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POOR QUALITY PAGES

THREE MILE ISLAND NUCLEAR STATION

GPU STARTUP PROBLEM REPORT

GPU NUMBER 2490

ORGANIZATION SERIAL NUMBER ~

TMI UNIT 2

SYSTEM: Condensate

TP NO. ~ MTX NO. 25

PROBLEM DESCRIPTION: Based on the Loss of Feedwater occurance on Unit #2 as identified in attached letter, Met-Ed feels that Burns + Roe should re-evaluated the control of COV12. The desireable 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 not incorporated B+R should re-evaluate the DP across COV12 as it would not open as designed during the occurance.

BY: John Brennan JH

ORGANIZATION: Met-Ed

DATE: 11/3/77

FOR RESOLUTION BY: R.J. Toole DATE SENT: 11-17-77

PROPOSED RESOLUTION: The Condensate Demin System was underwater 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 ΔP to be the problem with the valve operation.

BY: RJ Toole

DATE: 11-17-77

FOR ACTION BY: RJ 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.

GPU Complete [illegible] 11-17-77

McPHERSON EXHIBIT 91

8/7/79

Ross Dedo EX. NO. 119
8/10/79 E. A. Haydon, Jr.

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METROPOLITAN EDISON COMPANY Subsidiary of General Public Utilities Corporation

Subject: WATER IN THE INSTRUMENT AIR LINES AT THE CONDENSATE POLISHER CONTROL PANEL AND REGENERATION SKID RESULTING 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 diaphram operated air valves on the condensate polishing regeneration skid, since these valves would provide an interface point in the event of a ruptured diaphram. 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

INTER-OFFICE MEMORANDUM

on the diaphrams 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 diaphrams 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 occurrance 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 reoccurrence:

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.

9. Inspect the following check valves.

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

J. A. Brummer
Instrument & Control Engineer

for M. J. Ross
M. J. Ross
Shift Supervisor

JAB:sw

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

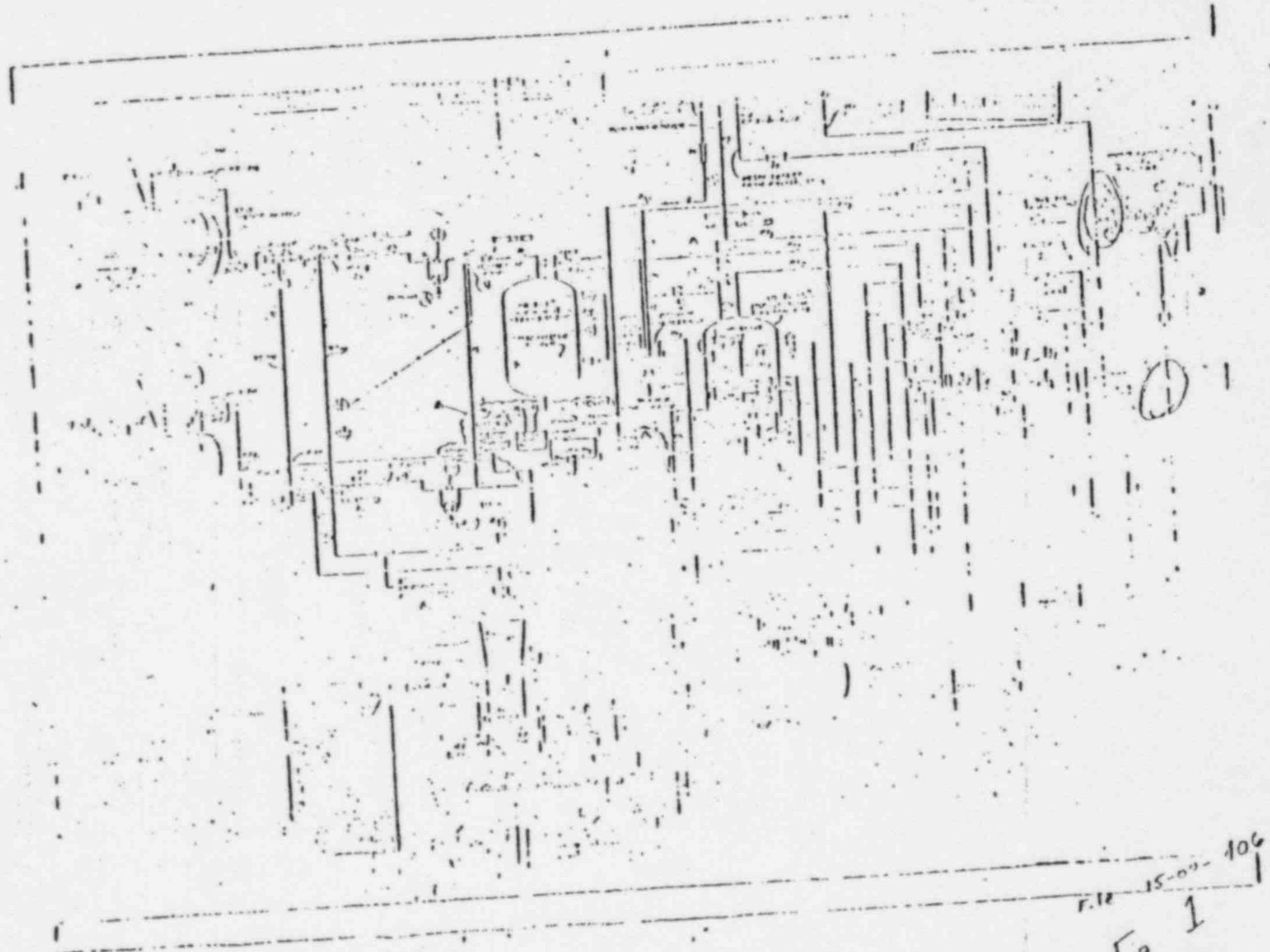

Fig 1