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Docket No. 50-382

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Dear Mr. Maurin:

The NRC staff held a conference call with your staff and their consultants on September 21, 1982, to discuss the Control of Heavy Loads technical evaluation report (TER). As promised during that conversation, I am forwarding a copy of ANSI N 14.6 to assist you in preparing your response on Special Lifting Devices.

If you have any further questions, please contact Suzanne Black, Project Manager, on (301) 492-7702.

Sincerely,

Handwritten signature: JSI

Janis D. Kerrigan, Acting Chief
Licensing Branch #3
Division of Licensing

Enclosure:
ANSI N 14.6 Report

cc: See next page

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EVALUATION OF ANSI N14.6-1978

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TER-C5257-429

N14.6-1978, since these lifting devices carry heavy loads as defined by NUREG-0612.

FRC has evaluated the criteria of ANSI N14.6-1978 and notes that it is difficult to make a strict interpretation of compliance between that standard and existing special lifting devices. FRC has no objection to addressing only those sections which are directly related to load handling reliability of the lifting devices. Further, FRC notes that the following sections are not pertinent nor do they contain requirements which affect load handling reliability: Scope (Section 1), Definitions (Section 2), Design Considerations to Minimize Decontamination Efforts (Section 3.4), Coatings (Section 3.5), Lubrication (Section 3.6), Inspector's Responsibilities (Section 4.2), and Fabrication Considerations (Section 4.3). In addition, FRC notes that Section 6 (Special Lifting Devices for Critical Loads) need not be included in this review since none of the loads identified by the Licensee has been determined to be a "critical load."

Evaluation and review of ANSI N14.6-1978 by FRC has identified several areas of concern where load handling reliability is an issue. It is FRC's judgment that certain sections (3.1, Designer's Responsibilities; 3.2, Design Criteria; 3.3, Design Considerations; 4.1, Fabricator's Responsibilities; and 5.0, Acceptance Testing, Maintenance, and Assurance of Continued Compliance) identify important information which should be readily available or requirements to which the Licensee should adhere in order to adequately substantiate the load handling reliability of the special lifting devices. Although this standard did not exist when lifting devices were designed and manufactured, it is not anticipated that procurement of information or compliance with the standard's criteria will create undue hardship since the criteria of the standard are akin to established industry practices and this standard merely codifies such practices for special lifting devices. Further, these special lifting devices are used for infrequent lifts of the plant's largest components, generally in the direct vicinity of irradiated fuel, which makes the reliability of design, fabrication, and continued testing of the special lifting devices a relatively sensitive concern for both the Licensee and the NRC.

It has been determined that compliance with Guideline 4 requires that the following specific sections of ANSI N14.6-1978 be addressed:

Section 3.1:

- a. limitations on the use of the lifting devices (3.1.1)
- b. identification of critical components and definition of critical characteristics (3.1.2)
- c. signed stress analyses which demonstrate appropriate margins of safety (3.1.3)
- d. indication of permissible repair procedures (3.1.4)

Section 3.2:

- a. use of stress design factors of 3 for minimum yield strength and 5 for ultimate strength (3.2.1)
- b. similar stress design factors for load bearing pins, links, and adapters (3.2.4)
- c. slings used comply with ANSI B30.9-1971 (3.2.5)
- d. subjecting materials to dead weight testing or Charpy impact testing (3.2.6)

Section 3.3:

- a. consideration of problems related to possible lamellar tearing (3.3.1)
- b. design shall assure even distribution of the load (3.3.4)
- c. retainers fitted for load carrying components which may become inadvertently disengaged (3.3.5)
- d. verification that remote actuating mechanisms securely engage or disengage (3.3.6)

Section 4.1:

- a. verify selection and use of material (4.1.3)
- b. compliance with fabrication practice (4.1.4)
- c. qualification of welders, procedures, and operators (4.1.5)
- d. provisions for a quality assurance program (4.1.6)
- e. provisions for identification and certification of equipment (4.1.7)
- f. verification that materials or services are produced under appropriate controls and qualifications (4.1.9).

Section 5.1:

- a. implementation of a periodic testing schedule and a system to indicate the date of expiration (5.1.3)
- b. provisions for establishing operating procedures (5.1.4)
- c. identification of subassemblies which may be exchanged (5.1.5)
- d. suitable markings (5.1.6)
- e. maintaining a full record of history (5.1.7)
- f. conditions for removal from service (5.1.8)

Section 5.2:

- a. load test to 150% and appropriate inspections prior to initial use (5.2.1)
- b. qualification of replacement parts (5.2.2)

Section 5.3:

- a. satisfying annual load test or inspection requirements (5.3.1)
- b. testing following major maintenance (5.3.2)
- c. testing after application of substantial stresses (5.3.4)
- d. inspections by operating (5.3.6) and non-operating or maintenance personnel (5.3.7).

c. FRC Conclusions and Recommendations

Insufficient information has been provided by the Licensee for FRC to determine compliance with Guideline 4. In order to demonstrate full compliance, the Licensee should evaluate all special lifting devices, including those for the spent fuel shipping cask, with respect to those items which affect load handling reliability and should report the results of this review to the NRC. For those special lifting devices for which ANSI N14.6-1978 guidelines are not met, the Licensee should propose alternatives and demonstrate their equivalence in terms of load handling reliability.

2.1.6 Lifting Devices (Not Specially Designed) [Guideline 5, NUREG-0612, Article 5.1.1(5)]

"Lifting devices that are not specially designed should be installed and used in accordance with the guidelines of ANSI B30.9-1971, 'Slings' [7]. However, in selecting the proper sling, the load used should be the sum of the static and maximum dynamic load. The rating identified on the sling should be in terms of the 'static load' which produces the maximum static and dynamic load. Where this restricts slings to use on only certain cranes, the slings should be clearly marked as to the cranes with which they may be used."

a. Summary of Licensee Statements and Conclusions

The Licensee has reviewed ANSI B30.9-1971 requirements and determined that the use of slings for handling heavy loads at the Palisades plant meets the intent of ANSI B30.9-1971. Slings suitable for use with only certain cranes or with certain loads are appropriately marked and identified. Further, all slings are load rated for the maximum static load only and are marked