

THE BARCOCK & WILCOX COMPANY  
POWER GENERATION GROUP

Ref 11

To	HARRY HONIG	
From	ELST WARD	EGW
Cust.	TMI-2	File No. or Ref.
Subj.	PORV DISCHARGE PIPING	Date APRIL 22, 1979 9:06 AM

BDS 888.3

This letter to cover one customer and one subject only

RE: YOUR REQUEST TO B&R ON 4/20/79.

- ON 4/21/79, A JACK KIVEN CALLED TO CONFIRM HE WAS TRANSMITTING A 7 PAGE TELECOPY PROVIDING DESIGN DETAILS AND LOADINGS FOR THE PORV. (THIS DATA IS ATTACHED.)
- THE REV. 20 OF THE WASTE SYSTEM DWG YOU WERE USING IS THE LATEST REVISION.
- A FABRICATION DRAWING OF THE PIPING WILL BE FORWARDED BY MAIL.
- THEY HAVE THE COMPLETE ANALYSIS REPORTS IF WE REQUIRE ANY ADDITIONAL INFORMATION.

EGW/tbc

CC: DOUG LEE

POOR ORIGINAL

8001170810

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The pressurizer discharge piping system consists of (see figure 1.0.1).

Rec'd 1152  
4/6  
Page 4/3

A 4" outlet piping from pressurizer electromagnetic relief valve RC-R2 which is mounted on the top of the pressurizer and is connected via a 4" discharge piping to 14" discharge header.

Two pressurizer safety valves RC-RIA,B which are connected to the pressurizer via 6 inch loop seals and are mounted on a platform which is integral to the pressurizer. The discharge side of the relief valves are connected to the 14" discharge header via 6" discharge piping.

14" header which connects the relief valves with the WDL-T-3 drain tank.

The analyses were performed to demonstrate the structural integrity of the discharge piping. It is not the intent of this report to show conformance of the loop seal piping to ANSI B31.1 Class I requirements.

The loop seal portion of piping was included only so that its flexibility, loadings and overall coupling with the discharge piping could be included in the analysis. The B-1 analysis of the loop seal piping will be performed in separate report.

The following analyses were performed:

1. Thermal analysis of the discharge piping assuming the piping at 70°F, 112°F and 500°F with the pressurizer/loop seal at 550°F and the platform at an average of 600°F (see Appendix A.2 for justification of platform temperature).
2. Spectral seismic analysis of the discharge piping including the pressurizer and secondary shield.
3. Dead weight analysis.
4. A time history analysis for the blow off of relief valves RC-RIA,B was performed.

ORIG. SOURCE: GRANT WARD B-W 4/20/79 1575  
(Name, Date & Time) RCW 255-2403

TASK NUMBER: 2020

TASK DESCRIPTION:

Provide piping design, pipe stress loads, stress/fab. costs for the electromatic relief RC-R2 inlet and discharge piping for use by B-W in Lab. analysis/Tests. (BW has done 2555-2403 RCW 20 - is it the latest?) DUE BY 4-23 AM

ASSIGNED TO: Stress  
J Kiven

DATE & TIME ASSIGNED: 4/20/79 1530  
Phone G. Ward with loading information ASAP

DETAILS/STATUS:

LOAD (THERMAL + DEADWEIGHT) IS:  
 $F_x = 69^{lb}$   $F_y = -300^{lb}$   $F_z = -1032^{lb}$   
 $M_{x1} = -20102^{lb-in}$   $M_y = -371^{lb-in}$   $M_z = -1127^{lb-in}$

RESOLUTION: PHONE CONVERSATION KIVEN TO WARD 10:30 AM 4/21/79  
LOAD INFORMATION REPORTED PER REQUEST.  
CONFIRMED THAT DWG 2555-2403 RCW 20 IS CORRECT.  
AGREED THAT FOLLOWING SHEETS OF PRESCRIBED RELIEF VALVE DISCHARGE PIPE STRESS REPORT WILL BE TELECOPIED TO LYNCHBURG.  
SHTS 1.0.1, A.1.1, A.1.2, 4.1.4  
FIGURES 1.01, 2.0, 1  
KELLOGG FABRICATION IS 2-23-1 WILL BE MAILED SPECIAL DELIVERY.  
J. KIVEN

DISCIPLINE SUPERVISOR CONCURRENCE \_\_\_\_\_

COMPLETE RESOLUTION:  YES \_\_\_\_\_ NO . . . DATE & TIME: 4-21-79 1110

PARTIAL RESOLUTION: \_\_\_\_\_ YES  NO . . . FORWARDED TO: G. Ward, B.W., 4/24/79  
(Name, Date & Time)

ACTION DESIGNER: J. KEVIN

RESOLUTION ACCEPTED: Approved 4-21-79  
(Proj. Mgr., Date & Time)

FURTHER ACTION REQUIRED: \_\_\_\_\_ YES  NO

DISTRIBUTION:

- B&R Site (W. R. Cobean), 1 telecopy/ 3 in mail
- B&R Site (Proj. Mgr.)
- B&R Site File
- GPU Min. Laken
- Project Mgr. Book
- TMI File (Dist. & Telecopy)

ASSIGNED TO: \_\_\_\_\_  
(Name, Date & Time)

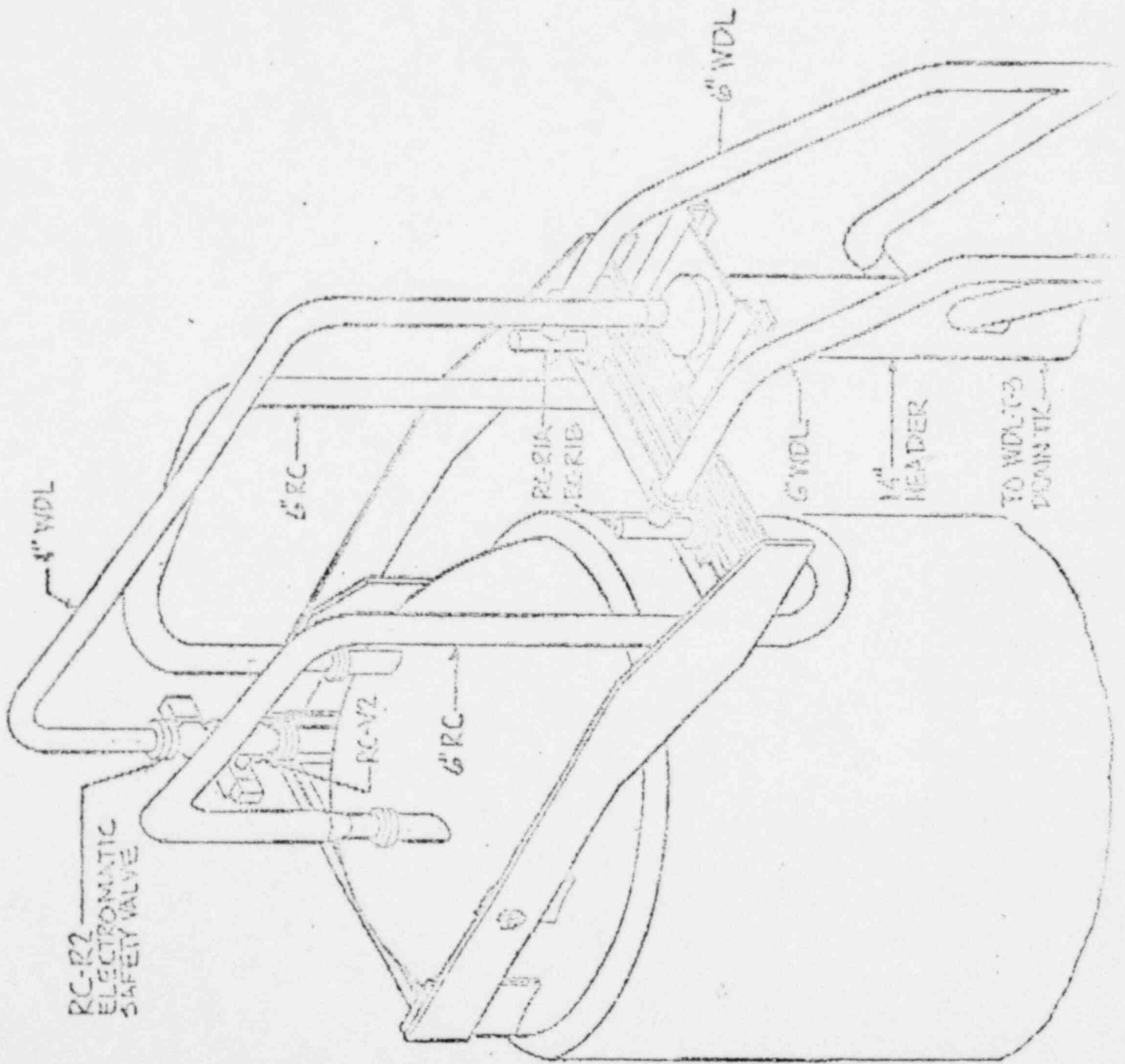
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FIGURE 1.0.1

TASK 2050

SH 2/7

105  
PA 3/7  
4/3/79



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W.D. No. 2555-09 Date 5-1-76 Book No. \_\_\_\_\_  
 Drawing No. \_\_\_\_\_ Rev. No. \_\_\_\_\_  
 By H.W. 11517 Checked W.P. 11517 Approved [Signature]  
 Title Change Calculation

1055  
 PA 1177  
 4/21/79

3) Thermal and Dead weight Loadings  
 (Data pt. 4)

	F <sub>x</sub> (lb.)	F <sub>y</sub> (lb.)	F <sub>z</sub> (lb.)	M <sub>x</sub> (in.-lb.)	M <sub>y</sub> (in.-lb.)	M <sub>z</sub> (in.-lb.)
Thermal	70	-217	-1044	-19782	-366	-1107
Deadweight	-1	-83	-12	-321	-5	-20
Total	69	-300	-1032	-20103	-371	-1127

combination of d.w. and thermal loading at worst ambient or operating temperature (platform @ 650°F, pipe @ 70°F)

Overturning Moment

$$M = \sqrt{M_x^2 + M_z^2} = \sqrt{20103^2 + 1127^2} = 20135 \text{ in.-lb.}$$

Axial Force

$$F = F_y = 300 \text{ lb.}$$

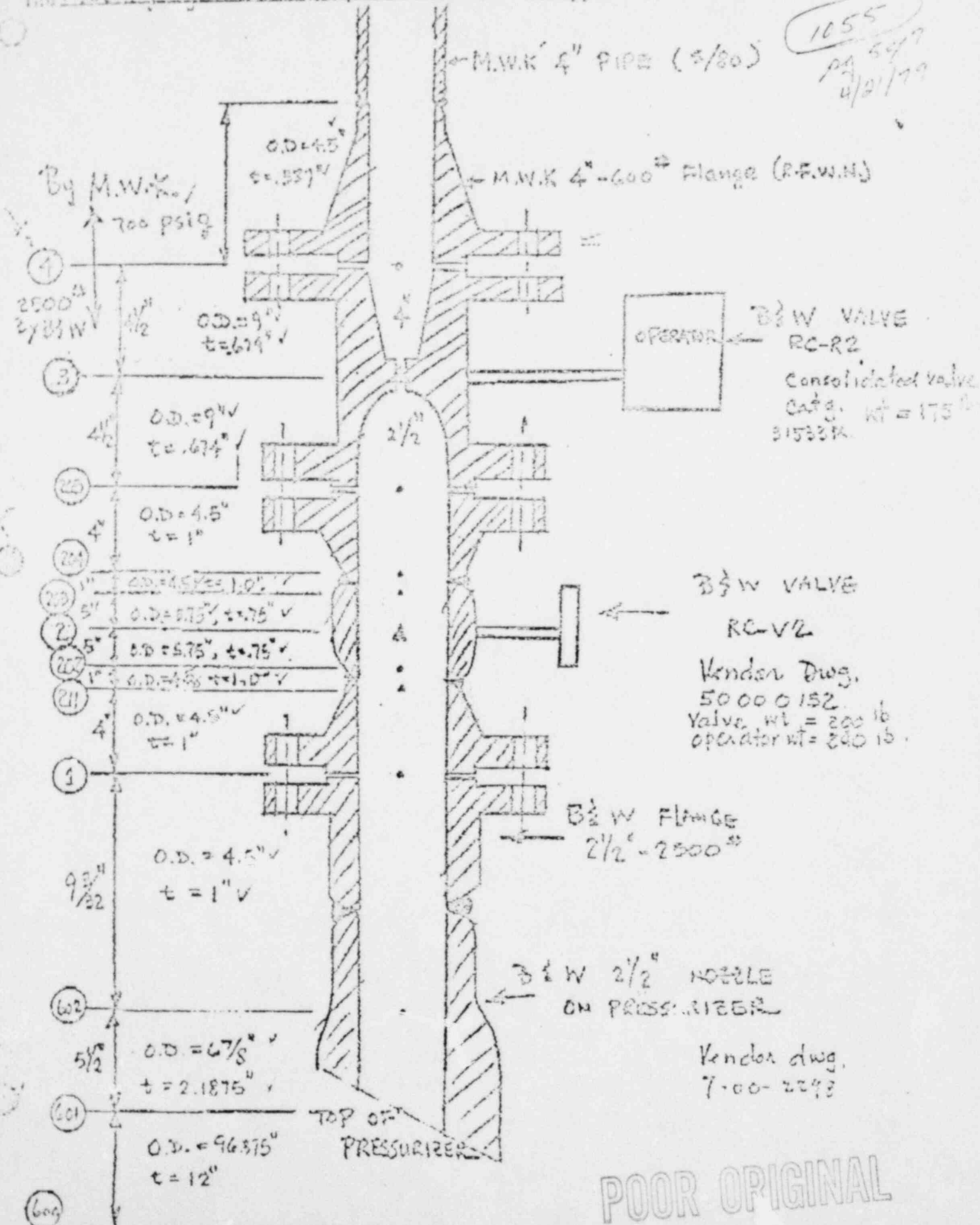
y = y  
 z = -x  
 x = +z

F <sub>x</sub>	F <sub>y</sub>	F <sub>z</sub>	M <sub>x</sub>	M <sub>y</sub>	M <sub>z</sub>	Z
70	-217	-1044	-19782	-366	-1107	70
-1	-83	-12	-321	-5	-20	-1
69	-300	-1032	-20103	-371	-1127	69

92	-31	-1019
2	-1	-27
94	-31	-1075

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1055  
 pg 549  
 4/21/79



OPERATOR ← B $\frac{3}{4}$ " W VALVE RC-R2  
 Consolidated Valve  
 Cat. g. wt = 175 lb  
 31533K

← B $\frac{3}{4}$ " W VALVE RC-V2  
 Vendor Dwg.  
 50000152  
 Valve wt = 200 lb  
 operator wt = 240 lb

← B $\frac{3}{4}$ " W FLANGE 2 $\frac{1}{2}$ " - 2500<sup>#</sup>

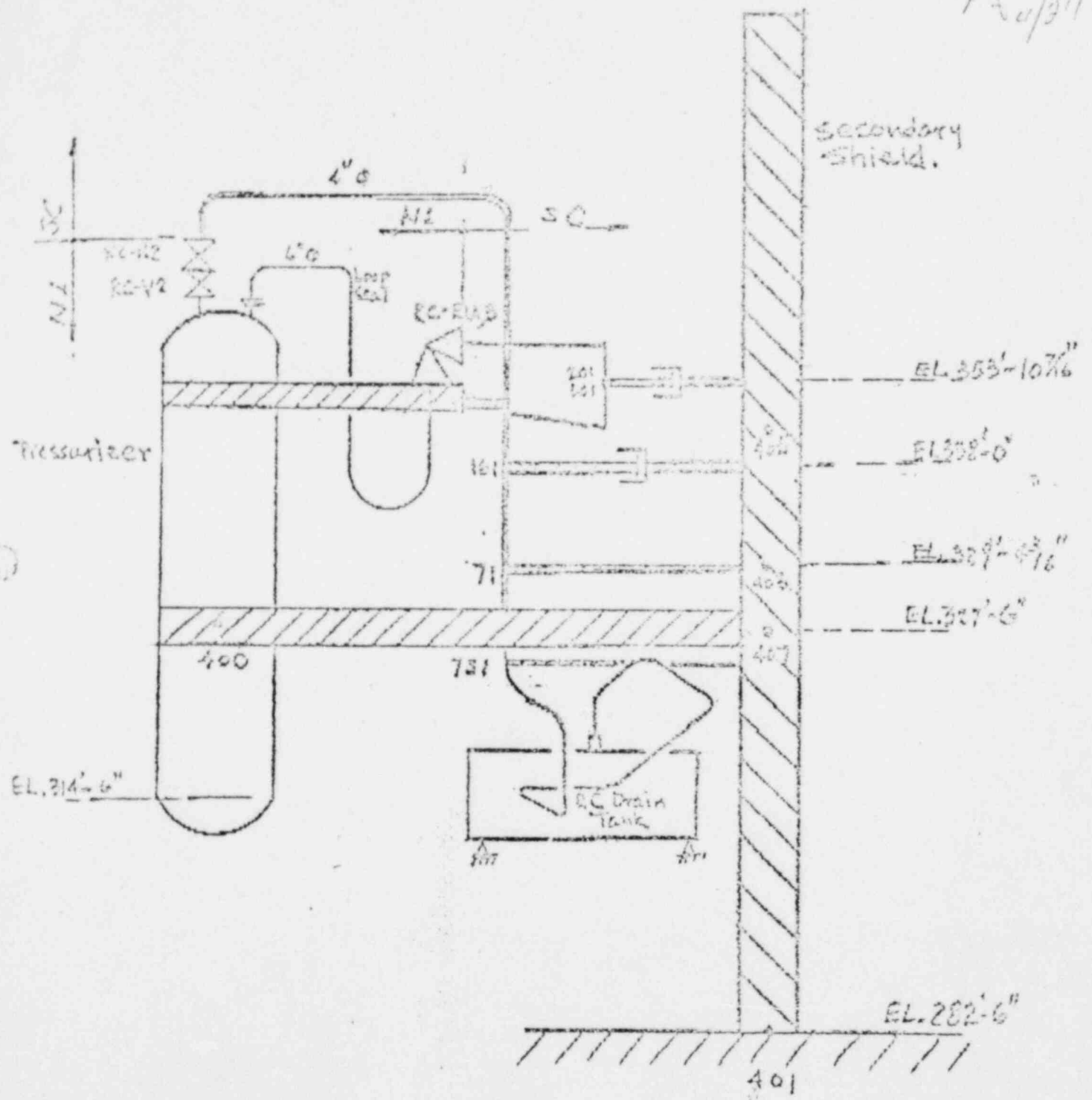
← B $\frac{3}{4}$ " W 2 $\frac{1}{2}$ " NOZZLE ON PRESSURIZER

Vendor dwg.  
 7-00-2293

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Sketch of the closed drainage system

1055  
PA 6.9.7  
u/31/79



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TASK 2038

SH 6/7

(TO BE  
XMITTED  
BY SPECIAL  
DELIVERY)

UPPER  
PART

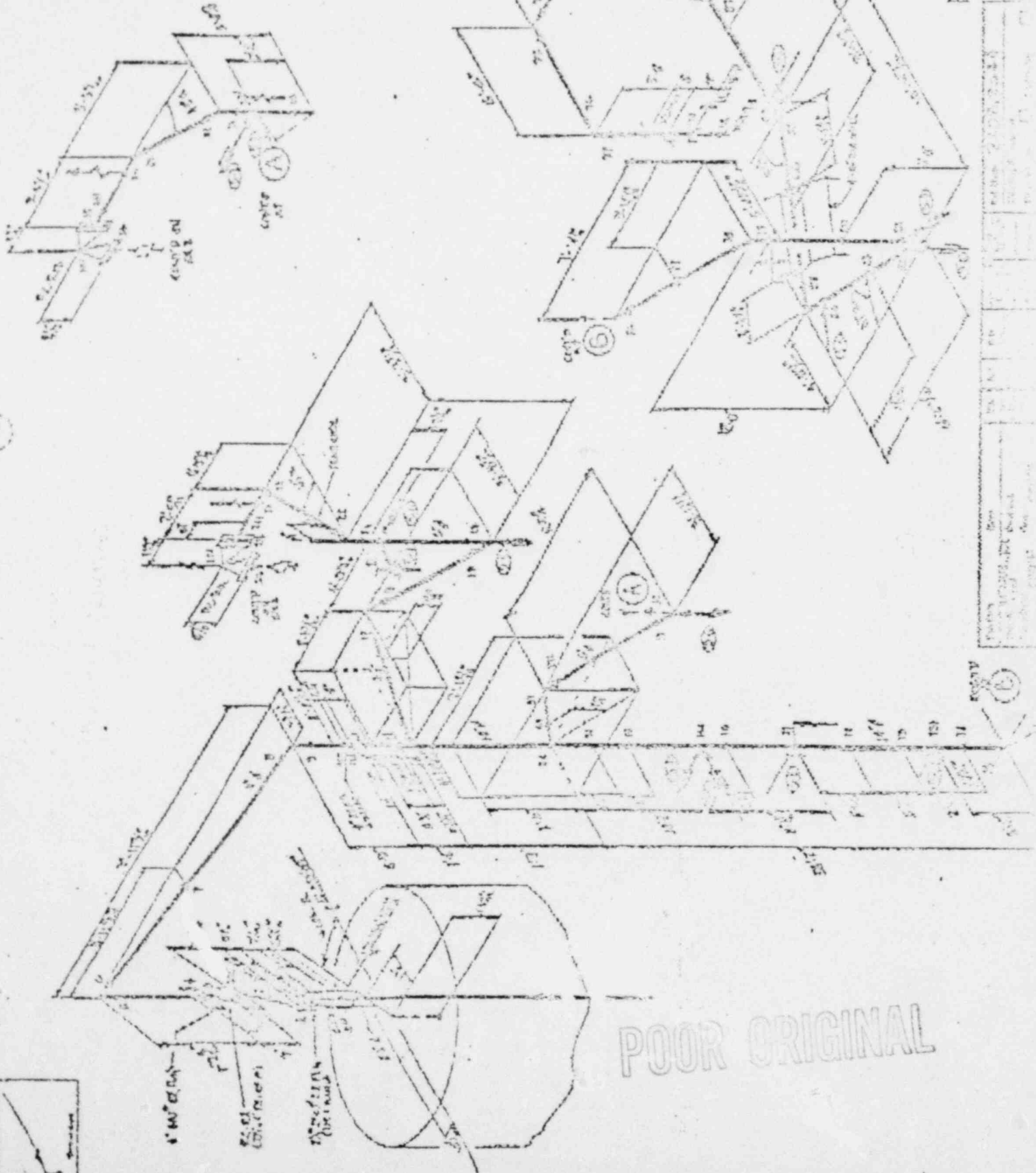


FIGURE 2.01

NO.	DATE	REVISION
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