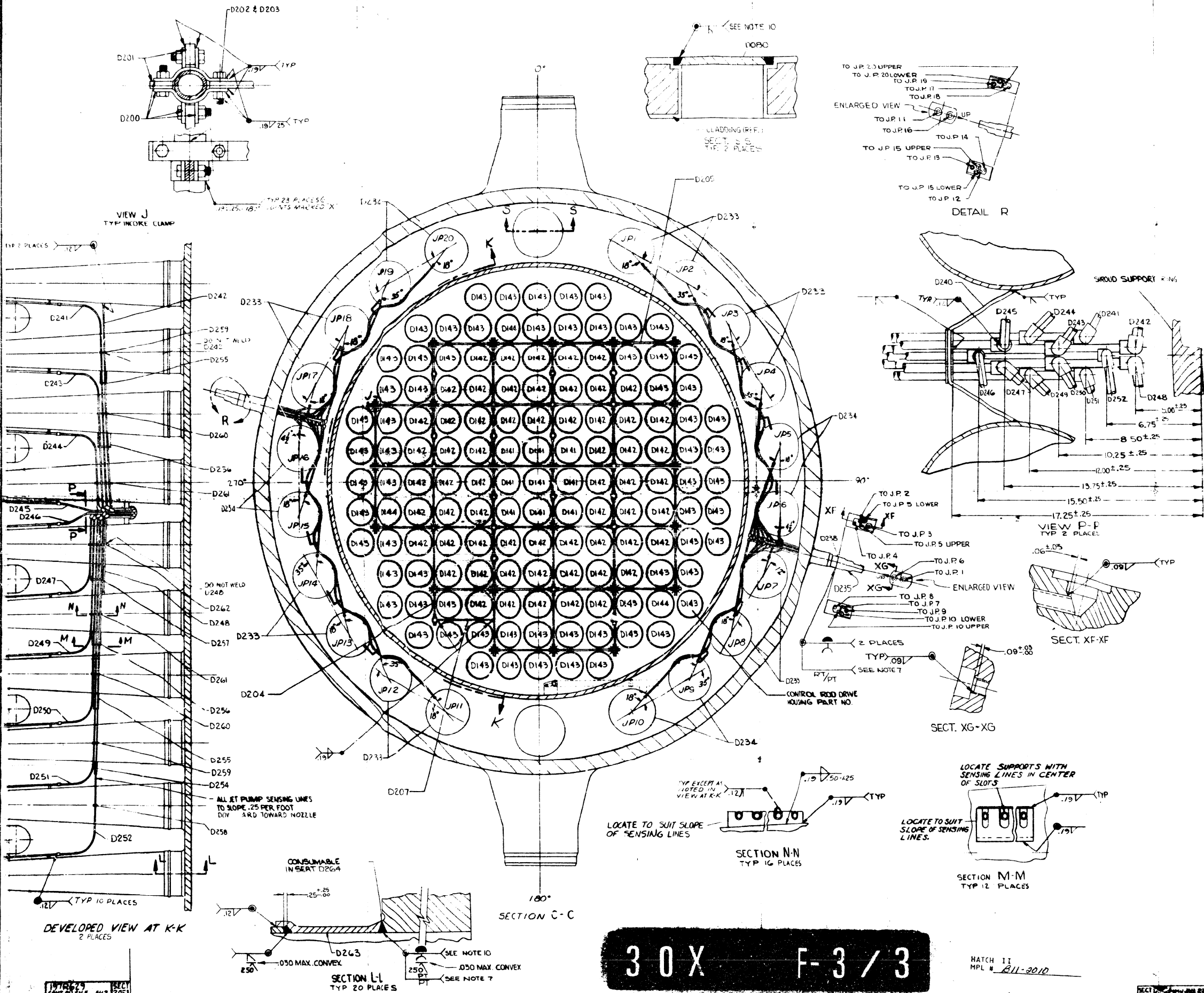
14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

8311	10-502	57823-2
TITLE Reactor Assembly, Sheet 2-5 of 7 Reactor 52526		
JOB EDWIN HATCH NUCLEAR PLANT UNIT 2		
MFR	General Electric	P.O. PER-2
Rev. 8		

RECORD COPY

Supplier Power Corporation Caitland		Job No. 811
SUPPLIER DOCUMENT REVIEW STATUS		
STATUS NO.		
1	Work may proceed	
2	Submit final document. Work may proceed	
3	Review and re-submit. Work may proceed, noted	
4	Correct and re-submit. Work may proceed	
5	Review not required. Work may proceed	
Permission to proceed does not constitute acceptance or approval of design details, calculations, analysis, test methods or materials unless indicated by the supplier and does not relieve supplier from full compliance with contractual obligations.		
By:	Signature	Date

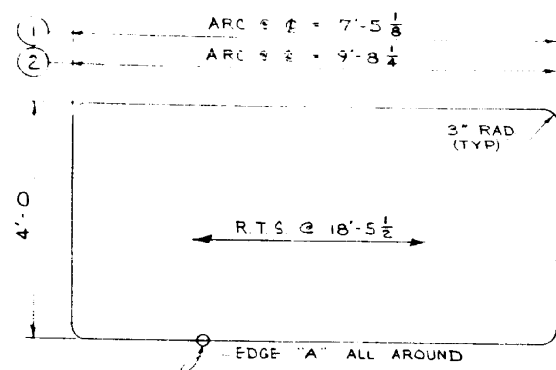
Manufactured 1/74



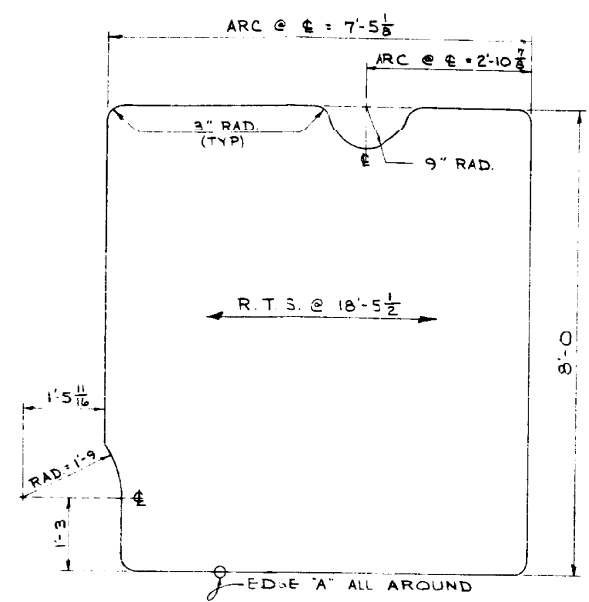
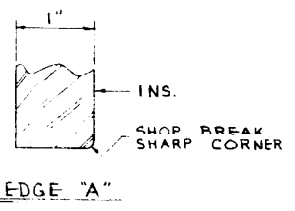
30X F-3/3

HATCH II
MPL # 811-3010

FOR REVISIONS
SEE SHEET:



①&②



③

SHIP PC.	MARK	ASS. PC.	DESCRIPTION	LENGTH	SPEC.	LD
2	270-1		R-48 x 1 1/2 (97 - 24 1/2)	7 5 1/8	MAT'L "1" B	
4	270-2		R-48 x 1 1/2 (97 - 19 5/8)	9 8 1/4	MAT'L "1" B	
2	270-3		R-36 x 1 - SK (770-1)	7 5 1/8	MAT'L "1" B	

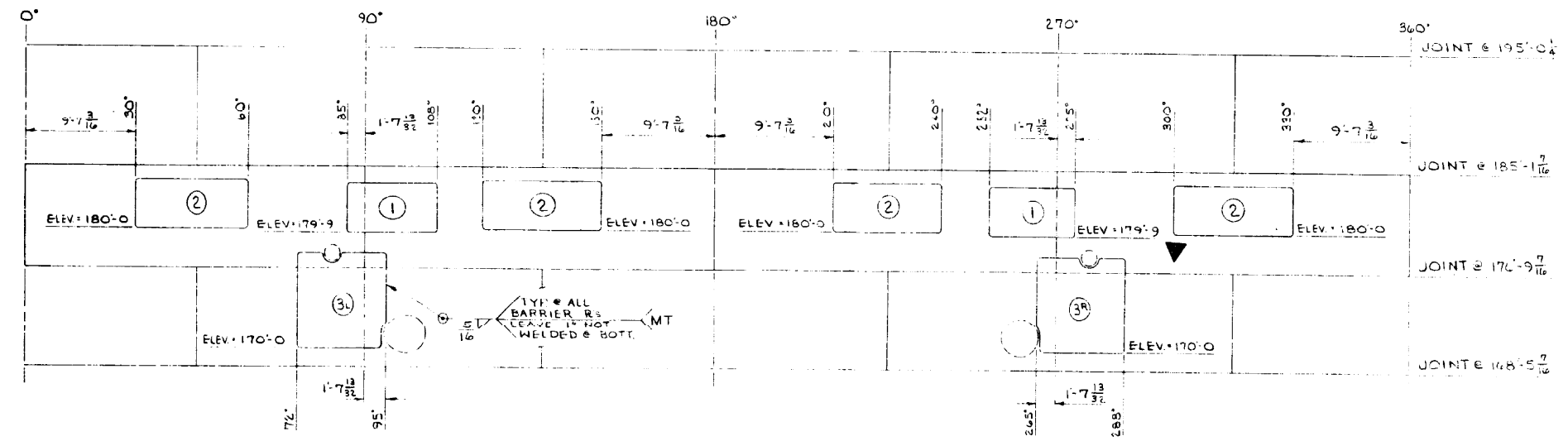
MAT'L "1" - SA 516 GR. 70 (MS-6216 B)

NOTE: IN AREAS INACCESSIBLE TO MT EQUIPMENT, PT MAY BE SUBSTITUTED FOR MT.

BEST SOURCE DOCUMENT AVAILABLE, MAY NOT BE OF MICROFILM-ABLE QUALITY.

2 CB&I		270
6511-20	10-502	S-28345 A
TITLE: Barrier Plates		
JOB: EDWIN I. HATCH NUCLEAR PLANT UNIT 2		
MFR: CHICAGO BRIDGE & IRON	P.O. REQ. PEH-2-33	CLASS 3-A-5

Rev. 1



DRYWELL CYLINDER INSIDE STIFF-TOUGH
~ DIMENSIONS ARE CHORDS ON INSIDE OF SHELL @ RAD. 18'-6 1/2 ~

APPROVED FOR NUCLEAR O.A. MATERIAL RELEASED FOR USE
Certified by: [Signature] Date: 7-25-73
UPDATED BY: REV. DATE

EDWIN I. HATCH NUCLEAR PLANT, UNIT 11
REACTOR BUILDING CONTAINMENT VESSEL
GEORGIA POWER CO., BAXLEY, GA.

CHICAGO BRIDGE & IRON COMPANY
BARRIER PLATES
- DRYWELL CYLINDER -
PURCHASER NO. PEH 2-33 CONTRACT NO. 71-2981
DRAWN BY C.F.H. DATE 6-21-73
CHECKED BY [Signature] DATE 7-12-73
ENGINEERING COORDINATOR [Signature] DWG NO. 270 rev 1

VENDOR'S DRAWING REVIEW

- Approved - Mfg. may proceed.
- Approved - Submit final dwg. - Mfg. may proceed.
- Approved except as noted - Make changes and submit final dwg. - Mfg. may proceed as approved.
- Not approved - Correct and resubmit.
- Review not required - Mfg. may proceed.

Approval of this drawing does not relieve supplier from full compliance with contract or purchase order requirements.

By: [Signature] Date: 8.10.73

JOB NO. 6511	BECHTEL CORPORATION POWER & INDUSTRIAL DIVISION P.O. BOX 607 GAITHERSBURG, MD.
-----------------	--

MICROFILMED
5/25/74

2016-007 C 2469-0-110

18-502 S 4093 7

TITLE HDSS Module Assembly, 13 wide (13, 15, 17, 19) SH. 1

JOB UNIT 1. MATCH NUCLEAR PLANT UNIT 2

MFR GE P.O. PER-2
 DIV CLASS

Rev. 2

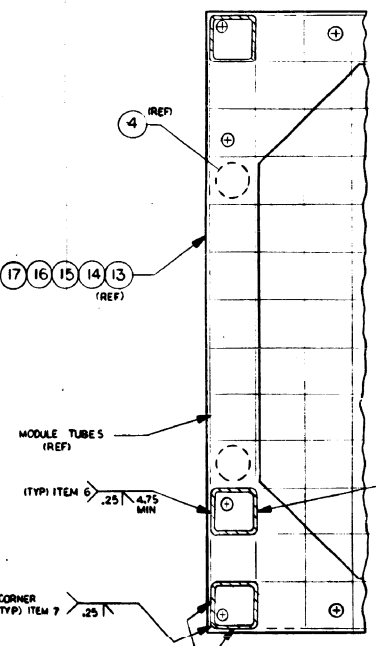
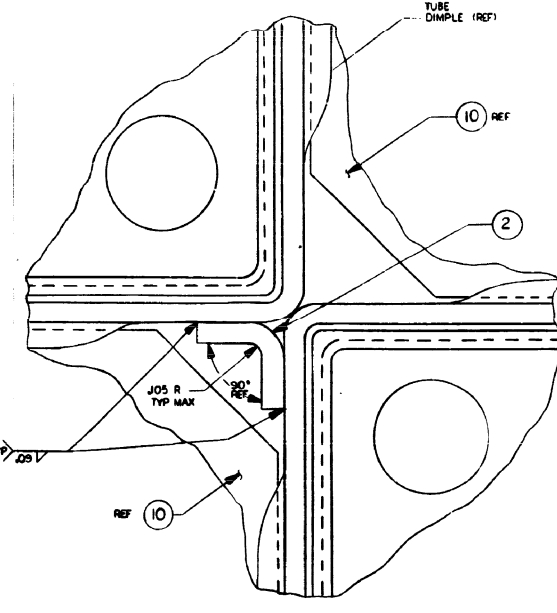
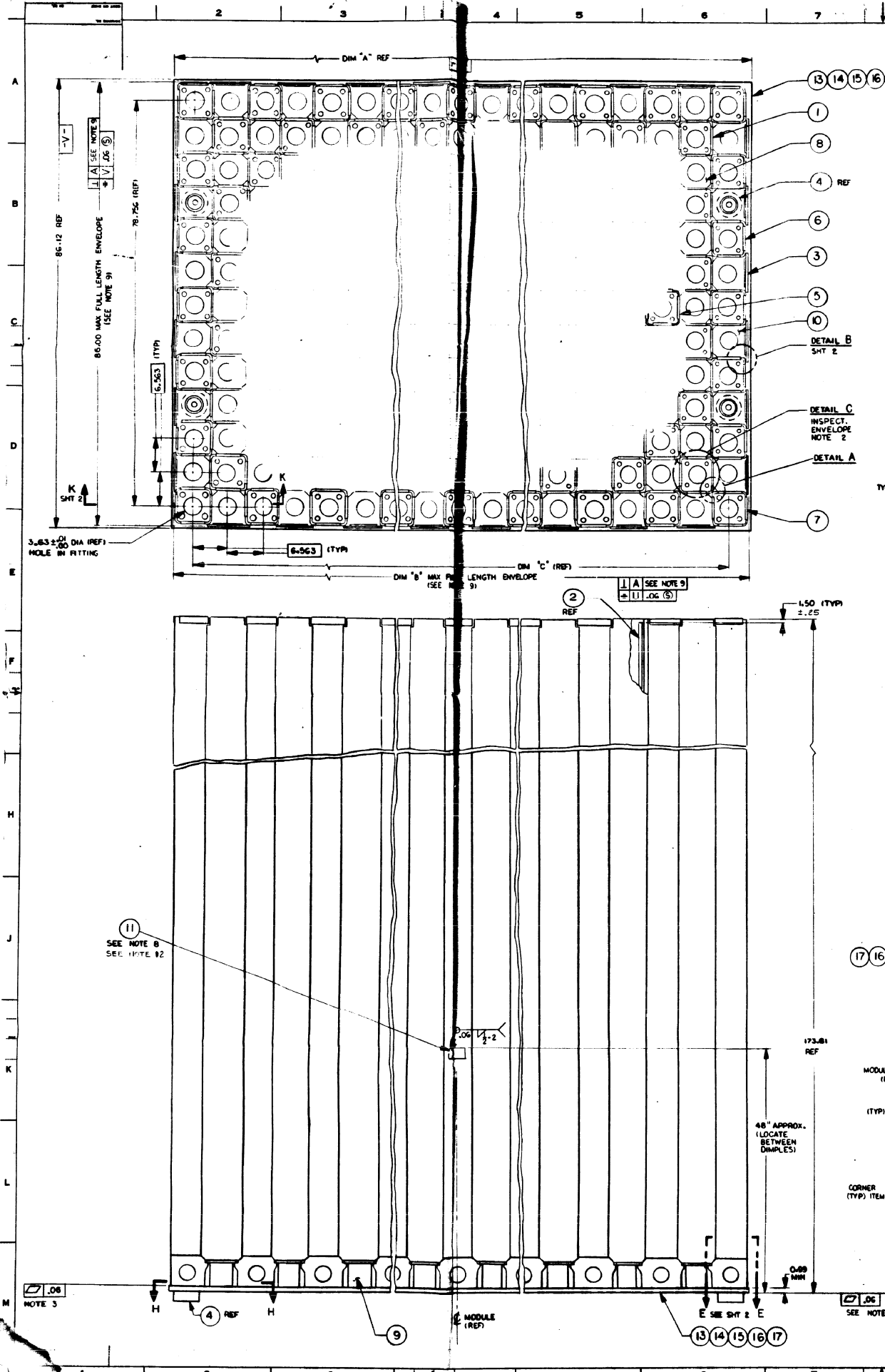
TABLE A

	G1	G2	G3	G4	G5
	13 X 11	13 X 13	13 X 15	13 X 17	13 X 19
Dim "A"	73.00	86.12	99.25	112.37	125.50
Dim "B"	72.88	86.00	99.13	112.25	125.38
Dim "C"	85.63	78.75C	91.882	105.008	118.134

UNLESS OTHERWISE SPECIFIED USE THE FOLLOWING—

APPLIED PRACTICES	ITEM	DESCRIPTION
1261	1	TUBE/FITTING ASSY
1262	2	ANGLE [2 GA X .50 X .50 X 164 2.0 304 SS ASTM A-240] (NOTE 1)
1263	3	CLOSURE PLATE
1264	4	LIFT LUG
1265	5	TUBE/FITTING ASSY
1266	6	TUBE/FITTING ASSY
1267	7	TUBE/FITTING ASSY
1268	8	FUEL SUPPORT PLATE [C5469-C-104] [ROUNDING]
1269	9	LOWER CLOSURE PLATE [25 SFN OR .375 THK X 5.00 X 5.13 2.03 304 SS ASTM A-240]
1270	10	FUEL SUPPORT R [C5469-C-105] (RECT)
1271	11	IDENT PLATE [C5469-C-107]
1272	12	ANGLE SEGMENT CORNER [2 GA X .50 X .50 X 164 2.0 304 SS ASTM A-240]
1273	13	BASE ASSY [3 X 11] [C5469-E-115]
1274	14	BASE ASSY [3 X 13] [C5469-E-116]
1275	15	BASE ASSY [3 X 15] [C5469-E-117]
1276	16	BASE ASSY [3 X 17] [C5469-E-118]
1277	17	BASE ASSY [3 X 19] [C5469-E-119]

PROPRIETARY INFORMATION NOTICE
 This drawing contains information of a proprietary nature. It is to be controlled and its disclosure is limited to the contract. It is to be maintained in confidence and its disclosure is prohibited without the express written consent of General Electric. This notice shall apply to all drawings and documents prepared by or for General Electric and shall be binding on all persons who receive such drawings and documents from or on behalf of General Electric.



- NOTES:**
1. ALL FABRICATION AND INSPECTION IN ACCORDANCE WITH G.E. SPEC C5469-0-2.
 2. AFTER COMPLETION OF ALL FABRICATION, EACH OF THE FUEL STORAGE LOCATIONS MUST FREELY ACCEPT A 14" LONG INSPECTION GAGE WHOSE CROSS SECTIONAL DIMENSIONS ARE SHOWN IN DETAIL C. ANY DEVIATION FROM THE DIMENSIONS IN DETAIL C DUE TO GAGE SIZE TOLERANCES, BOW, TWIST, ETC. SHALL MAKE THE OVERALL GAGE ENVELOPE LARGER THAN SHOWN. THIS INSPECTION SHALL BE PERFORMED WITH THE MODULE ASSEMBLY ORIENTED UPRIGHT.
 3. APPLIES TO LOW POINTS OF ALL ITEMS 1, 6 & 7 PRIOR TO ATTACHMENT OF THE BASE ASSY.
 4. BREAK ALL SHARP EDGES.
 5. DIMENSION SHOWN IS AN IN-PROCESS DIMENSION WHICH FACILITATES INSTALLATION OF ITEM 8. IT IS NOT A REQUIREMENT OF THE FINAL ASSY.
 6. SYMBOLS USED ARE PER ANS Y14.5-1973.
 7. ITEM 2 MAY BE COMPOSED OF SEPARATE ANGLE PIECES, MIN LENGTH 34", BUTTED TOGETHER END TO END. THE SEPARATE PIECES NEED NOT BE BUTT WELDED TOGETHER.
 8. IMPRESSION STAMP INFORMATION AS REQ'D ON IDENT. PLATE. USE 1/8" OR 3/16" HIGH CHARACTERS. SIZE OF THIS MODULE IS THE ARRAY SIZE.
 9. APPLIES TO MODULE ASSY, EXCLUSIVE OF BASE ASSY. MODULE ASSY, EXCLUSIVE OF BASE ASSY SHALL NOT PROJECT BEYOND THE BASE ASSY, BUT MAY EXCEED THE SYMMETRY TOLERANCES, SINCE INSTALLED TO MEET THE OUTER ENVELOPE CONDITION REQUIRE THE DOCUMENTATION OF THICKNESS, LOCATION AND HEAT NUMBER.
 10. SURFACE [A] IS DEFINED BY THE 4 CORNER AREAS TAKEN AS A SINGLE PLANE. SEE DETAIL D FOR TYP CORNER AREA.
 11. ALL TUBES TO BE WELDED. TUBES (REF DIM 8) REQUIRE THE DRILLING OF TWO (2) HOLES IN EACH TUBE, THROUGH THE INNER TUBE WALL, AT THE DIAGONAL CORNERS, 3/16" DIAMETER, 4 ± 1/2" FROM THE TOP OF THE MODULE. TYPE II TUBES DO NOT REQUIRE DRILLING AS THEY ARE DESIGNED WITH VENTED CORNERS (REF TYPE II TUBE DIMS. C5445-E-101).
 12. DOCUMENT LOCATION OF IDENT. PLATE BY IDENTIFYING THE TUBE SERIAL NUMBER TO WHICH IT IS WELDED. THE IDENT PLATE MAY ALTERNATELY BE LOCATED ON THE ADJACENT 13 TUBE SIDES.

VENDOR'S DRAWING REVIEW

GENERAL GE, NEW YORK

BOSTON GE, BOSTON, MASS. (if any)

CLEVELAND GE, CLEVELAND, OHIO (if any)

PITTSBURGH GE, PITTSBURGH, PA. (if any)

SACRAMENTO GE, SACRAMENTO, CALIF. (if any)

ST. LOUIS GE, ST. LOUIS, MO. (if any)

WASHINGTON GE, WASHINGTON, DC (if any)

YONKERS GE, YONKERS, N.Y. (if any)

Approved by the drawing office (if not shown, see last page)

By: *K. K. K... 5/17/80*

JOK:BIT BECHTEL GATHERBURG

BEST SOURCE DOCUMENT AVAILABLE MAY NOT BE OF MICROFILM-ABLE QUALITY

HDSS MODULE ASSY, 13 WIDE MATCH (13, 15, 17 & 19)

REVISIONS	CONTROL	A
NO.	DATE	FUNCTIONAL CLASS
01	ERM 79-37	FUNCTIONAL - 2B
11	79-50	
21	27-80 [initials]	
E. COMPTON 4-27-79 SAN JOSE		

C5469-E-110

I certify that the image contained on this frame was made in the normal and regular course of business, on the date stated below and that it is an accurate reproduction of the document(s) submitted to micrographics.

26 v

**See S-56429 for
RHRSW pump
performance curves
as updated per
10 CFR 21
notification.**



JOHNSTON PUMP COMPANY

Nuclear Service Division

GEORGIA POWER COMPANY

PLANT E. I. HATCH

RHR SERVICE WATER PUMP

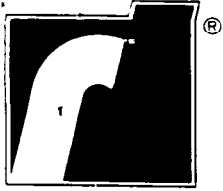
TEST CURVES

JOHNSTON PUMP MODEL 18 DC - 7 STAGE

SERIAL NUMBERS

DATE

SNRU-6504	12/12/84
SNRU-6505	03/29/85
SNRU-6519	06/28/85
SNRU-6520	10/31/85
NRW-6524	10/08/86
NRW-6525	11/19/86
NRX-6531	02/13/87
NRX-6532	04/23/87
NRX-6533	06/24/87
NRX-6534	11/04/87
NC-6519	12/10/91
ND-6509	10/16/92



JOHNSTON PUMP COMPANY

Nuclear Service Division

January 10, 1994

Southern Nuclear Power Generating co.
P.O. Box 1295
Inverness Center
Building 40
Birmingham, AL 35201

Attention: Tim Long

Reference: NPSH_a Requirements for RHR Service Water Pumps

Dear Tim:

Per your request Johnston Pump has reviewed the minimum submergence and NPSH_a requirements of the Johnston Model 18DC pump used as your RHR Service Water Pump at Plant Hatch. Please review the following:

$$\begin{aligned} \text{NPSH}_a - & \\ 29'' \text{mercury} \times & 1.1349 \quad \times \quad 12 \quad - \quad 12'' \quad = \quad 382.9 \quad + \\ (\text{worst case}) \quad (\text{conversion to ft of water}) \quad (\text{conversion to in.}) \quad (\text{vapor pressure}) \quad (\text{in. water}) \\ & \\ 12 & = 31.9 \text{ ft} \\ (\text{conversion to ft}) \quad (\text{NPSH}_a) \end{aligned}$$

Submergence required over the lip of the suction bell to prevent vortexing
4000 GPM = 35"
3500 GPM = 24"

NOTE: The eye of the impeller is 14" above the lip of the suction bell making the datum point for NPSH_a 21" and 10" respectively.

$$\begin{aligned} \text{At 4000 GPM - NPSH}_a \text{ is } 31.9 \text{ feet} \quad + \quad 1.75 \quad = \quad 32.7 \text{ feet of water} \\ (\text{atmospheric} \quad (\text{submergence}) \\ \text{pressure}) \end{aligned}$$

The NPSH_R for the 18DC Model Pump is 29 feet @ 4000 GPM and 30 feet @ 3500 GPM.

These figures were derived from Hydraulic Institute Standards for NPSH and actual test curves (see attached) of a Model 18DC pump.

Please disregard any previous correspondence that may have contradicted these current figures.

Regards,

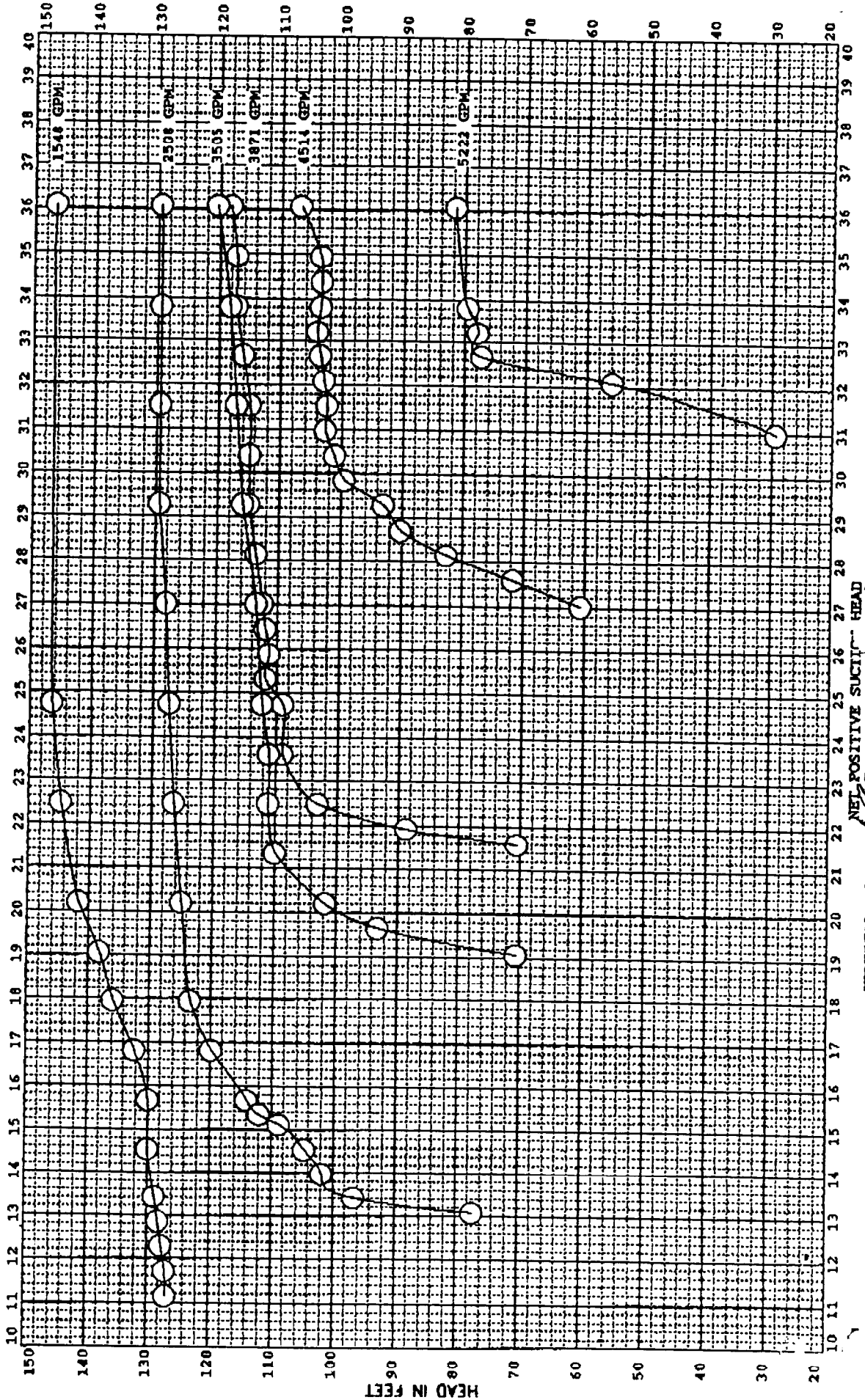

Gerald D. Harrelson

Enclosures - 2

JAN 14

JOHNSTON PUMP COMPANY
BROOKSHIRE, TEXAS
CERTIFIED MPH PERFORMANCE TEST
CUSTOMER: P. T. McDERMOTT INDONESIA
TYPE: 18DC-1 STAGE
NI. AL. BRZ. BOWL / NI. AL. BRZ. IMP. AT 13.375" DIA. .062" TDR
JOB # TA-1411 TCR06266

1790 RPM

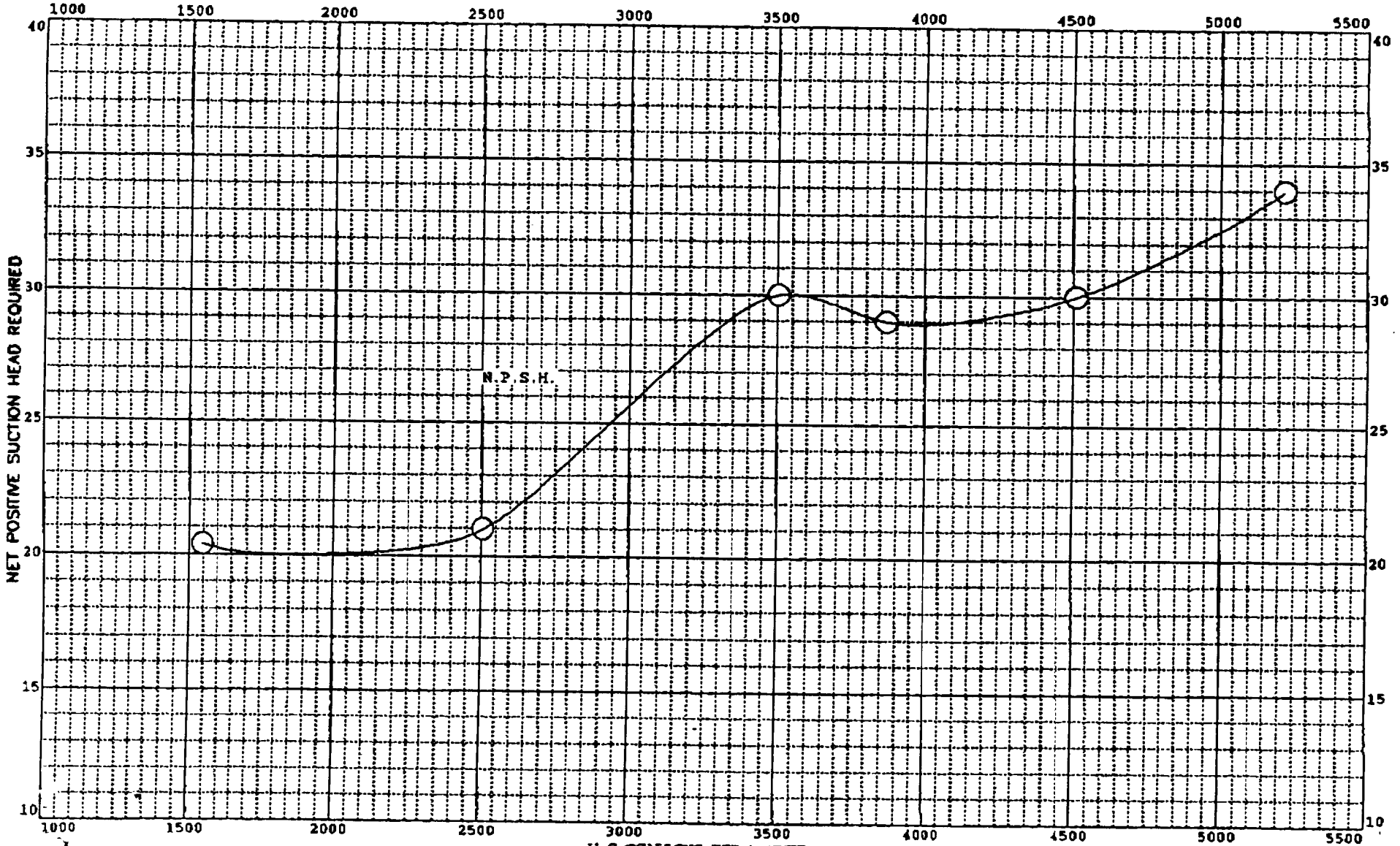


CERTIFIED BY: *[Signature]*
NET POSITIVE SUCTION HEAD
NOVEMBER 6, 1990

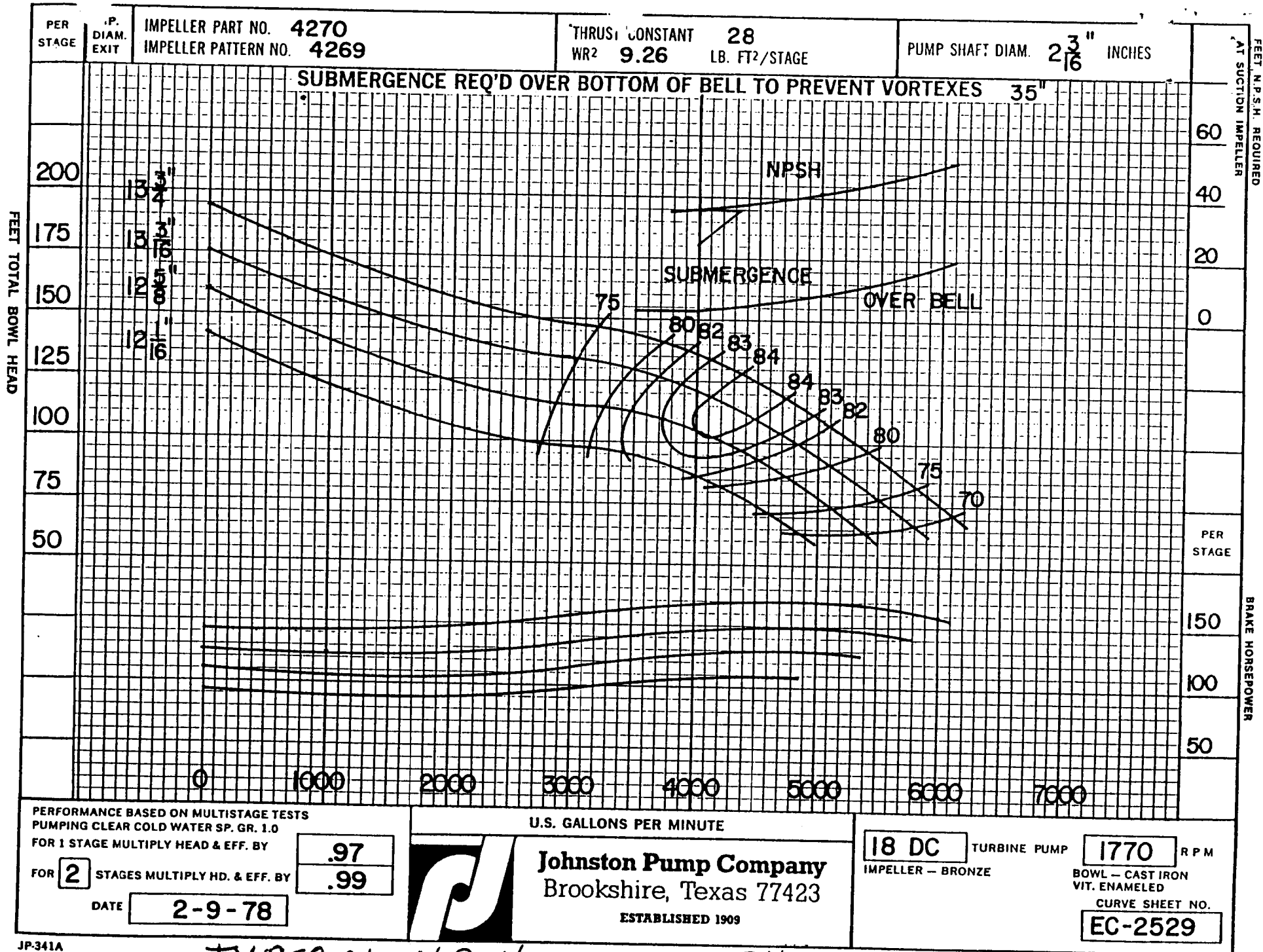
JOHNSTON PUMP COMPANY
 BROOKSHIRE, TEXAS
 CERTIFIED NPSH TEST CURVE
 CUSTOMER: P.T. McDERMOTT INDONESIA

TYPE: 18DC-BOTTOM STAGE
 NI. AL. BRZ. BOWL / NI. AL. BRZ. IMP. AT 13.375" DIA. .062" I.D.
 JOB # TA-1411 TC#06266

1790 RPM



CERTIFIED BY: *[Signature]* H.S. GALLONS PER MINUTE NOVEMBER 6, 1990



TYPICAL NPSH CURVE RHR SERVICE WATER

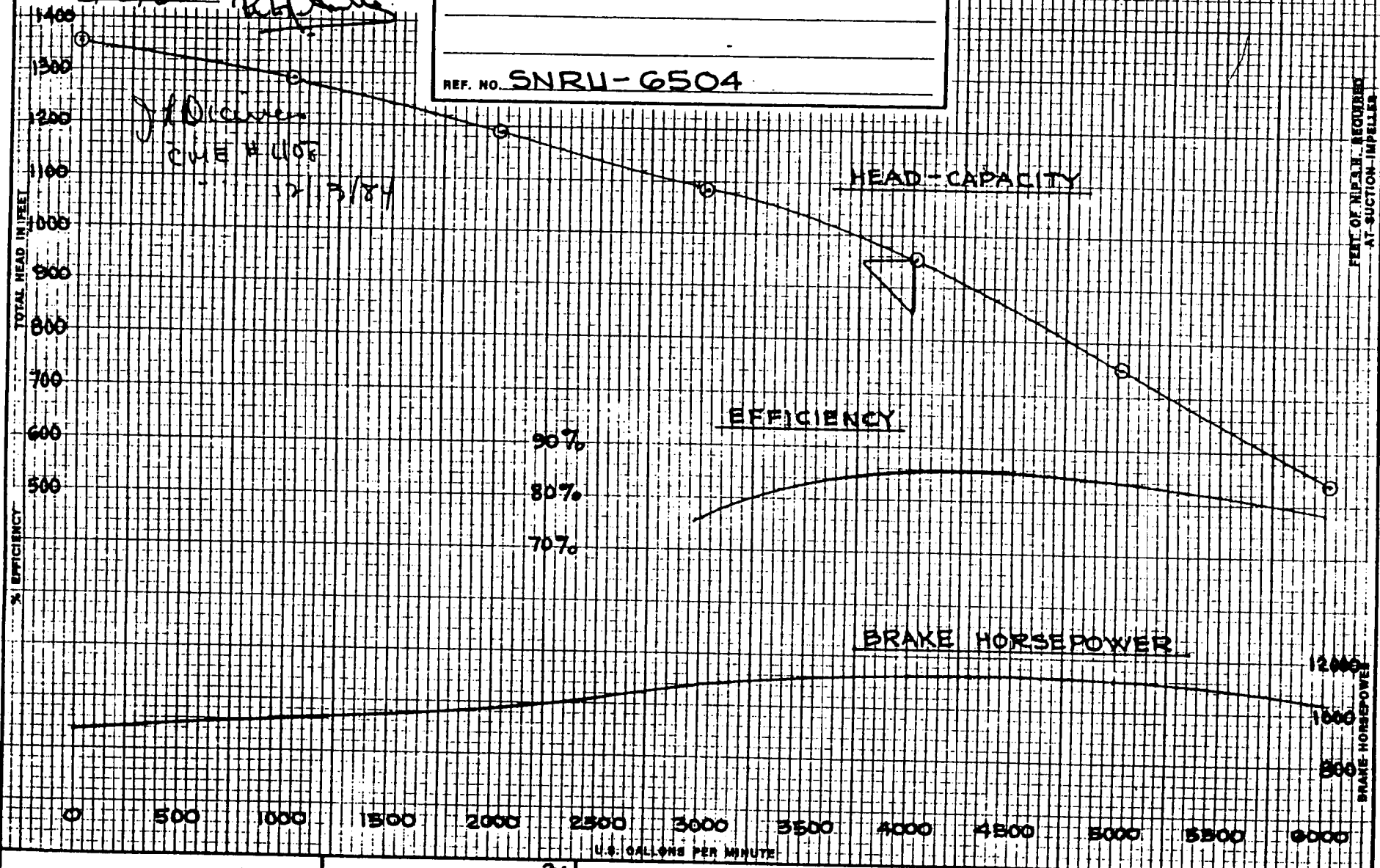
CERTIFIED BY: W. B. [Signature]

DATE 12/12/84

CUSTOMER GEORGIA POWER CO.

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STDS.

REF. NO. SNRU-6504



J. D. Oliver
3017 E.H.S.
12/15/84

THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRZ. DIA. 13 3/4
BOWLS S.S.-COATED
LIQUID WATER
SP. GR. 1.0
DATE 12/12/84 BY W.B.



Johnston Pump Company
Glendora, California 91740
ESTABLISHED 1908

TURBINE BOWL PERFORMANCE
7 STAGE 18 DC PUMP
1780 R.P.M.
CURVE NO. TC-05514

STON PUMP COMPANY
Glendora, Calif.

LABORATORY
TEST DATA SHEET

CURVE NO. TC-05514 JOB NO. 5NRH-6504
JOB NAME GEORGIA POWER Co.

LAB MOTOR 150 3 60 480 8-POLE IMPELLERS 1800 7 BRZ 13 3/4 FULL-1/2 BF
HP Phase Cycle Volt RPM Type Stage Material Dia. ~~Outlet~~

MOTOR SERIAL NO. _____ CLASS C FINISH _____ VANE _____

#2 WATTMETER 5:1 400:5 BOWLS S.S. PLASITE SUCTION CASE BELL
Ratio Transformer Material Coating Type

~~SMART~~ DYNAMOMETER _____ Impellers Raised ONE TURN Head LAB 16" H.P.
Scale Arm + TAPPER COL (NEW)

GPM = 608.604 x $\sqrt{\Delta P}$ ORIFICE DIA. 7.022 HEAD READINGS TAKEN (Before, After) Discharge Head

RATED CONDITION @ 1780 RPM
GPM 4000
Head 955
BHP _____
Sp. Gr. 1.00
Eff. _____
F.L. Amps _____ Voltage _____
RHR STAINLESS STEEL BOWL ASB
FOR UNITS #1 & #2

LINE	ORIFICE Δ P IN INCHES OF HG	U.S. G.P.M.	GAUGE		FEET OF WATER TO GAUGE	v ² /2g FOR 16" PIPE	TOTAL HEAD IN FEET	WATTMETER READING	INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	EFF.	Performance <u>7</u> Stage @ <u>1780</u> RPM		
			300* PSI	FEET OF HEAD										U.S. G.P.M.	TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.
0	0	0	143.5	331.5	6.0	-	337.5	.225	120.6	.900	108.6	891	0	0	1356.1	874.5
2	0.70	509	136.5	315.3		-	321.3	.239	128.2	.900	115.3	890	35.8	1020	1291.0	928.9
3	2.70	1000	125.5	289.9		-	295.9	.252	135.1	.900	121.7	890	61.4	2004	1188.9	979.5
4	6.10	1503	114.2	263.8		.1	269.9	.279	149.6	.900	134.6	889	76.1	3013	1084.5	1084.4
1	10.80	2000	100.0	231.0	6.0	.2	237.2	.290	155.5	.900	139.9	888	85.6	4009	954.9	1127.2
5	.90	2502	78.0	180.2		.3	186.5	.289	155.0	.900	139.5	888	84.5	5015	749.3	1123.3
6	24.30	3000	55.5	128.2		.5	134.7	.269	144.2	.900	129.8	889	78.6	6013	541.2	1045.5
7	28.50	3249	41.2	95.2	6.0	.5	101.7	.252	135.1	.900	121.7	890	68.6	6512	408.5	979.5

MOTOR MEGOHMS _____
SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ ft. _____ in.
BAROMETER _____ "HG
WATER TEMP. _____ °F
AIR TEMP. _____ °F

FLOOR TO WATER 12
FLOOR TO GAUGE 60
72 : 6.0

1780 = R = 2,004.5
888 R² = 4,0180

Tested by [Signature] Date 12-12-84
Witnessed by [Signature] 12-12-84
Certified by [Signature]

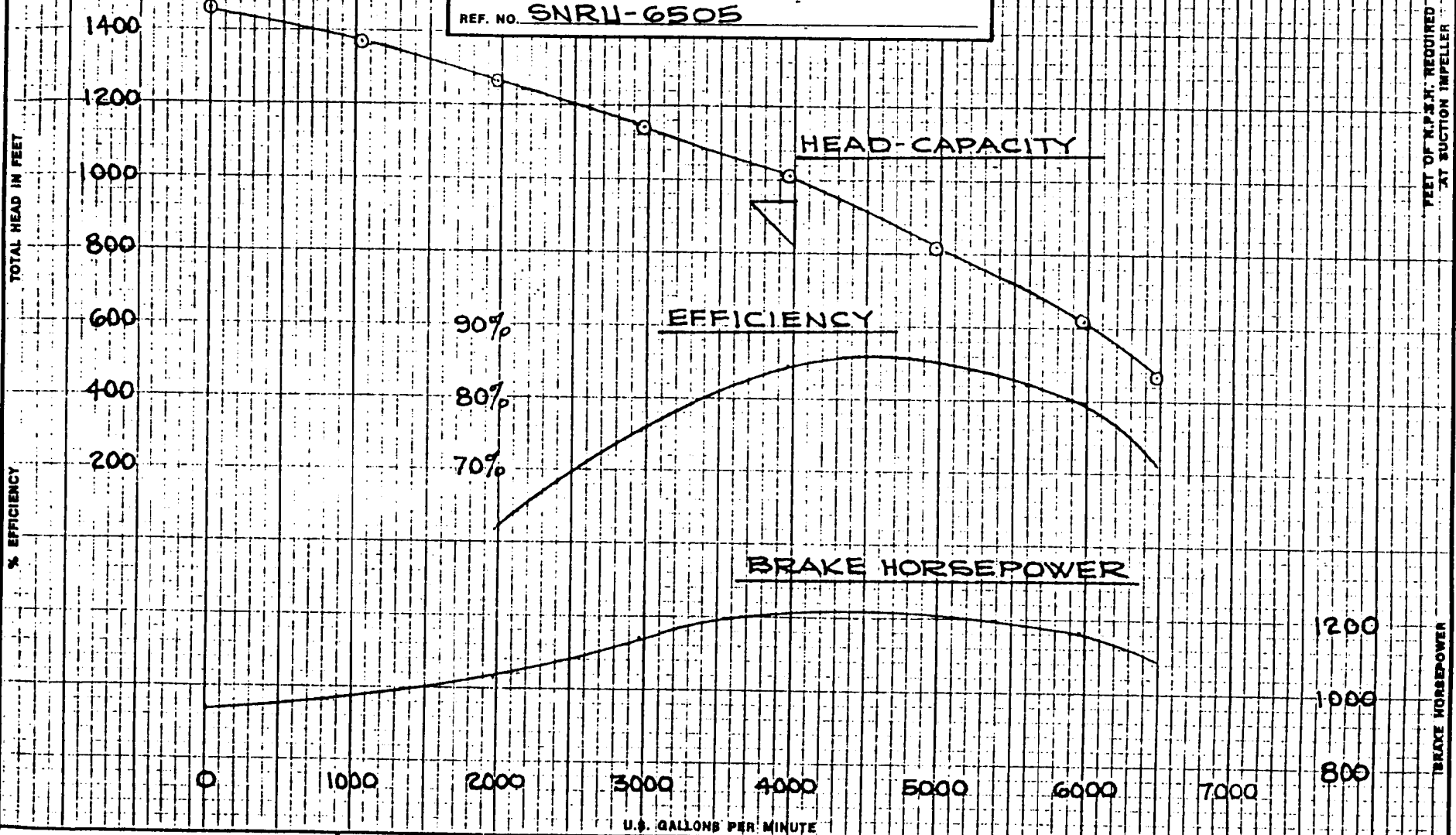
TC-05547

CERTIFIED BY: H. J. B.
DATE: 4/1/85

CUSTOMER: GEORGIA POWER CO.

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES.
BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STDS.

REF. NO. SNRU-6505



THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY; IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRZ DIA 13 3/4
BOWLS S.S. PLACITE
LIQUID WATER
SP. GR. 1.0
DATE 3-29-85 BY H.J.B.



Johnston Pump Company
Glendora, California 91740
ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 1BDC PUMP
1770 R.P.M.

CURVE NO. TC-05547

JOHN PUMP COMPANY
Glendora, Calif.

LABORATORY
TEST DATA SHEET

CURVE NO. TC-05547 JOB NO. 5NRU-15
JOB NAME GEORGIA POWER Co.

LAB MOTOR 150 3 60 480 8-POLE IMPELLERS 1800 7 BRZ 13 3/4 FEET + 1/16 DIA. BRZ
 MOTOR SERIAL NO. _____ CLASS C FINISH _____ VANE _____
 WATTMETER 5:1 400:5 BOWLS 5.5 PLASITE SUCTION CASE BELL
 DYNAMOMETER _____ Impellers Raised ONE TURN Head LAB 16" H.P.
 GPM = 608.604 * $\sqrt{\Delta P}$ ORIFICE DIA. 7.022 HEAD READINGS TAKEN (Before) (Alter) Discharge Head

RATED CONDITION @ 1270 RPM
 GPM 4000
 Head 955
 BHP _____
 Sp. Gr. 1.00
 Eff. _____
 F.L. Amps _____ Voltage _____

LINE	ORIFICE Δ P IN INCHES OF HG	U.S. G.P.M.	HEAD		FEET OF WATER TO GAUGE	v ² /2g FOR 16" PIPE	TOTAL HEAD IN FEET	WATTMETER		INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	BOWL EFF.	Performance		
			FEET OF HEAD	FT. Hg				READING	READING						U.S. G.P.M.	TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.
0	0	0	158.95	365.0	6.0	-	371.0	.245	131.4	.900	118.2	891	0	0	2474.0	936.3	1.00
2	0.70	509	24.95	338.6		-	344.6	.255	136.7	.900	123.0	890	36.0	1014	1369.1	974.5	
3	2.70	1000	23.00	312.1		-	318.1	.270	144.8	.900	130.3	889	61.7	1993	1265.8	1031.8	
4	6.10	1503	20.90	283.6		.1	289.7	.300	160.9	.900	144.8	888	75.9	2996	1151.0	1146.7	
5	10.80	2000	18.28	244.0		.2	254.2	.316	169.4	.900	152.5	888	84.2	3986	1010.2	1207.6	
6	16.90	2502	14.67	199.1		.3	205.4	.315	168.9	.900	152.0	888	85.4	4987	816.0	1203.7	
7	24.30	3000	10.96	148.7		.5	155.2	.305	163.5	.900	147.2	888	79.9	5980	616.7	1165.7	
8	28.50	3249	8.38	113.7	6.0	.5	120.2	.286	153.4	.900	138.0	888	71.5	6476	477.6	1092.5	

MOTOR MEGOHMS _____
 SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ ft. _____ in.
 BAROMETER _____ "HG
 WATER TEMP. _____ °F
 AIR TEMP. _____ °F

FLOOR TO WATER 12
 FLOOR TO GAUGE 60
72 : 6.0

$\frac{1220}{888} = R = 1,9932$
 $R^2 = 3,9730$
 $m = 7,9192$

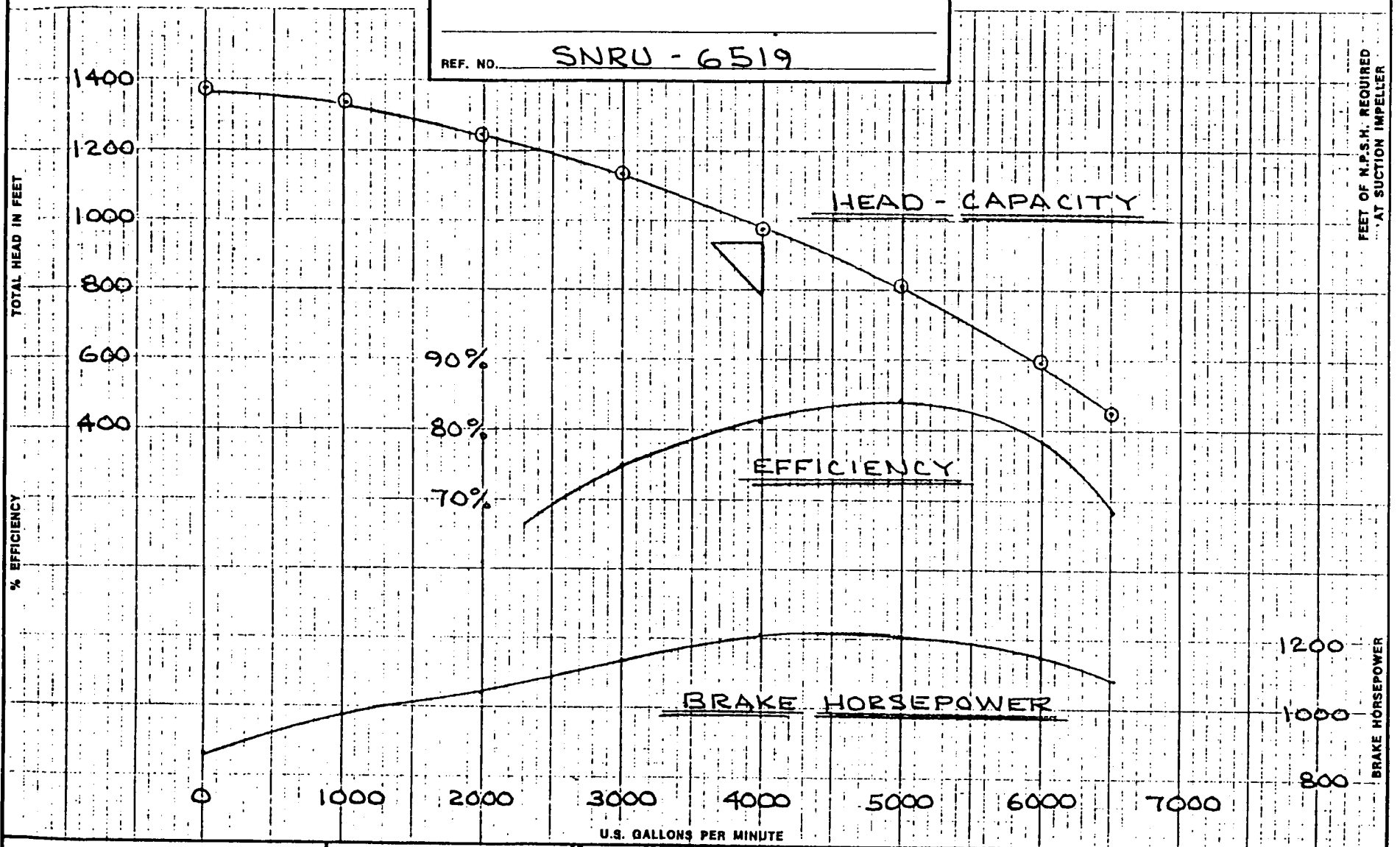
Tested by [Signature] Date 3-27-85
 Witnessed by [Signature] 3-27-85
 Certified by [Signature] 408
41,185

TC-05: 4

CERTIFIED BY: William CUE 403
 DATE: 1/7/85

CUSTOMER: GEORGIA POWER Co.
 REF. NO. SNRU - 6519

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
 BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STDS.




THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.


IMPELLER BRZ DIA 13 3/4
 BOWLS S.S. PLASITE
 LIQUID WATER
 SP. GR. 1.0
 DATE 9/28/85 BY W.B.

Johnston Pump Company
 Glendora, California 91740
 ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18 DC PUMP
1770 R.P.M.
 CURVE NO. TC-05574

LAB MOTOR 150 3 60 .480 (880) 8-POLE IMPELLERS 1830 7 BRZ. 3" + 1" 13 3/4 Full - 1/4 BF
 HP Phase Cycle Volt RPM Type Stage Material Dia. ~~Outlet~~ Inlet
 MOTOR SERIAL NO. _____ CLASS 4 FINISH _____ VANE _____
2 WATTMETER 5:1 400:5 BOWLS S.S. PLASITE SUCTION CASE BELL
 Ratio Transformer Material Coating Type
~~SMALL~~ DYNAMOMETER _____ Impellers Raised ONE  Head LAB 16" H.P.
 Scale Arm + TAPER SOL (NEW)
 GPM = 608.604 $\times \sqrt{\Delta P}$ ORIFICE DIA. 2.032 HEAD READINGS TAKEN (Before) Alter Discharge Head

RATED CONDITION @ 1770 RPM
 GPM 4000
 Head 955
 BHP _____
 Sp. Gr. 1.000
 Eff. _____
 F.L. Amps _____ Voltage _____

LINE	ORIFICE  Δ P IN INCHES OF HG	U.S. G.P.M.	GAUGE		FEET OF WATER TO GAUGE	V ² /2g FOR 16" PIPE	TOTAL HEAD IN FEET	WATTMETER		INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	EFF.	Performance <u>2</u> Stage @ <u>1770</u> RPM		
			300* PSI	FEET OF HEAD				READING	U.S. G.P.M.						TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.	
0	0	0	147.5	340.8	6.1	-	346.9	.225	120.6	.900	108.5	891	0	0	1381.4	822.2	
2	0.70	509	143.5	331.5		-	337.6	.255	136.7	.900	123.5	890	35.1	1016	1344.3	981.3	
3	2.70	1000	133.	307.2		-	313.3	.291	145.3	.900	130.8	889	60.5	1995	1247.6	1039.3	
4	6.10	1503	121.5	280.7	6.1	.1	286.9	.302	161.9	.900	145.7	887	74.7	2999	1142.4	1157.7	
1	10.80	2000	104.5	240.2		.2	246.5	.318	170.5	.900	153.4	885	81.3	3991	981.6	1218.9	
	6.90	2502	85.	196.4		.3	202.8	.315	168.9	.900	152.0	886	84.3	4993	807.5	1207.8	
6	24.30	3000	62.	143.2		.5	149.8	.300	160.9	.900	144.8	887	78.3	5986	596.5	1150.6	
7	28.50	3249	46.5	107.4	6.1	.5	114.0	.283	151.7	.900	136.5	888	68.5	6483	453.9	1084.6	

MOTOR MEGOHMS _____
 SUBMERGENCE ABOVE LIP _____ ft. _____ in.
 BAROMETER _____ "HG
 WATER TEMP. _____ °F
 AIR TEMP. _____ °F

FLOOR TO WATER 13
 FLOOR TO GAUGE 60
1770 = R = 1.9955
887 R² = 3.9920

Tested by R.D. [Signature] Date 6-27-85
 Witnessed by [Signature] 6/27/85
 Certified by [Signature] CI 408

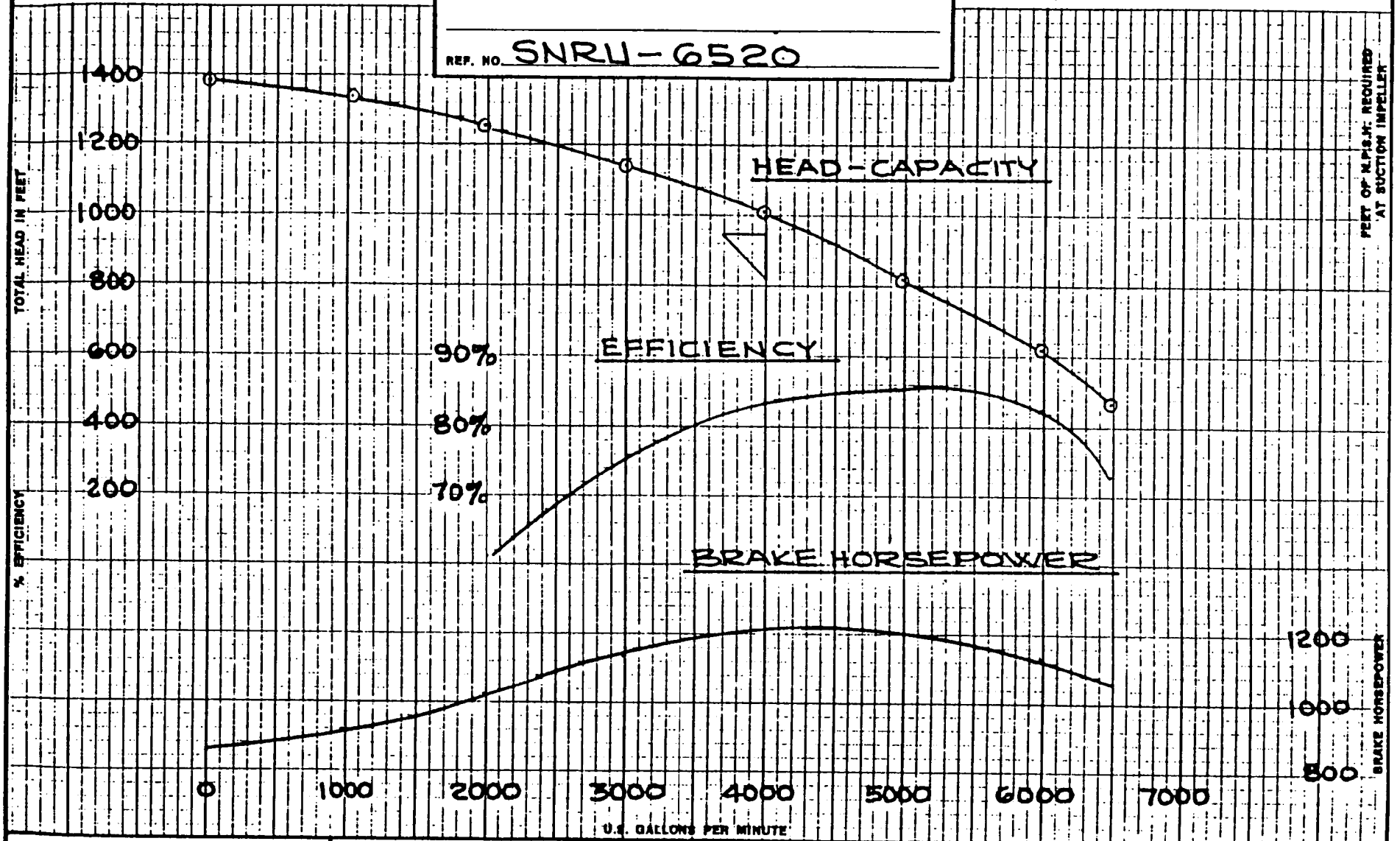
TC-05618

CERTIFIED BY: J. J. Palmer #408
 DATE: 11/4/85

CUSTOMER GEORGIA POWER CO.

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
 BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STDS.

REF. NO. SNRU-6520



THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY; IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRE. DIA 13 3/4
 BOWLS S.S. PLASITE
 LIQUID WATER
 SP. GR. 1.00
 DATE 10/31/85 BY H. J. B.



Johnston Pump Company
 Glendora, California 91740
 ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18DC PUMP
1770 R.P.M.

CURVE NO. TC-05618

JOHN UMP COMPANY
Glendora, Calif.

LABORATORY
TEST DATA SHEET

CURVE NO. TC-05618 JOB NO. SNKA-652
JOB NAME GEORGIA POWER Co.

LAB MOTOR 150 3 60 480 8-POLE IMPELLERS 1830 7 BRZ 3" 13 1/2 FALL - 1/2 DIA. 1/2 B.P.

MOTOR SERIAL NO. _____ CLASS C FINISH _____ VANE _____

#2 WATTMETER 5:1 400:5 BOWLS S.S. PLASITE SUCTION CASE BELL
Ratio Transformer Material Coating Type

~~SPACE~~ DYNAMOMETER _____ Impellers Raised ONE TURN Head LAB 16" H.P.
Scale Arm + TAPPER CO. (NEW)

GPM = 608.604 * $\sqrt{\Delta P}$ ORIFICE DIA. 7.032 HEAD READINGS TAKEN (Before, After) Discharge Head

RATED CONDITION @ 1770 RPM
GPM 4000
Head 955
BHP _____
Sp. Gr. 1.00
Eff. 84% BOWL
F.L. Amps _____ Voltage _____

16" LINE	ORIFICE	U.S. G.P.M.	GAUGE		FEET OF WATER TO GAUGE	V ² /2g FOR 16" PIPE	TOTAL HEAD IN FEET	WATTMETER READING	INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	EFF.	Performance <u>7</u> Stage		
			300 PSI	FEET OF HEAD										U.S. G.P.M.	TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.
0	0	0	148.0	341.9	7.2	-	349.1	.224	120.1	900	108.1	891	0	0	1390.1	859.0
2	0.70	509	143.0	330.3		-	337.5	.258	138.3	900	124.5	890	34.8	1016	1342.9	989.3
3	2.70	1000	133.0	307.2		-	314.4	.269	144.2	900	129.8	889	61.2	1996	1251.9	1031.4
4	6.10	1503	121.0	278.5		.1	286.8	.298	159.8	900	143.8	888	75.7	2999	1142.0	1142.6
5	10.80	2000	106.0	244.9	7.2	.2	252.3	.315	168.4	900	152.0	887	83.8	3991	1004.7	1207.8
6	16.90	2502	85.0	196.4		.3	203.9	.311	166.8	800	150.1	887	85.8	4993	811.9	1172.7
7	24.30	3000	64.0	147.8		.5	155.5	.297	159.2	900	143.3	888	82.2	5986	619.2	1138.7
8	28.50	3249	48.0	110.9	7.2	.5	118.6	.277	143.5	900	133.6	889	72.8	6483	472.3	1061.6

MOTOR MEGOHMS _____
SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ ft. _____ in.
BAROMETER _____ "HG
WATER TEMP. _____ °F
AIR TEMP. _____ °F

FLOOR TO WATER 26.5 *
FLOOR TO GAUGE 60 *
86.5 * 7.2'

1770 = R = 1.9955
887
R² = 3.9820

Tested by [Signature] Date 10-30-85
Witnessed by _____
Certified by [Signature] CURVE NO. 408

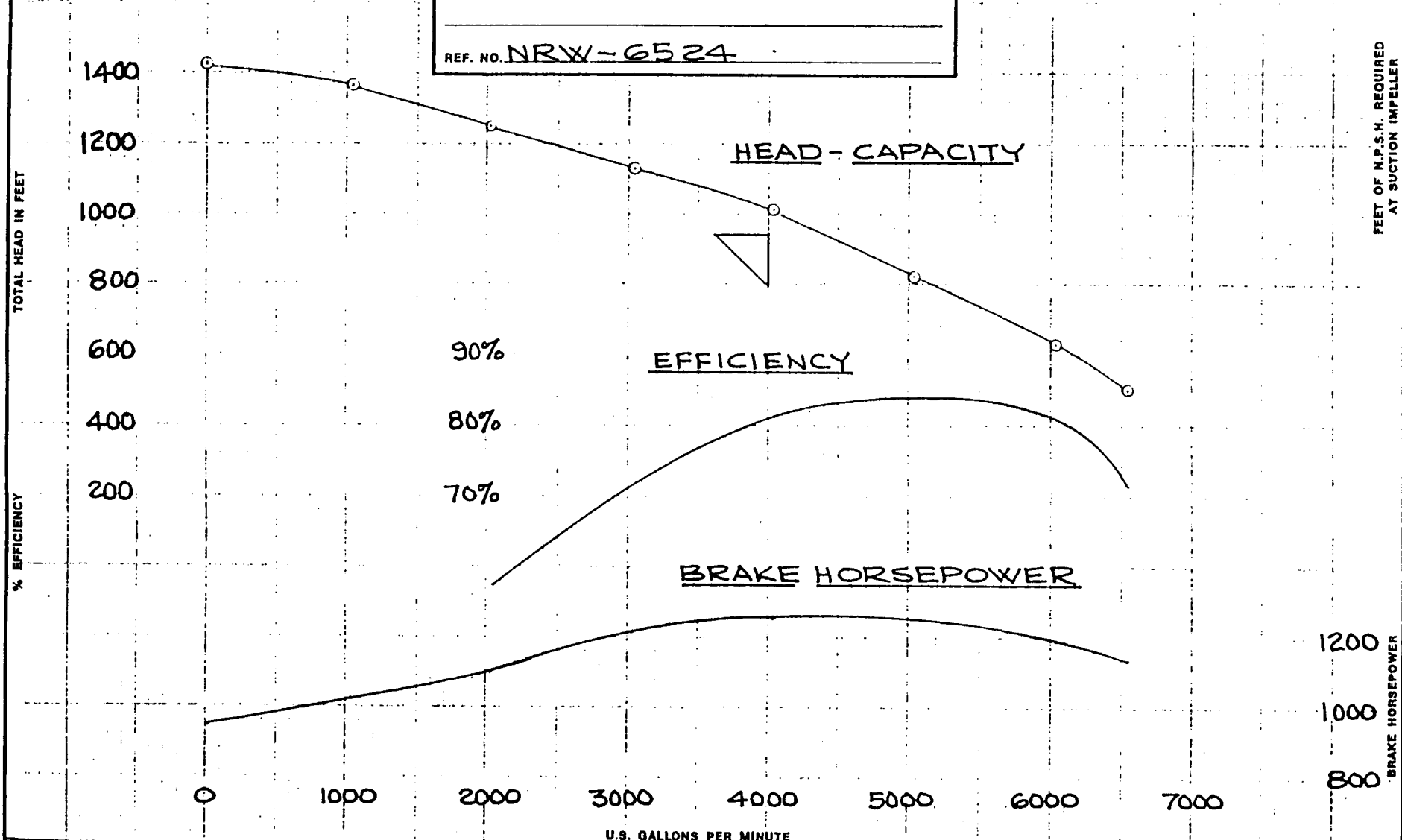
TC-05687

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STDS.

CERTIFIED BY: [Signature]
DATE 10/9/86

CUSTOMER GEORGIA POWER CO.

REF. NO. NRW-6524



THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRZ DIA 13 3/4
BOWLS S.S. PLACITE
LIQUID WATER
SP. GR. 1.0
DATE 10-8-86 BY H.J.B.



Johnston Pump Company
Glendora, California 91740
ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18DC PUMP
1770 R.P.M.
CURVE NO. TC-05687

JOHNS ... UMP COMPANY
Glendora, Calif.

LABORATORY
TEST DATA SHEET

CURVE NO. _____ JOB NO. NRW-6524
JOB NAME GEORGIA POWER Co.

LAB MOTOR 150 3 60 480 8-POLE IMPELLERS 1800 7 BRZ. 13 1/2" FULL + 1/2" T&F
 HP Phase Cycle Volt RPM Type Stage Material Dis. ~~Outlet~~
 MOTOR SERIAL NO. _____ CLASS C. FINISH _____ VANE _____
#2 WATTMETER 5:1 400:5 BOWLS 5.5 PLASITE SUCTION CASE BELL
 Ratio Transformer Material Coating Type
~~SAFETY~~ DYNAMOMETER _____ Impellers Raised ONE TURN Head LAB 16" H.P.
 Scale Arm + TAPER SOL (NEW)
 GPM = 608.604 * $\sqrt{\Delta P}$ ORIFICE DIA. 7.032 HEAD READINGS TAKEN (Before, Alter) Discharge Head

RATED CONDITION @ 1770 RPM
 GPM 4000
 Head 955
 BHP _____
 Sp. Gr. 1.00
 Eff. _____
 F.L. Amps _____ : Voltage _____

16" LINE	U.S. G.P.M.	GAUGE		FEET OF WATER TO GAUGE	V ² /2g FOR 16" PIPE	TOTAL HEAD IN FEET	WATTMETER		INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	EFF.	Performance <u>2</u> Stage @ <u>1770</u> RPM		
		300 PSI	FEET OF HEAD				READING	U.S. G.P.M.						TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.	
<u>0</u>	<u>0</u>	<u>150.0</u>	<u>346.5</u>	<u>6.2</u>	<u>-</u>	<u>352.7</u>	<u>.244</u>	<u>130.8</u>	<u>.900</u>	<u>117.7</u>	<u>890</u>	<u>0</u>	<u>0</u>	<u>1426.9</u>	<u>952.7</u>	
<u>0.70</u>	<u>509</u>	<u>143.0</u>	<u>330.3</u>	<u>6.2</u>	<u>-</u>	<u>336.5</u>	<u>.262</u>	<u>140.5</u>	<u>.900</u>	<u>126.7</u>	<u>888</u>	<u>78.2</u>	<u>1024</u>	<u>1361.3</u>	<u>1028.5</u>	
<u>2.70</u>	<u>1000</u>	<u>131.0</u>	<u>302.6</u>	<u>6.2</u>	<u>-</u>	<u>308.8</u>	<u>.281</u>	<u>150.7</u>	<u>.900</u>	<u>135.6</u>	<u>888</u>	<u>57.5</u>	<u>2011</u>	<u>1249.3</u>	<u>1163.4</u>	
<u>6.10</u>	<u>1503</u>	<u>118.0</u>	<u>272.6</u>	<u>6.2</u>	<u>.1</u>	<u>278.9</u>	<u>.309</u>	<u>165.7</u>	<u>.900</u>	<u>149.1</u>	<u>887</u>	<u>71.0</u>	<u>3023</u>	<u>1128.3</u>	<u>1213.2</u>	
<u>10.80</u>	<u>2000</u>	<u>105.0</u>	<u>242.6</u>	<u>6.2</u>	<u>.2</u>	<u>249.0</u>	<u>.320</u>	<u>171.6</u>	<u>.897</u>	<u>154.4</u>	<u>886</u>	<u>81.4</u>	<u>4023</u>	<u>1007.4</u>	<u>1256.4</u>	
<u>16.90</u>	<u>2502</u>	<u>85.0</u>	<u>196.4</u>	<u>6.2</u>	<u>.3</u>	<u>202.9</u>	<u>.318</u>	<u>170.5</u>	<u>.897</u>	<u>153.4</u>	<u>886</u>	<u>83.6</u>	<u>5032</u>	<u>820.8</u>	<u>1248.2</u>	
<u>24.30</u>	<u>3000</u>	<u>65.0</u>	<u>150.2</u>	<u>6.2</u>	<u>.5</u>	<u>156.9</u>	<u>.305</u>	<u>163.5</u>	<u>.900</u>	<u>147.2</u>	<u>887</u>	<u>80.7</u>	<u>6034</u>	<u>634.8</u>	<u>1197.8</u>	
<u>28.50</u>	<u>3249</u>	<u>50.0</u>	<u>115.5</u>	<u>6.2</u>	<u>.5</u>	<u>122.2</u>	<u>.284</u>	<u>155.0</u>	<u>.900</u>	<u>139.5</u>	<u>888</u>	<u>71.9</u>	<u>6535</u>	<u>494.4</u>	<u>1135.1</u>	

MOTOR MEGOHMS _____
 SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ In. _____ HG
 BAROMETER _____ "HG
 WATER TEMP. _____ °F
 AIR TEMP. _____ °F

FLOOR TO WATER 14 *
 FLOOR TO GAUGE 60 *
1770 = R = 2.011 3636
886 R² = 4.0455837

Tested by [Signature] Date 10-7-86
 Witnessed by [Signature]
 Certified by [Signature] 10/9/86

CU#408

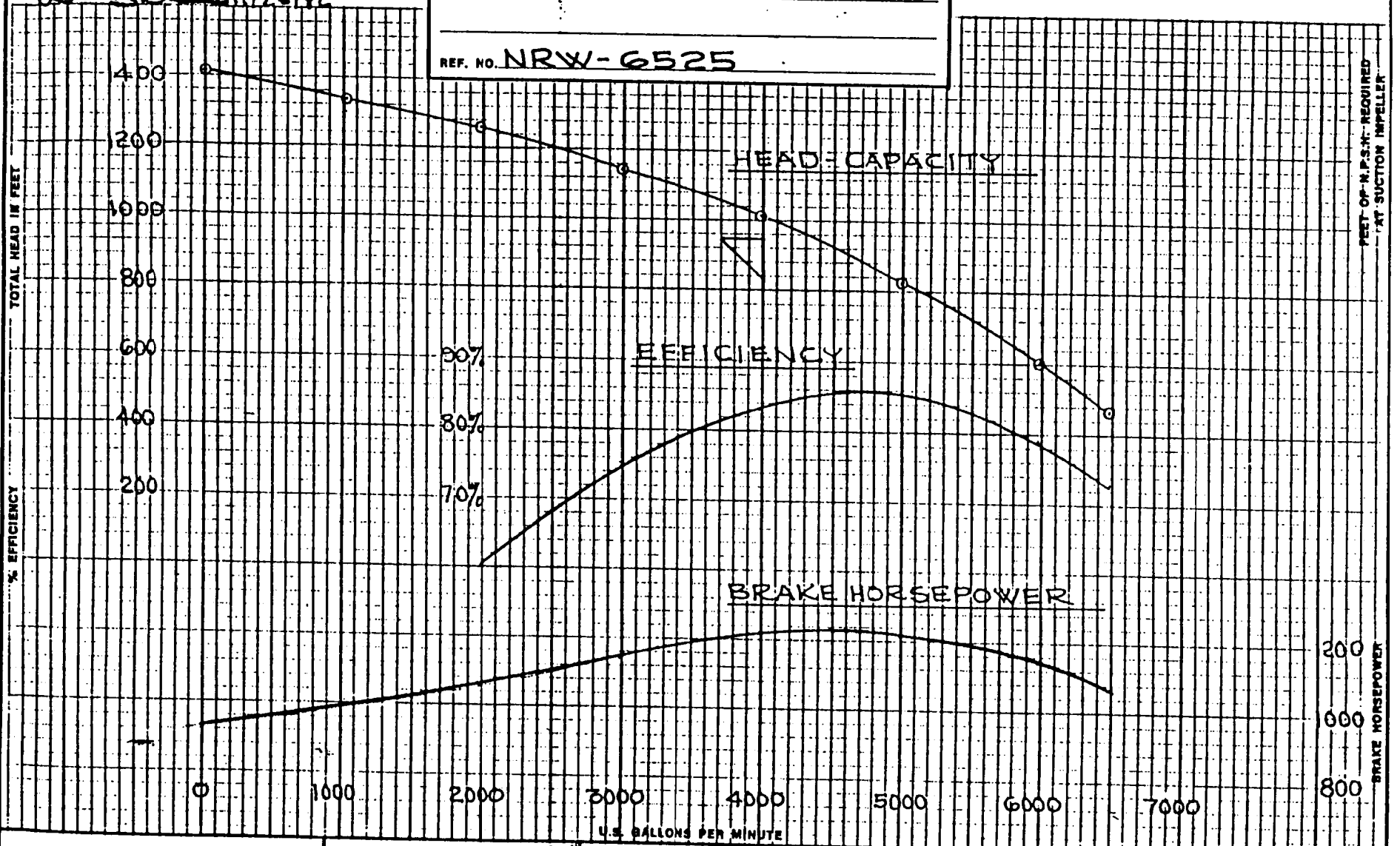
TC-05701

CERTIFIED BY: J. Dennis
DATE: 11/20/86
W. Bal 11/20/86

CUSTOMER GEORGIA POWER CO.

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE, STDS.

REF. NO. NRW-6525



THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS, WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRZ. DIA 13 3/4
BOWLS S.S. PLASITE
LIQUID WATER
SP. GR. 1.0
DATE 11-19-86 BY H.J.B.



Johnston Pump Company
Glendora, California 91740
ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18 DC PUMP
1770 R.P.M.

CURVE NO. TC-05701

(880)

LAB MOTOR 150 3 60 Y&D 8-POLE IMPELLERS 1800 7 BRZ. 13 1/2" FULL + 1/2" TAPER

RATED CONDITION @ 1220 RPM

GPM 4000

Head 955

BHP

Sp. Gr. 1.000

Eff.

F.L. Amps : Voltage

MOTOR SERIAL NO.

CLASS C FINISH — VANE

2 WATTMETER 5:1 400:5
Ratio Transformer

BOWLS 5.5 PLASITE SUCTION CASE BELL
Material Coating Type

DYNAMOMETER — —
Scale Arm

Impellers Raised ONE



Head LAB 16" H.P. + TAPER SOL

GPM = 608.604 = \sqrt{AP} ORIFICE DIA. 2.022

HEAD READINGS TAKEN (Before, After) Discharge Head

ORIFICE	U.S. G.P.M.	GAUGE DIFFERENTIAL		FEET OF WATER TO GAUGE	v ² /2g FOR 16" PIPE	TOTAL HEAD IN FEET	WATTMETER READING	INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	BOWL EFF.	U.S. G.P.M.	TOTAL HEAD IN FEET	Performance		
		PSI	FEET OF HEAD												Stage	RPM	
<u>0</u>	<u>0</u>	<u>151</u>	<u>348.8</u>	<u>5.7</u>	<u>—</u>	<u>354.5</u>	<u>.241</u>	<u>129.2</u>	<u>.900</u>	<u>116.3</u>	<u>890</u>	<u>0</u>	<u>0</u>	<u>1411.6</u>	<u>924.1</u>	<u>7</u>	<u>1220</u>
<u>0.70</u>	<u>509</u>	<u>143.2</u>	<u>330.8</u>	<u>5.7</u>	<u>—</u>	<u>336.5</u>	<u>.263</u>	<u>141.0</u>	<u>.900</u>	<u>126.9</u>	<u>890</u>	<u>34.1</u>	<u>1016</u>	<u>1339.9</u>	<u>1008.3</u>		
<u>2.70</u>	<u>1000</u>	<u>134.2</u>	<u>310.0</u>	<u>5.7</u>	<u>—</u>	<u>315.7</u>	<u>.275</u>	<u>147.4</u>	<u>.900</u>	<u>130.5</u>	<u>890</u>	<u>60.2</u>	<u>1995</u>	<u>1257.1</u>	<u>1052.9</u>		
<u>6.10</u>	<u>1503</u>	<u>122.5</u>	<u>283.0</u>	<u>5.7</u>	<u>.1</u>	<u>288.8</u>	<u>.301</u>	<u>161.4</u>	<u>.900</u>	<u>115.3</u>	<u>888</u>	<u>75.4</u>	<u>2999</u>	<u>1150.0</u>	<u>1154.6</u>		
<u>10.80</u>	<u>2000</u>	<u>107.0</u>	<u>247.2</u>	<u>5.7</u>	<u>.2</u>	<u>253.0</u>	<u>.318</u>	<u>170.5</u>	<u>.900</u>	<u>153.4</u>	<u>887</u>	<u>83.2</u>	<u>3991</u>	<u>1007.8</u>	<u>1218.9</u>		
<u>19.90</u>	<u>2502</u>	<u>87.0</u>	<u>201.0</u>	<u>5.7</u>	<u>.3</u>	<u>207.0</u>	<u>.316</u>	<u>169.4</u>	<u>.900</u>	<u>152.5</u>	<u>887</u>	<u>85.8</u>	<u>4993</u>	<u>824.3</u>	<u>1211.8</u>		
<u>24.30</u>	<u>3000</u>	<u>62.5</u>	<u>144.4</u>	<u>5.7</u>	<u>.5</u>	<u>150.6</u>	<u>.299</u>	<u>160.3</u>	<u>.900</u>	<u>144.3</u>	<u>888</u>	<u>79.1</u>	<u>5986</u>	<u>600.0</u>	<u>1146.6</u>		
<u>28.50</u>	<u>3249</u>	<u>49.0</u>	<u>113.2</u>	<u>5.7</u>	<u>.5</u>	<u>119.4</u>	<u>.281</u>	<u>150.7</u>	<u>.900</u>	<u>135.6</u>	<u>889</u>	<u>72.2</u>	<u>6483</u>	<u>475.4</u>	<u>1077.5</u>		

MOTOR MEGOHMS _____
SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ in.
BAROMETER _____ HG
WATER TEMP. _____ F
AIR TEMP. _____ F
T.P.L. _____

FLOOR TO WATER 8

FLOOR TO GAUGE 60

68 5.7'

1220 = R = 1.9954904

887 R' = 3.961982

11701007

Tested by [Signature] Date 11-18-86

Witnessed by _____

Certified by [Signature] CME 8/108
11-20-86

TC-05721

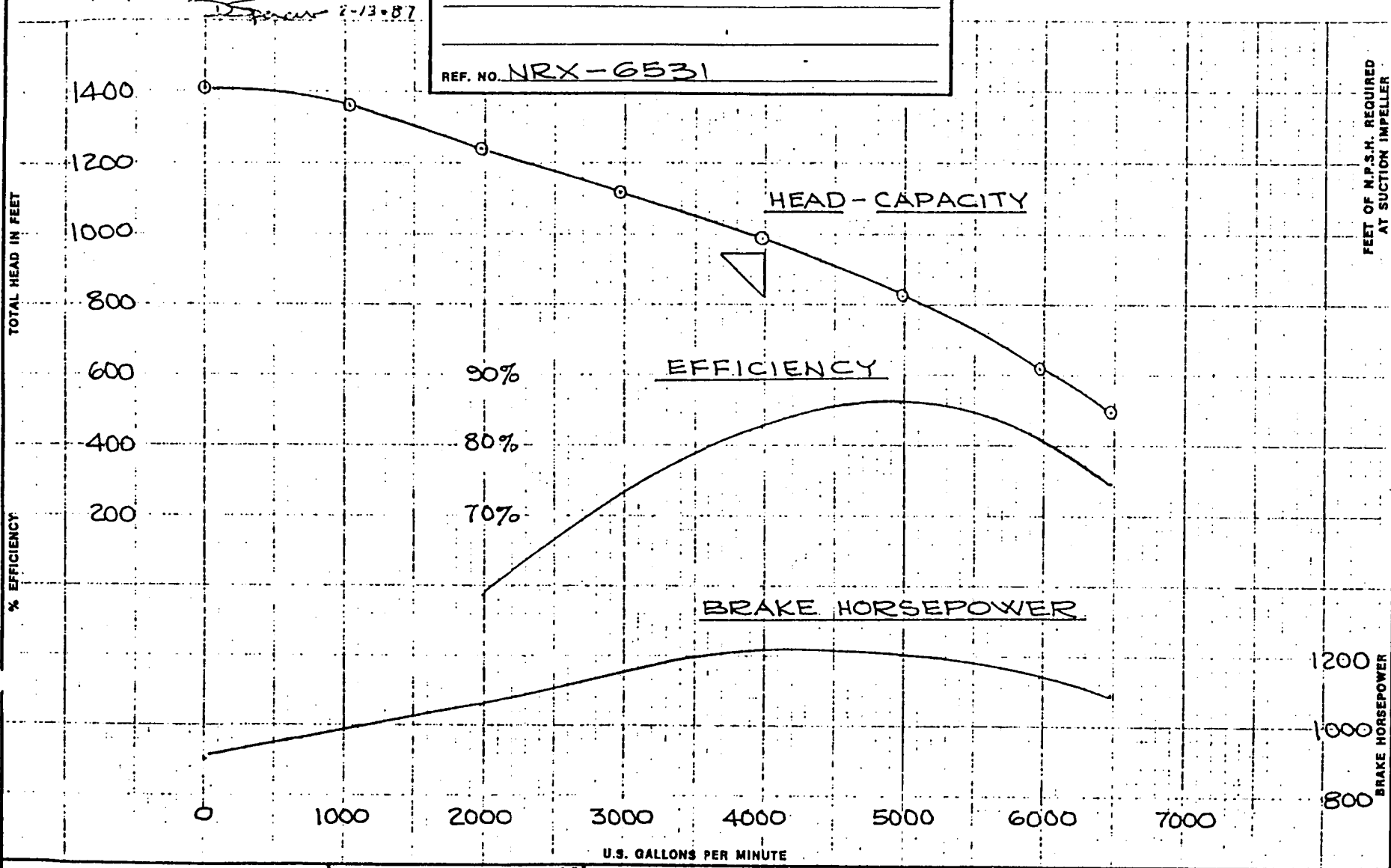
CERTIFIED BY: W. Buh

DATE 2/12/87

CUSTOMER GEORGIA POWER CO.

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTICES
BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STDS.

REF. NO. NRX-6531



THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRE. DIA 13 3/4"
 BOWLS S.S. PLACITE
 LIQUID WATER
 SP. GR. 1.0
 DATE 2-13-87 BY H.J.B.



Johnston Pump Company
 Glendora, California 91740
 ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18DC PUMP
1770 R.P.M.
 CURVE NO. TC-05721

LAB MOTOR 150 3 60 480 (880)
HP Phase Cycle Volt RPM
8-POLE

IMPELLERS 1860 7 BCZ 13 3/4 Full + 1 1/2 Tail
Type Stage Material Dia. S.W. Pipe

RATED CONDITION @ 1770 RPM

MOTOR SERIAL NO. _____

CLASS C FINISH _____ VANE _____

GPM 4000

#2 WATTMETER 511 400:5
Ratio Transformer

BOWLS ST. STL. PLASITE SUCTION CASE BELL
Material Coating Type

Head 955

BHP _____

~~SMALL~~ ~~LARGE~~ DYNAMOMETER _____
Scale Arm

Impellers Raised ONE TURN Head LAB 16" H.P. + TAPER COL.

Sp. Gr. 1.00

Eff. _____

F.L. Amps _____ Voltage _____

GPM = 608.604 x $\sqrt{\Delta P}$ ORIFICE DIA. 2.022"

HEAD READINGS TAKEN (Before) After Discharge Head

Performance 7 Stage
@ 1770 RPM

16" LINE FICE ALL TYPE Δ P IN INCHES OF HG	U.S. G.P.M.	GAUGE		FEET OF WATER TO GAUGE	v ² /2g FOR 16" PIPE	TOTAL HEAD IN FEET	DYNAMOMETER	INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	BOWL EFF.	U.S. G.P.M.	TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.
		WATTMETER	READING												
0	0	150.0	346.5	6.6	—	353.1	.238	127.6	.900	114.8	890	0	0	1406.0	912.6
0.70	509	114.0	332.6	}	—	339.2	.262	140.5	.900	126.4	889	34.5	1016	1350.7	1004.6
2.70	1000	132.0	304.9		—	311.5	.278	149.1	.900	134.2	888	58.6	1996	1240.4	1066.0
6.10	1503	119.0	274.9	}	.1	281.6	.302	161.9	.900	145.7	887	73.4	2999	1121.3	1158.0
10.80	2000	105.5	243.7		6.6	.2	258.5	.318	170.5	.900	153.4	887	82.5	3991	997.5
16.90	2502	86.0	198.7	}	.3	205.6	.313	167.8	.900	151.0	886	86.0	4993	818.7	1200.2
24.30	3000	64.5	149.0		.5	156.1	.301	161.4	.900	145.2	887	81.4	5986	621.6	1154.2
28.50	3249	51.0	117.8	6.6	.5	124.9	.285	152.8	.900	137.5	888	74.5	6483	497.4	1092.8

MOTOR MEGOHMS _____
SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ ft. _____ in.
BAROMETER _____ "HG
WATER TEMP. _____ °F
AIR TEMP. _____ °F
T.P.L. _____

FLOOR TO WATER 19 :
FLOOR TO GAUGE 60 :
79 : 6.6'

$\frac{1770}{887} = R = 1.9955$
 $R^2 = 3.9820$
 $R^3 = 7.9460$

Tested by [Signature] Date 2-10-87
Witnessed by R.O. Anderson/Reckel 2/10/87
Certified by _____

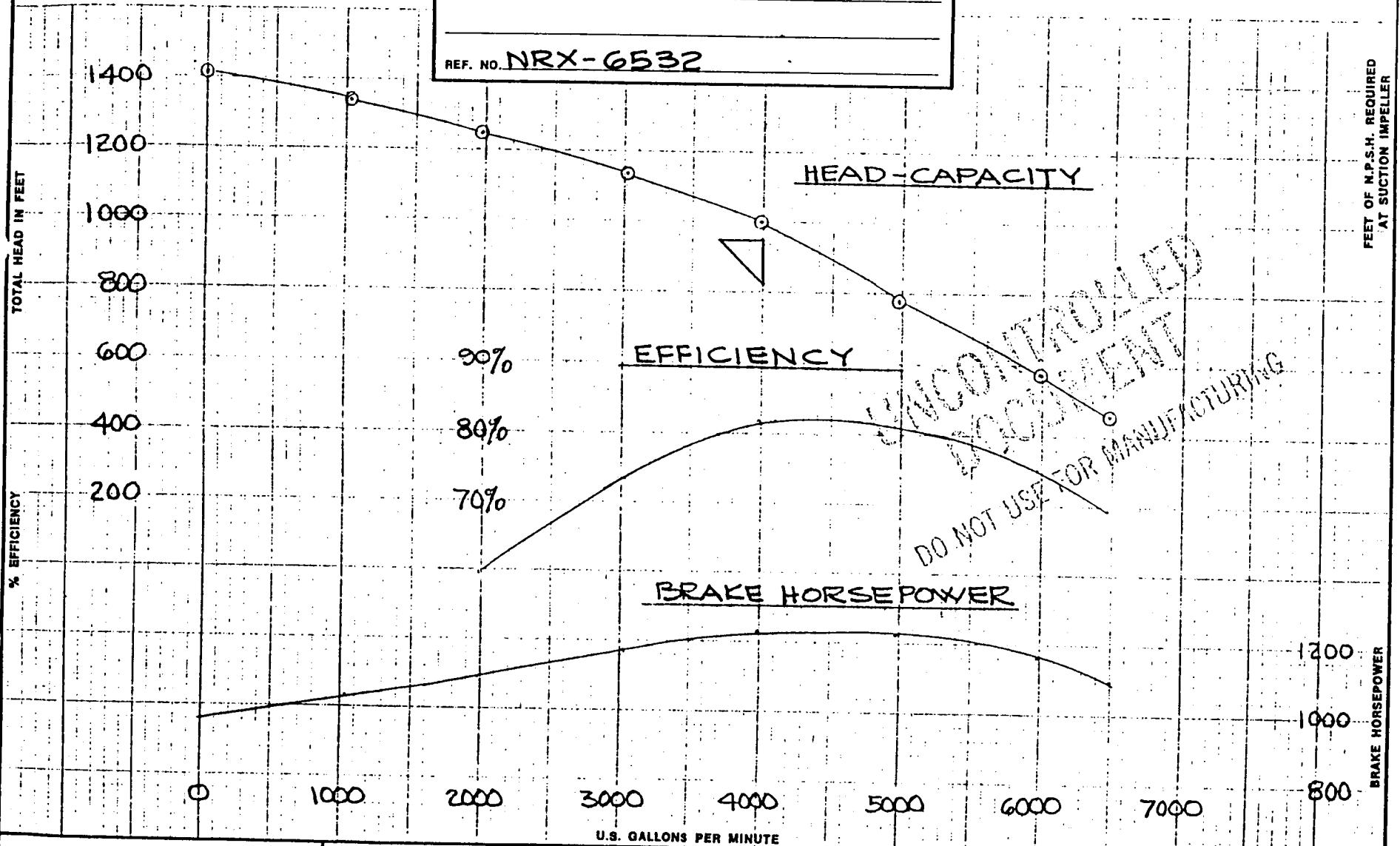
TC-05750

CERTIFIED BY: W. Bell
DATE 4/23/87

CUSTOMER GEORGIA POWER CO.

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE, STDS.

REF. NO. NRX-6532



THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRZ DIA 1 3/4
BOWLS S.S. PLASITE
LIQUID WATER
SP. GR. 1.0
DATE 4-23-87 BY H.J.B.



Johnston Pump Company
Glendora, California 91740
ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18DC PUMP
1770 R.P.M.

CURVE NO. TC-05750

LAB MOTOR 150 3 60 480 8-PCLE (880) IMPELLERS 1800 7 BRZ 13 1/4 Full + - 1/16 Dia. Em-Dash RATED CONDITION @ 1770 RPM
 HP Phase Cycle Volt RPM Type Stage Material Dia. Em-Dash
 MOTOR SERIAL NO. _____ CLASS 4 FINISH _____ VANE _____
#2 WATTMETER 5:1 400:5 BOWLS ST. STL. PLASITE SUCTION CASE BELL
 Ratio Transformer Material Coating Type
 DYNAMOMETER _____ Impellers Raised ONE TURN Head LAB 16" H.P. + TAIBER CO.
 Scale Arm
 GPM = 608.604 * $\sqrt{\Delta P}$ ORIFICE DIA. 2.022" HEAD READINGS TAKEN (Before, After) Discharge Head

GPM 4000
 Head 955
 BHP _____
 Sp. Gr. 1.00
 Eff. _____
 F.L. Amps _____ Voltage _____

ORIFICE LINE U.S. G.P.M.	GAUGE		FEET OF WATER TO GAUGE	v ² 2g FOR 16" PIPE	TOTAL HEAD IN FEET	DYNAMOMETER WATTMETER		INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	BOWL EFF.	Performance <u>7</u> Stage @ <u>1770</u> RPM		
	PSI	FEET OF HEAD				READING	U.S. G.P.M.						TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.	
0	0	151.0	348.8	5.5	354.3	.250	X=400	134.0	.900	126.6	889	0	0	1414.0	966.5
0.70	509	144.0	332.6		338.1	.270		144.8	.900	130.3	888	33.4	1017	1349.4	1038.8
2.70	1000	132.8	306.8		312.3	.282		151.2	.900	136.1	888	57.9	1998	1246.3	1085.0
6.10	1503	121.0 (105.5)	279.5		285.1	.304		163.0	.900	146.7	886	73.8	3002	1137.9	1169.6
10.80	2000	106.0	244.9	5.5	250.6	.321	(318)	172.1	.898	154.6	886	81.9	3995	1000.1	1232.6
16.90	2502	82.8	191.3		197.1	.318		170.5	.900	153.4	886	81.2	4998	786.5	1223.5
24.30	3000	60.0	138.6		144.6	.302		161.9	.900	145.7	887	75.2	5993	577.1	1161.9
28.50	3249	42.0	108.6	5.5	114.6	.283		151.7	.900	136.6	888	78.8	6490	457.2	1088.8

MOTOR MEGOHMS _____
 SUBMERGENCE ABOVE LIP _____ ft. _____ in.
 OF SUCTION BELL _____
 BAROMETER _____ "HG
 WATER TEMP. _____ °F
 AIR TEMP. _____ °F
 TPI _____

FLOOR TO WATER 6 "
 FLOOR TO GAUGE 60 "
66 " = 5.5'

1770 = R = 1.9977
886
 R² = 3.9910
 n = 7.9779

Tested by [Signature] Date 4-23-87
 Witnessed by R.O. Johnson / Bechtel 4/23/87
 Certified by _____

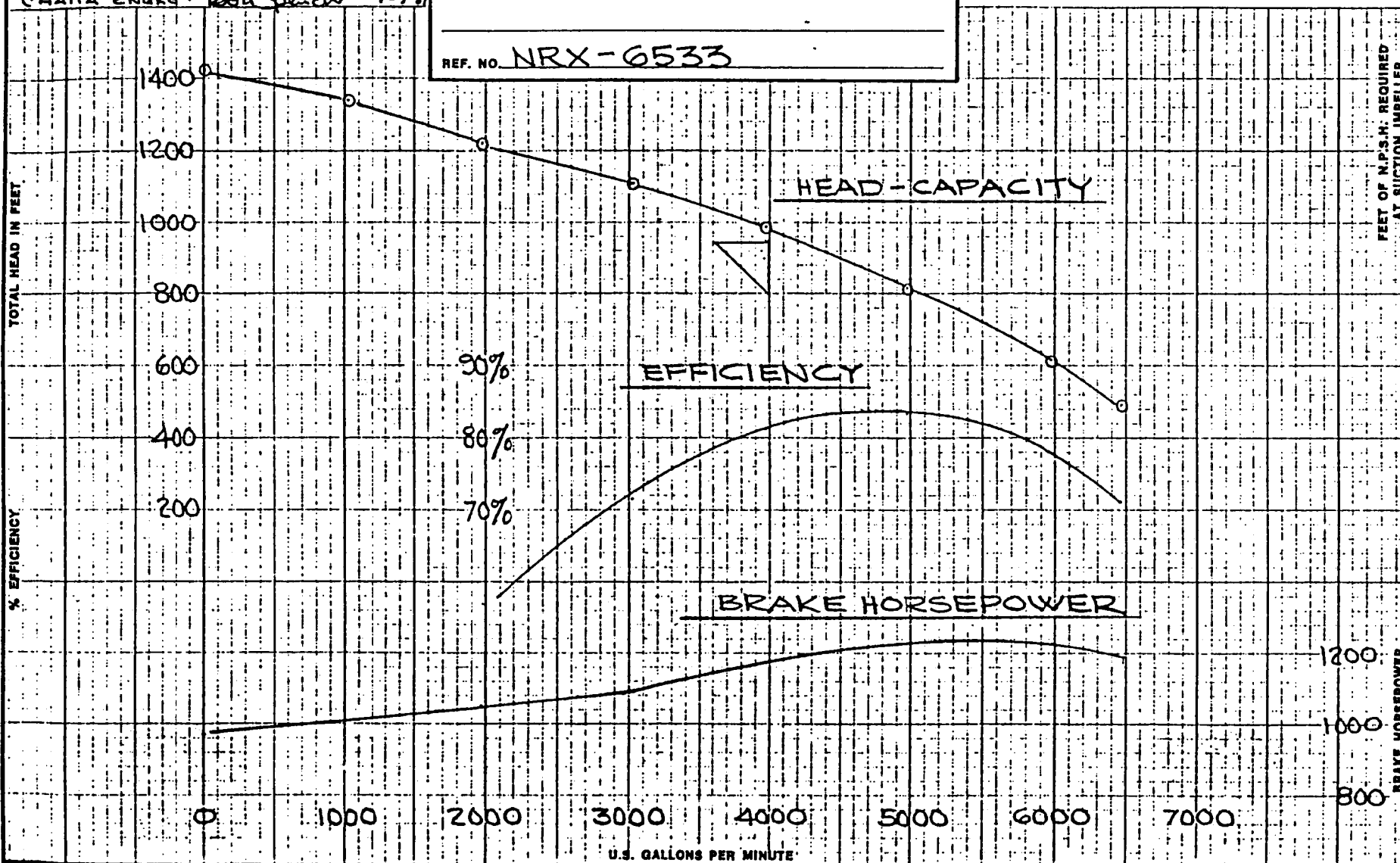
TC-05790

CERTIFIED BY [Signature]
 DATE 6-26-87
 CHATTA ENGRS. [Signature] 7-9-87

CUSTOMER GEORGIA POWER

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
 BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STGS.

REF. NO. NRX-6533



THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BRZ DIA. 13 3/4
 BOWLS S.S. PLACITE
 LIQUID WATER
 SP. GR. 1.0
 DATE 6-24-87 BY H.J.B



Johnston Pump Company
 Glendora, California 91740
 ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18DC PUMP
1770 R.P.M.
 CURVE NO. TC-05790

JOHNSTON PUMP COMPANY
Glendora, Calif.

LABORATORY
TEST DATA SHEET

CURVE NO. TC-05790 JOB NO. NRX-6533
JOB NAME GEORGIA POWER CO.

LAB MOTOR 150 3 60° 480 8-POLE (880) RPM
 HP Phase Cycle Volt RPM
 IMPELLERS 1880 7 BRZ 13 1/2 Fall + - 1/4 TOL
 Type Stage Material Dia. - Small Disc
 CLASS C FINISH — VANE
 BOWLS ST. STL. PLASITE SUCTION CASE BELL
 Material Coating Type
 Impellers Raised ONE TURN Head LAB 16" H.P. + TRIPER COL.
 MOTOR SERIAL NO. _____
 #2 WATTMETER 5:1 400:5
 Ratio Transformer
 DYNAMOMETER _____
 Scale Arm
 GPM = 608.604 × √ΔP ORIFICE DIA. 2.022"
 HEAD READINGS TAKEN (Before/After) Discharge Head

RATED CONDITION @ 1720 RPM
 GPM 4000
 Head 955
 BHP _____
 Sp. Gr. 1.00
 Eff. _____
 F.L. Amps _____ Voltage _____

Performance 7 Stage
 @ 1720 RPM
 U.S. G.P.M. TOTAL HEAD IN FEET B.H.P. @ Sp. Gr.
1.00

LINE	ORIFICE BELL TYPE Δ P IN INCHES OF HG	U.S. G.P.M.	GAUGE		FEET OF WATER TO GAUGE	V ² /2g FCR 16" PIPE	TOTAL HEAD IN FEET	DYNAMOMETER	INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	BOWL EFF.	U.S. G.P.M.	TOTAL HEAD IN FEET	B.H.P. @ Sp. Gr.
			READING	PSI				FEET OF HEAD								
0	0	0	152.0	351.1	6.7	—	357.8	.252	135.1	.900	121.6	890 880	0	0	1428.1	969.6
2	0.70	509	143.0	330.3	}	—	337.0	.271	145.3	.900	130.8	888	33.2	1017	1345.1	1042.7 1025
3	2.70	1000	130.0	300.3		—	307.0	.282	151.2	.900	136.1	888	56.0	1998	1225.2	1085.0
4	6.10	1503	117.5	271.4		.1	278.2	.305	163.5	.900	142.2	887	71.8	3002	1110.3	1173.5
1	10.80	2000	107.8	242.1	6.7	.2	249.0	.318 .321	170.5 172.1	.900	153.9 154.9	886	82.0	3995	993.8	1235.0
5	16.90	2502	85.5	197.5	}	.3	204.5	.320	171.6	.900	154.4	886	83.7	4998	816.2	1231.2
4	24.30	3000	63.5	146.7		.5	153.9	.310	166.2	.900	149.6	886	78.0	5993	614.2	1192.7
7	28.50	3249	49.5	114.3	6.7	.5	121.5	.291	156.0	.900	140.4	887	71.0	6490	485.1	1119.6

MOTOR MEGOHMS _____
 SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ ft. _____ in.
 BAROMETER _____ "HG
 WATER TEMP. _____ °F

FLOOR TO WATER 20
 FLOOR TO GAUGE 60 : 6.7'

$\frac{1720}{886} = R = 1.9977$
 $R^2 = 3.9910$

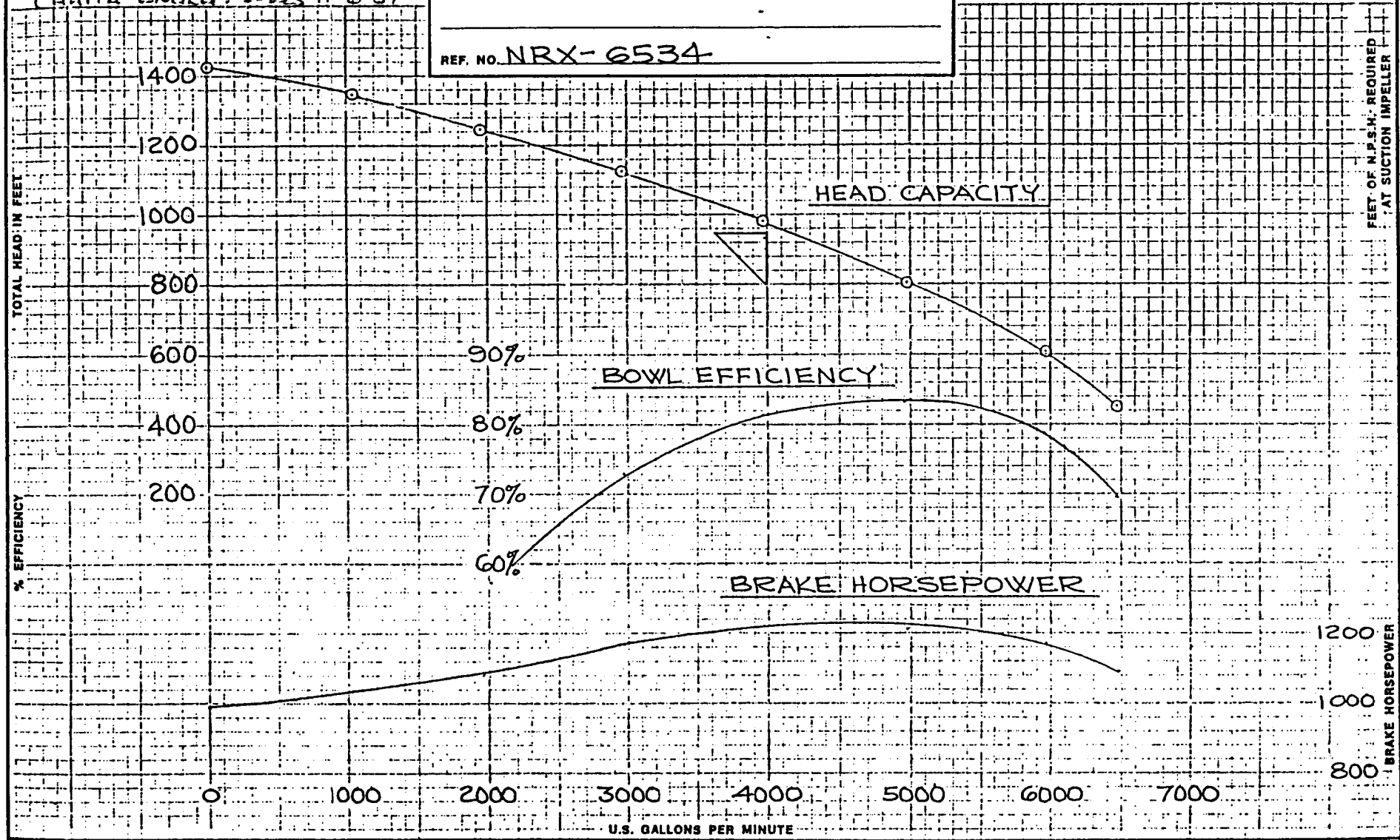
Tested by [Signature] Date 6-14-87
 Witnessed by L. Q. Anderson / Bechtel 6/21/87
 Certified by _____

TC-05873

CERTIFIED BY: entroy
 DATE 11-4-87
 CHATTA ENGRG: DBS 11-6-87

CUSTOMER GEORGIA POWER CO.
 REF. NO. NRX-6534

SUBMERGENCE REQ'D OVER BELL TO PREVENT VORTEXES
 BASED ON SUMP DESIGN PER HYDRAULIC INSTITUTE STDS.




THE CAPACITY, HEAD AND EFFICIENCY GUARANTEE IS FOR THE DESIGNATED POINT ONLY: IT IS BASED ON SHOP TESTS. WHEN HANDLING CLEAR, FRESH WATER AT A TEMPERATURE OF NOT OVER 85° F. AND UNDER SUCTION CONDITIONS AS SPECIFIED IN THE CONTRACT.

IMPELLER BR3 DIAL 3 3/4
 BOWLS 6.5" PLACITE
 LIQUID WATER
 SP. GR. 1.0
 DATE 11-4-87 BY H.J.B



Johnston Pump Company
 Glendora, California 91740
 ESTABLISHED 1909

TURBINE BOWL PERFORMANCE
7 STAGE 18 DC PUMP
1770 R.P.M.
 CURVE NO. TC-05873

LAB MOTOR 150 3 60 480 8-POLE (880) IMPELLERS 1800 7 BRZ 13 3/4 Full + - 1/16 T8F RATED CONDITION @ 1770 RPM
 HP Phase Cycle Volt RPM Type Stage Material Dia. 13 3/4
 MOTOR SERIAL NO. _____ CLASS C FINISH _____ VANE _____
#2 WATTMETER 5:1 400:5 BOWLS ST. STL. PLASITE SUCTION CASE BELL
 Ratio Transformer Material Coating Type
 DYNAMOMETER _____ Impellers Raised ONE  Head LAB 16" H.P. + TRIPER COL.
 Scale Arm
 GPM = 608.604 * $\sqrt{\Delta P}$ ORIFICE DIA. 2.022" HEAD READINGS TAKEN (Before Alter) Discharge Head

GPM 4000
Head 955
BHP _____
Sp. Gr. 1.00
Eff. _____
F.L. Amps _____ Voltage _____

ORIFICE DIP IN INCHES OF HG	U.S. G.P.M.	GAUGE PSI FEET OF HEAD		FEET OF WATER TO GAUGE	v ² / 2g FCR 16" PIPE	TOTAL HEAD IN FEET	DYNAMOMETER WATTMETER	INPUT H.P.	MOTOR EFF %	B.H.P.	RPM	BOWL EFF.	Performance <u>7</u> Stage @ <u>1770</u> RPM		
		READING	U.S. G.P.M.				TOTAL HEAD IN FEET						B.H.P. @ Sp. Gr.		
0	0	152.0	357.1	6.8	-	357.9	.259	138.9	.900	125.0	890	0	0	1425.2	993.2
0.20	509	144.5	333.8)	-	340.6	.271	145.3	.900	130.8	890	33.5	1016	1356.3	1039.3
2.70	1000	132.0	304.9		-	311.7	.282	151.2	.900	136.1	888	57.8	1995	1241.2	1081.4
6.10	1503	119.5	276.0		.1	282.9	.306	164.1	.900	147.7	887	72.7	2949	1126.5	1173.6
10.80	2000	(107.2) 104.0	240.2		6.8	.2	247.2	(.317) .318	170.5	.900	153.4	887	81.4	3991	984.3
16.90	2502	84.0	194.0)	.3	201.1	.315	168.9	.900	152.0	887	83.6	4993	800.8	1207.8
24.30	3000	63.0	145.5		.5	151.4	.303	162.5	.900	146.2	887	78.6	5986	604.5	1161.7
29.50	3249	47.0	108.6		6.8	.5	115.2	.283	151.7	.900	136.5	888	69.7	6483	461.5

MOTOR MEGOHMS _____
 SUBMERGENCE ABOVE LIP OF SUCTION BELL _____ ft. _____ in.
 BAROMETER _____ "HG
 WATER TEMP. _____ °F
 AIR TEMP. _____ °F

FLOOR TO WATER 21 "
 FLOOR TO GAUGE 60 "
01 " 1.8'

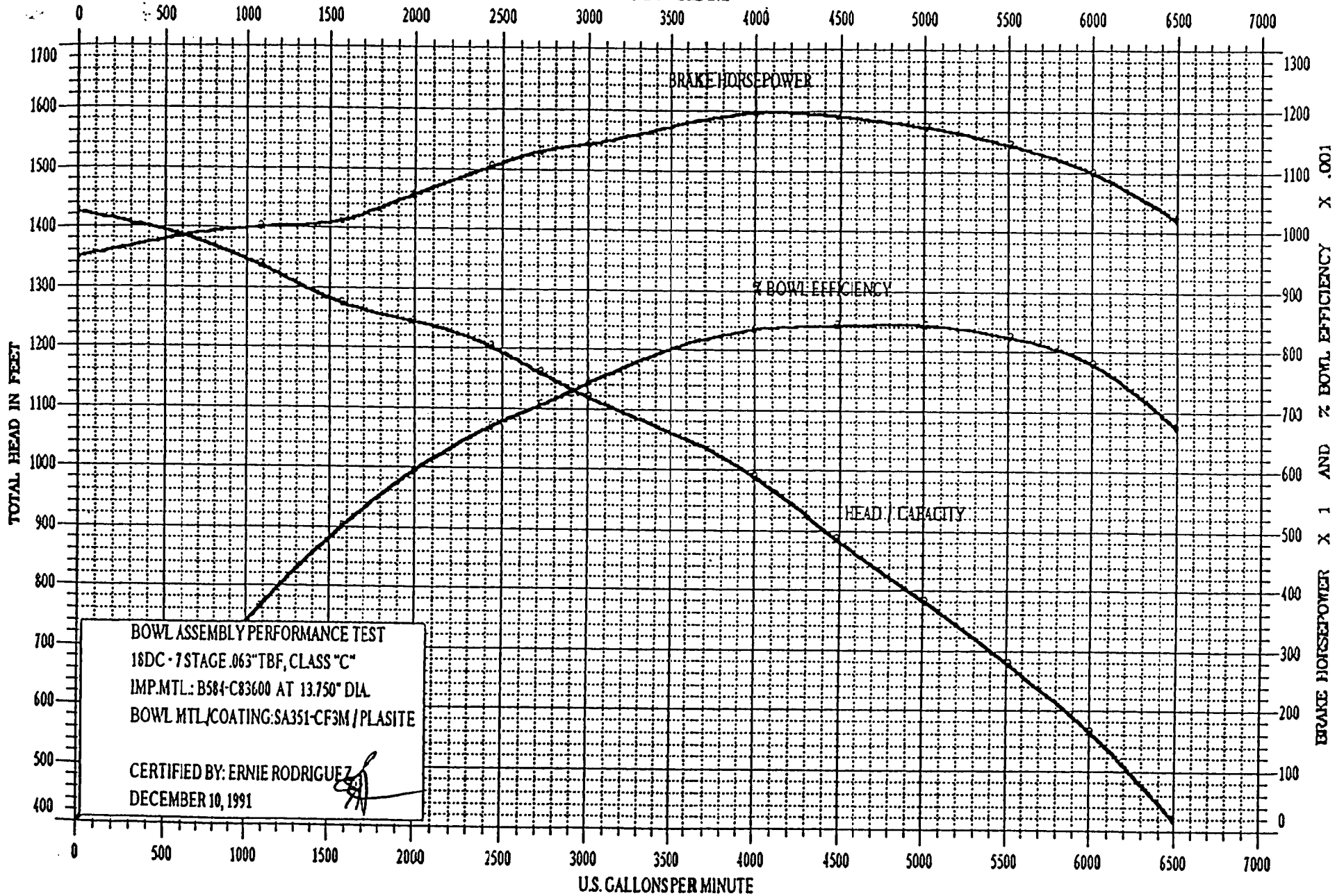
$\frac{1770}{887} = R = 1.9855$
 $R^2 = 3.9820$

Tested by [Signature] Date 11-3-82
 Witnessed by _____
 Certified by _____

JOHNSTON PUMP COMPANY
 BROOKSHIRE, TEXAS

CUSTOMER: GEORGIA POWER COMPANY
 JOB #: NC-6519 S/N: NC-6519 POF #: 66170 TC #: 06566
 1780 RPM

Reviewed By S. Nash Date 12/10/91
 Title ENGR. MGR.



BOWL ASSEMBLY PERFORMANCE TEST
 18DC - 7 STAGE .063" TBF, CLASS "C"
 IMP. MTL: B584-C83600 AT 13.750" DIA.
 BOWL MTL COATING: SA351-CF3M / PLASITE

CERTIFIED BY: ERNIE RODRIGUEZ
 DECEMBER 10, 1991

JOHNSTON PUMP COMPANY PERFORMANCE TEST SET-UP AND TEST DATA SHEET

TC NO.: TC-06566
 SERIAL NO.: NC-6519
 PARTS ORDER #: POP-66170
 JOB NUMBER: NC-6519
 CUST.: GEORGIA POWER COMPANY
 MODEL/STAGES: 18DC / 7
 W.P. S.A.: 13.750"
 W.P./CL.: .063" / "C"
 IMP. MATERIAL: B584 - C83600
 BOWL MATERIAL: SA351 - CP3M
 BOWL COATING: PLASITE 7122
 SUCTION: BELL
 TEST D. HEAD: LAB 16" HIGH PRESSURE DISCH. HEAD
 TEST COL.: TAPERED COLUMN PIPE
 TEST CONSTANTS;;
 FLOW: 608.604
 HEAD: 2.31

MOTOR H.P./R.P.M.: 150 / 880
 PH/CT/V: 3/60/480
 MOTOR S/N:
 JOB OR LAB MOTOR: LAB
 WATTMETER NO.: #2
 ORFICE DIAMETER: 7.022
 TEST LINE SIZE: 16
 PRESSURE GAGE: 300
 IMP. ADJUSTMENT: TWO TURNS

COMMENTS: TEST THE BOWL ASSEMBLY WITH A TEST DISCH. HEAD AND COLUMN AT REDUCED SPEED USING A TEST LAB MOTOR.

CHATAHOOGA P.O. NO.: TE - 9346

TESTED AS PER PROCEDURE NO.: JP-TP-0069 REV.

WORK ORDER NO.:

DESIGN @ R.P.M.: 1780
 G.P.M.: 4000
 HEAD: 955.0
 H.H.P.:
 EFFICIENCY: 84 % BOWL
 SPECIFIC GRAVITY 1: 1.00
 SPECIFIC GRAVITY 2: 0.00
 ITEM NO.:
 FLUID:
 APPLICATION:
 END USER: GEORGIA POWER COMPANY
 SITE: GEORGIA POWER COMPANY

PIPE DIA. @ PSI GAGE: 16.000

MOTOR EFFICIENCY;
 100%:
 75%:
 50%:

WATER TO FLOOR: 21 INCHES
 FLOOR TO GAGE: 60 INCHES
 TAKE SHUT-OFF(YES/NO): YES

TEST POINT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
DELTA "P"	10.80	0.80	1.70	2.70	4.00	5.00	6.10	10.80	13.50	16.90	20.50	24.30	28.50	
GALLONS PER MINUTE	2000	544	794	1000	1217	1361	1503	2000	2236	2502	2756	3000	3249	
GAGE/Hg READING	103.90	143.60	136.60	131.90	127.00	122.40	118.00	103.70	92.60	81.30	70.20	58.00	42.50	15
FEET OF HEAD	240.01	331.7	315.55	304.69	293.37	282.74	272.58	239.55	213.91	187.80	162.16	133.98	98.18	35
GAGE ELEV. CORR.	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.75	
VELOCITY HEAD LOSS	0.16	0.01	0.02	0.04	0.06	0.07	0.09	0.16	0.20	0.25	0.30	0.36	0.42	
TOTAL HEAD	246.92	338.48	322.32	311.48	300.18	289.57	279.42	246.46	220.85	194.80	169.21	141.09	105.34	35
WATT READING	123.70	105.60	106.80	109.50	114.10	116.80	118.20	123.20	122.70	120.90	118.30	113.60	106.00	9
INPUT H.P.	165.82	141.55	143.16	146.78	152.95	156.57	158.45	165.15	164.48	162.06	158.58	152.28	142.09	13
MOTOR EFFICIENCY	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0
H.H.P.	149.24	127.40	128.85	132.10	137.65	140.91	142.60	148.63	148.03	145.86	142.72	137.05	127.88	11
TEST R.P.M.:	889	895	895	890	889	889	889	888	888	888	889	889	890	
VOLTS(REF. ONLY)	0	0	0	0	0	0	0	0	0	0	0	0	0	
AMPS(REF. ONLY):	0	0	0	0	0	0	0	0	0	0	0	0	0	
VIBRATION IN MILS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
PERF. @ RATED R.P.M.:	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	
GALLONS PER MINUTE:	4005	1083	1578	2000	2437	2725	3010	4009	4482	5015	5511	6007	6498	
TOTAL HEAD IN FEET:	989.89	1338.83	1274.92	1245.91	1203.42	1160.88	1120.19	990.27	887.40	782.72	678.37	565.61	421.37	142
H.H.P. @ 1.0 SP. GR.:	1197.92	1002.21	1013.60	1056.84	1104.95	1131.10	1144.66	1197.11	1192.26	1174.77	1145.63	1100.11	1023.06	94
H.H.P. @ JOB SP. GR. 1:	1197.92	1002.21	1013.60	1056.84	1104.95	1131.10	1144.66	1197.11	1192.26	1174.77	1145.63	1100.11	1023.06	94
H.H.P. @ JOB SP. GR. 2:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0
EFFICIENCY:	0.836	0.365	0.501	0.595	0.670	0.706	0.744	0.837	0.842	0.844	0.825	0.780	0.676	0

TESTED BY: LLOYD COTTON

CERTIFIED BY: ERNIE RODRIGUEZ
 DATE OF TEST: DECEMBER 10, 1991

WITNESSED BY:

RCV BY: XEROX TELECOPIER 7010 , 10-16-92 2:13PM ;
OCT-16-92 FRI 13:06 J .G. , INC.
71 344669
6156981447;# 2
P. 02

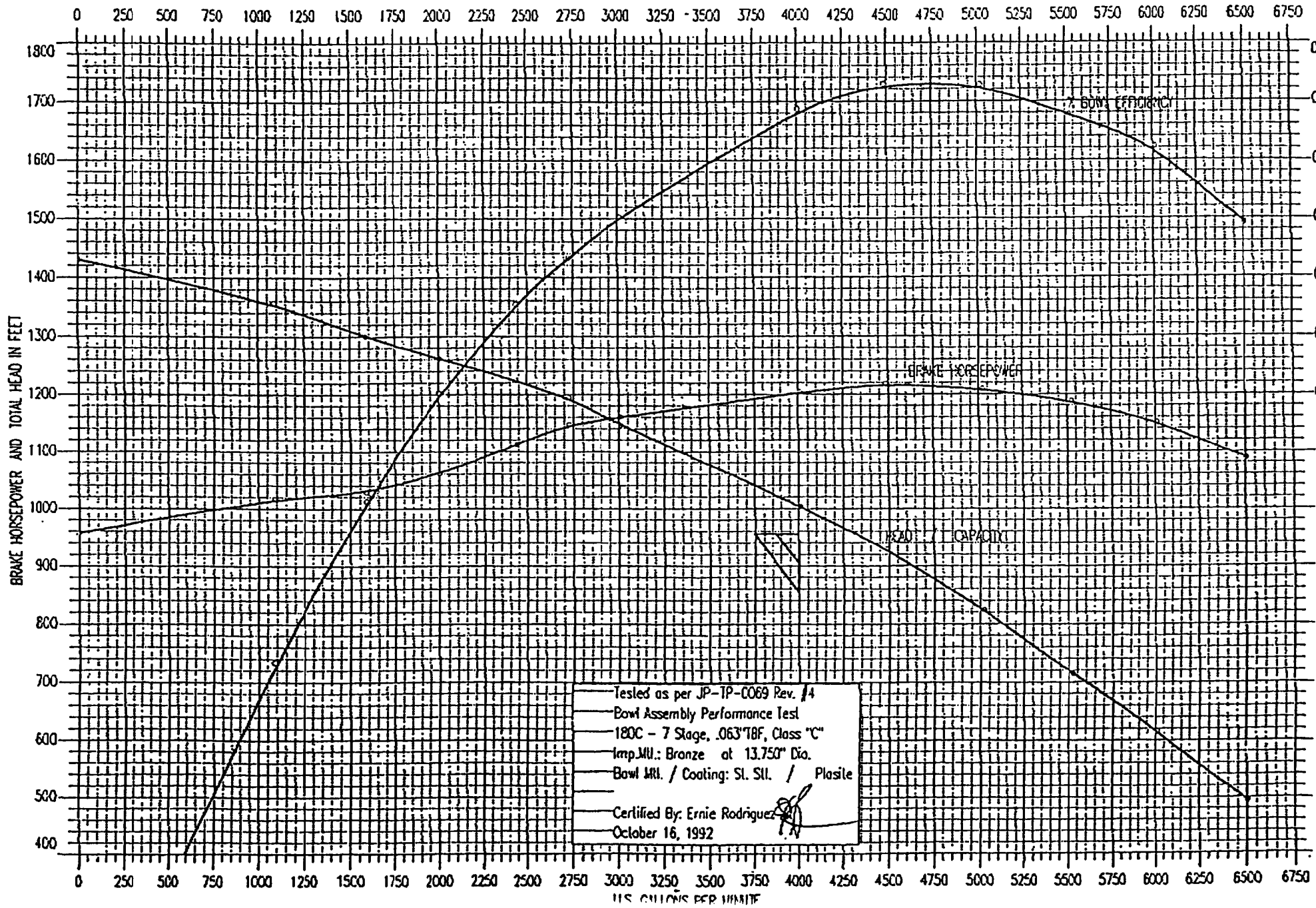
Johns Pump Company
Brookshire, Texas

Customer: Georgia Power Company

Job #: NO-6509 S/N: NRX-6533 POF #: 66224 TC #: 06784

1780 RPM

Reviewed By R. Chou Date 10-19-92
Title Service Center Manager



Tested as per JP-TP-C069 Rev. #4
Bowl Assembly Performance Test
180C - 7 Stage, .063" IBF, Class "C"
Imp. Mat.: Bronze at 13.750" Dia.
Bowl Mat. / Coating: St. Stl. / Plasite
Certified By: Ernie Rodriguez
October 16, 1992

JOHNSTON PUMP COMPANY

PERFORMANCE TEST SET-UP AND TEST DATA SHEET

TC No.: TC-06784
 Job Number: ND-6509
 Customer: Georgia Power Company
 Model / Stages: 18DG/7
 Imp. Dia.: 13.750
 TBF / CL: .063" / °C
 Imp. Material: Bronze
 St. Stl: St. Stl.
 Bowl Coating: Plazite
 Suction: Bell
 Test D. Head: Lab 18" H.P. Dlsch. Head
 Test Col.: Lab Tapper Column

Motor H.P. / R.P.M.: 150 / 880
 PH / CY / V: 3 / 00 / 480
 Motor S / N:
 Job OR Lab Motor: Lab
 Wattmeter No.: #2
 Orifice Diameter: 7.022
 Test Line Size: 18
 Pressure Gage: 300
 Impeller Adjustment: Two Turns

Comments: Test the Bowl Assembly only at reduced speed with a Test Lab Dlsch. Head and Column using a Test Lab Motor.

Reviewed By: B. Clark Date 10-19-92
 Title: Service Center Manager

Test Constants:
 Flow: 608.804
 Head: 2.31

DESIGN @ R.P.M.: 1780
 G.P.M.: 4000
 Head: 955.00
 B.H.P.:
 Efficiency: 84 % Bowl
 Specific Gravity 1: 1.00
 Specific Gravity 2: 0.00
 Rem No.:
 Fluid: Water
 Application:
 End User: Georgia Power Company
 Site: Georgia Power Company

Test Procedure #: JP-TP-0069 Rev.#4

Serial #: NRX - 6533

Job #: ND-6509

POF #: 66224

Chattanooga P.O. #: TE - 10234

Pipe Dia. @ Gage: 16.000

Motor Eff. :
 100 %:
 75 %:
 50 %:

Water To Floor: 10 INCHES
 Floor To Gauge: 60 INCHES

Take Shut - Off (Yes/No): Yes

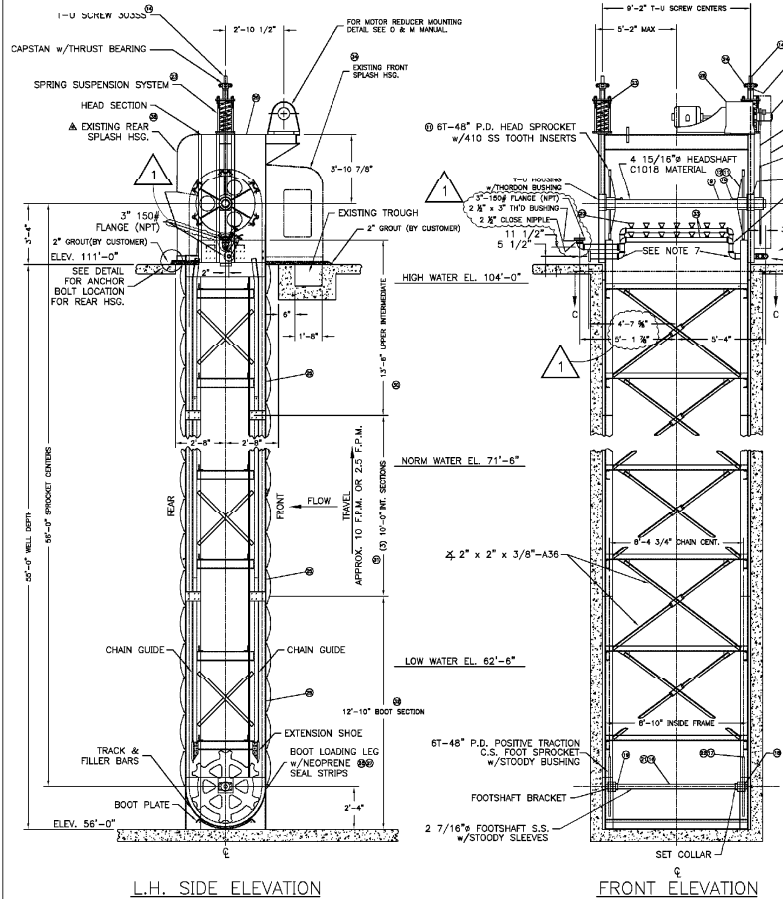
Test Point #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
D	10.80	0.80	1.70	2.70	4.00	5.00	6.10	10.80	13.60	18.90	20.50	24.30	28.50	0.00
Gallons Per Minute	2000	544	784	1000	1217	1361	1503	2000	2236	2502	2756	3000	3249	0
Gage Reading	105.00	144.30	138.10	133.70	129.60	128.00	121.00	105.50	97.30	85.90	74.00	63.80	50.70	152.30
Feet of Head	242.55	333.33	319.01	308.85	299.38	291.06	279.51	243.71	224.78	198.43	170.94	148.92	117.12	351.81
Gage Elev. Corr.	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83
Velocity Head Loss	0.16	0.01	0.02	0.04	0.06	0.07	0.09	0.16	0.20	0.26	0.30	0.36	0.42	0.00
Total Head	248.54	339.18	324.87	314.72	306.27	296.97	285.43	249.70	230.70	204.51	177.07	153.11	123.37	357.65
Watt Reading:	123.90	105.30	106.60	109.60	114.90	118.10	119.50	123.90	124.90	124.00	121.80	118.50	112.40	89.20
Input H.P.	166.09	141.15	142.90	146.92	154.02	158.31	160.19	166.09	167.43	166.22	163.27	158.85	150.67	132.88
Motor Efficiency	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
B.H.P.	149.48	127.04	128.61	132.23	138.62	142.48	144.17	149.48	150.68	149.60	146.94	142.96	135.60	119.88
Test R.P.M.:	887	880	890	889	889	888	888	888	887	887	887	888	889	890
Volts (Ref. Only)														
Amps (Ref. Only):														
Vibration in Mils:														
Rated R.P.M.:	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780	1780
Gallons Per Minute:	4014	1089	1587	2002	2437	2728	3013	4009	4487	5021	5530	6014	6506	0
Total Head in Feet:	1000.90	1358.71	1299.48	1261.71	1223.82	1193.22	1146.88	1003.29	929.43	823.58	713.09	615.18	494.58	1430.59
B @ 1.0 Sp.Gr.:	1207.99	1018.30	1028.85	1061.38	1112.70	1147.56	1161.16	1203.92	1217.74	1208.97	1187.52	1151.44	1088.40	957.43
B @ Sp.Gr.1:	1207.99	1018.30	1028.85	1061.38	1112.70	1147.56	1161.16	1203.92	1217.74	1208.97	1187.52	1151.44	1088.40	957.43
B.H.P. @ Sp.Gr.2:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Efficiency:	0.840	0.387	0.508	0.601	0.877	0.718	0.732	0.844	0.885	0.864	0.839	0.811	0.748	0.000

Tested By: Darryl Clark Jr.

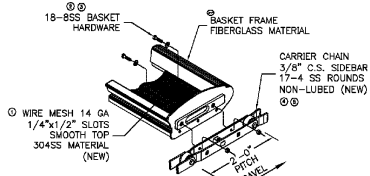
Certified By: Ernie Rodriguez

Witnessed By:

Date Of Test: October 16, 1992



DRIVE COMPONENTS:
 REDUCER: 3.0/75 HP NATURAL (EXISTING)
 OUTPUT SPEED: 4.8/1.5 R.P.M.
 INPUT SPEED: 1800/450 R.P.M.
 MOTOR: 3.0/75 HP 208V/3 PHASE/60 HZ
 1800/450 RPM 2 SPEED/2 WINDING
 TECO (EXISTING)
 DRIVE SPKT: 10T 3.85" P.D. (EXISTING)
 W/ SLEAK PIN HUB DEVICE
 DRIVEN SPKT: SSI 3.85" P.D. (EXISTING)
 DRIVE CHAIN: #1033 3.075" PITCH



SPRAY WASH REQUIREMENTS
 (BASED ON 7 NOZZLES EACH WITHING 8 3/4" OF SPRAY)

NO.	SIZE	VELOCITY
100	1/8"	2.45 FPM
100	3/16"	3.88 FPM
100	1/4"	5.31 FPM
100	5/16"	6.74 FPM
100	3/8"	8.17 FPM
100	1/2"	14.58 FPM

DIFFERENTIAL WATER LEVEL
 # OF CLEANABLE HEADERS IN FT. (AT 7.5 GPM @ 30000 GPM)

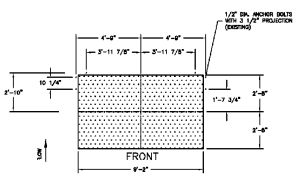
NO.	SIZE	VELOCITY
100	1/8"	2.45 FPM
100	3/16"	3.88 FPM
100	1/4"	5.31 FPM
100	5/16"	6.74 FPM
100	3/8"	8.17 FPM
100	1/2"	14.58 FPM

DIFFERENTIAL WATER LEVEL
 # OF CLEANABLE HEADERS IN FT. (AT 6.0 GPM @ 100000 GPM)

NO.	SIZE	VELOCITY
100	1/8"	2.45 FPM
100	3/16"	3.88 FPM
100	1/4"	5.31 FPM
100	5/16"	6.74 FPM
100	3/8"	8.17 FPM
100	1/2"	14.58 FPM

DIFFERENTIAL WATER LEVEL
 # OF CLEANABLE HEADERS IN FT. (AT 6.0 GPM @ 100000 GPM)

NO.	SIZE	VELOCITY
100	1/8"	2.45 FPM
100	3/16"	3.88 FPM
100	1/4"	5.31 FPM
100	5/16"	6.74 FPM
100	3/8"	8.17 FPM
100	1/2"	14.58 FPM



NOTE 1:
 ALL S.S. PARTS SHALL BE BLASTED PER SSPC-SP10 SPECIFICATIONS. REAR SPLIT BUSHING SURFACE FINISH SHALL BE 250 TO 300 ARI. ALL S.S. PARTS SHALL BE OILED WITH 30 W OIL FOR PROTECTION. INTERFERENCE FITS SHALL BE MANUFACTURED BY INTERNATIONAL.

NOTE 2:
 THIS SYSTEM IS DESIGNED TO RUN AT 10 FPM AT A HEADLOSS OF 4.5 FT AT MAXIMUM WATER LEVEL.

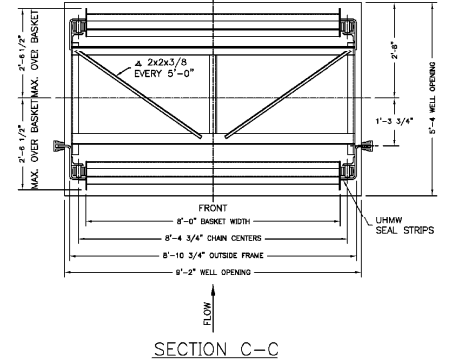
NOTE 3:
 ALL FRAMING MEMBER SHALL BE 18-8 SS.

NOTE 4:
 WEIGHT APPROX. 31,000 LBS. EACH SECTIONAL WEIGHTS:
 BASKET WEIGHT (82) 118 LBS. EACH
 CARRIER CHAIN WEIGHT (521/428) 21.6 LBS. EACH LINK
 HEADSHAFT ASSEMBLY WEIGHT (1) 2.50 LBS.
 FOOTSHAFT ASSEMBLY WEIGHT (1) 2.50 LBS.
 HEAD/FRAME ASSEMBLY WEIGHT (1) 16,000 LBS.

NOTE 5:
 ALL WELDS, BRIGETS, AND STAINLESS STEEL PARTS WILL NOT BE PAINTED.

NOTE 6:
 SEE O & M MANUAL FOR PARTS LIST.

NOTE 7:
 SHALL BE DR. HOLE ON THE BOTTOM OF EACH OF THE (4) 80' ELBOWS ON THE TWO NEW SPRAY HEADERS (FOR FREEZE PROTECTION)



Southern Nuclear Operating Company, Inc.
 Edwin I Hatch Nuclear Plant

UNIT 1 & 2
 BASKET, CHAIN & DRIVE CHAIN
 SSI QUOTE #100-SSC-R1
 REX & NOVICE T.W.S.

NO.	DESCRIPTION	DATE	BY
1	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
2	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
3	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
4	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
5	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
6	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
7	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
8	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
9	ISSUED FOR CONSTRUCTION	10-10-82	SSJ
10	ISSUED FOR CONSTRUCTION	10-10-82	SSJ

1
 S55894 (1W33-E003A&B)
 Southern Company Services, Inc.
 HATCH
 UNIT: 1 & 2
 TITLE: UNIT 1 AND 2 TRAVELING WATER SCREENS - GENERAL ARRANGEMENT DRAWING
 S.S.I. 6046417
 S-55894

THIS DWG. PART OF VENDOR MANUAL N/A
 TAB/SECT. N/A
 PAGE N/A
 FIGURE N/A

REVISION	DATE
1	3-11-83

REVISOR: ABN 00-0022-015.

SEE MICROFILM FOR PREVIOUS REV. SIGNATURES.

BY	CHK'D	APPR'L	APPR'L	APPR'L	APPR'L
CFC	DEW				



Johnston Pump
Nuclear Service Division
2601 East 34th Street
Chattanooga, Tennessee 37407
Phone: (615) 629-1415 □ TWX: 810-573-5272
698-1447

July 21, 1986

SOUTHERN COMPANY SERVICES
Post Office Box 2625
Birmingham, Alabama 35202

ATTENTION: Mr. William Garner

SUBJECT: RHRSW, PSW, Stand By Service Water Pumps, Submergence Requirements

REFERENCE: Letter dated July 21, 1986

Please refer to the attached sheet when adjusting the submergence of the referenced pumps.

If I can be of further assistance please do not hesitate to call.

Best Regards,
JOHNSTON PUMP COMPANY

Gerald D. Harrelson
Gerald D. Harrelson
Nuclear Account Manager

GDH /b

ATTACHMENT

cc: JPCO Distribution
Tim Long

Post-It™ brand fax transmittal memo 7671		# of pages > 2
To: <i>Jerry Harrelson</i>	From: <i>Tim Long</i>	
Co: <i>JPCO</i>	Co:	
Dept:	Phone #	
Fax # <i>615 698-1447</i>	Fax #	

A Division of Johnston Pump/General Valve, Inc.

GEORGIA POWER COMPANY
PLANT E.I. HATCH

SUBJECT: Pump Submergence
of Plant Service Water Pumps
RHR Service Water Pumps
Stand-BY Service Water Pumps

July 21, 1986

<u>SERVICE</u>	<u>MODEL</u>	<u>S/N</u>	<u>GPM</u>	<u>HEAD</u>	<u>SUBMERGENCE REQUIRED OVER SUCTION BELL</u>
Plant Service Water	24 EC-3 Stg.	GC-2751-54	*8500	*275'	48" W/O Suction Umbrella
		NE-3565-68			40" W/O Suction Umbrella
			#7000	#327'	32" W/O Suction Umbrella
					24" W/ Suction Umbrella
RHR Service Water	18 DC-7 Stg.	GC-2755-58	*4000	*955'	35"
		NE-3561-64	#3500	#1036	24"
Stand-By Service Water	12 EMC-3 Stg.	NG-2273	*700	#231.5	12"

* DESIGN CONDITIONS
REDUCED FLOW

THE REDUCED FLOW AND SUBMERGENCE REFERENCED ABOVE SHOULD NOT REDUCE THE SERVICE LIFE OF YOUR PUMPS.

FURTHER REDUCTION IN SUBMERGENCE PERIODICALLY SHOULD NOT CAUSE CATASTROPHIC FAILURE BUT WILL REDUCE THE SERVICE LIFE SCIENTIFICALLY.

S-56429

SNC Ver.3.0

**See S-53448 for original
RHRSW pump
performance curves**



JOHNSTON PUMP COMPANY

Nuclear Service Division

September 18, 2000

Southern Nuclear Operating Company
Nuclear Administration
40 Inverness Center Parkway
Birmingham, Al 35202

Attention: Rozell Harris

This letter is to inform you of a possible condition with respect to the pump(s) supplied to you pursuant to Purchase Order Numbers shown on NCR Attachment which may require a report to the Nuclear Regulatory Commission under 10 C.F.R. Part 21. At this point we are continuing our evaluations, and we may determine that there is in fact no deviation from the applicable procurement specifications. Moreover, we have substantial experience and expertise with pumps of this type, and based on what we know to date it may very well be that this condition would not create a substantial safety hazard. Nevertheless, in accordance with 10 C.F.R. 21.21 (b), we request your assistance in making these determinations

The condition involves the hydraulic testing that was performed at our Test Laboratory. Test results suggest that the pump flow may have been overstated by a factor of up to 3.8%. We are continuing to evaluate the matter, but enclosed with this letter are corrected pump curves. Your cooperation is appreciated inasmuch as a definitive determination whether a Part 21 report is required cannot be made without more detailed knowledge of your system and license requirements. We would appreciate a response by 12 October 2000.

Please contact Mr. Tommy Craig, Quality Assurance Manager, with your response or any questions. We are committed to the highest quality standards, therefore we respectfully request your assistance in this matter.

Sincerely
Edward Hang

President Johnston Pump Company

Received
Oct 3, 2000

NONCONFORMANCE REPORT

NCR 2033

DESCRIPTION					PAGE 1 OF 2						
DATE	JOB NUMBER	SHOP ORDER NO.	PART NO.	PART NAME							
C /18/00	SEE ATTACHED	N/A	N/A	N/A							
MATERIAL TYPE		PATTERN NO.	LAST OPER. COMP.		QTY.						
N/A		N/A	N/A		SEE ATTACHED						
SUPPLIER		P.O. NO.	CORRECTIVE ACTION REQ'D.								
JOHNSTON PUMP COMPANY BROOKSHIRE, TEXAS		SEE ATTACHED	00-009								
LOCATION											
<input type="checkbox"/> MACHINE SHOP <input type="checkbox"/> RECEIVING <input type="checkbox"/> STORAGE <input type="checkbox"/> WELDING <input type="checkbox"/> HYDRO <input checked="" type="checkbox"/> SUPPLIER <input type="checkbox"/> PAINT <input type="checkbox"/> ASSEMBLY <input type="checkbox"/> SHIPPING <input type="checkbox"/> OTHER											
DETAILS OF NONCONFORMANCE:											
INCORRECT HYDRAULIC PERFORMANCE TEST RESULTS OF 3.8% ON FLOW, TO JOHNSTON PUMP PURCHASE ORDER REQUIREMENTS											
								INSPECTOR	DATE		
								<i>P. Craig</i>	9/18/00		
DISPOSITION											
INITIAL DISPOSITION: <input type="checkbox"/> REWORK <input type="checkbox"/> REPLACE <input type="checkbox"/> RTS <input checked="" type="checkbox"/> MRB											
PROJECT ENGINEER		DATE	QA ENGINEER		DATE						
<i>Man</i>		9-18-00	<i>P. Craig</i>		9/18/00						
MRB DISPOSITION: <input type="checkbox"/> USE-AS-IS <input type="checkbox"/> REPAIR <input type="checkbox"/> REWORK <input type="checkbox"/> SCRAP <input type="checkbox"/> RTS											
CORRECTED HYDRAULIC CURVES TO BE REVIEWED BY ENGINEERING AND COMPARED TO CUSTOMER SPECIFICATION AND/OR PURCHASE ORDER REQUIREMENTS.											
COMMENTS:											
1) CORRECTED CURVES TO THE LATEST DESIGN REQUIREMENTS, ACCEPT AS-IS. SEE CURVES ATTACHED.											
2) CORRECTED CURVES WHERE PERFORMANCE DOES NOT MEET DESIGN REQUIREMENTS. THESE CONDITIONS REQUIRE FINAL REVIEW AND CUSTOMER ACCEPTANCE AS-IS. SEE ATTACHED CURVES.											
NOTE: PLEASE ACKNOWLEDGE ACCEPTANCE BY SIGNATURE AND RETURN OF THIS NONCONFORMANCE.											
MANAGER OF ENGR.			QUALITY ASSUR. MGR.			CUSTOMER/ANI					
<i>Man</i> 9-18-00			<i>P. Craig</i> 9/18/00								
MANUFACTURING INSTRUCTIONS											
OPER. NO.	DEPT. NO.	WP	HP	OPERATION	PROC. NO.	TOOLING	A	B	C	MANF.	QC
005	ENG		A	REVIEW TEST CURVES							

NONCONFORMANCE ATTACHMENT

NCR- 2033

Page 2 of 2

Georgia Power Company

J/P Job Number	Customer Purchase Order Number	Customer Specification	Results	J/P Order No.	Comments
94JC1500S	60139820000	SS-2105-6	S	TE-11325	
94JC1501S	60139820000	SS-2105-6	U	TE-11347	
94JC1502S	60139820000	SS-2105-6	U	TE-11326	
94JC1503S	60178650000	SS-2105-6	S	TE-11605	
94JC1504S	60178650000	SS-2105-6	S	TE-11606	
96JC1500S	60244490000	SS-2105-6	U	TE-12935	
96JC1501S	60244490000	SS-2105-6	S	TE-13141	
96JC1503S	60270210000	SS-2105-6	U	TE-13241	
98JC1504S	6034852	SS-2105-6	U	TE-14341	
98JC1509S	6038116	SS-2105-6	U	TE-14868	
99JC1508S	6041879	SS-2105-6	U	TE-15559	

Result Legend:

S = Satisfactory to Customer Specification

U = Does not meet Customer Specification



Johnston Pump Company

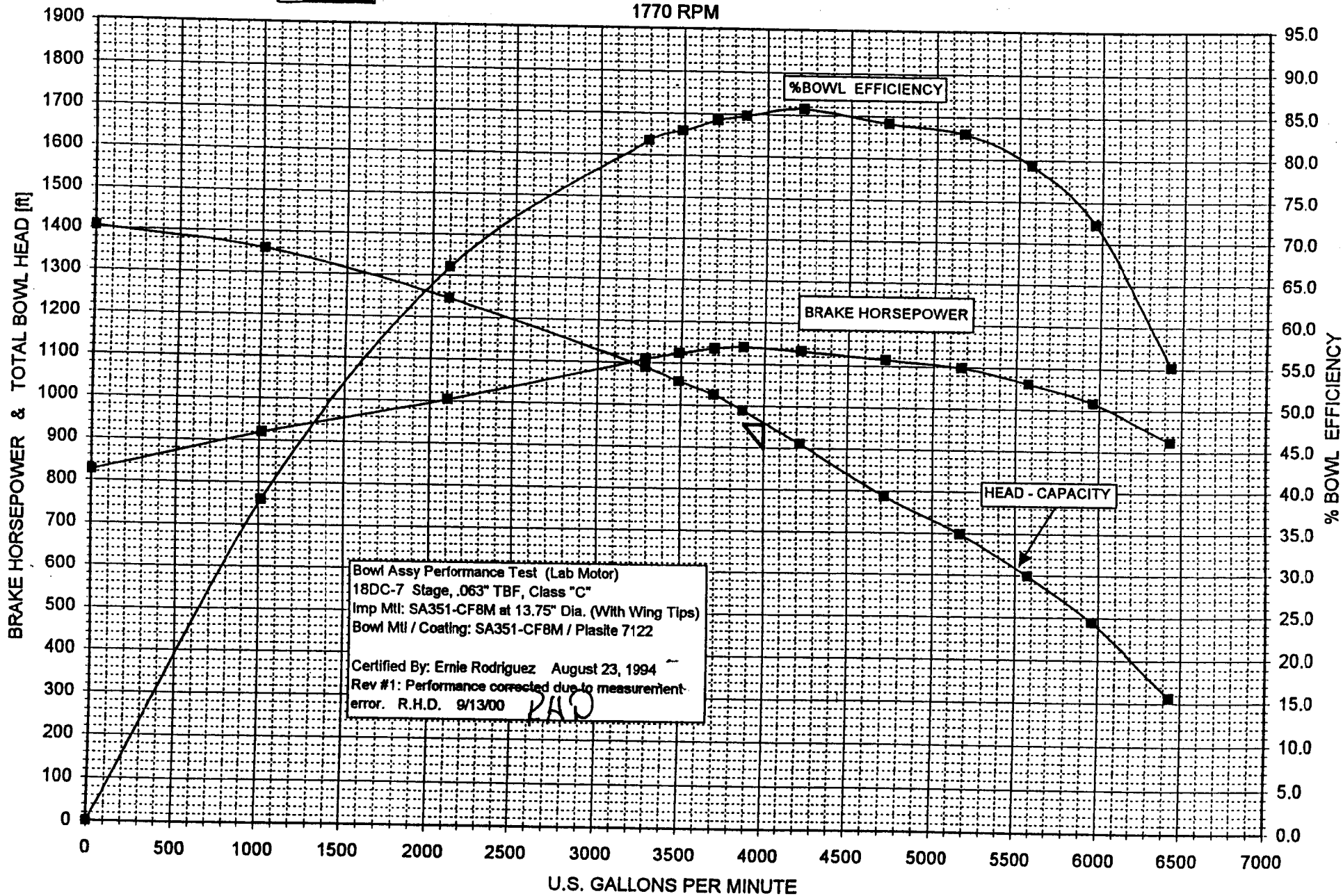
Brookshire, Texas

Customer: Georgia Power Company

Job # 94JC1500S S/N: SNRU 6504 POF#: 66303

TC#: 07365 Rev. # 1

1770 RPM



Bowl Assy Performance Test (Lab Motor)
18DC-7 Stage, .063" TBF, Class "C"
Imp Mtl: SA351-CF8M at 13.75" Dia. (With Wing Tips)
Bowl Mtl / Coating: SA351-CF8M / Plasite 7122

Certified By: Ernie Rodriguez August 23, 1994
Rev #1: Performance corrected due to measurement error. R.H.D. 9/13/00 *RAD*



Johnston Pump Company

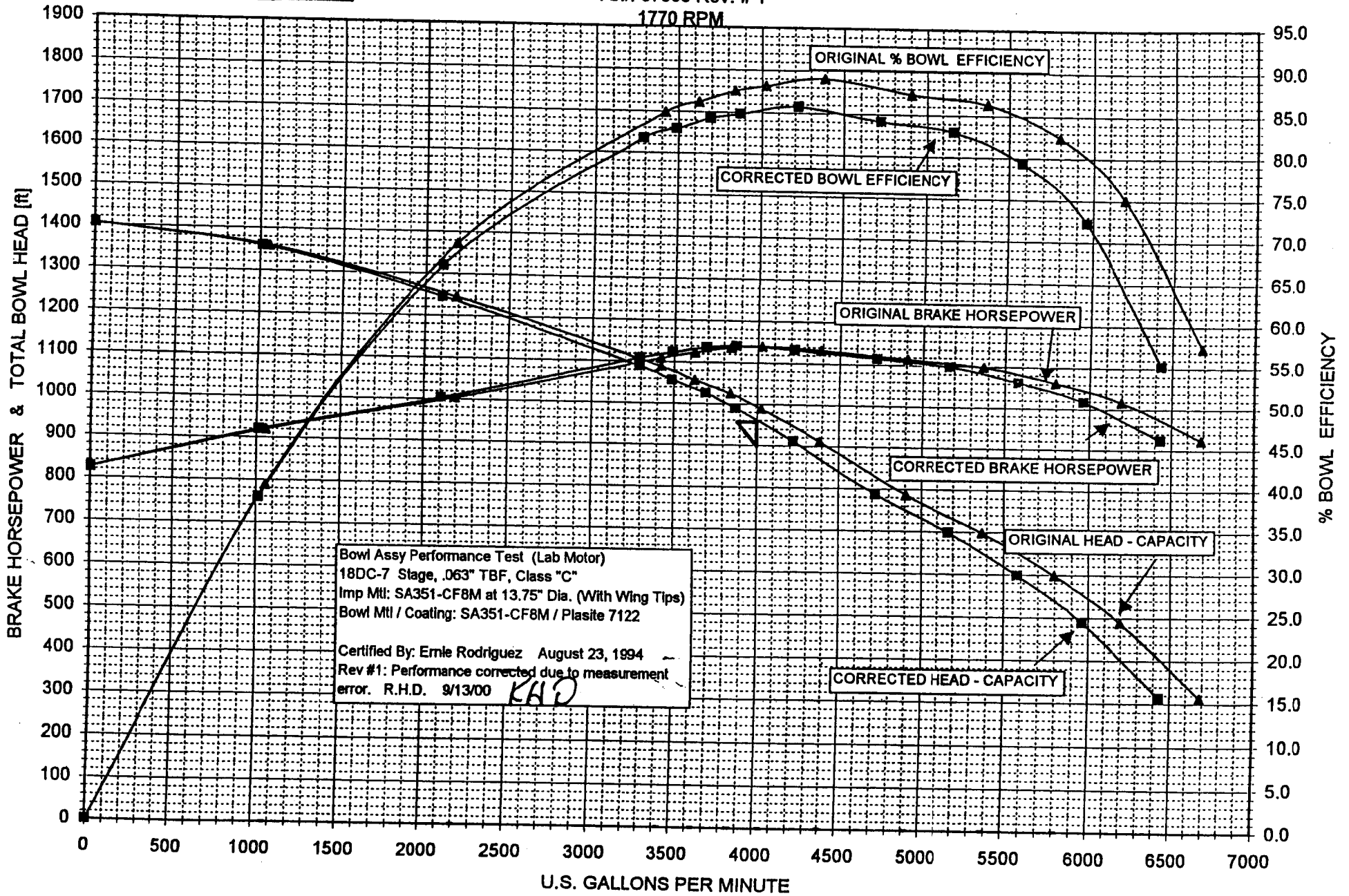
Brookshire, Texas

Customer: Georgia Power Company

Job # 94JC1500S S/N: SNRU 6504 POF#: 66303

TC#: 07365 Rev. # 1

1770 RPM



JOHNSTON PUMP COMPANY

PERFORMANCE TEST SET-UP AND TEST DATA SHEET

TC No.: TC-07365 Rev. 0
 Job Number: 94JC1500S
 Customer: Georgia Power Company
 Model / Stages: 18DC / 7
 Test Imp. Dia [in]: 13.75 (With Wing Tips)
 Job Imp. Dia [in]:
 TBF / CL: .063" / "C"
 Imp. Material: SA351-CF8M
 Bowl Material: SA351-CF8M
 Bowl Coating: Plasite 7122
 Suction: Bell - I.D. Coated
 Test D. Head: Lab 16" H.P. Discharge Head
 Test Col.: Lab Tapered Column Pipe
 Test Constants:
 Flow: 635.226
 Head: 2.31

Motor H.P. / R.P.M.: 150 / 880
 PH / CY / V: 3 / 60 / 480
 Motor S/N: 1118661
 Job OR Lab Motor: Lab
 Wattmeter No.: #2
 Test line Size [in]: 16"
 Orifice Diameter [in]: 7.0209
 Pressure Gage [psi]: 0 - 300
 Impeller Adjustment: Two Turns

Comments: Test the bowl assembly only using a test lab discharge head and column pipe at reduced speed with a test Lab Motor

Test Procedure #: JP-TP-0089 Rev #5

DESIGN @ R.P.M.: 1770
 G.P.M.: 4000
 Head [ft]: 955
 B.H.P.:
 Efficiency: 0.00
 Specific Gravity 1:
 Specific Gravity 2:
 Item No.:
 Fluid:
 Application:
 End User: Georgia Power Company
 Site:
 Tag:
 Take Shut - Off (Yes / No): YES

Serial Number: SNRU 6504
 Job Number: 94JC1500S
 Chattanooga P.O. Number: TE-11325
 Customer P.O. Number:
 POF Number: SJC 66303

Project Manager: _____

Water Temperature: 0

Pipe Dia. @ Gage [in]: 16
 Water To Floor [in]: 12
 Floor To Gauge [in]: 60
 psi tap on Bowl or head Bowl

Test Point #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Delta "P" [in-Hg]	10.1	0.7	3.0	7.3	8.2	9.2	10.1	12.0	15.0	18.0	21.0	24.0	28.0	0.0
Gallons Per Minute	2019	531	1100	1716	1819	1927	2019	2200	2460	2695	2911	3112	3361	0
Gage Reading [psi]	105.0	146.5	133.7	116.0	112.5	109.0	105.0	96.5	83.0	73.3	62.5	50.5	31.5	152.0
Head [ft]	242.6	338.4	308.8	268.0	259.9	251.8	242.6	222.9	191.7	169.3	144.4	116.7	72.8	351.1
Gage Elev. Corr. [ft]	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Velocity Head Loss [ft]	0.2	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.0
Total Head [ft]	248.7	344.4	314.9	274.1	266.0	257.9	248.7	229.1	198.0	175.6	150.7	123.0	79.2	357.1
Watt Reading [kW]	119.8	97.2	105.7	116.0	117.6	118.9	119.3	118.5	116.7	114.9	111.5	106.8	97.2	87.5
Input H.P.	160.6	130.3	141.7	155.5	157.6	159.4	159.9	158.8	156.4	154.0	149.5	143.2	130.3	117.3
Motor Efficiency	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
B.H.P.	144.5	117.3	127.5	139.9	141.9	143.4	143.9	143.0	140.8	138.6	134.5	128.8	117.3	105.6
Test R.P.M.:	888.0	891.0	890.0	888.0	888.0	888.0	888.0	888.0	888.0	888.0	889.0	889.0	890.0	882.0

ORIGINAL TEST DATA

Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per Minute:	4024	1056	2188	3421	3626	3840	4024	4386	4904	5372	5796	6196	6685	0
Total Discharge Head [ft]:	988.1	1359.2	1245.5	1088.9	1056.8	1024.8	988.1	910.2	786.5	697.7	597.4	487.7	313.3	1406.1
B.H.P. @ 1.0 Sp.Gr.:	1144.6	919.3	1003.1	1108.3	1123.5	1136.0	1139.8	1132.1	1115.0	1097.8	1061.7	1016.9	922.4	824.8
B.H.P. @ Sp.Gr. 1:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bowl Efficiency:	0.877	0.394	0.686	0.849	0.861	0.875	0.881	0.891	0.874	0.862	0.824	0.750	0.573	0.000

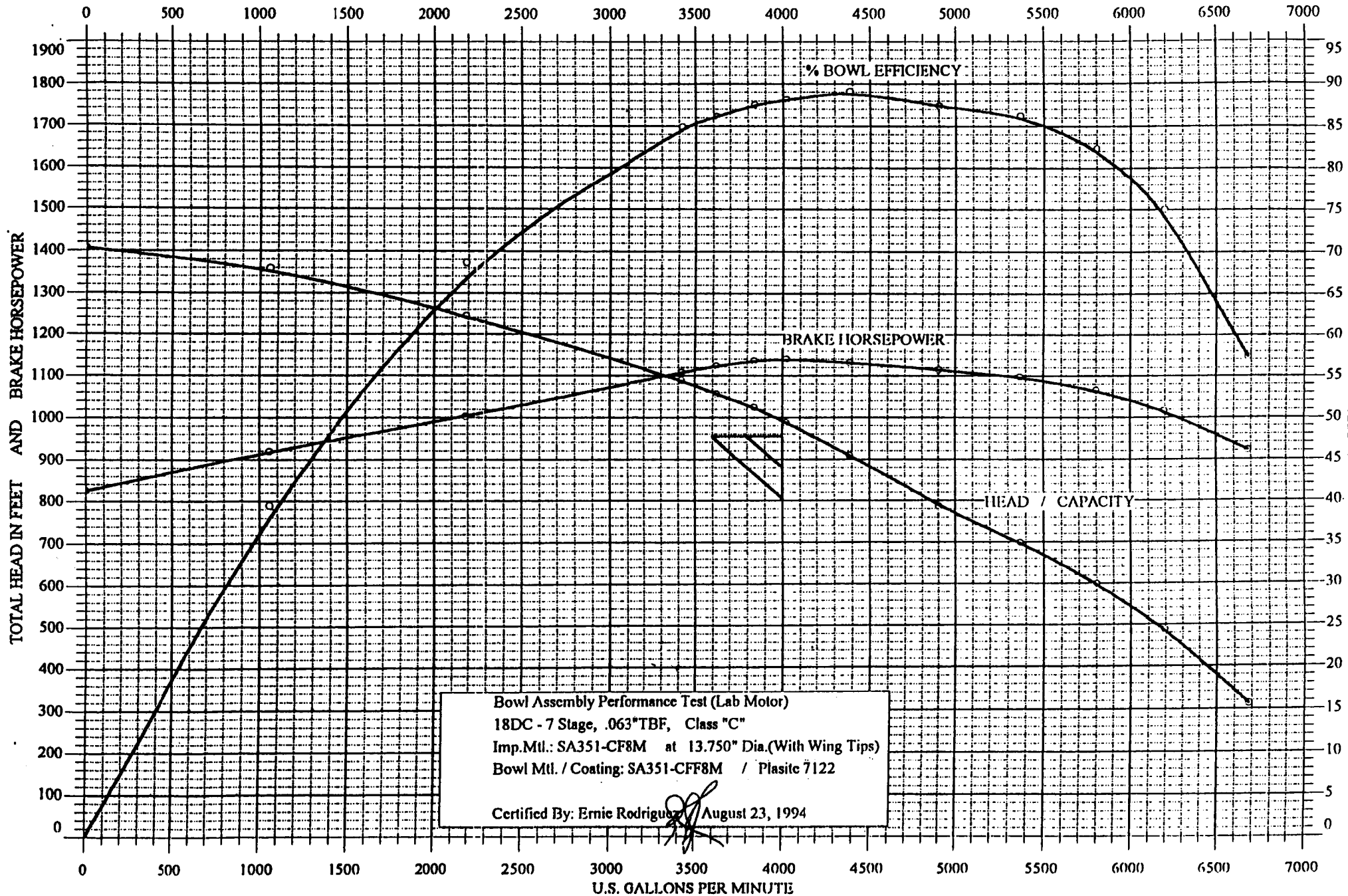
NEW DATA BASED ON FLOW CORRECTION

Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per Minute:	3873	1016	2106	3293	3490	3696	3873	4221	4720	5170	5578	5963	6434	0
Total Discharge Head [ft]:	988.1	1359.2	1245.5	1088.9	1056.8	1024.8	988.1	910.2	786.5	697.7	597.4	487.7	313.3	1406.1
B.H.P. @ 1.0 Sp.Gr.:	1144.6	919.3	1003.1	1108.3	1123.5	1136.0	1139.8	1132.1	1115.0	1097.8	1061.7	1016.9	922.4	824.8
B.H.P. @ Sp.Gr. 1:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bowl Efficiency:	0.844	0.379	0.660	0.817	0.829	0.842	0.848	0.857	0.841	0.830	0.793	0.722	0.552	0.000

Tested By: Darryl Clark Jr.
 Witnessed By: _____

Certified By: Ernie Rodriguez
 Date of Test: August 23, 1994

Johnston Pump Company
Brookshire, Texas
Customer: Georgia Power Company
Job#: 94JC1500S, S/N: SNRU 6504, POF66303, TC#: 07365 Rev.#0
1770 RPM



JOHNSTON PUMP COMPANY

PERFORMANCE TEST SET-UP AND TEST DATA SHEET

No.: TC-07385 Rev. #:0
Number: 94JC1500S
Customer: Georgia Power Company
Model / Stages: 18DC / 7
Dia.: 13.750 (With "Wing Tips")
Temp / CL.: .063" / "C"
Imp. Material: SA351-CF8M
Bowl Material: SA351-CF8M
Bowl Coating: Plaste 7122
Suction: Bell - I.D. Coated
Test D. Head: Lab 18" H.P. Discharge Head
Test Col.: Lab Tapered Column Pipe

Motor H.P. / R.P.M.: 150 / 880
PH / CY / V: 3 / 60 / 480
Motor S / N:
Job OR Lab Motor: LAB
Wattmeter No.: #2
Orifice Diameter: 7.0209
Test line Size: 18
Pressure Gage: 300
Impeller Adjustment: Two Turns

Comments: Test the bowl assembly only using a test lab discharge head and column pipe at reduced speed with a test lab motor.

Test Constants:
Flow: 635.226
Head: 2.31
Pipe Dia. @ Gage: 16.000
Motor Eff.:
100 %:
75 %:
50 %:

DESIGN @ R.P.M.: 1770
G.P.M.: 4000
Head: 955.00
B.H.P.:
Efficiency:
Specific Gravity 1: 1.00
Specific Gravity 2: 0.00
Item No.:
Fluid:
Application:
End User: Georgia Power Company
Site:

Test Procedure #: JP-TP-0069 Rev.#5

Serial #: SNRU 6504

Job #: 94JC1500S

POF #: 66303

Chattanooga P.O. #: TE-11325

Water To Floor: 12 INCHES
Floor To Gauge: 60 INCHES

Take Shut - Off (Yes / No): YES

Test Point #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Delta "P"	10.10	0.70	3.00	7.30	8.20	9.20	10.10	12.00	15.00	18.00	21.00	24.00	28.00	0.00
Flow Rate Per Minute	2019	531	1100	1716	1819	1927	2019	2200	2460	2695	2911	3112	3361	0
Gage Reading	105.00	146.50	133.70	116.00	112.50	109.00	105.00	96.50	83.00	73.30	62.50	50.50	31.50	152.00
Feet of Head	242.55	338.42	308.85	267.96	259.88	251.79	242.55	222.92	191.73	169.32	144.38	116.66	72.77	351.12
Gage Elev. Corr.	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Velocity Head Loss	0.16	0.01	0.05	0.12	0.13	0.15	0.16	0.19	0.24	0.29	0.33	0.38	0.45	0.00
Total Head	248.71	344.43	314.89	274.08	266.01	257.94	248.71	229.11	197.97	175.61	150.71	123.04	79.21	357.12
Watt Reading:	119.80	97.20	105.70	116.00	117.60	118.90	119.30	118.50	116.70	114.90	111.50	106.80	97.20	87.50
Input H.P.	160.59	130.29	141.69	155.50	157.64	159.38	159.92	158.85	156.43	154.02	149.46	143.16	130.29	117.29
Motor Efficiency	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
B.H.P.	144.53	117.27	127.52	139.95	141.88	143.45	143.93	142.96	140.79	138.62	134.52	128.85	117.27	105.56
Test R.P.M.:	888	891	890	888	888	888	888	888	888	888	888	888	890	892
Volts: (Ref. Only)														
Amps: (Ref. Only)														
Vibration in Mils:														
Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per Minute:	4024	1056	2188	3421	3626	3840	4024	4386	4904	5372	5802	6196	6685	0
Total Head in Feet:	988.1	1359.2	1245.5	1088.9	1056.8	1024.8	988.1	910.2	786.5	697.7	598.8	487.7	313.3	1406.1
B.H.P. @ 1.0 Sp.Gr.:	1144.6	919.3	1003.1	1108.3	1123.5	1136.0	1139.8	1132.1	1115.0	1097.8	1065.3	1016.9	922.4	824.8
B.H.P. @ Sp.Gr.1:	1144.6	919.3	1003.1	1108.3	1123.5	1136.0	1139.8	1132.1	1115.0	1097.8	1065.3	1016.9	922.4	824.8
B.H.P. @ Sp.Gr.2:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Efficiency:	0.877	0.394	0.686	0.849	0.861	0.875	0.881	0.891	0.874	0.862	0.824	0.750	0.573	0.000

Tested By: Darryl Ckark Jr.

Certified By: Ernie Rodriguez

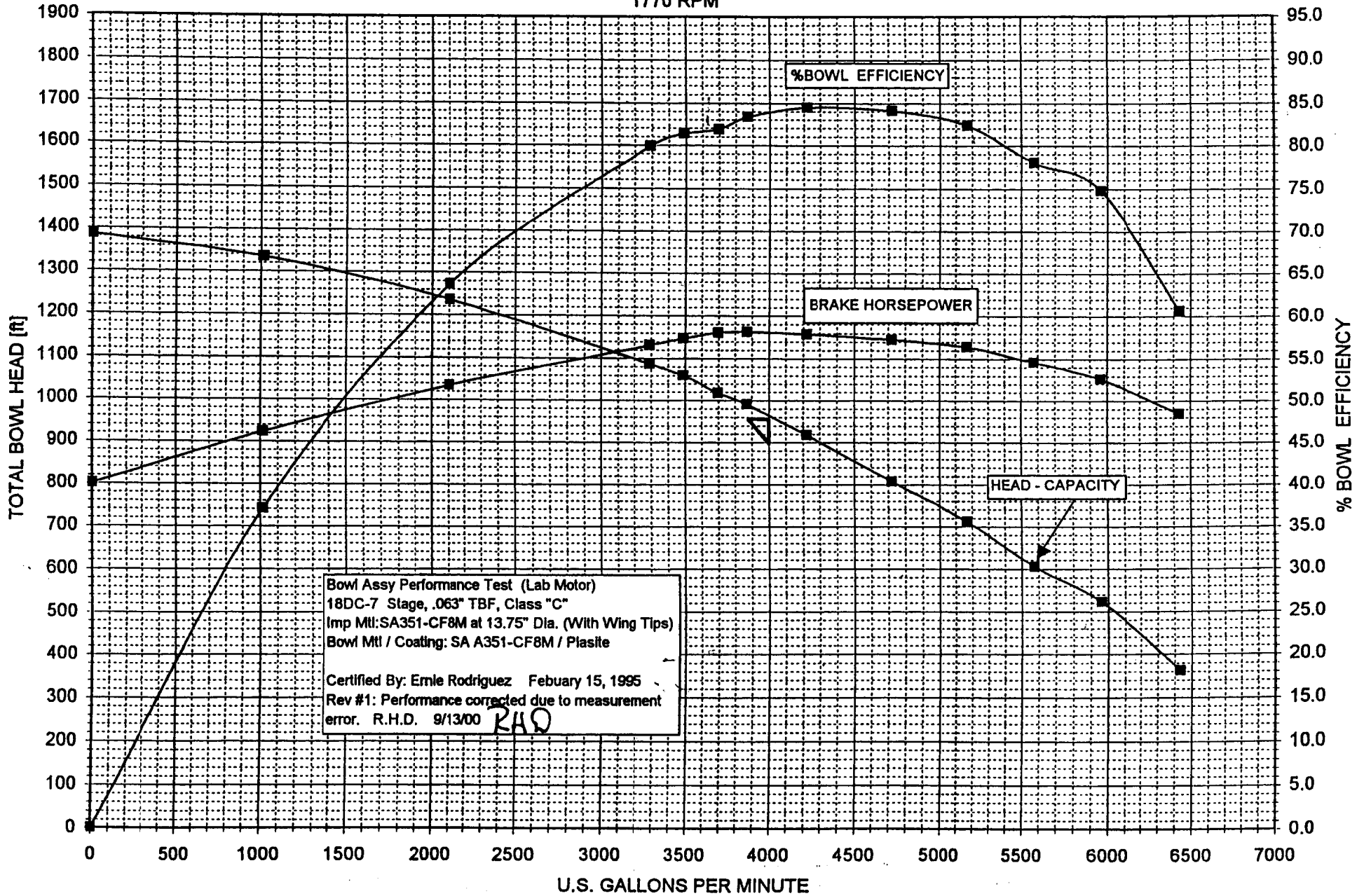
Witnessed By: _____

Date Of Test: August 23, 1994



Johnston Pump Company
Brookshire, Texas

Customer: Georgia Power Company
Job # 94JC1503S S/N: SNRU 6519 POF#: 66328
TC#: 07495 Rev. # 1
1770 RPM



Bowl Assy Performance Test (Lab Motor)
18DC-7 Stage, .063" TBF, Class "C"
Imp Mtl: SA351-CF8M at 13.75" Dia. (With Wing Tips)
Bowl Mtl / Coating: SA A351-CF8M / Plasite
Certified By: Ernie Rodriguez February 15, 1995
Rev #1: Performance corrected due to measurement error. R.H.D. 9/13/00 *RHD*



Johnston Pump Company

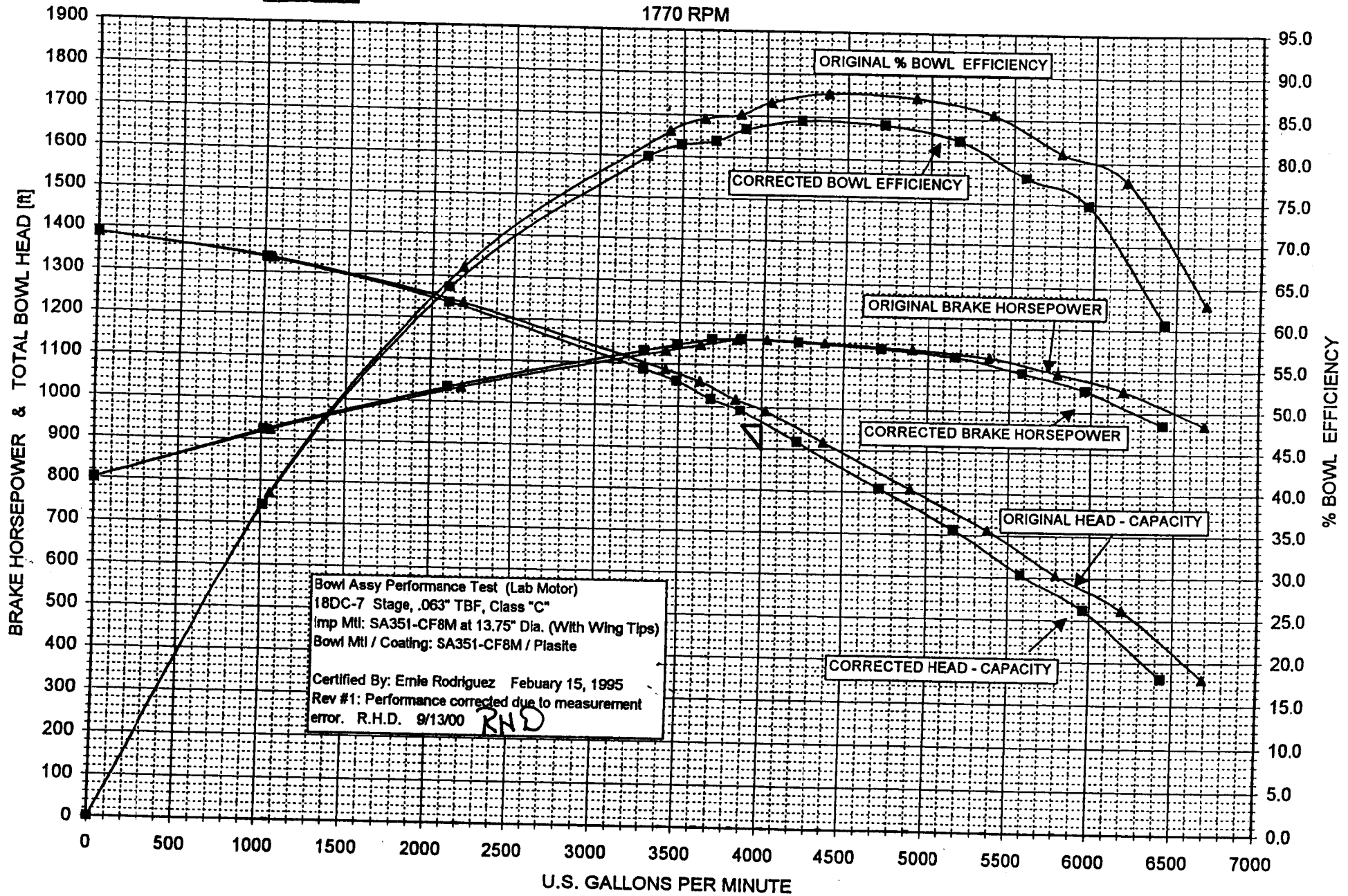
Brookshire, Texas

Customer: Georgia Power Company

Job # 94JC1503S S/N: SNRU 6519 POF#: 66328

TC#: 07495 Rev. # 1

1770 RPM



Johnston Pump Company

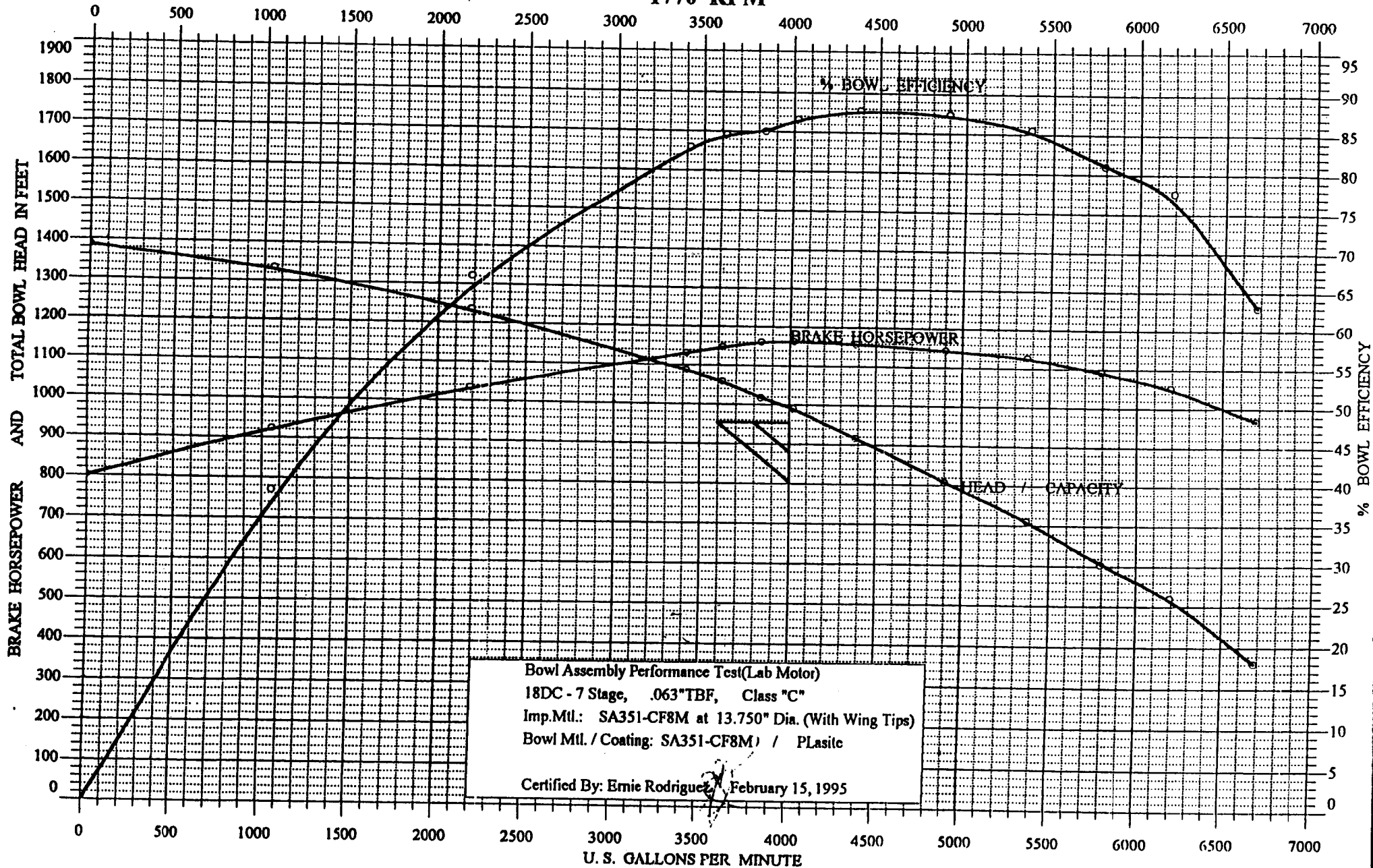
Brookshire, Texas

Customer: Georgia Power Company

Job #: 94JC1503S, S/N: SNRU-6519, POF66328

TC#:07495 Rev. #:0

1770 RPM



JOHNSTON PUMP COMPANY

PERFORMANCE TEST SET-UP AND TEST DATA SHEET

TC No.: TC-07495 Rev. #:0
 Job Number: 94JC1503S
 Customer: Georgia Power Company
 Model / Stages: 18DC / 7
 Impeller: 13.750 (With "Wing Tips")
 TB: .063" / °C
 Imp. Material: SA351-CF8M
 Bowl Material: SA351-CF8M
 Bowl Coating: Plaste 7122
 Suction: Bell - I.D. Coated
 Test D. Head: Lab 16" H.P. Discharge Head
 Test Col.: Lab Tapered Column Pipe

Motor H.P. / R.P.M.: 150 / 880
 PH / CY / V: 3 / 60 / 480
 Motor S / N:
 Job OR Lab Motor: LAB
 Wattmeter No.: #2
 Orifice Diameter: 7.0209
 Test line Size: 16
 Pressure Gage: 300
 Impeller Adjustment: Two Turns

Comments: Test the bowl assembly only using a test lab discharge head and column pipe at reduced speed with a test lab motor.

Test Constants:
 Flow: 635.226
 Head: 2.31

DESIGN @ R.P.M.: 1770
 G.P.M.: 4000
 Head: 955.00
 B.H.P.:
 Efficiency:
 Specific Gravity 1: 1.00
 Specific Gravity 2: 0.00
 Item No.:
 Fluid:
 Application:
 End User: Georgia Power Company
 Site:

Test Procedure #: JP-TP-0069 Rev.#5

Serial #: SNRU-6519

Job #: 94JC1503S

POF #: 66328

Chattanooga P.O. #: TE-11605

Pipe Dia. @ Gage: 18.000

Motor Eff. :
 100 %:
 75 %:
 50 %:

Water To Floor: 6 INCHES Take Shut - Off (Yes/No): **YES**
 Floor To Gauge: 60 INCHES

Test Point #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Delta P*	10.10	0.70	3.00	7.30	8.20	9.20	10.10	12.00	15.00	18.00	21.00	24.00	28.00	0.00
Gallons Per Minute	2019	531	1100	1716	1819	1927	2019	2200	2460	2695	2911	3112	3361	0
Gage Reading	105.50	144.00	132.50	116.00	113.00	108.50	105.50	87.50	85.50	75.00	63.50	54.50	37.00	150.00
Feet of Head	243.71	332.64	306.08	267.96	261.03	250.64	243.71	225.23	197.51	173.25	146.69	125.90	85.47	348.50
Gage Elev. Corr.	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
Velocity Head Loss	0.16	0.01	0.05	0.12	0.13	0.15	0.16	0.19	0.24	0.29	0.33	0.38	0.45	0.00
Total Head	249.37	338.15	311.62	273.58	266.66	256.28	249.37	230.92	203.24	179.04	152.52	131.78	91.42	352.00
Watt Reading:	121.70	97.60	108.60	118.40	120.10	121.50	121.70	121.20	119.80	118.10	114.70	110.50	102.10	85.00
Input H.P.	163.14	130.83	145.58	158.71	160.99	162.87	163.14	162.47	160.59	158.31	153.75	148.12	136.86	113.94
Motor Efficiency	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
B.H.P.	146.62	117.75	131.02	142.84	144.89	146.58	146.62	146.22	144.53	142.48	138.38	133.31	123.18	102.55
Test R.P.M.:	888	891	889	888	888	888	888	888	888	888	889	889	890	892
Volts: (Ref. Only)														
Amps: (Ref. Only):														
Vibration in Mills:														
Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per Minute:	4024	1056	2191	3421	3626	3840	4024	4386	4904	5372	5796	6196	6685	0
Total Head in Feet:	990.7	1334.4	1235.9	1086.9	1059.4	1018.2	990.7	917.4	807.5	711.3	604.6	522.4	361.6	1386.0
B.H.P. @ 1.0 Sp.Gr.:	1162.7	923.1	1034.1	1131.2	1147.4	1160.8	1162.7	1157.9	1144.6	1128.3	1092.1	1052.2	968.9	801.2
B.H.P. @ Sp.Gr.1:	1162.7	923.1	1034.1	1131.2	1147.4	1160.8	1162.7	1157.9	1144.6	1128.3	1092.1	1052.2	968.9	801.2
B.H.P. @ Sp.Gr.2:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Efficiency:	0.866	0.385	0.661	0.830	0.845	0.851	0.866	0.878	0.874	0.855	0.810	0.777	0.630	0.000

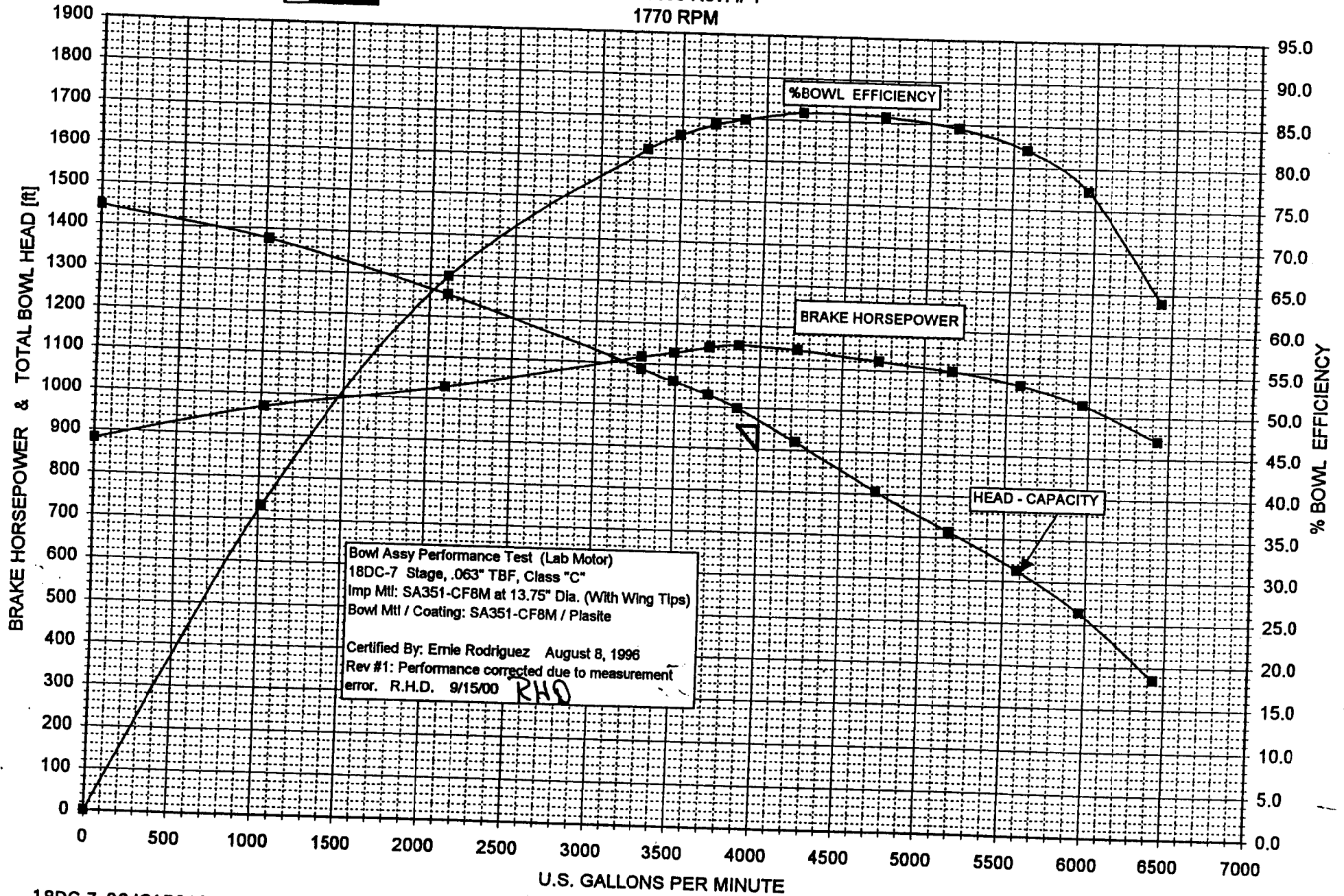
Tested By: Darryl Clark Jr.
 Witnessed By: _____

Certified By: Ernie Rodriguez
 Date Of Test: February 15, 1995



Johnston Pump Company
Brooks, Texas

Customer: Georgia Power Company
Job # 94JG1501S S/N: NRW 6525 POF#: 66554
96JC1501S TC#: 07890 Rev. # 1
1770 RPM



Bowl Assy Performance Test (Lab Motor)
18DC-7 Stage, .063" TBF, Class "C"
Imp Mtl: SA351-CF8M at 13.75" Dia. (With Wing Tips)
Bowl Mtl / Coating: SA351-CF8M / Plasite

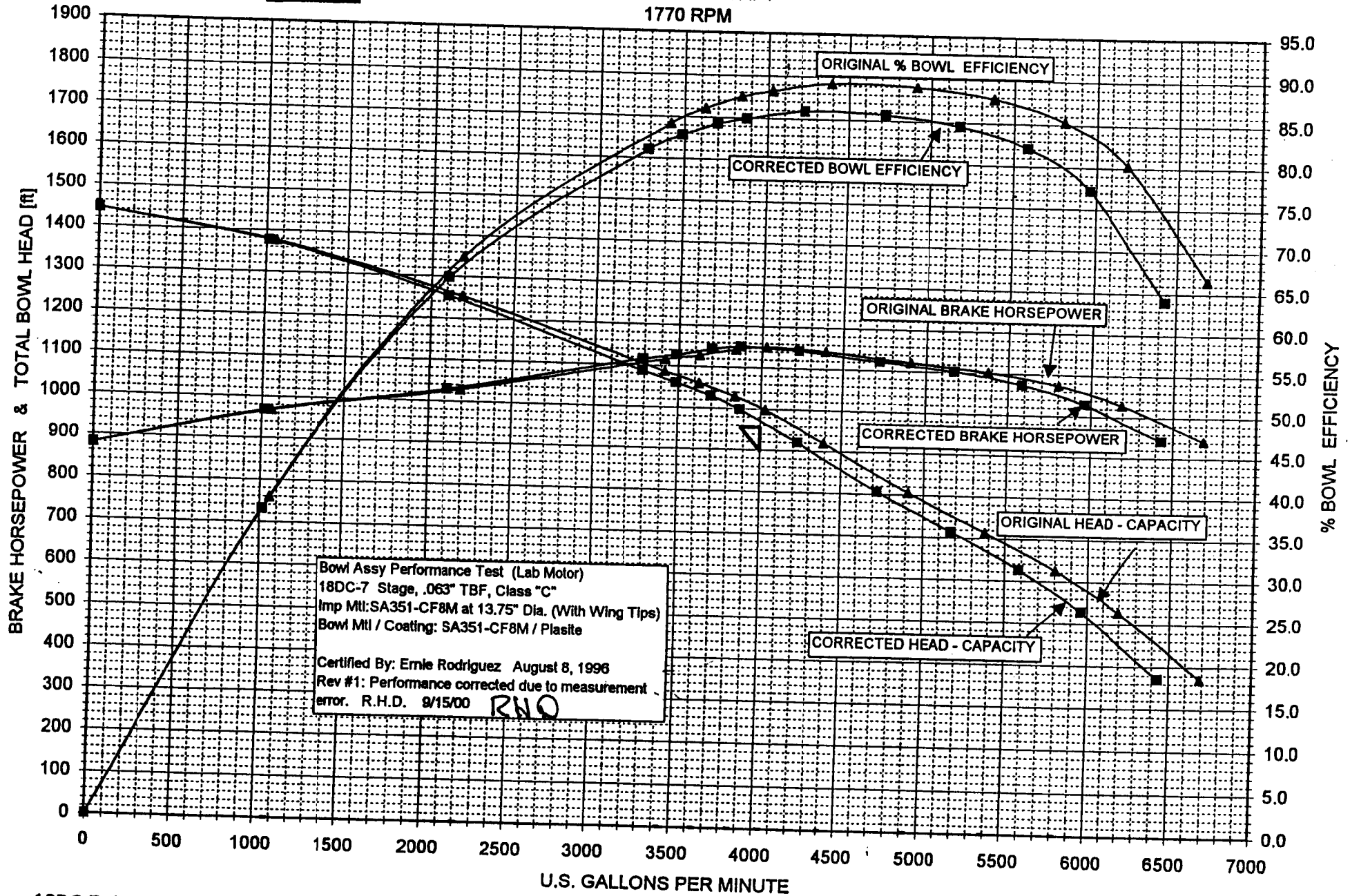
Certified By: Ernie Rodriguez August 8, 1996
Rev #1: Performance corrected due to measurement error. R.H.D. 9/15/00 RHO



Johnston Pump Company

Brookville, Texas

Customer: Georgia Power Company
Job # 94JC1501S S/N: NRW 6525 POF#: 66554
94JC1501S TC#: 07890 Rev. # 1
1770 RPM



Bowl Assy Performance Test (Lab Motor)
18DC-7 Stage, .063" TBF, Class "C"
Imp Mtl: SA351-CF8M at 13.75" Dia. (With Wing Tips)
Bowl Mtl / Coating: SA351-CF8M / Plasite

Certified By: Ernie Rodriguez August 8, 1996
Rev #1: Performance corrected due to measurement error. R.H.D. 9/15/00 RNO

JOHNSTON PUMP COMPANY

PERFORMANCE TEST SET-UP AND TEST DATA SHEET

TC No.: TC-07890 Rev. 1
 Job Number: 96JC1501S
 Customer: Georgia Power Company
 Model / Stages: 18DC / 7
 Test Imp. Dia [in]: 13.75 (With Wing Tips)
 Job Imp. Dia [in]:
 TBF / CL: .063" / "C"
 Imp. Material: SA 351-CF8M
 Bowl Material: SA 351-CF8M
 Bowl Coating: Plasite 7122
 Suction: Bell - I.D. Coated
 Test D. Head: Lab 16" H.P. Discharge Head
 Test Col.: Lab Tapered Column Pipe
 Test Constants:
 Flow: 635.226
 Head: 2.31

Motor H.P. / R.P.M.: 150 / 880
 PH / CY / V: 3 / 60 / 480
 Motor S / N: 1118661
 Job OR Lab Motor: Lab
 Wattmeter No.: #2
 Test line Size [in]: 16"
 Orifice Diameter [in]: 7.0209
 Pressure Gage [psi]: 0 - 300
 Impeller Adjustment: Two Turns

Comments: Test the bowl assembly only using a test lab discharge head and column pipe at reduced speed with a test Lab Motor

Test Procedure #: JP-TP-0059 Rev #8

DESIGN @ R.P.M.: 1770
 G.P.M.: 4000
 Head [ft]: 955
 B.H.P.:
 Efficiency: 0.00
 Specific Gravity 1:
 Specific Gravity 2:
 Item No.:
 Fluid:
 Application:
 End User: Georgia Power Company
 Site:
 Tag:
 Take Shut - Off (Yes / No): YES

Serial Number: NRW-6525
 Job Number: 96JC1501S
 Chattanooga P.O. Number: TE-13141
 Customer P.O. Number:
 POF Number: SJC 66554

Pipe Dia. @ Gage [in]: 16
 Water To Floor [in]: 6
 Floor To Gauge [in]: 60

psi tap on Bowl or head Bowl

Project Manager: _____

Water Temperature: 0

Test Point #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Delta "P" [inHg]	10.1	0.7	3.0	7.3	8.2	9.2	10.1	12.0	15.0	18.0	21.0	24.0	28.0	0.0
Gallons Per Minute	2019	531	1100	1716	1819	1927	2019	2200	2460	2695	2911	3112	3361	0
Gage Reading [psi]	108.5	148.3	134.5	116.0	113.0	109.5	106.0	97.5	85.0	75.0	65.5	55.0	38.0	156.0
Head [ft]	246.0	342.6	310.7	266.0	261.0	252.9	244.9	225.2	196.4	173.3	151.3	127.1	87.8	360.4
Gage Elev. Corr. [ft]	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
Velocity Head Loss [ft]	0.2	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.0
Total Head [ft]	251.7	348.1	316.2	273.6	266.7	258.6	250.5	230.9	202.1	179.0	157.1	132.9	93.7	365.9
Watt Reading [KW]	120.5	102.0	108.0	116.8	118.0	119.2	120.0	119.2	116.9	115.0	112.3	108.0	99.2	93.1
Input H.P.	161.5	136.7	144.8	156.6	158.2	159.8	160.9	159.8	156.7	154.2	150.5	144.8	133.0	124.8
Motor Efficiency	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
B.H.P.	145.4	123.1	130.3	140.9	142.4	143.8	144.8	143.8	141.0	138.7	135.5	130.3	119.7	112.3
Test R.P.M.:	888.0	890.0	889.0	888.0	888.0	887.0	887.0	887.0	887.0	887.0	888.0	889.0	890.0	891.0

ORIGINAL TEST DATA														
Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per Minute:	4024	1057	2191	3421	3626	3845	4028	4391	4909	5378	5802	6196	6685	0
Total Discharge Head [ft]:	999.9	1376.7	1253.6	1086.9	1059.4	1029.7	997.6	919.5	804.7	712.9	624.3	527.0	370.7	1443.8
B.H.P. @ 1.0 Sp.Gr.:	1151.3	968.0	1028.4	1115.9	1127.4	1142.7	1150.4	1142.7	1120.6	1102.4	1072.9	1028.4	941.4	880.5
B.H.P. @ Sp.Gr.1:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bowl Efficiency:	0.883	0.380	0.674	0.841	0.860	0.875	0.882	0.892	0.890	0.878	0.853	0.802	0.665	0.000

NEW DATA BASED ON FLOW CORRECTION														
Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per Minute:	3873	1017	2108	3293	3490	3700	3877	4228	4725	5176	5584	5983	6434	0
Total Discharge Head [ft]:	999.9	1376.7	1253.6	1086.9	1059.4	1029.7	997.6	919.5	804.7	712.9	624.3	527.0	370.7	1443.8
B.H.P. @ 1.0 Sp.Gr.:	1151.3	968.0	1028.4	1115.9	1127.4	1142.7	1150.4	1142.7	1120.6	1102.4	1072.9	1028.4	941.4	880.5
B.H.P. @ Sp.Gr.1:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bowl Efficiency:	0.849	0.365	0.649	0.810	0.828	0.842	0.849	0.859	0.857	0.845	0.821	0.772	0.640	0.000

Tested By: Ray Dumesnil

Certified By: Ernie Rodriguez

Witnessed By: _____

Date of Test: August 8, 1996

Rev. #1: Performance corrected due to measurement error. R.H.D. 9/15/00

RHO

JOHNSTON PUMP COMPANY

PERFORMANCE TEST SET-UP AND TEST DATA SHEET

File Name = 66554

No.: TC-07890 Rev. #:0
 Job Number: 96JC1501S
 Customer: Georgia Power Company
 Model / Stages: 18DC / 7
 Imp. Dia.: ##### (With "Wing Tips")
 TBF / CL.: .063" / "C"
 Imp. Material: SA351-CF8M
 Bowl Material: SA351-CF8M
 Bowl Coating: Plasite 7122
 Suction: Bell - I.D. Coated
 Test D. Head: Lab 16" H.P. Discharge Head
 Test Col.: Lab Tapered Column Pipe

Motor H.P. / R.P.M.: 150 / 880
 PH / CY / V: 3 / 60 / 480
 Motor S / N:
 Job OR Lab Motor: LAB
 Wattmeter No.: #2
 Orifice Diameter: 7.021
 Test line Size: 16
 Pressure Gage: 300
 Impeller Adjustment: Two Turns

Comm Test the bowl assembly only us
 test lab discharge head and colu
 pipe at reduced speed with a tes
 motor.

Test Constants:
 Flow: 635.2
 Head: 2.31

Pipe Dia. @ G####

Motor Eff. :
 100 %:
 75 %:
 50 %:

DESIGN @ R.P.M.: 1770
 G.P.M.: 4000
 Head: #####
 B.H.P.:
 Efficiency:
 Specific Gravity 1: 1.00
 Specific Gravity 2: 0.00
 Item No.:
 Fluid:
 Application:
 End Us Georgia Power Company
 Site:

Test Procedure #: JP-TP-0069 Rev.#

Serial # NRW-6525

Job #: 96JC1501S

POF #: ####

Chattanooga P. TE-13141

Water To Flo 6 INCHES
 To Gau 60 INCHES

Take Shut - Off (Yes **YES**)

Test Point #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Delta "P"	10.10	0.70	3.00	7.30	8.20	9.20	10.10	12.00	15.00	18.00	21.00	24.00	28.00	0.00
Gallons Per M	2019	531	1100	1718	1819	1927	2019	2200	2460	2695	2911	3112	3361	0
Gage Reading	#####	#####	#####	#####	#####	#####	#####	97.50	85.00	75.00	65.50	55.00	38.00	#####
Feet of Head	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	87.78	#####
Gage Elev. Cor	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
Velocity Head	0.16	0.01	0.05	0.12	0.13	0.15	0.16	0.19	0.24	0.29	0.33	0.38	0.45	0.00
Total Head	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	93.73	#####
Watt Reading	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	99.20	93.10
Input H.P.	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Motor Efficiency	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
B.H.P.	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Test R.P.M.:	888	890	889	888	888	887	887	887	887	887	888	889	890	891
Volts (Ref. Only)														
Amps (Ref. Only)														
Vibration in Mills:														
Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per M	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	0
Total Head in	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
B.H.P. @ 1.0 S	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
@ Sp.G	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
B.H.P. @ Sp.G	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Efficiency:	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####

Tested By : Ray Dumesnil

Certified By : Ernie Rodriguez



Johnston Pump Company

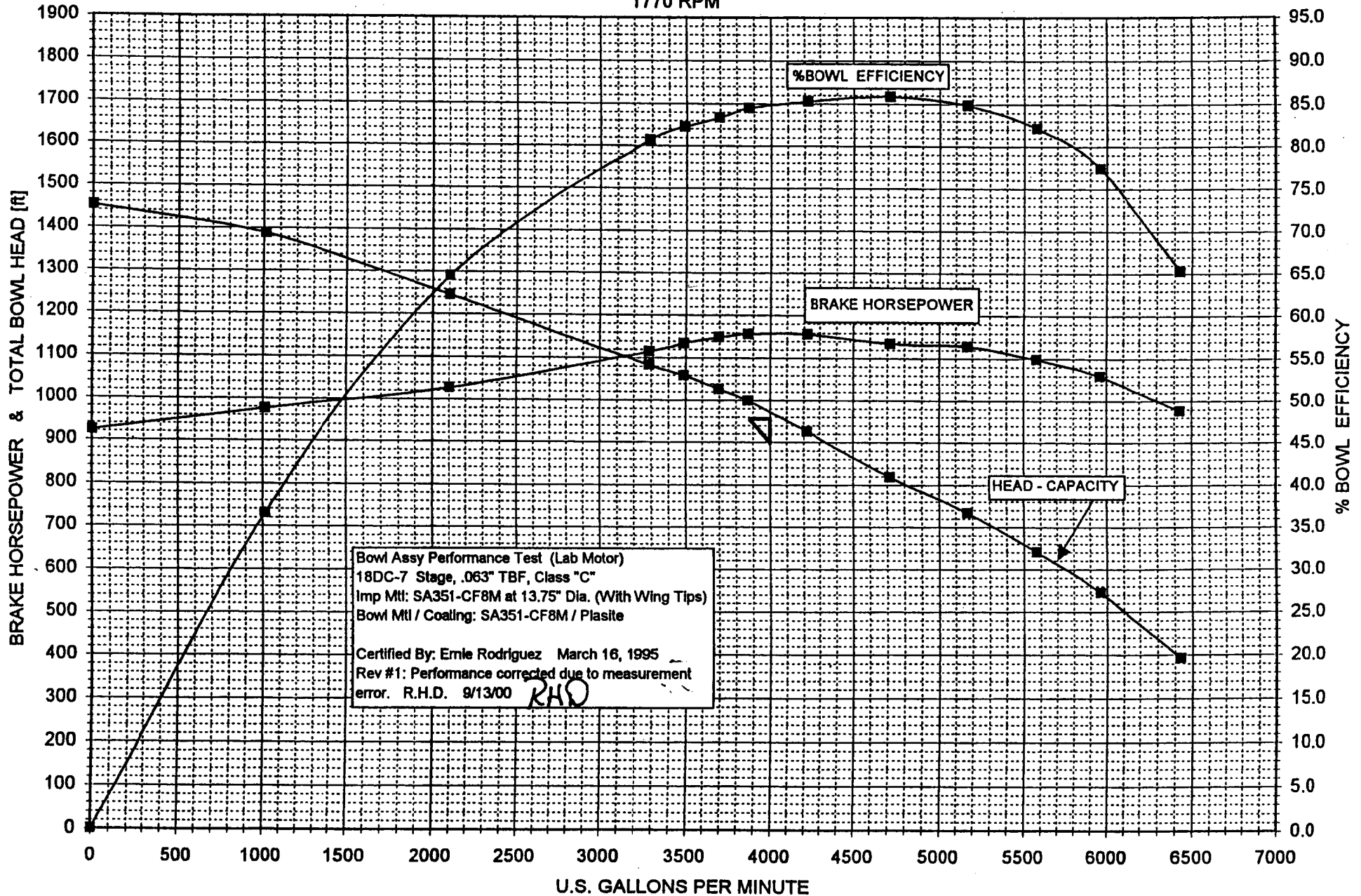
Brookshire, Texas

Customer: Georgia Power Company

Job # 94JC1504S S/N: NRX 6534 POF#: 66329

TC#: 07505 Rev. # 1

1770 RPM



Bowl Assy Performance Test (Lab Motor)
18DC-7 Stage, .063" TBF, Class "C"
Imp Mtl: SA351-CF8M at 13.75" Dia. (With Wing Tips)
Bowl Mtl / Coating: SA351-CF8M / Plasite
Certified By: Emile Rodriguez March 16, 1995
Rev #1: Performance corrected due to measurement error. R.H.D. 9/13/00 RHD



Johnston Pump Company

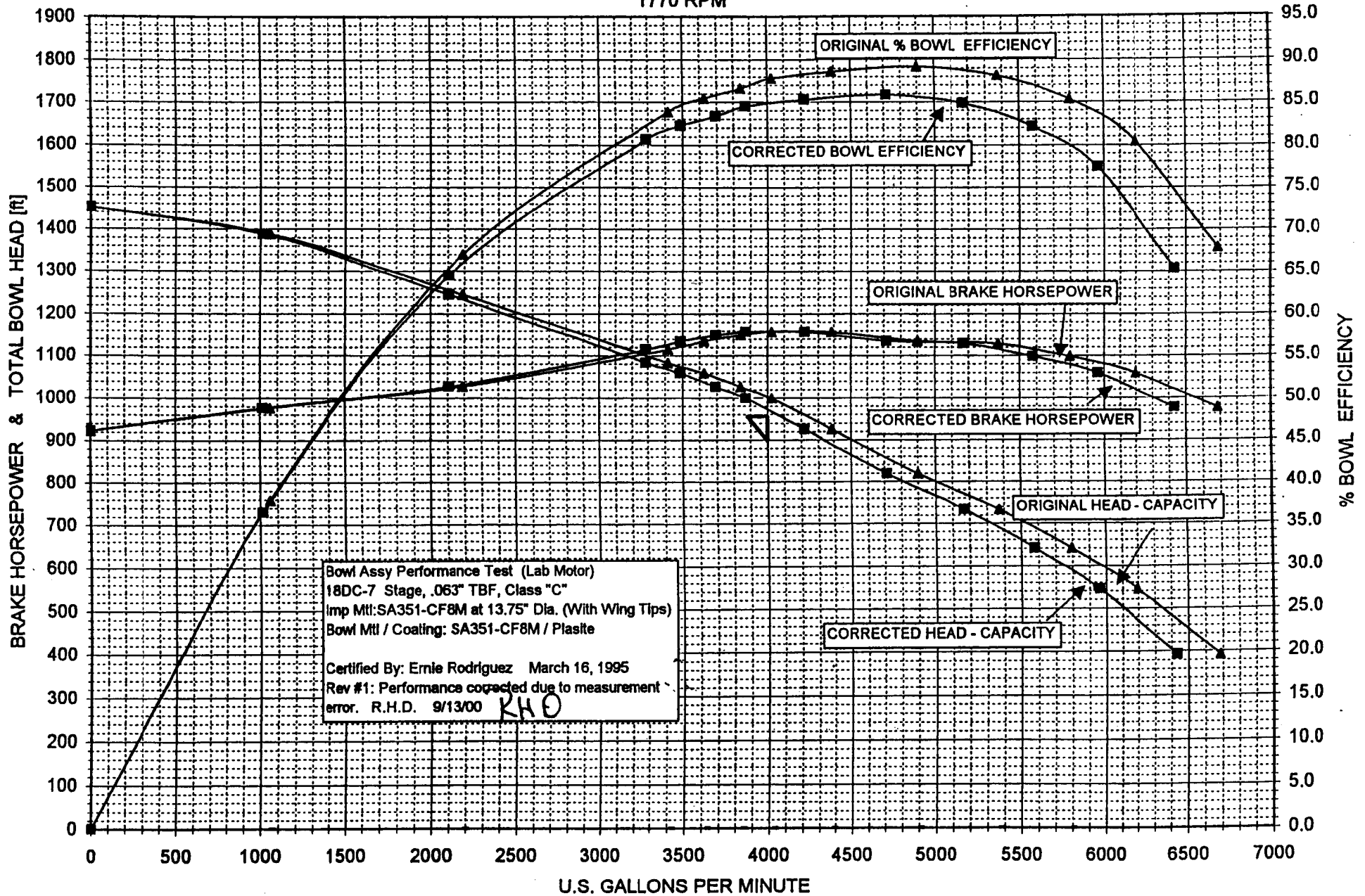
Brookshire, Texas

Customer: Georgia Power Company

Job # 94JC1504S S/N: NRX 6534 POF#: 66329

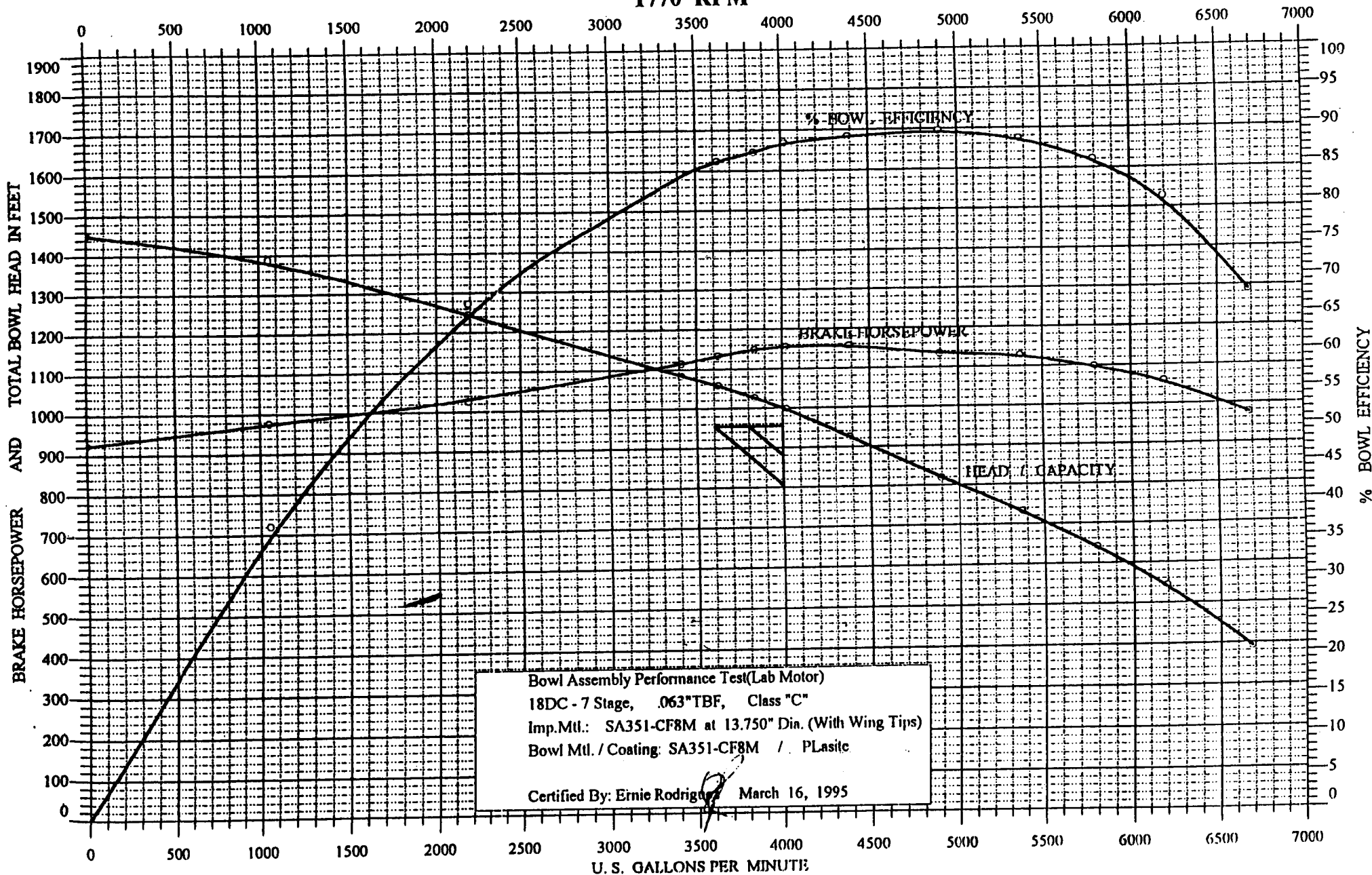
TC#: 07505 Rev. # 1

1770 RPM



Johnston Pump Company
Brookshire, Texas

Customer: Georgia Power Company
Job #: 94JC1504S, S/N: NRX 6534, POF66329
TC#:07505 Rev. #:0
1770 RPM



JOHNSTON PUMP COMPANY

PERFORMANCE TEST SET-UP AND TEST DATA SHEET

TC-07505 Rev. #: 0
 Job Number: 94JC1504S
 Customer: Georgia Power Company
 Stages: 18DC / 7
 Imp. Dia.: 13.750 (With "Wing Tips")
 BF / CL: .063" / °C
 Imp. Material: SA351-CF8M
 Bowl Material: SA351-CF8M
 Bowl Coating: Plaste 7122
 Suction: Bell - I.D. Coated
 Test D. Head: Lab 16" H.P. Discharge Head
 Test Col.: Lab Tapered Column Pipe

Motor H.P. / R.P.M.: 150 / 880
 PH / CY / V: 3 / 60 / 480
 Motor S / N:
 Job OR Lab Motor: LAB
 Wattmeter No.: #2
 Orifice Diameter: 7.0209
 Test line Size: 16
 Pressure Gage: 300
 Impeller Adjustment: Two Turns

Comments: Test the bowl assembly only using a test lab discharge head and column pipe at reduced speed with a test lab motor.

Test Constants:
 Flow: 635.226
 Head: 2.31
 Pipe Dia. @ Gage: 16.000

Motor Eff.:
 100 %:
 75 %:
 50 %:

DESIGN @ R.P.M.: 1770
 G.P.M.: 4000
 Head: 955.00
 B.H.P.:
 Efficiency:
 Specific Gravity 1: 1.00
 Specific Gravity 2: 0.00
 Item No.:
 Fluid:
 Application:
 End User: Georgia Power Company
 Site:

Test Procedure #: JP-TP-0069 Rev.#5

Serial #: NRX 6534
 Job #: 94JC1504S
 PGF #: 66929
 Chattanooga P.O. #: TE-11606

Water To Floor: 16 INCHES
 Floor To Gauge: 60 INCHES

Take Shut - Off (Yes / No): **YES**

Test Point #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Delta TP	10.10	0.70	3.00	7.30	8.20	9.20	10.10	12.00	15.00	18.00	21.00	24.00	28.00	0.00
Dis Per Minute	2019	531	1100	1716	1819	1927	2019	2200	2460	2695	2911	3112	3361	0
Gage Reading	106.00	149.50	133.50	115.50	112.50	109.00	106.00	98.00	86.50	77.00	67.00	56.50	40.00	156.50
Feet of Head	244.86	345.35	308.39	266.81	259.88	251.79	244.86	226.38	199.82	177.87	154.77	130.52	92.40	361.52
Gage Elev. Corr.	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33	6.33
Velocity Head Loss	0.16	0.01	0.05	0.12	0.13	0.15	0.16	0.19	0.24	0.29	0.33	0.38	0.45	0.00
Total Head	251.35	351.69	314.77	273.25	266.34	258.27	251.35	232.90	206.39	184.49	161.44	137.23	99.18	367.85
Watt Reading:	121.50	103.20	108.20	117.10	118.70	120.30	121.00	121.10	119.20	118.10	115.30	111.20	102.90	97.60
Input H.P.	162.87	138.34	145.04	156.97	159.12	161.26	162.20	162.33	159.79	158.31	154.56	149.06	137.94	130.83
Motor Efficiency	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
B.H.P.	146.58	124.50	130.54	141.27	143.20	145.13	145.98	146.10	143.81	142.48	139.10	134.16	124.14	117.75
Test R.P.M.:	888	891	890	889	888	888	888	888	889	888	889	889	890	891
Volts: (Ref. Only)														
Amps (Ref. Only):														
Vibration in Mills:														
Rated R.P.M.:	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
Gallons Per Minute:	4024	1056	2188	3417	3626	3840	4024	4386	4898	5372	5796	6196	6685	0
Total Head in Feet:	998.6	1387.9	1245.0	1083.2	1058.2	1026.1	998.6	925.3	818.1	733.0	640.0	544.0	392.3	1451.6
B.H.P. @ 1.0 Sp. Gr.:	1160.8	976.0	1026.8	1115.0	1134.1	1149.3	1156.0	1157.0	1135.0	1128.3	1097.9	1058.8	976.5	923.1
B.H.P. @ Sp. Gr. 1:	1160.8	976.0	1026.8	1115.0	1134.1	1149.3	1156.0	1157.0	1135.0	1128.3	1097.9	1058.8	976.5	923.1
B.H.P. @ Sp. Gr. 2:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Efficiency:	0.874	0.379	0.670	0.838	0.854	0.866	0.878	0.886	0.892	0.881	0.853	0.804	0.678	0.000

Tested By: Ray Dumesnil
 Passed By: _____

Certified By: Ernie Rodriguez
 Date Of Test: March 16, 1995

8

7

6

5

4

3

2

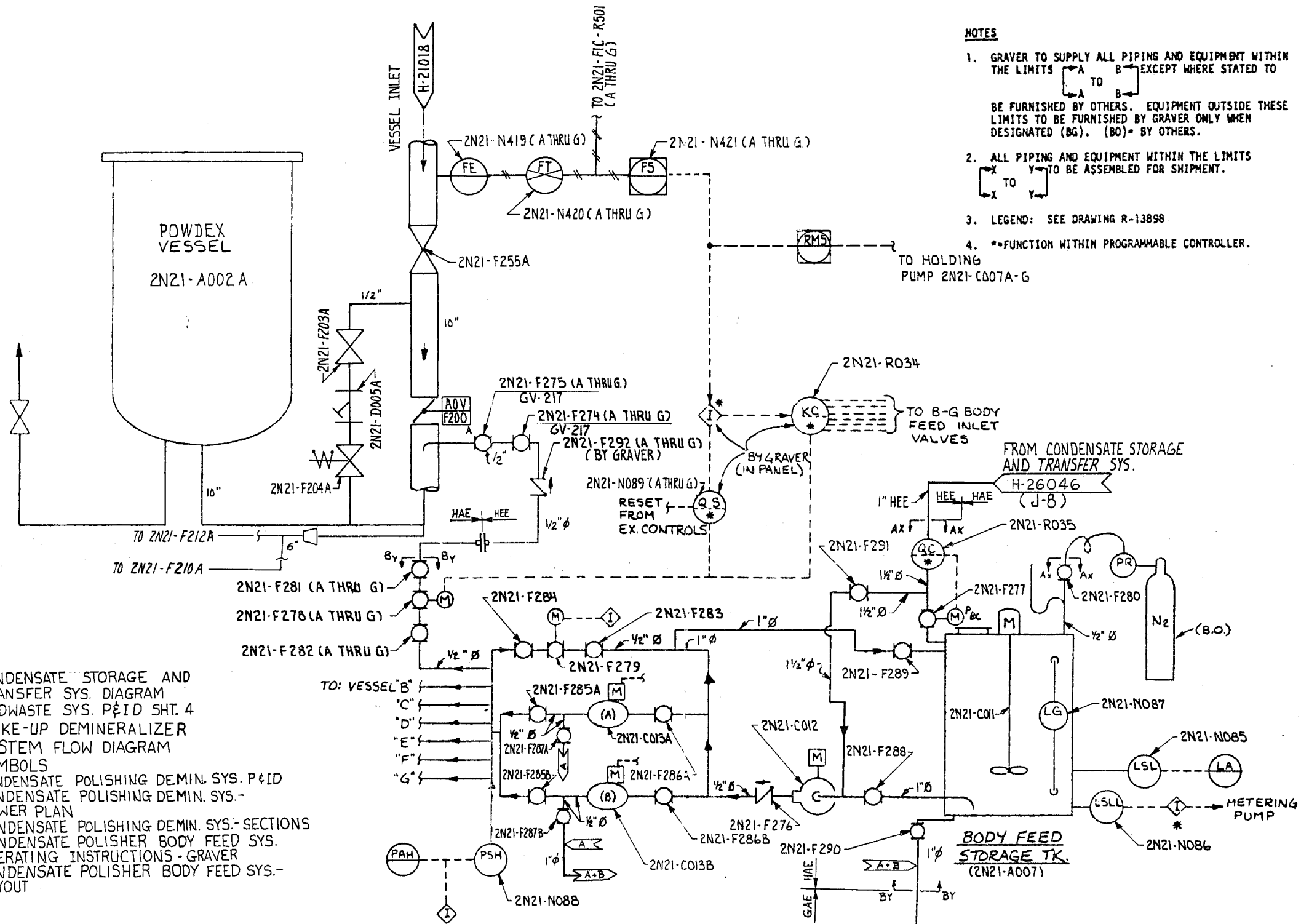
1

D

C

B

A



- NOTES**
- GRAVER TO SUPPLY ALL PIPING AND EQUIPMENT WITHIN THE LIMITS $\left[\begin{matrix} A \\ TO \\ B \end{matrix} \right]$ EXCEPT WHERE STATED TO BE FURNISHED BY OTHERS. EQUIPMENT OUTSIDE THESE LIMITS TO BE FURNISHED BY GRAVER ONLY WHEN DESIGNATED (BG). (BO) - BY OTHERS.
 - ALL PIPING AND EQUIPMENT WITHIN THE LIMITS $\left[\begin{matrix} X \\ TO \\ Y \end{matrix} \right]$ TO BE ASSEMBLED FOR SHIPMENT.
 - LEGEND: SEE DRAWING R-13898
 - **FUNCTION WITHIN PROGRAMMABLE CONTROLLER.

REFERENCES:

- H-26046.....CONDENSATE STORAGE AND TRANSFER SYS. DIAGRAM
- H-26029.....RADWASTE SYS. P&ID SHT. 4
- S-14416.....MAKE-UP DEMINERALIZER SYSTEM FLOW DIAGRAM
- H-21018.....CONDENSATE POLISHING DEMIN. SYS. P&ID SYMBOLS
- H-21130.....CONDENSATE POLISHING DEMIN. SYS. - LOWER PLAN
- H-21131.....CONDENSATE POLISHING DEMIN. SYS. - SECTIONS
- S-51103.....CONDENSATE POLISHER BODY FEED SYS. OPERATING INSTRUCTIONS - GRAVER
- S-60193.....CONDENSATE POLISHER BODY FEED SYS. - LAYOUT

CUST.: E. I. HATCH
 NUCLEAR POWER PLANT
 UNIT 2
 ENGR: SOUTHERN COMPANY SERVICES

MPL # 2N21 GRAVER JOB 12080

P & ID
BODY FEED SYSTEM
CONDENSATE POLISHER

REV. B	DATE 1-20-86
GENERAL REVISION PER ABN 85-671 SUP. O IN RESP. O DCR 84-241	
REV. O BY SCS	
BY	CHK'D
DM	W/ADM

REV.	DATE	REMARKS
A	12/14/84	ENGR. REVIEW

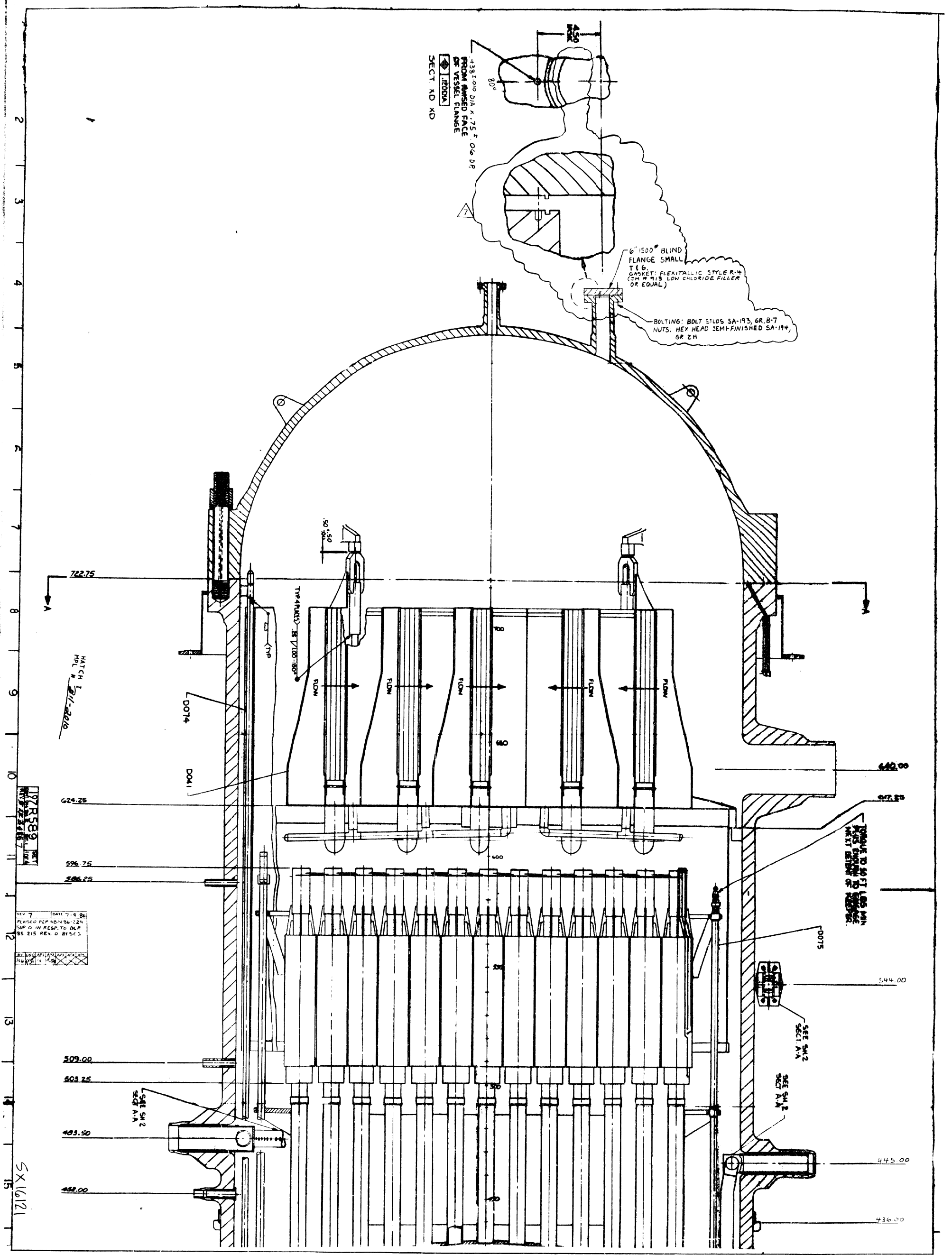
DRAWN	BY	DATE	SCALE
	W	10/29/84	
INTERFACE CHECK			
FINAL CHECK			
CERTIFIED			

R-26841 REV **B**

560192

560192

PLANT	HATCH	Southern Company Services, Inc.
UNIT	01 02	VENDOR
TITLE	S 60192 C	GRAVER WTR
		PEHA-0000962
CONDENSATE POLISHER BODY FEED SYSTEM-PIPING & INSTRUMENTATION		
APPROVAL OF THIS DOCUMENT DOES NOT RELIEVE VENDOR FROM COMPLIANCE WITH CONTRACT PURCHASE ORDER REQUIREMENTS.		
BY: [Signature] DATE: 1/20/86		
1. REVISE AS MARKED, INGS. MAY NOT PROCEED. 2. APPROVED EXCEPT AS NOTED, INGS. MAY PROCEED. 3. APPROVED AS SUBMITTED. 4. SCS FILE FOR USE IN DESIGN ONLY. 5. APPROVAL NOT REQUIRED. (CORRECTION DRAWINGS) 6. AS SHOWN		



4.38100 DIA X .75 T O.G. DR
FROM RAISED FACE
OF VESSEL FLANGE
SECT NO XD

6\"/>

BOLTING: BOLT STUDS SA-193, GR. B-7
NUTS: HEX HEAD SEMI-FINISHED SA-194,
GR 2H

HATCH 1
HPL # 211-2010

197R589
REV 7
DATE 7-18-86

REV 7 DATE 7-18-86
REVISED PER NDN 96-224
SUP O IN RESP TO DCP
85 215 REV O BY SCV

493.50
458.00

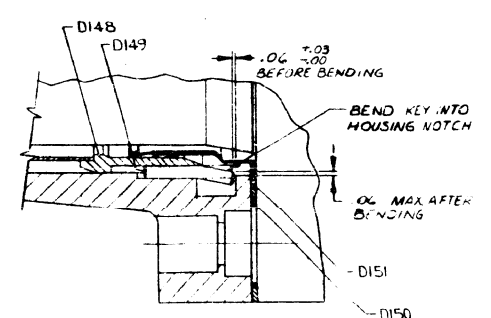
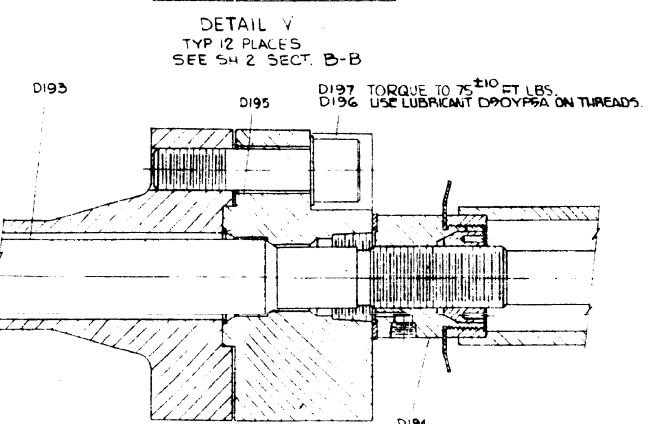
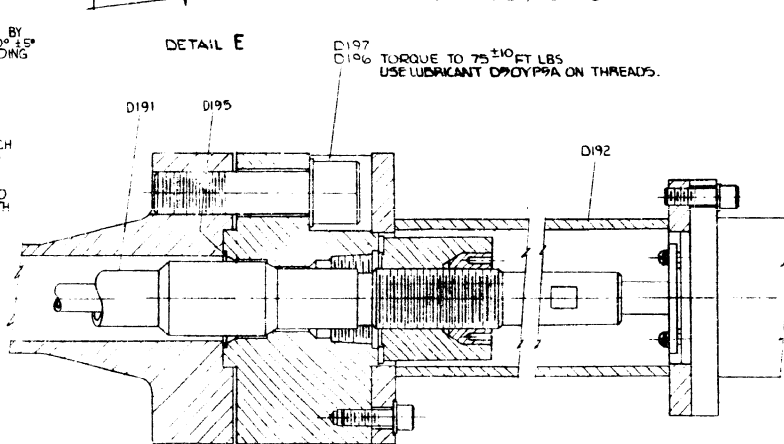
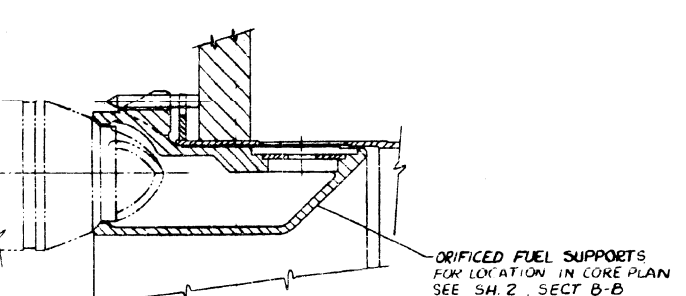
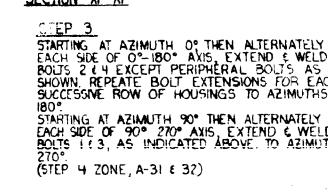
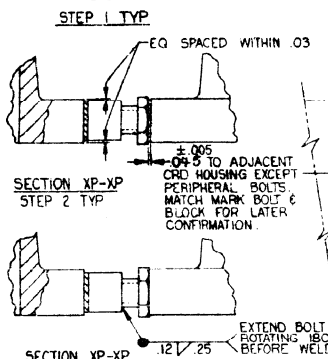
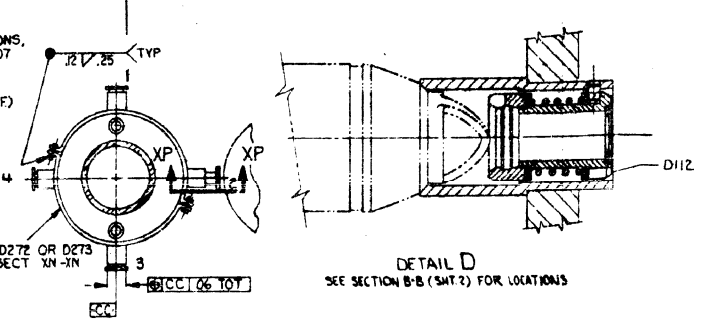
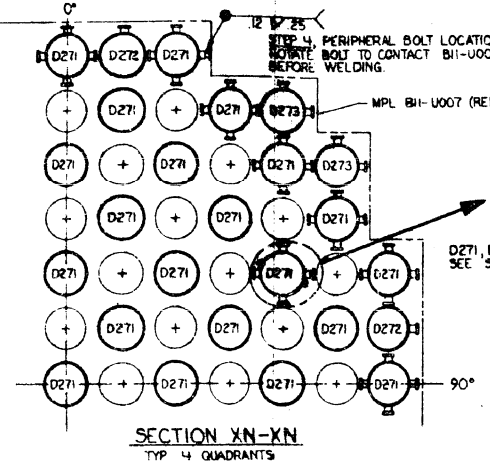
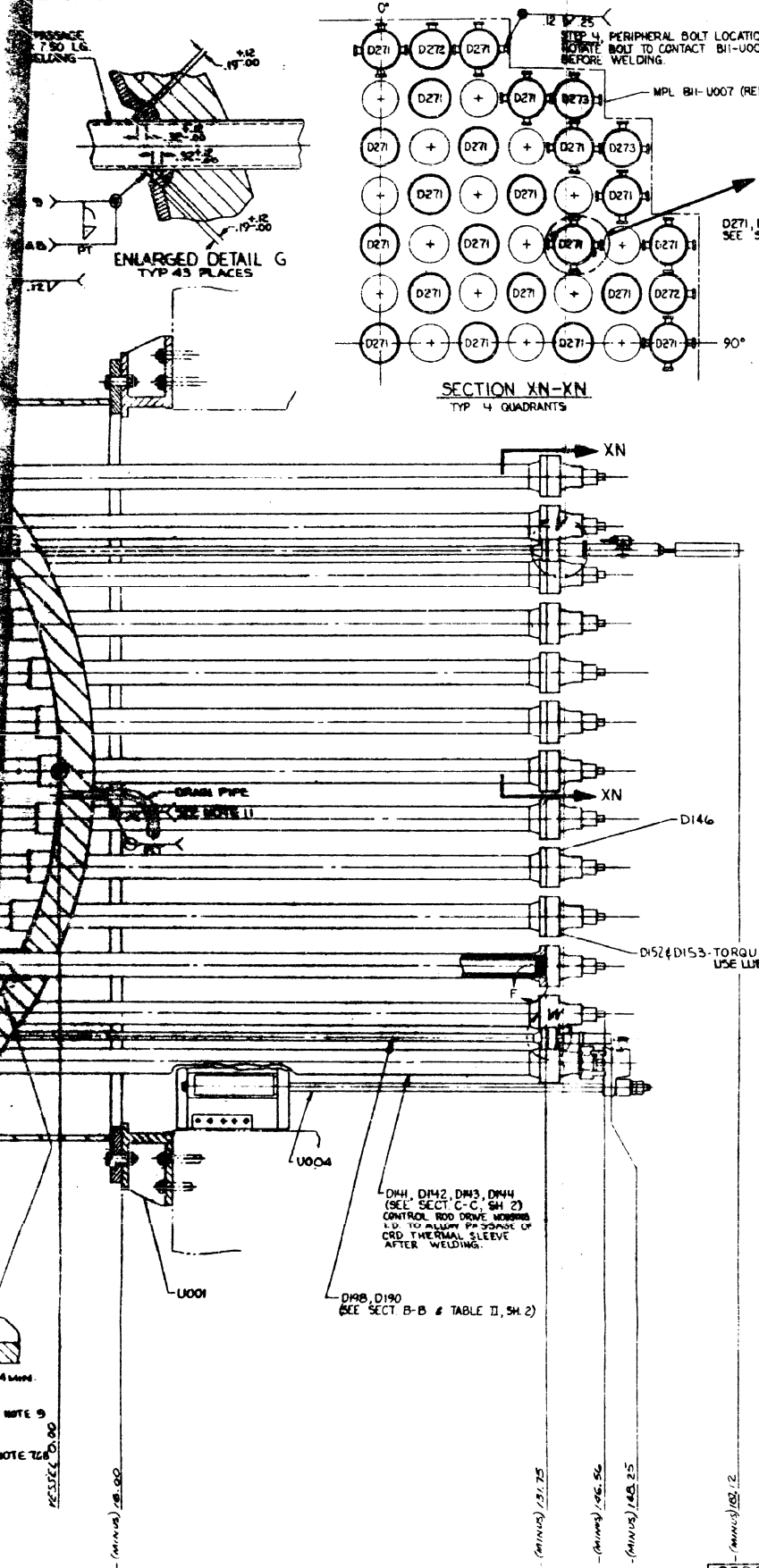
458.00

PLANT	HATCH
UNIT	
SX16121 C	
TITLE	REACTOR ASSEMBLY-SECTION 1- SUPERSEDES S16587
VENDOR	GE
P.O.	PEH-2

Southern Company Services, Inc.
1 REVISE AS MARKED. MFG. MAY NOT PROCEED.
2 APPROVED EXCEPT AS NOTED. MFG. MAY PROCEED.
3 APPROVED AS SUBMITTED.
4 SCS FILE FOR USE IN DESIGN ONLY.
5 VOID
6 APPROVAL NOT REQUIRED. (ERECTION DRAWINGS)
7 AS SHOWN
8 APPROVAL OF THIS DOCUMENT DOES NOT RELIEVE VENDOR FROM COMPLIANCE WITH CONTRACT/PURCHASE ORDER REQUIREMENTS.
BY *[Signature]* DATE 7-20-86

RECORD COPY

REF: 238X



- NOTES:
1. FOR REACTOR INSTALLATION REQUIREMENTS SEE...
 2. ALL FOUR (4) DIGIT PART NUMBERS ARE PREFIXED BY THE MPL ITEM NUMBER.
 3. ALL ELEVATION DIMENSIONS...
 4. ALL FIELD WELDS ARE TO AUSTENITIC STAINLESS STEEL UNLESS OTHERWISE NOTED.
 5. TORQUE CORE SUPPORTS TO 75 ±10 FT LBS. USE LUBRICANT D90YPP9A AND SPHERICAL SURFACE CONTAMINATE REMOVAL ALL EXCESS LUBRICANT.
 6. FINAL ACCESSIBLE WELDS, EXCLUDING TIG WELDS, PENETRANT TESTED IN ADDITION TO VISUAL SURFACE.
 7. ROOT PASS OF WELD TESTED IN ADDITION TO VISUAL SURFACE.
 8. SURFACE OF H WELD TESTED IN ADDITION TO VISUAL SURFACE.
 9. THIS WELD IS ALUMINUM NI-CR-Fe.
 10. THIS WELD IS NI-CR-Fe.
 11. THIS WELD IS CARBON STEEL.

D144, D142, D143, D144 (SEE SECT C-C, SH 2) CONTROL ROD DRIVE HOUSING UP TO HOUSING PP-SPOKE OF CRD THERMAL SLEEVE AFTER WELDING.

D198, D190 (SEE SECT B-B & TABLE II, SH. 2)

SEE NOTE 9
SEE NOTE 12

HATCH 1
MPL # 211-2010

30X F-3/4

197R589 SECT
REV 1/23/64

5	11/23/64	REVISED
6	11/23/64	REVISED
7	11/23/64	REVISED
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