Luminant

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CP-201500157
TXX-15022

Ref. # 10CFR50.55a(g)(6)

February 24 , 2015

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NO. 50-446
RELIEF REQUEST NO. 2C3-1 FOR THE UNIT 2 REACTOR PRESSURE VESSEL LEAK-OFF FLANGE (THIRD ISI INTERVAL START DATE: AUGUST 3, 2014; THIRD ISI INTERVAL END DATE: AUGUST 2, 2023)

REFERENCES:

1. Letter logged TXX-13145 dated October 13, 2013, from Rafael Flores to the NRC submitting Relief Request No. C-3 for the Unit 2 Second 10 Year ISI Interval From 10CFR50.55a Inspection Requirements Due to Hardship (Second Interval Start Date: August 13, 2004) (ML13312A121) as supplemented by letters dated January 23, and February 11, 2014 (ADAMS Accession Nos. ML 14038A256 and ML 14055A318, respectively.

2. NRC Letter dated April 4, 2014, from Michael T. Markley to Rafael Flores concerning Comanche Peak Nuclear Power Plant, Unit 2 - Approval of Relief Request No. C-3 for the Third 10-Year Inservice Inspection Interval (TAC No. MF2997) (ML14084A291)

3. Letter logged TXX-12129 dated August 23, 2012, from Rafael Flores to the NRC submitting Relief Request No. C-2 for the Unit 1 Third 10 Year ISI Interval From 10CFR50.55a Inspection Requirements Due to Hardship (Third Interval Start Date: August 13, 2012)(ML12250A670) as supplemented by letter dated January 9, 2013 (ML130250339)

4. NRC Letter dated March 19, 2013, from Michael T. Markley to Rafael Flores concerning Comanche Peak Nuclear Power Plant, Unit 1 - Approval of Relief Request No. C-2 for the Third 10-Year Inservice Inspection Interval (TAC No. ME9409) (ML13046A385)

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a (h)(3)(z)(1) Luminant Generation Company LLC (Luminant Power) is submitting Relief Request 2C3-1 for Comanche Peak Nuclear Power Plant (CPNPP) Unit 2 for the third ten year inservice inspection interval. Luminant Power has determined that compliance with certain inspection requirements of ASME Section XI would result in an unnecessary hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The reactor pressure vessel flange leak-off piping configuration precludes system pressure testing when the reactor vessel head is removed. The configuration also precludes pressurizing the line externally

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NRR

when the head is installed. A visual examination of the accessible areas was performed during the second interval on the unpressurized subject piping as part of the Class 2 leakage test. No evidence of leakage has been identified for the subject component. No undue risk to the public health and safety is presented by this request.

A similar relief request was previously submitted to the NRC for Unit 2 second interval, via Reference 1, and reviewed and approved via Reference 2.

The VT-2 system leakage tests of the reactor pressure flange leak-off piping will occur once in each of the three periods of the current third interval. Therefore, Luminant Power requests approval of this relief request by September 30, 2015, to support the upcoming CPNPP Unit 2 refueling outage.

This communication contains no new commitments regarding CPNPP Unit 2.

Should you have any questions, please contact Mr. Jack Hicks at (254) 897-6725.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: Fred W. Madden
Fred W. Madden
Director, External Affairs

Attachments:
(1) Relief Request Number - 2C3-1 For the Reactor Pressure Vessel Leak-Off Piping (Third 10-Year ISI Interval Start Date: August 3, 2014)
(2) Reactor Pressure Vessel Seal Leak-off Details
(3) Piping and Instrumentation Diagram and Piping Isometric Drawings

c - Marc L. Dapas, Region IV
Balwant K. Singal, NRR
Resident Inspectors, Comanche Peak
Jack Ballard, ANII, Comanche Peak
Robert Free, TDLR

COMANCHE PEAK NUCLEAR POWER PLANT UNIT 2
RELIEF REQUEST NUMBER – 2C3-1 FOR THE REACTOR PRESSURE VESSEL LEAK-OFF FLANGE
(THIRD 10-YEAR ISI INTERVAL START DATE: AUGUST 3, 2014)

1. **ASME Code Component Affected:**

ASME Code Class:	Code Class 2
References:	ASME Section XI, Table IWC-2500-1 and IWC-5220
Examination Category:	C-H (All Pressure Retaining Components)
Item Number:	C7.10
Description:	Alternative Pressure Testing Requirements for the RPV Flange Leak-Off Piping
Component:	NPS ¾" RPV Flange Seal Leak-Off Piping
Material:	SA376 type 304 or 316 Stainless Steel
Line Numbers:	RC-2-080, RC-2-081, RC-2-082
Plant Drawings:	BRP-RC-2-RB-005, BRP-RC-2-RB-006, BRP-RC-2-RB-007, BRP-RC-2-RB-013, BRP-RC-2-RB-014, BRP-RC-1-RB-042, BRP-RC-1-RB-043, M2-0250

2. **Applicable Code Edition and Addenda:**

The applicable ASME Boiler and Pressure Vessel Code edition and addenda is ASME Section XI, "Rules for Inservice of Nuclear Power Plant Components," 2007 Edition through 2008 Addenda. Hereafter referred to as the "Code."

3. **Applicable Code Requirement:**

ASME Section XI, Subarticle IWC-2500, Table IWC-2500-1, Code Category C-H, Item Number C7.10 requires that all Class 2 pressure retaining components be subject to a system leakage test with a Visual, VT-2 examination each inspection period. The system leakage test is performed at the pressure obtained while the subject portion of the system is performing its normal operating function or during a comparable test.

4. **Reason for Request: Hardship without a compensating increase in quality and safety (10 CFR 50.55a (h)(3)(z)(1)) .**

As discussed in Section 3, "Applicable Code Requirement," ASME Section XI, 2007 Edition through 2008 Addenda requires that Class 2 pressure boundary piping shall be pressure tested once each inspection period. The Reactor Pressure Vessel (RPV) head flange seal leak detection piping is separated from the reactor coolant pressure boundary by one passive membrane, which is an O-ring located on the inner vessel flange as shown in Attachment 2. A second O-ring is located on the outside of the tap in the vessel flange. Failure of the inner O-ring is the only condition under which this line is pressurized. Therefore, the line is not expected to be pressurized during the system pressure test following a refueling outage.

The configuration of this piping precludes system pressure testing while the vessel head is removed because the time required by personnel for the installation and removal of a threaded plug in the flange face to act as a pressure boundary for the test would incur significant dose (estimated 20 – 40 mRem/minute), which would be an ALARA concern. This activity would also present a Foreign Material Exclusion issue for the 1/8" plug that would be required to be installed to complete a leakage test at pressure.

COMANCHE PEAK NUCLEAR POWER PLANT UNIT 2
RELIEF REQUEST NUMBER – 2C3-1 FOR THE REACTOR PRESSURE VESSEL LEAK-OFF FLANGE
(THIRD 10-YEAR ISI INTERVAL START DATE: AUGUST 3, 2014)

The configuration also precludes pressurizing the line externally with the head installed at the start of an outage. The top head of the vessel contains two grooves that hold the O-rings. The O-rings are held in place by a series of retainer clips that are housed in recessed cavities in the flange face. If a pressure test were to be performed with the head on, the inner O-ring would be pressurized in a direction opposite to its design function. This test pressure would result in a net inward force on the inner O-ring that would tend to push it into the recessed cavity that houses the retainer clips. The thin O-ring material would likely be damaged by the inward force. The inner O-ring failure would prevent pressure build-up by allowing water to pass by and enter the reactor vessel. To ensure that it was in fact an O-ring failure and not a leak in the leak-off piping, the portion of piping in the reactor vessel nozzle inspection areas ("sandboxes") would have to be inspected. The conditions inside the "sandboxes" at the beginning of the outage prior to removing the head would be considered unsafe with extremely high temperatures and dose ratings ranging from 150 to 250 mRem/hr. The leak-off piping travels through three of the eight "sandboxes". It is felt that performing the examination in this manner would result in an unnecessary hardship without a sufficient compensating increase in the level of quality and safety. Therefore, the only time, other than O-ring failure, that the leak-off lines are fluid filled under any type of pressure is when the head is removed and the cavity flooded.

Attachment 3 contains the piping and instrumentation diagram (P&ID) and the piping isometric drawings showing the subject flange leak-off line.

5. **Burden Caused by Compliance:**

Purposely failing or not installing the inner O-ring in order to perform a pressure test would require purchasing a new O-ring set and the time and radiation exposure associated with removing and reinstalling the RPV head to replace the O-rings would be an undue hardship. Therefore, compliance with the IWC-5221 system leakage test requirements results in an unnecessary hardship without a sufficient compensating increase in the level of quality and safety.

6. **Proposed Alternative and Basis for Use:**

In lieu of the requirements of IWC-5221, a VT-2 visual examination of the accessible areas will be performed each period on the piping subjected to the static pressure head when the reactor cavity is filled. This test will be part of the reactor coolant Class 2 leakage test.

During normal operation, the inner O-ring isolation valve is open. Should the inner O-ring leak, a high temperature alarm actuates at 140 degrees F in the control room, informing the operator of the leak. The operator monitors reactor vessel flange leak-off temperature in accordance the CPNPP alarm procedures (ALM-053A for Unit 1 and ALM-053B for Unit 2) and closes the valve, isolating the leak. The procedure directs shutting the manual isolation valve and opening another valve, transferring RCS pressure boundary maintenance to the outer O-ring. Opening the valve then transfers leak detection to the outer O-ring. All drainage/leakage is piped to the reactor coolant drain tank. The procedure also addresses notifying chemistry department to increase monitoring of the containment atmosphere to detect possible outer O-ring failure; perform an operations test to determine leakage rate as applicable; and initiating corrective action documents to identify the condition and correct the condition as applicable.

COMANCHE PEAK NUCLEAR POWER PLANT UNIT 2
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Additionally, the flange seal leak-off line is essentially a leakage collection/detection system and the line would only function as a Class 2 pressure boundary if the inner O-ring fails, thereby pressurizing the line. If any significant leakage does occur in the leak-off line piping itself during this time of pressurization then it would clearly exhibit boric acid accumulation and be discernable during the proposed VT-2 visual examination that will be performed unpressurized as proposed in this request. The elevation of the Reactor Vessel flange is 834' ½". The elevation for the water level when the cavity is flooded is 858" 6". Therefore, the minimum pressure at the opening of the flange leak-off line when the exam is performed is 24' 5 ½ " of static pressure head or 10.6 psi.

The system leakage test will be performed in accordance with ASME Section XI Subarticle IWA-5213(a). A 10-minute hold time will be maintained after test pressure has been reached for Class 2 components that are not in use during normal operating conditions. The subject lines are also not insulated.

There has been no known evidence of corrosion, stress corrosion cracking, or fatigue in the subject flange leak-off piping at Comanche Peak. Database searches for the subject lines in the Comanche Peak Corrective Action Program identified no historical instances of degradation.

7. **Duration of Proposed Alternative:**

This alternative is requested for the Third Inservice Inspection Interval, which began on August 3, 2014 and ends on August 2, 2024.

8. **Precedents:**

(1) Comanche Peak Nuclear Power Plant, Unit 2 Second Inspection Interval Relief Request C-3 "Alternative Pressure Testing Requirements for the RPV Flange Leak-Off Piping", as approved by the NRC on April 4, 2014 (ML14084A291).

(2) Comanche Peak Nuclear Power Plant, Unit 1 Third Inspection Interval Relief Request C-2 "Alternative Pressure Testing Requirements for the RPV Flange Leak-Off Piping", as approved by the NRC on March 19, 2013 (ML13046A385).

(3) LaSalle County Station Third Inspection Interval Relief Request I3R-08. "Pressure Testing of the Reactor Vessel Head Flange Leak Detection System", as approved by the NRC in a letter dated January 30, 2008 (ADAMS Accession No. ML073610587)

(4) Susquehanna Steam Electric Station Third 10-Year Inservice Inspection (ISI) Interval Program Plan Request for Relief 3RR-07 "Exemption for Pressure Testing Reactor Pressure Vessel Head Flange Seal Leak Detection System", approved by the NRC in a letter dated September 24, 2004 (ADAMS Accession No. ML 042680078)

COMANCHE PEAK NUCLEAR POWER PLANT UNIT 2
RELIEF REQUEST NUMBER – 2C3-1 FOR THE REACTOR PRESSURE VESSEL LEAK-OFF FLANGE
(THIRD 10-YEAR ISI INTERVAL START DATE: AUGUST 3, 2014)

9. **Reference:**

Code Case N-805, "Alternative to Class 1 Extended Boundary End of Interval or Class 2 System Leakage Testing of Reactor Vessel Head Flange O-ring Leak Detection System," was issued to the 2010 Edition of the ASME Section XI Code and is listed in Supplement 6 for Code Cases. However, Code Case N-805 has not been approved by the NRC and is not identified in Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1."

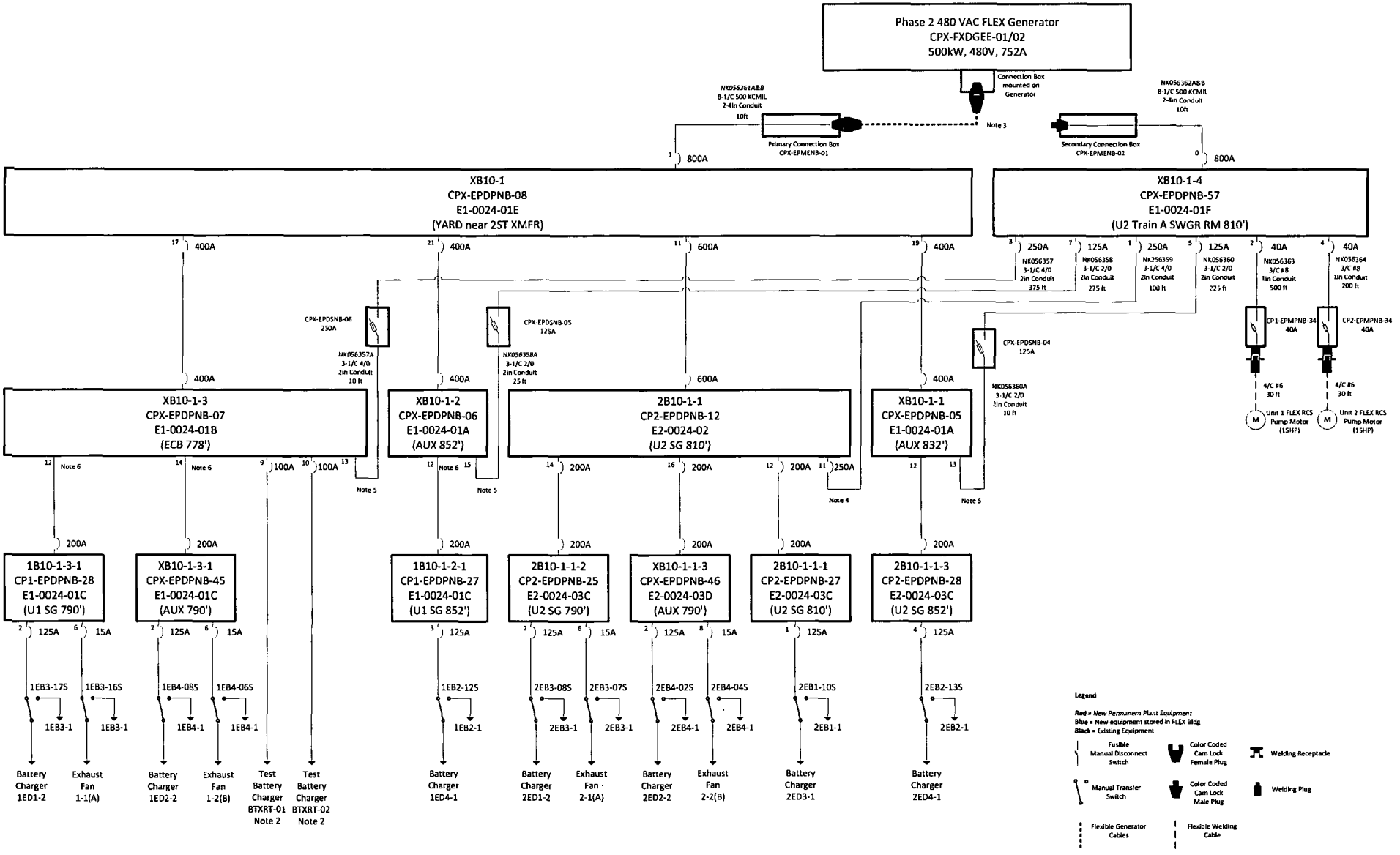


Figure A3-23: Phase 2 480VAC FLEX Generator Connection to Plant Support Power

Reactor Pressure Vessel Seal Leak-Off Details

Luminant Power
Comanche Peak Nuclear Power Plant

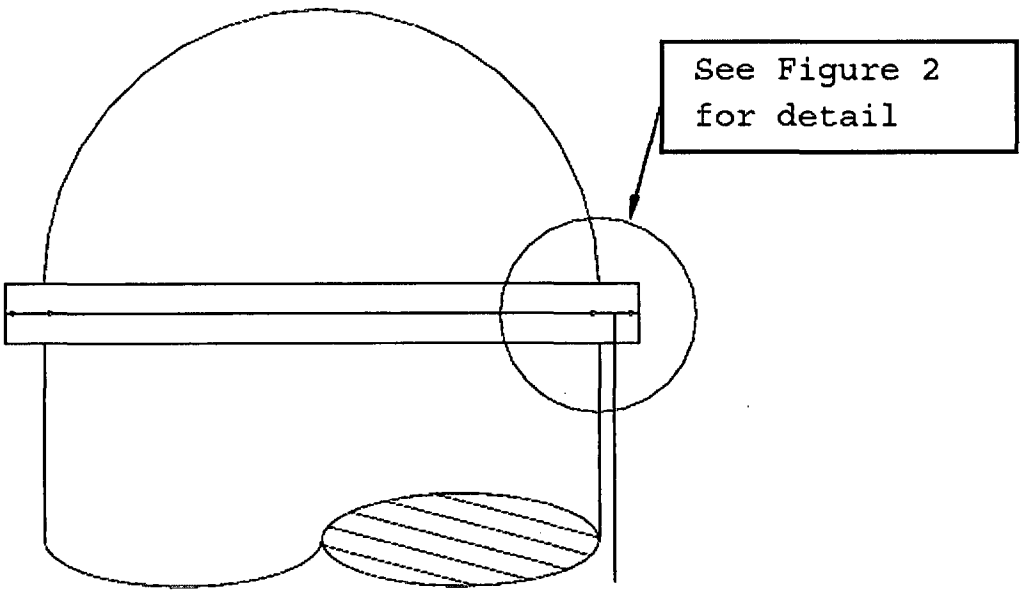


Figure 1:
REACTOR PRESSURE VESSEL HEAD FLANGE
LEAK-OFF LINE CONFIGURATION

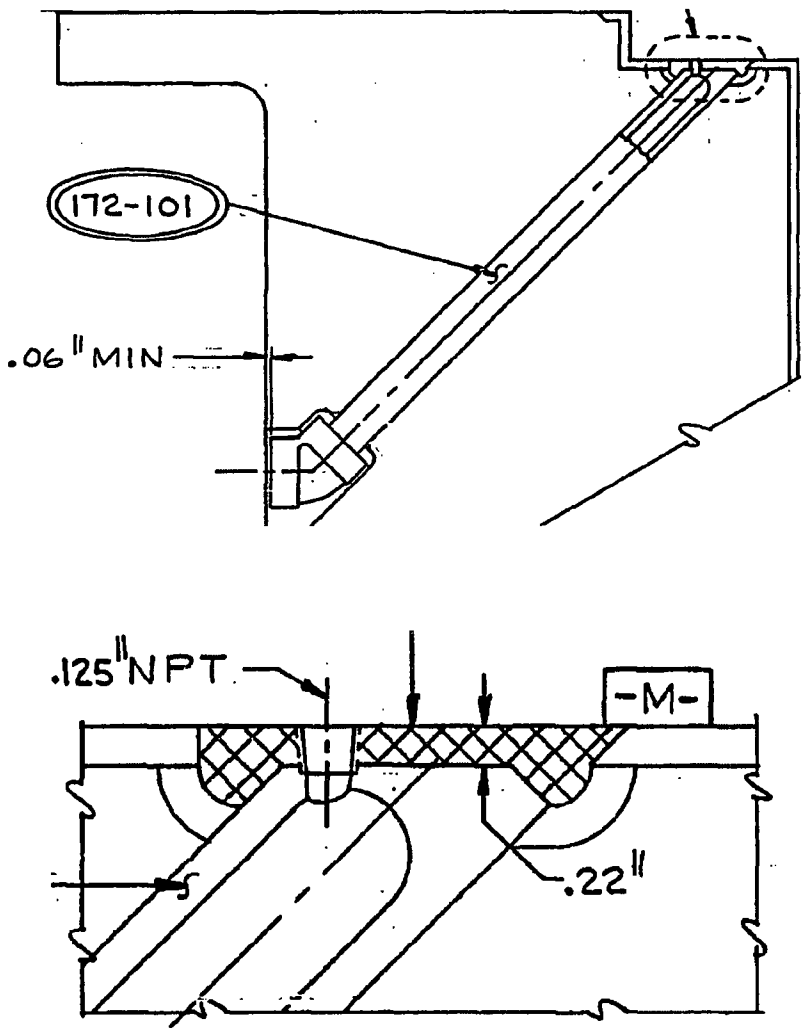


Figure 2:

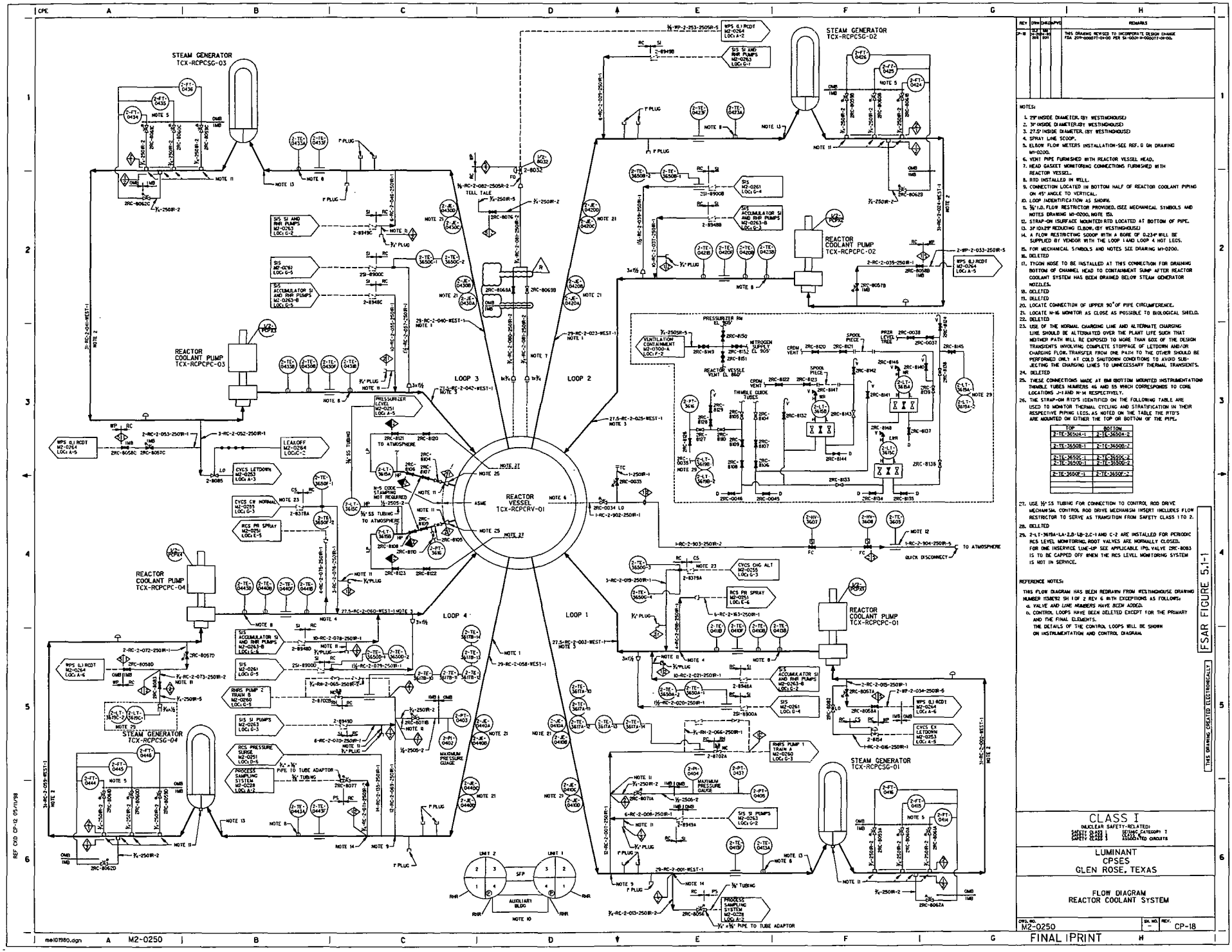
Reactor Pressure Vessel Head Flange
Leak-Off Line Details

Attachment 3 to TXX-15022

Piping and Instrumentation Diagram

and

Piping Isometric Drawings



REV	DRN	CHKD	APVD	REMARKS
CP-18	12-7-98	MK	12-9-98	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA 2019-000877-01-00 PER SA-9809-M-0002177-01-00.

NOTES:

1. 29" INSIDE DIAMETER. (BY WESTINGHOUSE)
2. 34" INSIDE DIAMETER.(BY WESTINGHOUSE)
3. 27.5" INSIDE DIAMETER. (BY WESTINGHOUSE)
4. SPRAY LINE SCOOP.
5. ELBOW FLOW METERS INSTALLATION-SEE REF. 9 ON DRAWING M1-0200.
6. VENT PIPE FURNISHED WITH REACTOR VESSEL HEAD.
7. HEAD GASKET MONITORING CONNECTIONS FURNISHED WITH REACTOR VESSEL.
8. RTD INSTALLED IN WELL.
9. CONNECTION LOCATED IN BOTTOM HALF OF REACTOR COOLANT PIPING ON 45° ANGLE TO VERTICAL.
10. LOOP IDENTIFICATION AS SHOWN.
11. 3/4" I.D. FLOW RESTRICTOR PROVIDED. (SEE MECHANICAL SYMBOLS AND NOTES DRAWING M1-0200, NOTE 15).
12. STRAP-ON (SURFACE MOUNTED) RTD LOCATED AT BOTTOM OF PIPE.
13. 29"-10.629" REDUCING ELBOW. (BY WESTINGHOUSE)
14. A FLOW RESTRICTING SCOOP WITH A BORE OF 0.234" WILL BE SUPPLIED BY VENDOR WITH THE LOOP 1 AND LOOP 4 HOT LEGS.
15. FOR MECHANICAL SYMBOLS AND NOTES SEE DRAWING M1-0200.
16. DELETED
17. TYGON HOSE TO BE INSTALLED AT THIS CONNECTION FOR DRAINING BOTTOM OF CHANNEL HEAD TO CONTAINMENT SUMP AFTER REACTOR COOLANT SYSTEM HAS BEEN DRAINED BELOW STEAM GENERATOR NOZZLES.
18. DELETED
19. DELETED
20. LOCATE CONNECTION OF UPPER 90° OF PIPE CIRCUMFERENCE.
21. LOCATE N-16 MONITOR AS CLOSE AS POSSIBLE TO BIOLOGICAL SHIELD.
22. DELETED
23. USE OF THE NORMAL CHARGING LINE AND ALTERNATE CHARGING LINE SHOULD BE ALTERNATED OVER THE PLANT LIFE SUCH THAT NEITHER PATH WILL BE EXPOSED TO MORE THAN 60% OF THE DESIGN TRANSIENTS INVOLVING COMPLETE STOPPAGE OF LETDOWN AND/OR CHARGING FLOW. TRANSFER FROM ONE PATH TO THE OTHER SHOULD BE PERFORMED ONLY AT COLD SHUTDOWN CONDITIONS TO AVOID SUBJECTING THE CHARGING LINES TO UNNECESSARY THERMAL TRANSIENTS.
24. DELETED
25. THESE CONNECTIONS MADE AT 6M (BOTTOM MOUNTED INSTRUMENTATION) THIMBLE TUBES NUMBERS 45 AND 55 WHICH CORRESPONDS TO CORE LOCATIONS J-11 AND M-14 RESPECTIVELY.
26. THE STRAP-ON RTD'S IDENTIFIED ON THE FOLLOWING TABLE ARE USED TO MONITOR THERMAL CYCLING AND STRATIFICATION IN THEIR RESPECTIVE PIPING LEGS. AS NOTED ON THE TABLE THE RTD'S ARE MOUNTED ON EITHER THE TOP OR BOTTOM OF THE PIPE.

TOP	BOTTOM
2-TE-36504-1	2-TE-36504-2
2-TE-36508-1	2-TE-36508-2
2-TE-36505-1	2-TE-36505-2
2-TE-36503-1	2-TE-36503-2
2-TE-36506-1	2-TE-36506-2

27. USE 1/2" SS TUBING FOR CONNECTION TO CONTROL ROD DRIVE MECHANISM. CONTROL ROD DRIVE MECHANISM INSERT INCLUDES FLOW RESTRICTOR TO SERVE AS TRANSITION FROM SAFETY CLASS 1 TO 2.
28. DELETED
29. 2-LT-36784-LA-2.8-UB-2.C-1 AND C-2 ARE INSTALLED FOR PERIODIC RCS LEVEL MONITORING. ROOT VALVES ARE NORMALLY CLOSED. FOR ONE INSERVICE LINE-UP SEE APPLICABLE IPO. VALVE 2RC-8085 IS TO BE CAPPED OFF WHEN THE RCS LEVEL MONITORING SYSTEM IS NOT IN SERVICE.

REFERENCE NOTES:

THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING NUMBER 1136762 SH 1 OF 2 REV 6 WITH EXCEPTIONS AS FOLLOWS:

a. VALVE AND LINE NUMBERS HAVE BEEN ADDED.
b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.

FSAR FIGURE 5.1-1

THIS DRAWING CREATED ELECTRONICALLY

CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 — SEISMIC CATEGORY I
SAFETY RELATED — DESIGN CODE
ESSENTIAL CIRCUITS

LUMINANT
CPSES
GLEN ROSE, TEXAS

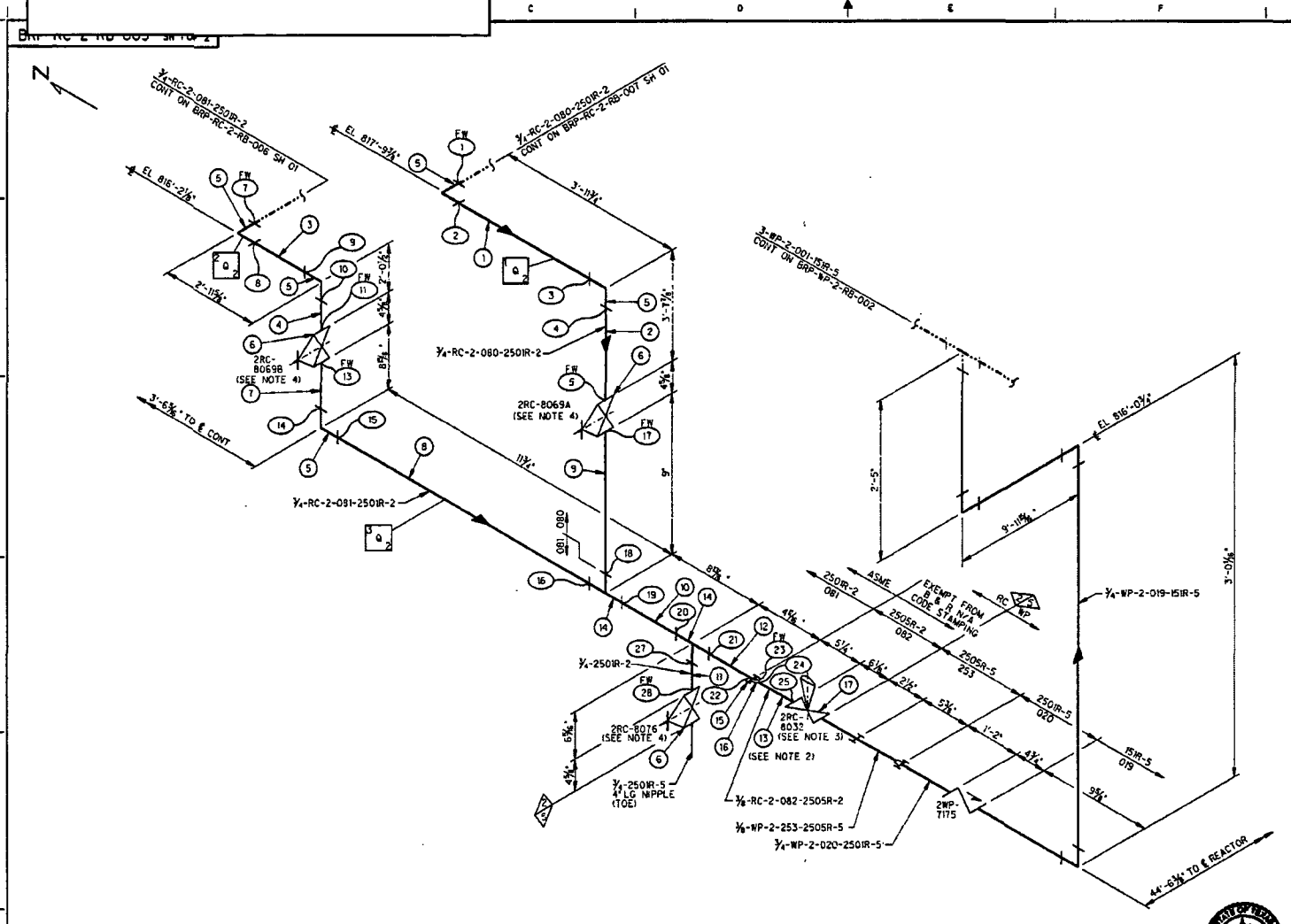
FLOW DIAGRAM
REACTOR COOLANT SYSTEM

DWG. NO. M2-0250 — SH. NO. - — REV. CP-18

FINAL PRINT

REF CAD CP-12 05/11/98

melo1980.dgn A M2-0250 B C D E F G H



BILL OF MATERIAL

PC NO.	REQ.	CLASS CODE	DESCRIPTION	ASME ASTM	GRADE	COLOR CODE
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2	1	2	¾" S/160 PIPE 3'-7⅜" EST LG	SA376	TP304	BR/
3	1	2	¾" S/160 PIPE 2'-9⅜" EST LG	SA376	TP304	BR/
4	1	2	¾" S/160 PIPE 2'-0⅛" EST LG	SA376	TP304	BR/
5	5	2	¾" 6000 LB SW 90° ELL	SA182	F316	BR/
6	3	2	¾" TB1609 SOMA MS-20A.1	SA182	F316	-
7	1	2	¾" S/160 PIPE	SA376	TP304	BR/
8	1	2	¾" S/160 PIPE	SA376	TP304	BR/
9	1	2	¾" S/160 PIPE	SA376	TP304	BR/
10	1	2	¾" S/160 PIPE	SA376	TP304	BR/
11	1	2	¾" S/160 PIPE	SA376	TP304	BR/
12	1	2	¾" S/160 PIPE	SA376	TP316	BR/
13	1	2	⅜" OD TUBE	SA213	TP316	-
14	2	2	¾" 6000 LB SW TEE	SA182	F316	BR/
15	1	2	¾" 6000 LB SW CPLG	SA182	F316	BR/
16	1	2	¾"x⅜" SWAGELOK PIPE TO TUBE ADAPTOR SS-12-MPW-A-6TSW	SA403	WP316	-
17	1	2	⅜" TA78DL CP-001S/O 220	SA182	F316	-

REV	OWN CHECK	RE LDC	DV	APVD	REMARKS
CP-5			N/A		THIS DRAWING REVISED TO INCORPORATE N-5 PUNCHLIST COMMENT AND NOTES.

COMPOSITE M2-0511, M2-0512 PART

FLOW DIAG. M2-0250, M2-0264 SPEC. 1-2002, M-2003 DESIGN CAT./CL. 2501R-2, 2505R-2

NOTES
1. REFER TO MRS (MANUFACTURING RECORD SHEET) FOR TYPE OF MATERIAL USED.
2. GRADIENT OF .65" PER FOOT IN PIECE 13 WITH VALVE 2RC-8032 (HBI) IS ACCEPTABLE.
3. GRADIENT OF 1.79" PER FOOT IN TUBING AT DISCHARGE OF 2RC-8032 WITH VALVE AT HIGH END IS ACCEPTABLE.
4. ⅜" VALVE BORED TO ¾" REFERENCE TUC 92-5121 REV 0.

TU ELECTRIC
CPSES
GLEN ROSE, TEXAS

IMAGE REFLECTS DOCUMENT QUALITY

REACTOR COOLANT

TURNOVER NO. RFT-M2-5501 DWG. NO. BRP-RC-2-RB-005 SHT. NO. 1 OF 2 REV. CP-5

GROUP/ ORGANIZATION n/a

REVIEWER'S INITIALS AND DATE

THIS DRAWING CREATED ELECTRONICALLY

CLASS I

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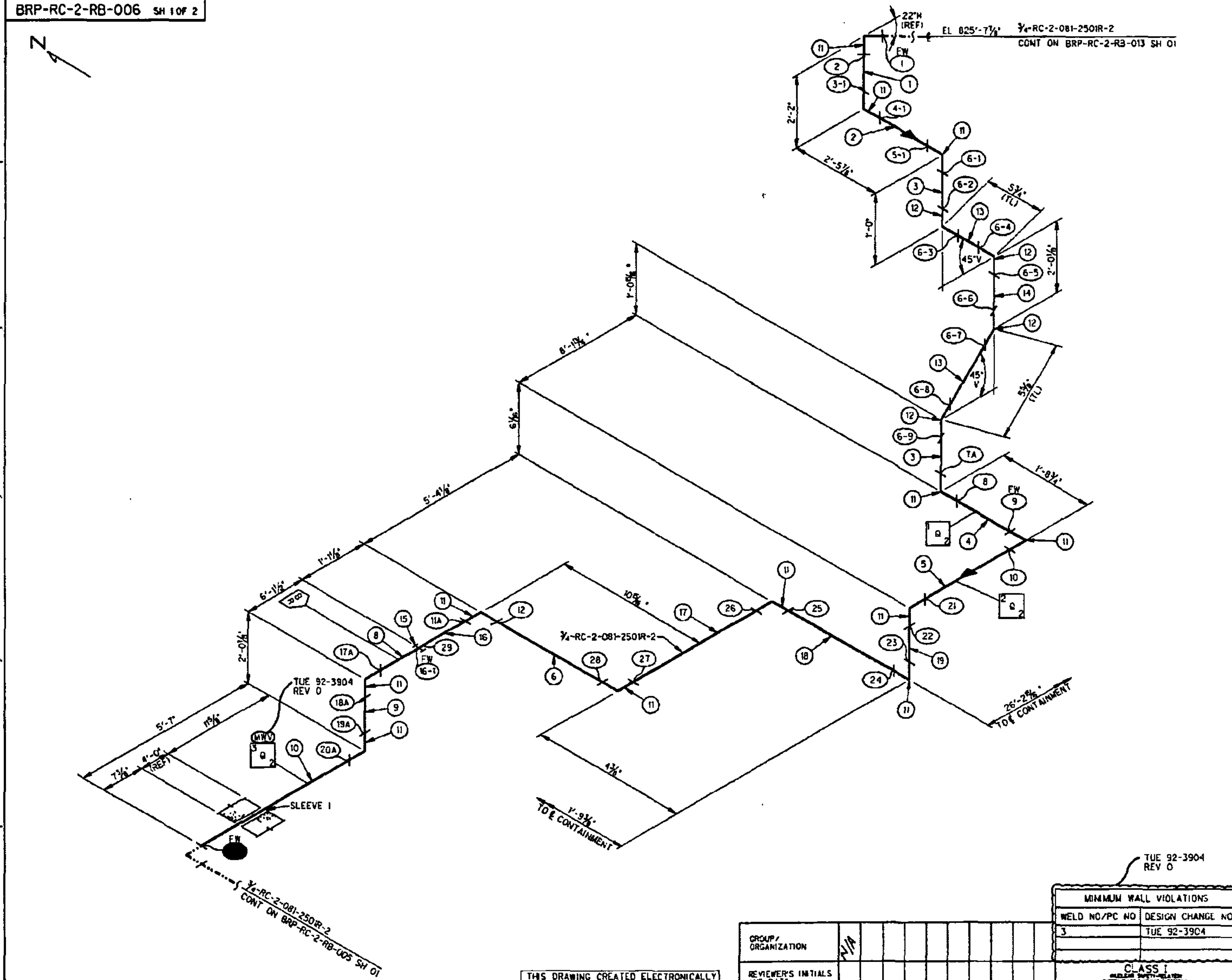
FINAL PRINT

BRP-RC-2-RB-006 SH 1 OF 2



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8	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
9	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
10	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
11	12	2	¾" 6000 LB SW 90° ELL	SA182	F304 F316	BR/
12	4	2	¾" 6000 LB SW 45° ELL	SA182	F304 F316	BR/
13	2	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
14	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
15	1	2	¾" 6000 LB SW CPLG	SA182	F304 F316	BR/
16	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
17	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
18	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/
19	1	2	¾" S/160 PIPE	SA376	TP304 TP316	BR/

REV	DWN CHKD	RE LDE	DV	APVD	REMARKS
CP-3	BN 5-21-92	KB	N/A		THIS DRAWING REVISED TO INCORPORATE TUE 92-3904 REV 0.

SPOOLS 1 THRU 3 BY B&R.

COMPOSITE: M2-0511, M2-0513	PAINT:	
FLOW DIAG.: M2-0250	SPEC.: M-2003	DESIGN CAT./CL.: 2501R-2

NOTES

1. REFER TO MRS (MANUFACTURING RECORD SHEET) FOR TYPE OF MATERIAL USED.

5-21-92

TU ELECTRIC
CPSES
GLEN ROSE, TEXAS

REACTOR COOLANT

MINIMUM WALL VIOLATIONS	
WELD NO/PC NO	DESIGN CHANGE NO
3	TUE 92-3904

TUE 92-3904
REV 0

GROUP/ ORGANIZATION	N/A
REVIEWER'S INITIALS AND DATE	

CLASS I

THIS DRAWING CREATED ELECTRONICALLY

TURNOVER NO.	DWG. NO.	SH. NO.	REV.
RFT-M2-5501	BRP-RC-2-RB-006	1 OF 2	CP-3

FINAL PRINT

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25-MAR-1992 11:03

BRP-RC-2-RB-007 SH 1 OF 2

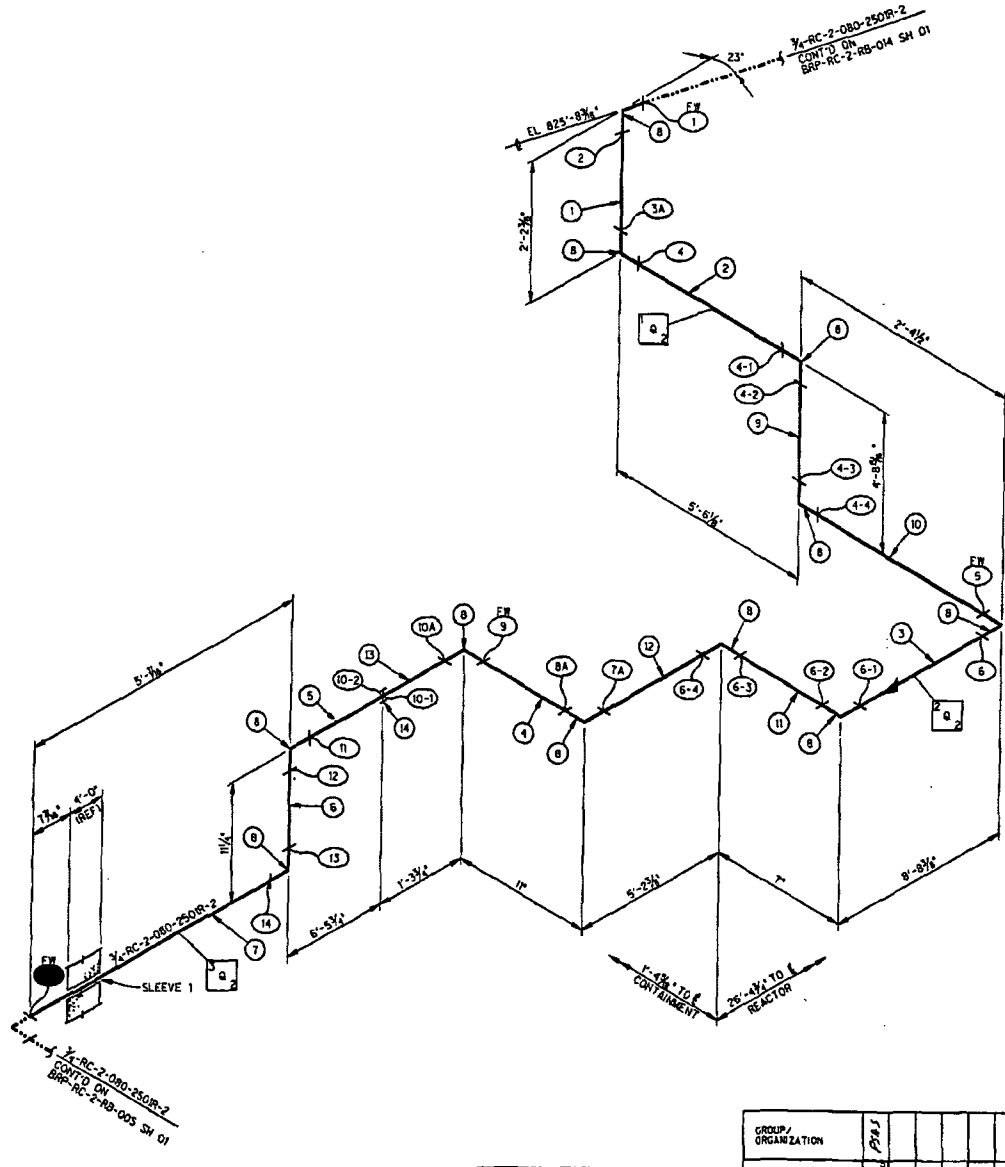

IMAGE REFLECTS DOCUMENT QUALITY

THIS DRAWING CREATED ELECTRONICALLY

BILL OF MATERIAL

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5	1	2	¾" S/160 4'-4⅛" EST LG	SA376	TP304	BR/
6	1	2	¾" S/160 0'-9⅝" EST LG	SA376	TP304	BR/
7	1	2	¾" S/160 5'-1½" EST LG	SA376	TP304	BR/
8	11	2	¾" 6000 LB SW 90° ELL	SA182	F304	BR/
9	1	2	¾" S/160	SA376	TP304	BR/
10	1	2	¾" S/160	SA376	TP304	BR/
11	1	2	¾" S/160	SA376	TP304	BR/
12	1	2	¾" S/160	SA376	TP304	BR/
13	1	2	¾" S/160	SA376	TP304	BR/
14	1	2	¾" 6000 LB SW CPLG	SA182	F304	BR/

REV	DWN CHKD	RE LDE	DV	APVD	REMARKS
CP-1					THIS DRAWING REVISED TO INCLUDE THE CONTENTS OF TU ELECTRIC DWG BRP-RF-2-RB-007 REV 5.

NOTICE

DESIGN CHANGE STATUS OF THIS DRAWING SHALL BE CHECKED AT A COMPUTER TERMINAL PRIOR TO USE.

SPOOLS 1 THRU 3 BY B&R.

CONTRACT	PROJECT
M2-0513	

P.O. NO.	SPEC.	DESIGN CAT./CL.
M2-0250	M-2003	2501R-2

NOTES

1. REFER TO MRS (MANUFACTURING RECORD SHEET) FOR TYPE OF MATERIAL USED.

TU ELECTRIC
CPSES
GLEN ROSE, TEXAS

REACTOR COOLANT

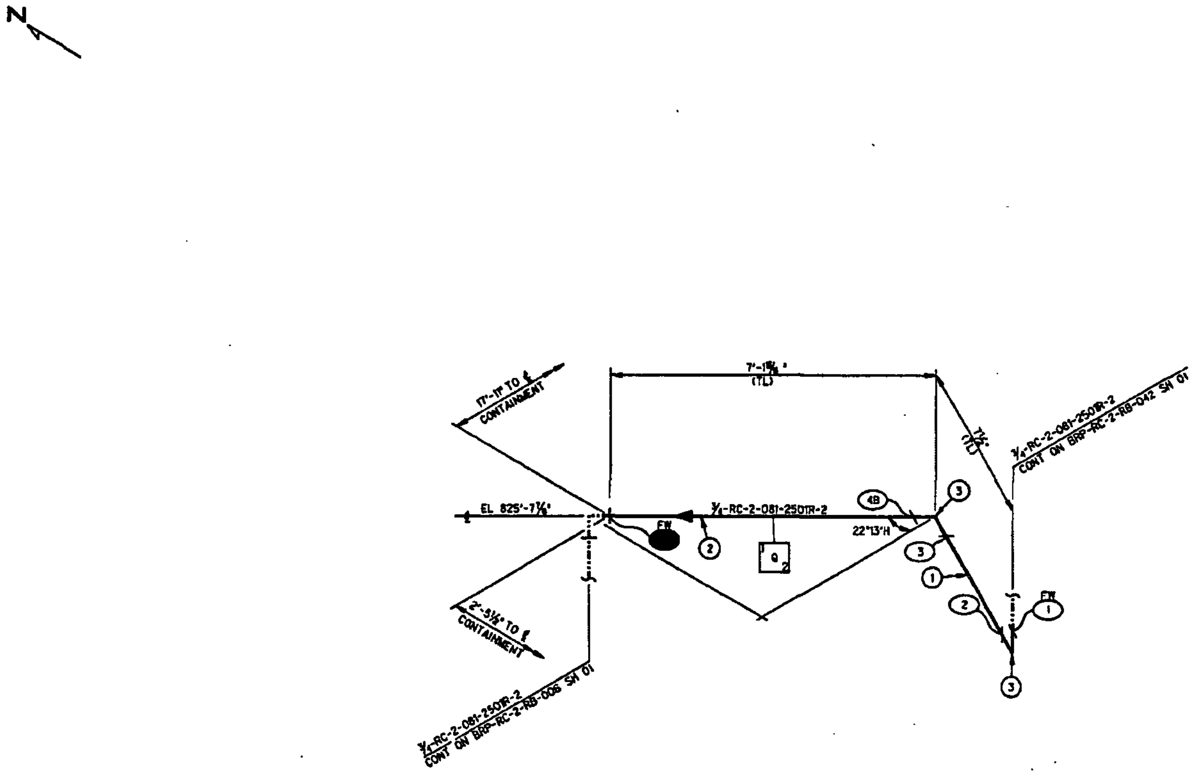
GROUP/ ORGANIZATION	PSI
REVIEWER'S INITIALS AND DATE	

REDRAWN FROM:
DWG.BRP-RC-2-RB-007 REV. 5
ORIG.ORG.TU ELECTRIC

CLASS 1

TURNOVER NO.	DWG. NO.	SH. NO.	REV.
RFT-M2-5501	BRP-RC-2-RB-007	1 OF 2	CP-1

BRP-RC-2-RB-013 SH 1 OF 2



BILL OF MATERIAL

PC NO.	REQ.	CLASS CODE	DESCRIPTION	ASME ASTM	GRADE	COLOR CODE
1	1	2	$\frac{3}{4}$" S/160 PIPE 0'-5$\frac{3}{16}$" EST LG	SA376	[illegible]	BR/
2	1	2	$\frac{3}{4}$" S/160 PIPE	SA376	[illegible]	BR/
3	2	2	$\frac{3}{4}$" 6000 LB SW 90° ELL	SA182	[illegible]	BR/

REV	DWN CHKD	RE LDE	DV	APVD	REMARKS
CP-1	[illegible]	[illegible]	N/A	[illegible]	THIS DRAWING REVISED TO INCLUDE THE CONTENTS OF TU ELECTRIC DWG BRP-RC-2-RB-013 REV 2.

SPOOL 1 BY B&R.

COMPONENTS: M2-0508, M2-0513

FLOW DIAG.: M2-0250 | SPEC.: M-2003 | DESIGN CAT./CL.: 2501R-2

NOTES

1. REFER TO MRS (MANUFACTURING RECORD SHEET) FOR TYPE OF MATERIAL USED.

11/1/90

IMAGE REFLECTS DOCUMENT QUALITY

NOTICE

DESIGN CHANGE STATUS OF THIS DOCUMENT SHALL BE CHECKED AT A COMPUTER TERMINAL PRIOR TO USE

THIS DRAWING CREATED ELECTRONICALLY

GROUP/ORGANIZATION

REVIEWER'S INITIALS AND DATE

REDRAWN FROM: DWG. BRP-RC-2-RB-013 REV. 2

ORIG. ORG. TU ELECTRIC

CLASS I

TU ELECTRIC
CPSES
GLEN ROSE, TEXAS

REACTOR COOLANT

TURNOVER NO.: RFT-M2-5501 | DWG. NO.: BRP-RC-2-RB-013 | SH. NO.: 1 OF 2 | REV.: CP-1

15-NOV-1990 20:02

CPE

BRP-RC-2-RB-014 SH 1 OF 2

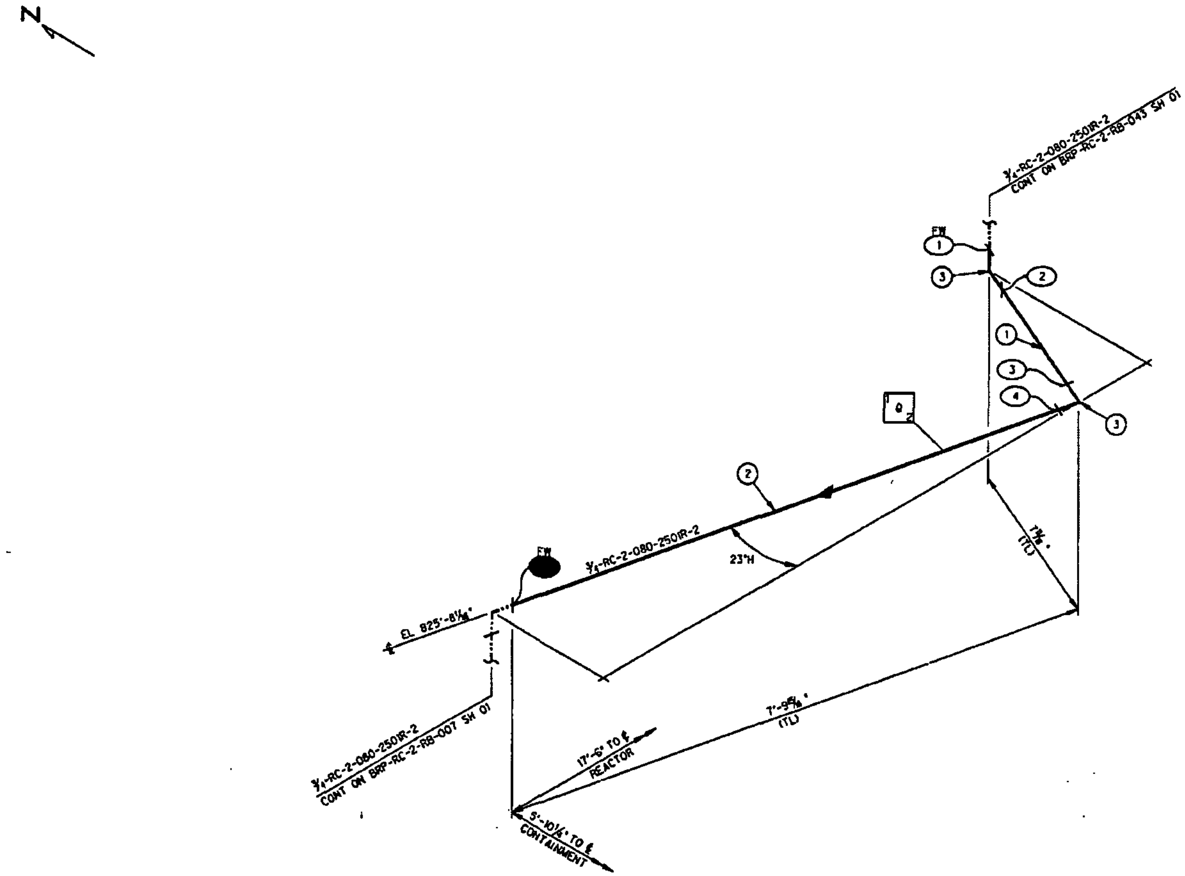


IMAGE REFLECTS DOCUMENT QUALITY

BILL OF MATERIAL

PC NO.	REQ.	CLASS CODE	DESCRIPTION	ASME ASTM	GRADE	COLOR CODE
1	1	2	3/4" S/160 PIPE 0'-5 5/8" EST LG	SA376	[illegible]	BR/
2	1	2	3/4" S/160 PIPE 7'-9 5/16" EST LG	SA376	[illegible]	BR/
3	2	2	3/4" 6000 LB SW 90° ELL	SA182	[illegible]	BR/

REV	DWN CHKD	RE LOE	DV	APVD	REMARKS
CP-1			N/A		THIS DRAWING REVISED TO INCLUDE THE CONTENTS OF TU ELECTRIC DWG BRP-RC-2-RB-014 REV 2.

NOTICE

DESIGN CHANGE STATUS OF THIS DRAWING SHALL BE CHECKED AT A ... TERMINAL PRIOR TO USE

SPOOL 1 BY B&R.

COMPOSITE: M2-0508, M2-0513

FLOW DIAG.: M2-0250 | SKE: M-2003 | DESIGN CAT./CL.: 2501R-2

NOTES

1. REFER TO MRS (MANUFACTURING RECORD SHEET) FOR TYPE OF MATERIAL USED.

STATE OF TEXAS ...

10-30-90

TU ELECTRIC
CPSES
GLEN ROSE, TEXAS

REACTOR COOLANT

THIS DRAWING CREATED ELECTRONICALLY

GROUP/ORGANIZATION

REVIEWER'S INITIALS AND DATE

REDRAWN FROM: DWG. BRP-2-RB-014 REV. 2
ORIG. ORG. TU ELECTRIC

CLASS I

TURNOVER NO. RFT-M2-5501 | DWG. NO. BRP-RC-2-RB-014 | SH. NO. 1 OF 2 | REV. CP-1

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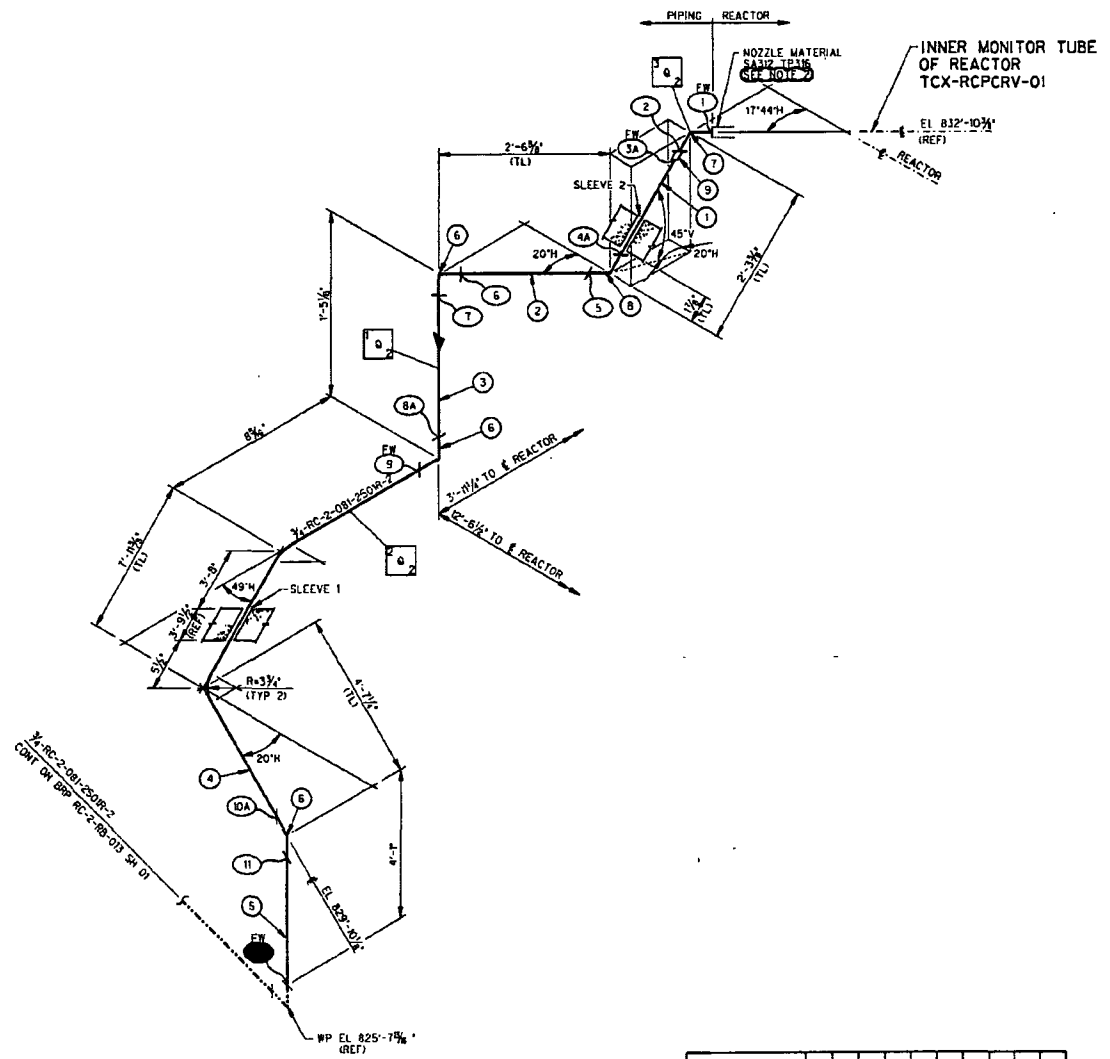
FINAL PRINT

Attachment to TXX-15022
Page 8 of 9

BRP-RC-2-RB-042 SH 1 OF 2



THIS DRAWING CREATED ELECTRONICALLY

GROUP/ ORGANIZATION

REVIEWER'S INITIALS AND DATE

CLASS 1

21-OCT-1992 13:20

HRCR00424.IGN

BILL OF MATERIAL

PC NO.	REQ.	CLASS CODE	DESCRIPTION	ASME ASTM	GRADE	COLOR CODE
1	1	2	¾" S/160 PIPE 2'-0¼" EST LG	SA376	TP316	BR/
2	1	2	¾" S/160 PIPE 2'-4⅝" EST LG	SA376	TP316	BR/
3	1	2	¾" S/160 PIPE 1'-3⅛" EST LG	SA376	TP316	BR/
4	1	2	¾" S/160 PIPE 13'-2⅝" EST LG	SA376	TP316	BR/
5	1	2	¾" S/160 PIPE 4'-0⅛" EST LG	SA376	TP316	BR/
6	3	2	¾" 6000 LB SW 90° ELL	SA182	F316	BR/
7	1	2	1" 6000 LB SW 45° ELL	SA182	F316	BR/
8	1	2	¾" 6000 LB SW 45° ELL	SA182	F316	BR/
9	1	2	1"x¾" 6000 LB SW RED INSERT	SA182	F316	BR/

REV	DWN CHKD	RE & DF	DV	APVD	REMARKS
CP-4	BH 10-22-92	TRT 10-22-92	N/A	10-22-92	THIS DRAWING REVISED FOR EDITORIAL CHANGES AS NOTED.

COMPONENTS M2-0308, M2-0507 ANSI

FLOW DIAG. M2-0250 SPEC. M-2003 DESIGN CAT./CL. 2501R-2

NOTES

1. REFER TO MRS (MANUFACTURING RECORD SHEET) FOR TYPE OF MATERIAL USED.
2. 1" 45° SW ELL IS WELDED DIRECTLY TO INNER MONITOR NOZZLE. CLASS 1 TO CLASS 2 BREAK OCCURS UPSTREAM OF THIS NOZZLE.

STATE OF TEXAS — R. A. Simpson — 68108 — REGISTERED PROFESSIONAL ENGINEER

Ronald J. Dehan 10-22-92

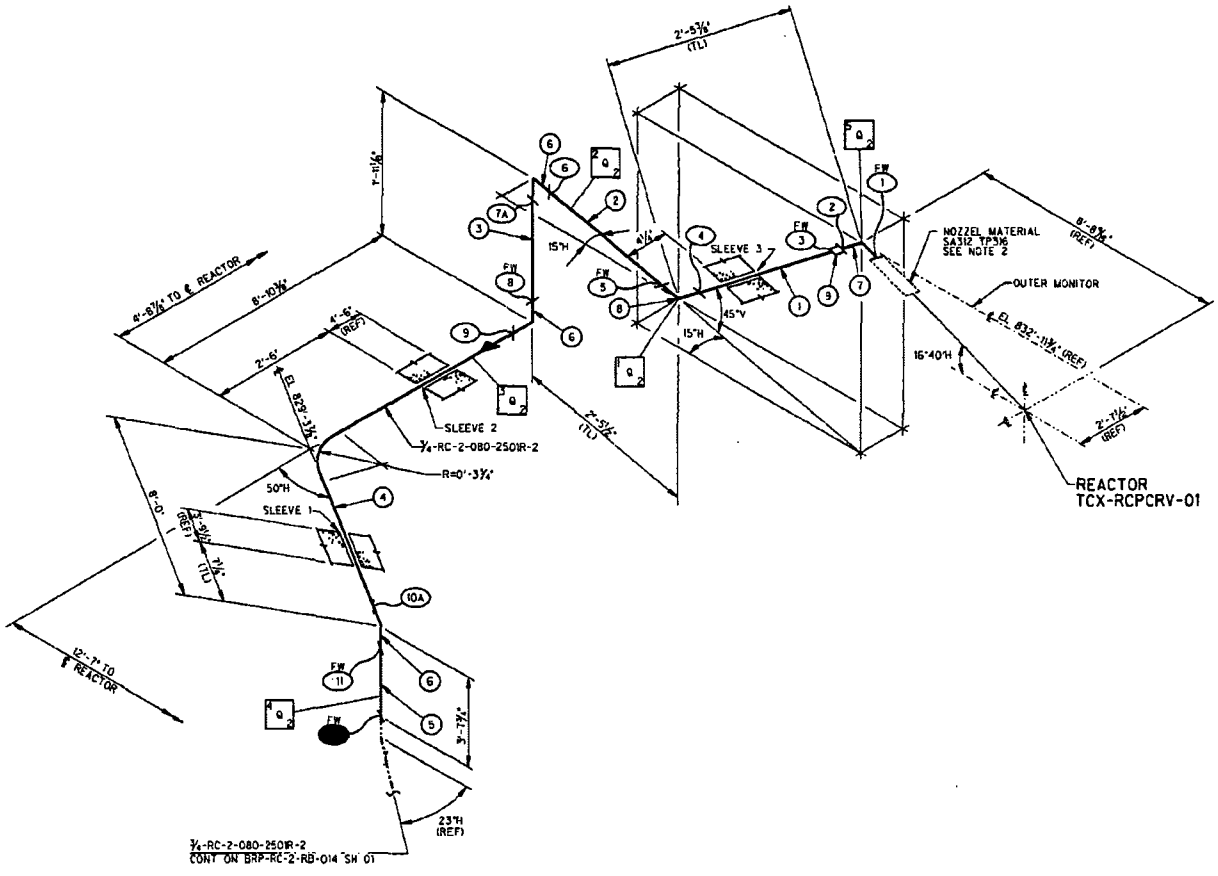
TU ELECTRIC
CPSES
GLEN ROSE, TEXAS

REACTOR COOLANT

TURNOVER NO. RFT-M2-9501 DWG. NO. BRP-RC-2-RB-042 SH. NO. 1 OF 2 REV. CP-4

FINAL PRINT

BRP-RC-2-RB-043 SH 1 OF 2



BILL OF MATERIAL

PC NO.	REQ.	CLASS CODE	DESCRIPTION	ASME ASTM	GRADE	COLOR CODE
1	1	2	¾" S/160 PIPE 2'-2¾" EST LG	SA376	TP304 TP316	BR/
2	1	2	¾" S/160 PIPE 2'-2⅝" EST LG	SA376	TP304 TP316	BR/
3	1	2	¾" S/160 PIPE 1'-9⅛" EST LG	SA376	TP304 TP316	BR/
4	1	2	¾" S/160 PIPE 16'-7⅞" EST LG	SA376	TP304 TP316	BR/
5	1	2	¾" S/160 PIPE 3'-6⅞" EST LG	SA376	TP304 TP316	BR/
6	3	2	¾" 6000 LB SW 90° ELL	SA182	F304 F316	BR/
7	1	2	1" 6000 LB SW 45° ELL	SA182	F304 F316	BR/
8	1	2	¾" 6000 LB SW 45° ELL	SA182	F304 F316	BR/
9	1	2	1"x¾" 6000 LB SW RED INSERT	SA182	F304 F316	BR/

REV	DRAWN CHKD	RE LDE	DV	APVD	REMARKS
CP-3			N/A		THIS DRAWING REVISED TO INCORPORATE M-S PUNCHLIST COMMENTS.

COMPOSITE M2-0507 PART

FLOW DIAG. M2-0250 SPEC M-2003 DESIGN CAT./CL. 2501R-2

NOTES
1. REFER TO MRS (MANUFACTURING RECORD SHEET) FOR (TYPE OF MATERIAL USED.
2. 1" 45° SW ELL IS WELDED DIRECTLY TO OUTER MONITOR NOZZLE. CLASS 1 TO CLASS 2 BREAK OCCURS UPSTREAM OF THE NOZZLE.

STATE OF TEXAS R. J. REDDING 6139 REGISTERED PROFESSIONAL ENGINEER

10-22-92

TU ELECTRIC
CPSES
GLEN ROSE, TEXAS

REACTOR COOLANT

TURNOVER NO. RFT-M2-5501 | DWG. NO. BRP-RC-2-RB-043 | SHT. NO. 1 OF 2 | REV. CP-3

GROUP/ ORGANIZATION

REVIEWER'S INITIALS AND DATE N/A

THIS DRAWING CREATED ELECTRONICALLY

CLASS 1

21-OCT-1992 13:13

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