

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-346/88014(DRS)

Docket No. 50-346

License No. NPF-3

Licensee: Toledo Edison Company
Edison Plaza
300 Madison Avenue
Toledo, OH 43652

Facility Name: Davis-Besse, Unit 1

Inspection At: Oak Harbor, Ohio

Inspection Conducted: May 9-13, 1988

Inspector: *Beth A. Azab*
B. A. Azab

6/7/88
Date

Approved By: *M. P. Phillips*
M. P. Phillips, Chief
Operational Programs Section

6/7/88
Date

Inspection Summary

Inspection on May 9-13, 1988 (Report No. 50-346/88014(DRS))

Areas Inspected: Routine announced safety inspection of defueling activities (60710).

Results: One unresolved item was identified which involved a modification to the fuel grapple on the three fuel handling bridges. One violation was identified for permitting a fuel handler to operate equipment on which he was not adequately trained.

DETAILS

1. Persons Contacted

Toledo Edison Company

- *L. F. Storz, Plant Manager
- *R. Brandt, Operations Superintendent
 - D. Erickson, Radiation Protection Manager
 - R. Flood, Assistant Plant Manager, Operations
- *G. A. Gibbs, Performance Engineering Director
 - G. Honma, Compliance Supervisor
- *S. C. Jain, Independent Safety Engineering Director
- *J. Magers, Licensing
- *J. E. Moyers, Quality Verification Manager
- *R. W. Schrauder, Nuclear Licensing Manager
- *D. Schreiner, Operations Assessment Supervisor
- *R. Simpkins, Operations Training Manager
 - P. Timmerman, Operations Training

USNRC

- *P. Byron, Senior Resident Inspector
- *D. Kosloff, Resident Inspector

The inspector also interviewed other licensee personnel during the course of the inspection including members of the operations and technical staffs.

*Denotes persons attending the exit meeting of May 13, 1988.

2. Procedure Review

The inspector reviewed a number of completed procedures relating to defueling activities for procedural adequacy and compliance with Technical Specifications, particularly Section 3/4.9 which deals with refueling operations. The following procedures were reviewed and found adequate:

- DB-PF-03393, "Fuel Handling Bridge Load Test," Revision 0, performed May 9, 1988.
- PT 5181.01, "Fuel Handling Equipment Periodic Test," Revision 5, completed May 9, 1988.
- ST 5091.01, "Source Range Nuclear Instrumentation Functional Test," Revision 10, completed for both channels on May 9, 1988.
- ST 5092.02, "Core Alteration Prerequisites and Periodic Checks," Revision 2, performed May 9-13, 1988.

- PP 1502.04, "Fuel/Control Component Shuffle," Revision 9, performed May 9-13, 1988.
- ST 5099.01, "Miscellaneous Instrument Shift Check," a sample of shiftly surveillances from April 24 through May 2, 1988.

No violations or deviations were identified in this area.

3. Defueling Activities

Core alterations began at 2025, May 9 and were completed the morning of May 13, 1988. The inspector witnessed activities performed during both of the two daily shifts of fuel handlers in the reactor cavity area and spent fuel pool (SFP) area. The inspector also observed activities in the control room during fuel moves. The following are discussions of specific inspector observations:

- a. The inspector witnessed good housekeeping practices in both the spent fuel pool area and reactor cavity area. The areas were kept clear of debris and any waste generated from work being performed was immediately deposited in a waste bag located in each area. A materials exclusion area was established around the reactor cavity by placing a person on watch to log any loose items that were taken near the cavity.
- b. During core alterations, the inspector observed numerous changes made to the "Fuel Movement Sequence Sheets," which were attachments to Procedure PP 1502.04, "Fuel/Control Component Shuffle." The sequence sheets were developed by the performance engineering group prior to core alterations and specify each component to be moved, its initial and final location and the bridge and transfer mechanism to be used. Procedure PP 1502.04 allowed changes to be made to the sequence sheets provided the Refueling Director and the Operations Assessment Supervisor or his designee concurred. The inspector witnessed some changes being made during fuel moves without adequate reviews and brought it to the attention of licensee management. Subsequently, the inspector observed an improvement in the control of changes made to the sequence sheets; demonstrated by more communication between the Refueling Director and the Operations Assessment Supervisor's designee and a more formal review of the change to verify that it would not adversely affect future movements.
- c. Most of the changes made to the sequence sheets were the result of a problem with a modification that was made to the fuel grapple on all three bridges. The grapples were modified so they could grasp Mark 4 fuel assemblies which contain Mark 5 burnable poison rod assemblies (BPRAs). The assemblies with this particular combination were of a slightly different design and could not be picked up by the old grapples. The new grapples failed to grasp the component configuration they were modified for; and the sequence sheets were

revised to ensure no fuel shuffling resulted in that particular combination of components. The licensee suspected that the fingers on the grapple were not long enough to grasp the Mark 4 fuel assembly and Mark 5 BPRA combination. They planned to evaluate the engineering involved in the modification and use an underwater camera to view the evolution of the grapple attempting to grasp the fuel assembly. A member of the licensee's staff stated that the grapple was tested on a dummy fuel assembly prior to defueling activities; however, it could not be tested on the component configuration it was modified for because all of the Mark 5 BPRA's were in the reactor core.

This is considered an unresolved item (346/88014-01(DRS)) pending the results of the licensee's evaluation of the modification and an NRC evaluation of the adequacy of the post modification testing.

- d. An incident occurred during fuel movements on the day shift of May 10. A fuel assembly was in the process of being moved from the reactor by the main fuel handling bridge when it struck a core support assembly guide lug, which was in a direct path with a fuel transfer basket. The licensee verified that the fuel assembly was retracted to its maximum height within the mast and that the height limit was set properly. There were no interlocks associated with the core support assembly guide lug because the designed clearance was approximately 3/4 inch. However, the licensee determined that this fuel assembly expanded a sufficient amount for it not to clear the guide lug.

Core alterations were immediately suspended and an underwater camera was used to examine the fuel assembly. The fuel assembly had a small nick on the lower end fitting, but no other damage was observed. The fuel assembly was in the core for three cycles and was not scheduled to be put back into the reactor. Core alterations were resumed with directions to the operators to avoid travel directly over the guide lug to preclude another such incident. The inspector observed that subsequent fuel moves bypassed travel over the guide lug.

- e. The inspector observed some inconsistencies with a step-off-pad located near the reactor cavity. The radiation work permit (RWP) for refueling personnel required one set of rubber gloves and shoe covers. However, the step-off-pad required removal of one set of rubber gloves and shoe covers when leaving the reactor cavity area, thereby inferring that two sets of protective clothing were to be worn into the area. The inspector observed several refueling personnel confused about the clothing requirements when crossing the step-off-pad. The inspector brought this to the attention of the Radiological Control Foreman who revised the RWP. Later, the Step-off-pad was removed completely because the reactor cavity area was not a high contamination area and the step-off-pad was unnecessary.

- f. The inspector observed a fuel handler experiencing difficulties with fuel handling equipment during core alterations in containment. The operator in question was moving control components with the auxiliary fuel handling bridge and appeared to be unsure of his duties. A performance engineer was on the bridge with the operator to assist him. It should be noted that performance engineers are not qualified to operate fuel handling equipment, but are very knowledgeable about the equipment and conduct training on the operation of fuel handling equipment. During this time, the inspector was not on the auxiliary fuel handling bridge and, therefore, could not observe the specifics of the fuel handlers difficulties nor could she hear the conversation between the operator and the performance engineer.

The operator was relieved from the auxiliary bridge and went on an hourly fire watch. After returning from the fire watch, he assumed the controls of the fuel transfer system. The inspector was standing next to the fuel transfer controls and was able to observe the operator's actions. For several consecutive manipulations, the fuel handler was unsure of which button or control to operate and asked the Refueling Director for his assistance each time a control was to be manipulated. Based on the inspector's observations, it was apparent that the fuel handler was not sufficiently knowledgeable in how to operate the equipment that he was assigned to operate. The operator told the inspector that his duties at that time were those of "Spotter." However, he was operating the fuel transfer mechanism at the time.

The inspector reviewed the training records of the individual in question and discovered that he had qualified to operate fuel handling equipment four years ago and had not received hands-on training since then. Prior to this refueling outage, both classroom and hands-on training were given to the fuel handlers, primarily to instruct them on the modifications made to the equipment. All fuel handlers were administratively required to attend. However, when reviewing training records at the inspector's request the licensee discovered that the operator in question as well as another person, who had not yet handled fuel, did not attend the hands-on training entitled "Control Rod Mast Modification."

Section 15.4.1.1 of the Nuclear Quality Assurance Manual states, in part, that initial and continuing training programs shall be established for Nuclear Group and support personnel to ensure that they are knowledgeable of applicable equipment and capable of performing the assigned duties of their intended position. Procedure PP 1501.01, "Fuel Loading and Refueling Limits and Precautions," states in Section 5.4.1 that refueling personnel must be thoroughly trained in the use and maintenance of handling equipment and tools which they will use or be responsible for. Although the operator did receive the required training on the equipment which qualified him to be a fuel handler in 1984, his performance demonstrated that he did not receive sufficient

subsequent training to maintain proficiency in the operation of the equipment. The operator's actions indicated that he was not thoroughly trained in the use of fuel handling equipment nor capable of performing his assigned duties as required by procedure. This is considered a violation (346/88014-02(DRS)) of Technical Specifications Section 6.8.1.b which requires that written procedures covering refueling activities be implemented.

One unresolved item and one violation were identified in this area.

4. Quality Assurance Effectiveness

The licensee conducted an extensive quality verification audit of the defueling activities which included a six member team observing fuel handling with daily surveillance reports of their findings. The team included the technical expertise of a nuclear engineer and a former performance engineer. The team had some observations similar to those of the NRC inspector, including the poorly controlled and frequent changes to the "Fuel Movement Sequence Sheets."

The quality verification team did not have 24 hour coverage of fuel handling, but frequently observed on all shifts. No member of the team was present in containment during the time period when the inspector witnessed the operator experiencing difficulties manipulating equipment. The quality verification team asked the Operations Department if the fuel handlers received training on the modifications to the equipment. The Operations Department stated that training was supplied; however, no one reviewed the training attendance sheets to verify that all the fuel handling personnel received the training. In this respect, the quality verification was incomplete, and failed to identify the individuals who had not received the hands on training.

No violations or deviations were identified in this area.

5. Unresolved Items

Unresolved Items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An unresolved item disclosed during this inspection is discussed in Paragraph 3c.

6. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on May 13, 1988, and summarized the scope and findings of the inspection. The licensee acknowledged the statements made by the inspector with respect to the violation (denoted in Paragraph 3f). The inspector also discussed the likely informational content of the inspection report with respect to documents or processes reviewed by the inspector during the inspection. The licensee stated that no material reviewed by the inspector was considered proprietary.