

151. Note: SEELINGER TO BRUNNER  
5/16/78
- 16 2. MEMO: ZEWE TO SEELINGER  
5/15/78
- 17 3. PROBLEM REPORT JOHN BRUN...  
TO R.J. TOOLE 11/3/77
- 18 4. OCT 19, 1977 LOSS OF FEED WATER  
TRIP REPORT
5. FQ 1577
6. ECM 5-4562

Frank  
Spangenberg  
P.P.  
201-262-5800

POOR ORIGINAL

8001200072

MEMO from:

J. L. SEELINGER

3  
8-17-78

cc Beyilla - task  
Zewe - info

5/16/78

John Brummer

Subj: Water in IA

1. See Zewe's attached correspondence
2. There are some good ideas here.
3. The quickest route to go on SAV 376 might be a CPU problem report.
4. With respect to COVID, it will undoubtedly be a capital project so let's get paper moving.
5. Dew cell - same as #4  
Target date on PR 5/18  
Others: initial paper by 6/16

Jim

POOR ORIGINAL

5/15/78

TO: JIM SEELINGER

SUBJ: Water in Service air & hot air

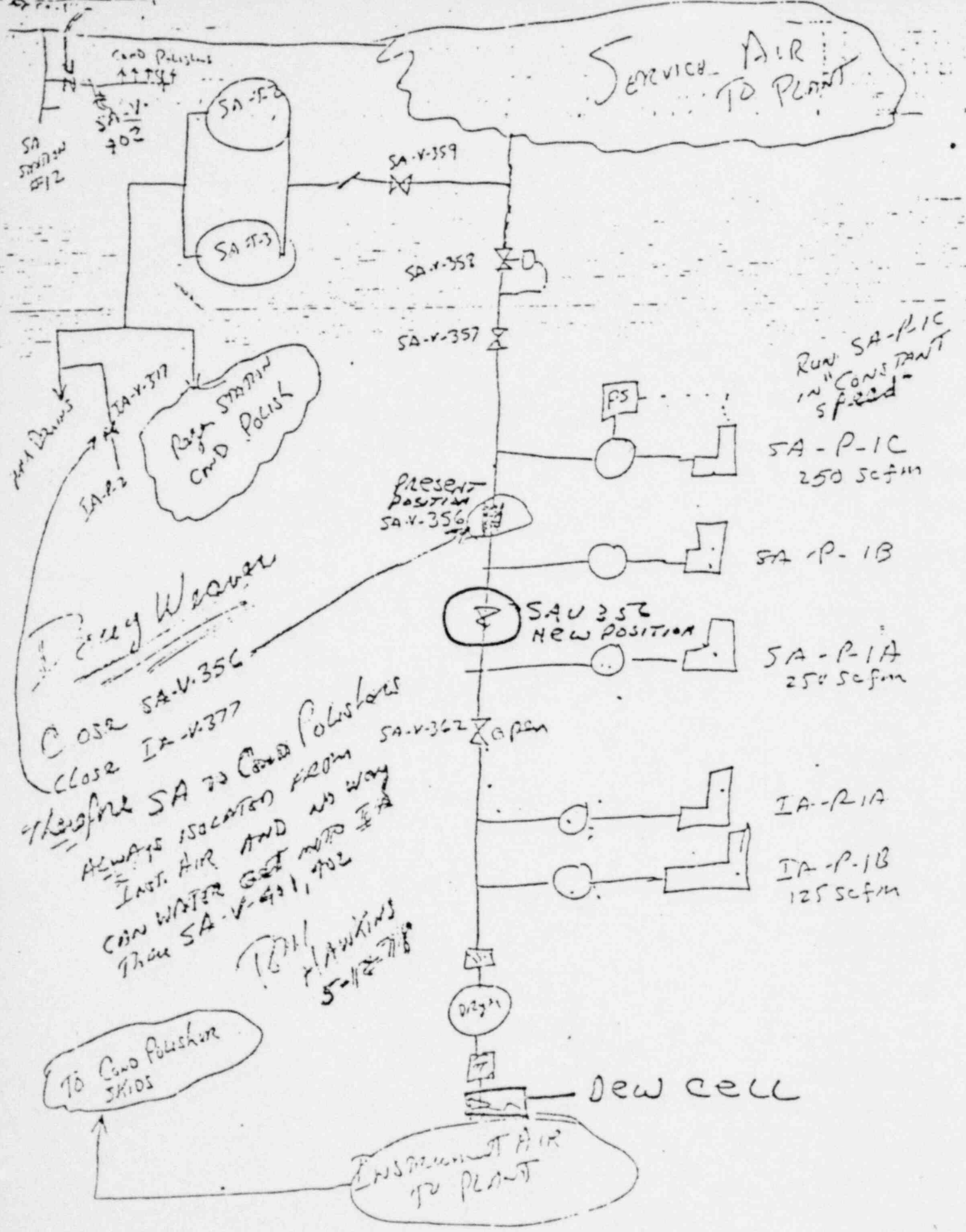
It's time to really do something on this problem before a very serious accident occurs. If the Polisters take themselves off line at any high power level the resultant damage could be very significant.

I have talked with Doug Weaver and we agree that a couple of things could be done to alleviate the problem.

1. COV12 - must be made an automatic valve that ~~opens~~ on High Polister OP  
OPENS
2. SAV 356 - Move valve to between SA-P-1A and SA-P-1A. Keep this valve shut at all times to isolate SA. + I.A.
3. Install inline Dew cell instrument downstream of air dryer. This should be made to alarm and record.

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W.H. Zeve -



Run SA-P-1C  
in "CONSTANT  
speed"

SA-P-1C  
250 scfm

SA-P-1B

SA-P-1A  
250 scfm

IA-R-1A

IA-P-1B  
125 scfm

CLOSE SA-V-356  
close IA-V-377  
Therefore SA TO COND POLISHERS  
ALWAYS ISOLATED FROM  
INST. AIR AND NO WAY  
CAN WATER GET INTO IA  
THROUGH SA-V-401, 402  
TOTAL PLANNING  
5-11-78

POOR ORIGINAL

SYSTEM: Condensate

TP NO.                     

MTX NO. 25

PROBLEM DESCRIPTION: Based on the Loss of Feedwater occurrence on Unit 2 as identified in attached letter, Met-Ed feels that Burns & Roe should re-evaluate the control of COV12. The desirable change appears to be a control in place of the present gate valve, motor operator, with a control loop which will open the valve either on high DP across the Condensate Polishing System or low effluent flow. At a minimum, if the above recommended change is incorporated, BTR should re-evaluate the DP across COV12 as it would not open as designed during the occurrence.

BY: John Brown

ORGANIZATION: Met-Ed

DATE: 11/3/77

FOR RESOLUTION BY: L.J. Toole

DATE SENT: 11-17-77

PROPOSED RESOLUTION: The Condensate Demin. System was under water during the flood. The water damage you observed could have been a result of this damage. We have previously operated CO-V-12 without problems, ~~therefore~~ we do not consider the SP to be the problem with the valve operation.

BY: L.J. Toole

DATE: 11-17-77

FOR ACTION BY: L.J. Toole

DATE SENT: 11-17-77

No further action required by this PR. If when the plant is restored the problem is better defined, we will resolve the problem.

POOR ORIGINAL

Subject: WATER IN THE INSTRUMENT AIR LINES AT THE CONDENSATE  
POLISHER CONTROL PANEL AND REGENERATION SKID RESULT-  
ING IN A LOSS OF FEEDWATER CONDITION IN UNIT #2 ON  
OCTOBER 19, 1977

Location TMI Nuclear Station  
Middletown, PA 17057  
Date November 14, 1977

To G. P. MILLER  
J. L. SEELINGER

Plant Conditions:

At this time of occurrence the reactor plant was in a cold shutdown mode. The secondary plant had a vacuum and feedwater heating established with one condensate pump and feedwater heater string in service. The main turbine was on turning gear.

Summary of Events:

At the time of the occurrence the Unit #2 50,000 gallon demineralized water tank was out of service, therefore, in order to regenerate #2 condensate polisher bed, Demineralized Water was supplied via Unit #1 Demineralized Water pump to the Unit #2 Demineralized Water pump supplying Demineralized Water to the regeneration skid. Since the Unit #1 pump was supplying suction to the Unit #2 pump, resulting in an abnormally high suction pressure to the Unit #2 pump the discharge pressure of the Demineralized Water system was greater than 190 psi. The normal pressure of the Unit #2 Demineralized Water system is  $\leq$  130 psi.

During or shortly after the attempted transfer of resin from mix bed polisher #2 to the receiving tank on the regeneration skid, the Auxiliary Operator noted water running out of the air operated recorders on the condensate polisher control panel, No. 304. Shortly thereafter the discharge valves on the condensate polishers closed resulting in a total LOSS OF FEEDWATER condition. Upon detection, the Control Room Operator immediately tried to open CO-V12, condensate polisher bypass valve; however, he was unable to open this valve from the control room. The auxiliary operator was then notified to manually open CO-V12, after about 5-10 minutes and assisted by another Auxiliary Operator CO-V12 was opened. If this would have happened while at power the unit would have been placed in a severe transient condition resulting in an Emergency Feedwater Actuation, Main Steam Relief to Atmosphere, Turbine Trip and Reactor runback with possible trip.

After discussing the problem with the operators, Mike Ross and myself, Doug Weaver was concerned that it was an instrument problem which induced this condition. As directed, his people dismantled, inspected, cleaned, and reassembled all 42 of the diaphragm operated air valves on the condensate polishing regeneration skid, since these valves would provide an interface point in the event of a ruptured diaphragm. In addition all instrument air lines have been blown down to insure that all moisture has been removed from these lines. In almost all of these valves water was either found or indications that water had been there were found. Three quarters of the valves had rusty water and rust rings

POOR ORIGINAL  
INTER-OFFICE MEMORANDUM

on the diaphragms indicating that water had been there for some time. The remaining quarter contained no visible indication, by rust color of the duration of time that the water was present. However, no ruptured diaphragms were found in the system.

As a result of above discussed investigation and the tracing of all instrument air lines in the vicinity, no fluid path has been found that would explain this occurrence. One remote fluid path was recognized, that being that the demineralized water, because it was at an abnormally high pressure, was forced through the service air system, through three check valves, the instrument air dryer and back to the condensate polishing controls, being the lowest point in the system and the most consuming point of instrument air. However, dew point readings taken periodically after this occurrence in the instrument air system indicated that this probably was not the case.

In summary we conclude that the only way left available to try and identify how this happened, is to reenact this occurrence in a controlled fashion, however, this may not be desirable. As a result of our findings, we feel that the following should be acted upon to preclude a recurrence:

1. Change/replace the desiccant condition indicator on the instrument air dryers.
2. Completely realign all air and water controls on the condensate polishing regeneration system.
3. Checkout air control loop for valve C-5 to insure proper operation.
4. Submit problem report on CO-V12 as it appears that the dp across the valve was too high to allow openings.
5. Install drain trap on control lines on condensate polisher discharge valves.
6. Develop a PM program to take dew readings in the instrument air system as a minimum on a weekly basis, at the instrument air dryer and at the condensate polishing control panel.
7. Revise the Operations log to require blowing down the air compressors on each mid-shift and record the amount of water in the Auxiliary Operator's Log. Log any abnormal amounts of moisture, indicating a leak.
8. Revise the Operations log to require blowing down the instrument air line that feeds the condensate polishing control panel each mid-shift and record any abnormal moisture levels in the Auxiliary Operator's Log indicating excessive condensation problems.

POOR ORIGINAL

G. P. MILLER  
J. L. SEELINGER

-3-

NOVEMBER 14, 1977

9. Inspect the following check valves.

1. SA-V360
2. Two check valves circled on Figure 1.

*J. A. Brummer*  
J. A. Brummer  
Instrument & Control Engineer

*W. J. Marshall*  
*for M. J. Ross*  
M. J. Ross  
Shift Supervisor

JAB:sw

cc: J. R. Floyd  
W. J. Marshall  
T. E. Morck  
D. M. Shovlin  
Shift Supervisor  
Unit #2 Shift Foremen

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Fig.

1-00-5-10  
1

POOR ORIGINAL

DATE 2-19-77

0 SYSTEM CONDENSATE POLISHING MTK NO. 24  
0 REFERENCE:  
1 Flow Diagram or Engr. Dwg. No. 2006  
2 Elem. Wiring Diagram No. \_\_\_\_\_  
3 R. O. or Specification No. \_\_\_\_\_  
4 Other \_\_\_\_\_  
0 INQUIRY SOURCE:

General Question  Drawing Clarification   
Test Result  Equipment Clarification   
Test or Oper. Procedure  Anticipated Problem

Immediate Action Required

QUESTION  
Problem: The RESINS in The POLISHER TANKS CAN NOT BE SATISFACTORILY SLURCED TO THE RECEIVING TANK WITH OUT THE AID OF SERVICE AIR BEING INSERTED INTO THE BOTTOM OF THE RESINS. Provide A PERMANENT SOURCE OF INSTRUMENT OR SERVICE AIR TO THE BOTTOM OF EACH CONDENSATE POLISHER TANK.

4.1 Individual Initiating Question: Name M. B. Rubin Organization SPA 5/4  
B Priority 1 MTK 2-19-77 Organization Serial No. \_\_\_\_\_

5.0 ANSWER: Vendor Dwg. Change Req'd by UEC Start Up  Yes  No  
UEC SU Revise LXA 4519 Rev D to show SA to CO-K-19 thru UEC Startup to accomplish ECM S-4562

5.1 Date Completed 2/22/77 B&R Engineer: R. Brownwell  
5.2 Follow-Up Action req'd. by PTO EDH2  Yes  No By R. Brownwell  
5.3 Follow-Up Action completed: Date: 2/22/77 B&R Engineer R. Brownwell

ECM S-4562  
PCN \_\_\_\_\_  
FCR \_\_\_\_\_

- COPIES:
- |                  |                       |                |                                    |
|------------------|-----------------------|----------------|------------------------------------|
| R.W. Heward, Jr. | R.W. Benschel         | D. Lashert     | D.T. English                       |
| R.J. Coole       | G.P. Miller           | M.J. Stromberg | G.T. Harper                        |
| J.E. Wright      | J.C. Harbin           | S. Kakarla     | J.P. Cady (2)                      |
| W.T. Gunn        | Unit #2 Shift Foreman |                | W.R. Cobean                        |
|                  |                       |                | B&R Cog. Engr. <u>R. Brownwell</u> |

POOR ORIGINAL

THREE MILE ISLAND UNIT NO. 2

BURNS & ROE, INC.

FIELD QUESTIONNAIRE NO. 1577

6.0 Change Authorization as follows:

Retest Required

YES

NO

(Give specifics if other than T/P 250/2): 250/1 & 4

GPU Test Superintendent approval: J.M. [Signature] for RST [Signature]

Completion Schedule: 3-18-77

Work to be performed by

UESC

MEC

△ 7.0 Change completed and As-Built information requested in Section 5.0 provided below:

*Completed by CONSTRUCTION - OPERATIONAL  
Pressure test completed*

Name D Rhine Organization UESC SU Date 4-10-77

△ 8.0 Vendor Drawing Changes Completed (List Drawing & Revision Numbers)

LA WATER D-4519 REV. E B/R FILE NO 15-00-0405  
JBS 4/27/77

Name [Signature] Date 4-10-77

POOR ORIGINAL

5/14/77

UNIT NO. 12  
 BURNS AND ROE, INC.  
 ENGINEERING CHANGE MEMO  
 (REV 12/75)

COST EST. 2079.00  
 B&R/VM DATE 5/21/77  
 G20 DATE

SERIAL NO. S-4562  
 DISCIPLINE Mech  
 SUBJECT S.A. to Condensate Polisher  
 ATTACHMENTS 2

REFERENCES:

L+A Dwg. No. 4519 Rev. D F.O. 1577  
 " " " 3749 Rev. I  
 " " " 3750 Rev. H \*B&R VALUE LIST  
 \*B&R Dwg. 2014 shift 3 Rev. 6  
 \*B&R Dwg. 2141 Rev. 10

AREA:  
 + FIELD SOLUTION

DISTRIBUTION  
 UESC  
 JOB ENGINEER (2)  
 GEN SUPT.  
 SUPT. UNIT 2  
 QC SVSR.  
 GPU  
 ASST. PROJ. MG  
 CONST. ENG. (2)  
 QA SVSR.  
 B&R  
 SEE 27-74

CHANGE:

UEC START-UP TO CONNECT 3/4" Line spec. 150-1, piping at S.A. STA. NO. 12 and field route to a 3/4" C.S. gate valve and check valve. From the check valve field run the header and branch lines to each Condensate Polisher valve M17B then M97B. (see attachments 1 and 2 of 2).

B&R to change value list to retag:  
 S-726-1-473 (3/4" C.S. gate s.w.) to SA-V-LATER  
 S-726-1-244 (3/4" C.S. check s.w.) to SA-V-482.

DESIGNER APPROVAL \_\_\_\_\_ DATE \_\_\_\_\_

REASON FOR CHANGE:

GPU Request to provide permanent S.A. supply to the bottom of each Condensate Polisher to lift & fluff resins prior to sluicing to Regeneration Station.

R. B. ... B&R ENGINEER DATE 5/21/77 PROJECT ENGINEER M. ...

FOLLOW-UP ACTION  
 REVISE SPEC. 1/0  
 \* REVISE ENG. 1/0

ACCOMPLISHMENT:  
 UESC - NAME  
 DATE

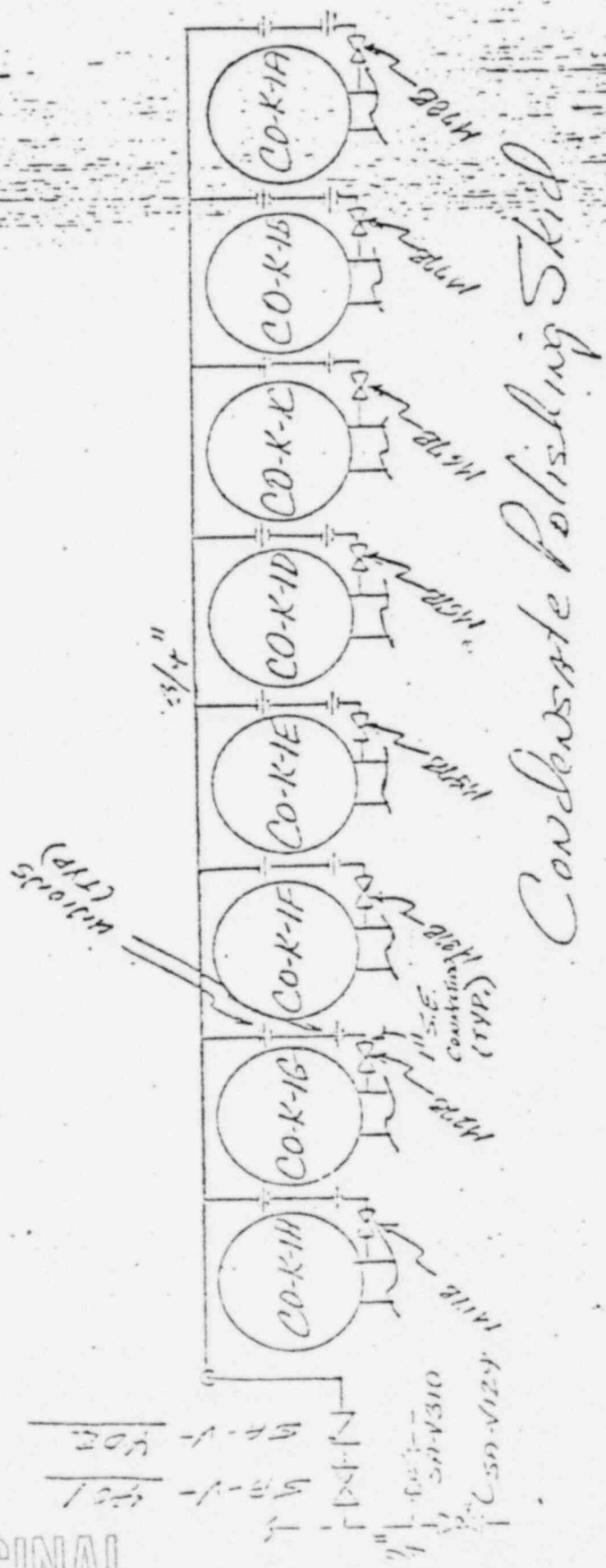
DISCIPLINE SUPERINTENDENT RESPONSIBLE FOR IMPLEMENTATION  
 NAME DISCIPLINE  
 R. ... GPU

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W.O. No. \_\_\_\_\_ Date \_\_\_\_\_ Book No. \_\_\_\_\_ Page No. \_\_\_\_\_  
 Drawing No. \_\_\_\_\_ Gate No. \_\_\_\_\_ Sheet \_\_\_\_\_ of \_\_\_\_\_  
 By \_\_\_\_\_ Checked \_\_\_\_\_ Approved \_\_\_\_\_  
 Title \_\_\_\_\_

All Piping To Be 3/4" 450-1  
 And Field Run By MEC STARTUP

Attachment 1 of 2  
 ECM No. S-4512



Condensate Polishing Skid

POOR ORIGINAL

