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John F. Franz, Jr.
Vice President, Nuclear

December 5, 1997
NG-97-2056

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-37
Washington, D.C. 20555-0001

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Reply to a Notice of Violation Transmitted with NRC Inspection
Report 97015
File: A-105, A-102

Dear Sir:

This letter is provided in response to the Notice of Violation transmitted with
NRC Inspection Report 97015.

This letter contains no new commitments.

If you have any questions regarding this matter, please contact my office.

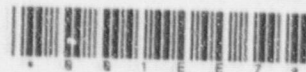
Sincerely,

John F. Franz
Vice President, Nuclear

Attachment

cc: R. Murrell
L. Root
G. Kelly (NRC-NRP)
A. B. Beach (Region III)
NRC Resident Office
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IES Utilities Inc.
Reply to a Notice of Violation
Transmitted with Inspection Report 97015

VIOLATION

10 CFR 50.65(a)(1) requires, in part, that the holders of an operating license shall monitor the performance or condition of structures, systems or components (SSCs), against licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs as defined in 10 CFR 50.65(b), are capable of fulfilling their intended functions. Such goals shall be established commensurate with safety. When the performance or condition of an SSC does not meet established goals, appropriate corrective action shall be taken.

10 CFR 50.65(a)(2) requires, in part, that monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

Contrary to 10 CFR 50.65(a)(2), as of July 10, 1996, the time that the licensee elected to not monitor the performance or condition of certain SSCs against licensee-established goals pursuant to the requirements of Section (a)(1), the licensee had not demonstrated that the performance or condition of certain SSCs within the scope of 10 CFR 50.65 had been effectively controlled through the performance of appropriate preventive maintenance, as evidenced by the following examples:

- a) The licensee failed to demonstrate that the performance of the high safety significant standby gas treatment system was being effectively controlled through the performance of appropriate preventive maintenance in accordance with the requirements of 10 CFR 50.65(a)(2). Specifically, the licensee failed to demonstrate it had established adequate measures to evaluate the effectiveness of preventive maintenance on the standby gas treatment system prior to placing the SSC under Section (a)(2), in that the licensee had established system level reliability performance measures that could not demonstrate that the SSC trains would function as required. Both trains of the standby gas treatment system would have to be non-functional coincidentally before the system level reliability performance measures would be affected.
- b) The licensee failed to demonstrate that the performance of fuel handling equipment was being effectively controlled through the performance of appropriate preventive maintenance in accordance with the requirements of 10 CFR 50.65(a)(2). Specifically, the licensee failed to demonstrate it had established adequate measures to evaluate the effectiveness of preventive maintenance on the fuel handling equipment prior to placing the SSC under Section (a)(2), in that the licensee-established measures for this SSC had an unacceptable stand-alone reliability measure based on reportable events. The measure

based on un-reportable events had no predictive value to evaluate the effectiveness of maintenance for this SSC.

- c) The licensee failed to demonstrate that the performance of reactor building sumps were being effectively controlled through the performance of appropriate preventive maintenance in accordance with the requirements of 10 CFR 50.65(a)(2). Specifically, the licensee failed to demonstrate it had established adequate measures to evaluate the effectiveness of preventive maintenance on the reactor building sumps prior to placing the SSC under Section (a)(2), in that the licensee had established plant level performance measures that could not demonstrate that this SSC would function as required. Extended inoperability of equipment important to safety because of flooding would have to occur before a plant level performance measure would be affected due to failures of the reactor building sumps.
- d) The licensee failed to demonstrate that the performance [of] the hydrogen-oxygen analyzers were being effectively controlled through the performance of appropriate preventive maintenance in accordance with the requirements of 10 CFR 50.65(a)(2). Specifically, the licensee failed to demonstrate it had established adequate measures to evaluate the effectiveness of preventive maintenance on the hydrogen-oxygen analyzers prior to placing the SSCs under Section (a)(2), in that the licensee had established system level and plant level performance measures that could not demonstrate that the SSC trains would function as required. Both trains of the hydrogen-oxygen analyzers would have to be non-functional coincidentally before a performance measure would be affected.

This is a Severity Level IV violation (Supplement 1).

RESPONSE TO THE VIOLATION

1. REASON FOR THE VIOLATION

VIOLATION PART (a)

The Secondary Containment and Standby Gas Treatment System (SBGT), which has the function of providing a treated, elevated release path to meet 10 CFR 100 requirements, did not meet the NUMARC 93-01 Probabilistic Risk Assessment (PRA) standards for high safety significance during the initial analysis in 1994, but it was subsequently designated as such by the Duane Arnold Energy Center (DAEC) Expert Panel. Performance Criteria was set for SBGT availability at the train level to ensure train level monitoring was occurring for the system. When setting reliability performance criteria, it was noted that Secondary Containment could be rendered non-functional via either Secondary Containment integrity problems (essentially a single train) or due to SBGT problems. Reliability monitoring was thus set at the

functional level, with Secondary Containment integrity problems and SGBT problems being counted equally. This was a misinterpretation of the NUMARC 93-01 requirements for train level monitoring.

VIOLATION PART (b)

During the Maintenance Rule scoping and Performance Criteria development at the DAEC, the Fuel Handling Equipment system was determined to be in the scope of the Rule due to the use of safety-related components within the system, and was found to be of low safety significance based on the NUMARC guidelines for PRA analysis and by Expert Panel review. The system has no accident mitigation function taken credit for in the PRA or the Updated Final Safety Analysis Report (UFSAR). Its equipment is tested prior to each use, and it has no automatic or manual function prior to use for fuel movement. Difficulties with the system resulting in extended plant outage duration would be captured via the Plant Level criteria for Unplanned Capability Loss Factor, and if the system in some unanticipated manner affected plant risk while in operation for fuel movement, this would be captured by the Plant Level Criteria for Outage Risk Changes. An additional criterion for the system tied to 10 CFR 50.73 reportable events was also established to further capture any significant problems. As a result of the comments provided by the NRC staff via the on-site inspection and further documented in NRC Inspection Report (IR) 97015, it has been concluded that the above monitoring of the Fuel Handling Equipment system was not sufficiently sensitive.

VIOLATION PART (c)

During the Maintenance Rule scoping and Performance Criteria development at the DAEC, the Reactor Building Sump system was designated as within the scope of the Maintenance Rule because it contained safety-related components. It was found to be of low safety significance based on the NUMARC 93-01 guidelines for PRA analysis, and by Expert Panel review. The sump system is in use daily, and is not taken credit for in the PRA or in UFSAR accident analysis. Monitoring was therefore established under Plant Level Criteria for Unplanned Capability Loss Factor. As a result of the comments provided by the NRC staff via the on-site inspection and further documented in NRC IR 97015, it has been concluded that the above monitoring of the Reactor Building Sump system was not sufficiently sensitive.

VIOLATION PART (d)

During the Maintenance Rule scoping and Performance Criteria development at the DAEC, the function of the Hydrogen-Oxygen Analyzers was recognized as within the scope of the Maintenance Rule because this equipment contained safety-related

components. The system provides an indication-only function to detect long-term gas buildup in support of Emergency Operating Procedures (EOPs). The function was found to be of low safety significance based on the NUMARC 93-01 guidelines for PRA analysis, and by Expert Panel review. The function is not taken credit for in the PRA or in the UFSAR accident analysis. Monitoring was therefore established under Plant Level Criteria for Unplanned Capability Loss Factor (loss of available indication could result in a Technical Specification required shutdown). The high hydrogen alarm was also monitored as one of a group of annunciators which indicate a possible EOP entry condition. As a result of the comments provided by the NRC staff via the on-site inspection and further documented in NRC IR 97015, it has been concluded that the above monitoring of the Hydrogen-Oxygen Analyzers was not sufficiently sensitive.

2. **CORRECTIVE STEPS THAT HAVE BEEN TAKEN AND THE RESULTS ACHIEVED**

VIOLATION PART (a)

Train level reliability monitoring of the SBT system has been instituted to more effectively evaluate the effectiveness of preventive maintenance in maintaining train functional reliability. Based on the revised criteria and the train performance, the system has been designated as specified in §50.65(a)(2). A review of the other Performance Criteria in the program found no similar problems, or evidence the error was systematic in nature.

VIOLATION PART (b)

To enhance the monitoring of this low safety significant system, reliability criteria have been established for the Fuel Handling Equipment system functions of prevention of inadvertent criticalities via interlocks and prevention of a fuel bundle drop, in order to ensure the effectiveness of preventive maintenance on this system is properly evaluated, and is predictive in nature. Based on the revised criteria and the system performance, the system has been designated as specified in §50.65(a)(2). A review of the other Performance Criteria in the program found no similar issues.

VIOLATION PART (c)

Performance Criteria have now been established at the system and train level for the Reactor Building Sump System to ensure the effectiveness of preventive maintenance on the system is properly evaluated, without first requiring extended equipment inoperability due to flooding. Based on the current performance, the system has been

designated as specified in §50.65(a)(2). A review of the other Performance Criteria in the program found no similar issues.

VIOLATION PART (d)

Availability and Reliability Performance Criteria at the system and train level have now been established for the Hydrogen - Oxygen Analyzers to ensure effectiveness of preventive maintenance on this equipment is properly evaluated. Based on the Performance Criteria established, the Hydrogen - Oxygen Analyzers have been designated as specified in §50.65(a)(1). Corrective actions to improve performance are in progress. A review of the other Performance Criteria in the program found no similar issues.

3. CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

The corrective actions discussed above are considered adequate, and therefore no further actions to avoid further violations are planned.

4. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

VIOLATION PART (a)

Full compliance was achieved on October 30, 1997 with the institution of train level monitoring of SBT reliability by the DAEC Expert Panel.

VIOLATION PART (b)

Full compliance was achieved on November 24, 1997 with the institution of reliability criteria by the DAEC Expert Panel for the Fuel Handling Equipment System functions of prevention of inadvertent criticalities via interlocks and prevention of a fuel bundle drop.

VIOLATION PART (c)

Full compliance was achieved on November 24, 1997 with the establishment of Performance Criteria at the system and train level by the DAEC Expert Panel for the Reactor Building Sump System to ensure the effectiveness of preventive maintenance on the system is properly evaluated, without first requiring extended equipment inoperability due to flooding.

VIOLATION PART (d)

Full compliance was achieved on November 24, 1997 with the institution of availability and reliability Performance Criteria at the system and train level by the DAEC Expert Panel for the Hydrogen - Oxygen Analyzers to ensure effectiveness of preventive maintenance on this equipment is properly evaluated.