



**Wisconsin Electric** POWER COMPANY  
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February 15, 1983

Mr. H. R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. NUCLEAR REGULATORY COMMISSION  
Washington, D. C. 20555

Attention: Mr. R. A. Clark, Chief  
Operating Reactors Branch 3

Gentlemen:

DOCKET NOS. 50-266 AND 50-301  
TRANSMITTAL OF ADDITIONAL INFORMATION  
NUREG-0612 - CONTROL OF HEAVY LOADS  
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Your letters dated December 22, 1980 and February 3, 1981 requested that Wisconsin Electric Power Company review the handling of heavy loads at the Point Beach Nuclear Plant and provide information as requested in Enclosure 2 to the December 22 letter. Our transmittals of September 30, 1981 and January 11, 1982 submitted our six and nine-month responses, respectively, which included the majority of the information requested in your letters. Our February 25, 1982 letter provided a proposed schedule for the completion of those outstanding information items.

Enclosed for your review is Wisconsin Electric's response to NRC Question Attachments 1-2, "Evaluation of Overhead Handling Systems with Respect to NUREG-0554", and 1-3, "Seismic Analysis Methodology for Overhead Handling Systems". This information is provided in the form of revised pages 3, 4, 5, 6, 7, and 8 for inclusion in our nine-month response.

Please contact us if you have any questions.

Very truly yours,

Vice President, Nuclear Power

C. W. Fay

Enclosure

Copy to NRC Resident Inspector

Subscribed and sworn to before me  
this 15th day of February 1983.

Notary Public, State of Wisconsin

My Commission expires July 1, 1984.

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2.3 NRC QUESTION 2.2-3

Identify any cranes listed in 2.2-1, above, which you have evaluated as having sufficient design features to make the likelihood of a load drop extremely small for all loads to be carried and the basis for this evaluation (i.e., complete compliance with NUREG-0612, Section 5.1.6, or partial compliance supplemented by suitable alternative or additional design features). For each crane so evaluated, provide the load-handling system (i.e., crane load-combination) information specified in Attachment 1.

RESPONSE

The auxiliary building crane will be modified to meet the guidelines of NUREG-0612, Section 5.1.6, or partial compliance supplemented by suitable alternatives or additional design features. Dependent upon equipment delivery, it is expected that the auxiliary building crane upgrade modifications can be completed within two years.

The information requested on single-failure-proof handling systems in Attachment 1 to the NRC letter of December 22, 1980, is provided below.

Information on Single-Failure-Proof Handling System2.3.1 NRC QUESTION ATTACHMENT 1-1

Provide the name of the manufacturer and the design-rated load (DRL). If the maximum critical load (MCL), as defined in NUREG-0554, is not the same as the DRL, provide this capacity.

RESPONSE

Ederer Crane, a division of Ederer Incorporated, will be supplying a single-failure-proof replacement trolley for the auxiliary building crane. The trolley will be Ederer's X-SAM type and will have a DRL and MCL of 125 tons.

2.3.2 NRC QUESTION ATTACHMENT 1-2

Provide a detailed evaluation of the overhead handling system with respect to the features of design, fabrication, inspection, testing, and operation as delineated in NUREG-0554 and supplemented by the identified alternatives specified in NUREG-0612, Appendix C. This evaluation must include a point-by-point comparison for each section of NUREG-0554. If the alternatives of NUREG-0612, Appendix C, are used for certain applications in lieu of complying with the recommendation of NUREG-0554, this should be explicitly stated. If an alternative to any of those contained in NUREG-0554 or NUREG-0612, Appendix C, is proposed, details must be provided on the proposed alternative to demonstrate its equivalency.

RESPONSE

The design and fabrication of the replacement trolley will be in compliance with Topical Report EDR-1, "Ederer's Nuclear Safety-Related (X-SAM) Cranes", Revision 2. This topical report has been reviewed by the NRC and it has been determined that the X-SAM crane conforms to the guidelines of Regulatory Guide 1.104, "Overhead Crane Handling Systems for Nuclear Power Plants", and NUREG-0554, "Single Failure Proof Cranes for Nuclear Power Plants."

At this time, Ederer Incorporated is seeking NRC approval for Revision 3 to Topical Report EDR-1. The design described in Revision 3 is considered by Ederer to incorporate a number of advanced features. If NRC approval of EDR-1, Revision 3, is received prior to the start of fabrication, the Point Beach trolley will incorporate all the features described in Revision 3.

Wisconsin Electric intends to submit the final design review and plant-specific information for the crane, including the required seismic analysis, in conjunction with a license amendment application to incorporate Technical Specification changes which would permit Wisconsin Electric to fully utilize the single-failure-proof crane. These proposed changes would revise the present restriction on the weight of spent fuel shipping casks permissible for use at Point Beach and remove other specifications which presently limit the weight of materials which may be carried over and across the spent fuel pool. These submittals will be made prior to installation of the new crane trolley. It is expected that the submittal will occur in early summer of 1983.

2.3.3 NRC-QUESTION ATTACHMENT 1-3

With respect to the seismic analysis employed to demonstrate that the overhead handling system can retain the load during a seismic event equal to a safe shutdown earthquake, provide a description of the method of analysis, the assumptions used, and the mathematical model evaluated in the analysis. The description of assumptions should include the basis for selection of trolley and load position.

RESPONSE

See the response to Question Attachment 1-2.

2.3.4 NRC QUESTION ATTACHMENT 1-4

Provide an evaluation of the lifting devices for each single-failure-proof handling system with respect to the guidelines of NUREG-0612, Section 5.1.6.

RESPONSE

No special lifting devices are used with the auxiliary building crane. Lifting devices that are not specially designed will be replaced with slings meeting the requirements of ANSI B30.9-1971, "Slings." In the interim, as the slings are being replaced, the old slings have been derated by a factor of 2. This derating was accomplished by taking the lowest value for a particular diameter from the tables in B30.9-1971 for wire rope slings without regard to sling construction, splice, material and type of hitch and dividing the assumed value by 2. Table 2-2 shows the derated capacities of the slings.



**TABLE 2-2**  
**SLING CAPACITIES**

CAPACITY (TONS)  
FACTOR OF SAFETY = 10

Dia. (Inches)	Single Leg <sup>2</sup>	BRIDLE SLING <sup>3</sup>		ENDLESS SLINGS
		2-LEG	3-LEG	
3/32	.12	.16	.24	
1/8	.21	.28	.42	
3/16	.47	.65	.95	
1/4	.18	.24	.37	.31
5/16	.28	.38	.55	.50
3/8	.40	.55	.80	.47
7/16	.55	.70	1.05	.95
1/2	.70	.90	1.40	1.0*
9/16	.85	1.15	1.70	1.05
5/8	1.05	1.40	2.10	1.4
3/4	1.40	1.90	2.85	1.9
7/8	1.95	2.50	3.75	2.9*
15/16	-	-	-	2.95
1	2.50	3.20	4.80	4.0*
1-1/8	3.15	3.85	5.50	4.2
1-1/4	3.70	4.60	7.0	5.4*
1-5/16	3.75	5.0	7.5	5.5
1-3/8	4.10	5.5	8.0	7.0
1-1/2	4.80	6.5	9.5	8.0
1-5/8	6.0	8.0	12.5	
1-11/16	-	-	-	9.0
1-3/4	7.0	9.5	14.0	
1-7/8	-	-	-	11.0
2	9.0	12.5	18.5	
2-1/4	15.5	-	-	15.5
2-5/8	21.0	-	-	21.0

\* These capacities were derated to a factor of safety greater than 10 so they would not be of greater capacity than the following larger diameter sling.

**NOTES**

1. The attached table was developed from Tables 3 thru 14 of ANSI B30.9-1971 by taking the lowest capacity for a specific diameter ignoring sling construction, splice, material, and type of hitch, and derating by a factor of two.
2. For single leg slings using a vertical basket hitch D/d must be 20 or greater and the vertical angle should not exceed 30 degrees.
3. For Bridle slings do not exceed a vertical angle of 60 degrees or a horizontal angle of less than 30 degrees.
4. For endless slings using a vertical basket hitch D/d must be 5 or greater.

Slings used in the turbine building for carrying loads which do not pass over the control building will not be derated, and will not be replaced. All other sling requirements will apply to slings used for these non-safety related lifts. Slings which are used to carry miscellaneous loads over the control building will be derated as per the table. The slings used to carry the turbine rotor over its specified path will not be derated as the effects of the failure of this lifting system have been reviewed and determined acceptable.

This table will be used for old slings throughout the plant until the slings are replaced with the exception of the turbine building. It is expected that all slings used with the auxiliary building crane will be replaced prior to completion of modifications to the crane. Those old slings that are used with the auxiliary building crane have been derated by a factor of 2. When selecting a derated sling for use, the load used will be the sum of the static and maximum dynamic loads neglecting the loads imposed by the SSE. A dynamic load factor of 2 will be used to determine the load.

#### 2.3.5 NRC Question Att. 1-5

Provide an evaluation of the interfacing lift points with respect to the guidelines of NUREG 0612, Section 5.1.6.

#### Response

Table 4-12 of the Six Month Report lists the loads handled by the auxiliary building crane. Only the following loads have interfacing lift points (lifting lugs or trunions).

New Fuel Shipping Cask  
Spent Fuel Shipping Cask  
Concrete Hatch Covers  
Large Filter Cask  
Small Filter Cask  
Resin Cask  
Watergate

Note: A dynamic load factor of 2 was used for all evaluations.

The new fuel shipping cask is owned by the contractor supplying the new fuel (Westinghouse). The spent fuel shipping casks are currently leased from various suppliers. The new fuel shipping container lifting lugs are designed such that any one of the four lifting lugs is capable of lifting the entire weight of a loaded container. Refueling Procedure 2A dated February 7, 1980 requires that all four lift points be used when handling the container. Based on the provisions above it is concluded that the lifting lugs are acceptable.

The spent fuel shipping cask lift points evaluation will be deferred until a shipping cask that is licensed is chosen for use at the Point Beach Nuclear Plant. No shipping cask movement over the spent fuel or safe shutdown equipment will be permitted until the evaluation is completed and compliance with NUREG-0612, Section 5.1.6(3) or its equivalent is confirmed or justified. Modifications, if required, will be completed prior to cask use.

An evaluation of the lugs for the concrete hatch covers, the large and small filter cask, the resin cask and watergate will be performed and submitted under a separate letter.

2.4 NRC Question 2.2-4

For cranes identified in 2.2-1, above, not categorized according to 2.2-3, demonstrate that the criteria of NUREG 0612, Section 5.1, are satisfied. Compliance with Criterion IV will be demonstrated in response to Section 2.4 of this request. With respect to Criteria I through III, provide a discussion of your evaluation of crane operation in the spent fuel area and your determination of compliance.

Response

The spent fuel pool crane was identified in 2.2-1 above and was not categorized according to 2.2-3. As stated in the response to 2.2-2, this device carries spent fuel elements which weigh less than the defined heavy load of 1750 lbs. and therefore is excluded from further consideration.