

REPORT ON INTERNALS HANDLING FIXTURE PROBLEM

This report is being made pursuant to 10 CFR 50.55(e) on significant deficiencies to document the generic investigation of the significant deficiency in the design of the internals handling fixture spherical nut retaining device. ✓

Identification of Problem

During the preparation for plenum assembly removal from the reactor vessel at TMI-1, it was noticed that the spherical nut was not secured to the threaded rod and could become unthreaded. The set screws on the three assemblies were found to be either missing, loose, or the wrong length.

Analysis

A design review by B&W engineering has found that the set screw concept of preventing the spherical nuts from rotating relative to the threaded rods (i.e., become unthreaded) is inadequate in the original design. The spherical nuts could be unthreaded during the adjusting procedure, leaving inadequate thread engagement to support the weight of the internals. Should the threads shear off, the resulting drop of the internals from as little as 6 inches height could result in fuel damage. Drops from greater heights could also result in damage to the internals and the reactor vessel.

Evaluation

With the inadequate method of capture between the spherical nut and the threaded rod, there would be no assurance that the proper thread engagement would always be made. A small drop of about 7 inches could cause fuel assembly damage which would adversely affect the safety of the internals handling operation. This design deficiency is considered to be a significant deficiency pursuant to 10 CFR 50.65 (e).

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All affected plants have been notified of the problem. There has been no failure of the internal handling fixture and, thus, no damage or adverse effect on safety resulting from this deficiency.

Corrective Actions

- 1) On TMI-1, the problem was resolved by a field modification. This modification consisted of drilling a hole in the threaded rod to ensure capture by the set screw and staking of the set screw to ensure that the set screws would not back out.
- 2) A redesign of the capture device has been implemented on other contracts. This design revision consists of attaching a plate to the bottom of the threaded rod which will not allow the spherical nut to unthread.

Letter from Duke Power Company, A. C. Thies, dated
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