SITE PROBLEM

REPORT TRANSMITTAL

25

**** CLEARED ****

TO: Change Control For Distribution
S. M. Klein - Quality Assurance
Central Engineering Files
O. Putzbruck - Task Engineer
J. Lauer - Project Manager

FILE: 13-14-386
CONTRACT NO: 620-00 14
SPR 386
TITLE Electromatic Relief Valve Modification
DATE: 3/27/78
STATUS CODE C

_____ L. C. Rogers - MET. ED. _____
_____ F. R. Faist - TOLEDO _____
_____ J. R. Bohart - Intl. Support _____
_____ J. L. Donnell - OFR _____
_____ B. A. Karrasch - Plant Integration _____

Attached is one copy of Site Problem Report No. 386 which was processed on Contract 620-00 14. Future contracts have been reviewed for the potential of a similar problem. This problem ~~is~~/is not considered applicable to other contracts _____.

REMARKS: _____

NUCLEAR SERVICE SUPPORT ENGINEER

CLEARED

8001170900

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SITE PROBLEM REPORT

BABCOCK & WILCOX SPR #

CUSTOMER	ORIGINATOR	DATE	DOC. ID. CONT. NO.	SPR NO.
Toledo Edison Company	F.R.Faist	11/2/77	13 - 620-0014	366
VENDOR	P.A. NO.		PART NO./TAG NO.	GROUP NO. / REV.
Crosby	023 090 LS		28/041/005	
TITLE (MAX 30 CHARACTERS)			PROBLEM CONTACT	
Electromatic Relief Valve Modification			J. E. Anderson	

PROBLEM IDENTIFICATION

DESCRIPTION OF PROBLEM:

See attached sheet.

STATUS-ACTION TO DATE, INCLUDING PERSONS CONTACTED: Lynb. Engineering is aware of this problem. S. A. Lamanna, Lynb., and J. A. Lauer, Proj. Mgm. know of this problem. T. D. Murray and B. R. Beyer, TECo, are also aware of the problem.

FURTHER ACTION RECOMMENDED BY SITE PERSONNEL: 1. Lynb. Engineering should review Crosby installation, operating and maintenance instructions No. I - 1115, Sect. 4.2, with the Crosby vendor to determine if these instructions will give the proper pilot valve stem adjustment when actuated. 2. Engineering to provide additional recommendation and concurrence with action taken.

RESOLUTION

RESOLUTION: Engineering Operations discussed recommendations per conversation with Mr. Dick Ashbaker. The instruction manual section 4.2 will be revised by Crosby. A duplicate Bill will be given copies of the revised pages for the I.M.
Steve Lamanna.

PREPARED BY	DATE	APPROVED BY	DATE
Doug Halstead	11-4-77		
F. Pattman & K. Ellison	11-7-77	J. A. Lauer	11-7-77

	COST CATEGORY	FIELD CHANGE REQ	F.C.A. NO.	SIGNIF. DEFICIENCY
	☐ NORM ☒ OTHER	☐ YES ☒ NO	04- N/A	☐ YES ☒ NO

COMPLETION

SITE COMPLETION REPORT: SOM Letter #352, copy attached with written to CTCo. Instruction manual to remain correct and will not be revised. Additional adjustment check provided. Eng. concurred with Crosby/ CTCo action.

DEVIATIONS: ☒ NONE SPR REV NO. ☐

DATE COMPLETED: 3/24/78

COMPLETED BY	DATE
F. R. Faist	3/24/78
F. R. Faist	3/24/78

Babcock&Wilcox

SPR #386
620-0014
11/2/77

Description of Problem:

On 10/13/77, the electromatic relief valve was tested after the completion of repairs as outlined in SPR #369. The valve was cycled six times successfully. On the seventh test cycle the pilot valve did not close. The ERV was isolated and permitted to cool down while waiting for Crosby representatives.

Crosby rep., Walt Conroy, arrived and the pilot valve assembly was removed from the main valve. Disassembly of the pilot valve revealed that the pilot valve stem had stuck open due to the close tolerance causing a binding condition between the O.D. of the stem and the I. D. of the pilot valve nozzle. Also, a small metal particle was found in the pilot stem/nozzle area. Subsequent cleaning of the inlet piping to the ERV revealed this same type of metal particles.

The Crosby representative furnished a detailed drawing of the pilot valve stem requiring a diameter of $\frac{.374}{.373}$. This was changed to read $\frac{.373}{.372}$ diameter by the Crosby rep., and the stem was modified accordingly by TECo Maintenance under the direction of the Crosby rep. This modification resulted in opening the clearance between the stem and the nozzle thus eliminating the binding. The nozzle was also reamed out with a reamer the same size, no material was removed.

All parts were cleaned and assembled. The solenoid linkage was adjusted to drop the adjustment bolt more squarely on the disc actuator. In addition, the adjustment bolt was positioned to move the pilot valve stem off the seat a maximum of .125". It had been moving off the seat some .375".

The pilot valve was tested without pressure by actuating the solenoid three times. The valve was tested again twice with 5 or 6 seconds between tests. This was followed by testing the valve five more times assuring actuation each time by a one minute delay between tests. The valve was tested with a pressure of 1100 psig on the second and third occasion.

JEA:nlf

TITLE O

ERV MODIFICATION

AH FCL... Y
SPR #386
620-0014

Suggested test sequence
Leave block valve closed RC11
Test electrical solenoid circuit 3 times

Open ~~[illegible]~~ RC11
Blow twice for 5-6 seconds of ~~[illegible]~~ RCS & Q.T. can take it
Do not go below 600 psi on RCS
Pressure should be as near 1500 psi as possible
will test at 1150 because of heat transfer limitation -

Stroke 5 times assuring actuation closing each time - wait ~~[illegible]~~ 1 min in between stroke to assure closing
~~[illegible]~~
Stroke 5 times again same as above

NRC wants one cycle at temp & press

~~[illegible]~~
3/1 ~~[illegible]~~

POOR ORIGINAL

Emerg Elect Relief 10-14-77

min clearance between guides and stem
was 0.005"

373 - 374 stem ~~was 0.3745 at bottom~~
375 - 376 nozzle ~~[illegible]~~

Reduced stem diameter by polishing with emery cloth
Now

0.375 in nozzle
0.372 on stem - Crosby will issue revised drawing

(1) Opened clearance between guide & pilot valve stem
lapped seats
Main valve verified OK - seats good - did not
~~[illegible]~~ disassemble - valve seat [illegible]

(2) Alter solenoid to set full actuator stroke to about .130 - .140"
~~[illegible]~~ to get ≈ .100 stroke on pilot valve

(3) Will attempt to eliminate side force on
the pilot valve actuator stem - ~~it~~ may
alter face of solenoid bolt or
solenoid [illegible]

(4) Cleaned line between Pilot valve & [illegible]

Crosby - Balt. Convey 10-15-77
Exit Interview

Accomplished things planned and discussed on 10-14-77.

Walt will include in his report recommendation to revise method of adjusting solenoid to get ≈ 0.100 pilot valve stroke.

Crosby ~~[illegible]~~ Engineering will submit letter on change on pilot valve stem diameter.

[illegible signature]
10/15/77

MAINTENANCE WORK ORDER

Correction sheet for No. 3 and No. 14 [illegible]

FUNCTIONAL ACCOUNT NO.								EQUIPMENT FILE NO.	MWO NO.
5	8		3	3	0	0	5		77-2120

1\. EQUIPMENT/INSTRUMENT NAME AND NO.: PRZR ELECTROMAGNETIC RELIEF VALVE RC2A

2\. MWO INITIATED BY: ☐ WRI ____ ☐ AIR NO. ____ ☐ NCR No. ____ ☐ MWO NO. ____ ☐ OTHER ____

3\. DESCRIPTION OF PROBLEM/MALFUNCTION

RC2A STUCK OPEN. TROUBLESHOOT AND REPAIR AS NEEDED. WORK WITH SERVICE MAN ON REPAIRS

4\. WORK CLASSIFICATION: ☒ Normal ☐ Immediate ☐ Emergency ☐ Outage ☐ Preventive Maintenance
☒ Routine ☐ Non-Routine ☒ Nuclear Safety Related/ASME ☐ Non-Nuclear Safety Related
Frequency ____ Scheduled For ____

5\. REP REQUIRED: ☒ Yes ☐ No
6\. CLEANLINESS INSPECTION REQUIRED: ☐ Yes ☒ No
7\. NPRD REQUIRED: ☐ Yes ☒ No

8\. PROCEDURE/INSTRUCTION: Number MEC-1 Revision ____
9\. APPROVED BY MAINTENANCE/I&C ENGINEER: [signature] DATE: 9/26/77

10\. REVIEWED BY QUALITY CONTROL: Donald Rhodes for [illegible] | DESIGNATED INSPECTOR (Name): Rhodes / Q.C. Section | MIN. LEVEL: [illegible]

SPECIAL INSTRUCTIONS: Notify Q.C. prior to starting work.

11\. ASSIGNED RESPONSIBILITY: Hassell / Ebersold [illegible]
12\. PERMISSION TO COMMENCE WORK: [signature] DATE: 9/27/77

13\. DESCRIPTION OF WORK PERFORMED

DISASSEMBLED VALVES - REPLACED PARTS & GASKETS [illegible] VALVES - WAS NOT ABLE TO CYCLE VALVE DUE TO NO POWER [illegible] RAH & V.H.H. when valve was cycled with pressure pilot valve stuck again on the 5th blow.

14\. TEST EQUIPMENT I.D. NO.: [illegible] | CALIBRATION DUE DATE: [illegible]
15\. SPARE PARTS REQUIRED: ☒ Yes ☐ No (List MIT or P.O. on Back)

MAINTENANCE COMPLETED AND INSPECTED PER REQUIREMENTS OF AD 1844.00

16\. DESIGNATED INSPECTOR: [signature] DATE: 10/17/77 | RESPONSIBLE FOREMAN: [signature] DATE: 10-17-77

TESTING COMPLETED & RETURNED TO SHIFT FOREMAN/FOREMAN CONTROL

17\. TEST NO.: — | SHIFT FOREMAN/FOREMAN: [signature] | DATE: 10/17/77

ACTION ITEMS/FOLLOW UP

18\. ☐ NPRD Form Completed (If required) ☒ None Required
☒ Initiated Followup MWO NO. 77-2256 ☐ Other ____
☐ Initiated AIR/DVR NO. ____

MWO REVIEWED AND APPROVED

MAINTENANCE ENGINEER: [signature] DATE: 10/18/77

POOR ORIGINAL

7

77-2256

1. EQUIPMENT/INSTRUMENT NAME AND NO.
Pressurizer Electromatic Relief Valve

2. MWO INITIATED BY:
☐ WRI ______ ☐ AIR NO. ______ ☐ NCR No. ______ ☐ MWO NO. ☒ OTHER B. Bryan

3. DESCRIPTION OF PROBLEM/MALFUNCTION
Remove Press. Electromatic Relief Valve solenoid; mark [illegible] wires to ensure positive identification when [illegible] disassemble pilot valve. Further disassemble and remove as instructed by Project Engr. ~~[illegible]~~ Repair as required. Reassemble when instructed.

4. WORK CLASSIFICATION
☐ Normal ☐ Immediate ☐ Emergency ☒ Outage
☒ Routine ☐ Non-Routine
☒ Nuclear Safety Related/ASME ☐ Non-Nuclear Safety Related
☐ Preventive Maintenance
Frequency ______
Scheduled For 10/12/77

5. REP REQUIRED ☒ Yes ☐ No
6. CLEANLINESS INSPECTION REQUIRED ☐ Yes ☒ No
7. NPRD REQUIRED ☐ Yes ☒ No

8. PROCEDURE/INSTRUCTION
Number MP14CP02 Revision 0

9. APPROVED BY MAINTENANCE/I&C ENGINEER: [signature] DATE 10/12/77

REVIEWED BY QUALITY CONTROL: [signature] for C. Dept
DESIGNATED INSPECTOR (Name): Schultz / QC Section
MIN. LEVEL: E-M II

SPECIAL INSTRUCTIONS
Notify T&Co QC Prior to Starting Work

11. ASSIGNED RESPONSIBILITY: Saunders
12. PERMISSION TO COMMENCE WORK: V Ogden DATE 10/13/77

13. DESCRIPTION OF WORK PERFORMED
Pilot valve was removed and found to be sticking open about 1/16". Stem was cleaned & turned to 0.372 which gives 0.003" clearance in the guide. Seat and disc were lapped. The main disc was checked [illegible] and found to be free and [illegible]. The inlet [illegible] was cleaned to the block valve. The actuator was adjusted to give the pilot valve ~ 0.100 opening.

14. TEST EQUIPMENT I.D. NO.: MM4.1
CALIBRATION DUE DATE: 3-3-78
15. SPARE PARTS REQUIRED: ☒ Yes ☐ No (List MIT or P.O. on [illegible])

MAINTENANCE COMPLETED AND INSPECTED PER REQUIREMENTS OF AC 1844 QC

DESIGNATED INSPECTOR	DATE	RESPONSIBLE FOREMAN	DATE
[signature]	10/15/77	[signature]	10-15-77

TESTING COMPLETED & RETURNED TO SHIFT FOREMAN/FOREMAN CONTROL

TEST NO	SHIFT FOREMAN/FOREMAN	DATE
	[signature]	10/17/77

ACTION ITEMS/FOLLOW UP
☐ NPRD Form Completed (If required) ☒ None Required
☐ Initiated Followup MWO NO. ______ ☐ Other ______
☐ Initiated AIR/DVR NO. ______

MWO REVIEWED AND APPROVED

MAINTENANCE/I&C ENGINEER	DATE
[signature]	10/19/77

WHITE - Routed to be completed/procedure
BLUE - Maintenance/I&C Office
GREEN - Shift Foreman
YELLOW - Operations Engineer

DAVIS-BESSE NUCLEAR POWER STATION
MAINTENANCE WORK ORDER - CONTINUATION SHEET

MWO NO.:

Set Wheston measurement is [illegible] 0.372 MWL
Diode measurement is 0.375

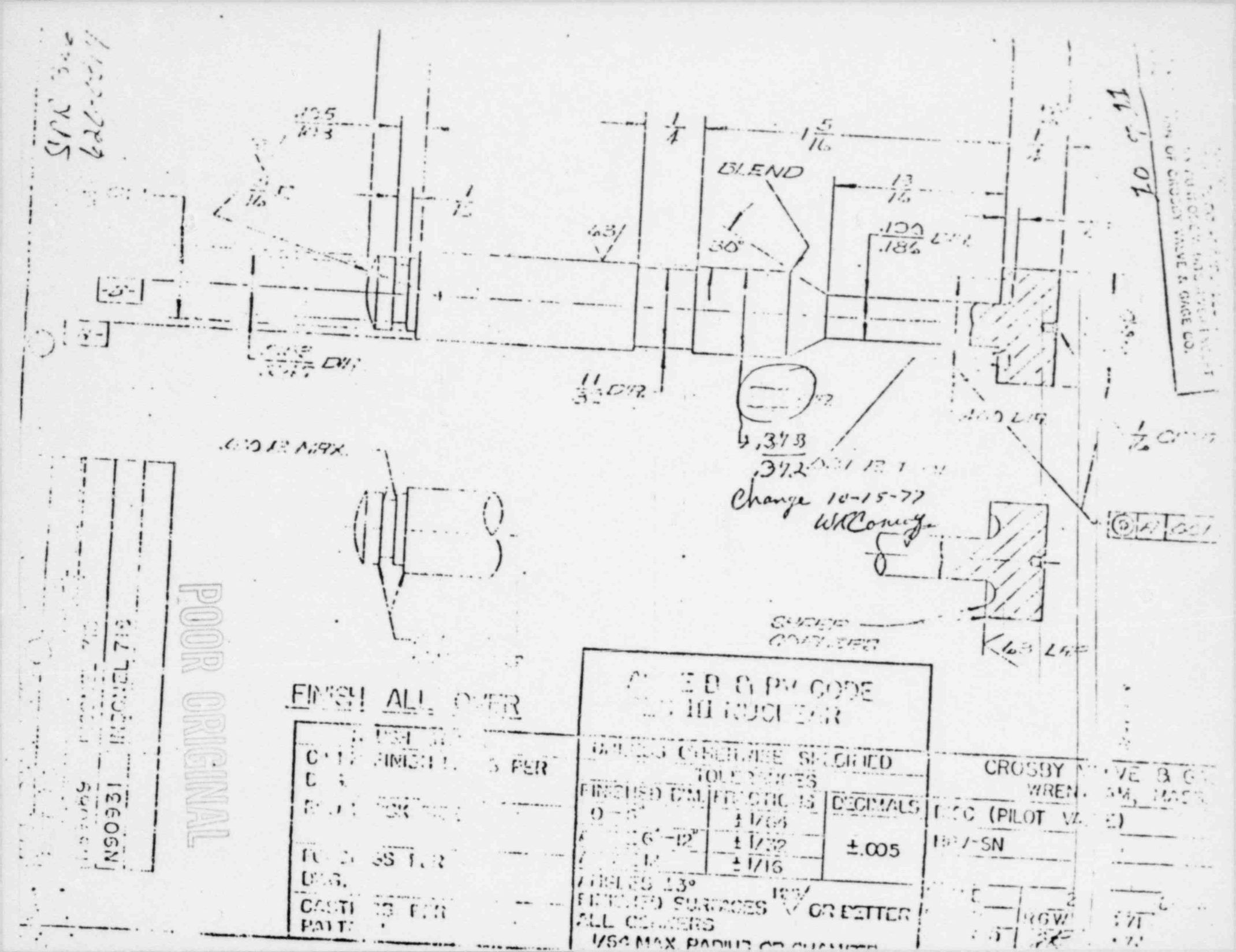
Valve was tested at ~ 1100 psi 10 times and closed satisfactorly with no leakage noted.

Valve was also tested one time at 2150 psi and closed satisflatorily with no leakage noted.

Valve was also opened and closed once and had two additional ≈ 5 second blows at ≈ 1100 psi besides the 10 times above

[illegible signature]
10/19/77

WHITE - Routed to be completed/procedure   YELLOW - [illegible]


BLEND
30°
Change 10-15-77
W.R.Conway
FINISH ALL OVER
POOR ORIGINAL

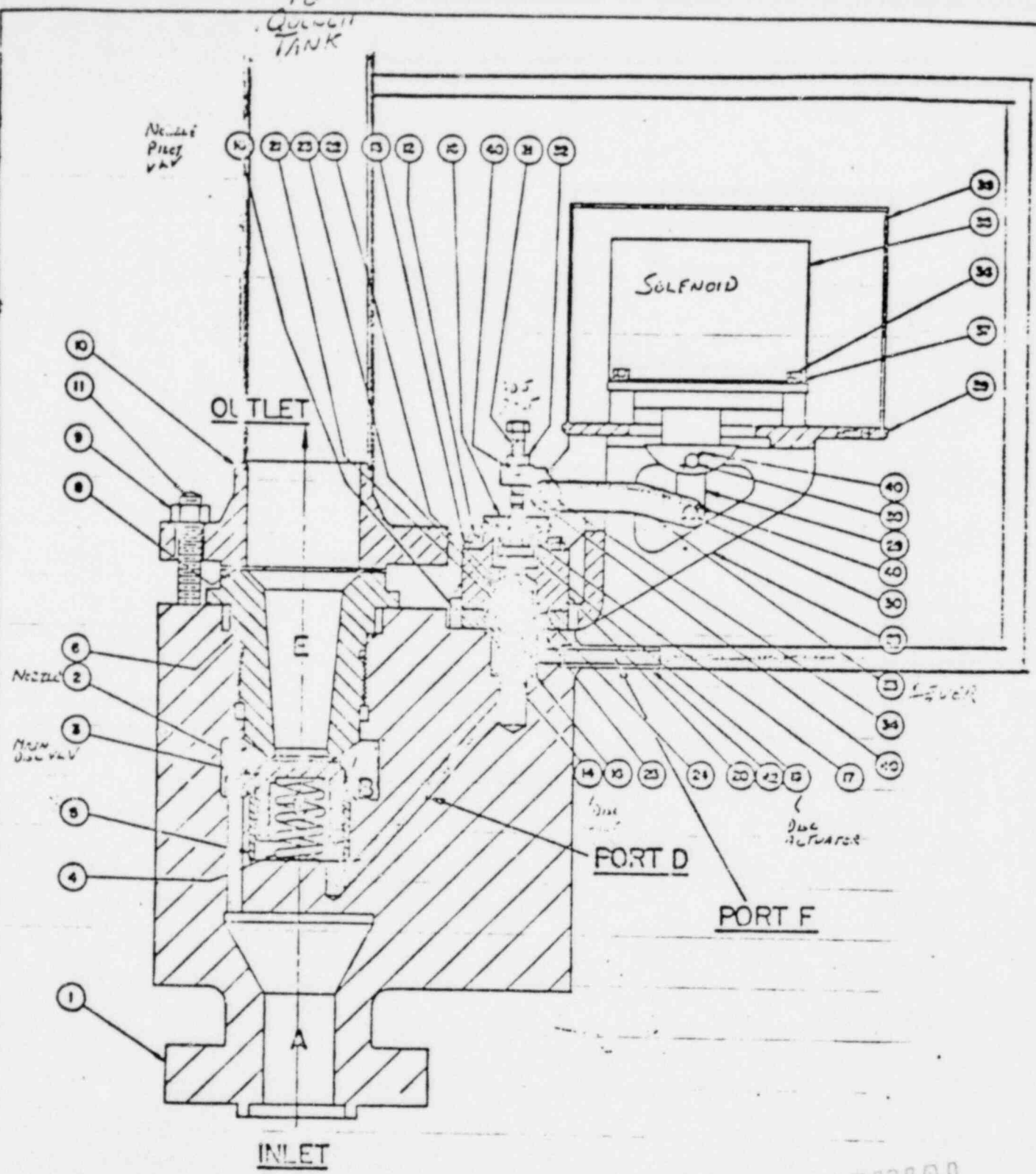


FIG. 1

ASSEMBLY OF PRESSURMATIC
VALVE STYLE HPV-SN

CROSBY VALVE & GAGE COMPANY
WRENTHAM, MASS 02093 • 617/384-3121

Jack Anderson

January 13, 1978

The Babcock & Wilcox Company
Power Generating Group
P.O. Box 1260
Lynchburg, Virginia 24505

Attention: Mr. C. D. Carmichael
Senior Buyer
Purchasing Department

Subject: TOLEDO EDISON (DAVIS BESSE NO. 1)
HPV-SN ASSEMBLY NO. N54890
ADJUSTMENT OF SOLENOID ADJUSTING BOLT

Gentlemen:

Please forward the following information to Steve Lamanna.

Para. 4.2.2.2, Crosby instruction No. I-1115 is correct as written and should be followed.

Proper adjustment of the solenoid adjusting bolt can be further checked as follows:

- Move the solenoid plunger to full stroke by pushing to the maximum position. The Disc Actuator Pilot Valve (19) will be depressed by the adjusting bolt (31) with the plunger in this position. If the adjusting bolt (31) were to be backed off a distance of approximately 5/32" (which could be accomplished by allowing the pluger to drop from its full upward position), the adjusting bolt (31) should be just beginning to make contact with the disc actuator pilot valve (19). Should the condition prevail, with the adjusting bolt (31) is making contact with, or is moving the disc pilot valve (19) below the free position, the adjustment is not correct and should be reset per instruction I-1115, Para. 4.2.2.2.

The above described method is not to be used for any reason other than information, and all settings of the adjusting bolt (31) should be per the instruction manual (I-1115).

I hope the information as written is clear and as requested, but if further clarification or information is required, please do not hesitate to contact Mr. R. A. Wright, Service Manager or this writer.

Very truly yours,

CROSBY VALVE & GAGE COMPANY

R.J. Martin
Asst. Product Manager - Power Industry

RJM/lea

cc: V.L. Heine
R.A. Wright
P.F. Black
M.A. Gaffin

Babcock & Wilcox

Power Generation Group

P.O. Box 1260, Lynchburg, Va. 24505

Telephone: (804) 384-5111

March 24, 1978

SOM #352 620-0014
12B28 T3.3.1
01-0204-00

Mr. T. D. Murray, Station Superintendent
Davis-Besse Nuclear Power Station
5501 North State Route #2
Oak Harbor, Ohio 43449

Subject: Adjustment of Solenoid Adjusting Bolt on Pressurizer Power Relief Valve RC2A

Reference: Crosby Style HPV-SN Solenoid Pilot Operated Relief Valve, "Installation, Operating and Maintenance Instruction No. I-1115", B&W #01-0204-00

Dear Terry:

The referenced instruction manual pertains to the pressurizer power relief valve RC2A. Section 4 of the manual describes the testing and adjustment procedure for the valve, while section 4.2 pertains to adjustments for proper pilot valve actuation.

A critical adjustment is that described in step 4.2.2.2, Setting of the Adjusting Bolt (P/N 31). All adjustments should be made per the instruction manual, however, proper adjustment of the solenoid adjustment bolt can be further checked as follows:

> Move the solenoid plunger to full stroke by pushing to the maximum position. The Disc Actuator Pilot Valve (19) will be depressed by the adjusting bolt (31) with the plunger in this position. If the adjusting bolt (31) were to be backed off a distance of approximately 5/32" (which could be accomplished by allowing the plunger to drop from its full upward position), the adjusting bolt (31) should be just beginning to make contact with the disc actuator pilot valve (19). Should the condition prevail, with the adjusting bolt (31) making contact with, or is moving the disc pilot valve (19) below the free position, the adjustment is not correct and should be reset per instruction I-1115, Para. 4.2.2.2.

Installation and adjustment of the power relief valve was performed with a Crosby service representative. The valve operated properly when tested immediately after installation, and has operated properly during certain RCS transients.

It is recommended that the "further checks" on the solenoid adjustment bolt stated above be included in the appropriate maintenance procedures for the power relief valve RC2A to minimize any misadjustments that may be overlooked.

If you have any questions, please advise.

Yours truly,

Fred R Faist

Fred R. Faist
Site Operations Manager

FRF:nlf
cc: W. H. Spangler
J. A. Lauer
R. L. Pittman
R. J. Finnin
D. A. Lee

J. S. Grant, TECo
E. C. Novak, TECo
C. R. Domeck, TECo
J. G. Evans, TECo
B. R. Beyer, TECo
R. A. Brown, TECo
J. P. Hartigan, Jr., TECo
J. D. Lenardson, TECo
R. E. Blanchong, TECo