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April 4, 1997  
NG-97-0581

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 Inspection Report 96013  
File: A-105, A-102

Dear Sir:

This letter and attachment are provided in response to the Notice of Violation transmitted with NRC Inspection Report 96013.

This letter contains no new commitments.

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

Sincerely,

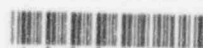
John F. Franz  
Vice President, Nuclear

Attachment: Reply to a Notice of Violation Transmitted with Inspection Report 96013

cc: R. Murrell  
L. Root  
G. Kelly (NRC-NRR)  
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**IES Utilities Inc.**  
**Reply to a Notice of Violation**  
**Transmitted with Inspection Report 96013**

**VIOLATION ONE**

Duane Arnold Energy Center (DAEC) Technical Specifications (TS) 3.2.A, Table 3.2-A requires the Main Steam Line Radiation trip level setting to be  $\leq 3x$  Normal Rated Power Background. The table requires a minimum of 2 (out of 2) operable channels per trip system. The action statement for less than 2 operable channels requires the channels to be restored within 6 hours or be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

Contrary to the above, from November 24 to December 18, 1996, with reactor power at approximately 100 percent rated power, the Main Steam Line Radiation Monitors (MSLRMs) were set greater than  $3x$  Normal Rated Power Background and appropriate actions were not taken. Specifically, the monitors were set at 1800 mR/hr while background radiation was typically 150-200 mR/hr.

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

**RESPONSE TO VIOLATION ONE**

**1. REASON FOR THE VIOLATION**

During Refueling Outage (RFO) 14, the Duane Arnold Energy Center (DAEC) performed Noble Metal Chemical Addition (NMCA). This is a first of a kind process which will provide corrosion protection of vessel internals with decreased Hydrogen Water Chemistry (HWC) injection rates. This will result in lower radiation dose rates at the facility.

On January 15, 1997, it was determined that the DAEC failed to meet the requirement of Technical Specifications (TS) Table 3.2-A, in that the Main Steam Line Radiation Monitors (MSLRMs) were not set to trip at  $\leq 3 \times$  Normal Rated Power Background. The MSLRMs were set to trip at a setpoint of 1800 mR/hr from startup from RFO 14 (November 16, 1996) until December 18, 1996. This setpoint corresponded to a Hydrogen Water Chemistry (HWC) injection rate of 15 scfm (previous cycle injection rate). HWC injection rates after startup were approximately 6 scfm from November 20 until December 18, 1996, except for periods of testing. Radiation readings in the vicinity of the Main Steam Lines (MSLs) were approximately 150 mR/hr with HWC set at an injection rate of approximately 6 scfm, hence the trip setpoint should have been approximately 450 mR/hr ( $3x$ ). TS Table 3.2-A states: "If the minimum operable channels per trip system" cannot be met,

then follow action statement 21. Action statement 21 requires the plant to be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours. Although the MSLRM setpoint of 1800 mR/hr was conservative with respect to the design basis, it was non-conservative with respect to TS. DAEC failed to meet this TS requirement between November 24, 1996 (when rated power was reached) and December 18, 1996.

The root cause of this event is less than adequate implementation of the post-outage NMCA test. The test failed to establish provisions for timely interim re-establishment of "Normal" radiation levels and the corresponding setpoint change prior to placing HWC in service for startup from RFO 14. The DAEC staff accepted a definition of "Normal" that had been established based on historical operating parameters. Prior to startup from RFO 14, it was understood that there would be a need to adjust the MSLRM set points to correspond with a different HWC injection rate. The injection rate would be dependent upon a General Electric (GE) evaluation of the results of the post-Noble Metal Chemical Addition test. This test required HWC to be varied to determine the effectiveness of Noble Metal Chemical Addition. It was anticipated that the new value of "Normal" would not be established (by GE) until January, 1997. While the planning recognized that changes were likely to occur in HWC injection rates, the DAEC staff focused on the design basis safety function of the MSLRMs and did not fully recognize the interim operation at lower HWC rates as establishing a new "Normal" value in accordance with TS.

## **2. CORRECTIVE ACTIONS TAKEN AND THE RESULTS ACHIEVED**

On December 18, 1996 the HWC injection rate was raised to 15 scfm to ensure that the MSLRMs were set in accordance with TS.

On December 21, 1996, Engineering Maintenance Action A27877 lowered the MSLRM set points to match the GE recommended HWC injection rate and HWC injection rate was reduced. Surveillance Test Procedures were revised to reflect the revised setpoints for future calibrations.

DAEC's conversion to Improved Standard Technical Specifications is currently on the docket. The proposed MSLRM set point will be a value consistent with the design basis. This corrective action will eliminate the ambiguity surrounding the word "Normal."

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

All corrective actions to prevent further violations have been completed.

4. **DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED**

Full compliance was achieved on December 18, 1996, when the HWC injection rate was raised to 15 scfm to ensure that the MSLRMs were in accordance with TS.

**VIOLATION TWO**

Criterion XI of 10 CFR Part 50, Appendix B requires, in part, that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable documents.

Contrary to the above,

- a) From March 27 to December 30, 1996, daily Surveillance Test Procedure (STP) 42D011, "Radiation Monitor Sensor Check," failed to incorporate correct acceptance limits for the offgas radiation hi-hi level alarm. As a result, technicians used an uncontrolled reference sheet which listed an outdated and incorrect value for the offgas stack radiation alarm.
- b) From October 25 to December 8, 1996, STP 42A001, "Instrument Checks," failed to incorporate the correct acceptance limits. As a result, operators used incorrect acceptance limits when performing a daily surveillance of the emergency service water temperatures.

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

**RESPONSE TO VIOLATION TWO**

1. **REASON FOR THE VIOLATION**

**VIOLATION 2a**

On December 30, 1996, a chemistry technician performed STP 42D011, "Radiation Monitor Sensor Check." The technician performing the STP used an informal reference sheet during the completion of the surveillance. It was determined that the reference sheet listed an incorrect value for the Offgas Vent Pipe HI-HI Radiation Alarm setpoint. This value was used to determine if any alarm setpoints had been reached. There was no operability concern because the incorrect value for the setpoint was in the conservative direction.

### **VIOLATION 2b**

The quarterly performance of Emergency Service Water (ESW) STP 48E001-Q, "Emergency Service Water Quarterly Operability Test," determined the maximum allowable river water temperature that would support ESW system operability. STP 42A001, "Instrument Checks," compared actual river water temperature to this maximum allowable value. On October 25, 1996, operators failed to record the data on the "Emergency Service Water Temperature" log sheet. Subsequently, operators transferred the incorrect data to the STP 42A001. As a result, the acceptance criteria used in STP 42A001 (91.8°F for "A" and 93°F for "B") were not the actual values (90.5°F for "A" and 94.3°F for "B"). During this period actual river temperature was significantly below the limit and there was low safety significance associated with the use of the incorrect acceptance criteria.

## **2. CORRECTIVE ACTIONS TAKEN AND THE RESULTS ACHIEVED**

### **VIOLATION 2a**

An Action Request was initiated as part of DAECs corrective action program and STP 42D001 was verified to contain the correct acceptance criteria.

Chemistry technicians were instructed to stop using the uncontrolled document. Instructions were given on how to perform the applicable steps of the STP without the informal reference sheet.

### **VIOLATION 2b**

An Action Request was initiated as part of DAECs corrective action program. The most recent river water temperature limits for ESW operability were recorded in STP 42A001 and operations ESW log. River water temperature was verified to be less than the temperature limits for ESW operability.

STPs 48E001-Q and 42A001 were revised to control the recording and transcribing of the limiting river water temperature for ESW operability.

Additionally, an Action Request was initiated to review the need for additional corrective actions. As a result of this review, the following corrective actions have been taken:

- ☐ Information was disseminated to site personnel stressing the need to utilize self checking techniques when transferring data from one document to another, the need for reviewers to be aware of the possibility of transcribing errors, and the

need to ensure that placing data on an intermediary document or status board is controlled procedurally.

- ☐ Revised the STP writers guide to provide guidance on the use and control of data on intermediary documents or status boards as well as when it is being transferred from one STP to another STP.
- ☐ Informed all STP owners of the above additional corrective actions.

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

All corrective actions to prevent further violations have been completed.

4. **DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED**

**VIOLATION 2a**

Full compliance was achieved on January 24, 1997, when STP 42D011 was verified to contain correct acceptance criteria and that no operability concern existed.

**VIOLATION 2b**

Full compliance was achieved on December 8, 1996, when STP 42A001 was updated with the correct river water temperature limits.