Wm. H. Zimmer Nuclear Power Station
Hydrostatic/Pneumatic Test Report
(Page 1)

Test No. RR-20

A. Test Parameters

1. System to be tested REACTOR RECIRCULATION (RR)

   Cleanliness Class "B"

2. Bldg. or Location of test RX BLDG

3. Orientation and Terminal Points of test SEE ATTACHED P&ID

   elevation of high point 553' elevation of low point 534'

   el.

4. Attached Drawing Numbers & Revision Numbers M-47-2 REV: E

   (ISK-RR-(26"-0)(26"-R0)(25"-R0)(25"-R1)(24"-01))

5. Pipe Fabricator: (KEI) Other

6. Type Test: Hydrostatic [X] Pneumatic [ ]

7. Test Media FYROUEL - EHC HYDRAULIC FLUID (USE SYSTEM HYDRAULIC UNIT FOR PRESSURE SOURCE)

8. Test Plan (Select One)

   Hydrostatic KEI 10-101 [X] REV.3 Pneumatic KEI 10-103 [ ]

   Hydrostatic KEI 10-102 [ ]

9. A. Required Test Pressure 200 P.S.I.G. (minimum at highest elev

   1. From S&L Piping Line List

   2. 1.25 times design pressure Ref. ASME Code

   3. 1.5 times design pressure Ref. ANSI B31.1

   4. As specified by CG&E Construction Engineer for Class 0 Systems only

      N/A
      Signature/Date

   B. Maximum pressure to which system can be pressurized 215 P.S.I.G.

      (material or component restraint)

8302180188 821227
PDR FOIA
DEVINE82-206 PDR

KAISER ENGINEERS

Form 2 Rev. 5
4-5-78

Wm. H. Zimmer Nuclear Power Station
Hydrostatic/Pneumatic Test Report
(Page 2)

Test No. RR-30

C. Gauge location (elevation) 530 expected static pressure reading 10 PSIG

D. Specified test pressure (9A + 9C) 210 PSIG

E. Greater of 3/4 test pressure or design pressure (ASME test only) 160 PSIG

F. Holding test pressure (~~9C to 9E~~) 160 PSIG

10. Test Parameters completed by Steve I Ritter 9-6-78
Signature/Date

Verified A P Gill 9/12/78
KEI Q.A. Engineer

B. Test Prerequisites

1. Valve Lineup completed by C E Hamm 3-2-79
Signature/date

2. Water Analysis Report available and acceptable. NA
KEI-QA Signature/Date

3. Test Gauges: Note Range shall be more than 1½ times test pressure but less than 4 times test pressure.

S/N WTG-11 Range 0±400 Psi Calib. date 2-4-79 Due date 8-6-79

S/N WTG-30 Range ±400 Psi Calib. date 9-27-78 Due date 3-27-79

S/N _____ Range ± _____ Psi Calib. date _____ Due date _____

RETEST - WTG-28 - 0-400 7/30/79 1/30/80

RETEST - WTG-10 - 0-400 6/18/79 12/18/79

10-4-79 RETEST Ernest E Hayhurst
WTG 10 0-400 6-18-79 12-18-79
WTG 28 0-400 7-30-79 1-30-80

EXCEPTIONS (5) VALVE 833F356C NOT INST AT TIME OF TEST. WELD NOT INSPECTED

4-5-78

Wm. H. Zimmer Nuclear Power Station
Hydrostatic/Pneumatic Test Report
(Page 3)

Test No. RR-30

C. Test Results

1. Ambient temp. 75° Media temp. 75°

2. Time test started ReTest 7:30 PM 2:00 PM Time test pressure reached 3:45 PM

Hold time 10 min SAME Time test completed 3:45 PM

ReTest 10-4-79 Test Gauge Pressure Reading at test ~~min~~ 210 PSIG

Test Pressure Reached 2:55 PM 3. Test Results & Remarks: No Leaks

4. Test conducted by: [signature] 3-2-79
Signature/date

5. Remove test tags, remove test equipment, etc. R

[signature] 3-2-79
Signature/date

R

D. Test Witnessed and Accepted By:

1. KEI Hydrotest Super. and/or Engineer [signature] 3-2-79
Signature/date

2. Quality Assurance Representative [signature] 3-2-79 R
Signature/date WITH 1 EXCEPTION ON BACK

3. CG&E Representative/Ohio Special Insp. C. L. Wood 3/2/79
Signature/date

4. Authorized Nuclear Inspector L L Burtin 3/2/79
Signature/date

VALVE NUMBER	POSITION	COORDINATES	DRAWING NUMBER
1B33F3[illegible]C	[illegible]	C-4	M-47-2
1B33F3[illegible]C	Closed	C-4	M-47-2

Note: Protect all instruments in panels, on racks, etc. from Hydro Test Pressure.

INFORMATION ONLY
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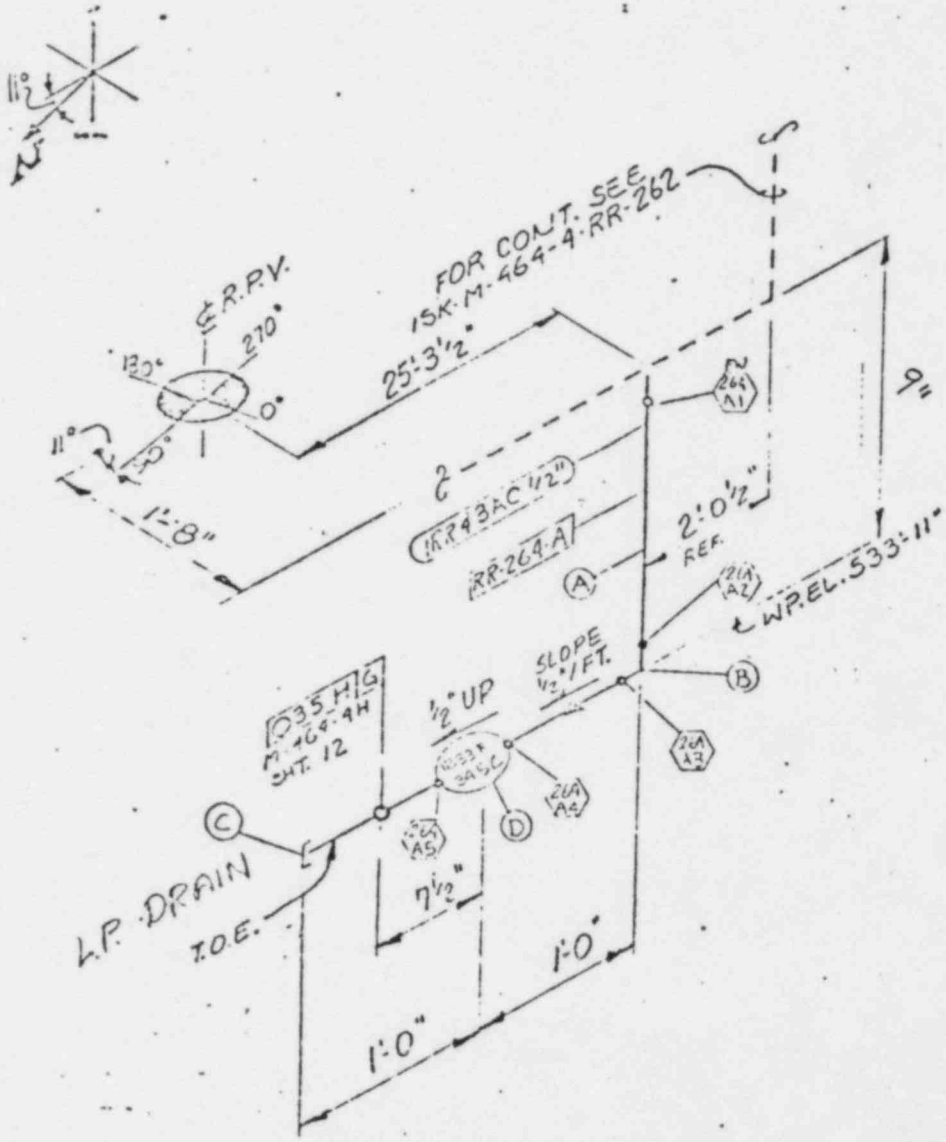
CONSTRUCTION



	HEAT NUMBERS
A	
B	
C	
D	
E	
F	
G	
H	
J	
K	

MATERIAL - TAKE OFF CLASS B ESSENTIA
2540 WZ 2

A	3	LF	1/2"	80	PIPE ASME SA312 GR TP304	Z-B	1	
B	1	EA	1/2"		90°ELL SA182 GR F304	I-L	2	
C	1	EA	1/2"		CAP S/SD SA182 GR F304	I-L	2	
D	1	EA	1/2"		VALVE ANGLE F-316 - (1B33F345C)			

KF-1 WELD DATA - SMALL BORE PIPING

	3-1-56			
	ER308			
		X		
		X		
To field weld only.		X		
		X		

The drawing data found on this sheet is not to be used for construction purposes.

JP Scott 7-17-75

5 TOTAL WELDS

NO.	DATE	BY	DESCRIPTION
REVISIONS			

WM. H. ZIMMER NUCLEAR POWER STATION UNIT 1

KAISER ENGINEERS

KAISER ENGINEERS, INC. JULY NO. 1970

CLEAN CLASS B3	SEISMIC CLASS B
DESIGN TEMP 185°F	DESIGN PRESS 2500PSI
PIP SPEC M-225	INSULATION C/A
WELD PROCEDURE	
LINE NO IRR43AC 1/2"	
HANGER NO 035HG	
PIECE NOS RR-264-A	
P&ID DWGS M-441-2, M-464-4H	
AREA AA-533 REACTOR BLDG.	
DRAWN RLS 7-15 CHKD 7-15	
APPROVED REACTOR PIPING ENGR.	

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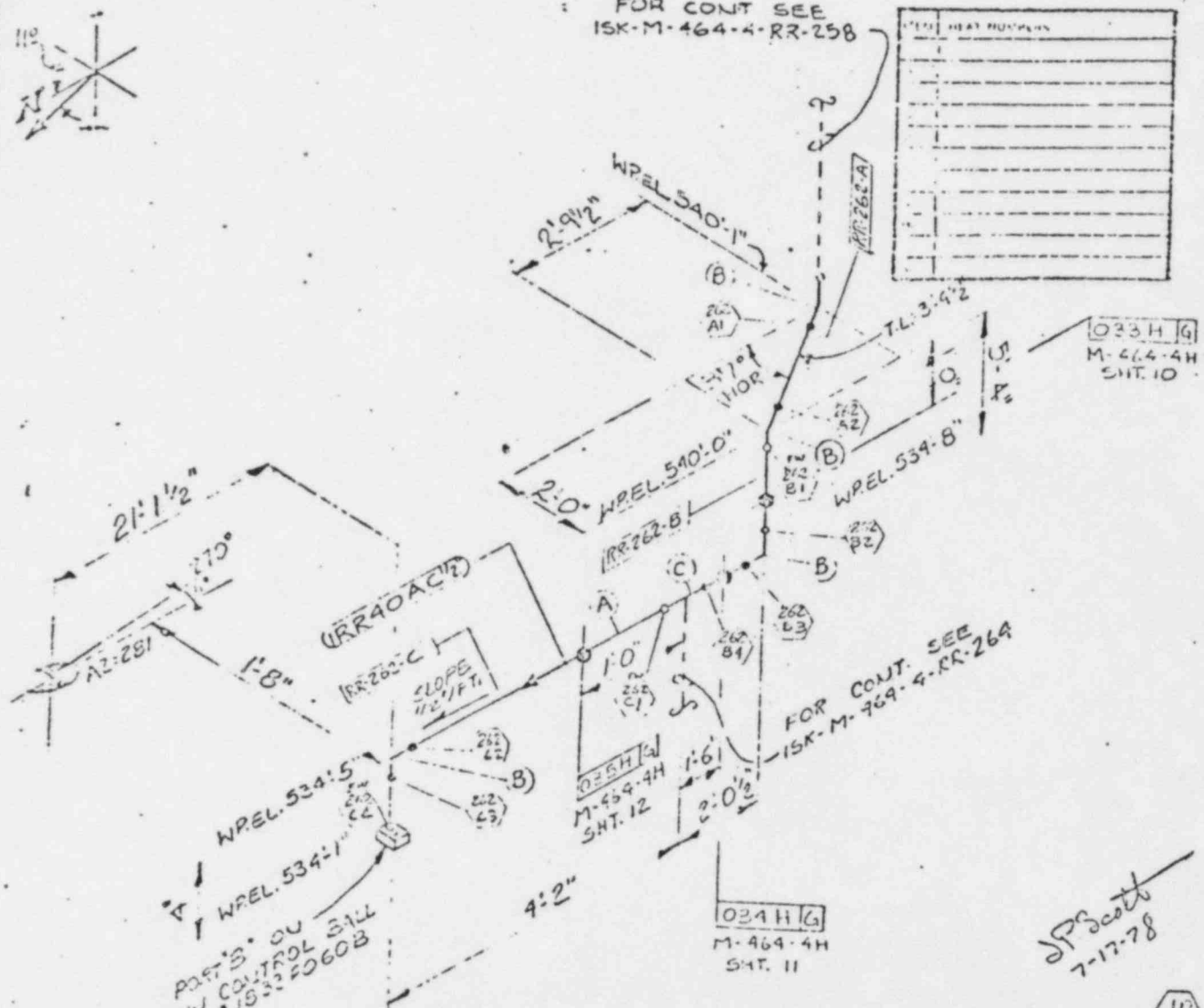


MATERIAL - TAKE OFF CLASS B ESSENT

A	16	LF	1½"	SCH 80	PIPE ALVE [illegible]
B	4	EA	1½"	[illegible]	[illegible]
C	1	EA	½"	[illegible]	[illegible]

XF-1 WELD DATA — CARBON STEEL PIPE

		3.1.5C											
		GTAW											
		GTAW											
For fillet welds only													
Ellipses/pipe													
033HG													

The welding data on this ISK shall not apply to groove weld connections to three bore pipe.

CLASS	B
DESIGN TEMP	185°F
SPEC	H-2256
WELD PROCEDURE	
LINE NO.	1RR40AC½"
HANGER NO	033HG, 026HG, 035HG
PIECE NOS	RV-262-A, B, C
	M-47-2, M-464-4
	AA-534 REACTOR BLDG.
	RLS
	REACTOR RECIRCULATION

10 TOTAL WELDS

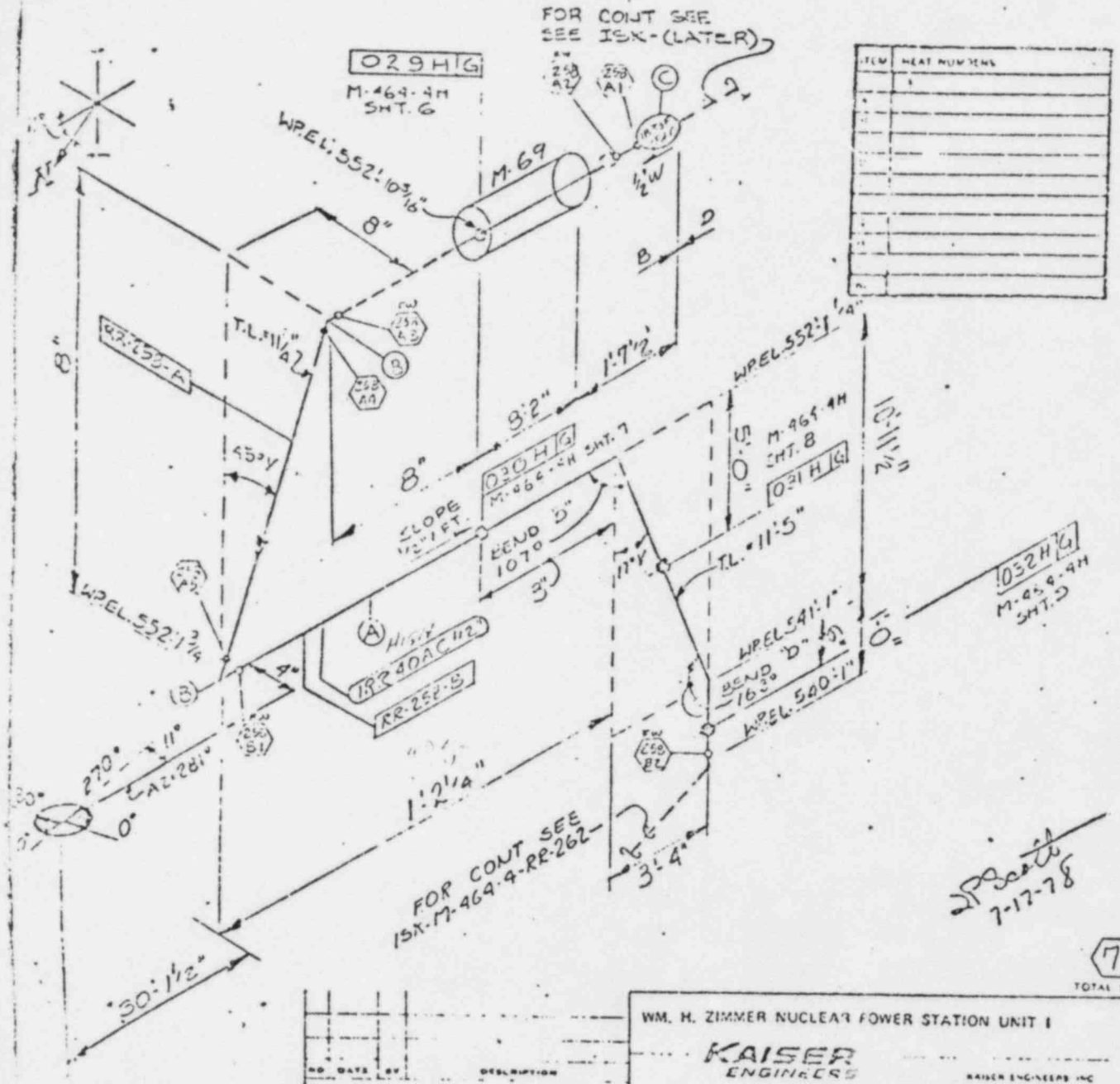
JPScott 7-17-78

WM. H. ZIMMER NUCLEAR POWER STATION UNIT 1

KAISER ENGINEERS

KAISER ENGINEERS INC

FORMATION ONLY"
OT TO BE USED FOR
YSICAL CONSTRUCTION



ITEM	HEAT NUMBERS

MATERIAL - TAKE OFF CLASS B ESSENTIAL
2540 WZ 2

A	15	LF	1/2"	80	PIPE NOMINAL WALL
B	2	EA	1/2"	6000	10" FULL COUPLING
C	1	EA	1/2"	2500	VALVE GLOBE F-3216 (1833F356C)

KE-T-WELD DATA — SMALL BORE PIPING

3.7.5	
6501	
	X
	X
	3
	X
	X

BEND A - 5D
BEND B - 5D
BEND C - 5D
BEND D - AS BUILT

The welding data listed on this sheet shall not apply to groove weld connections to flange bore side.

CLEAN CLASS B	SEISMIC CLASS B
DESIGN TEMP 125°F	DESIGN PRESS 1250 PSIG
REF SPEC M-2256	INSULATION N/A
WELD PROCEDURE	
LINE NO 1RR40AC-11"-21	
HANGER NO 029HG, 030HG, 021HG, 032HG	
PIECE NOS RR-256-A, B	
REF DWGS M-47-2, M-464-4	
AA-540 REACTOR BLDG	
DRAWN BY RLS CHECKED BY JCS APPROVED BY JCS DATE 7-17-78	
SYSTEM REACTOR RECIRCULATION	
M-464-4 RR-256, C	

WM. H. ZIMMER NUCLEAR POWER STATION UNIT 1

KAISER ENGINEERS

KAISER ENGINEERS INC JOB NO. 7010

NO	DATE	BY	DESCRIPTION
			REVISIONS

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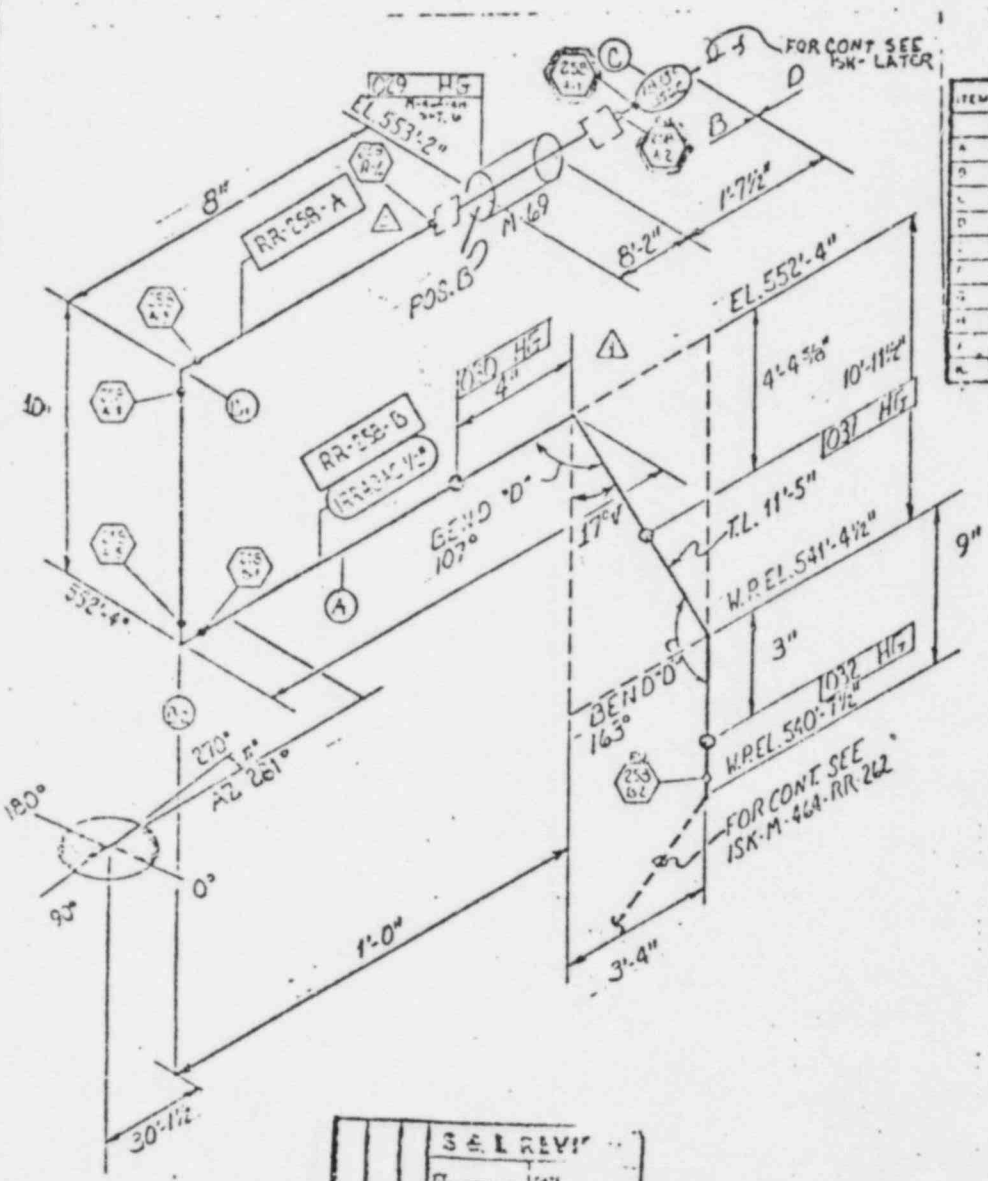

ITEM	HEAT NUMBERS
	1
A	
B	
C	
D	
E	
F	
G	
H	
J	
K	

MATERIAL - TAKE-OFF CLASS B ESSENTIAL

PIPE DESIGN TABLE 910 VZ NAME CLASS 2

ITEM	QTY	UNIT	SIZE	WEIGHT	MATERIAL DESIGNATION & SPEC	FIELD WELDS	SHOP WELDS	REMARKS
A	10	LF	½	80	PIPE ASME SA 312 GR TP304	2	1	10'-0"
B	2	EA	½	200	90° ELL SA-182 GR F304	1-L	2	3'-10"
C	1	EA	½	250	VALVE GLOBE F-316 (1B33F356C)			
D								
E								
F								
G								
H								
J								
K								

KE-1-WELD DATA — SMALL BORE PIPING

	CA STAMP	DATE
PIPING CLASS 3.1.5		
PIPING & DRAWING NO. 6.0.7		
EXAMINATION TYPE EX 30%		
MIN. WALL THICKNESS 3/32" 1/8"		
SHOP SIDE EXAM (IF REQUIRED)		
SPECIAL INSTRUCTIONS		
X		
X		
2 of 10 welds only - APPROXIMATE		
X		
	n/a	n/a

ALL BENDING TO BE PERFORMED IN ACCORDANCE WITH CONSTRUCTION PROCEDURE 2-235
BEND A - 52° - 22'
BEND B - 53° - 0'
BEND C - 27° - 38'
BEND D - AS NOTED

The welding data noted on this ISK shall not apply to stress weld considerations to judge bore pipe.

J Beets 7-17-78

4 8 TOTAL WELDS

CLEAN CLASS B	SEISMIC CLASS B
DESIGN TEMP 185°F	DESIGN PRESS 300 PSIG
REF SPEC M-2256	INSULATION N/A
WELD PROCEDURE	
LINE NO 1RR40AC1-2"	
HANGER NO 029HG, 030HG, 031HG, 032HG	
PIECE NOS RR-258-A, B	
REF DWGS M-47-2, M-464-4	
AREA AA-540 REACTOR BLDG	
DRAWN BY RLS CHECKED BY [illegible] APPROVED BY [illegible] DATE 7-17-78	
SYSTEM REACTOR RECIRCULATION	
DWG NO ISK M-464-4 RR-258 REV 2 SH 1 OF 1	

NO	DATE	BY	DESCRIPTION
2	10-3-77	[illegible]	ADDED FENET CPLG
1	10-4-77	[illegible]	REPHASIN PER FIELD SKETCH

REVISIONS

WM. H. ZIMMER NUCLEAR POWER STATION UNIT 1

KAISER ENGINEERS

KAISER ENGINEERS INC. JOB NO 7078

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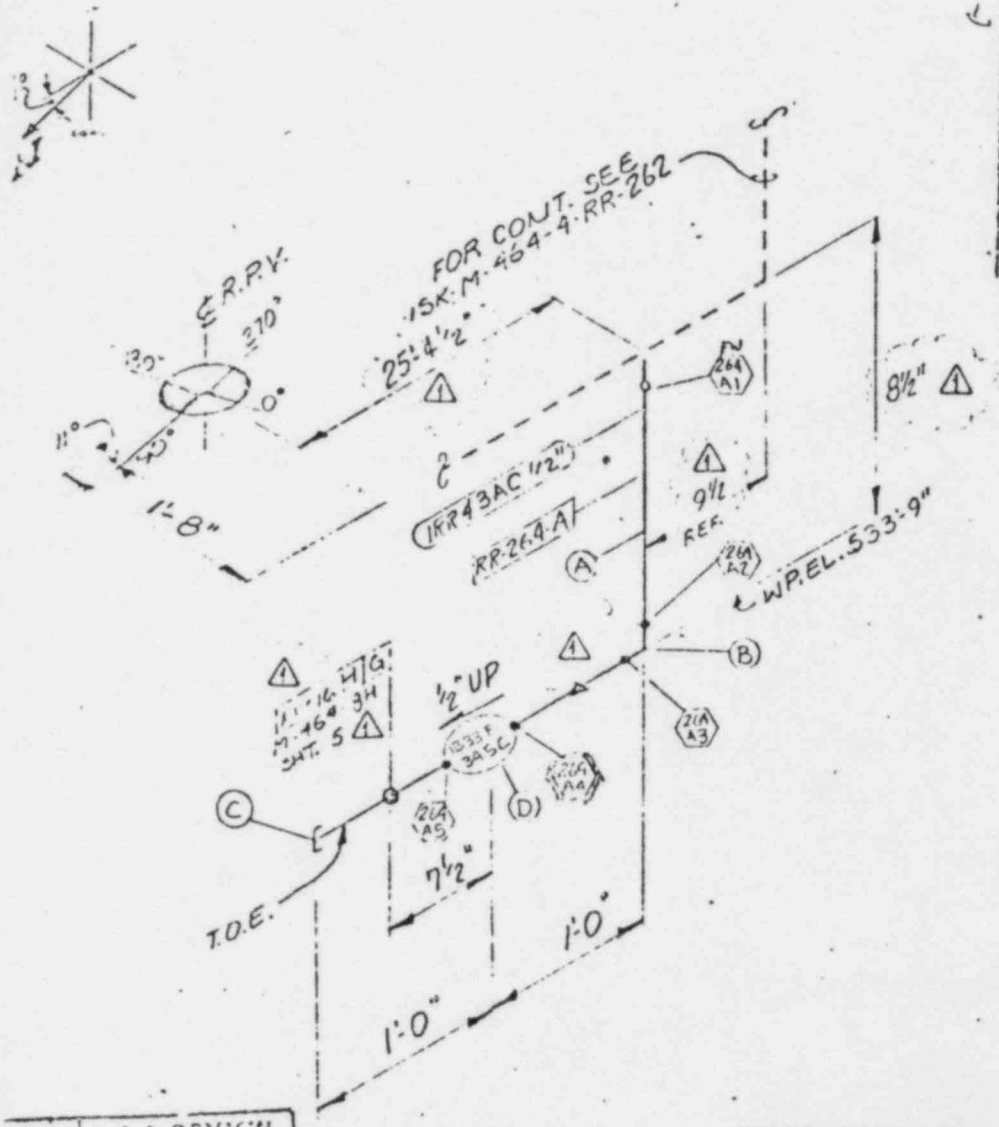


	HEAT NUMBERS

MATERIAL - TAKE OFF CLASS B ESSENTIAL

SPEC CLASS 240 WZ SHEET NO. 2

A	3	LF	1/2"	SCH	PIPE ASME SA 312 GR TP304	
B	1	EA	1/2"	3000#	90°ELL SA 182 GR F304	
C	1	EA	1/2"	3000#	CAP SOCD SA 182 GR F304	
D	1	EA	1/2"	1500#	VALVE ANGLE F316 (1B33F345C)	

RT-1 WELD DATA - SHEET NO.

3-1-56

ER304

X

X

X

For fillet welds only. X

Est'd finish 2/10/78

KB 7/12/78

The welding data noted on this RT sheet refers to above weld connections to RPV nozzle.

TEST FOR 2ND EXCEPTION

JP 3rd 7-17-78

CLASS	B
DESIGN TEMP	185°F
REF SPEC	A 2255
WELD PROCEDURE	
LINE NO	IRR43AC 1/2"
HANGER NO	
PIPE NOS	RR-264-A
	M-471 SH 2
	A4-1
	R
	M-444 RR 264

SEISMIC CLASS

NO.	DATE	BY	DESCRIPTION
1	10-6-78	JHC	MADE CHGS. PER FIELD REQUEST

REVISIONS

WM. H. ZIMMER NUCLEAR POWER STATION UNIT 1

KAISER ENGINEERS

KAISER ENGINEERS INC
JOB NO. 7073

TURNBACK NO: 04
PRIORITY : A

RETURN OF SYSTEM/EQUIPMENT TO CONSTRUCTION

b(piping on the attached list

S BEING RETURNED TO GED FOR:

epair_____Rework_____Design Change_____Completion of Construction Re-hydro

eference Material: M 47 sheets 1 and 2

Note: Lead System Engineer (T.F.Van Natta) must be present during preparations for and conduct of hydro test. (Attach pages as necessar

EQUIRED CONSTRUCTION RETESTING:

est Number	Description & Requirements
Hydro 25 thru 32	RR-2 field piping hydrostatic test

reop Retesting required No X Yes_____ Test No._____ Section_____

repared By T F Van Natta Date 9-11-79 Authorized By [illegible] Date 9-11-7
System Engineer — System Test Coordinator

eviewed By W D Lewis Date 9/12/79 Authorized By R E Dowell 9/12/79
Operations Supervisor — Maintenance Supervisor

****

echanical_____Electrical_____Instrumentation_____
iping_____Civil_____HVAC_____

he work requested above has been completed and necessary construction testing performed and is being returned to EPD jurisdiction for operation and/or preoperational testing.

_____Date_____
Cognizant Construction Engineer

_____Date_____
Principal QA&S Engineer (Preoperational Turnover Onl

****

he System as described above is accepted from Generation Construction for peration and testing.

_____Date_____
Maintenance Supervisor

reoperational retesting complete.

_____Date_____
System Test Coordinator

orm reviewed and filed by

_____Date_____
(Turnover Group)

CC: QA&S
Station Superintendent
Test Coordinator
System Test Coordinator (2)
Operations Supervisor
Maintenance Supervisor

FORM 6.5
SU.PRP.01-F
REV. 5

ETSU-SB

Boundry

1RR42AA	3/4
" B	1/2
" C	1/2
" D	3/4
1B33F344	A
"	B
"	C
"	D
1B33F355	A
"	B
"	C
"	D
1RR39AA	3/4
" B	1/2
" C	1/2
" D	3/4
1RR41AA	3/4
" B	1/2
" C	1/2
" D	3/4
1B33F343	A
"	B
"	C
"	D

HO
1B33
F060A

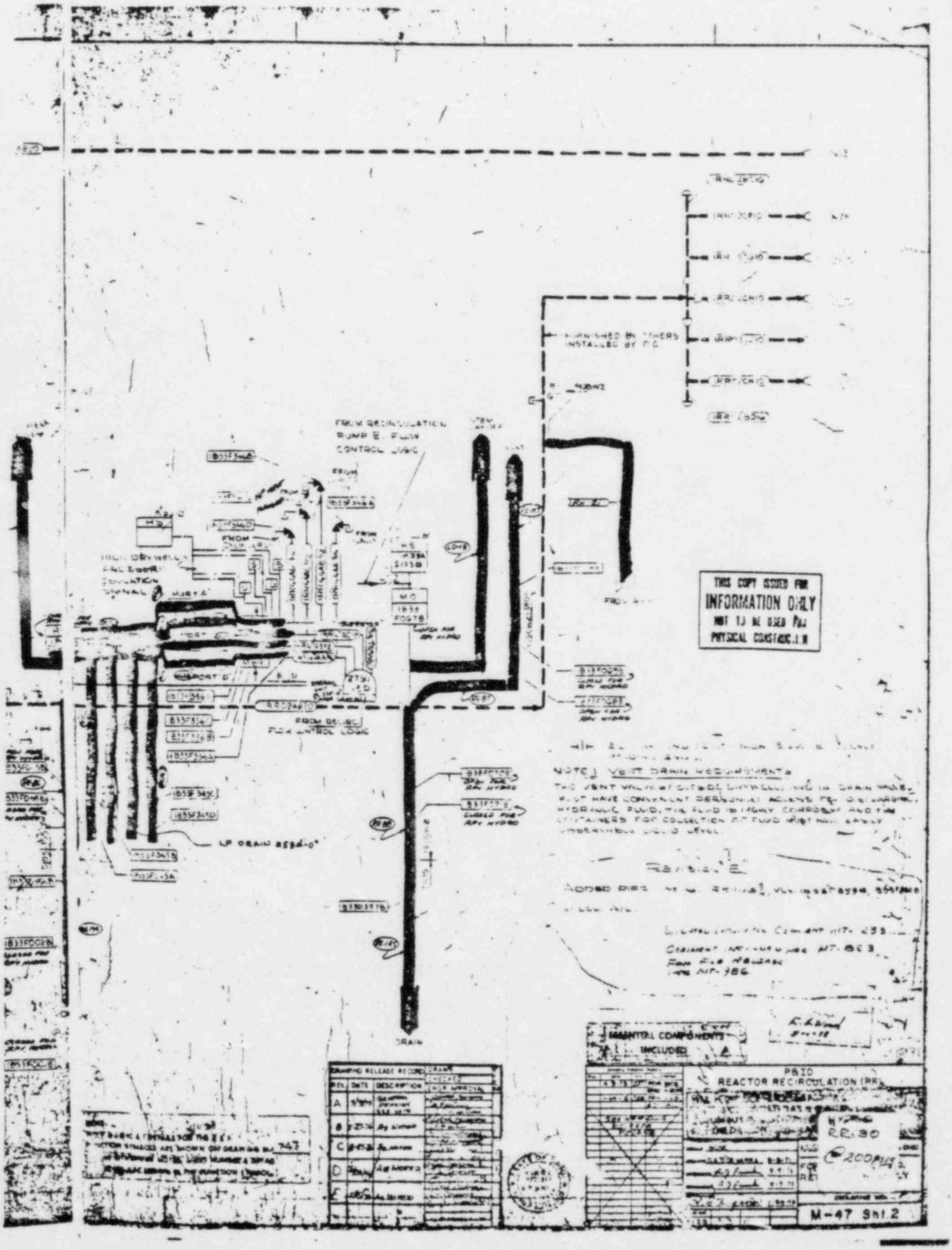
ETSU-SB

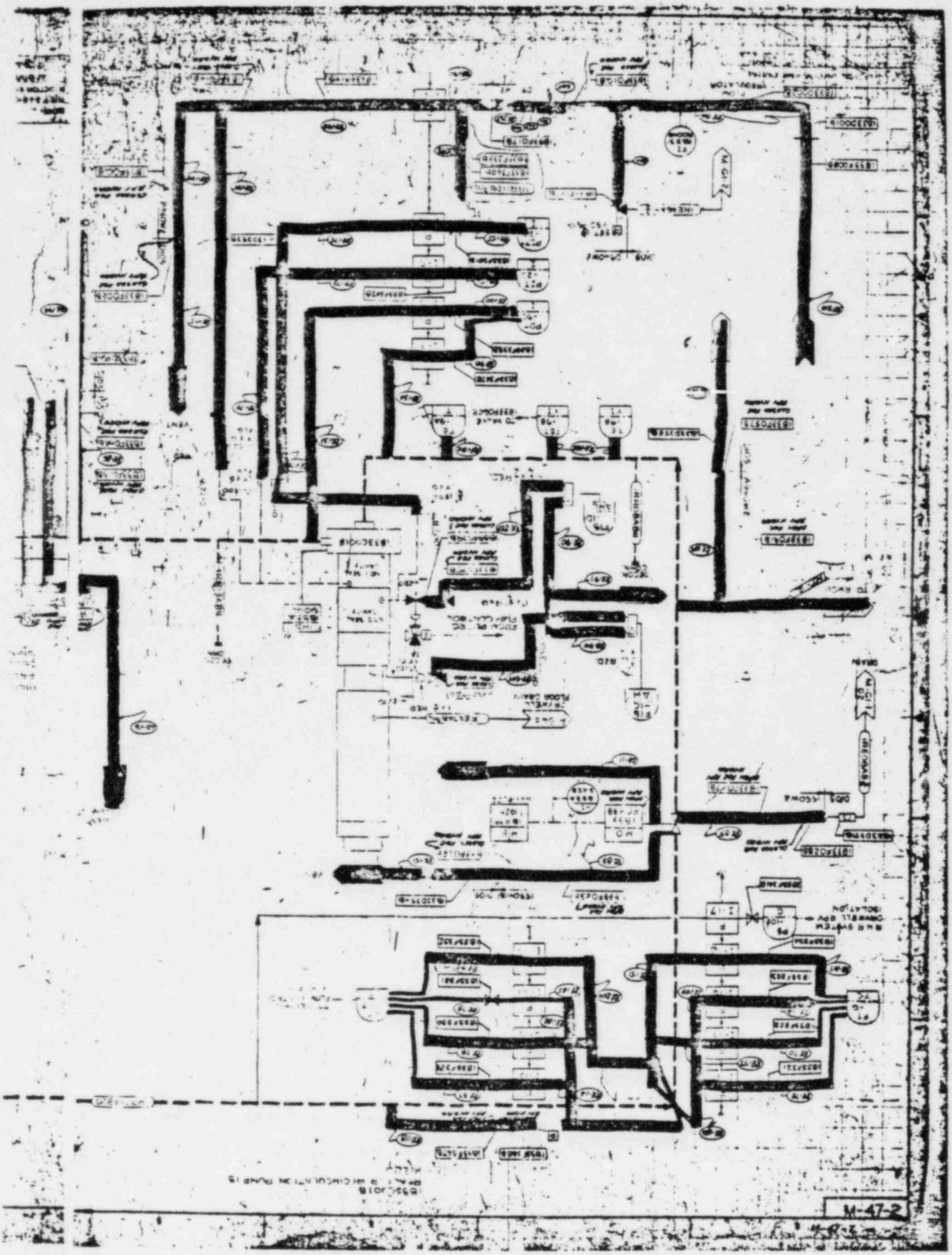
1RR47AA	3/4
" B	1/2
" C	1/2
" D	3/4
1B33F346	A
"	B
"	C
"	D
1B33F356	A
"	B
"	C
"	D
1RR40AA	3/4
" B	1/2
" C	1/2
" D	3/4
1RR43AA	3/4
" B	1/2
" C	1/2
" D	3/4
1B33F345	A
"	B
"	C
"	D

HO
1B33
F060B

Boundry

T.C. Dill
2/1/77


FURNISHED BY OTHERS INSTALLED BY P.C.
FROM RECIRCULATION PUMP B FLOW CONTROL LOGIC
FROM RECIRC FLOW CONTROL LOGIC
LP DRAIN 858'-0"
DRAIN
THIS COPY ISSUED FOR INFORMATION ONLY
NOT TO BE USED FOR PHYSICAL CONSTRUCTION
NOTE 1 VENT DRAIN REQUIREMENTS
MATERIAL COMPONENTS INCLUDED
P&ID
REACTOR RECIRCULATION (RR)
RR-30
M-47 Sht 2


M-47-2

KAISER ENGINEERS, INC. WM. H. ZIMMER NUCLEAR POWER STATION	QUALITY ASSURANCE - CONSTRUCTION METHODS INSTRUCTION (QACMI)

D-4

Title: Pressure Testing of Piping Systems	QACMI No. M-10, R.6	Page: 1 of 11
Prepared By: R. Linne	Effective Date: 11-16-78	

Approved By:

KEI QA Manager R. Turner

KEI Project Manager

KEI Construction Manager

FEC Gen. Supt.

FEC Const. Eng.

This QACMI M-10 incorporates the attached Construction Procedure 2-103, Hydrostatic/Pneumatic Testing, Revision 9, dated September 12, 1978.

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W.H. ZIMMER NUCLEAR POWER STATION-UNIT 1, MOSCOW, OHIO

FIELD CONSTRUCTION PROCEDURE 2 - 103

HYDROSTATIC/PNEUMATIC TESTING

REVISION 9 * DATE September 12, 1978

SUBJECT: Hydrostatic/Pneumatic Testing

AUTHORIZED: Project Manager Construction Engineer General Superintendent

QA STATUS: QA PROCEDURE REQUIRED ☒ YES ☐ NO

Approved By AMI: Lowell L Burton 11/8/78

ASME N-1.2 + N-7

* CHANGES not marked. complete Review is req'd. R M Tolson 10-23-78

1.0 PURPOSE

This procedure defines the methods employed to accomplish and document hydrostatic/pneumatic pressure testing of piping systems/subsystems installed in accordance with ASME Boilers and Pressure Vessel Code Section III, ANSI B31.1 Power Piping Code, Ohio Building Code Chapter BB-201 and S&L Specification H-2256 to prove the integrity of field welds and joints.

2.0 RESPONSIBILITIES

2.1 Hydrostatic/Pneumatic Testing Engineer shall:

2.1.1 Coordinate with the Piping Engineer to resolve all design problems involving Hydrostatic Testing.

2.1.2 Develop test boundaries.

2.1.3 Prepare Hydrostatic/Pneumatic test package.

2.1.4 Prepare Hydrostatic/Pneumatic test report.

2.1.5 Assist test superintendent with valve line up and testing as necessary.

2.1.6 Coordinate test schedules with the test superintendent.

2.1.7 Establish and maintain a unique numbered test log.

2.1.8 Assign unique test numbers to test package.

2.1.9 Submit completed test package to Quality Assurance for vault retention.

2.2 Hydrostatic Test Superintendent shall:

2.2.1 Supply all craft manpower necessary to accomplish hydrostatic/pneumatic testing.

2.2.2 Be responsible for storage of all hydrostatic/pneumatic testing equipment.

2.2.3 Be responsible for installation of all testing devices, caps, plugs, gauges, fixtures, etc.

2.2.4 Make valve line up and tag valves in accordance with FCP 1-16.

2.2.5 Supervise craft manpower.

2.2.6 Notify Quality Assurance of impending tests.

2.2.7 Return system to normal, remove temporary attachments, plugs, caps, etc. and blow dry as required.

2.2.8 Notify Client's Engineering Department of impending tests.

2.2.9 Perform pre-test walkdown of pipe detailing any incomplete work on an incomplete work list.

2.3 Quality Assurance shall:

2.3.1 Review documentation of welds, etc. of pipe within the test boundaries and detail any inconsistencies on an incomplete documentation list.

2.3.2 Notify authorized Nuclear Inspector and the Ohio State Special Inspector of impending hydrostatic/pneumatic tests.

2.3.3 Witness tests and perform leak inspection at pressure.

2.3.4 Verify that the test parameters are in accordance with the ASME Code requirements.

2.3.5 QAE to review completed test reports before final submittal to vault for retention.

2.3.6 After review (Section 2.3.5) transfer all valid and completed hydrostatic/pneumatic test reports to vault for retention with traceability to piping systems.

2.3.7 Maintain water analysis reports assuring water used for hydrostatic testing conforms to requirements.

2.3.8 QA Surveillance required to insure system cleanliness per QACMI M-9, R. 5.

3.1 Hydrostatic/pneumatic testing shall be initiated when one of the following occur:

3.1.1 Pipe is to be embedded in concrete or otherwise made inaccessible. Test package shall be initiated by the hydrostatic test engineer from information related by the field piping engineer.

3.1.2 Sub-system completion and system completion. Test package shall be initiated by hydrostatic test engineer based on test pressures in the line list for piping class A, B, C and D+ only.

3.1.3 Upon receipt of written request from the Client additional test packages shall be initiated by hydrostatic test engineer.

3.2 Development of Hydrostatic Test Packages. Hydrostatic test engineer shall:

3.2.1 Markup P&ID's to show test pressure of each line as indicated by the line list.

3.2.2 Make test package according to boundaries of pipe having like test pressures.

3.2.2.1 Test packages to consist of:

A. Marked up P&ID showing boundary of individual test.

B. PSK's showing large bore pipe in test.

C. ISK's showing small bore pipe in boundary.

D. C&ID showing Instrument pipe, etc. in boundary.

E. Hanger drawings showing hangers in boundary.

F. DDC's related to portion of system within test boundary.

G. Valve line up showing valves in test boundary and their position for the test.

3.3 Completion of hydrostatic test package shall initiate pre-test walkdown. Any incomplete work or problems shall be enumerated on an incomplete work list. This list shall be transmitted to the hydrostatic test superintendent The hydrostatic test superintendent shall assign work to the responsible parties, i.e. engineering craft superintendent, etc. When the incomplete work list has been cleared by the responsible parties the hydrostatic test engineer shall initiate the hydrostatic test report.

3.4 Preparation of Hydrostatic Test Report, Part A, Test Parameters.

3.4.1 System to be tested. Use the proper system letter designation, IA, RH, RR, etc.

3.4.2 Building or location of test. Record all buildings where pipe is pressurized.

3.4.3 Orientation and terminal points of the test. This information shall be expressed by marked up drawings. See Section 3.2.2.1.

3.4.4 Record drawing number and revision of all drawings used to describe test boundaries and identify temporary test fixtures.

3.4.5 Pipe installer shall be either KEI or an on site sub-contractor (RCI, etc.).

3.4.6 Mark appropriate box for either hydrostatic test or pneumatic test.

3.4.7 Test media shall be demineralized water, well water, dry nitrogen or dry air. Selection shall be at the discretion of the test engineer based on system requirements and system vent, drain and equipment restrictions. When demineralized water is used QA shall verify water quality meets the requirements.

3.4.8 The test plan shall be determined by the code used to fabricate and install the pipe and the appropriate box marked.

3.4.9 Minimum required test pressure shall be transcribed from:

A. S&L line list.

B. As specified by CG&E construction engineer.

Maximum test pressure shall be in accordance with S&L Spec H-2256 but may be less if system components pressure restrictions are less is computed by subtracting low point elevation from highest elevation of pipe test to obtain feet of static head. Multiply feet of elevation by .433 lbs. per foot to obtain amount of head pressure. Holding test pressure after initial 10 minutes at specified test pressure shall be indicated by circling the greater of 3/4 test pressure or design pressure and indicating actual pressure in alloted space.

3.4.10 After completion of part A, the hydrostatic/pneumatic test report shall be retained by the hydrostatic engineer until completion of Section 3.3. indicating test boundaries are ready for test.

3.5 Preparation of hydrostatic test report part B. Test prerequisites shall be completed by the responsible superintendent or test engineer adhering to the following guidelines:

3.5.1 Accomplish valve line up and assure all valves are positioned for the test and are tagged as set forth in Field Construction Procedure 1-16. No system shall be pressurized before tagging is complete.

3.5.2 When required QA shall verify that a proper water analysis report is available and sign-off Item 2 of test prerequisites.

3.5.3 Test gauges shall be obtained from QA calibration lab. The gauges used shall have a scale of at least 1½ times of specified test pressure and less than 4 times specified test pressure. Test conductor shall transcribe necessary information from gauges to test report.

3.6 Preparation of the hydrostatic test report, part C. Test results shall be completed by the responsible test superintendent or test engineer during actual testing.

3.6.1 Record ambient and media temperature at start of test.

3.6.2 Record time milestones as they occur.

3.6.3 Record any pertinent remarks and record results of the test. If no leaks are observed so state.

3.7 Part D of the test report shall be signed-off by the appropriate test witnesses upon test completion. These signatures shall be secured by the test superintendent or test engineer conducting test.

3.7.1 Section E of the hydrostatic test report, removal of test fixtures, shall be accomplished and signed-off before transmittal of test report to QA.

4.0 General

4.1.0 All Hydrostatic/Pneumatic tests shall be scheduled with the Test Superintendent. When a test date has been established, Hydrostatic Test Engineer shall assign a unique test number and the projected date. Hydrostatic Test Engineer shall review the test parameters of Part A for accuracy and proper requirements, then transmit a copy of the test package to the Test Superintendent to commence set up for testing. Hydrostatic Test Engineer shall simultaneously transmit the original of the test package to Quality Assurance affording the minimum 24 hour notice and for the applicable QA Engineer review and sign-off.

4.2.0 Testing shall be accomplished in accordance with this procedure and the requirements of the test report (Figure 2) exercising caution and adhering to the steps prescribed in the test plan.

4.3.0 Testing shall not commence until all parties required to witness the test are present.

4.4.0 After successful completion of testing, the Test Superintendent or Test Engineer shall return system to normal removing all temporary attachments, plugs, valves, etc. and documenting the [illegible] by signature on the test report.

4.5.0 The completed test package shall be submitted to Hydrostatic Test Engineer for final review and log the completed test.

4.6.0 Hydrostatic Test Engineer using transmittal form (Figure 3) shall transmit the complete hydrostatic/pneumatic test package to the Quality Assurance Analysis and Procedures Supervisor for filing in the QA vault.

4.7.0 Pneumatic Tests

All pneumatic tests shall be accomplished [illegible] the only exceptions shall be the use of B31.1 guideline determined maximum and minimum test pressures on tests conducted involving pipe constructed to ANSI B31.1 parameters. All other aspects of pneumatic testing are the same for ASME Code or ANSI B31.1 Code.

Rev: 3

ZIMMER #1
MOSCOW, OHIO

ANSI

KAISER ENGINEERS
HYDROSTATIC TEST PLAN NO. 10-102
(Ref: Field Construction Procedure 2-103)

The KEI Hydrostatic Test Procedure for all ANSI Tests shall be performed in accordance with ANSI B31.1 Paragraph 137, (1973). Demineralized water or well water is the testing media per S&L Spec H2256, Paragraph 906.2 and DDC M-2831, dated June 2, 1978.

All temporary valves and test plugs for the hydro shall be shown on drawings included in the KEI Test Package. Their removal upon the successful completion of the test must be properly documented.

A. Prior to filling the system the following steps are to be completed:

1. An adequate supply of well or demineralized water to be readily available. Demineralized water to be in compliance with the following Quality Criteria:

ph at 250°C (77°F)	5.5 to 8.0
Chloride	- 1.0
Floride	- 1.0
Sulfide	- 1.0
Conductivity @ 25°C uhos/cm	- 3.0

2. All valves shall be visually inspected, positioned for the test, and tagged in accordance with the tagging procedure FCP 1-16.

3. Isolate all system equipment that is not to be part of the hydrostatic test.

4. All joints and welds shall be left uninsulated/unwrapped and exposed for examination during tests.

5. Attach test pump to system and ready system for fill.

B. Test the system by completing the following:

1. Fill and vent the system. The pressure from the water supply should be sufficient to properly vent the system. If not, the test pump may be utilized to vent the system.

2. After initially filling and venting the system, wait a minimum of five minutes, then vent the system again. Continue this process until all air pockets are expelled and the system is as free from air as possible.

3. After filling and venting is complete, all low pressure filling lines and other appurtenances that should not be subjected to the test pressure should be removed or isolated by valves.

4. Pressurize system or partial system being tested to the specified test (Gauge) pressure with the test pump remaining on line to maintain the test pressure throughout the duration of the test.

5. Following the application of the hydrostatic test pressure for the minimum of ten minutes, examination for leakage shall be made of all welds, joints, connections and of all regions of high stress, while maintaining the full test pressure. If any leaks are present in the above, they shall be retested in accordance with these requirements.

6. The joints are to be visually examined and the calibrated test gauges/ recorders are to be monitored while the joints are being examined.

Rev: _____

CIVACON #1
[illegible]

[illegible]

(Ref: Field Construction Procedure [illegible])

The KEI Hydrostatic Test Procedure for all ASME Tests shall be performed in accordance with ASME Section III, NB6000 (thru summer, 1973 addenda). Demineralized water or well water is the testing media per S&L Spec H2256 and DDC M-2831, dated June 2, 1978.

All temporary valves and test plugs for the hydro shall be shown on drawings included in the KEI Test Package. Their removal upon the successful completion of the test must be properly documented.

A. Prior to filling the system, the following steps are to be completed:

1. An adequate supply of well water or demineralized water is to be readily available. Demineralized water is to be in compliance with the following Quality Criteria:

ph at 25°C (77°F)	5.5 to 8.0
Chloride	- 1.0
Floride	- 1.0
Sulfide	- 1.0
Conductivity @ 25°C uhos/cm	- 3.0

2. All valves must be visually inspected, positioned for the test, and tagged in accordance with the tagging procedure FCP 1-16.

3. Isolate all system equipment that is not to be part of the hydrostatic test.

4. All joints and welds shall be left uninsulated/unwrapped and exposed for examination during tests.

5. Attach test pump to system and ready system for fill.

B. Test the system by completing the following:

1. Fill and vent the system. The pressure from the water supply should be sufficient to properly vent the system. If not, the test pump may be utilized to vent the system.

2. After initially filling and venting the system, wait a minimum of five minutes, then vent the system again. Continue this process until all air pockets are expelled and the system is as free from air as possible.

3. After filling and venting is complete, all low pressure filling lines and other appurtenances that should not be subjected to the test pressure should be removed or isolated by valves.

4. Pressurize system or partial system being tested to the specified test (Gauge) pressure with the test pump remaining on line to maintain the test pressure throughout the duration of the test. Following the application of hydrostatic test pressure for a minimum of ten minutes, the pressure shall be reduced to the greater of either 3/4 the test pressure or the design pressure. Examination for leakage of all joints, connections and all regions of high stress shall be made. If any leaks are present in the above, they shall be repaired and eliminated after which, the system shall be retested in accordance with these requirements.

5. The joints are to be visually examined and the calibrated test gauges/ recorders are to be monitored while the joints are being examined.

Date: 6/12/80

Rev: 3

ZIMMER #1
MOSCOW, OHIO

ASME

KAISER ENGINEERS
HYDROSTATIC TEST PLAN NO. 10-103
(Ref: Field Construction Procedure 2-103)

The KEI Pneumatic Test Procedure for all ASME Tests shall be performed in accordance with ASME III, NB6000. Test media for all Pneumatic Tests shall be clean dry oil/free air nitrogen only (Ref: S&L Spec H2256.)

All temporary valves and test plugs utilized shall be shown on drawings attached to the Pneumatic Test Report. The removal of temporary appurtenances upon successful completion of the test must be properly documented. (See Line C-4 of the test report form).

Prior to pressurizing the system the following steps are to be strictly adhered to:

1. Assure that all components and appurtenances that should not be subject to test pressure have been disconnected or isolated by valves or other suitable means.

2. All joints including welds shall be left unisulated and exposed for examination during testing.

3. All applicable ASME Code Requirements of Section III, NB6300 shall be met before pressurization.

4. The only permissable leak testing fluids are: "Snoop", "Leak Tek", or "Wonder" soap bubbles. (To be removed after completion of test).

5. All valves shall be visually inspected, positioned for test and tagged in accordance with FCP 1-16.

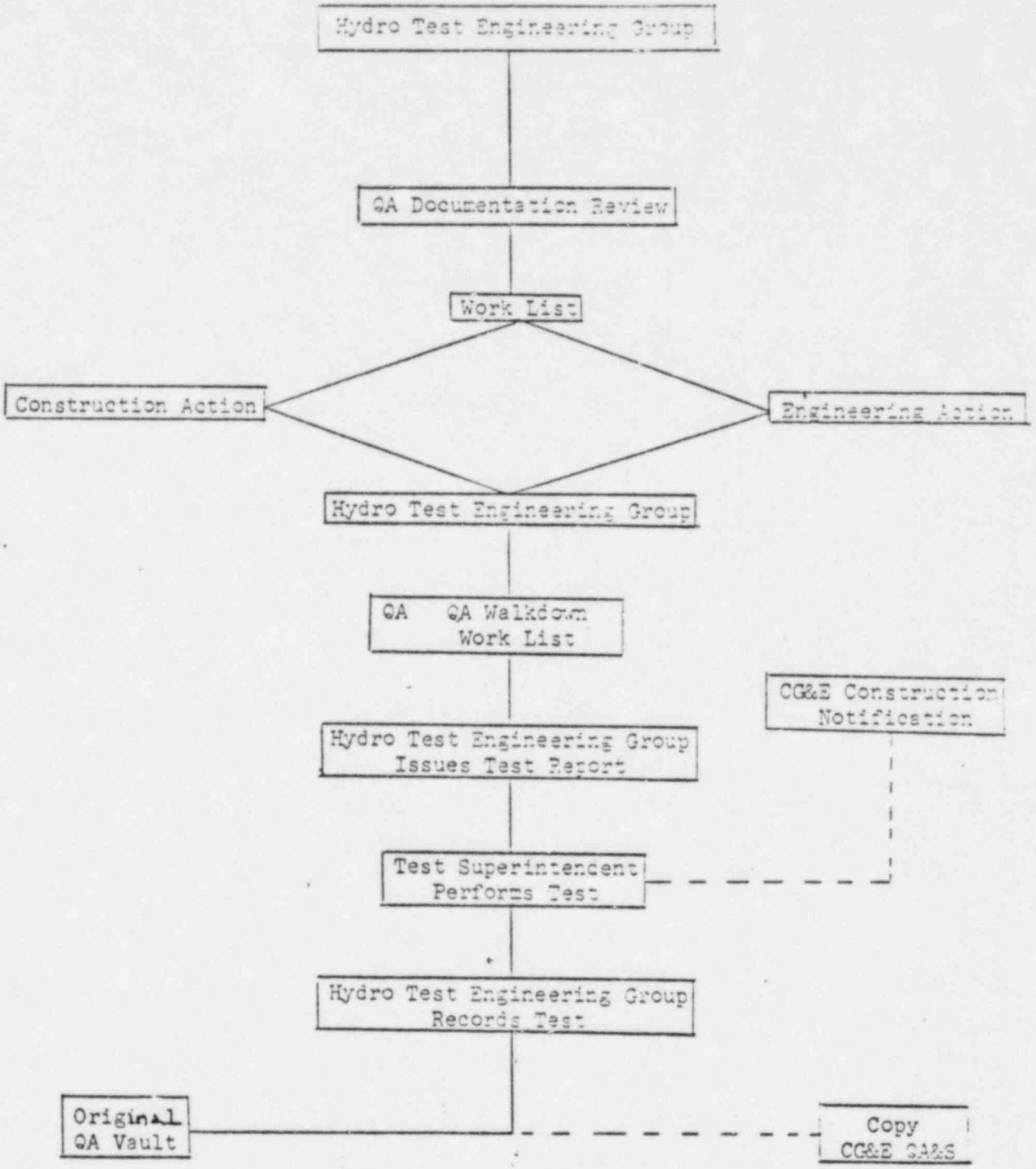
6. Fill valves are to be open prior to the application of Pneumatic Test Pressure.

Procedure for Applying Pneumatic Pressure to Testing Piping.

The pressure in the system shall be gradually increased to not more than one-half test pressure, after which the pressure shall be increased in steps of approximately one-tenth of the test pressure until the required test pressure has been reached. The test pressure shall be maintained for 10 minutes. The pressure shall then be reduced to a value equal to the greater of the design pressure or 3/4 test pressure and held for a sufficient time to permit examination of system.

Following 10 minutes hold time each joint, connection, and region of high stress shall be examined for leaks, except for valves which shall be examined while at test pressure.

Except in case of pumps and valves all leaks shall be eliminated after which the system shall be retested in accordance with these requirements. When testing valves and pumps, there shall be no leakage except that leakage of seals, seats and gasket joints may be permitted, if allowed by Design Specifications.


Hydro Test Engineering Group
QA Documentation Review
Work List
Construction Action
Engineering Action
Hydro Test Engineering Group
QA QA Walkdown Work List
CG&E Construction Notification
Hydro Test Engineering Group Issues Test Report
Test Superintendent Performs Test
Hydro Test Engineering Group Records Test
Original QA Vault
Copy CG&E QA&S

KAISER ENGINEERS

KAISER ENGINEERS INC
P O BOX 20
MOSCOW OHIO 45153

Date: _____

Standard Test Procedure

Perform Hydrostatic/Pneumatic Test, # _____ in accordance with attached Test Data Sheet and QACMI M-10.

Estimated Date of Test: _____

Test to be Conducted By: _____

Form 2, Rev. 6
9/12/78

Wm. H. Zimmer Nuclear Power Station
Hydrostatic/Pneumatic Test Report
(Page 1)

Test #:_____

A. Test Parameters

1. System to be tested:_____

   Cleanliness Class:_____

2. Building Location of Test:_____

3. Orientation and Terminal Points of this are as shown on attached drawings.

   Elevation of High Point _____ Feet

   Elevation of Low Point _____ Feet

4. Attached Drawing Numbers and Revision Numbers:

   _____

5. Pipe Fabricator: KEI Other:_____

6. Type Test: Hydrostatic /__/ Pneumatic /__/

7. Test Media:_____

8. Test Plan: (Select One)

   Hydrostatic KEI 10-101 /__/

   Hydrostatic KEI 10-102 /__/

   Pneumatic KEI 10-103 /__/

9. A.1. Required Test Pressure from S&L Piping Line List:

   _____ PSIG (Minimum at Highest Elevation).

   2. As specified by CG&E Construction _____ PSIG

   _____
   Signature/Date

B. Maximum Pressure to which system can be pressurized:

   _____ PSIG.

C. Amount of Head Pressure _____ PSIG.

Wm. H. Zimmer Nuclear Power Station
Hydrostatic/Pneumatic Test Report
(Page 2)

Test #: _____

D. Gauge Location: Elevation _____ Feet.

E. Initial Test Pressure: _____ PSIG.

F. Holding Test Pressure: _____ PSIG.

10. Test Parameters completed by: _____
Signature/Date

Verified: _____
KEI QA Engineer

B. Test Prerequisites

1. Valve Lineup completed by: _____
Signature/Date

2. Water Analysis Report available and acceptable:

_____
Signature/Date

3. Test Gauges: Note: Range shall be more than 1½ times test pressure but less than 4 times test pressure.

S/N _____ Range ± _____PSI Calibration Date _____ Date _____

S/N _____ Range ± _____PSI Calibration Date _____ Date _____

Wm. H. Zimmer Nuclear Power Station
Hydrostatic/Pneumatic Test Report
(Page 3)

Test #: _____

C. Test Results

1. Ambient Temperature _____ Media Temperature _____

2. Time test started _____ Time test pressure reached _____

Hold time _____

3. Test results and remarks: _____

_____

_____

_____

_____

D. Test Witnessed and Accepted By:

1. KEI Hydrotest Superintendent and/or Engineer: _____
Signature/Date

2. Quality Assurance Representative: _____
Signature/Date

3. CG&E Representative/Ohio Special Inspector: _____
Signature/Date

4. Authorized Nuclear Inspector: _____
Signature/Date

E. Remove Test Tags, remove Test Equipment, etc.:

_____
Signature/Date

Form 3, Rev. 3
7/26/77

HYDROSTATIC PNEUMATIC TEST REPORT

TRANSMITTAL

TO: KEI-QA Documentation Date: _____

FROM: _____

SUBJECT: Hydrostatic/Pneumatic Test Report

Please note the attached Hydrostatic/Pneumatic Test Report # _____

The test report is an original document for your permanent records as specified in GACNI G-2 (Current Revision) "Master System Plan."

4/5/72

HYDROSTATIC/PNEUMATIC TEST REPORT

TRANSMITTAL

TO: CG&E-QA Documentation Date: _____

FROM: _____

SUBJECT: Hydrostatic/Pneumatic Test Report

Please note the attached Hydrostatic/Pneumatic Test Report # _____

This test report is a copy for your records.

KAISER ENGINEERS

KAISER ENGINEERS, INC.
P. O. BOX 658
CINCINNATI, OHIO 45201

Date: November 9, 1978
KEI No.: _____

Mr. W. W. Schwiers, Principal Engineer
General Engineering Department
The Cincinnati Gas & Electric Company
139 East Fourth Street
Cincinnati, Ohio 45202

Copies: (W. W. Schwiers)
(_____)

Subject: Quality Assurance Document Transmittal

Gentlemen:

Transmitted herewith are the following Quality Assurance Documents:

___ KEI Audit Report No. _____
___ KEI Nonconformance Report No. _____
X KEI Procedure No. M-10, Title: QACMI _____
___ KEI Document Deficiency Notice _____
___ Other _____

These are submitted for your:

___ Action
___ Approval
X Information
___ Special Instructions: _____

Acknowledgement of receipt X is, ___ is not required. Please acknowledge receipt when required by signing the xeroxed copy of this transmittal in the space provided below.

Very truly yours,

KAISER ENGINEERS, INC.

R. Turner

R. E. Turner
Quality Assurance Manager

WJF:sbc
Enclosure(s)

Receipt Acknowledged: W W Schwiers 11-9-78
CG&E Quality Assurance Representative