NORTHEAST UTILITIES

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NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 666-6911

March 14, 1985

Docket No. 50-423
B11406

Director of Nuclear Reactor Regulation
Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Reference: (1) W. G. Counsil letter to B. J. Youngblood, Response to Auxiliary Systems Branch Draft SER Open Items, May 15, 1984.

(2) B. J. Youngblood letter to W. G. Counsil, dated November 15, 1984.

Dear Mr. Youngblood:

Millstone Nuclear Power Station, Unit No. 3
NUREG-0612, Control of Heavy Loads

On December 22, 1980, the NRC issued a letter to Northeast Nuclear Energy Company (NNECO), requesting that NNECO review provisions for handling and control of heavy loads at Millstone Unit No. 3, and evaluate these provisions with respect to the guidelines of NUREG-0612. In Reference (1), NNECO transmitted the response to this request. Enclosure 1 to Reference (2) contained the technical evaluation report regarding Section 5.1.1 of NUREG-0612 (Phase I) control of heavy loads for Millstone Unit No. 3 and has identified five open items. Enclosed are NNECO's responses to those five open items contained in Reference (2).

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Limited Distribution

As requested by the NRC Project Manager for Millstone Unit No. 3, Ms. E. L. Doolittle, ten (10) copies of the reports, that are referenced in the responses to the open items, are being forwarded directly to her. If there are any questions, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY
et. al.

BY NORTHEAST NUCLEAR ENERGY COMPANY
Their Agent

W. G. Counsil
Senior Vice President

STATE OF CONNECTICUT)
) ss. Berlin
COUNTY OF HARTFORD)

Then personally appeared before me W. G. Counsil, who being duly sworn, did state that he is Senior Vice President of Northeast Nuclear Energy Company, an Applicant herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Applicants herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Notary Public

My Commission Expires March 31, 1988

NUREG-0612, "Control of Heavy Loads"

2.2.1 Scope

"Report the results of your review of plant arrangements to identify all overhead handling systems from which a load drop may result in damage to any system required for plant shutdown or decay heat removal (taking no credit for any interlocks, technical specifications, operating procedures, or detailed structural analysis) and justify the exclusion of any overhead handling system from your list by verifying that there is sufficient physical separation from any load-impact point and any safety-related component to permit a determination by inspection that no heavy load drop can result in damage to any system or component required for plant shutdown or decay heat removal."

EG&G Evaluation

The Steam Generator Access Platform Jib Crane Mark No. 3MHR-CRN-4, 5 was excluded from compliance with NUREG-0612 on the basis that limit switches and a load cell limit the load over the refueling cavity area to 1800 lb. Exclusion does not seem to be consistent with Phase I criteria of not taking credit for interlocks and operating procedures.

The Spent Fuel Bridge and Hoist Mark No. 3MHS-CRN-B1 and the Sigma Refueling Machine Mark No. 3MHR-CRN-2 were excluded because the maximum load they will carry is a fuel element. However, it is not clear whether it is possible to lift loads heavier than a fuel element with these hoists. If heavier loads are eliminated only by administrative procedures then these hoists hoists should be included.

Response

Under normal use conditions, the Steam Generator Access Platform Jib cranes (3MHR-CRN 4 and 5) will not be handling loads greater than 1800# due to its interlocks, and will be in use when the Reactor is in a Mode V condition and the vessel head and its associated equipment is in place. In the unlikely event that the jib crane interlocks must be bypassed and a heavy load lifted, it will be done by written procedure and under shift supervisor supervision with the reactor in either a Mode V or Mode VI condition. In any case, any possible load drop could not produce the forces analyzed in section 2.3.4.c and found acceptable.

The Spent Fuel Bridge and Hoist (3MHS-CRN-B1) has been included in Table 1, "Crane Heavy Load List and Lifting Devices" of the control of heavy loads report for Millstone 3.

The Sigma Refueling Machine (3MHR-CRN2) is a specially designed crane used only during refueling. The only loads this crane will handle are the control rod drive shaft unlatching tool and fuel elements. Since the unlatching tool weighs less than 1800#, this crane will not be included.

2.3.1 Safe Load Paths [Guidelines 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 flood 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."

EG&G Evaluation

NNECO's response to this guideline is brief but seems to meet the intent of the guidelines. Load paths are defined and a load director will verify and direct the load handling operation to ensure that load paths are followed. It is not clear if deviations from load paths require a written approval.

Response:

Any deviations from defined load paths will require written alternative procedures approved by the Plant Operators Review Committee (PORC). Refer to the revised response to item 2.1.3b (Reference 1).

Reference: (1) Revision 1 of the Control of Heavy Loads Report for Millstone 3, dated March, 1985.

2.3.2 Load-Handling Procedures [Guidelines 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."

EG&G Evaluation

NNECO states that "load-handling operational procedures will be written as necessary to ensure compliance with the NNECO submittal to NUREG-0612." Compliance should be to NUREG-0612 not the NNECO submittal. It is also not clear if all heavy loads will have written procedures for their handling.

Response:

The statement in response to item 2.1.3b (Reference 1) will be changed to read "load handling procedures will be written as necessary in accordance with the guidelines of NUREG-0612 as noted in this submittal." Also the statement in response to item 2.1.3.c (Reference 1) will be changed to read "Procedures for the lifting of all heavy loads will incorporate the guidance of NUREG-0612.

Reference: (1) Revision 1 of the Control of Heavy Loads Report for Millstone 3, dated March, 1985.

2.3.4 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 (4500 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) or the load and of the intervening components of the special handling device."

EG&G Evaluation

A stress report on the two special lifting devices identified is being done by Westinghouse but is not yet available. Based on the information given in the response the intent of the guideline should be met but the stress report or a summary of its conclusions should be provided before final acceptance. Information on how dynamic loads were accounted for should also be provided. The response to the requirements of Section 5.3 of ANSI N 14.6 is not in sufficient detail.

Response:

Attached is the "Evaluation of the Acceptability of the Reactor Vessel Head Lift Rig, Reactor Vessel Internals Lift Rig, Load cell, and Load Cell Linkage to the Requirements of NUREG-0612" (WCAP 10669). This report is provided as an attachment to the Millstone 3 submittal (Report on "Control of Heavy Loads", dated May 1984) concerning the handling of heavy loads at Millstone 3. It represents a response to item 2.3.4 "Special Lifting Devices" with the following exceptions:

1) Table 2-1, page 2-8 lists Felpro N-1000 as a lubricant on the vessel head lift rig. Millstone 3 will use Felpro N-5000 as an alternate to Felpro N-1000.

2) Table 2-1, page 2-12 states "weld repairs should be performed in accordance with the requirements identified in NF-4000 and NF-5000 (Fabrication and Examination) of the ASME Boiler and Pressure Vessel Code Section III, Division 1, Subsection NF." Millstone 3 will perform weld repairs in accordance with Article IWB-4000 (Repair Procedure) of the ASME Boiler and Pressure Vessel Code, Section XI.

References: (1) Revision 1 of the Control of Heavy Loads for Millstone 3, dated March, 1985.

(2) Evaluation of the Acceptability of the Reactor Vessel Head Lift Rig, Reactor Vessels Internals Lift Rig, Load Cell, and Load Cell Linkage to the Requirements of NUREG-0612 (WCAP-10669), dated September, 1984.

2.3.5 Lifting Devices (Not Specifically Designed) [Guidelines 5, NUREG-0612, Article 5.1.1(5)]

"Lifting devices that are not specifically 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."

EG&G Evaluation

Since no information was provided an evaluation is impossible.

Response:

Millstone 3 has evaluated the potential routine dynamic loading for lifting devices not specifically designed and found them to be a relatively small fraction of the static load. The evaluation has been made on the basis of the crane speeds which are all below 30 ft/minute except for one crane which has a speed of 32ft/min. Therefore, Millstone 3 is taking exception to the requirement to select slings in accordance with the maximum working load tables of ANSI B30.9 considering the sum of static and dynamic loads.