February 4, 2004

MEMORANDUM TO: Ashok C. Thadani, Director
Office of Nuclear Regulatory Research

FROM: J. E. Dyer, Director **/RA/**
Office of Nuclear Reactor Regulation

SUBJECT: RESPONSE TO PROPOSED RECOMMENDATIONS FOR GENERIC ISSUE (GI)-186, "POTENTIAL RISK AND CONSEQUENCES OF HEAVY LOAD DROPS IN NUCLEAR POWER PLANTS"

By memorandum dated November 12, 2003, you forwarded the following proposed recommendations for GI-186, "Potential Risk and Consequences of Heavy Load Drops in Nuclear Power Plants," to the Office of Nuclear Regulatory Regulation (NRR) for action:

(1) Evaluate the capability of various rigging components and materials to withstand rigging errors (e.g., absence of corner softening material, acute angle lifts, shock from load shifts, and postulated human errors). As appropriate, issue necessary guidelines for rigging applications.

(2) Endorse American Society of Mechanical Engineers (ASME) NOG-1, "Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)," for Type I cranes as an acceptable method of qualifying new or upgraded cranes as single-failure-proof. As appropriate, issue guidance endorsing the standard.

(3) Reemphasize the need to follow the Phase I guidelines in NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants" (the Phase I guidelines consists of good practices for crane operations and load movements). Continue to assess implementation of heavy load controls in safety-significant applications through the Reactor Oversight Process.

The NRR staff intends to implement these recommendations principally through issuance of a regulatory information summary (RIS). Although the estimated frequency of very heavy load drops is low enough that significant Nuclear Regulatory Commission regulatory action is not justified, there is considerable uncertainty because drop frequency is highly dependent on human performance and because systems affected by load drops are difficult to identify. Therefore, the RIS will clarify and reemphasize existing regulatory guidance that enhances human performance or compensates for human performance errors. The RIS will include the following key messages:

- Operational experience indicates that "below-the-hook" human performance errors are the principal contributor to load drops. Since the ability to compensate for these errors through design measures is limited, human performance and measures that offer protection against these errors, such as increased safety factors used in the selection of slings, should help compensate for human performance errors in this area. The RIS will

clarify existing guidance for “below-the-hook” issues and reemphasize the Phase I guidelines of NUREG-0612.

- Endorsement of ASME NOG-1 for Type I cranes as an acceptable method of satisfying the guidelines of NUREG-0554, “Single-Failure-Proof Cranes for Nuclear Power Plants,” establishes safe, clear, and industry-supported standards for construction of new components used in the qualification of cranes as single-failure-proof under Section 50.59 of Title 10 of the *Code of Federal Regulations*.

- The heavy load movements with the highest potential risk are drywell shield plug and spent fuel cask movements within boiling water reactors reactor buildings while the reactor is operating at power and heavy component replacement activities within pressurized water reactors containment buildings while fuel is in the reactor vessel.

We understand that the Office of Nuclear Regulatory Research will contact appropriate code committees to request that they evaluate the need to establish standardized load drop calculation methodologies for heavy load drops at nuclear power plants. NRR concurs with this action.

CONTACT: Steve Jones, NRR/DSSA/SPLB
415-2712

clarify existing guidance for "below-the-hook" issues and reemphasize the Phase I guidelines of NUREG-0612.

- Endorsement of ASME NOG-1 for Type I cranes as an acceptable method of satisfying the guidelines of NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants," establishes safe, clear, and industry-supported standards for construction of new components used in the qualification of cranes as single-failure-proof under Section 50.59 of Title 10 of the *Code of Federal Regulations*.

- The heavy load movements with the highest potential risk are drywell shield plug and spent fuel cask movements within boiling water reactors reactor buildings while the reactor is operating at power and heavy component replacement activities within pressurized water reactors containment buildings while fuel is in the reactor vessel.

We understand that the Office of Nuclear Regulatory Research will contact appropriate code committees to request that they evaluate the need to establish standardized load drop calculation methodologies for heavy load drops at nuclear power plants. NRR concurs with this action.

CONTACT: Steve Jones, NRR/DSSA/SPLB
415-2712

DISTRIBUTION:

SPLB RF	SRJones	DSolorio	JHannon
HWagage	RLloyd	Jibarra	JFlack
FEtilawah	CPaperiello	MFields	SBlack
BSheron	JDyer	NRR Mailroom (Y020040001)	

Response Accession No.: ML040280165 Incoming No.: ML040070232
Package No.: ML040280198

***Please See Previous Concuurence**
DOCUMENT NAME: ML040280165

OFFICE	SPLB:DSSA	SC:SPLB:DSSA	BC:SPLB:DSSA	D:DSSA
NAME	*SRJones (DSolorio for):tw	*DSolorio	*JHannon	*SBlack
DATE	01/28/ 04	01/28/ 04	01/28/ 04	01/29/ 04

OFFICE	AD:ADPT	D:NRR	Tech Editor
NAME	BWSheron	JEDyer	*PKleene
DATE	02/3/ 04	02/4/ 04	01/28/ 04

OFFICIAL RECORD COPY