IES
UTILITIES INC.

February 17, 1994
NG-94-0562

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Reply to a Notice of Violation
Transmitted with Inspection Report 93021
File: A-102, R-22

Dear Dr. Murley:

Pursuant to the requirements of 10 CFR 2.201, this letter and its attachment are provided in response to the Notice of Violation concerning activities at the Duane Arnold Energy Center (DAEC).

We fully recognize the serious nature of the violations identified in the Notice. As discussed during the enforcement conference and acknowledged in Region III's January 19, 1994 letter transmitting the Notice, we have aggressively pursued the root cause of the violation and pursued comprehensive corrective actions.

We believe that this event highlights the importance of an effective relationship between the maintenance and engineering staff at the DAEC. Our past efforts to strengthen this relationship have resulted in a stronger engineering presence in all phases of our maintenance program. Efforts are currently underway to evaluate additional means of improving our efficiency and further enhancing engineering support. Continued progress in this area will help us to sustain the improved plant performance noted in the inspection report.

This letter contains the following new commitments:

1. Training specific to this event will be incorporated into the Operations and Engineering Department Continuing Training Program. This training will be completed by December 31, 1994.

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2. Maintenance procedures which we know were developed through informal communications with the vendor will be reviewed to verify proper incorporation of technical manual requirements. This review will be completed by June 30, 1994.

3. Vendor manuals yet to be reviewed which address safety-related electrical distribution equipment will be given first priority in the ongoing vendor manual review process.

This response, consisting of this letter and the attachment, is true and accurate to the best of my knowledge and belief.

IES UTILITIES INC.

By John F. Franz
JOHN F. FRANZ
Vice President-Nuclear

State of Iowa

(County) of Linn

Signed and sworn to before me on this 16th day of February, 1994, by John F. Franz.

Kathleen D. Furman
Notary Public in and for the State of Iowa

September 28, 1995
Commission Expires

JFF/LH:so
Attachment

cc: L. Heckert
L. Liu
L. Root
R. Pulsifer (NRC-NRR)
J. Martin (Region III)
NRC Resident Office
DCRC

IES UTILITIES INC.
REPLY TO A NOTICE OF VIOLATION
TRANSMITTED WITH INSPECTION REPORT 93021

VIOLATIONS

A. Duane Arnold Energy Center technical specification 3.5.G.1 states that during any period when one standby diesel generator (SBDG) is inoperable, continued reactor operation is permissible only during the succeeding 7 days unless such SBDG is sooner made operable. If that condition is not met, an orderly shutdown shall be conducted and the reactor shall be taken to hot shutdown within the next 12 hours and taken to cold shutdown within the following 24 hours.

Contrary to the above, on July 21, 1993, with the reactor operating at approximately 75 percent power, the "B" SBDG became inoperable. The "B" SBDG was not restored to operable status within 7 days and the reactor was not taken to hot shutdown within the next 12 hours, or cold shutdown within the following 24 hours. (01013)

B. Technical specification 3.9.D.1 requires that with core alterations in progress, one SBDG shall be operable with its associated standby gas system train and its main control room ventilation standby filter unit subsystem.

Contrary to the above, from August 7, 1993, to August 11, 1993 with core alterations in progress, both SBDGs were inoperable. (01023)

RESPONSE TO VIOLATIONS

1. Reason for the Violations

These violations were caused by the use of an inadequate circuit breaker maintenance procedure. Specifically, this procedure did not address the need to verify that the proper gap was maintained between the circuit breaker plunger and the operating rod on the stationary auxiliary switch mechanism. As a result, maintenance performed on the Standby Transformer feeder breaker (1A401) rendered the automatic closure circuit for the "B" Standby Diesel Generator (SBDG) output breaker inoperable from July 21 to September 25, 1993.

2. Corrective Steps that have been Taken and the Results Achieved

The proper gap between the circuit breaker plunger and the stationary auxiliary switch mechanism for the 1A401 breaker was restored on September 24, 1993. The "B" SBDG was declared operable on September 25, 1993.

The maintenance history for all 4160 Vac circuit breakers was reviewed to identify any safety-related contacts which had not been functionally tested since breaker maintenance was last performed. The ten breakers identified by this review were promptly tested satisfactorily. This testing, completed on September 27, verified that all 4160 Vac circuit breaker auxiliary contacts were operable in the "as-found" condition.

In response to our request, General Electric (GE) developed additional dimensional checks to provide further assurance of proper contact operation. We completed performance of these dimensional checks on September 28. Twenty-six of the 49 breakers did not meet the acceptance criteria. Ten of the 26 breakers not meeting the acceptance criteria have auxiliary contacts that are safety-related or important to plant operations. Adjustments of these ten breakers were completed on October 2. In addition, adjustments to nine of the remaining breakers have been completed.

Pending permanent revision, the circuit breaker maintenance procedure was temporarily modified to include the required gap dimensions. Two full-time personnel then conducted a line-by-line comparison of the maintenance procedure and vendor manual requirements. This review has been completed. Proposed revisions to the procedures are currently being reviewed by GE. The proposed revision will eliminate the use of the imprecise measurement techniques which contributed to this event and will ensure that the proper post-maintenance verification of the breaker-to-switchgear interface is performed.

Special Order 93-48 was issued which requires the Electrical Maintenance Supervisor or his designee to authorize and witness any 4160 Vac breaker exchanges. This order further ensures that the proper gap is maintained following the installation of any breaker. Labels have been attached to all 4160 Vac breaker cubicles to identify the associated breaker and reference the requirements of the Special Order.

Training was provided to all maintenance electricians which detailed the events leading to the breaker inoperability and the corrective actions taken. Specific attention was given to the need for a questioning attitude whenever an unexplained need for breaker adjustment is discovered and the importance of the breaker-to-cubicle interface. Training on these topics

will also be provided in continuing training programs of the Operations Department and Engineering Department. This training will be completed by December 31, 1994. The DAEC Training Center has also acquired a breaker cubicle so that the breaker-to-cubicle interface can be better addressed in continuing hands-on training.

A test simulating the SBDG output breaker malfunction was administered to two operating crews on the Duane Arnold Energy Center (DAEC) simulator. This test was performed without any prior briefing for the crews involved. Both crews promptly recognized the failure and manually reenergized the essential bus within 5 minutes. Following this test, training was provided to all operating crews on this scenario.

A risk assessment was performed to determine the effect on plant safety of the loss of the automatic closure of the SBDG output breaker. The results indicated a small effect on plant safety which was further minimized by prior training, existing plant procedures and an aggressive outage risk management program.

Considerable efforts have been made to communicate information from this event to the industry. A description of the event was placed on the Institute of Nuclear Power Operations "Notepad" network and on the Nuclear Plant Reliability Data System. Information was also presented at a workshop sponsored by the Electric Power Research Institute's (EPRI's) Nuclear Maintenance Application Center.

At the enforcement conference on November 19, 1993, we committed to review our initial evaluation with regard to 10 CFR Part 21. Our review confirmed that this issue does not require a Part 21 notification.

3. Corrective Steps that will be Taken to Avoid Further Violations

As stated in Licensee Event Report 50-331/93-008, adjustments will be performed on the remaining 4160 Vac breakers prior to startup from the next refueling outage (RFO-13).

Permanent revisions to the circuit breaker maintenance procedure will be incorporated upon completion of GE's review of our proposed revisions. Procedure changes will be incorporated into the DAEC electrical maintenance continuing training program.

The incorporation of vendor manual requirements into plant maintenance procedures is controlled by the DAEC Vendor Manual

Program. This program is currently performing an extensive re-evaluation of approximately 3,300 existing manuals. Approximately 1,300 of these manuals remain to be reviewed. In order to address the issues raised in this event, we will focus our resources for this program on two specific areas.

First, we have determined that development of the circuit breaker maintenance procedure relied heavily on the direct observation of breaker maintenance performed by the vendor. We believe that this informal approach may have contributed to the omission of other important details located in the technical manual. We will therefore initiate an immediate review of other maintenance procedures which were developed in a similar manner. Secondly, we will identify those vendor manuals yet to be reviewed which address safety-related electrical distribution equipment. These manuals will be given first priority in the on-going review process.

Regarding the role of the Engineering Department in the maintenance process, measurable progress has been made in recent months as we have steadily increased the role of the system engineer in resolving maintenance issues. We will continue to place significant emphasis on the involvement of our engineering staff in all phases of plant maintenance. Additionally, we are evaluating further opportunities to eliminate departmental barriers and enhance the effectiveness of our maintenance and engineering organizations.

To further clarify management expectations for the Engineering Department's role in plant maintenance, interim guidelines have been issued to the maintenance and engineering staff. These guidelines specifically address the engineering staff's role in maintenance procedure development, maintenance affecting dimensional tolerances, initial analysis of equipment problems and the determination of post-maintenance testing requirements.

4. Date when Full Compliance will be Achieved

Violation A
Full compliance was achieved when the reactor was placed in Cold Shutdown on July 31, 1993.

Violation B
Full compliance was achieved when core alterations were completed on August 11, 1993.