



VALCOR ENGINEERING CORPORATION

2 Lawrence Road • Springfield, New Jersey 07081 USA • 973-467-8400
Fax: 973-467-8382 • Internet: <http://www.valcor.com>

May 19, 1998

Operations Center
Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Mr. Bob Stranski
Fax: 301-816-5151

SUBJECT: 10CFR21 Reporting of Delay-In-Closing Problem of Valcor Valve, Part Number V70900-65-11.

Confirming our telephone conversation earlier this afternoon, Valcor is submitting the attached report "Summary of V70900-65-11 Delay-In-Closing Problem Due To Residual Magnetism" under the provision of 10 CFR Part 21.

The report contains all the elements required per 21.21.d.4 of the Part 21. Please feel free to call me at 973-467-8400, extension 284 if you need any additional information.

VALCOR ENGINEERING CORPORATION

A handwritten signature in black ink, appearing to read "Jimmy Shieh".

Jimmy Shieh
Quality Assurance Director

cc: H. Loran
D. Shave
B. Matiez
C. DelPomo
L. Olsen, PP&L



May 19, 1998



VALCOR ENGINEERING CORPORATION

Summary of V70900-65-11 Delay-In-Closing Problem Due To Residual Magnetism

Following 6 to 18 months of continuously energized service, 3 units of Valcor Model V70900-65-11 air pilot valves have reportedly failed to stroke closed immediately upon de-energization when installed in their respective systems. Despite best efforts, the delays in closing have not been able to be replicated outside of the plant system. Delays in closing have ranged from 1 to 5 minutes.

Upon investigation, a potential cause of the delayed closing is the possible susceptibility of this particular model to the effects of residual magnetism. Delayed closing may occur when the air gap between the plunger and the stop becomes too small or if the plunger makes contact with the stop. Extended periods of continuously energized service, and subsequent compression setting of the O-ring seat, may induce the small air gap condition. As a result of the small air gap, the valve may then be subject to residual magnetism forces, which tend to prevent closure of the valve upon de-energization. Opening operation of the valve is not affected.

The V70900-65-11 is an AC-powered version and is the only version of the V70900-65 air pilot series subject to this effect.

Only 46 units of this particular model have been delivered, all to PP&L's Susquehanna Nuclear Power Plant. All of these units have been, or are scheduled to be, modified by Valcor to positively eliminate the potential for residual magnetism effects. The corrective action includes the insertion of a non-magnetic residual washer between the plunger and the stop, and also includes modification of the assembly procedure to specifically measure and control the air gap. This results in a higher drop out voltage for the valve. Other corrective action, which has already been accomplished, includes the modification of the reference design to add the residual washer to units built in the future.

The initial report of a potential problem with one valve was received by Valcor in September of 1997. Subsequent investigations by the utility and by Valcor led Valcor to believe that a possible problem might exist, and Valcor initiated a 10CFR21 evaluation in accordance with internal procedures in late March, 1998. Further plant testing in April and May of 1998 identified 2 other valves which appeared to delay in closing.

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 50-388, Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
 AUTH.NAME AUTHOR AFFILIATION
 SHIEH, J. Valcor Engineering Corp.
 RECIP.NAME RECIPIENT AFFILIATION
 STRANSKI, B. NRC - No Detailed Affiliation Given

SUBJECT: Part 21 rept re summary of V70900-65-11 delay-in-closing problem due to residual magnetism. Only 46 units of particular model have been delivered, all to PP&L's Susquehanna Nuclear Power Plant.

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THE BUREAU OF
POSTAL SERVICE



May 19, 1998



VALCOR ENGINEERING CORPORATION

Summary of V70900-65-11 Delay-In-Closing Problem Due To Residual Magnetism

Following 6 to 18 months of continuously energized service, 3 units of Valcor Model V70900-65-11 air pilot valves have reportedly failed to stroke closed immediately upon de-energization when installed in their respective systems. Despite best efforts, the delays in closing have not been able to be replicated outside of the plant system. Delays in closing have ranged from 1 to 5 minutes.

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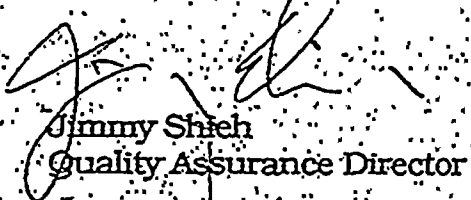
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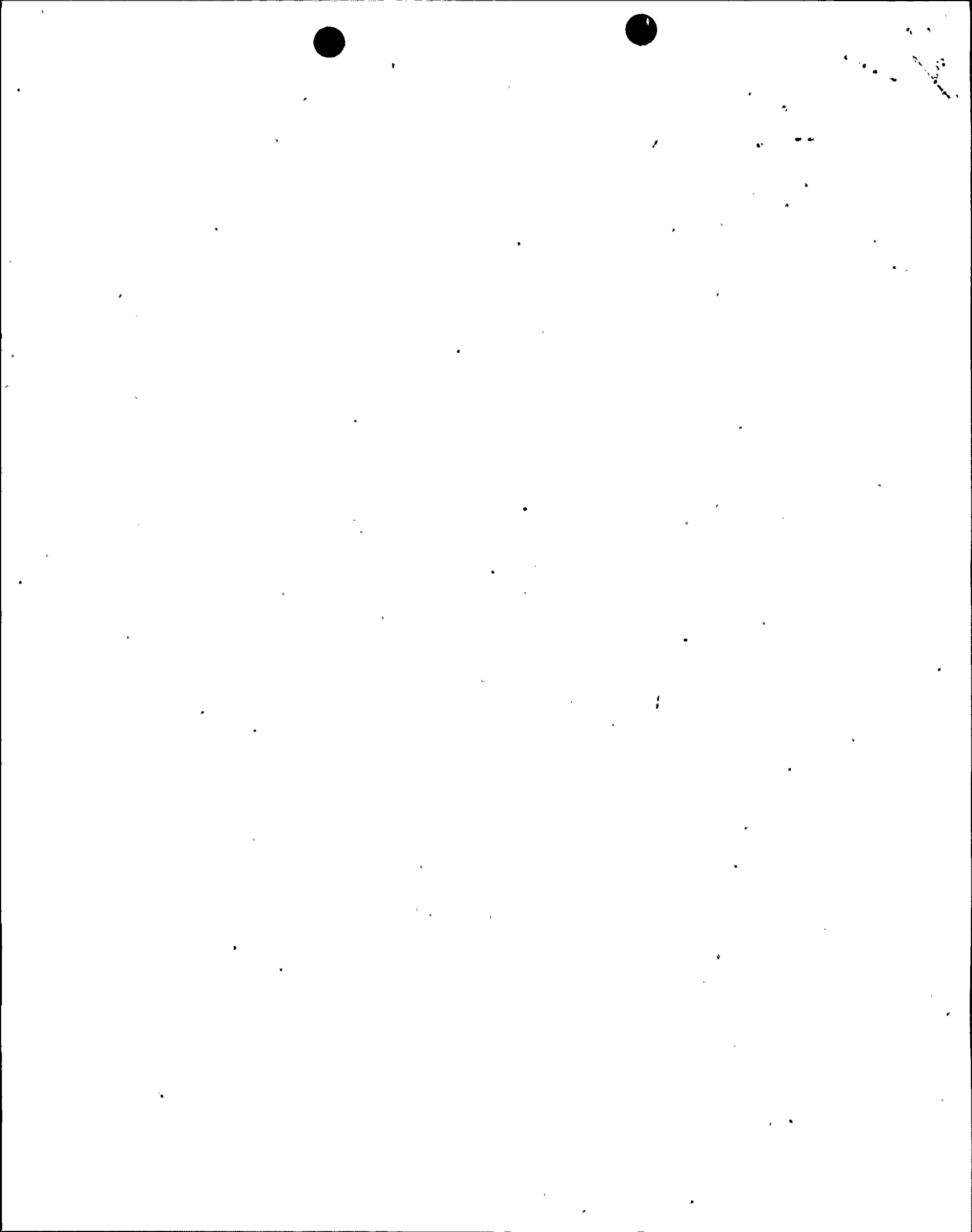


Jimmy Sheeh
Quality Assurance Director

- cc: H. Loran
D. Shave
B. Matiez
C. DelPomo
L. Olsen, PP&L

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GENERAL INFORMATION or OTHER

EVENT NUMBER: 34262

LICENSEE: VALCOR ENGINEERING CORPORATION
 CITY: SPRINGFIELD REGION: 1
 COUNTY: STATE: NJ
 LICENSE#: AGREEMENT: N
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NOTIFICATION DATE: 05/19/98
 NOTIFICATION TIME: 15:59 [ET]
 EVENT DATE: 05/19/98
 EVENT TIME: 00:00 [EDT]
 LAST UPDATE DATE: 05/19/98

NOTIFICATIONS

GENE KELLY RDO
 VERN HODGE NRR

NRC NOTIFIED BY: JIMMY SHIEH
 HQ OPS OFFICER: BOB STRANSKY

EMERGENCY CLASS: NOT APPLICABLE
 10 CFR SECTION:
 CDEG 21.21(c) (3) (i) DEFECTS/NONCOMPLIANCE

EVENT TEXT

10 CFR PART 21 REPORT

FOLLOWING 6 TO 18 MONTHS OF CONTINUOUS ENERGIZED SERVICE, THREE VALCOR MODEL V70900-65-11 AIR PILOT VALVES FAILED TO STROKE CLOSED IMMEDIATELY UPON DEENERGIZATION WHEN INSTALLED IN THEIR RESPECTIVE SYSTEMS. DELAYS IN CLOSING HAVE RANGED FROM ONE TO FIVE MINUTES. DESPITE BEST EFFORTS, THE VENDOR REPORTED THAT CLOSING DELAYS HAVE NOT BEEN REPLICATED OUTSIDE OF THE PLANT SYSTEMS.

THE VENDOR REPORTED THAT A POTENTIAL CAUSE OF THE DELAYED CLOSING IS THE POSSIBLE SUSCEPTIBILITY OF THIS PARTICULAR MODEL TO THE EFFECTS OF RESIDUAL MAGNETISM. DELAYED CLOSING MAY OCCUR WHEN THE AIR GAP BETWEEN THE PLUNGER AND THE STOP BECOMES TOO SMALL OR IF THE PLUNGER MAKES CONTACT WITH THE STOP. EXTENDED PERIODS OF CONTINUOUSLY ENERGIZED SERVICE AND SUBSEQUENT COMPRESSION SETTING OF THE O-RING SEAT MAY INDUCE THE SMALL AIR GAP CONDITION. AS A RESULT OF THE SMALL AIR GAP, THE VALVE MAY THEN BE SUBJECT TO RESIDUAL MAGNETISM FORCES, WHICH TEND TO PREVENT CLOSURE OF THE VALVE UPON DEENERGIZATION. OPENING OPERATION OF THE VALVE IS NOT AFFECTED.

THE V70900-65-11 IS AN AC POWERED VERSION AND IS THE ONLY VERSION OF THE V70900-65 AIR PILOT SERIES SUBJECT TO THIS EFFECT. ONLY 46 UNITS OF THIS PARTICULAR MODEL HAVE BEEN DELIVERED, ALL TO THE SUSQUEHANNA STEAM ELECTRIC STATION. ALL OF THE UNIT HAVE BEEN, OR ARE SCHEDULED TO BE, MODIFIED BY VALCOR TO ELIMINATE THE POTENTIAL FOR RESIDUAL MAGNETISM EFFECTS.

