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UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
WASHINGTON, D.C. 20555

August 4, 1981

IE INFORMATION NOTICE NO. 81-23: FUEL ASSEMBLY DAMAGED DUE TO IMPROPER
POSITIONING OF HANDLING EQUIPMENT

Description of Circumstances:

On June 19, 1981, a spent fuel assembly at the D. C. Cook Unit 1 facility was damaged while being transferred in the refueling cavity when the lower end of the assembly struck a ledge outside of the reactor vessel. During lifting of the fuel assembly from the core the two air lines and the electric cable serving the gripper tangled and caught the gripper-tube-up position switch, closing it before the gripper tube and attached fuel assembly were in the full-up position inside the cannister. Closing the switch cleared the interlock and allowed lateral movement of the manipulator crane. The lower end of the fuel assembly protruded below the cannister and it struck the ledge on the refueling cavity floor just outside the reactor vessel area. Several rods in the fuel assembly were damaged, and one rod was dislodged and fell from the assembly onto the refueling cavity floor. No release occurred as a result of the damaged rods, even though the dislodged rod was severely bent. However, considerable time was lost due to efforts to recover the dislodged rod and to move the damaged fuel assembly out of the refueling cavity. Discussions with refueling personnel indicate that tangling of the air lines and electric cable is not an uncommon occurrence. For example, manipulator crane operators frequently must shake the gripper tube lines and cables to obtain a signal that the gripper has correctly engaged the fuel assembly.

Stearns Roger, manufacturer of the manipulator crane, has previously proposed modifications to improve the cranes, especially the earlier models. One of these modifications was the addition of the Z-axis tape that provides positive indication of the vertical position of the gripper tube assembly (and thus the fuel assembly). The D. C. Cook manipulator cranes have the Z-axis tapes, but the operator(s) involved in the subject event apparently did not check the tape to verify the position of the assembly before initiating lateral movement.

The licensee has revised the fuel handling procedure to require the manipulator crane operators to check the Z-axis tape in addition to the limit lights to verify the fuel assembly is in the full-up position before the crane is moved. (It has always been required by D. C. Cook procedures to utilize the tape to verify that the fuel assembly is in the full-down position before the gripper is disengaged.)

A related event involving improper vertical positioning of the gripper tube assembly occurred at the Point Beach Unit 2 facility during the April-May 1981 refueling outage. The gripper fingers were extended in the latch position underneath the leaf spring of the fuel assembly rather than under the top plate of the top nozzle. Again, the problem could have been avoided by checking the Z-axis tape.

All licensees and construction permit holders, particularly those with similar manipulator cranes, may wish to make equipment modifications to reduce the potential for this type of event. In addition, operating procedures should be reviewed to assure that all available indications are fully utilized (i.e., the Z-axis tapes, visual observation of the air lines and electrical cables, underwater visual observation using binoculars of movement of the fuel assemblies) to prevent this type of occurrence.

This Information Notice is provided as a notification of a possible generic problem. It is expected that recipients will review the information for possible applicability to their facility. It is also expected that copies of this Information Notice will be provided to personnel involved in fuel handling operations. No special action or response is requested at this time. If you have any questions regarding this matter, please contact the director of the appropriate NRC Regional Office.

Attachment:
Recently issued IE Information Notices

RECENTLY ISSUED
IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
81-22	Section 235 and 236 Amendments to the Atomic Energy Act of 1954	7/31/81	All power research reactor, fuel fabrication and reprocessing, and spent fuel storage licensees and applicants
81-21	Potential Loss of Direct Access to Ultimate Heat Sink	7/21/81	All power reactor facilities with an OL or CP
81-20	Test Failures of Electrical Penetration Assemblies	7/13/81	All power reactor facilities with an OL or CP
81-19	Lost Parts in Primary Coolant System	7/6/81	All power reactor facilities with an OL or CP
81-18	Excessive Radiation Exposures to the Fingers of Three Individuals Incurred During Cleaning and Wipe Testing of Radioactive Sealed Sources at a Sealed-Source Manufacturing Facility	6/23/81	Specified licensees holding byproduct licenses
81-16	Control Rod Drive System Malfunctions	4/23/81	All BWR facilities with an OL or CP
81-15	Degradation of Automatic ECCS Actuation Capability by Isolation of Instrument Lines	4/22/81	All power reactor facilities with an OL or CP
81-14	Potential Overstress of Shafts on Fisher Series 9200 Butterfly Valves with Expandable T Rings	4/17/81	All power reactor facilities with an OL or CP

OL = Operating Licenses
CP = Construction Permits