

79-14 PHASE II
 DEVIATION EVALUATION FORM
 WATTS BAR NUCLEAR PLANT UNIT 1

Revision 0
 Page 1 of 3

Package No.: 1T03-47W427-200 Inspection Drawing: ⁽¹⁾ See Package No.

(2) Deviation No.	(3) Phase I Discrepancy No.	(4) Acceptance Criteria	(5) Phase II Discrepancy No.	(6) Comments
1T03-47W427- 200 - 1H	N/A	47A050-1M R/5 Note 6	N/A	
- 2H	N/A	N3C-912 Sect. 4.1.1	N/A	
- 3H	N/A	47A050-1B R/6 Note 2	N/A	
- 4H	N/A	N3C-912 Sect. 5.2	N/A	
- 5H	N/A	47A050-1C Note 7	N/A	
- 6H	N/A	G-32 Sect. 4.6.1	N/A	

NOTES:

- (1) This is an analysis isometric drawing number.
- (2) All deviations are to be listed consecutively.
- (3) If this deviation was previously assigned a Phase I discrepancy number, identify the number and do not address columns (4) and (5).
- (4) If this deviation is acceptable per existing acceptance criteria, identify the acceptance criteria and page number and do not address column (5).
- (5) If this deviation was not assigned a Phase I discrepancy number or is not acceptable per existing acceptance criteria, then this deviation must be assigned a Phase II discrepancy number per EN DES-SEP 82-25, Attachment 4, page 4.
- (6) Any related comments of interest should be recorded.

Prepared by Robert C. McKay / *Danny Sample*
 CONST/EN DES

August 29, 1983
 Date

Reviewed by *J. D. Waldrop*
 EN DES

August 29, 1983
 Date

79-14 PHASE II
 DEVIATION EVALUATION FORM
 WATTS BAR NUCLEAR PLANT UNIT 1

Revision 0
 Page 2 of 3

Package No.: 1T03-47W427-200 Inspection Drawing: ⁽¹⁾ See Package No.

(2) Deviation No.	(3) Phase I Discrepancy No.	(4) Acceptance Criteria	(5) Phase II Discrepancy No.	(6) <u>Comments</u>
1T03-47W427- 20 - 7H	N/A	47A050-1B R/6 Note 2	N/A	
- 8H	N/A	47A050-1M R/5 Note 61 & G-43 Sect. 2.8.1.3	N/A	
- 9H	N/A	47A050-1M R/5 Note 6	N/A	
-10H	N/A	47AJ50-1C R/6 Note 7	N/A	
-11H	N/A	N3C-912 Sect. 5.1	N/A	
-12H	N/A	47A050-1C R/6 Note 7	N/A	
-13H	N/A	47A05C-1M R/5 Note 6	N/A	
-14H	N/A	47A050-1C R/6 Note 7	N/A	
-15H	N/A	47A050-1M R/5 Note 6	N/A	
-16H	N/A	G-43 Sect. 2.9.3.b G-43 Sect. 2.8.1.1	N/A	
-17H	Per TVA reinspection and Teledyne reinspection, no deviation exists.			
-18H	N/A	N3C-912 Sect. 5.1	N/A	
-19H	N/A	47A050-1C R/6 Note 7	N/A	
-20H	N/A	47A050-1T R/1 Note 3	N/A	
-21H	N/A	G-43 Sect. 2.8.1.1	N/A	
-22H	N/A	G-43 Sect. 2.8.1.3	N/A	
-23H	N/A	G-43 Sect. 2.8.1.3	N/A	

Prepared by Robert C. McKay
 CONST/EN DES

August 29, 1983
 Date

Reviewed by J. D. Walker
 EN DES

August 29, 1983
 Date

79-14 PHASE II
 DEVIATION EVALUATION FORM
 WATTS BAR NUCLEAR PLANT UNIT 1

Revision 0
 Page 3 of 3

Package No.: 1T03-47W427-200 Inspection Drawing: ⁽¹⁾ See Package No.

(2) Deviation No.	(3) Phase I Discrepancy No.	(4) Acceptance Criteria	(5) Phase II Discrepancy No.	(6) Comments
1T03-47W427- 200 -24H	N/A	G-43 Sect. 2.8.1.2	N/A	
-25H	1R03-47W427-200/04H	N/A	N/A	
-26H	N/A	G-43 Sect. 2.8.1.1	N/A	

Prepared by Robert C. McKay / Barry Lough
 CONST/EN DES

August 29, 1983
 Date

Reviewed by J. D. Waldrop
 EN DES

August 29, 1983
 Date

79-14 PHASE II
DISCREPANCY EVALUATION FORM
WATTS BAR NUCLEAR PLANT UNIT 1

Revision 0
Page 1 of 1

Discrepancy No.: 1T03-47W427-200/01P

Support No.: N/A

Description of Discrepancy: Deviation No: 9P The installed pipe length
of 7' -9" exceeds the analyzed dimension of 7' - 5". (Reinspection of this
line determined dimension to be 7' - 7½"). Reference MEDS memo WBN 83-1025-003.

Significant: No Nonsignificant: Yes

Definite potential for loss of pressure boundary: No

Basis for judgment: The stresses are low in the region and this nonsignificant
change in the pipe segment length will have an insignificant affect on the
analysis.

Resolution: The as-constructed pipe configuration is acceptable. Isometric
drawing No. 47W427-200 will be revised to resolve this discrepancy.

[Signature]
Preparer 11/3/83
Date

[Signature]
Checker 11-3-83
Date

[Signature]
Supervisor 11-3-83
Date

[Signature]
Concurreter 11-4-83
Date

[Signature]
Reviewer 11-4-83
Date

[Signature]
Supervisor 11/4/83
Date

WBN NRC-OIE BULLETIN 79-14 INSPECTIONS

TVA INFORMAL
REPORT TO PIECES
9-16-83

As a result of the NRC-OIE Bulletin 79-14, TVA developed the 79-14 phase I and phase II programs. The phase I program was a detailed inspection performed by CONST of all category 1 safety-related piping, 2-1/2 inches in diameter and greater, and all category 1 piping, regardless of size, which was dynamically analyzed by the computer. The inspection drawings were the piping analysis isometrics, the piping mechanical drawings, the support design drawings, and the valve drawings. The phase I program did not measure pipe member lengths, support locations, or support member sizes; however, most other items were inspected as shown on the inspection drawings. The phase II program was a detailed inspection performed by Teledyne Engineering Services (TES) of nine piping analysis isometrics of different systems agreed on with NRC. The phase II program inspected those items inspected under phase I and those items not inspected under phase I (e.g., the measurements of pipe member lengths, support locations, and support member sizes). The phase II program was a sampling program to audit the quality of TVA's phase I program and TVA's QA program in order to satisfy the requirements of the NRC-OIE Bulletin 79-14.

The phase I inspections began in January 1983. By August 1983, the inspections were approximately 70-percent complete. The phase II inspections began August 22, 1983, and were completed on September 1, 1983. A NRC phase II inspection exit meeting was held on August 31 at the plant site. A preliminary assessment of the discrepancies, used at the exit meeting, is attached.

During the phase I program, all construction deviations which were outside of TVA tolerances were identified as discrepancies to be tracked, evaluated, and resolved by TVA. During the phase II program, all construction deviations which were outside of TVA tolerances were identified as discrepancies, unless already identified under phase I, to be tracked, evaluated, and resolved by TVA. All discrepancies under phase II are being classified as nonsignificant, significant, or definite potential for loss of pressure boundary. So far, all phase II discrepancies have been classified as nonsignificant. No phase II discrepancies have been identified as having significant impact on the piping analysis. The majority of the phase II discrepancies has been clearance discrepancies, due to conduit, steel, instrument lines, etc., being recently installed too close to the pipe. The phase II clearance discrepancies could result in potential damage to the insulation on the piping, so some field changes will be performed to prevent the interferences from occurring. All other phase II nonclearance discrepancies require no field changes whatsoever, as of now.

Future schedule dates related to the 79-14 inspections are as follows:

<u>Item</u>	<u>Completion Date</u>
TES report of trip	9-23-83
Phase II discrepancy evaluation	10-15-83
Final report to close 79-14 NCR	12-1-83

- I. Phase II Contractor: Teledyne Engineering Services
 II. Phase II Start Date: August 22, 1983
 III. Total Phase II Packages: 9 Packages (listed below)
 IV. Teledyne Inspection Completed: 9 Packages
 V. TVA Review Complete: 9 Packages (status shown below)

System	Phase II Package No.	Deviations		Discrepancies		Non-Significant		Significant		DPLPB*	
		Pipe	Hangers	Pipe	Hangers	Pipe	Hangers	Pipe	Hangers	Pipe	Hangers
MS	1T01-600200-06-04	49	53	7	14	7	14	0	0	0	0
FW	1T03-47W401-208	20	15	0	0	0	0	0	0	0	0
AFW	1T03-47W427-200	10	26	1	0	1	0	0	0	0	0
CVCS	1T62-47W406-203	18	22	4	7	4	7	0	0	0	0
SI	1T63-47W435-217	17	21	0	0	0	0	0	0	0	0
ERCW	1T67-47W450-217	8	52	1	4	1	4	0	0	0	0
RC	1T68-47W465-206	54	44	12	5	12	5	0	0	0	0
CC	1T70-47W464-242	3	55	1	2	1	2	0	0	0	0
CS	1T72-47W437-201	42	58	0	3	0	0	0	0	0	0

*Definite Potential For Loss of Pressure Boundary

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

CEB '83 0512 008

TO : G. Wadewitz, Project Manager, Watts Bar Nuclear Plant, CONST (3)

FROM : J. C. Standifer, Project Manager, Watts Bar Design Project, 204 GB-K

DATE : MAY 12 1983

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 1 - PROGRAM FOR NRC-OIE BULLETIN 79-14 PHASE 2 INSPECTIONS

CEB has overall responsibility to implement the subject inspections at WBN. EN DES-SEP 82-25 is being written to control this activity, and onsite inspections will occur between ~~July 5 and 16, 1983.~~

CEB will provide an independent inspection team of 4 to 6 persons not involved in the NRC-OIE Bulletin 79-14 phase 1 inspections currently in progress. In addition, a small onsite CEB and WBP engineer team will be provided. WBN CONST is requested by CEB to support this effort by providing the following services, facilities, and equipment during the above time period:

1. Field engineers to guide the team in locating the piping in the plant.
2. Measuring devices, flashlights, ladders, lighting, scaffolding, etc., as required to perform the inspections.
3. Onsite office space for approximately 12 people.
4. Onsite space for training (approximately 200 feet square).
5. Inspection package for each of the randomly selected problems.

All inspection packages must contain the following documents:

1. Prints (2) of the math model isometric drawing for rigorously analyzed piping.
2. Prints (2) of the applicable mechanical drawing for alternately supported piping.
3. Prints of the mechanical (physical) drawings which show the actual routing of the piping in the building.
4. Prints of the manufacturers' drawings of all valves inspected and/or special components within the piping system.

2

G. Wadewitz

WATTS BAR NUCLEAR PLANT UNIT 1 - PROGRAM FOR NRC-OIE BULLETIN 79-14 PHASE 2 INSPECTIONS

5. Copies of the inspection/recording forms.
6. Prints of pipe support design drawings as required to perform inspections.

Original Signed By
J.C. Standifer

J. C. Standifer

ROB:JDH:DCG

cc: R. O. Barnett, W9D224 C-K (2)
C. Bonine, E7B24 C-K
MEDS, W5B63 C-K
R. M. Pierce, 104 ESTA-K
M. N. Sprouse, W11A9 C-K

Principally Prepared By: J. D. Hansen, Extension 3702

NOT
SWP-GB-K
PLEASE FORWARD

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : G. Wadewitz, Project Manager, Watts Bar Nuclear Plant, CONST (3)

FROM : J. C. Standifer, Project Manager, Watts Bar Design Project, 704 GB-K

DATE :

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 1 - PROGRAM FOR NCR-OIE BULLETIN 79-14 PHASE 2 INSPECTIONS

Reference: Your memorandum from J. C. Standifer dated May 12, 1983
(CEB 830512 008)

The 79-14 phase 2 inspections will occur between August 1 and 13, 1983 instead of between July 5 and 13, 1983 as specified in the referenced memorandum.

CEB has overall responsibility to implement the subject inspections at WBN. EN DES-SEP 82-25 is being written to control this activity, and onsite inspections will occur between July 5 and 16, 1983.

CEB will provide an independent inspection team of 4 to 6 persons not involved in the NCR-OIE Bulletin 79-14 phase 1 inspections currently in progress. In addition, a small onsite CEB and WBP engineer team will be provided. WBN CONST is requested by CEB to support this effort by providing the following services, facilities, and equipment during the above time period:

1. Field engineers to guide the team in locating the piping in the plant.
2. Measuring devices, flashlights, ladders, lighting, scaffolding, etc., as required to perform the inspections.
3. Onsite office space for approximately 12 people.
4. Onsite space for training (approximately 200 feet square).
5. Inspection package for each of the randomly selected problems.

All inspection packages must contain the following documents:

1. Prints (2) of the math model isometric drawing for rigorously analyzed piping.
2. Prints (2) of the applicable mechanical drawing for alternately supported piping.
3. Prints of the mechanical (physical) drawings which show the actual routing of the piping in the building.
4. Prints of the manufacturers' drawings of all valves inspected and/or special components within the piping system.

2

G. Wadewitz

WATTS BAR NUCLEAR PLANT UNIT 1 - PROGRAM FOR NRC-OIE BULLETIN 79-14 PHASE 2
INSPECTIONS

5. Copies of the inspection/recording forms.
6. Prints of pipe support design drawings as required to perform inspections.

J. C. Standiter

ROB:JDH:DCG

cc: R. O. Barnett, W9D224 C-K (2)
C. Bonine, E7B24 C-K
MEDS, W5B63 C-K
R. M. Pierce, 104 ESTA-K
M. N. Sprouse, w11A9 C-K

Principally Prepared By: J. D. Hansen, Extension 3702

083175.03

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

CEB'83 0802 002

TO : G. Wadewitz, Project Manager, Watts Bar Nuclear Plant, CONST (3)

FROM : J. C. Standifer, Project Manager, Watts Bar Design Project, 204 GB-K

DATE : AUG 2 1983

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT 1 - PROGRAM FOR NCR-OIE BULLETIN 79-14 PHASE II INSPECTIONS

Reference: My memorandum to you dated May 12, 1983
(CEB 830512 008)

The 79-14 Phase II inspections will occur between August 18 and 31, 1983. CONST is responsible for preparing the inspection packages. A package must be prepared for each of the following analysis isometrics: 47W400-216, 47W401-208, 47W406-203, 47W427-200, 47W435-217, 47W437-201, 47W450-217, 47W454-242, and 47W465-206.

Original Signed By
J.C. Standifer
J. C. Standifer

*cc: J.C. Wgk
SK2*

ROB_E

ROB:SKS:DCG

cc: R. O. Barnett, W9D224 C-K (2)
C. Bonine, E7B24 C-K
MEDS, W5B63 C-K
R. M. Pierce, 104 ESTA-K
M. N. Sprouse, W11A9 C-K

Principally Prepared By: S. K. Sherfey, Extension 4318

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

CEB '83 0902 004

TO : Those listed

FROM : M. N. Sprouse, Manager of Engineering Design, W11A9 C-K

DATE : SEP 2 1983

SUBJECT: EN DES SPECIAL ENGINEERING PROCEDURE (SEP) DISTRIBUTION - DIVISION LEVEL - TRANSMITTAL MEMO NO. EN DES-SEP 82-25 RO

The following new EN DES-SEP is attached for your information and filing:

<u>Item</u>	<u>Title</u>	<u>Affects</u>
EN DES-SEP 82-25 RO	Program for NRC-OIE Bulletin 79-14 Phase II Inspections at Watts Bar Nuclear Plant Unit 1	CEB WBP

Also attached is a revised page of the EN DES-SEP Index.

Original Signed By
E. R. ARMSTRONG

M. N. Sprouse

- R. O. Barnett, W9D224 C-K (2) _____
- E. G. Beasley, W12B21 C-K (1) _____
- ESB Procedures Control Section, F70 C-K (1) _____
- R. M. Pierce, 104 ESTA-K (1) _____
- J. C. Standifer, 204 GB-K (7) _____

ROB:SKS:BSH
Attachments
cc: MEDS, W5B63 C-K

----- FOLD HERE TO RETURN -----

NOTE TO THE ABOVE LISTED:

1. For address changes to the above distribution please notify
S. K. Sherfey at 4318.
2. To provide evidence of receipt of this transmittal, please initial and date the duplicate copy of this page in the space provided after your name and return the copy as follows:

RETURN TO:

R. R. DeVault, W9A2 C-K

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

CEB'83 0921 019

TO : Those listed

FROM : M. N. Sprouse, Manager of Engineering Design, W11A9 C-K

DATE : **SEP 21 1983**

SUBJECT: EN DES SPECIAL ENGINEERING PROCEDURE (SEP) DISTRIBUTION - DIVISION LEVEL - TRANSMITTAL MEMO NO. EN DES-SEP 82-25 R1

The following revised EN DES-SEP is attached for your information and filing:

<u>Item</u>	<u>Title</u>	<u>Affects</u>
EN DES-SEP 82-25	Program for NRC-OIE Bulletin 79-14 Phase II Inspections at Watts Bar Nuclear Plant Unit 1	CEB WBP

For a description of the changes to the revised SEP please refer to the revision log. Section supervisors should review and discuss applicable changes with their employees.

Also attached is a revised page of the EN DES-SEP Index.

M. N. Sprouse

- R. O. Barnett, W9D224 C-K (2) _____
- F. C. Bessley, W12221 C-K (1) _____
- CIVIL ENGINEERING BRANCH
- ESB Procedures Control Section, S70 C-K (1) _____
- OCT 4R 1983 Pierce, 104 ESTA-K (1) _____
- J. C. Standifer, 204 GB-K (7) _____

IN	OUT
N	Date Time
ROB	ROB
JWA	JWA
TCC	TCC
WAE	WAE
ROH	ROH
TWR	TWR

W5B63 C-K

----- FOLD HERE TO RETURN -----

NOTE TO THE ABOVE LISTED:

1. If address changes to the above distribution please notify S. K. Sherfey at 4318.

2. To provide evidence of receipt of this transmittal, please initial and date the duplicate copy of this page in the space provided after your name and return the copy as follows:

RETURN TO: R. K. Devault, W9A2 C-K



UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY
CEB '831101 900

Dated

: R. O. Barnett, Chief, Civil Engineering Support Branch, W9D224 C-K

FROM : J. C. Standifer, Project Manager, Watts Bar Design Project, 204 GB-K

DATE : 10/25/83

SUBJECT: TRANSMITTAL OF PIPING ANALYSIS/~~OR PIPE RUPTURE~~ INFORMATION FOR
Prob No: VARIOUS FILE (WBN 66D) - QUALITY INFORMATION,
 STANDALONE QUALITY INFORMATION, NOT QUALITY RELATED,
ECN 3100 OR DCR _____.

Attached is the piping analysis/ pipe rupture information
for the VARIOUS system as requested by your
SEP 82-75-25 or provided without request.

This information is: (check one)

- A copy of controlled information.
- Advanced information that will be added to controlled documents.
- Other 79-14 PKG NO. FOR PHASE II

The information transmitted herein will be incorporated into: (check one)

- Piping Analysis Piping Isometric Pipe Rupture Report
- Calculations

B. G. Pratt
for J. C. Standifer

Attachments: (check one)

- TVA Drawing No.
- Vendor Drawing No.
- Sketch
- Piping Dislo.
- VALVE
- Analysis Information Form
- Pipe Rupture Information
- Other 79-14 PKG. PHASE II
566 ATTACHED

T. J. Blane
Preparer
N/A
Independent Reviewer

To: J. C. Standifer, Project Manager, Watts Bar Design Projects, 204 GB-K
From: R. O. Barnett, Chief, Civil Engineering Support Branch, W9D224 C-K
Date: NOV 01 1983
Subject: TRANSMITTAL OF PIPING ANALYSIS/PIPE RUPTURE INFORMATION FOR

We acknowledge receipt of the above information. This information is: (check one)

- Satisfactory as received
- Insufficient
- Other _____

WITNESSED BY SIGNATURE TO RETURN TO YOU BY NOV 1.

R. O. Barnett
R. O. Barnett
K. OPH
K. OPH
& C. RESNA

cc: MEDS, W5B63 C-K



TO: J. HANSEN / D. WILSON
FM: R.G. PRATT

SUBJECT: PHASE II 79-14 INSPECTION PACKAGES.

WBP HAS REVIEW THE 79-14 PHASE II
PACKAGES AS STATED PER SEP 82-25 RI.

PACKAGES REVIEWED ARE LISTED BELOW:

IT01-0600200-06-04

IT03-47W401-208

IT03-47W427-200 *

IT62-47W406-203

IT63-47W435-217

IT67-47W450-217 *

IT68-47W465-206

IT70-47W464-242

IT72-47W437-201

WE ARE RETURNING SAID PACKAGES FOR CEB'S
FINAL REVIEW AS PER SEP 82-25 RI.

WBP REQUEST THAT CEB MAKES COPIES OF
THE FINAL RESOLUTIONS OF THE DISCREPANCIES AND
FORWARD THEM TO R.G. PRATT, FOR DISTRIBUTION WITHIN
WBP. A COPY OF THE FINAL DISCREPANCY IS REQ'D
FOR DWG. REV.

* THERE ARE TWO DISCREPANCIES THAT REQ'D
REINSPECTION, IT67-47W450-217/04H &
IT03-47W427-200/01P, A MEMO IS FORTH
COMING FROM BOB MCKAY.

UNITED STATES GOVERNMENT

Memorandum

TENNESSEE VALLEY AUTHORITY

TO : J. C. Standifer, Project Manager, Watts Bar Design Project , 204 GB-K

FROM : R. O. Barnett, Chief, Civil Engineering Support Branch, W9D224 C-K

DATE : NOV 14 1983

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT(S) 1 - TRANSMITTAL OF
PIPING ANALYSIS/~~PIPE RUPTURE~~ INFORMATION ASSOCIATED WITH SEP 82-25
- QUALITY INFORMATION, STANDALONE QUALITY
INFORMATION, NOT QUALITY RELATED, SYSTEM VARIOUS, ECN/DCR 4376

Attached are preliminary piping analysis results, final piping analysis results,
 pipe rupture information, request for information, other 7914
PHASE II INSPECTION & EVALUATION RESULTS, for CEB analysis No. _____,
isometric No. _____. This work was associated with ECN 4376,
other SEP 82-25. The attached information is to be
used for support design, protective device design, information only,
 documentation change (your design is not affected). Any questions concerning this
information should be addressed to S.K. SHERFEY W9C173 C-K at
extension 4318. Additional comments _____

Prepared by S.K. Sherfe ^{JDH} =

Independent Review Alan D. Lowards

William J. Kagay
for R. O. Barnett
WR

ROB:
Attachment(s): 9 INSPECTION PACKAGES

TO : R. O. Barnett, Chief, Civil Engineering Support Branch, W9D224 C-K

FROM : J. C. Standifer, Project Manager, Watts Bar Design Project , 204 GB-K

DATE :

SUBJECT: WATTS BAR NUCLEAR PLANT UNIT(S) _____ TRANSMITTAL OF
PIPING ANALYSIS/PIPE RUPTURE INFORMATION ASSOCIATED WITH _____

We acknowledge receipt of the above information. This information is: (check one)

- Satisfactory as received
- Insufficient
- Other _____

Prepared by _____ J. C. Standifer

JCS:
Attachment(s)
cc: MEDS, W5B63 C-K w/Attachment(s): _____

GH2.R2

79-14 PHASE II INSPECTION FORMS

DATA PACKAGE COVER SHEET

Revision _____

WATTS BAR NUCLEAR PLANT UNIT 1

Package No.: _____

- 1. The attached package contains _____ data sheet(s) 1
- _____ data sheet(s) 2
- _____ data sheet(s) 3
- _____ data sheet(s) 4
- _____ data sheet(s) 5
- _____ data sheet(s) 6

- 2. No additional supports exist on piping other than those specified by the analysis isometric.

Remarks:

Inspector No. 1

Date

Inspector No. 2

Date

3. Reviewed by: _____
EN DES Site Representative

Date

79-14 PHASE II DATA SHEET 1

Revision _____

PIPE SUPPORT* CHECKLIST

Page ____ of ____

WATTS BAR NUCLEAR PLANT UNIT 1

Package No.: _____

1. Pipe Support Drawing No. _____

2. Is support installed per support drawing(s)? (Yes or No) _____

If no, indicate deviations on the support drawing and list them below.

NOTE: See Attachment 2, section 2.0, for items to be checked and instructions.

3. Is there load carrying attachment(s) welded to pipe? (Yes or No) _____

If yes, does the weld(s) conform to support drawing(s)? (Yes or No) _____

Inspector No. 1

Date

Inspector No. 2

Date

EN DES Site Representative Comments:

EN DES Site Representative

Date

*For springs use Data Sheet 5.

79-14 PHASE II DATA SHEET 2

Revision _____

VALVE CHECKLIST

Page ____ of ____

WATTS BAR NUCLEAR PLANT UNIT 1

Package No.: _____

- 1. Valve Tag No. _____
- TVA Valve Mark No. _____
- Valve Size and Type (e.g., 4" BW Globe) _____
- Valve Drawing No. _____
- Valve Manufacturer and Model No. _____

Note: See Attachment 2, section 3.0, for instructions.

- 2. Is valve location correct? (Yes or No) _____
(If no, show location on drawing)
- 3. If the valve has an extended operator, is the orientation of the operator correct? (Yes or No) _____
(If no, indicate orientation on drawing.)
- 4. Operator Manufacturer and Model No. _____

Inspector No. 1

Date

Inspector No. 2

Date

EN DES Site Representative Comments:

EN DES Site Representative

Date

79-14 PHASE II DATA SHEET 3

Revision _____

ISOMETRIC CHECKLIST

Page ____ of ____

WATTS BAR NUCLEAR PLANT UNIT 1

Package No.: _____

1. Does the general configuration of the piping system, including support location, match the isometric? (Yes or No) _____
2. List deviations below and submit marked drawings. See Attachment 2, section 4.0, for instructions.

Inspector No. 1

Date

Inspector No. 2

Date

EN DES Site Representative Comments:

EN DES Site Representative

Date

79-14 PHASE II DATA SHEET 4 Revision _____
PENETRATION CLEARANCE CHECKLIST Page ___ of ___
WATS BAR NUCLEAR PLANT UNIT 1

Package No.: _____

1. Does the pipe have proper clearance through all penetrations (see Attachment 2, section 5.0, for instructions)? (Yes or No): _____
If no, indicate interferences below and mark them on the isometric. Initial and date beside each penetration of the design drawing as it is checked.

Inspector No. 1

Date

Inspector No. 2

Date

EN DES Site Representative Comments:

EN DES Site Representative

Date

79-14 PHASE II DATA SHEET 5

Revision _____

SPRING HANGER CHECKLIST

Page ____ of ____

WATTS BAR NUCLEAR PLANT UNIT 1

Package No.: _____

Hanger Dwg. No.: _____

Note: See Attachment 2, section 6.0, for instructions.

1. Vendor _____

2. Size and Type of Canister _____

3. Travel Limits (inches) _____

4. Load Setting and Condition (lb)
(i.e., hot or cold, full or empty) _____

5. Dynamic Travel Limit (inches) _____

Inspector No. 1

Date

Inspector No. 2

Date

EN DES Site Representative Comments:

EN DES Site Representative

Date

79-14 PHASE II DATA SHEET 6

Revision _____

GENERAL CLEARANCE CHECKLIST

Page ____ of ____

WATTS BAR NUCLEAR PLANT UNIT 1

Package No.: _____

Identify interferences below per Attachment 2, section 5.0.

INTERFERENCE IS _____ IN THE _____ DIRECTION FROM PIPE TO _____
_____, LOCATION: _____

INTERFERENCE IS _____ IN THE _____ DIRECTION FROM PIPE TO _____
_____, LOCATION: _____

INTERFERENCE IS _____ IN THE _____ DIRECTION FROM PIPE TO _____
_____, LOCATION: _____

INTERFERENCE IS _____ IN THE _____ DIRECTION FROM PIPE TO _____
_____, LOCATION: _____

INTERFERENCE IS _____ IN THE _____ DIRECTION FROM PIPE TO _____
_____, LOCATION: _____

INTERFERENCE IS _____ IN THE _____ DIRECTION FROM PIPE TO _____
_____, LOCATION: _____

INTERFERENCE IS _____ IN THE _____ DIRECTION FROM PIPE TO _____
_____, LOCATION: _____

Inspector No. 1

Date

Inspector No. 2

Date

EN DES Site Representative

Date

79-14 PHASE II
 DEVIATION EVALUATION FORM
 WATTS BAR NUCLEAR PLANT UNIT 1

Revision _____
 Page ____ of ____

Package No.: _____ Inspection Drawing: ⁽¹⁾ See Package No. _____

(2) Devia- tion No.	(3) Phase I Discrepancy No.	(4) Acceptance Criteria	(5) Phase II Discrepancy No.	(6) Comments

NOTES:

- (1) This is an analysis isometric drawing number.
- (2) All deviations are to be listed consecutively.
- (3) If this deviation was previously assigned a Phase I discrepancy number, identify the number and do not address columns (4) and (5).
- (4) If this deviation is acceptable per existing acceptance criteria, identify the acceptance criteria and page number and do not address column (5).
- (5) If this deviation was not assigned a Phase I discrepancy number or is not acceptable per existing acceptance criteria, then this deviation must be assigned a Phase II discrepancy number per EN DES-SEP 82-25, Attachment 4, page 4.
- (6) Any related comments of interest should be recorded.

Prepared by _____
 CONST/EN DES

_____ Date

Reviewed by _____
 EN DES

_____ Date

79-14 PHASE II
DEVIATION EVALUATION FORM
WATTS BAR NUCLEAR PLANT UNIT 1

Revision _____
Page ___ of ___

Package No.: _____ Inspection Drawing: ⁽¹⁾ See Package No. _____

(2) <u>Devia-</u> <u>tion</u> <u>No.</u>	(3) Phase I <u>Discrepancy</u> <u>No.</u>	(4) <u>Acceptance</u> <u>Criteria</u>	(5) Phase II <u>Discrepancy</u> <u>No.</u>	(6) <u>Comments</u>

Prepared by _____
CONST/EN DES

_____ Date

Reviewed by _____
EN DES

_____ Date

Note: See first deviation evaluation form for notes.

033131.25

79-14 PHASE II
DISCREPANCY EVALUATION FORM
WATTS BAR NUCLEAR PLANT UNIT 1

Revision _____
Page ____ of ____

Discrepancy No.: _____

Support No.: _____

Description of Discrepancy: _____

Significant: _____ Nonsignificant: _____

Definite potential for loss of pressure boundary: _____

Basis for judgment: _____

Resolution: _____

Preparer

Date

Checker

Date

Supervisor

Date

Concurrer

Date

Reviewer

Date

Supervisor

Date

WATT BAR UNIT - 19 - PHASE II INSPECTION

SHT. 1 of 1

DISCREPANCY NO.	DEVIATION NO.	DISCREPANCY DESCRIPTION	RESOLUTION
IT01-0600200-06-04/01C	10C	POTENTIAL INTERFERENCE BETWEEN PIPE SPRT. HARDWARE AND MISC. STL.	CEB
IT01-0600200-06-04/02C	12C	PIPE IN CONTACT WITH PIPE SPRT. (SPR. CAN ROD).	CEB
IT01-0600200-06-04/03C	20C	PIPE IN CONTACT WITH STRUCT. STL. MEMBER.	CEB
IT01-0600200-06-04/01P	41P	PIPE SPRT. LOCATION - OUT OF TOLERANCE	CEB & WBP
IT01-0600200-06-04/02P	45P	FLOW INDIKATOR CONN. LOCATION DOES NOT AGREE WITH ANAL. ISOMETRIC.	CEB
IT01-0600200-06-04/03P	46P	INSULATION TH'KNSS. DOES NOT INCREASE W/ PIPE SIZE INCREASE. SAME TH'KNSS REQ'D.	CEB & WBP
IT01-0600200-06-04/04P	48P	PIPE SPRT LOCATION - OUT OF TOLERANCE.	CEB & WBP

WATT BAR UNIT 19TH PHASE INSPECTION

SHT. 2 of 11

DISCREPANCY NO.	DEVIATION NO.	DISCREPANCY DESCRIPTION	RESOLUTION
* ITO1-0600200-06-04/01H	09H	SPRING CAN SETTING (COLD LOAD) INCORRECT.	WBP
IT01-0600200-06-04/02H	10H	PIPE SPRT. ATTACHM'TS DEVIATE FROM DESIGN DWG.	WBP
IT01-0600200-06-04/03H	12H	PIPE SPRT. ATTACHM'TS DEVIATE FROM DESIGN DWG.	WBP
IT01-0600200-06-04/04H	15H	PIPE SPRT. ATTACHM'TS DEVIATE FROM DESIGN DWG.	WBP
IT01-0600200-06-04/05H	19H	PIPE SPRT. ATTACHM'T DEVIATES FROM DESIGN DWG.	WBP
IT01-0600200-06-04/06H	23H	SPRING CAN SETTING (COLD LOAD) INCORRECT.	WBP
IT01-0600200-06-04/07H	24H	EXIST. STR. STL. MEMB. AND ELEV. REFERENCE INCORRECT ON DES'N. DWG.	WBP

WATT BAR UNIT 19TH PHASE INSPECTION

DISCREPANCY No.	DEVIATION No.	DISCREPANCY DESCRIPTION	RESOLUTION
IT01-0600200-06-04/08H	25H	PIPE SPRT. DWG. DEVIATES FROM AS-INSTALLED CONFIGURATION.	WRP
IT01-0600200-06-04/09H	27H	PIPE SPRT. STIFFENER POSITION DEVIATES FROM DES'N. DWG.	WRP
IT01-0600200-06-04/10H	36H	PIPE SPRT. DWG. DET. DOES NOT AGREE W/ AS-INSTALLED CONFIGURATION.	WRP
IT01-0600200-06-04/11H	38H	PIPE SPRT. SNUBBER ID TAG MISSING.	WRP
IT01-0600200-06-04/12H	40H	PIPE SPRT. ATTACHMENT DIMS. DEVIATE FROM DES'N. DWG.	WRP
IT01-0600200-06-04/13H	52H	PIPE SPRT. CLAMP GAPS DEVIATE FROM DES'N DWG.	WRP
IT01-0600200-06-04/14H	53H	PIPE SPRT. DIMS. DEVIATE FROM AS-INSTALLED CONFIGURATION.	WRP

WATT BAR UNIT # 49 PHASE II INSPECTION

SHT. 4 of 11

DISCREPANCY No.	DEVIATION No.	DISCREPANCY DESCRIPTION	RESOLUTION
IT62-47W406-203/01P	P5	INSTALLED PIPE LENGTH DOES NOT AGREE W/ ANALYSIS ISOMETRIC.	CEB & WBP
IT62-47W406-203/02V	V7	VALVE ORIENTATION DOES NOT AGREE W/ ANALYSIS ISOMETRIC.	CEB & WBP
IT62-47W406-203/03V	V8	VALVE ORIENTATION DOES NOT AGREE W/ ANALYSIS ISOMETRIC.	CEB & WBP
IT62-47W406-203/04C	C10	POTENTIAL INTERFERENCE BETWEEN PIPE AND DUCT SUPPORT.	CEB
IT62-47W406-203/01H	01H	PIPE SPRT. INSTALLED CONFIGURATION DIMS. DO NOT AGREE W/ DESIGN DRAWING.	WBP
IT62-47W406-203/02H	02H	PIPE SPRT. INSTALLED CONFIGURATION DOES NOT AGREE W/ DESIGN DRAWING.	WBP
IT62-47W406-203/03H	09H	PIPE SPRT. LOCATION - OUT OF TOLERANCE.	CEB & WBP

~~WATER BAR UNIT~~ ~~PHASE II~~ ~~INSPECTION~~

SHT. 59

DISCREPANCY NO.	DEVIATION NO.	DISCREPANCY DESCRIPTION	RESOLUTION
IT62- 47W406- 203/04H	15H	PIPE SPRT. LOCATION - OUT OF TOLERANCE.	CEB & WBP
IT62- 47W406- 203/05H	18H	PIPE SPRT. LOCATION - OUT OF TOLERANCE.	CEB & WBP
IT62 47W406- 203/06H	19H	PIPE SPRT. LOCATION - OUT OF TOLERANCE	CEB & WBP
IT62 47W406- 203/07H	20H	PIPE SPRT LOCATION - OUT OF TOLERANCE	CEB & WBP
IT03- 47W427- 200/01P	9P	PIPE LENGTH (INSTALLED) DOES NOT AGREE W/ ANALYSIS ISOMETRIC.	CEB & WBP

WATT BAR UNIT PHASE I INSPECTION

SHT. 6 of 11

DISCREPANCY No.	DEVIATION No.	DISCREPANCY DESCRIPTION	RESOLUTION
1T72-47W437-201/01V	1V	VALVE OPERATOR (INSTALLED) IS NOT SHOWN ON ANALYSIS ISOMETRIC.	CEB
1T72-47W437-201/02V	2V	VALVE OPERATOR (INSTALLED) IS NOT SHOWN ON ANALYSIS ISOMETRIC.	CEB
1T72-47W437-201/03V	3V	VALVE OPERATOR (INSTALLED) IS NOT SHOWN ON ANALYSIS ISOMETRIC.	CEB
1T72-47W437-201/04V	4V	VALVE LOCATION NOT TIED DOWN.	CEB/WBP
1T72-47W437-201/05V	5V	VALVE OPERATOR (INSTALLED) IS NOT SHOWN ON ANALYSIS ISOMETRIC.	CEB
1T72-47W437-201/01H	2H	PIPE SPRT BOLT TO BOLT SPACING (INSTALLED) DOES NOT AGREE W/ DESIGN DWG.	WBP
1T72-47W437-201/02H	11H	PIPE SPRT INSTALLED CONFIGURATION DOES NOT AGREE W/ DESIGN DWG.	WBP

DISCREPANCY No.	DEVIATION No.	DISCREPANCY DESCRIPTION	RESOLUTION
IT72-47W437-201/03H	12H	PIPE SPRT. INSTALLED CONFIGURATION DOES NOT AGREE W/ DESIGN DWG.	WBP
IT67-47W450-217/01V	8V	VALVE OPERATOR ORIENTATION (INSTALLED) DOES NOT AGREE W/ ANALYSIS ISOMETRIC.	CEB & WBP
IT67-47W450-217/02V	9V	VALVE OPERATOR ORIENTATION (INSTALLED) DOES NOT AGREE W/ ANALYSIS ISOMETRIC.	CEB & WBP
IT67-47W450-217/01H	19H	PIPE SPRT. ATTACHMENT IS NOT IN ACCORDANCE W/ DESIGN DRAWING.	WBP
IT67-47W450-217/02H	33H	PIPE SPRT. GAPS ARE NOT IN ACCORDANCE W/ DESIGN DWG.	CEB & WBP
IT67-47W450-217/03H	37H	PIPE SPRT. GAPS ARE NOT IN ACCORDANCE W/ DESIGN DWG.	CEB & WBP

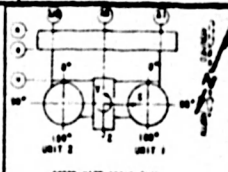
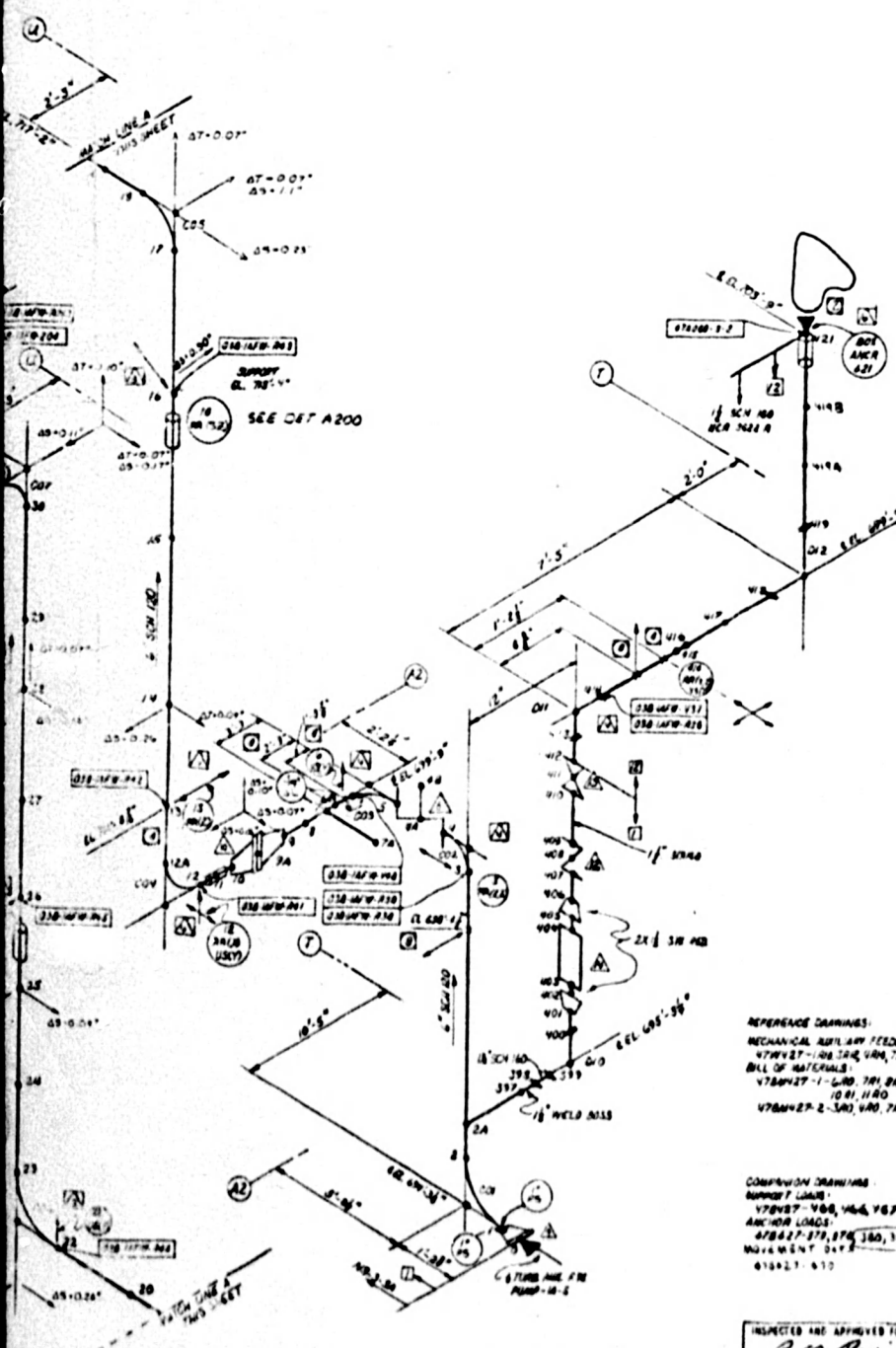
WATER BAR UNIT PHASE I INSPECTION

SIT. 3911

DISCREPANCY NO.	DEVIATION NO.	DISCREPANCY DESCRIPTION	RESOLUTION
IT67-47W450-217/04H	42H	PIPE SPRT. INSTALLED CONFIGURATION DOES NOT AGREE W/ DESIGN DRAWING.	WBP
IT70-47W464-242/01P	P1	PIPE LENGTH (INSTALLED) DOES NOT AGREE W/ ANALYSIS ISOMETRIC.	CEB & WBP
IT70-47W464-242/01H	08H	PIPE SUPPORT DESIGN DRAWING ERROR.	WBP
IT70-47W464-242/02H	49H	PIPE SPRT. (INSTALLED) DIMENSION DOES NOT AGREE W/ DESIGN DRAWING.	WBP
IT68-47W465-206/01C	1C	PIPE IN CONTACT W/ PIPE SPRT.	CEB

DISCREPANCY NO.	DEVIATION NO.	DISCREPANCY DESCRIPTION	RESOLUTION
IT68- 47W465- 206/02C	2C	POTENTIAL INTERFERENCE W/ REACTOR COOLANT PUMP HOUSING.	CEB
IT68- 47W465- 206/03C	14C	POTENTIAL INTERFERENCE W/ VALVE FLEX-HOSE	CEB
IT68- 47W465- 206/04P	52P	INSTALLED PIPE ELEVATION DOES NOT AREF. W/ ANALYSIS ISOMETRIC.	CEB + WBP
IT68- 47W465- 206/05C	17C	POTENTIAL INTERFERENCE W/ PIPE.	CEB
IT68- 47W465- 206/06C	24C	PIPE IN CONTACT W/ CONDUIT	CEB
IT68- 47W465- 206/07C	26C	POTENTIAL INTERFERENCE W/ CONDUIT.	CEB
IT68- 47W465- 206/08C	37C	CONTACT W/ PIPE SUPPORT COMPONENT.	CEB

DISCREPANCY NO.	DEVIATION NO.	DISCREPANCY DESCRIPTION	RESOLUTION
IT68-47W465-206/09C	38C	POTENTIAL INTERFERENCE W/ CONDUIT.	CEB
IT68-47W465-206/10C	40C	POTENTIAL INTERFERENCE W/ CONCRETE WALL.	CEB
IT68-47W465-206/11C	41C	VALVE OPERATOR IS IN CONTACT W/ CONDUIT.	CEB
IT68-47W465-206/12C	42C	VALVE OPERATOR HAS A POTENTIAL INTERFERENCE W/ PIPE.	CEB
IT68-47W465-206/01H	2H	PIPE SPRT LOCATION IS NOT IN ACCORDANCE W/ ANALYSIS ISO.	CEB & WBP
IT68-47W465-206/02H	7H	INSTALLED PIPE SPRT MEMB. DOES NOT AGREE W/ DESIGN DWG.	WBP
IT68-47W465-206/03H	22H	PIPE SPRT. ATTACHMENT DIMENSIONS DO NOT AGREE W/ DESIGN DWG.	WBP



COORDINATE DEFINITION

SYMBOL	DEFINITION
(Symbol)	RESTRAINT DEFINITION
RE(1)	RESTRICTED RESTRAINT
UR(1)	UNIDIRECTIONAL SUPPORT
DS(1)	SPRING SUPPORT
VS(1)	VARIABLE SPRING SUPPORT
CS(1)	CONSTANT FORCE SUPPORT
(Symbol)	FICTITIOUS RESTRAINT
(Symbol)	ANCHOR
(Symbol)	FICTITIOUS ANCHOR
(Symbol)	LINE IDENTIFICATION NUMBER
(Symbol)	WELD NUMBER-SEE TABLE
(Symbol)	NOTE NUMBER
(Symbol)	COLUMN LINE
(Symbol)	TANGENT INTERSECT POINT
(Symbol)	JOINT IDENTIFICATION NUMBER
(Symbol)	STRONG LAP POINT

(Symbol)	PIPE RESTRAINT SYMBOL
(Symbol)	SUPPORT MARK NUMBER

- NOTES:
- ALL PIPE 2" OR SMALLER HAS SOCKET WELD TYPE FITTINGS.
 - PIPE FROM THIS POINT ON IS SUPPORTED USING ALTERNATE PIPING ANALYSIS AND SUPPORT DISTANCES TO S.
 - ALL PIPE 1" OR SMALLER IS SOFT GAS EXCEPT AS NOTED.
 - WELD NUMBER HAS NO INSULATION WELD NUMBER 1501 HAS AIRBOR INSULATION.
 - DL DENOTES SAMPLING LINE.
 - MOOF (M) AND MOSE (M) ARE HIGH ENERGY ALL OTHER PIPING IS MODERATE ENERGY.
 - CIRCUMFERENTIAL FRACTURES ARE POSTULATED AT NODES 1, 11, 20A.
 - SUPPORT LOCATION WAS DETERMINED UNDER PROGRAM DEVELOPED BY TVA REPORT NO. CE-80-10.
 - WELD LOCATIONS IF NOT NOTATED WEST 90° FROM VERTICAL AND PER W-002.
 - QUANTITIES DETERMINED BY PROGRAM IDENTIFIED BY THE REPORT OF CE-80-10. REVISION 1 IS NOT REQUIRED BY THE REVISION BUT CHANGES WILL BE INCORPORATED IN THE NEXT ANALYSIS REVISION BUT CLEARANCE MUST BE MAINTAINED TO ALLOW FOR THERMAL AND VIBRATION MOVEMENTS (INCHES) AT A MAXIMUM THERMAL MOVEMENT (INCHES) AT A MAXIMUM SEISMIC MOVEMENT (INCHES) IS REVISIONS (M) MOVEMENTS LESS THAN 1/16" ARE NOT SHOWN.
 - PIPING ANALYSIS MODEL IS CURRENT TO REVISION 3 OF THIS DRAWING CHANGES SHOWN IN ANY LATER REVISION OF THIS DRAWING NOT REQUIRED REANALYSIS BUT WILL BE INCORPORATED INTO THE NEXT REANALYSIS OF THIS PROBLEM.

1	ISSUE	DATE	BY	REVISION
2	ISSUE	DATE	BY	REVISION
3	ISSUE	DATE	BY	REVISION
4	ISSUE	DATE	BY	REVISION
5	ISSUE	DATE	BY	REVISION
6	ISSUE	DATE	BY	REVISION
7	ISSUE	DATE	BY	REVISION
8	ISSUE	DATE	BY	REVISION
9	ISSUE	DATE	BY	REVISION
10	ISSUE	DATE	BY	REVISION

REFERENCE DRAWINGS:
 MECHANICAL AUXILIARY FEEDWATER
 4770427-1-001, 201, 202, 203, 204
 BILL OF MATERIALS:
 4780427-1-001, 201, 202, 203, 204
 4780427-1-001, 1180
 4780427-2-300, 400, 701, 801

COMPRESSION DRAWINGS:
 SUPPORT LOADS:
 4780427-1-001, 201, 202, 203, 204
 4780427-1-001, 1180
 4780427-2-300, 400, 701, 801

AUXILIARY BUILDING
 UNIT 1 CLASS 2/3
 SYSTEM N3-3-3A
 ISOMETRIC AUXILIARY FEEDWATER TURBINE
 AND MOTOR DRIVEN PUMP DISCHARGE
 PIPING FOR SEISMIC, THERMAL AND
 STATIC ANALYSIS

WATTS BAR NUCLEAR PLANT
 TENNESSEE VALLEY AUTHORITY
 DIVISION OF ENGINEERING DESIGN

DESIGNED	RECOMMENDED	APPROVED
(Signature)	(Signature)	(Signature)
KNOXVILLE 3-8-76	65 M	4770427-200 R7

8501160408-01

VALVE PLUMB DATA TABLE									
VALVE NO. (NO.)	TYPE	SIZE & NAMED	VALVE SIZE (IN)	PLUMB SIZE (IN)	PLUMB PT. A	PLUMB PT. B	PLUMB PT. C	PLUMB PT. D	PLUMB PT. E
25	4" FLOW-ON	4" FLOW-ON	4"	4"	1400				
26	4" FLOW-ON	4" FLOW-ON	4"	4"	1400				

A
B
C
D
E
F
G
H

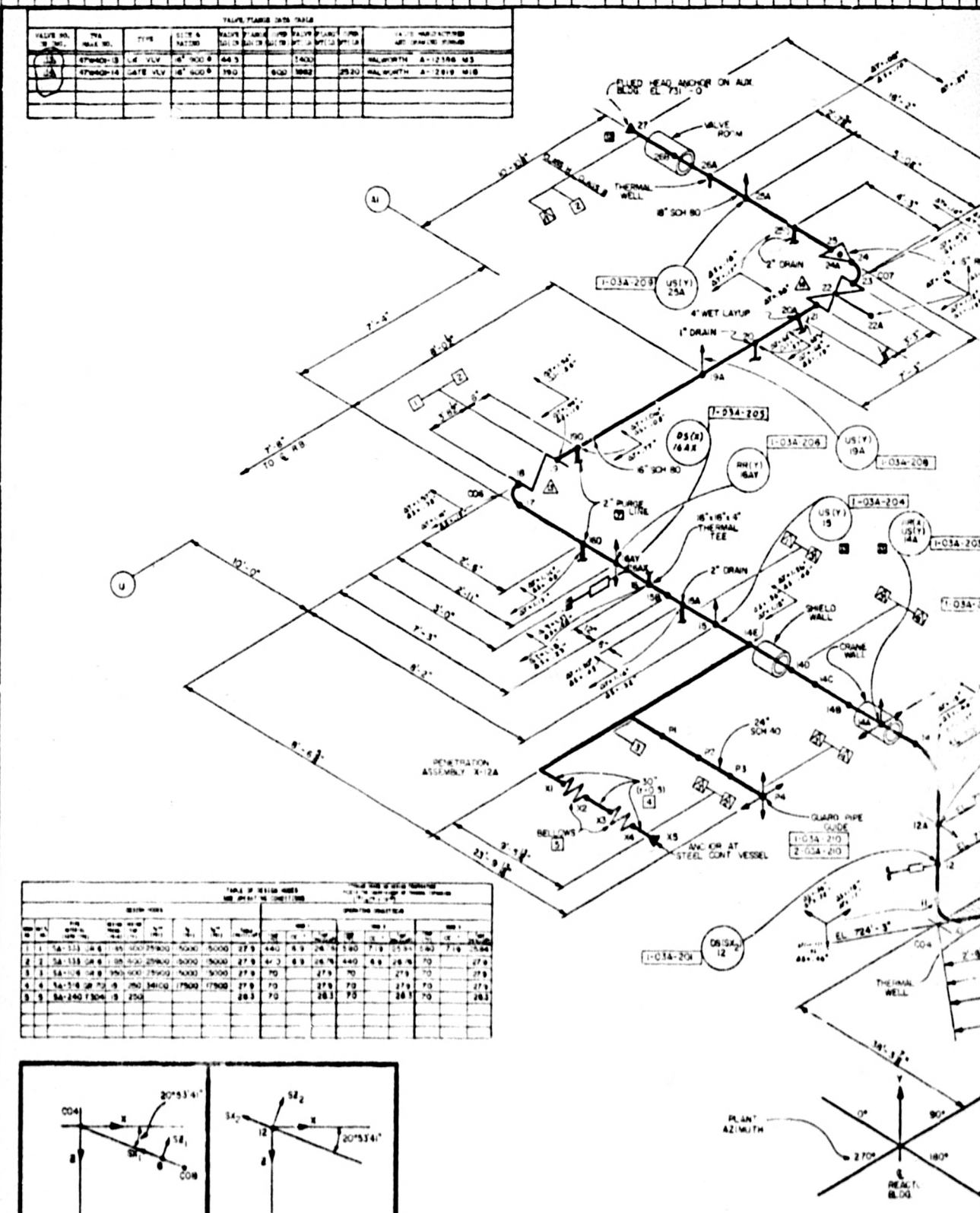
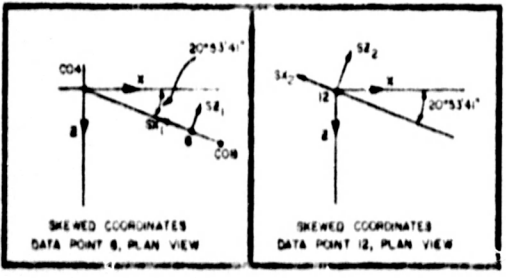
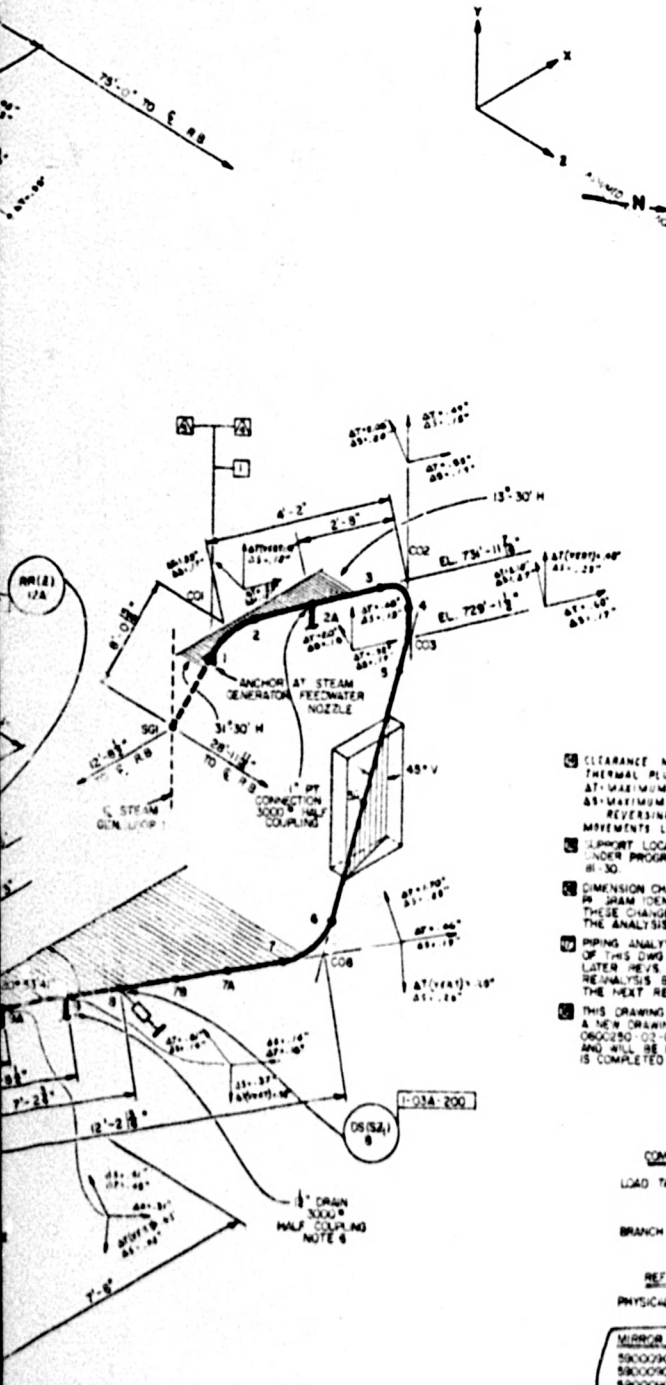


TABLE OF DESIGN VALUES										
NO.	VALVE NO.	TYPE	SIZE & NAMED	VALVE SIZE (IN)	PLUMB SIZE (IN)	DESIGN VALUES				
						W	H	D	E	
1	25	4" FLOW-ON	4" FLOW-ON	4"	4"	27.9	44.0	6.9	26.7	140
2	26	4" FLOW-ON	4" FLOW-ON	4"	4"	27.9	44.0	6.9	26.7	140



H



SYMBOL	DEFINITION
(S)	STRAIGHT DESIGNATION
(R)(Y)	RIG RESTRAINT
(U)(Y)	UNIDIRECTIONAL SUPPORT
(M)(Y)	MOVIE TRIGGER
(F)(Y)	FIXABLE SPRING SUPPORT
(C)(Y)	CONSTANT FORCE SUPPORT
(T)	TYPINGS RESTRAINT
(M)	MOVIE
(V)	VALVE
(V)	VALVE IDENTIFICATION NUMBER
(H)	PIPE NUMBER-SEE TABLE
(N)	NOTE NUMBER
(C)	COLUMN LINE
(I)	TARGET INTERSECT POINT
(I)	PIPE IDENTIFICATION NUMBER
(L.P. (S))	DRYABLE LIP POINT
(Z)	SUPPORT ZONE

SUPPORT ZONE ID NUMBERS

- ⊠ AUXILIARY BUILDING
- ⊠ STEEL CONTAINMENT VESSEL
- ⊠ SHIELD BUILDING
- ⊠ INTERIOR CONCRETE STRUCTURE
- ⊠ STEAM GENERATOR

NOTES:

1. UNIT 1 AS SHOWN
2. ENTIRE PIPE IS HIGH ENERGY AND THE CLASS B DIMENSIONS ARE FOR SUPPORT LOCATIONS ONLY
3. ALL ELBOWS ARE LONG RADIUS
4. ENTIRE PIPE HAS MIRROR INSULATION
5. BRANCH LINE ANALYSIS BY ALTERNATE ANALYSIS METHOD
6. BRANCH LINE ANALYSIS CONTINUED AS EDS PROBLEM 0600200-02-03
7. SUPPORT ID NO. [] FOR UNIT 1 PIPING
8. THIS DRAWING SUPERSEDES EDS DRAWING 0600200-02-01 REV. 3 INCORPORATING BY TWA TO INCLUDE NCR WBNCEB014
9. FOR ANALYSIS INFORMATION SEE REPORT CEB-ME-70-5 FINAL DOCUMENTATION LOG
10. PIPE BREAK LOCATIONS ARE POSTULATED AT DATA POINTS 1, 4, 14, & 27 IN MAIN PIPING AND AT TERMINAL ENDS OF THE FOLLOWING BRANCH PIPING 12" DRAIN LINE AT 9'-2" DRAIN LINE AT 15A & 15D, AND 2" PURGE LINE AT 16D & 19D
11. PIPING BEYOND THIS POINT IS DEADWEIGHT SUPPORTED ONLY EXISTING RIGID RESTRAINT (RR) IS ACCEPTABLE FOR THIS ANALYZED UNIDIRECTIONAL SUPPORT (US)

12. CLEARANCE MUST BE MAINTAINED TO ALLOW FOR THERMAL PLUS SEISMIC PIPING MOVEMENTS AT MAXIMUM THERMAL MOVEMENT
13. AT MAXIMUM SEISMIC MOVEMENT (DIRECTION IS REVERSING) LOCK & VALVE SLAM MOVEMENTS INCLUDED MOVEMENTS LESS THAN 1/16" ARE NOT SHOWN
14. SUPPORT LOCATION FOR UNIT 1 WAS DETERMINED UNDER PROGRAM IDENTIFIED BY CEB REPORT NO. 8I-30
15. DIMENSION CHANGE FOR UNIT 1 DETERMINED BY M-38AM IDENTIFIED BY CEB REPORT NO. 8I-30. THESE CHANGES HAVE BEEN INCORPORATED INTO THE ANALYSIS REPRESENTED BY 42 OF THIS DWG.
16. PIPING ANALYSIS MODEL IS CURRENTLY TO REV. 2 OF THIS DWG. PIPING CHANGES SHOWN ON ANY LATER REV. OF THIS DWG HAVE NOT REQUIRED REANALYSIS BUT WILL BE INCORPORATED INTO THE NEXT REANALYSIS
17. THIS DRAWING 47W401-208 R3 IS FOR UNIT 1 ONLY A NEW DRAWING NO. 47W401-423, PROBLEM NO. 0600200-02-01 HAS BEEN ASSIGNED FOR UNIT 2 AND WILL BE ISSUED WHEN THE UNIT 2 ANALYSIS IS COMPLETED

COMPANION DRAWINGS

LOAD TABLES	47W401-400
	47W401-401
	47W401-438
BRANCH LINE DATA	47W401-438

REFERENCE DRAWINGS

PHYSICALS	47W401-185, 248, 417
	47W401-3-48

MIRROR INDICATION DRAWING NUMBERS

58000703MC	SH 1 OF 2 REV. B
58000703GC	SH 1 OF 8 REV. C
58000703MC	SH 3 OF 9 REV. C
58000703EC	SH 1 OF 1 REV. A

ANALYSIS INCLUDES
ECN NO. 2800
NCR NO. WBNCEB3014

INSPECTED AND APPROVED FOR ISSUE
R. L. [Signature]

3100	REVISED TO RESOLVE 79-18 INHERENT NO DISCREPANCIES
2	REVISED PER ECR 3304 TO ADD PIPE MOVEMENT DATA AND NOTES
1	REVISED PER ECR 3304 TO ADD PIPE MOVEMENT DATA AND NOTES

SCALE (NFS) EXCEPT AS NOTED

REACTOR BUILDING B AUX BLDG UNIT 1

PROBLEM: 0600200-02-01
SUPPORT LOCATION DWG.
FEEDWATER PIPING, STEAM GEN. NO. 1

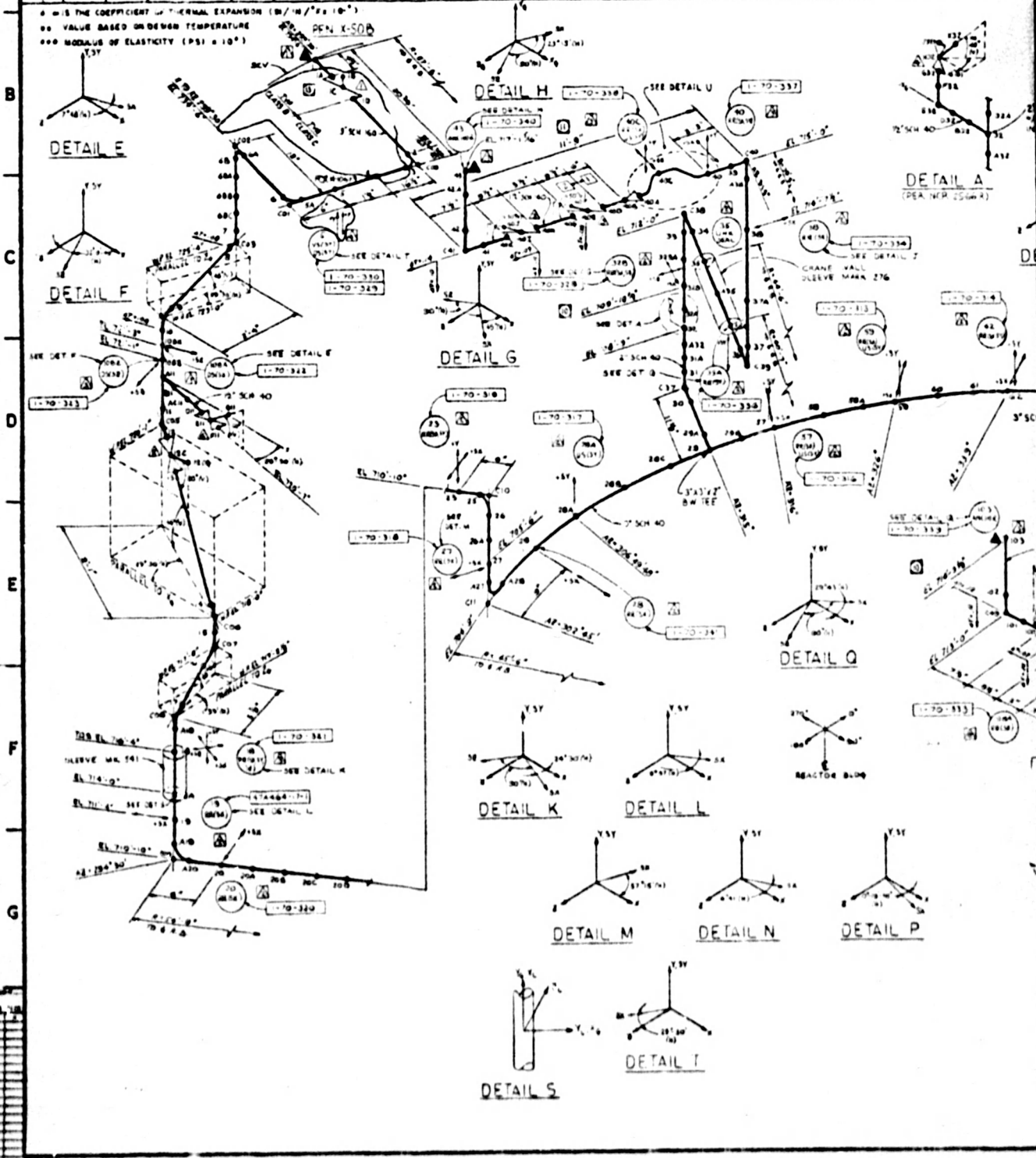
WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

APPROVED: [Signatures]

KNOXVILLE 2-21-61 95 N 47W401-208 R3

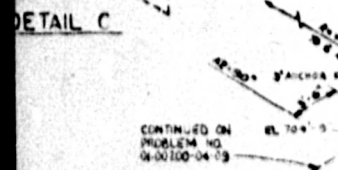
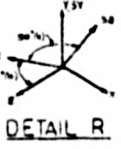
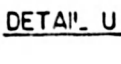
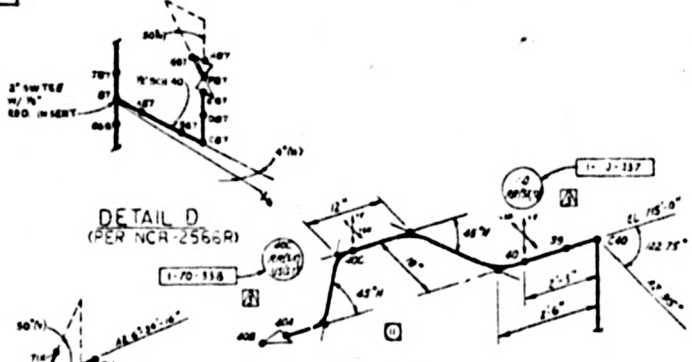
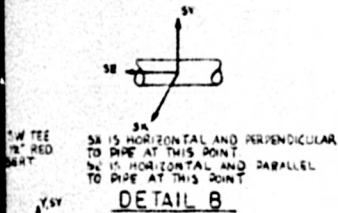
DESIGN MODES	OPERATING CONDITIONS											TUBE NO.	TRA NO.	TYPE	ACT. NO.				
	MODE 1	MODE 2	MODE 3	MODE 4	MODE 5	MODE 6	MODE 7	MODE 8	MODE 9	MODE 10	MODE 11					MODE 12	MODE 13	MODE 14	
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

α = IS THE COEFFICIENT OF THERMAL EXPANSION (IN/IN/°F) × 10⁻⁶
 t₀ = VALUE BASED ON DESIGN TEMPERATURE
 E = MODULUS OF ELASTICITY (PSI) × 10⁶



85 M 47464-242

VALVE	PIPING	SIZE	TYPE	LOCATION	DATE
1	1	2 1/2"	35	ATWOOD & VONHILL 4137-04	
2	2	2 1/2"	35	HALLWORTH 3A-2028-08	
3	3	2 1/2"	43	AERDREST TVD-0-100-3-B	
4	4	2 1/2"	11	YARWAY 108271-104348	



SYMBOL		DEFINITION
(Symbol)	(Symbol)	FIXED RESTRAINT
(Symbol)	(Symbol)	SEMI-FIXED RESTRAINT
(Symbol)	(Symbol)	SLIDING RESTRAINT
(Symbol)	(Symbol)	SYMMETRIC RESTRAINT
(Symbol)	(Symbol)	SPRING RESTRAINT
(Symbol)	(Symbol)	CONSTANT FORCE SUPPORT
(Symbol)	(Symbol)	FIXING RESTRAINT
(Symbol)	(Symbol)	ANCHOR
(Symbol)	(Symbol)	FRICITION ANCHOR
(Symbol)	(Symbol)	VALVE IDENTIFICATION NUMBER
(Symbol)	(Symbol)	MODE NUMBER-SEE TABLE
(Symbol)	(Symbol)	NOTE NUMBER
(Symbol)	(Symbol)	COLOR LINE
(Symbol)	(Symbol)	TANGENT INTERSECT POINT
(Symbol)	(Symbol)	JOINT IDENTIFICATION NUMBER
(Symbol)	(Symbol)	SYMMETRIC LAP POINT
(Symbol)	(Symbol)	RESTRAINT DESIGNATION
(Symbol)	(Symbol)	SEISMIC ZONE
(Symbol)	(Symbol)	CL. POINT MARK NO.

- NOTES**
- ALL PIPING IS UNINSULATED.
 - ALL MODE 1 PIPING IS SCH 40 EXCEPT AS NOTED. ALL MODE 2 PIPING IS SCH 160.
 - ALL MODE 1 SOCKET WELD FITTINGS ARE 1500#. ALL MODE 2 SOCKET WELD FITTINGS ARE 3000#.
 - ALL 2" PIPE HAS LR BUTT WELD ELBOWS. ALL OTHER ELBOWS ARE SOCKET WELD, UNLESS OTHERWISE NOTED.
 - FINAL ANALYSIS DOCUMENTATION LOG CED-MET-78-8.
 - ALL PIPING IS MODERATE ENERGY.
 - ALL SUPPORTS ON HORIZONTAL PIPING HAVE LOCAL COORDINATE SYSTEM AS SHOWN IN DETAIL B, EXCEPT AS NOTED.
 - MULTIPLE RESPONSE ZONES:
ZONE 1: 30V
ZONE 2: 175-217°
ZONE 3: 30S-217°
ZONE 4: 125-EL 735'
 - ANCHOR LOADS AT NODES 43 AND 05 ARE COMBINED WITH SIDE 2 PROBLEM 0600200-04-3 (2" O.D. FLEX HOSE). ANCHOR 05 IS DESIGNED BY THIS PROBLEM.
 - THIS ELEVATION REFLECTS AS BUILT SUPPORT LOCATION PER 8/80, AND WILL BE INCORPORATED IN THE NEXT ANALYSIS REVISION.
 - THIS DETAIL REFLECTS PIPING AS REVISED IN NCR 2108 AND WILL BE INCORPORATED IN THE NEXT ANALYSIS REVISION.
 - CLEARANCE MUST BE MAINTAINED TO ALLOW FOR THERMAL PLUS SEISMIC PIPING MOVEMENT (INCHES).
ΔT: MAXIMUM THERMAL MOVEMENTS (INCHES)
ΔS: MAXIMUM SEISMIC MOVEMENTS (DIRECTION IS REVERSING - MOVEMENTS LESS THAN 1/8" ARE NOT SHOWN FOR DBA MOVEMENTS. SEE NSC-912).
 - PIPING CHANGES SHOWN ON THIS REVISION (R2) DO NOT REQUIRE REANALYSIS, BUT SHOULD BE INCORP. IN THE NEXT ANALYSIS REVISION.

REFERENCE DWGS:
PHYSICALS... 47W464-15 R6
... 17 R12
... 17 R13
... 18 R3

BILL OF MATERIALS
... 47W464-1 SHEETS 7-12

COMPANION DWGS:
SUPPORT LOADS
... 47S464-197 THRU -600

ANCHOR LOADS
... 47B464-501 THRU -603

NO.	REVISION	DATE	BY	CHKD.
1	REVISED PER NCR 2108			
2	REVISED PER NCR 2108 TO ADD PIPE MOVEMENT DATA. SHOULD HAVE BEEN REVISED PER NCR 2108 TO ADD PIPE MOVEMENT DATA. SHOULD HAVE BEEN REVISED PER NCR 2108 TO ADD PIPE MOVEMENT DATA.			

REACTOR BUILDING UNIT 1

PROBLEM 0600200-04-08 PEN X-50 B
ISOMETRIC-STATIC, THERMAL & DYNAMIC ANALYSIS
OF COMPONENT COOLING WATER THERMAL BARRIER SUPPLY TO RC PUMPS 1 & 4.

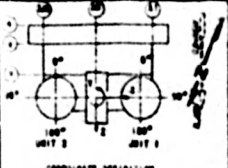
WATTS BAR NUCLEAR PLANT TENNESSEE VALLEY AUTHORITY			
SUBMITTED	APPROVED	DATE	BY
KNOWVILLE	4-27-78	66 M	47W464-242 R2

ECN # 2880, 2876, 2637
INSPECTED AND APPROVED FOR ISSUE
JC Strickland

THIS DWG. SUPERSEDES DCA 245 0600200-04-08

8501160408-03

DESIGN MODES	OPERATING CONDITIONS				
	COND 1	COND 2	COND 3	COND 4	COND 5
1. SALES	1.0	1.0	1.0	1.0	1.0
2. SALES	1.0	1.0	1.0	1.0	1.0
3. SALES	1.0	1.0	1.0	1.0	1.0
4. SALES	1.0	1.0	1.0	1.0	1.0
5. SALES	1.0	1.0	1.0	1.0	1.0

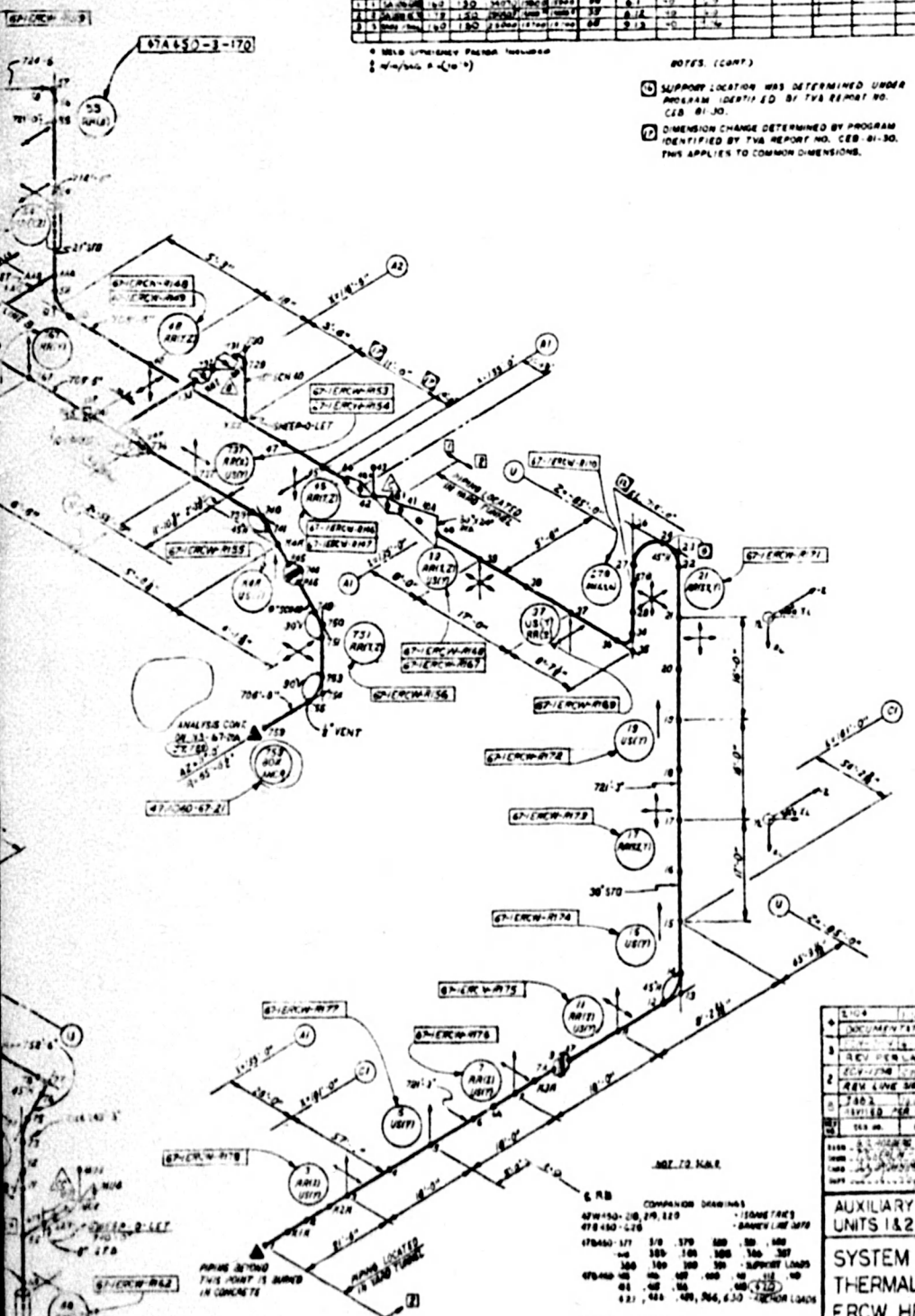


COORDINATE DEFINITION	
SYMBOL	DEFINITION
(○)	PLANTIST DESIGNATION
(R122)	RIGID RESTRAINT
(R122)	BI-DIRECTIONAL SUPPORT
(R122)	SPRINGS BRIDGE
(R122)	VARIABLE SPRING SUPPORT
(R122)	CONTACT FORCE SUPPORT
(R122)	PICHTING RESTRAINT
(▲)	BRIDGE
(▲)	PICHTING BRIDGE
(▲)	VALVE REST PICATION BRIDGE
(▲)	WELD NUMBER-SEE TABLE
(▲)	NOTE BRIDGE
(▲)	COLLAR LINE
(▲)	TARGET INTERSECT POINT
(▲)	JOINT IDENTIFICATION NUMBER
(▲)	SPRING LAP POINT
(▲)	SUPPORT MARK NUMBERS

WELD DIMENSIONAL PHASES INCLUDED
 1/4" DIA. (10")

NOTES (CONT)

- 1. SUPPORT LOCATION WAS DETERMINED UNDER PROGRAM IDENTIFIED BY THE REPORT NO. CER 81-30.
- 2. DIMENSION CHANGE DETERMINED BY PROGRAM IDENTIFIED BY THE REPORT NO. CER 81-30. THIS APPLIES TO COMMON DIMENSIONS.



- 3. THIS REPRESENTS A LATERAL RESTRAINT AT THIS POINT IS INDICATED A BOWED LATERAL RESTRAINT.
- 4. ALL PIPING IN THIS SYSTEM IS INDICATED WITH LOCAL CIVIL DESIGN.
- 5. PIPING BEYOND THIS POINT SHALL BE SUPPORTED BY ALTERNATE MEANS. SEE REPORT CER-70-19.
- 6. THE DASHED PIPING IS OVERLAPPED WITH PROBLEM 43-67-11A.
- 7. THIS PIPING BEYOND THIS POINT SHALL BE A 3" DIA. WELD W/ 1/4" DIA. WELD.
- 8. ALL PIPING BEYOND THIS POINT CONTINUED ON SYSTEM 43-67-2A, JOINTS W/ 7/16" U.
- 9. ALL PIPING 2" AND SMALLER IS SOCKET WELDED.
- 10. PIPING ANALYSIS MODEL IS CURRENTLY TO BE REVIEWED FOR DRIVING THROUGH-TO PIPING CHANGE IS KNOWN IN ANY LATER REVISION OF THE DESIGN. WARE NOT REQUIRED REANALYSIS BUT WILL BE INCORPORATED INTO THE NEXT REANALYSIS OF THIS MODEL.
- 11. ALL ANALYSIS DEMONSTRATION WAS CONDUCTED W/ 500-1000 LBS.
- 12. ALL PIPING IS MODERATE ENERGY.
- 13. ALL PIPING IS CLASS C.

COMMON DIMENSIONS

67-150-20	24	120	150	180	240
67-150-270	24	120	150	180	240
67-150-177	30	120	150	180	240
67-150-180	30	120	150	180	240
67-150-181	30	120	150	180	240
67-150-182	30	120	150	180	240
67-150-183	30	120	150	180	240
67-150-184	30	120	150	180	240
67-150-185	30	120	150	180	240
67-150-186	30	120	150	180	240
67-150-187	30	120	150	180	240
67-150-188	30	120	150	180	240
67-150-189	30	120	150	180	240
67-150-190	30	120	150	180	240
67-150-191	30	120	150	180	240
67-150-192	30	120	150	180	240
67-150-193	30	120	150	180	240
67-150-194	30	120	150	180	240
67-150-195	30	120	150	180	240
67-150-196	30	120	150	180	240
67-150-197	30	120	150	180	240
67-150-198	30	120	150	180	240
67-150-199	30	120	150	180	240
67-150-200	30	120	150	180	240

REFERENCE DRAWINGS
 47-150-10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400, 410, 420, 430, 440, 450, 460, 470, 480, 490, 500, 510, 520, 530, 540, 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670, 680, 690, 700, 710, 720, 730, 740, 750, 760, 770, 780, 790, 800, 810, 820, 830, 840, 850, 860, 870, 880, 890, 900, 910, 920, 930, 940, 950, 960, 970, 980, 990, 1000.

67-150-20	24	120	150	180	240
67-150-270	24	120	150	180	240
67-150-177	30	120	150	180	240
67-150-180	30	120	150	180	240
67-150-181	30	120	150	180	240
67-150-182	30	120	150	180	240
67-150-183	30	120	150	180	240
67-150-184	30	120	150	180	240
67-150-185	30	120	150	180	240
67-150-186	30	120	150	180	240
67-150-187	30	120	150	180	240
67-150-188	30	120	150	180	240
67-150-189	30	120	150	180	240
67-150-190	30	120	150	180	240
67-150-191	30	120	150	180	240
67-150-192	30	120	150	180	240
67-150-193	30	120	150	180	240
67-150-194	30	120	150	180	240
67-150-195	30	120	150	180	240
67-150-196	30	120	150	180	240
67-150-197	30	120	150	180	240
67-150-198	30	120	150	180	240
67-150-199	30	120	150	180	240
67-150-200	30	120	150	180	240

INSPECTED AND APPROVED FOR ISSUE
P.M. Daniel

AUXILIARY BUILDING
 UNITS 1&2 COMMON

SYSTEM N3-67-1A ISOMETRIC:STATIC,
 THERMAL AND SEISMIC ANALYSIS OF
 ERCW HEADER 1B

WATTS BAR NUCLEAR PLANT
 TENNESSEE VALLEY AUTHORITY
 DIVISION OF ENGINEERING DESIGN

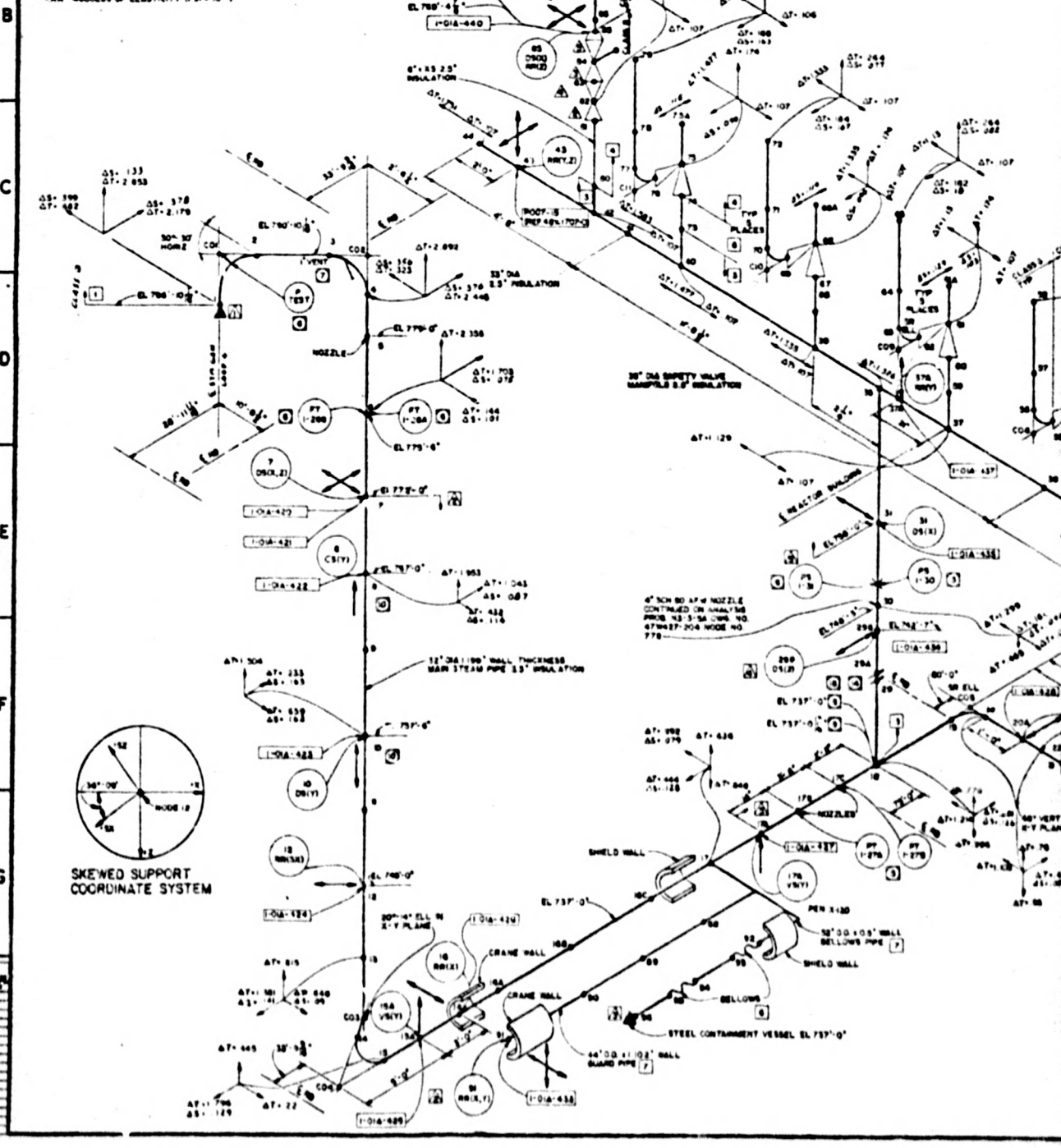
SUBMITTED: *[Signature]* REVISIONS: *[Signature]* APPROVED: *[Signature]*

KNOXVILLE 1-7-77 46 W 47W450-27 86

8501160408-04

NO.	PIPE MATERIAL (ASTM TYPE)	DESIGN PRESS. (PSI)	DESIGN TEMP. (°F)	DESIGN MODES		OPERATING CONDITIONS												VALVE NO.	TAG NO.	TYPE	
				$\frac{L}{D}$ (PSI)	$\frac{L}{D}$ (PSI)	NO. AT 500	NO. AT 575	NO. AT 650	NO. AT 700	NO. AT 750	NO. AT 800	NO. AT 850	NO. AT 900	NO. AT 950	NO. AT 1000	NO. AT 1050	NO. AT 1100				NO. AT 1150	NO. AT 1200
1A	SA304-HC70	1185	600	28400	17500	17500	27.9	57	7130	36.0	177	7184	25.647	579	7184	25.647	70	27.9	1	PCV-20	1-FLOW
2	SA304-HC70	1185	600	28400	17500	17500	27.9	57	7130	36.0	177	7184	25.647	579	7184	25.647	70	27.9	2	47W400-1	GATE
3	SA304-HC70	1185	600	28400	17500	17500	27.9	70	---	---	---	---	---	---	---	---	---	---	3	PCV-10	RELIEF
4	SA304-HC70	1185	600	28400	17500	17500	27.9	70	---	---	---	---	---	---	---	---	---	---	4	---	---
5	SA304-HC70	1185	600	28400	17500	17500	27.9	70	---	---	---	---	---	---	---	---	---	---	5	---	---
6	SA304-HC70	1185	600	28400	17500	17500	27.9	70	---	---	---	---	---	---	---	---	---	---	6	---	---
7	SA304-HC70	1185	600	28400	17500	17500	27.9	120	6178	27.82	130	6178	27.82	120	6178	27.82	70	27.9	7	47W400-2	SATV
8	SA304	1185	600	28400	17500	17500	27.9	70	---	---	---	---	---	---	---	---	---	---	8	47W400-3	SPR NG

β IS THE COEFFICIENT OF THERMAL EXPANSION (IN/IN/°F) AT 60°
 E VALUE BASED ON DESIGN TEMPERATURE
 E MODULUS OF ELASTICITY (PSI x 10⁶)

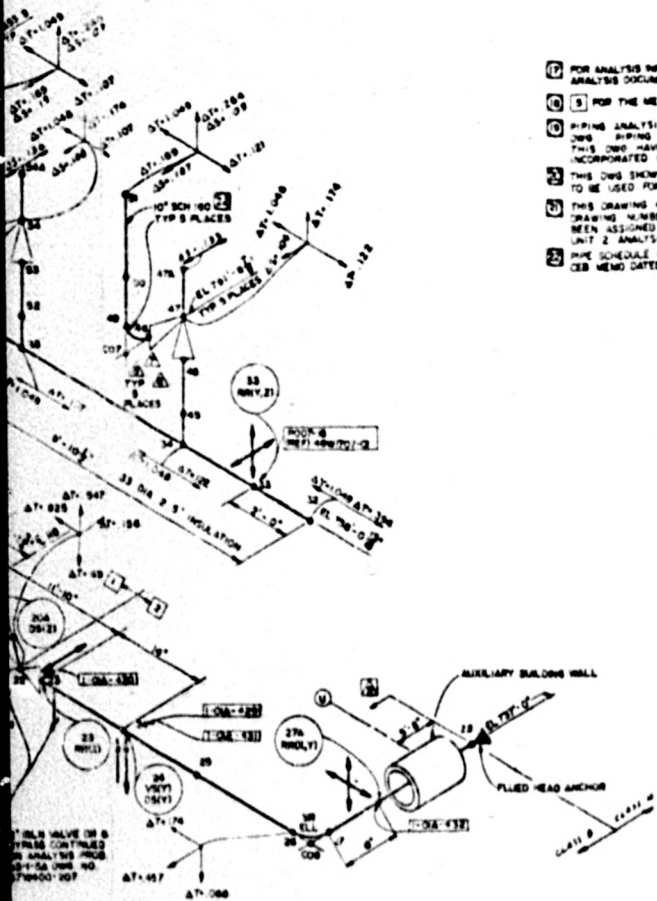
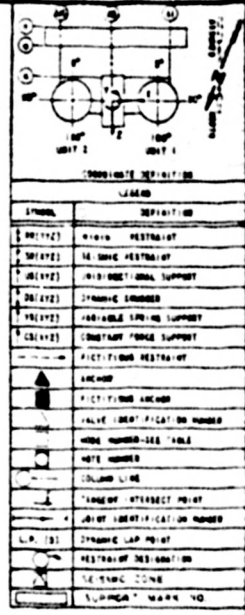
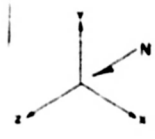


SKEWED SUPPORT COORDINATE SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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UNIT	NO.	DATE	BY	FOR	REVISION	DESCRIPTION
01	000	78	NA	NA	NA	ATWOOD & MERRILL DWS NO. 14204-01-01
02	000	80	NA	NA	SP	WELLSWORTH CO DWS NO. SA-2034-46
03	000	83	NA	NA	NA	COOPER-VULCAN DWS NO. E-174260
04	000	84	NA	NA	NA	
05	000	84	NA	NA	NA	
06	000	84	NA	NA	NA	
07	000	84	NA	NA	NA	DRAWO CORP DWS NO. E-2678-0008
08	000	84	NA	NA	NA	CONSOLIDATED DWS NO. DMC-040
09	000	84	NA	NA	NA	

- SUPPORT ZONE I.D. NUMBERS
- Ⓐ STEAM GENERATOR
 - Ⓑ INTERIOR CONCRETE STRUCTURE
 - Ⓒ STEEL CONTAINMENT VESSEL
 - Ⓓ SHIELD BUILDING
 - Ⓔ AUXILIARY BUILDING



- ① FOR ANALYSIS INFORMATION SEE CES REPORT CES-ME-78-9 FINAL ANALYSIS DOCUMENTATION LOG
- ② FOR THE MEMBER BETWEEN NODES 29 AND 20A
- ③ PIPING ANALYSIS MODEL IS CURRENT TO REVISION 3 OF THIS DWS. PIPING CHANGES SHOWN ON ANY LATER REVISION OF THIS DWS HAVE NOT REQUIRED REANALYSIS BUT WILL BE INCORPORATED INTO THE NEXT REANALYSIS OF THIS PROBLEM.
- ④ THIS DWS SHOWS THE ANALYSIS SUPPORT LOCATION AND IS NOT TO BE USED FOR SUPPORT FABRICATION OR INSTALLATION.
- ⑤ THIS DRAWING 47W400-218 IS ONLY FOR UNIT 1. ONLY A NEW DRAWING NUMBER 47W400-223 AND 080250-08-04 HAS BEEN ASSIGNED FOR UNIT 2 AND WILL BE ISSUED WHEN THE UNIT 2 ANALYSIS IS COMPLETED.
- ⑥ PIPE SCHEDULE CHANGE NEEDED FOR STRESS QUALIFICATION PER CES MEMO DATED DEC. 7, 1982 WEDS ACNO 158 821202 01.

- NOTES
- ① ALL ELBOWS LR UNLESS OTHERWISE NOTED.
 - ② ENTIRE PIPE IS INSULATED AS SHOWN (SHROUD INSULATION).
 - ③ ENTIRE PIPE IS HIGH ENERGY.
 - ④ RUPTURE LOCATION HAS BEEN DETERMINED PER THE GUIDELINES OF DESIGN CRITERIA WB-DC 82-11-90 AND IS SHOWN BY THE LETTERS WB-80, 20A AND 20B. THE INTERMEDIATE RUPTURE LOCATIONS AT JOINT 7 AND JOINT 17C DO NOT EXCEED THE RUPTURE STRESS CRITERIA AND ARE DEEMED TO MEET MINIMUM RUPTURE LOCATION CRITERIA.
 - ⑤ BRANCH CONNECTION ANALYZED IN ACCORDANCE WITH TWO LETTER WB-81, DATED NOV. 9, 1978. SUPPORT TO BE PROVIDED BY T.V.A.
 - ⑥ BRANCH CONNECTION TO BE SUPPORTED IN ACCORDANCE WITH ALTERNATE ANALYSIS CRITERIA.
 - ⑦ RUPTURE STRESSES (ALLOWABLE RUPTURE STRESS = 17000 PSI) JOINT MEMBER RUPTURE STRESS BREAK LOCATION TYPE

NO.	COL.	STRESS	TYPE
1	COL	22725	TERMINAL
2	SM	11000	INTERMEDIATE
3	SM	20400	INTERMEDIATE
28	TE	4387	TERMINAL
 - ⑧ ERECTED TIE CENTERLINE ELEVATION BEFORE COLD PULLING.
 - ⑨ ERECTED TIE CENTERLINE ELEVATION AFTER COLD PULLING.
 - ⑩ SUPPORTS AT JOINTS 8 & 10 ARE LUG ATTACHMENTS.
 - ⑪ BELLOWS WELDED TO SOFT PIPING COLD PULL.
 - ⑫
 - ⑬
 - ⑭ 1/2" COLD PULL IMP APPROX COLD PULL FORCE = 8875 LBS. SUPPORTS SHOULD BE ADJUSTED TO CARRY PIPE DEADWEIGHT DURING COLD PULL OPERATION.
 - ⑮ SUPPORT LOCATIONS WERE DETERMINED UNDER PROGRAM IDENTIFIED BY TVA REPORT NO. CES 81-10.
 - ⑯ CLEARANCE MUST BE MAINTAINED TO ALLOW FOR THERMAL PLUS SEISMIC PIPING MOVEMENTS AT ALL TIE-IN THERMAL MOVEMENTS AND BELLOWS COLD PULLING MOVEMENTS. MAXIMUM SEISMIC MOVEMENTS IN ALL DIRECTIONS INCLUDING AND INCLUDING STEAM HAMMER, RELIEF VALVE THRUST, OSA PRESSURE LOAD ON BELLOWS, AND RELIEF VALVE MOVEMENTS LESS THAN 0.6' ARE NOT SHOWN.

COMP DWGS - 478400-408
 478400-409 , 478400-410
 478400-421

REF DWGS 47W400-114, 217, 444
 47W410-115, 47W431-117
 47W 801-115

NO ISSUED FOR ECH 1481

INSPECTED AND APPROVED FOR ISSUE
 JCS

NO.	REV.	DATE	BY	DESCRIPTION
01	01	4-4-83	JCS	ISSUED FOR ISSUE

AUXILIARY BUILDING UNIT 1

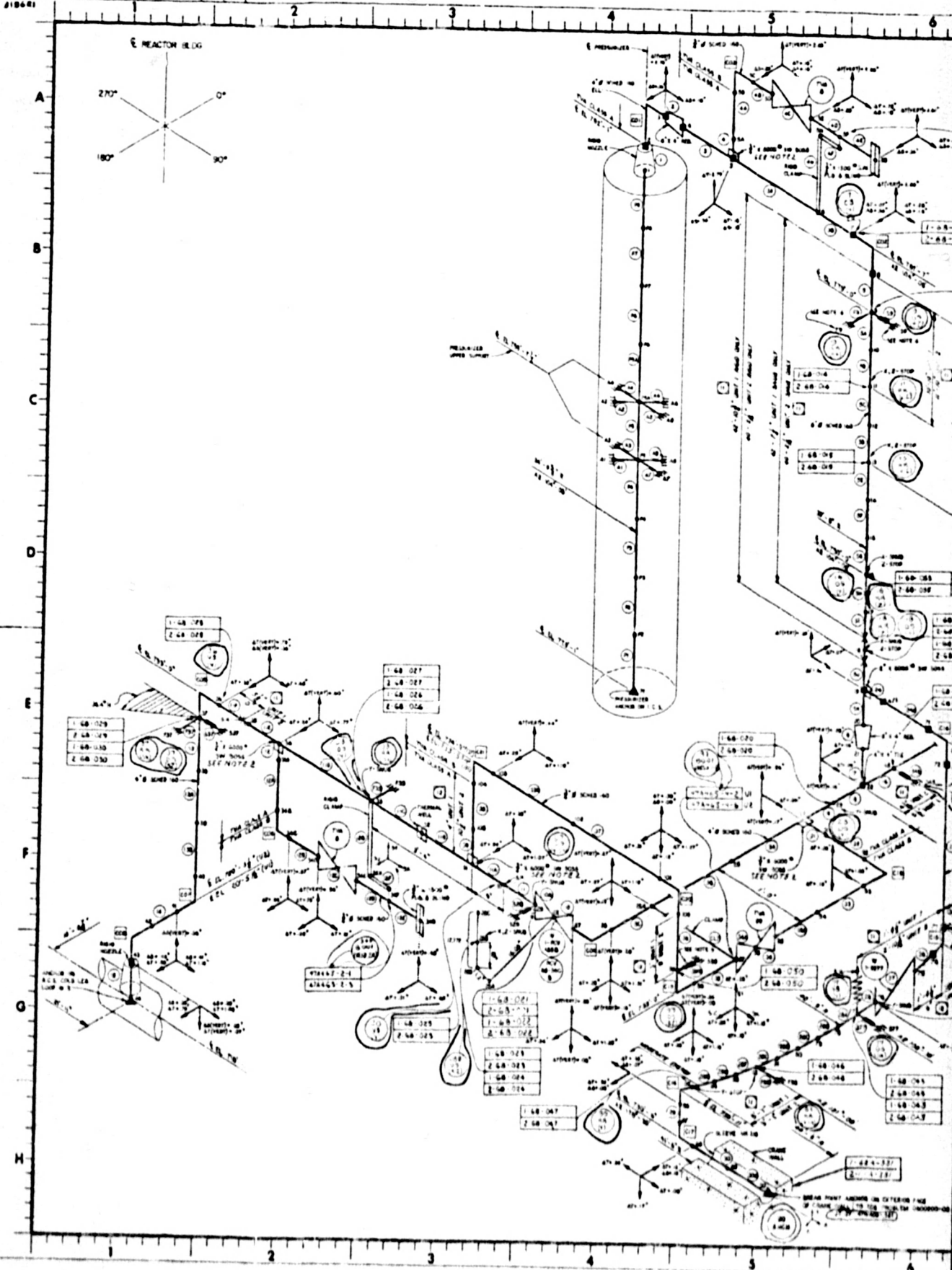
SYSTEM 0600200-06-04 ISO-32" Ø MAIN STEAM LINE FROM GEN (LOOP 4) TO AUX BLDG ANCR

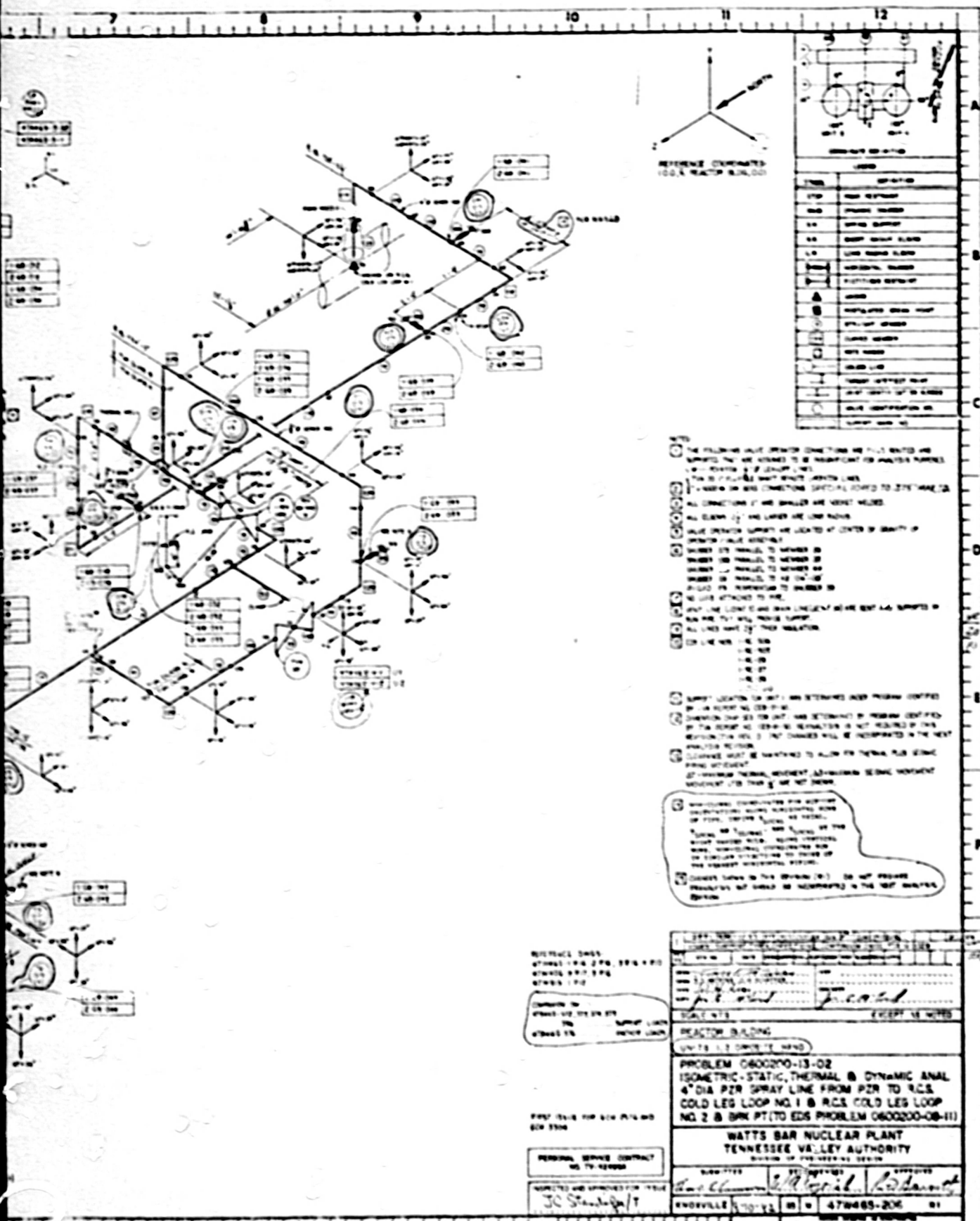
WATTS BAR NUCLEAR PLANT
 TENNESSEE VALLEY AUTHORITY
 DIVISION OF LICENSED ENGINEERING

SUBMITTEE: [Signature]
 APPROVED: [Signature]
 KNOXVILLE 4-4-83 08 47W400-218

THIS DRAWING SUPERSEDES THE DRAWING NUMBER 080250-08-04-2703

8501160 408-05





REFERENCE DIMENSIONS
100.0 INCHES REACTOR BUILDING

SYMBOL	DEFINITION
(Solid circle)	STEAM GENERATOR
(Circle with vertical lines)	PRESSURIZER
(Circle with horizontal lines)	PUMP
(Circle with diagonal lines)	TANK
(Circle with dots)	PIPE
(Circle with cross-hatch)	PIPE FITTING
(Circle with diagonal lines 45°)	FLANGE
(Circle with diagonal lines 135°)	VALVE
(Circle with diagonal lines 225°)	PIPE SUPPORT
(Circle with diagonal lines 315°)	PIPE BRACE
(Circle with horizontal lines)	PIPE LIFT
(Circle with vertical lines)	PIPE DROPPED
(Circle with diagonal lines 45°)	PIPE IDENTIFICATION NO.
(Circle with diagonal lines 135°)	WELDED JOINT

- (1) THE FOLLOWING PIPING SYSTEMS ARE TO BE INSTALLED AND THE PIPING TO BE INSTALLED IS TO BE IDENTIFIED BY THE REACTOR BUILDING NUMBER AND THE PIPING SYMBOL AND THE IDENTIFICATION NUMBER.
- (2) THE PIPING TO BE INSTALLED IS TO BE IDENTIFIED BY THE REACTOR BUILDING NUMBER AND THE PIPING SYMBOL AND THE IDENTIFICATION NUMBER.
- (3) ALL DIMENSIONS OF THE PIPING ARE TO BE AS SHOWN.
- (4) ALL DIMENSIONS OF THE PIPING ARE TO BE AS SHOWN.
- (5) ALL DIMENSIONS OF THE PIPING ARE TO BE AS SHOWN.
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- (40) ALL DIMENSIONS OF THE PIPING ARE TO BE AS SHOWN.

ALL DIMENSIONS OF THE PIPING ARE TO BE AS SHOWN.

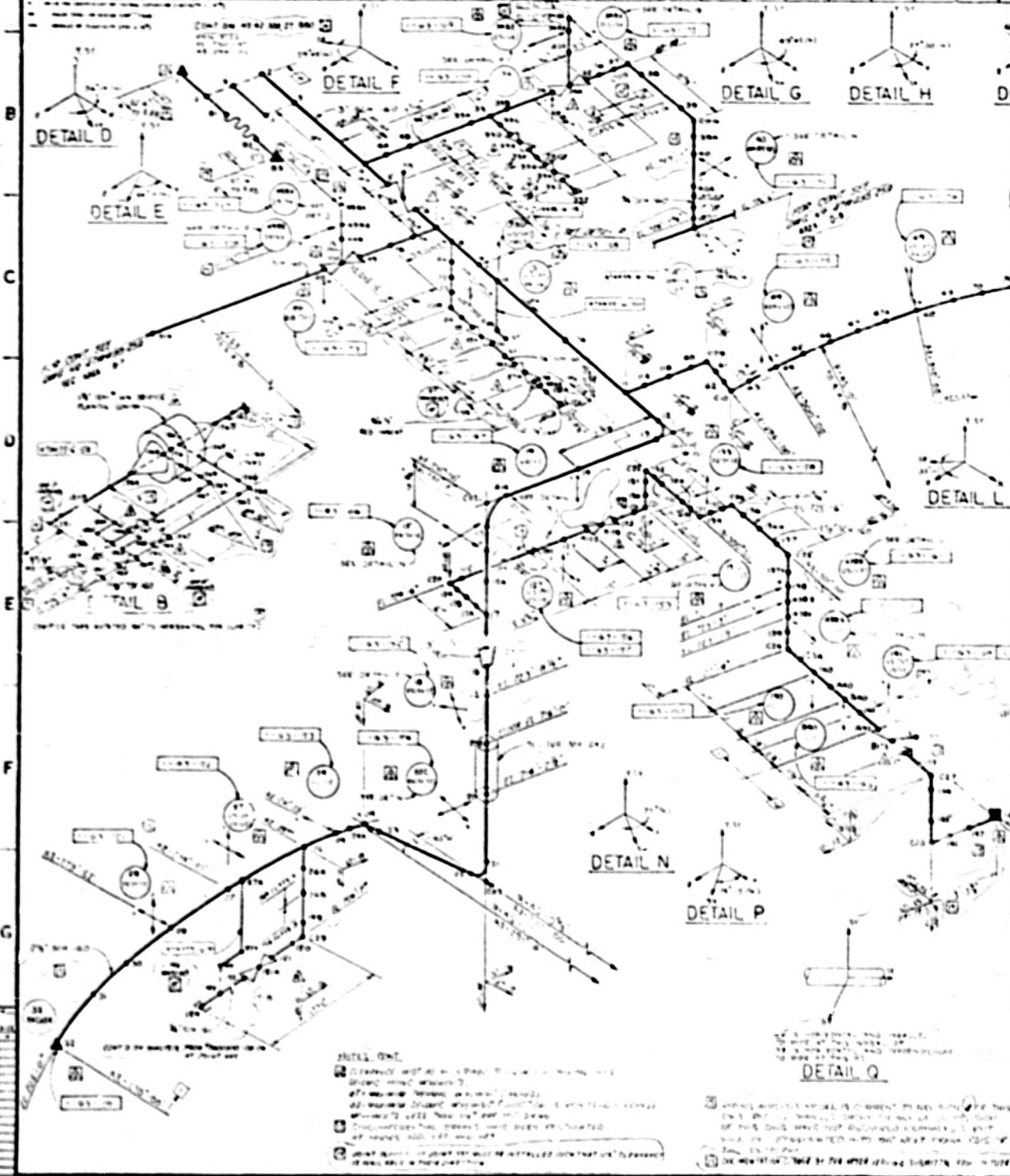
MATERIAL SPEC.
STANDARD 100.0 INCHES REACTOR BUILDING
STANDARD 100.0 INCHES REACTOR BUILDING
STANDARD 100.0 INCHES REACTOR BUILDING

DATE	BY	APPROVED
06/02/60	J. J. ...	J. J. ...
REACTOR BUILDING		
UNIT 1 & 2 DRIVE 'E' BEAM		
PROBLEM 0600200-13-02		
ISOMETRIC-STATIC, THERMAL & DYNAMIC ANAL		
4" DIA PZR SPRAY LINE FROM PZR TO R.C.S.		
COLD LEG LOOP NO. 1 & R.C.S. COLD LEG LOOP		
NO. 2 & BRK PT. (TO EDS PROBLEM 0600200-08-11)		
WATTS BAR NUCLEAR PLANT		
TENNESSEE VALLEY AUTHORITY		
DIVISION OF PROCESS DESIGN		
DRAWN BY	CHECKED BY	APPROVED BY
J. J. ...	J. J. ...	J. J. ...
MEMPHIS, TENN.		MOBILE, ALA.
NO. 478465-206		BY

8501160408-06

DESIGN MODES OPERATING CONDITIONS

MODE	DESIGN MODES				OPERATING CONDITIONS											
	MODE 1	MODE 2	MODE 3	MODE 4	COND. 1			COND. 2			COND. 3			COND. 4		
NO.	NAME	TYPE	CLASS	NO.	TEMP.	REL. HUM.	WIND	TEMP.	REL. HUM.	WIND	TEMP.	REL. HUM.	WIND	TEMP.	REL. HUM.	WIND
1	Normal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2
3
4
5
6



NOTES:

1. All dimensions are in inches unless otherwise specified.
2. All materials shall be of the best quality available.
3. All work shall be done in accordance with the latest editions of the applicable specifications.
4. The contractor shall be responsible for obtaining all necessary permits and approvals.
5. The contractor shall maintain access to all existing utilities at all times.

1. This drawing is a part of the contract documents for the project. It is to be read in conjunction with the other drawings and specifications.

2. The contractor shall be responsible for verifying the accuracy of the information shown on this drawing.

3. The contractor shall be responsible for obtaining all necessary permits and approvals.

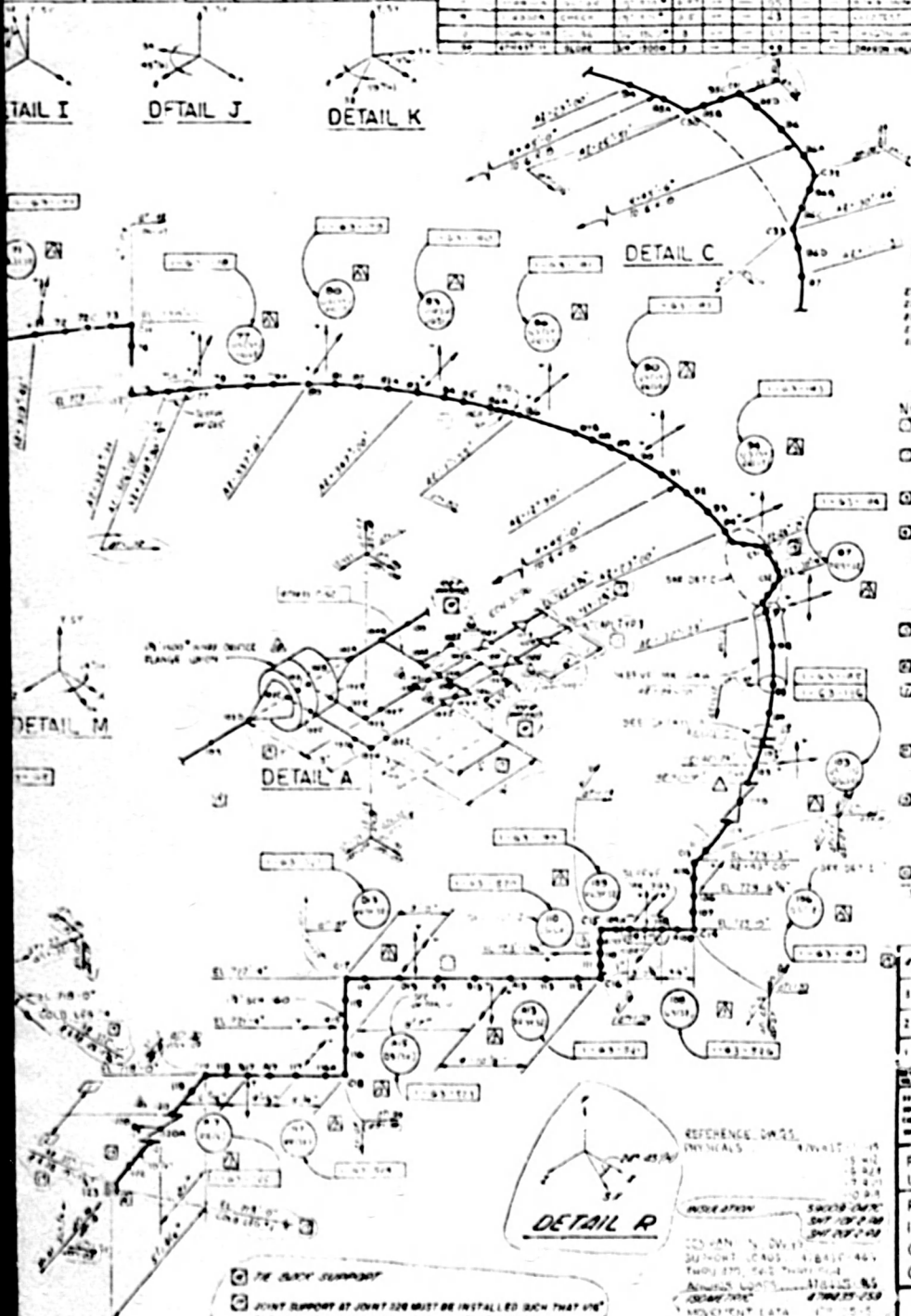
NO.	DATE	BY	DESCRIPTION

MANUFACTURE DATA TABLE									
MATERIAL NO.	SIZE	TYPE	UNIT	QTY	STATUS	REMARKS	REVISION	DATE	BY

COORDINATE DEFINITION

SYMBOL DEFINITION

[Symbol]	RESTRICTION DESIGNATION
[Symbol]	PIPE RESTRICTION
[Symbol]	STRUCTURAL SUPPORT
[Symbol]	SPRING
[Symbol]	ADJUSTABLE SPRING SUPPORT
[Symbol]	CONSTANT FORCE SUPPORT
[Symbol]	RESTRICTION
[Symbol]	ANCHOR
[Symbol]	RESTRICTION ANCHOR
[Symbol]	VALVE IDENTIFICATION NUMBER
[Symbol]	PIPE NUMBER IDENTIFIER
[Symbol]	WIRE NUMBER
[Symbol]	CONDUIT LINE
[Symbol]	TANGENT INTERSECT PTS OF
[Symbol]	JOINT IDENTIFIER OR NUMBER
[Symbol]	SPRING CAP POINT
[Symbol]	SUPPLY ZONE
[Symbol]	ANCHOR POINT NUMBER



END 1 - SEE
END 2 - SOLD BRASS
END 3 - ANCHOR CLAMP
END 4 - WELDED
END 5 - WELDED

- NOTES:**
- 1. 3" DIA. INDICATED FROM ALL NOTCHES BACK TO FIRST CHECK VALUE WITH 2" THICK REMAINING PIPING IS UNINSULATED.
 - 2. WITHIN LINES AT ITS 24" DIA. USE OF 2" DIA. HAVE BEEN ASSUMED BENT OVER AND ATTACHED TO RUN PIPE.
 - 3. ALL REVISIONS PER REV 2 TO THIS DWS WERE A RESULT OF ECN WORK EXCEPT AS NOTED.
 - 4. CLASS 5 PIPING BEYOND JTS 35 & 40 HAVE BEEN MODELED FOR SEISMIC EFFECTS ON THE RUN PIPE.
 - 5. HIGH ENERGY PARTS ARE BETWEEN JTS 121 & 11 AND 42 & 47.
 - 6. 12" & 10" SMALLER DIA. HAVE SOCKET WELD FITTINGS.
 - 7. ALL SUPPORTS ON HORIZONTAL PIPE HAVE LOCAL COORDINATE SYSTEM AS DEFINED IN DETAIL K, N, AND O UNLESS NOTED.
 - 8. FINAL ANALYSIS DOCUMENTATION LOG JTS-MNT-78-8.7.001.1 (ACTION FOR UNIT 1) AND DIFFERENTIAL ANALYSIS PROGRAM CONTROL BY THE UNIT IN LOG B-30.

- PIPING SUMMARY**
- 1. JOINT SUPPORT AT JOINT 220 MUST BE INSTALLED SUCH THAT 4" CLEARANCE IS AVAILABLE IN THE X AND Y DIRECTIONS.
 - 2. DESIGNER, ENGINEER & CONTRACTOR TO VERIFY THE UNIT ONLY NEW DESIGN NUMBER (1) IS THE INDIAN 080200-09-05 IS VALID FOR UNIT 1, 2 & 3. (SEE 080200-09-05).

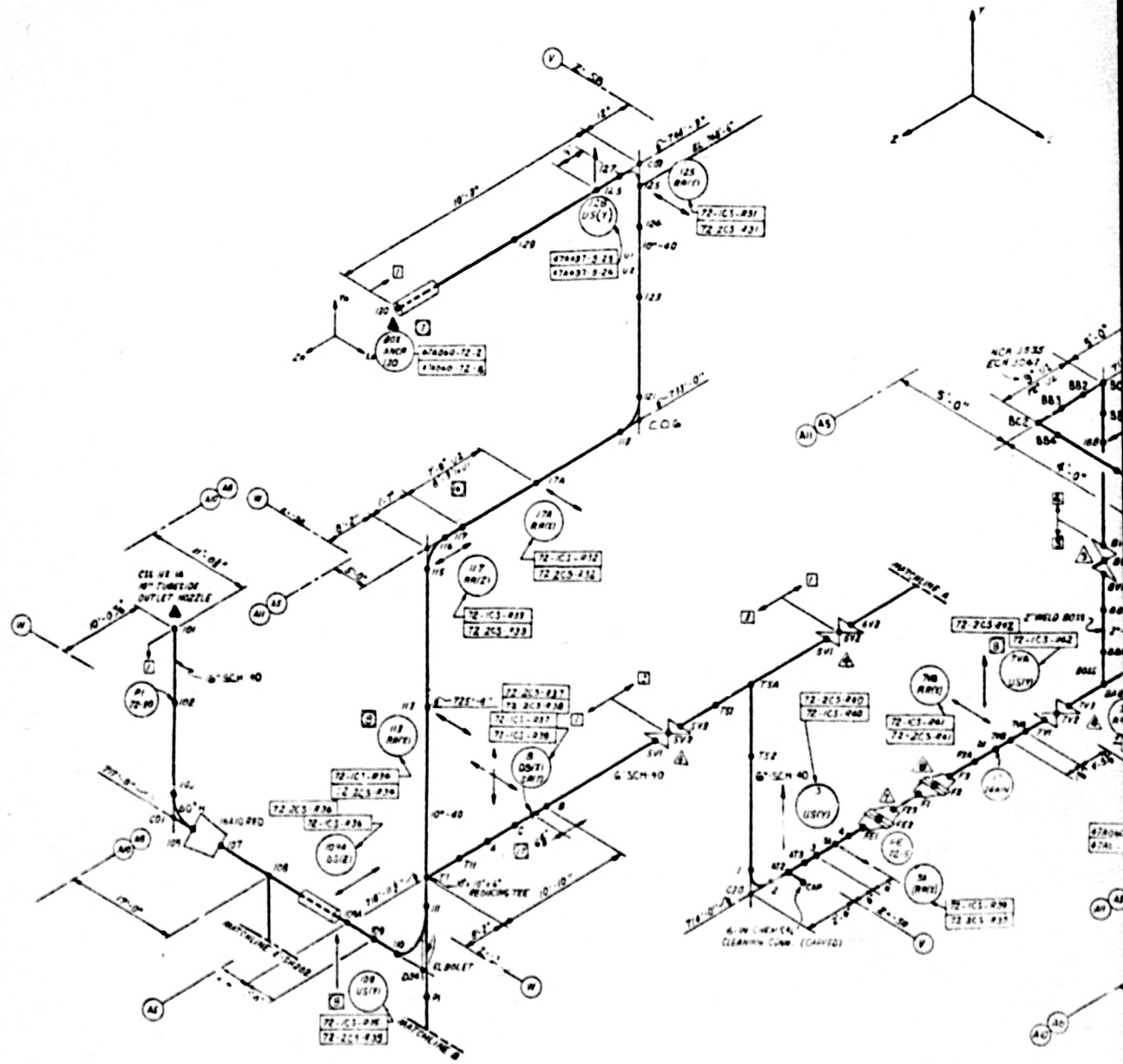
REFERENCE DWGS:
MECHANICAL

ECN # 2162, 2576

INSPECTED AND APPROVED FOR ISSUE
[Signature]

REACTOR BUILDING	CLASS 1, 2, 3
UNIT 1	
PROBLEM 080200-09-05	PENET X-22
ISOMETRIC-STATIC, THERMAL & DYNAMIC ANAL. OF SIS, BORON INJECTION FROM PEN TO RCL COLD LEGS 1 & 4	
WATTS BAR NUCLEAR PLANT	
TENNESSEE VALLEY AUTHORITY	
DIVISION OF ENGINEERING DESIGN	
SUBMITTED	RECOMMENDED
[Signature]	[Signature]
KNOXVILLE	98 M 47W435-217

8501160408-07

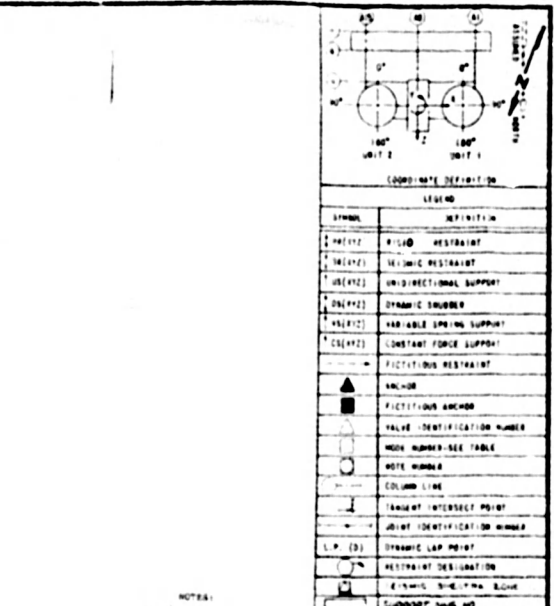
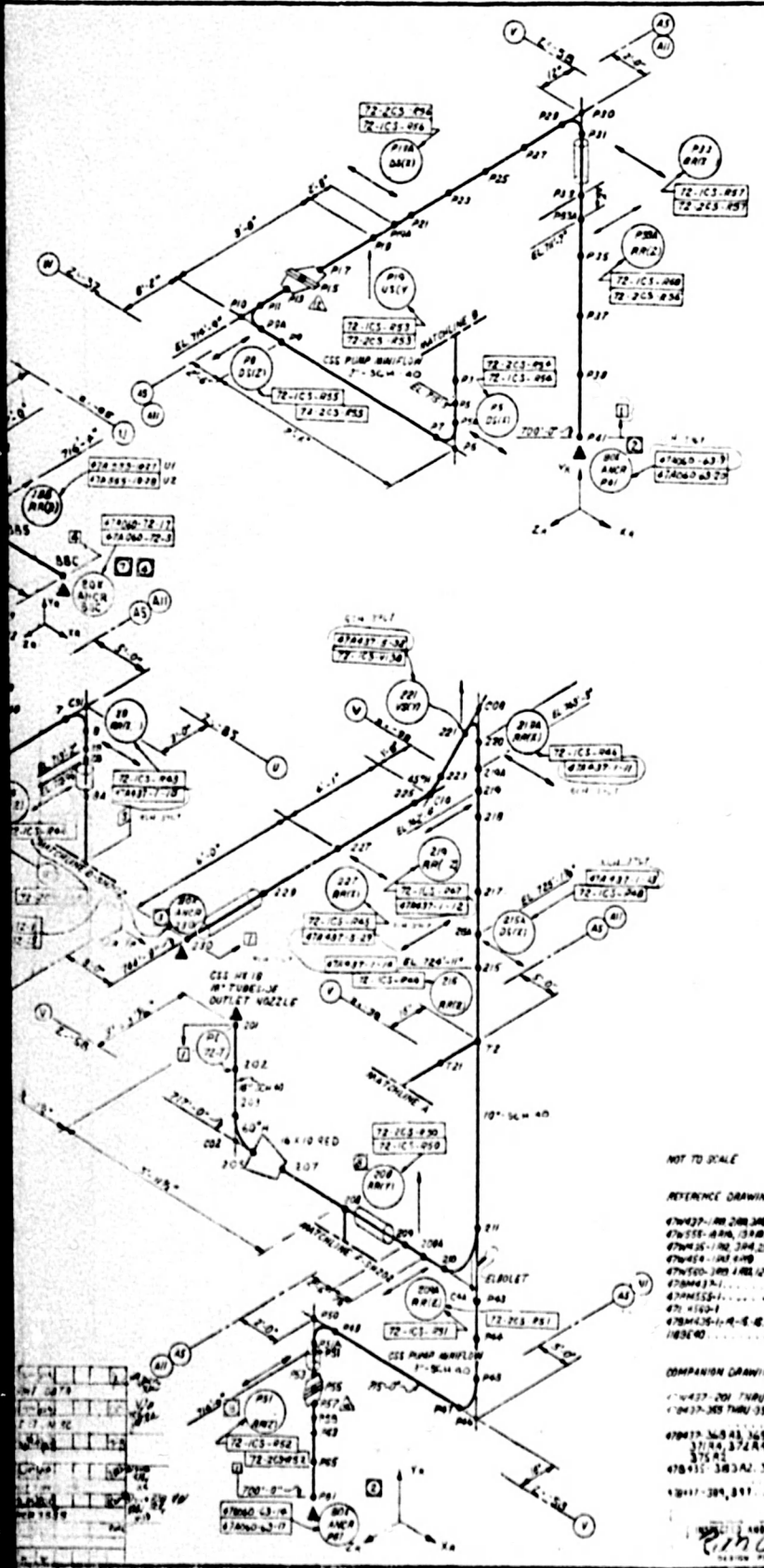


(NOTES CONT.)

- 1 SUPPORT LOCATION WAS DETERMINED UNDER PROGRAM IDENTIFIED BY TIA REPORT NO. CEB-81-30.
- 2 PIPING ANALYSIS MODEL IS CURRENT TO REVISION 7 OF THIS DWS. PIPING CHANGES SHOWN ON ANY LATER REVISION OF THIS DWS ARE NOT REQUIRED FOR ANALYSIS BUT WILL BE INCORPORATED INTO THE NEXT REANALYSIS OF THIS PROBLEM.
- 3 THESE INSTRUMENT LINES HAVE PIPING INSTALLED BUT ARE JUDGED TO BE OBTAINED FROM ANALYSIS AS PER EVALUATION IN CALCULATION - SEE NEXT REVISION.

DATE: 12 31 1974
 JOB NO: 13 (POSITE) HAND EXERT 4; NOTED.

NO.	DESCRIPTION	DATE	BY
1	ADDED COMPANION DWS. 47W437-197 & 47W437-201	12/31/74	...
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- NOTES:
- 1 ALL LINES 2" AND SMALLER REQUIRE SOCKET WELD FITTINGS.
 - 2 ANCHOR TO BE DESIGNED BY SYSTEM N3-63-7A (ISOMETRIC 47433-194). JOINTS P41 AND P41 OF THIS ANALYSIS ARE FOR AND 434 RESPECTIVELY IN SYSTEM N3-63-7A.
 - 3 ANCHOR TO BE DESIGNED BY SYSTEM N3-72-3A (ISOMETRIC 47433-194).
 - 4 WALL SLEEVE: BORIC ACID BLENDER 2" DISCHARGE TO RWST.
 - 5 UNIT 2 ANCHOR WILL BE DESIGNED BY N3-63-4A, JOINT 164 AND 175.
 - 6 FOR RWST TABLE SEE 47437-202.
 - 7 FITTINGS ON OTHER SIDE OF ANCHOR IS SUPPORTED BY ALTERNATE ANALYSIS.
 - 8 AUXILIARY BUILDING SPECTRA IS USED FOR ALL BORDS.
 - 9 PIPING ON OTHER SIDE OF ANCHOR IS SUPPORTED AND DESIGNED BY SYSTEM N3-63-3A, -4A.
 - 10 ALL WIDE B PIPING AND PIPING CARRYING ARE INSULATED WITH 2" OF CALCEUM SILICATE.
 - 11 UNIT 2 ROUTING OF THIS PIPING SECTION IS SHOWN ON SH. 203 AND IDENTIFIED AS N3-72-14.
 - 12 FICTITIOUS SUPPORT FOR ANALYSIS PURPOSE ONLY. SLEEVE WITH PLATE ACTING AS P-S GATE.
 - 13 SEE REPORT CES 74-5 FOR ALTERNATE ANALYSIS.
 - 14 FINAL ANALYSIS ORIENTATION LOS (24-11-19-5).
 - 15 ALL PIPING IS CLASS B, MODERATE ENERGY.

NOT TO SCALE

REFERENCE DRAWINGS:

47437-194 200 200 200	CSO PWT
47437-194 200 200 200	CHE PWT
47437-194 200 200 200	ECC PWT
47437-194 200 200 200	ECC PWT
47437-194 200 200 200	PIPING PWT
47437-194 200 200 200	CSO B M S
47437-194 200 200 200	CHE B M S
47437-194 200 200 200	ECC B M S
47437-194 200 200 200	PROC FLOW DIAG

COMPARISON DRAWINGS:

47437-201 194 200 200	ISOMETRIC
47437-368 194 200 200	SUPPORT LOADS
47437-368 194 200 200	ANCHOR LOADS
47437-368 194 200 200	WRT DATA

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14
15

REV	BY	DATE	DESCRIPTION
1
2
3
4
5

AUXILIARY BUILDING
UNITS 1, 2 OPP H

SYSTEM N3-72-1A
ISOMETRIC-STATIC, THERMAL & DYNAMIC
ANALYSIS FOR CSS HEAT EXCHANGER
DISCHARGE TO CSS SPRAY HEADERS
& 6" TEST LINE TO RWST

WATTS BAR NUCLEAR PLANT
TENNESSEE VALLEY AUTHORITY
DIVISION OF ENGINEERING DESIGN

SUBMITTED: [Signature]
RECOMMENDED: [Signature]
APPROVED: [Signature]

KNOXVILLE 9-30-76 85 N 47W437-201 6-8

GROUP DESIGN 16-12-1976

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7

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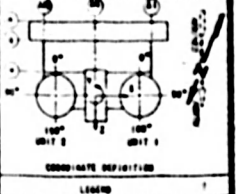
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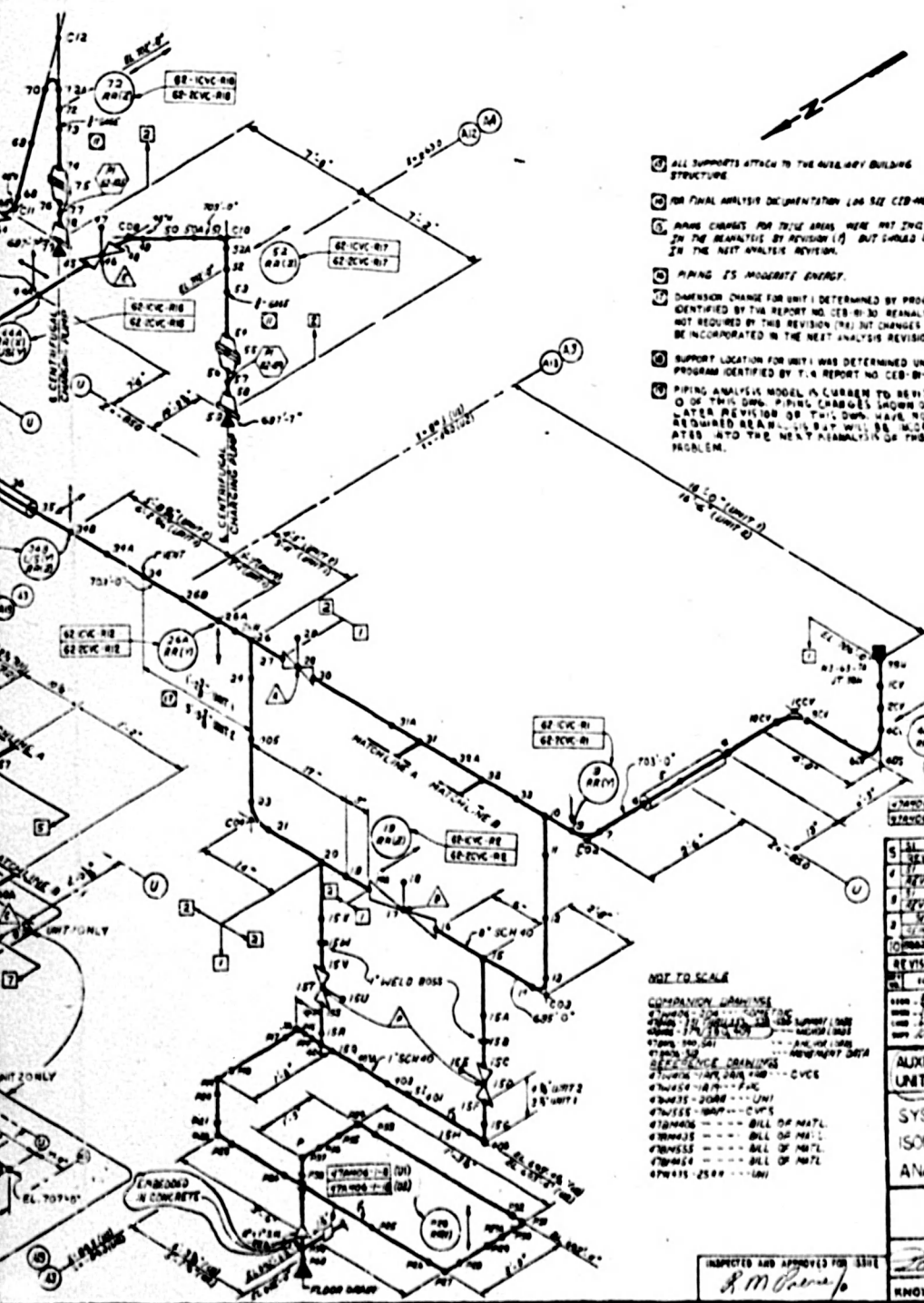
11

12

DESIGN CODES				OPERATING CONDITIONS			
CLASS	NO.	UNIT	DATE	CLASS	NO.	UNIT	DATE
...



LEGEND	
SYMBOL	DESCRIPTION
○	RESTRAINT DESIGNATION
○ (with dot)	SLIP-NO. RESTRAINT
○ (with cross)	SLIP-NO. RESTRAINT SUPPORT
○ (with triangle)	SPRING MEMBER
○ (with vertical line)	VALVE SPONGE SUPPORT
○ (with horizontal line)	VALVE FLOOR SUPPORT
○ (with diagonal line)	FIXED END RESTRAINT
▲	ANCHOR
□	IDENTIFICATION NUMBER
△	VALVE IDENTIFICATION NUMBER
□ (with dot)	WELD IDENTIFICATION NUMBER
○ (with circle)	WIRE NUMBER
○ (with cross)	CON. NO. LINE
○ (with triangle)	TANGENT INTERSECT POINT
○ (with square)	JOINT IDENTIFICATION NUMBER
○ (with vertical line)	SUPPORT LAP POINT
○ (with horizontal line)	SUPPORT MARK NO.



- 1. ALL SUPPORTS ATTACH TO THE AUXILIARY BUILDING STRUCTURE
- 2. FOR FINAL ANALYSIS DOCUMENTATION LOG SIZE CED-HEI-10 IS
- 3. WELD CHANGES FOR THESE AREAS WERE NOT INCLUDED IN THE ANALYSIS BY REVISION (1) BUT SHOULD BE INCORPORATED IN THE NEXT ANALYSIS REVISION.
- 4. PIPING IS MODERATE ENERGY.
- 5. DIMENSION CHANGE FOR UNIT 1 DETERMINED BY PROGRAM IDENTIFIED BY THE REPORT NO. CED-BI-30 REANALYSIS IS NOT REQUIRED BY THE REVISION (1) BUT CHANGES WILL BE INCORPORATED IN THE NEXT ANALYSIS REVISION.
- 6. SUPPORT LOCATION FOR UNIT 1 WAS DETERMINED UNDER PROGRAM IDENTIFIED BY T-4 REPORT NO. CED-BI-30
- 7. PIPING ANALYSIS MODEL IS CURRENT TO DESIGN OF THIS DRAW. PIPING CHANGES SHOWN ON ANY LATER REVISION OF THIS DRAW. HAVE NOT BEING REANALYZED BUT WILL BE INCORPORATED INTO THE NEXT REANALYSIS OF THE PROBLEM.

- NOTES:
1. THE XY RESTRAINT AT 44A AND 62A MUST BE PROVIDED WITH 6 INCH CLEARANCE BETWEEN PIPE AND SUPPORT ON THE WEST SIDE OF 62A AND ON THE EAST SIDE OF 44A, AND SO A 6" CLEARANCE IN THE VERTICAL LP DIRECTION FROM THIS POINT ON IS TO BE SUPPORTED USING ALTERNATE PIPING ANALYSIS AND SUPPORT CRITERIA.
 2. ANCHOR TO BE DESIGNED BY SYSTEM N3-62-7A
 3. ANCHOR TO BE DESIGNED BY SYSTEM N3-62-10A
 4. ANCHOR TO BE DESIGNED BY SYSTEM N3-62-3A
 5. ANCHOR TO BE DESIGNED BY SYSTEM N3-62-2A
 6. THE SPRING IS INCLUDED TO PROTECT IN THE Y-DIRECTION
 7. PIPING TWO INCHES AND SMALLER HAVE SOCKET WELDED JOINTS
 8. 3" CALCIUM SULFATE INSULATION ON EMERGENCY SHUTDOWN PIPE, ALL OTHER PIPING NOT INSULATED.
 9. ANCHOR TO BE DESIGNED BY SYSTEM N3-62-1A
 10. 1" WELD CONNECTOR TO BE USED DURING INITIAL FLUSHING AFTER LUBRICATING OIL OFF WITH LINE UP
 11. UNIT 1 IS SHOWN, UNIT 2 COMPLETE HAND EXCEPT AS NOTED

DESIGNER	DATE	UNIT	NO.
...

NOT TO SCALE

COMPANION DRAWINGS

UNIT 1 - 62-200-100

UNIT 2 - 62-200-100

...

NO.	DESCRIPTION	DATE	BY
5	REV. PIPING	...	...
6	REV. WELD	...	...
7	REV. SUPPORT	...	...
8	REV. IDENTIFICATION	...	...
9	REV. WELD IDENTIFICATION	...	...
10	REV. WELD IDENTIFICATION	...	...
11	REV. WELD IDENTIFICATION	...	...
12	REV. WELD IDENTIFICATION	...	...

REVISOR CHECK

NO.	DESCRIPTION	DATE	BY
...

AUXILIARY BUILDING	
UNIT 1, UNIT 2 (OPPOSITE HAND EXCEPT AS NOTED)	
SYSTEM N3-62-1A	
ISOMETRIC - STATIC, THERMAL, SEISMIC	
ANALYSIS OF CVCS SUCTION PIPING	
WATTS BAR NUCLEAR PLANT TENNESSEE VALLEY AUTHORITY DIVISION OF ENGINEERING DESIGN	
DESIGNED BY	APPROVED BY
...	...
...	...
KNOXVILLE 3-2676 88 M 47W405-203 A10	

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