UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

ACRSR-2050

September 24, 2003

Dr. William D. Travers
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: PROPOSED RECOMMENDATIONS FOR RESOLVING GENERIC ISSUE 186, "POTENTIAL RISK AND CONSEQUENCES OF HEAVY LOAD DROPS IN NUCLEAR POWER PLANTS"

Dear Dr. Travers:

During the 505th meeting of the Advisory Committee on Reactor Safeguards, September 11-13, 2003, we met with representatives of the NRC staff to discuss the proposed recommendations for resolving Generic Issue 186, "Potential Risk and Consequences of Heavy Load Drops in Nuclear Power Plants." We also had the benefit of the documents referenced.

CONCLUSIONS

(1) We concur with the staff's conclusion that regulatory action is warranted to reduce the number and potential severity of load drop events. While these events do not pose a high nuclear plant safety risk, they do raise significant concerns regarding worker safety.

(2) We concur with the following recommendations developed by the staff:

(a) Evaluate the capability of rigging components and materials to withstand rigging errors.
(b) Endorse American Society of Mechanical Engineers (ASME) NOG-1, "Rules for Construction of Overhead and Gantry Cranes" for Type 1 cranes.
(c) Reemphasize the need to follow and enforce NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants" Phase 1 guidelines and continue to assess implementation of heavy load controls in safety-significant applications through the Reactor Oversight Process.
(d) Evaluate the need to establish standardized calculation methodologies for heavy load drops.

DISCUSSION

NUREG-1774, "Survey of Crane Operating Experience at U.S. Nuclear Power Plants from 1968 through 2002," summarizes the number, type, and severity of load drop events that continue to occur at operating plants. It also documents that human error and rigging deficiencies below the hook account for many of the observed load drop events. In addition, the report concludes that licensees could have reduced the frequency of crane operating events attributable to

human error if they had focused appropriate attention on the crane operating practices described in NUREG-0612.

The NRC staff examined several of the more serious crane load drop events for possible inclusion in the Accident Sequence Precursor (ASP) Program, but none of those events exceeded the ASP screening risk threshold of $1x10^{-5}$ per reactor year. However, we are concerned that worker fatalities have occurred and we conclude that the proposed, measured regulatory attention is appropriate.

We concur with the staff's recommendation to endorse ASME NOG-1 for single-failure-proof cranes. This will clarify the requirements for the construction or upgrade of cranes to the single-failure-proof crane category, which is referred to in NUREG-0612.

The staff also found that load drop calculational methodologies, assumptions, and predicted consequences vary greatly from licensee to licensee. Accurate load drop analysis is essential to determine transport height and load path restrictions. Therefore, the staff recommends evaluating the need to establish standardized load drop calculation methodologies.

We would like to review the proposed resolution of Generic Issue 186.

Sincerely,

/RA/

Mario V. Bonaca
Chairman

References:

1. Letter dated August 14, 2003, from Farouk Eltawlia, Office of Nuclear Regulatory Research, NRC, to Dr. John T. Larkins, Executive Director, ACRS, Subject: Proposed Regulation and Guidance Development Recommendations for Generic Issue 186, "Potential Risk and Consequences of Heavy Load Drops in Nuclear Power Plants."
2. U.S. Nuclear Regulatory Commission, NUREG-1774, "A Survey of Crane Operating Experience of U.S. Nuclear Power Plants from 1968 through 2002," July 2003.
3. U.S. Nuclear Regulatory Commission, Generic Letter 85-11, "Completion of Phase II of Control of Heavy Loads at Nuclear Power Plants," NUREG 0612, June 28, 1985.
4. U. S. Nuclear Regulatory Commission, NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," July 1980.