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IN 86-58

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

July 11, 1986

IE INFORMATION NOTICE NO. 86-58: DROPPED FUEL ASSEMBLY

Addressees:

All nuclear power reactor facilities holding an operating license or a construction permit.

Purpose:

This information notice is to alert recipients to a potentially significant problem pertaining to removal of nuclear fuel from the reactor core. The NRC expects that recipients will review this notice for applicability to their facilities and consider actions, if appropriate, to preclude a similar problem occurring at their facilities. However, suggestions contained in this notice do not constitute NRC requirements; therefore, no specific action or written response is required.

Past Related Correspondence:

IE Information Notice 80-01, "Fuel Handling Events," January 4, 1980.

IE Information Notice 81-23, "Fuel Assembly Damaged Due to Improper Positioning of Handling Equipment," August 4, 1981.

IE Information Notice 85-12, "Recent Fuel Handling Events," February 11, 1985.

IE Information Notice 86-06, "Failure of Lifting Rig Attachment While Lifting the Upper Guide Structure at St. Lucie Unit 1," February 3, 1986.

Description of Circumstances:

On February 26, 1986, at Haddam Neck, a spent fuel assembly was inadvertently lifted from the core when the upper core support structure was removed from the reactor vessel in preparation for refueling. The assembly stuck to the structure because of a bent fuel assembly locating pin. These locating pins protrude at the bottom of the upper core support structure and insert into the fuel assembly upper nozzle alignment holes when the support structure is properly in place. One pin was bent toward the center of its fuel assembly, thus holding the assembly by pinching against the inner side of the alignment hole. With the support structure lifted above the reactor vessel, the bottom of the attached assembly did not clear the top of the vessel. As the structure

was moved laterally, the assembly impacted the core barrel and was knocked off. The assembly dropped 2-4 feet onto the core. The dropped assembly and the two assemblies it impacted were damaged; however, no radiological release occurred during this event. All 3 assemblies and a symmetrically-burned assembly have been withdrawn from use in the reactor. The core barrel was superficially scratched and a core baffle former plate was partially torn. The licensee determined that these latter items do not prevent continued use of these structural components.


The licensee inspected fuel assemblies that occupied the same core position as the dropped assembly in previous cycles. The chamfer of the guide pin alignment holes of these assemblies was also deformed in the location of the bent pin. No such deformation was identified in other fuel assemblies. This indicated that the bent pin was the cause of the event and that the condition may have existed since 1981, but previously did not result in enough interference to lift the fuel assembly when the upper core support structure was removed. The bent pin was repaired.

Discussion:

A 240,000-lb capacity crane was used to lift the upper core support structure weighing 57,000 lb. The stuck fuel assembly weighed only 1200 lb, so the procedural limit for the lift of 59,000 lb did not ensure that no fuel assembly was attached to the structure. Load cells of appropriate range and calibration along with sufficiently restrictive limits may be helpful to ensure that loads to be lifted are not encumbered. However in this application, the weight of the fuel assembly is such a small fraction of the total load, that a load cell may not be a reliable method of detecting an attached fuel assembly. This event illustrates the need during lifting for rigorous visual inspection as well as sensitivity to instruments to ensure unencumbered lifts of heavy loads from the reactor core.

Similar problems have been noted before. As discussed in Information Notice 86-06, a stripped thread on a bolt attaching the lifting rig to the upper guide structure at St. Lucie 1 may have caused an imperceptible tilt that later was magnified to the observed tilt of the whole upper guide structure. This bolt was below the structure where the thread problem could not be readily observed. As discussed in Information Notice 85-12, fuel assembly alignment pins did not function properly in an event at Turkey Point 4. In that case, slight lateral motion of the fuel handling bridge contributed to the misalignment. Inadequate control of the vertical position of the load was also highlighted in Information Notice 81-23.

No specific action or written response is required by this information notice. If you have any questions about this matter, please contact the Regional Administrator of the appropriate regional office or this office.


Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

Technical Contact: Vern Hodge, IE
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Attachment: List of Recently Issued IE Information Notices

LIST OF RECENTLY ISSUED
 IE INFORMATION NOTICES

Information Notice No.	Subject	Date of Issue	Issued to
86-57	Operating Problems With Solenoid Operated Valves At Nuclear Power Plants	7/11/86	All power reactor facilities holding an OL or CP
86-56	Reliability Of Main Steam Safety Valves	7/10/86	All PWR facilities holding an OL or CP
86-55	Delayed Access To Safety-Related Areas And Equipment During Plant Emergencies	7/10/86	All power reactor facilities holding an OL or CP
86-54	Criminal Prosecution Of A Former Radiation Safety Officer Who Willfully Directed An Unqualified Individual To Perform Radiography	6/27/86	All holders of by-product, source, or special nuclear material
86-53	Improper Use Of Heat Shrinkable Tubing	6/26/86	All power reactor facilities holding an OL or CP
86-52	Conductor Insulation Degradation On Foxboro Model E Controllers	6/26/86	All power reactor facilities holding an OL or CP
86-51	Excessive Pneumatic Leakage In The Automatic Depressurization System	6/18/86	All BWR facilities holding an OL or CP
86-50	Inadequate Testing To Detect Failures Of Safety-Related Pneumatic Components Or Systems	6/18/86	All power reactor facilities holding an OL or CP
86-49	Age/Environment Induced Electrical Cable Failures	6/16/86	All power reactor facilities holding an OL or CP
86-48	Inadequate Testing Of Boron Solution Concentration In The Standby Liquid Control System	6/13/86	All BWR facilities holding an OL or CP

OL = Operating License
 CP = Construction Permit