Nebraska Public Power District

COOPER NUCLEAR STATION
P.O. BOX 98, BROWNVILLE, NEBRASKA 68321
TELEPHONE (402) 825-3811

50-298

LQA8200024

May 14, 1982

Mr. Darrel G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Control of Heavy Loads

References: 1) Letter from D. G. Eisenhut to all licensees dated December 22, 1980; same subject

2) Draft Technical Evaluation Report by Franklin Research Center (FRC) dated October 5, 1981; same subject

3) Safety Evaluation Report of Cooper Nuclear Station (CNS) dated February 14, 1973

Dear Mr. Eisenhut:

In accordance with the November 19, 1981 request of Mr. Byron Siegel, this letter is in response to the Draft Technical Evaluation Report (TER) written by the Franklin Research Center (Reference 2).

2.1.2 Safe Load Paths {Guideline 1, NUREG-0612, Article 5.1.1(1)}

"Safe load paths should be defined for the movement of heavy loads to minimize the potential for heavy loads, if dropped, to impact irradiated fuel in the reactor vessel and in the spent fuel pool, or to impact safe shutdown equipment. The path should follow, to the extent practical, structural floor members, beams, etc., such that if the load is dropped, the structure is more likely to withstand the impact. These load paths should be defined in procedures, shown on equipment layout drawings, and clearly marked on the floor in the area where the load is to be handled. Deviations from defined load paths should require written alternative procedures approved by the plant safety review committee."

A033
S
1/1

Response

The TER stated that Nebraska Public Power District's (NPPD's) response was inadequate. The attached safe load paths for the reactor pressure vessel (RPV) plugs, dryer-separator pool plugs, drywell head, RPV head, and Bellows Shield on the refueling floor have been defined in revisions to the plant's procedures which are currently undergoing SORC review. Approval of these revisions is anticipated within 30 days of the date of this submittal. The Bellows Shield weighing approximately six tons was not identified in the earlier response. Slings meeting ANSI B30.9-1971 criteria are used for moving the Bellows Shield. The safe load paths for the steam dryer and steam separator are defined by the dryer and separator storage pool since the dryer and separator follow and are not lifted out of the storage pool. The load paths for the concrete plugs follow, to a great extent, structural floor members. The drywell head and reactor pressure vessel head follow structural members before angling to their respective laydown areas. The loads are moved in a manner to minimize the potential to impact irradiated fuel and are not moved over safe shutdown equipment. The load paths will be added to their respective procedures and written alternatives will be approved by the CNS Operations Review Committee (SORC). A drawing showing the safe load paths will be posted on the refueling floor and inside the cab of the Reactor Building crane within approximately 30 days from the date of this submittal. Any changes to these load paths or additional paths added through a special procedure will be established with engineering judgment and approved by SORC. Marking load paths on the floor will not be done as it is not a good practice in regards to CNS radiation and contamination control procedures.

With the exception of the Control Building Hoist H-7, the plant's monorails are physically separated from use over safe shutdown equipment. Revised procedures to minimize the exposure of safe shutdown equipment to damage from loads dropped from Control Building Hoist H-7 are currently undergoing SORC review; approval within 30 days of the date of this submittal is anticipated.

2.1.3 Load Handling Procedures (Guideline 2, NUREG-0612, Article 5.1.1(2))

"Procedures should be developed to cover load handling operations for heavy loads that are or could be handled over or in proximity to irradiated fuel or safe shutdown equipment. At a minimum, procedures should cover handling of those loads listed in Table 3-1 of NUREG-0612. These procedures should include: identification of required equipment; inspections and acceptance criteria required before movement of load; the steps and proper sequence to be followed in handling the load; defining the safe path; and other special precautions."

Response

Safe load paths for the heavier loads, as stated in the response to 2.1.2 on the refueling floor, have been defined in revisions to the plant's procedures which are currently undergoing SORC review. Approval of these revisions is anticipated within 30 days of the date of this submittal.

2.1.4 Crane Operator Training {Guideline 3, NUREG-0612, Article 5.1.1(3)}

"Crane operators should be trained, qualified, and conduct themselves in accordance with Chapter 2-3 of ANSI B30.2-1976, 'Overhead and Gantry Cranes'(5)."

Response

Crane operator training and qualification records are available at CNS for inspection by the NRC. Any conduct not in accordance with Chapter 2-3 of ANSI B30.2-1976 will disqualify an employee as a crane operator.

2.1.5 Special Lifting Devices {Guideline 4, NUREG-0612, Article 5.1.1(4)}

"Special lifting devices should satisfy the guidelines of ANSI N14.6-1978, 'Standard for Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds (4,500 kg) or More for Nuclear Materials' (6). This standard should apply to all special lifting devices which carry heavy loads in areas as defined above. For operating plants certain inspections and load tests may be accepted in lieu of certain material requirements in the standard. In addition, the stress design factor stated in Section 3.2.1.1 of ANSI N14.6 should be based on the combined maximum static and dynamic loads that could be imparted on the handling device based on characteristics of the crane which will be used. This is in lieu of the guideline in Section 3.2.1.1 of ANSI N14.6 which bases the stress design factor on only the weight (static load) of the load and of the intervening components of the special handling device."

Response

NPPD has identified the following specially-designed lifting devices used in the vicinity of irradiated fuel or safe shutdown equipment.

1. Reactor Pressure Vessel Head Strongback
2. Dryer and Separator Sling
3. Strongbacks for Concrete Shield Plugs
4. Redundant Crane Adapter and Pins
5. Spent Fuel Cask Redundant Lifting Yoke

GE supplied the reactor pressure vessel head strongback and the dryer and separator sling and testing was performed by Stearns-Roger, Incorporated. The strongbacks for concrete seal plugs were constructed by Jelco, Incorporated. Burns and Roe performed calculations for the strongback using the deadweight of the plugs showing the adequacy of the strongback. The redundant crane adapter and pins were designed, constructed, and tested in conjunction with Stearns-Roger, Incorporated. The records search and conformance analysis for these special lifting devices should be completed by September 1, 1982. Calculations have been performed on the spent fuel cask redundant lifting yoke by GE and the results showing the yoke conformance are attached to this response.

As discussed with the staff, the District understands that the delayed submittal of this information will not preclude use of the devices for refueling or other evolutions.

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."

Response

The slings at CNS are selected and used in accordance with ANSI B30.9-1971. A new procedure for the selection, storage, and inspection of slings has been drafted which considers the effects of dynamic loading on slings. This procedure is currently undergoing SORC review; approval is anticipated within 30 days of the date of this submittal.

2.1.7 Cranes Inspection, Testing, and Maintenance {Guideline 6, NUREG-0612, Article 5.1.1(6)}

"The crane should be inspected, tested, and maintained in accordance with Chapter 2-2 of ANSI B30.2-1976, 'Overhead and Gantry Cranes,' with the exception that tests and inspections should be performed prior to use where it is not practical to meet the frequencies of ANSI B30.2 for periodic inspection and test, or where frequency of crane use is less than the specified inspection and test frequency (e.g., the polar crane inside a PWR containment may only be used every 12 to 18 months during refueling operations, and is generally not accessible during power operation. ANSI B30.2, however, calls for certain inspections to be performed daily or monthly. For such cranes having limited usage, the inspections, test, and maintenance should be performed prior to their use)."

Response

Readily auditable records of Procedures 7.2.32 regarding crane hoist, sling, and cable inspection are available for review at CNS by the NRC.

2.1.8 Crane Design {Guideline 7, NUREG-0612, Article 5.1.1(7)}

"The crane should be designed to meet the applicable criteria and guidelines of Chapter 2-1 of ANSI B30.2-1976, 'Overhead and Gantry Cranes,' and of CMAA-70, 'Specifications for Electric Overhead Traveling Cranes' (8). An alternative to a specification in ANSI B30.2 or CMAA-70 may be accepted in lieu of specific compliance if the intent of the specification is satisfied.

Response

Records concerning crane design are available for inspection by the NRC.

2.2.1 Technical Specifications (Interim Protection Measure 1, NUREG-0612, Article 5.3)

"Licenses for all operating reactors not having a single-failure-proof overhead crane in the fuel storage pool area should be revised to include a specification comparable to Standard Technical Specification 3.9.7, 'Crane Travel - Spent Fuel Storage Pool Building,' for PWR's and Standard Technical Specification 3.9.6.2, 'Crane Travel,' for BWR's, to prohibit handling of heavy loads over fuel in the storage pool until implementation of measures which satisfy the guidelines of Section 5.1."

Response

The reactor building crane at CNS has redundancy and the minimum design safety factors shown in the response to Sections 2.2 through 2.4 as stated in Enclosure 3 of Reference 1. The overhead crane in the fuel pool area is considered single failure proof. As stated in Section 9.2 of the Safety Evaluation Report of CNS (Reference 3), "The failure of any single component would not result in the dropping of the (spent fuel) cask." Therefore, the additional technical specification stated in the TER is not required.

2.2.3 Special Review for Heavy Loads Over the Core (Interim Protection Measure 6, NUREG-0612, Article 5.3)

"Special attention should be given to procedures, equipment, and personnel for the handling of heavy loads over the core, such as vessel internals or vessel inspection tools. This special review should include the following for these loads: (1) review of procedures for installation of rigging or lifting devices and movement of the load to assure that sufficient detail is provided and that instructions are clear and concise; (2) visual inspections of load-bearing components of cranes, slings, and special lifting devices to identify flaws or deficiencies that could lead to failure of the component; (3) appropriate repair and replacement of defective components; and (4) verify that the crane operators have been properly trained and are familiar with specific procedures used in handling these loads, e.g., hand signals, conduct of operations, and content of procedures."

Response

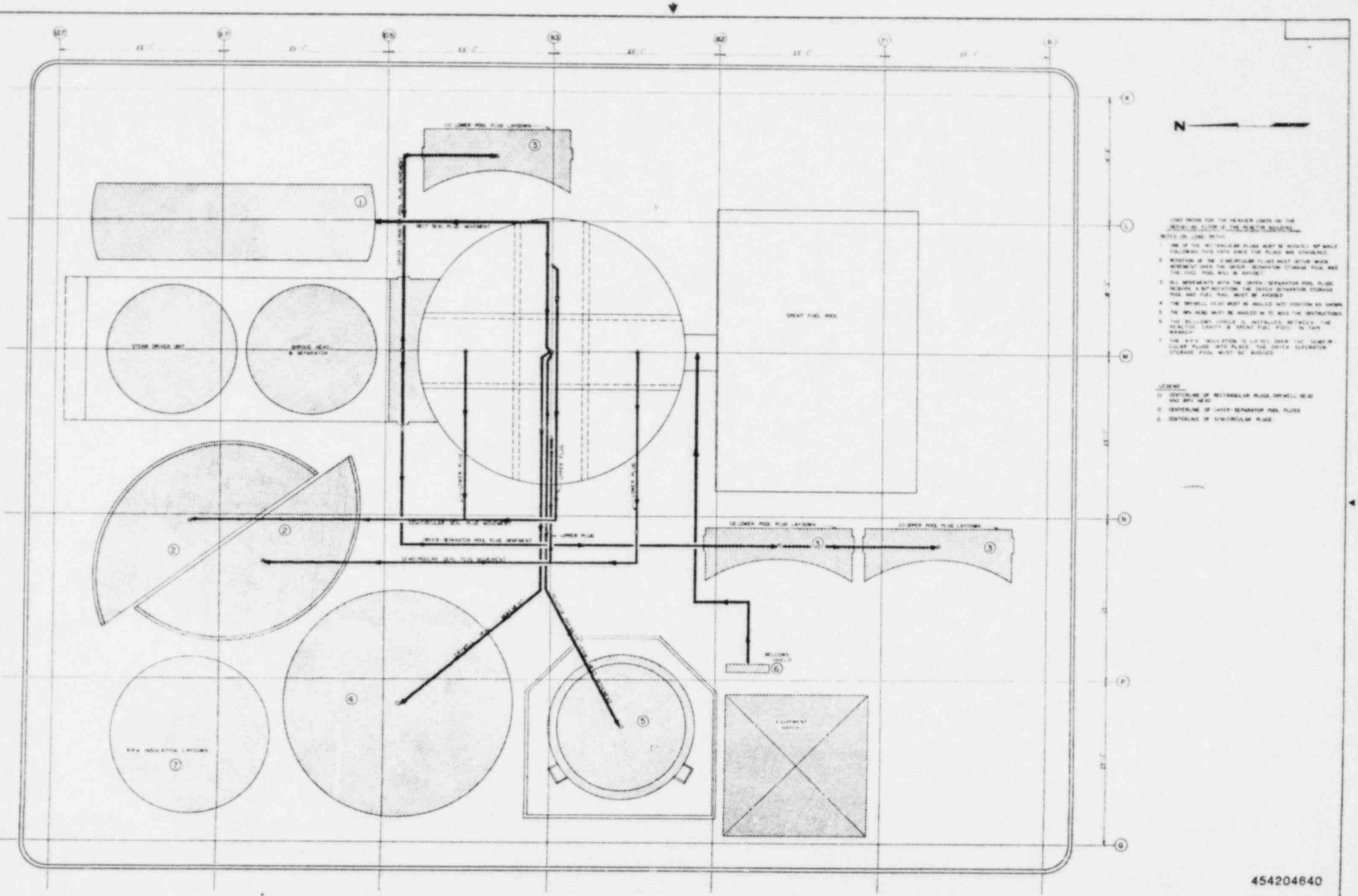
Revisions to the pertinent procedures which call for visual inspection of special lifting devices have been drafted. These revisions also provide for the appropriate repair or replacement of defective components. A revision to the crane hoist, sling, and cable inspection procedure which provides for the appropriate repair or replacement of defective components has also been drafted. These revisions are currently undergoing SORC review; approval is anticipated within 30 days of the date of this submittal. With approval of the revisions to the procedures stated in the text of this response, Interim Protection Measure 6 should be satisfied.

Should you have any further questions regarding this issue, please contact me.

Sincerely,

Jay M. Pilant
Division Manager of Licensing
& Quality Assurance

JMP:DAW:cg



SAFE LOAD PATHS
100' REACTOR BUILDING

Nebraska Public Power District

CNS-BLDG-6