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 DAVIS, A.B. Region 3, Ofc of the Director

SUBJECT: Responds to violations noted in Insp Rept 50-331/90-06.

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Iowa Electric Light and Power Company

May 11, 1990
NG-90-1269

Mr. A. Bert Davis
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 Notice of Violation
Transmitted with Inspection Report 90006

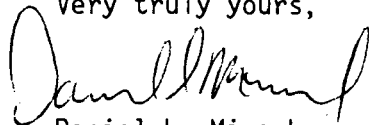
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Dear Mr. Davis:

This letter and attachment are provided in response to the Notice of Violation concerning certain activities at the Duane Arnold Energy Center.

If you have any questions regarding this response, please feel free to contact our office.

Very truly yours,



Daniel L. Mineck
Manager, Nuclear Division

DLM/JRP/gt

Attachment: Response to Notice of Violation
Transmitted with Inspection Report 90-006

cc: U. S. NRC Document Control Desk (Original)
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Iowa Electric Light and Power Company
Response to Notice of Violation
Transmitted with Inspection Report 90-006

NRC NOTICE OF VIOLATION 1

"10 CFR 20.201(b) requires that each licensee make or cause to be made such surveys as (1) may be necessary for the licensee to comply with the regulations in 10 CFR Part 20 and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present. 10 CFR 20.201(a) defines a survey as an evaluation of the radiation hazards incident to the production, use, release, disposal or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present.

Contrary to the above, on November 11, 1989, surveys necessary and reasonable under the circumstances to ensure compliance with the occupational dose limits of 10 CFR 20.201, were not made prior to workers handling and remaining in the near vicinity of highly radioactive intermediate range monitor (IRM) cables immediately following IRM extraction from the core in that:

- a. The radiation hazards expected to be present had not been properly evaluated in that the short-lived radioactive products in the IRM cables had not been adequately recognized and quantified during pre-job planning.
- b. Work area radiation surveys were inadequate to identify the B-IRM cable (125 R/hr on contact) as a radiation hazard upon removal from the reactor vessel and prior to handling.
- c. Work area radiation surveys were inadequate to quantify the F-IRM cable dose rate (1000 R/hr on contact) upon removal from the reactor vessel and prior to handling.

This is a Severity Level IV Violation (Supplement IV)."

NRC NOTICE OF VIOLATION 2

"Technical Specification 6.8.1 requires that written procedures involving nuclear safety, including applicable check off lists and instructions for preventive and corrective maintenance operations which could have an effect on the nuclear safety of the facility, be prepared, approved, implemented, and maintained. Administrative Control Procedure No. 1407.1, Control and Accounting of Special Nuclear Material, Step 6.3.1 implements this requirement and provides that the removal/installation of source range monitors and intermediate range monitors be performed per the SRM/IRM Repair Procedure. The repair procedure, No. MECFUN-G080-003, General Electric IRM/SRM Detectors, is applicable only to IRMs and/or SRMs known to have been stuck in the core during normal power production, removed from the core area and allowed to decay for at least six weeks prior to removal from the reactor vessel.

Contrary to the above, on November 11, 1989, workers removed from the core and the reactor vessel, less than three days after reactor shutdown, IRMs known to have been stuck in the core during normal power production by improperly attempting to implement Maintenance Department Repair Procedure No. MECFUN-G080-003. Also, the licensee did not prepare, approve, and implement a procedure, with applicable instructions, which was relevant to removal, soon after the reactor shutdown, of IRMs which were known to have been stuck in the core during normal power production.

This is a Severity Level IV Violation (Supplement IV)."

1. RESPONSE TO NOTICE OF VIOLATION 1

The administrative overexposure which occurred on November 11, 1989 during Intermediate Range Monitor (IRM) detector and cable removal was promptly recognized by plant management as an event requiring significant attention. An independent review team was formed and extensive investigations were conducted. It was determined that surveys necessary to ensure compliance with the occupational dose limits were not adequately performed due to poor review and communication of the hazards of irradiated in-vessel cabling, and because of incomplete surveys performed during and after the cable removal.

Several principal deficiencies were found to be keys to the occurrence of the administrative overexposure. Previous industry operating experience on cable removals (NRC Information Notice 88-63) had not been adequately reviewed. Previous plant experience with in-core detector removals had not been sufficiently reviewed for lessons learned. Informal computations performed for the planned work which indicated the likelihood of the detector cabling being a significant radiation source were not well communicated to, or fully understood by, the ALARA job planners. As a result, workers in the field were not aware of the potential for the detector cabling to be a significant radiation source. In addition, during and after the removal of the cable itself, area surveys to determine the current radiological conditions were not adequately performed.

a. Violation 1a:

1) Corrective Actions Taken and the Results Achieved:

To ensure adequate recognition and quantification of radiation hazards during future activities, a number of corrective actions have been implemented. Specific to the cable removal in question, the Information Notice on this topic was re-reviewed. The SRM/IRM detector removal procedure was subsequently modified to explicitly note the possibility of highly radioactive cabling. Continuous monitoring of the cable as it is withdrawn and monitoring of the final collection area for the cable is now required by the procedure. The SRM/IRM procedure has also been clarified to state that components must be withdrawn from the core for at least one week prior to the start of work, with exceptions only upon the approval of the Health Physics Supervisor.

An ALARA job history file has been created for the cable removal activity. This file will provide a source of information on plant and industry experience that was previously not readily available

for ALARA job planning. On-going creation of ALARA job history files for significant radiological evolutions will collect information for future ALARA job planning.

To aid in evaluation of industry operating experience, procedures controlling operating experience reviews have been upgraded to better detail the methodology needed for performing a satisfactory review. To ensure results of radiological pre-planning computations are clearly communicated, they must now be formally transmitted to the ALARA job planners.

As an additional corrective action to ensure adequate awareness of radiation levels by workers in the field, alarming dosimetry is now required without exception for work in locked high radiation areas. A remote handling cable take up reel has also been obtained. This device significantly reduces the personnel contact with the in-core cable and detector necessary during removals.

2) Corrective Actions to be Taken to Prevent Recurrence

General staff training on communication skills and improved methodology for reviewing industry operating experience is currently being conducted. This training will be complete by June 15, 1990. An effectiveness review of the industry operating experience program will be conducted in July, 1990.

3) Date When Full Compliance Will be Achieved

Full compliance was achieved on November 12, 1989, with completion of a full survey of the work area.

b. Violation 1b and 1c:

1) Corrective Actions Taken and the Results Achieved

To ensure that work area radiation surveys are adequate to promptly identify radiation hazards, a number of corrective actions have been taken. The potential for in-vessel cabling to be highly radioactive is now included in the initial Health Physics Technician (HPT) training and has been discussed in HPT continuing training. To address the potential for future generic surveying problems, during the most recent continuing training cycle for HPTs the administrative overexposure event was reviewed and surveying practices discussed. The need for resurveying areas while a job progresses, especially in cases with the potential for a quick change in dose rates, was stressed. This training will be repeated on a regular basis. A recently implemented program under which radiological engineers in Radiation Protection periodically observe and critique Health Physics work coverage will help to ensure that surveying practices in the field are adequate.

2) Corrective Actions to be Taken to Prevent Recurrence

Initial Health Physics Technician training regarding surveying and bagging practices is currently under review. Course upgrades will

be initiated by June 15, 1990. This upgraded material will be included in the next course conducted on surveying practices.

3) Date When Full Compliance Will be Achieved

Full compliance was achieved on November 12, 1989, with completion of a full survey of the work area.

2. RESPONSE TO NOTICE OF VIOLATION 2

As noted in the response to Violation One, following the referenced event Iowa Electric initiated extensive reviews to identify its root causes and initiate appropriate corrective actions. Use of a procedure which was not applicable to the work activity resulted from an inadequate understanding and incomplete evaluation of the limitations of the SRM/IRM removal procedure. In addition, work plans developed to minimize doses due to the known high dose rates of the IRM detector were not incorporated into the final, formalized work package. As discussed in the response to Violation One, the radiological hazard represented by the detector cabling was not recognized during ALARA job planning.

a. Corrective Actions Taken and the Results Achieved:

As previously noted in the response to Violation 1a, the SRM/IRM detector removal procedure has been modified to explicitly note the possibility of highly radioactive cabling. The procedure has also been modified to provide additional guidance on its use and applicability for removal of components from the reactor core and on surveys needed to ensure adequate radiological control.

A pre-job review of work instructions by ALARA and maintenance personnel is now required to ensure the completeness and applicability of procedures to be used for activities with a potential for significant exposure. Criteria used to determine the need for these pre-job work instruction reviews include work where anticipated doses to a single individual are expected to exceed 300 millirem during a single entry, and work with anticipated indexed dose rates in excess of 50 mr/HR. When ALARA pre-job meetings are deemed warranted for other reasons, a review of work instructions will be required as well. These pre-job work instruction reviews will cover procedural controls and provide an opportunity for additional Health Physics hold points and precautions to be included in the written job instructions or as an addendum to the Radiation Work Permit if circumstances warrant.

The referenced event has been reviewed with maintenance personnel, and the procedural inadequacy discussed. This training included a discussion of the necessity for reviewing work controls and procedures to be used and augmenting them as necessary with temporary instructions to ensure adequate job control. This training will be repeated on a regular basis.

b. Corrective Actions to be Taken to Prevent Recurrence

To ensure a broad-based understanding of the lessons learned from this event regarding procedural applicability, training on the referenced event is also currently being provided to the general plant staff. This training includes a discussion of the need for a full review and

understanding of work instructions prior to implementation to ensure they are applicable to the circumstances of the job. This training will be complete by June 15, 1990. It will be routinely repeated.

c. Date When Full Compliance Will be Achieved

Full compliance was achieved with the revision of the SRM/IRM detector replacement procedure, on March 30, 1990.