

Iowa Electric Light and Power Company

March 23, 1984
NG - 84 - 1302

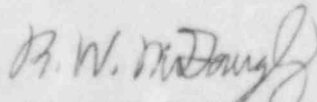
Mr. James G. Keppler
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Response to NRC Inspection Report 84-02

Dear Mr. Keppler:

This letter is provided in response to Mr. C. E. Norelius' letter concerning an inspection of activities at the Duane Arnold Energy Center conducted on January 3 through 31, 1984. Attachment 1 provides the subject response in accordance with your request.

Very truly yours,



Richard W. McGaughy
Manager, Nuclear Division

RWG/MSH/pv*

Attachment: Response to IR 84-02

cc: M. Harris
L. Liu
S. Tuthill
M. Thadani
NRC Resident Inspector
Commitment Control
File A-102, NRC-4

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Response to IR 84-02

Attachment 1

NRC Item of Non-Compliance

Technical Specification 6.8.1 states in part, "Detailed written procedures involving nuclear safety ...shall be prepared...All procedures shall be adhered to." Surveillance Test Procedure BS-12, "Low Low Set Instrument Functional Test and Calibration," Step 4.7. states in part, "Monitor PS-4544 using terminals GG-2 and GG-9 with VOM (Volt Ohm Meter) selected for ohms."

Contrary to the above, the VOM was connected at step 4.1 causing main steamline safety relief valve PSV-4401 to open contributing to a reactor scram.

Response to Item of Non-Compliance

1. Corrective action taken and the results achieved:

While performing a monthly Low Low Set Instrument Functional Test and Calibration, BS-12, the instrument technician performing the procedure erroneously placed an ohmmeter across the high pressure switch contacts too early in the test sequence. As a result, the PSV-4401 actuation solenoid relay was falsely energized which, in conjunction with the procedure step to push the test button, caused the valve to open. Approximately 75 seconds after the valve had opened, the operators reset the Low-Low Set logic, thereby disarming the solenoid and the valve closed. It was later determined that due to the relatively low internal impedance of the ohmmeter, the meter acted as a jumper and bypassed the contacts. This event is described in detail in DAEC LER 84-01 dated February 6, 1984.

Immediate diagnosis of the cause of the SRV opening was greatly aided by the instrument technician's prompt identification that he had committed an error. Prior to resumption of the surveillance procedure, the instrument technician was informed of the gravity of his error and instructed to exercise more caution in the future.

After demonstrating that the inclusion of the ohmmeter at the wrong step was in fact the cause for lifting the valve, the procedure was revised to utilize a voltmeter in lieu of an ohmmeter to test the circuitry. This revision will eliminate the possibility of the meter acting as a jumper in the circuit while under test, regardless of when it is connected.

Prior to plant restart after the event, all the instrument technicians were assembled and shown, during a step by step reconstruction, the exact cause of the event and the steps leading up to it. Throughout the meeting, it was impressed upon them the importance of procedural compliance without deviating from the prescribed testing sequence. Briefings to all plant personnel were held on February 27 and 28 to discuss personnel errors and the importance of preventing them. Additional corrective action relative to minimizing personnel error is identified in Item 2, below.

Attachment 1

Response to Item of Non-Compliance (cont.)

2. Corrective action to be taken to avoid further Non-Compliance:

There is presently a program underway to review and revise Surveillance Test Procedures with multiple channel formats. In order to reduce the margin for technician error, the applicable STP's are being revised to more clearly define the instrument or function being tested and to include instructions on each worksheet. (Current procedures contain a list of the instructions at the front of the test package followed by sequential data sheets.) Of the ninety-eight (98) STP's under consideration for revision, forty-three (43) revisions have been completed. The multiple channel tests previously considered most prone to error are included in these forty-three (43) STP's. As a result of these revisions it is anticipated that a substantial reduction in personnel errors during the performance of Surveillance Test Procedures can be recognized.

An engineering study has been implemented to study the feasibility and desirability of modifications to reduce the use of temporary jumpers and complicated test sequences (see LER 83-042). The feasibility and extent to which these methods can be applied to future DAEC modifications, or backfit to existing circuits, has yet to be determined. The study has so far revealed a variety of equipment and methods which could be implemented. Some ideas which are presently being explored are the use of sheathed male test jumpers only, special tags for all terminal points and leads which are frequently tested, and the installation of permanent test switches.

After an earlier scram on 11/08/83 and a review of personnel error trends, it was apparent that the personnel errors were experienced in cycles. The occurrence of several personnel errors is usually followed by a period with few or no personnel errors due to a heightened awareness of procedural compliance and error prevention. It appears that after some time with no significant errors, the issue of error prevention may not be as heavily emphasized. Technicians and other maintenance personnel become less aware of the issue and a new group of personnel errors is experienced. In light of the cyclic occurrence of these errors and the number now being experienced, a task force of personnel from various disciplines at DAEC has been formed to identify and recommend methods of maintaining a consistent, heightened awareness of the importance of procedural compliance and minimizing personnel errors. Task force recommendations are scheduled to be issued in early April.

Attachment 1

Response to Item of Non-Compliance (cont.)

3. Date when full compliance will be achieved:

As outlined above, the subject Non-Compliance was immediately addressed and resolved on 01/07/84 achieving full compliance. Actions to minimize personnel errors will continue as an ongoing activity.