DCD/DC6 (RIDS)

February 26, 1990

Docket No. 50-316
License No. DPR-74
EA 89-252

Indiana Michigan Power Company
ATTN: Mr. Milton P. Alexich
Vice President
Nuclear Operation Division
1 Riverside Plaza
Columbus, Ohio 43216

Gentlemen:

SUBJECT: NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY - $75,000
(NRC INSPECTION REPORT NO. 50-316/89028(DRS))

This refers to the routine safety inspection conducted on October 16 through 20, 24 through 26, and December 4, 1989, at the D.C. Cook Nuclear Plant, Units 1 and 2. The report documenting the inspection was sent to you by letter dated December 21, 1989. During the monthly surveillance test of the Turbine-Driven Auxiliary Feedwater Pump (TDAFP), NRC personnel identified a mismatch between the test and local process flow instrumentation. Subsequent investigation by the plant staff determined that the process flow instrument was not properly functioning and would not have been able to actuate the TDAFP flow retention feature. This flow retention feature is required by your safety analysis to prevent pump runout during a feedwater or main steamline break. On January 4, 1990, an enforcement conference was conducted in the NRC Region III office with you and other members of your staff to discuss the violation, its cause, and your corrective actions.

The violation as described in the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice) indicates that TDAFP has been inoperable since initial plant startup. The root cause of this violation appears to be an inappropriately sized orifice that was not identified as deficient during receipt inspection and original installation. Preoperational testing identified the anomaly with the process instrumentation in 1978. However, adequate corrective action was not taken to either determine the cause of the deficiency or to prevent the instruments use in safety-related applications. This appears to be partly due to the lack of a system, prior to 1986, that tracked the corrective actions for identified deficiencies. Regardless, greater attention to the TDAFP conditions during monthly operability testing over the last ten years should have uncovered the discrepancy between two flow instrument readings.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

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This is a significant regulatory concern because you operated the facility for over 10 years with a degraded auxiliary feedwater system. The D.C. Cook Updated Final Safety Analysis Report (UFSAR) only credits the two motor driven auxiliary feedwater pumps (MDAFP) each at 50% capacity in addition to the full capacity TDAFP. During the enforcement conference you indicated a single failure of one MDAFP with concurrent inoperability of the TDAFP may not have resulted in loss of the auxiliary feedwater function due to the conservatism in the system design assumptions. We also note that on occasion, one MDAFW pump has been inoperable during plant operation. This deficiency resulted in operation outside the facility design basis as described in the FSAR and significantly degraded system performance capability and should have been identified and corrected in a more timely manner.

To emphasize the need for effective corrective action for identified deficiencies and operator attention to equipment conditions during surveillance testing, I have been authorized, after consultation with the Director, Office of Enforcement, and the Deputy Executive Director for Nuclear Materials Safety, Safeguards, and Operations Support, to issue the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice) in the amount of $75,000 for the violation described in the enclosed Notice. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1989), the violation has been categorized as a Severity Level III violation.

The base value of a civil penalty for a Severity Level III violation is $50,000. The escalation and mitigation factors in the Enforcement Policy were considered and escalation of the base penalty by 50% is appropriate because this violation was identified by an NRC inspector. You had an opportunity to rectify this violation after identification during testing in 1978. You also had opportunity to identify this discrepancy during routine surveillance testing of the TDAFP. Though your immediate corrective actions were adequate to assure correct sizing of the remaining feedwater pump orifices, no plan was developed to verify that other deficiencies identified prior to implementation of your current tracking system were adequately resolved, until prompted by the NRC. Consequently, neither escalation nor mitigation was applied for corrective action. Further escalation or mitigation of the civil penalty was not deemed appropriate.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. In your response, you should document the specific actions taken and any additional actions you plan to prevent recurrence. Your response should specifically address actions you have taken to improve your corrective action system and operator attention to detail during conduct of testing. In addition you should consider whether your receipt inspection program needs to be reviewed and improved. After reviewing your response to this Notice, including your proposed corrective actions and the results of future inspections, the NRC will determine whether further NRC enforcement action is necessary to ensure compliance with NRC regulatory requirements.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

The responses directed by this letter and the enclosed Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, Pub. L. No. 96-511.

Sincerely,

Original signed by
A. Bert Davis

A. Bert Davis
Regional Administrator

Enclosures:
1. Notice of Violation and Proposed Imposition of Civil Penalty
2. Inspection Report No. 50-316/89028(DRP)

See Attached Distribution

OE	OE:D	DEDS		
WTroskoski	JLieberman	HThompson		
2/16/90	2/14/90	2/7../90		
RIII	RIII	RIII	RIII	RIII
Schultz/db	Grobe	Greenman	Paperiello	Davis
02/22/90	02/23/90	02/22/90	02/23/90	02/23/90

Distribution

cc w/enclosures:
A. A. Blind, Plant Manager
DCD/DCB (RIDS)
Licensing Fee Management Branch
Resident Inspector, RIII
James R. Padgett
Michigan Public Service
Commission
EIS Coordinator, USEPA
Region 5 Office
Michigan Department of
Public Health
PDR
LPDR
SECY
CA
JMTaylor, EDO
HThompson, DEDS
JLieberman, OE
JGoldberg, OGC
TMurley, NRR
JPartlow, NRR
Enforcement Coordinators
RI, RII, RIV, RV
FIngram, GPA/PA
BHayes, OI
DWilliams, OIG
EJordan, AEOD
WTroskoski, OE
OE:Chron
OE:EA
RAO:RIII
PAO:RIII
SLO:RIII
M. Stahulak, RIII
DCS

NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTY

Indiana and Michigan Power Company
D. C. Cook Unit 2

Docket No. 50-316
License No. DPR-74
EA 89-252

During an NRC inspection conducted on October 16 through 20, 24 through 26, and December 4, 1989, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (1989), the Nuclear Regulatory Commission proposes to impose a civil penalty pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (Act), 42 U.S.C. 2282, and 10 CFR 2.205. The particular violation and associated civil penalty are set forth below:

Technical Specification 3.7.1.2 requires at least three independent steam generator auxiliary feedwater pumps and associated flow paths be operable in Modes 1, 2, and 3. With one auxiliary feedwater pump inoperable, restore that pump to operable status within 72 hours or be in hot standby within the next 6 hours and hot shutdown within the following 6 hours.

Contrary to the above, while the facility has been in Modes 1, 2, and 3, the licensee did not have three independent steam generator auxiliary feedwater pumps and associated flow paths operable during the period from August 31, 1978 through November 10, 1989, and action was not taken to restore all pumps to operable status or place the facility in hot standby or hot shutdown. The Turbine-Driven Auxiliary Feedwater Pump (TDAFP) was inoperable during this period due to the inability of the flow retention system for the TDAFP to prevent run out of the TDAFP and its resulting failure in the event of a feedwater or steam line break.

This is a Severity Level III violation (Supplement I).
Civil Penalty - $75,000.

Pursuant to the provisions of 10 CFR 2.201, Indiana and Michigan Power Company (Licensee) is hereby required to submit a written statement or explanation to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, within 30 days of the date of this Notice of Violation and Proposed Imposition of Civil Penalty (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include: (1) admission or denial of the alleged violation, (2) the reasons for the violation if admitted; and if denied, the reasons why, (3) the corrective steps that have been taken and the results achieved, (4) the corrective steps that will be taken to avoid further violations, and (5) the date when full compliance will be achieved. If an adequate reply is not received within the time specified in this Notice, an order may be issued to show cause why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, the Licensee may pay the civil penalty by letter addressed to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, with a check, draft, or money order payable to the Treasurer of the United States in the amount of the civil penalty proposed above, or may protest imposition of the civil penalty in whole or in part by a written answer addressed to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission. Should the Licensee fail to answer within the time specified, an order imposing the civil penalty will be issued. Should the Licensee elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalty, in whole or in part, such answer should be clearly marked as an "Answer to a Notice of Violation" and may: (1) deny the violation listed in this Notice in whole or in part, (2) demonstrate extenuating circumstances, (3) show error in this Notice, or (4) show other reasons why the penalty should not be imposed. In addition to protesting the civil penalty in whole or in part, such answer may request remission or mitigation of the penalty.

In requesting mitigation of the proposed penalty, the factors addressed in Section V.B of 10 CFR Part 2, Appendix C (1989), should be addressed. Any written answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate parts of the 10 CFR 2.201 reply by specific reference (e.g., citing page and paragraph numbers) to avoid repetition. The attention of the Licensee is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing a civil penalty.

Upon failure to pay any civil penalty due which subsequently has been determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated, may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282c.

The response noted above (Reply to Notice of Violation, letter with payment of civil penalty, and Answer to a Notice of Violation) should be addressed to: Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region III, and a copy to the NRC Resident Inspector at the D.C. Cook Nuclear Plant.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Bert Davis
Regional Administrator

Dated at Glen Ellyn, Illinois
this 26th day of February, 1990

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No.: 50-315/89028(DRS); 50-316/89028(DRS)

Docket Nos.: 50-315; 50-316 Licenses No. DPR-58; DPR-74

Licensee: Indiana Michigan Power Company
1 Riverside Plaza
Columbus, OH 43216

Facility Name: D. C. Cook Nuclear Plant - Units 1 and 2

Inspection At: D. C. Cook Site, Bridgman, MI

Inspection Conducted: October 16-20, 24-26, and December 4, 1989

Inspectors: J. F. Smith 12-19-89
J. P. Smith Date

M. P. Huber 12/19/89
M. P. Huber Date

Approved By: D. H. Danielson 12/19/89
D. H. Danielson, Chief Date
Materials and Processes Section

Inspection Summary
Inspection on October 16-20, 24-26, and December 4, 1989 (Reports No. 50-315/89028(DRS); 50-316/89028(DRS))
Areas Inspected: Routine announced safety inspection of maintenance and inservice testing (IST) of pumps and valves. The areas covered included actions taken in response to IE Bulletin 85-03 (25573) and implementation of IST (73756) including a review of administrative procedures, performance of testing, and recording of trends.
Results: Within the areas inspected, one apparent violation of Technical Specification 3.7.1.2 due to the inoperability of the Unit 2 Turbine Driven Auxiliary Feedwater Pump was identified. Based on the results of the inspection, the NRC inspectors noted the following:

- Review of the IST program indicated that there was an effective and logical progression of work through the system and that a knowledgeable staff was dedicated to the programs.
- Actions taken to address MOV testing and switch settings methodologies were good.
- The failure to properly evaluate the significance of the incorrect process flow reading and the failure to adequately correct the flow reading anomaly are considered to have contributed considerably to the apparent violation.

DETAILS

1. Persons Contacted

   a. American Electric Power Service Corporation (AEP)

   *A. A. Blind, Plant Manager
   *B. A. Svenson, Licensing Coordinator
   *K. R. Baker, Assistant Plant Manager, Production
   *J. B. Droste, Engineering Supervisor
   *J. L. St. Amand, Performance Supervisor
   *R. P. Beilman, Maintenance Superintendent
   *J. R. Sampson, Operations Superintendent
   *J. E. Rutkowski, Assistant Plant Manager, Technical Support
   *L. Gibson, Assistant Plant Manager, Projects

   b. U. S. Nuclear Regulatory Commission (U.S. NRC)

   *B. L. Jorgensen, Senior Resident Inspector

   *Denotes those present for the exit meeting on December 4, 1989.

   The NRC inspectors also contacted other licensee personnel during the course of the inspection.

2. Licensee Action on Previous Inspection Findings

   (Open) Open Item (50-315/87023-02; 50-316/87023-02): Review of NDE Program for CCW welds.

   A through-wall crack on the 14" diameter Component Cooling Water (CCW) return line from Unit 2 RHR heat exchanger originally caused inspection of the system which disclosed 14 through-wall cracks and six subsurface cracks on Unit 2. The CCW system is a safety-related system and is made from ASTM A106, Grade B. The causes of the failure were investigated by both Gelles Laboratories, Inc., and Westinghouse Electric Company, Inc. Based on the results of these investigations, the licensee repaired most of the defects but left some partial penetration cracks to facilitate monitoring future growth. Toward this end, the licensee was reported to be developing an NDE Program. The review of this program was identified as the open item in the original report.

   The NRC inspectors reviewed the corrective action and the inspection data completed by the licensee to date but found no NDE Program. The inspectors noted that only a single re-examination of the identified cracks had been performed. After reviewing the work status with the NRC inspectors, the licensee plans to evaluate the merits of performing additional inspection on the cracks before closing the program. Pending completion of a finalized NDE Program for CCW welds, this item remains open.

3. Licensee Action on IE Bulletins

(Open) TI 2515/73 and IE Bulletin (IEB) 85-03 and Supplement 1 to IEB 85-03 (50-315/85003-BB; 50-316/85003-BB): Motor Operated Valve (MOV) Common Mode Failure During Plant Transients Due to Improper Switch Settings.

Action Item a of the bulletin requests a review and documentation of the design basis for the operation of each valve addressed, including an evaluation of limiting differential pressure conditions; Action Items b through d require actions to assure that the MOV switch settings are set, tested, and maintained properly; and Action Item e requires a 180 day report of the results of Action Item a and a program to accomplish Action Items b through d.

Supplement 1 to IEB 85-03 was issued to clarify misunderstandings in IEB 85-03 and to clarify which valves are required to be included in the scope of the bulletin program.

In order to ensure that MOVs will operate as intended against designed operational conditions such as differential pressure, and meet the requirements of IEB 85-03, licensee's were to establish methodologies for setting MOV switches and establishing these settings on the valves. This type of program encompasses several organizational elements and coordination between these elements to ensure that the bulletin valves, as well as other plant valves, operate as intended. The different licensee organizations needed to ensure that the MOVs are adequately set and maintained include engineering, mechanical maintenance, electrical maintenance, and operations, as well as others.

The NRC inspectors discussed the licensee's program with plant personnel, reviewed maintenance and test procedures, and reviewed completed testing data to evaluate the licensee's MOV program to address IEB 85-03.

a. Program Evaluation

The licensee has reviewed and tested the valves included in the scope of their program submitted to the NRC. The NRC inspectors reviewed the completed test packages for a sample of the valves in the licensee's program and no problems were noted. MOV switch settings were verified to meet the licensee's switch setting configuration methodologies.

b. Thermal Overload Relay

Thermal overload switches used on MOVs at D. C. Cook do not utilize bypass features; however, the thermal overload switches applied to MOVs are not intended to protect the MOV motors. The thermal overloads were provided to protect the bus and sized to avoid possible spurious trips of motors in order to meet Regulatory Guide 1.106. This configuration was selected to allow the motor to perform its safety function and is an acceptable configuration.

c. Maintenance of Switch Settings

To some extent, this involves all programmatic activities that assure long term valve operability because wear and degradation can affect the adequacy of switch settings.

The NRC inspectors reviewed licensee procedures to determine the extent to which maintenance and surveillance activities were considering switch settings to ensure continued valve operability. Procedures reviewed included:

- 12MHP-SP-122, Revision 1, "Testing of Motor Operated Valves Using MOVATS Signature Acquisition System".
- 12MHP5021.001.006, Revision 4, "Disassembly Repair and Reassembly of Limitorque SMB Valve Operators".
- 12MHP5021.001.037, Revision 4, "Maintenance Procedure for Rotor and Torque Type Limit Switches on Limitorque Motor Operated Valves".
- 12MHP5030.012.001, Revision 0, "Preventive Maintenance Requirements for Limitorque Motor Operated Valves".
- 12MHP5030.012.002, Revision 0, "Testing of Limitorque Motor Operators with OATIS Data Acquisition System".

The procedures were detailed and should be adequate to ensure that problems noted with MOVs are addressed in an appropriate manner. The procedures incorporate the appropriate vendor information. Additionally, controls were established by the licensee to prevent changes to the MOVs and their switches without the review and approval of cognizant engineering personnel. The MOV program was developed to require review of MOV maintenance activities by cognizant personnel.

The licensee also has an extensive data base with current settings for safety-related valves to be used only with the approval of a maintenance engineer for setting valves or obtaining or recording information of valve specifics. These specifics include design data as well as actual torque switch settings. The use of this valve specific information in a controlled manner also aids in the maintenance of the MOV switch settings.

d. Motor Operated Valve Test and Analysis Applications

The NRC inspectors witnessed the performance of "OATIS", the licensee's motor operated valve analysis and test system, as provided by Impell Corporation. The system appeared to operate effectively, to provide the data necessary to properly set the electrical switches and to record the valves' operational performance. The personnel operating the equipment were well versed in its use but this would be expected inasmuch as they were members

of engineering management. Although they do not routinely operate the equipment, they are qualified to teach its operation.

4. Pump and Valve IST Program Implementation (73756)

The licensee's second ten-year IST program is based on the requirements of Section XI of the ASME Code, 1983 Edition through Summer of 1983 Addenda. The licensee's program was reviewed by NRC and a Safety Evaluation Report (SER) was issued on August 29, 1989. The SER found the licensee's IST program to be acceptable for implementation provided the omissions and inconsistencies identified in the SER were addressed.

a. Anamolies Identified in the SER

The NRC, with technical assistance from EG&G Idaho, Incorporated, identified concerns with the licensee's IST program, and noted them in the SER. The NRC inspectors reviewed the inconsistencies identified in the SER to ensure actions taken were adequate and complete. During discussions with the licensee, it was noted that some of the relief requests that were denied by the NRC in the SER were to be re-addressed by the NRC and AEP. Of those relief requests that were denied and were not to be re-addressed, the NRC inspectors verified that actions were being taken to ensure compliance with the SER. The licensee still was within the allowable time frame for completion of the action necessary to address the omissions and inconsistencies, but had taken significant steps towards program revision to comply with the SER.

b. Administrative Controls of IST

The NRC inspectors confirmed that administrative controls were in place to satisfy the requirements of the IST program and that specific IST duties had been assigned to personnel. The inspectors reviewed selected portions of administrative and technical documents for general content and for compliance with specific requirements of the D. C. Cook Nuclear Station Inservice Testing Program for Pumps and Valves and with the D. C. Cook program for MOVs prepared in response to NRC IEB 85-03. The documents listed below were included in this group.

- Inservice Inspection Check Valve Disassembly and Examination, 12THP5070 ISI.002, Revision 0, dated August 22, 1988.
- ISI Safety Valve and Safety Relief Valve Testing, 12THP5020 ISI.001, Revision 1, dated January 14, 1988.
- Turbine Driven Auxiliary Feedwater System Test, 2-OHP 4030.STP.017T, Revision 7, dated September 1, 1988.

c. Pump Program Implementation

The licensee's pump IST program implementation was inspected to verify compliance with Appendix B of 10 CFR 50; 10 CFR 50.55a(g); and Subsection IWP of Section XI of the ASME Code, 1983 Edition

through Summer 1983 Addenda. The inspection included a review of administrative controls, selected surveillance procedures, test results and documentation.

During the course of the review the NRC inspectors reviewed procedure 12THP5070PER.001, "Review of Inservice Testing of Pumps". This procedure defined the requirements of the licensee's program as it related to IST of pumps. Requirements for trending, operability determinations, review of test results, retest requests and methods of measuring the parameters specified by the Code were specified in the procedure.

The NRC inspectors also reviewed completed surveillance procedures to verify implementation of the licensee's IST program for pumps. Surveillances reviewed included:

- 1-OHP 4030.STP.017E, Revision 5, "East Motor Driven Auxiliary Feedwater System Test", performed October 15, 1989.
- 1-OHP 4030.STP.017T, Revision 6, "Turbine Driven Auxiliary Feedwater System Test", performed October 16, 1989.
- 2-OHP 4030.STP.002A, Revision 3, "Boric Acid Transfer Pump (#3 BAT) and Boration System Operability Test", performed October 16, 1989.
- 2-OHP 4030.STP.017E, Revision 4, "East Motor Driven Auxiliary Feedwater System Test", performed October 15, 1989.

The respective required action range values for the pumps were recorded in the licensee's Tech Data Book and transferred to the procedures for operability determinations. Instrument calibration data was recorded in the procedure to ensure current instrument calibration and traceability.

The NRC inspector verified that the acceptance criteria for the allowable range of test parameters were adequate and all surveillance data was within acceptable levels.

d. Performance of the Turbine-Driven Auxiliary Feed Pump (TDAFP) Operability Test

The NRC inspectors witnessed the routine inservice testing of the turbine-driven auxiliary feed system for Unit 2 (Procedure No. 2-OHP 4030.STP.017T). During the test, the inspectors observed that the pump flow indicated by the permanently mounted process flowmeter for the TDAFP deviated significantly from that indicated by the portable test instrument. Both instruments bore recent calibration stickers. A review of drawing No. OP2-5106A-16 disclosed that there were no flow routes which would explain the anomaly.

Both instruments operate by measuring differential pressure across an orifice. The licensee confirmed that both instruments were reading correctly when tested apart from the orifices. The test instrument orifice was then removed and inspected for proper dimensions and freedom from damage. The test orifice proved to be acceptable. The process orifice could not be removed for inspection without shutting down the plant, so no direct inspection of this component was done.

The process instrument was found to provide a design safety function as well as local flow indication. This safety function was a part of the original licensing basis for D. C. Cook. The TDAFP is designed to normally provide 700 gallons per minute to the steam generators at a minimum pressure of 1180 psig. In the event of a pipe break in a feed line to a single steam generator, when the flow exceeds 975 gallons per minute, the flow retention signal from the process flowmeter is designed to close the four flow retention valves (which are in parallel) to a preselected position to ensure an adequate flow of feedwater to the unaffected steam generators.

The licensee performed investigations to test the TDAFP flow indicators in Unit 1, to test the four Motor-Driven Auxiliary Feed Pumps (MDAFP) in the two units, to determine if the proper size flow orifice was originally purchased, and to determine if the operability of any of the equipment was compromised by the condition observed. The NRC inspectors witnessed the testing of the four motor-driven feed pumps. No irregularities were observed in the techniques nor in the results. The NRC resident inspector witnessed the testing of the Unit 1 TDAFP and concluded that it showed acceptable results.

The licensee developed data relating the indicated flow in the test instrument with that in the process instrument. The process instrument was found to read approximately 0.8 times the test instrument value. Knowing the diameter of the measured orifice in the test instrument and knowing how the differential pressures varied across these orifices when the same flow was passed through each of them, the licensee calculated the orifice in the process instrument to be 5.62". There are no records indicating that the orifice was measured when it was received. The licensee has also indicated that there is evidence that the 150 gallon per minute difference was identified ten years ago, but there is no evidence that any corrective action was ever initiated.

A record of the anomalous reading is provided in Condition Report (1)C/R No. 2-8-78-480, generated on August 31, 1978. The problem was investigated and the test orifice (FFX-253) and the process orifice (FFS-258) were "checked for proper installation, taps and their ID tabs were checked for orifice diameter and pipe diameter". The orifices were subsequently " . . . removed from their lines and inspected for possible damage or obstructions. The inspectors did not uncover any problems with either orifice". However, there is no indication that the orifices were measured. "Preventive Action"

identified in the Condition Report included statements that the licensee had been unable to account for the mismatch in the two flowmeters and indicated that the test orifice (FFX-253) shall be used in place of the process orifice (FFS-258) for flow measurement in future IST surveillance testing for the pump. The licensee also indicated that the abnormal reading of the process orifice would remain under investigation. The Preventive Action section did not include any mechanism to prevent future use of the switch in the defective process flow meter. Subsequent use of that switch in the flow retention system provided an inadequate source of signal for initiation of that system. Neither the design control process during initial construction nor subsequent preoperational testing discovered the inability of the flow retention system to meet its licensing basis.

In order to restore the operability of the flow retention system, the licensee adjusted the setpoint of the process flowmeter to operate at the signal produced by the existing orifice for the prescribed flow of 975 gallons per minute. After the adjustment was made, the NRC inspectors reviewed the data sheet for the setpoint shift and found that the as-found trip setpoint was high by 64.9% as compared with the as-left setpoint. In order to produce a signal which would trip at the as-found setting, the licensee's calculations indicate that the TDAFP actual flow would have had to exceed 1225 gpm. At this value, pump runout would occur in the event of an accident such as a feedwater or steam line break. In the event of TDAFP failure, the two remaining Unit 2 MDAFPs would be available, as well as all three AFWPs from Unit 1. The licensee has a procedure in place that allows cross connection of available AFWPs from one unit to another unit that has insufficient or unavailable AFW flow.

At the earliest outage of adequate time (but no later than the next refueling outage), the licensee plans to replace the present process orifice with one which complies with the dimensions and output of the design requirements. When this is accomplished, the setpoint of the flow meter will be adjusted so that all elements of the system function as originally designed.

In the event of a feedwater or steamline break, the failure of the process flowmeter to initiate the flow retention system would permit the turbine-driven auxiliary feed pump to run out. As a result, the pump is considered to be inoperable. This is an apparent violation of Technical Specification 3.7.1.2 which states, in part, "At least three independent steam generator auxiliary feedwater pumps and associated flow paths must be OPERABLE with . . . One feedwater pump capable of being powered from an OPERABLE steam supply system" (316/89028-01).

The means by which the violation occurred included (1) failure to receipt inspect the safety-related orifice plate at the time of its delivery, (2) failure to perform appropriate corrective action when anomalous gauge indication was first discovered in 1978 and at every monthly operability test since then, and (3) failure to record the

problem with the orifice upon discovery in 1978 in a manner that would prevent its use as the signal source for initiation of the automatic flow retention safety function.

5. Exit Interview

The NRC inspectors met with licensee representatives (denoted in Paragraph 1) on December 4, 1989, to discuss the scope and findings of the inspection. The licensee acknowledged the statements made by the inspectors with respect to items discussed in the report. In addition, a preliminary exit interview was conducted on October 26,1989, with the licensee. The inspectors discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection and the licensee did not identify any such documents or processes as proprietary.