

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, D.C. 20555-0001

December 1, 2008

**NRC REGULATORY ISSUE SUMMARY 2008-28
ENDORSEMENT OF NUCLEAR ENERGY INSTITUTE GUIDANCE
FOR REACTOR VESSEL HEAD HEAVY LOAD LIFTS**

ADDRESSEES

All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

INTENT

The U.S. Nuclear Regulatory Commission (NRC) is issuing this regulatory issue summary (RIS) to notify industry of methods approved by the NRC staff for evaluating changes to a facility's licensing basis related to reactor vessel head and other heavy load lifts. By letter dated September 5, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082410532), the NRC staff transmitted its safety evaluation of the guidelines developed by the Nuclear Energy Institute (NEI) and contained in NEI 08-05, "Industry Initiative on Control of Heavy Loads," Revision 0 (ADAMS Accession No. ML082180684). With NRC staff clarifications and conditions noted in the safety evaluation, licensees may use these guidelines to voluntarily establish a revised licensing basis for handling of reactor vessel heads and other heavy loads that is consistent with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59, "Changes, Tests and Experiments." This RIS requires no action or written response by addressees.

BACKGROUND INFORMATION

By letter dated September 14, 2007 (ADAMS Accession No. ML072670127), NEI notified the NRC staff of plans to implement an industry initiative on heavy load lifts. The initiative resolves a lack of consistency in plant licensing bases that pertain to heavy load handling and ensures that plants continue to conduct heavy load lifts safely.

The initiative includes the following actions:

- A) For all heavy load lifts, the initiative specifies adequate implementation of safe load paths, load handling procedures, and industry standards addressing the following topics: training of crane operators, use of special lifting devices, use of slings, and design, inspection, testing, and maintenance of the crane.

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- B) For reactor vessel head lifts and spent fuel cask lifts over the spent fuel pool, the initiative specifies that the licensee use a single-failure-proof crane (or equivalent) or provide a load drop analysis (generic or plant-specific) that bounds the planned lifts with respect to load weight, load height, and medium present under the load. The initiative also specifies that procedures for moving the load reflect the applicable safety basis. Load drop analyses can be based on realistic (i.e., best estimate) calculations. If the licensee uses load drop analyses, the initiative specifies that plant procedures reflect restrictions on load height, load weight, and medium present under the load.
- C) The initiative specifies that licensees treat the movement of heavy loads as a configuration management activity in administrative controls established to implement paragraph (a)(4) of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."
- D) If not already included in the safety analysis report, the initiative specifies that in the next safety analysis report update (after July 1, 2008) the licensee include a summary description of the basis for conducting safe heavy load movements. This description should include the definition of safe load paths, establishment of load handling procedures, and implementation of industry standards addressing the following topics: training of crane operators, use of special lifting devices, use of slings, and design, inspection, testing, and maintenance of cranes. If the safety basis includes reliance on a load drop analysis, then the licensee should include that fact in the summary description of the safety analysis report.

SUMMARY OF ISSUE

Revision 0 to NEI 08-05 provides industry-developed guidelines for licensee implementation of the voluntary industry heavy loads initiative. To support the initiative, NEI 08-05 includes guidelines for the following activities:

- managing the risk associated with maintenance involving movement of heavy loads
- performing consequence analyses for postulated reactor vessel head drops
- establishing single-failure-proof equivalence for handling systems when used for reactor vessel head lifts
- updating the description of heavy load handling programs in the safety analysis report

By letter dated September 5, 2008, the NRC staff transmitted its safety evaluation of the guidelines contained in NEI 08-05. The NRC staff considers the acceptance criteria of Appendix F, "Rules for Evaluation of Service Loadings with Level D Service Limits," to the American Society of Mechanical Engineer's Boiler and Pressure Vessel Code, Section III, Division 1, appropriate for evaluation of coolant retaining component performance following a postulated head drop. Otherwise, licensees may consider the guidelines of NEI 08-05 as providing methods approved by the NRC for the specified applications when implementing the requirements of 10 CFR 50.59. With NRC staff clarifications and conditions noted in the safety evaluation, licensees may use these guidelines to voluntarily establish a revised licensing basis

for handling of reactor vessel heads and other heavy loads consistent with the provisions of 10 CFR 50.59.

Licensees may wish to consider the following regulatory requirements in implementing the industry initiative. Paragraph (a)(4) of 10 CFR 50.65 specifies that licensees assess and manage the increase in risk associated with maintenance activities. The scope of the assessment may be limited to structures, systems and components that a risk-informed evaluation process has shown to be significant to public health and safety. Reactor vessel head removal, in addition to many other heavy load handling activities, could be classified as a maintenance activity. The reactor vessel and attached piping perform a shutdown coolant inventory retention function that is significant to public health and safety. Licensees may determine that some of the commitments related to heavy loads handling at each nuclear power plant serve as measures that limit the increase in risk resulting from heavy load handling. In addition, Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," to Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," lists procedures for removal of the reactor head as Item 9.d (6). Accordingly, these procedures may be subject to technical specification administrative control requirements related to the establishment, maintenance, and implementation of these procedures. Finally, the requirements of 10 CFR 50.59 and Paragraph (e) of 10 CFR 50.71, "Maintenance of Records, Making of Reports," apply to changes to the safety analysis report and the content of updates to the safety analysis report, respectively.

BACKFIT DISCUSSION

This RIS notifies addressees of methods described in Revision 0 to NEI 08-05 that the NRC staff has found acceptable for use in evaluating changes to a facility's licensing basis related to reactor vessel head and other heavy load lifts. Licensees may choose to retain the facility's current licensing basis with respect to handling of heavy loads. However, licensee's that choose to clarify the facility's licensing basis with respect to handling of heavy loads consistent with the industry initiative may find that NRC acceptance of the guidelines in NEI 08-05 facilitates the associated changes to the safety analysis report. Pursuant to Paragraph (a)(2)(ii) of 10 CFR 50.59, a change from a method described in the safety analysis report to another method approved by the NRC for the intended application does not constitute a departure from a method of evaluation described in the safety analysis report.

This RIS does not impose any new or modified NRC staff requirements, prescribe any unique way to comply with the regulations, or require any action or written response. Any licensee use of the guidance endorsement referenced by this RIS is strictly voluntary. Therefore, this RIS is not a backfit under 10 CFR 50.109, "Backfitting." The NRC staff did not perform a backfit analysis.

FEDERAL REGISTER NOTIFICATION

A notice of opportunity for public comment on this RIS was not published in the *Federal Register* because it is informational and pertains to a staff position that does not represent a departure from current regulatory requirements and practice. The NRC interacted with stakeholders in several public meetings, from December 2007 through April 2008, during the development of the industry guidelines contained in Revision 0 to NEI 08-05.

CONGRESSIONAL REVIEW ACT

This is a rule under the Congressional Review Act (5 U.S.C. §§801-808). The Office of Management and Budget (OMB) has determined this is not a major rule.

PAPERWORK REDUCTION ACT STATEMENT

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CONTACT

Please direct any questions about this matter to the technical contact listed below.

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