



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

September 10, 2001

Docket No. 50-213

CY-01-108

Re: 10CFR50.90

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Haddam Neck Plant
Proposed Technical Specification Change

Introduction

Pursuant to 10 CFR 50.90, Connecticut Yankee Atomic Power Company (CYAPCO) hereby proposes to amend its Operating License, DPR-61, by incorporating the attached proposed changes into the Haddam Neck Plant (HNP) Technical Specifications.

The proposed changes to Technical Specification 3/4.9.7 and corresponding Bases address application of a Single-Failure-Proof Handling System, as defined by NUREG-0612 and NUREG-0554, for the handling of loads in excess of 1800 pounds near or over the Spent Fuel Pool. The anticipated types of heavy-loads include the combination of a spent fuel storage canister and transfer cask which are compliant with an NRC Certificate of Compliance per 10 CFR 72.214 and 10 CFR 72.238.

A001

Discussion

The proposed changes address both: (a) the existing designs of the Fuel Handling Cranes within the Spent Fuel Building and (b) a Single-Failure-Proof Handling System that includes a Yard Crane upgraded to the single-failure-proof criteria of NUREG-0612 and NUREG-0554 by application of the X-SAM crane design. The X-SAM crane design is defined by: (a) NRC-approved Generic Licensing Topical Report EDR-1 (P)-A, Revision 3, "EDERER'S Nuclear Safety Related eXtra-Safety And Monitoring (X-SAM) CRANES" Revision 3, Amendment 3, dated October 8, 1982, (b) the NRC Safety Evaluation for EDR-1, Revision 1, dated January 2, 1980, and (c) the NRC Safety Evaluation for EDR-1, Revision 3, dated August 26, 1983.

Within the previous decade, several other licensees have submitted similar proposed Technical Specification changes concerning Single-Failure-Proof Handling Systems; and the NRC has issued corresponding license amendments.

In support of this license amendment request, the following information is provided:

- Attachment 1 provides: (i) a detailed description of the proposed changes, (ii) background and reason for the proposed change, (iii) regulatory analysis, (iv) technical analysis, (v) a no significant hazards consideration determination, and (vi) an environmental impact consideration determination.
- In conformance with the NRC Safety Evaluations for EDR-1, Attachment 2 provides a plant-specific Appendix B Supplement to EDR-1.
- In conformance with the NRC Safety Evaluations for EDR-1, Attachment 3 provides a plant-specific Appendix C Supplement to EDR-1, including information concerning seismic qualification.
- Attachment 4 forwards the marked-up Technical Specification and Bases pages.
- Attachment 5 forwards the retyped Technical Specification and Bases pages.

As discussed in Attachment 1, the proposed changes have been reviewed in accordance with 10 CFR 50.92, and it has been determined that the proposed changes do not involve a Significant Hazards Consideration (SHC). In addition, the proposed changes have been reviewed in consideration of 10 CFR 51.22, and it has been determined that the proposed changes meet the criteria for categorical exemption from requiring an environmental impact statement.

Independent Review

The Plant Operations Review Committee and Nuclear Safety Assessment Board have reviewed the proposed amendment request and concur with the above determinations.

State Notification

In accordance with 10CFR 50.91(b), CYAPCO is providing the State of Connecticut with a copy of the proposed amendment request.

Commitments

The following commitments are contained within this letter:

- For the Single-Failure-Proof Handling System, administrative controls will be used to maintain a vertical distance of greater than 1.5 feet between any crane load greater than 1800 pounds and any surface within the Spent Fuel Building which has not been demonstrated by evaluation to support safe operation of the facility following damage resulting from either a postulated failure of the drive train or single wire rope.
- The Single-Failure-Proof Handling System will not be used to lift spent fuel assemblies from Spent Fuel Racks.
- The Auxiliary Hoist of the upgraded Yard Crane will not be used for any crane load greater than 1800 pounds that is near or over the Spent Fuel Pool.

Schedule Required for NRC Approval

The modifications to the Yard Crane are scheduled to be completed by the fourth quarter of 2001.

Therefore, CYAPCO requests that these proposed changes be reviewed and approved by the NRC Staff within 180 days of receipt. Finally, CYAPCO requests that the license amendment be effective upon issuance for implementation within 60 days.

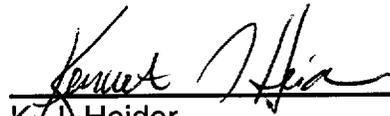
Conclusion

The proposed changes have been reviewed in accordance with 10 CFR 50.92 and have been determined to not constitute a Significant Hazards Consideration (SHC). In addition, the proposed changes have been reviewed in consideration of 10 CFR 51.22; and it has been determined that the proposed changes meet the criteria for a categorical exemption from requiring an environmental impact statement.

If the NRC staff should have any questions regarding this submittal, please contact Mr. G. P. van Noordennen at (860) 267-3938.

Sincerely,

CONNECTICUT YANKEE ATOMIC POWER COMPANY



K.J. Heider

Vice President -Operations and Decommissioning

Attachments

cc: H.J. Miller, NRC Region I Administrator
J.E. Donoghue, NRC Senior Project Manager, Haddam Neck Plant
R.R. Bellamy, Chief, Decommissioning and Laboratory Branch, NRC Region I
E.L. Wilds, Jr., Director, CT DEP Monitoring and Radiation Division

Subscribed and sworn to before me

this 10th day of Sept., 2001

Gerard P. van Noordennen

Date Commission Expires:

December 31, 2002

Docket No. 50-213
CY-01-108

Attachment 1
Haddam Neck Plant
Proposed Revision to Technical Specifications
Description and Analysis

September 2001

Detailed Description of Change

The proposed changes affect Technical Specification 3/4.9.7 "CRANE TRAVEL – SPENT FUEL BUILDING," and corresponding Technical Specification Bases B 3/4.9.7.

The proposed Technical Specification Changes are:

- Revision of Limiting Condition for Operation (LCO) 3.9.7 to identify that the existing prohibitions on travel of crane loads in excess of 1800 pounds are not applicable to a Single-Failure-Proof Handling System including a Yard Crane that is compliant with the single-failure-proof criteria of NUREG-0612 Section 5.1.2(1) and NUREG-0612 Section 5.1.6.
- Revision of Technical Specification Bases 3/4.9.7 to identify that the continuing restrictions on the movement of loads in excess of 1800 pounds by any crane that is not qualified to single-failure-proof criteria supports both (a) the safety analysis described in FSAR Section 15.2.2 and (b) the referenced evaluation of the effect of load drop on spent fuel structural integrity.
- Revision of Technical Specification Bases 3/4.9.7 to identify that the Single-Failure-Proof Handling System, as defined by NUREG-0612, is applied for the handling of loads in excess of 1800 pounds near or over any area the Spent Fuel Pool, including certified spent fuel casks.

The proposed changes retain existing requirements concerning the travel of the Fuel Handling Cranes.

Background and Reason for Change

The Technical Specifications for the Haddam Neck Plant (HNP) include a restriction on the movement of loads greater than 1800 pounds over any fuel assembly stored in the Spent Fuel Pool. Additionally, the licensing bases includes a restriction on the handling of spent fuel casks near or over any area of the Spent Fuel Pool. As stated in the NRC Safety Evaluation for Facility Operating License Amendment 125, Reference (7), the required condition for the removal of the restriction is the completion of NUREG-0612 Phase II actions (which are defined in Generic Letter 85-11, Reference (8)).

To date, CYAPCO has not fully completed NUREG-0612 Phase II actions that fulfill the condition for the handling of spent fuel casks near or over the Spent Fuel Pool.

CYAPCO anticipates future transfers of spent fuel from the Spent Fuel Pool in compliance with a Certificate of Compliance for an approved dry cask storage system.

Therefore, the reasons for the proposed changes are to provide revised Technical Specification requirements and Bases that:

- Support the analytical assumptions for the safety analysis that is described in FSAR Section 15.2.2, Reference (9). (Existing restrictions are retained for cranes that are not qualified to the single-failure-proof criteria of NUREG-0612).
- Identify that application of the single-failure-proof heavy load handling system, as defined by of NUREG-0612 Sections 5.1.2(1) and 5.1.6, fulfills the required condition for the movement of heavy loads, including spent fuel casks, near or over any area of the Spent Fuel Pool.
- Restrict the handling of such loads to a crane and lifting devices that conform to the single-failure-proof heavy load handling system criteria of NUREG-0612 Sections 5.1.2(1) and 5.1.6.

Regulatory Guidance and Regulatory Analysis

The proposed license amendment corresponds to application of a combination of design of systems, structures, components (SSCs), and procedures that support compliance with the applicable guidelines of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," Reference (1).

Applicable Guidelines of NUREG-0612

The guidelines of Section 5.1 of NUREG-0612 provide a defense-in-depth approach to assure the safe handling of heavy loads near or over spent fuel at licensed commercial nuclear power plants.

General Requirements of NUREG-0612 Section 5.1.1

In the Safety Evaluation for License Amendment 125, Ref. (7), the NRC acknowledged that the general guidance of NUREG-0612 Section 5.1.1 (NUREG-0612 Phase I) was applicable to HNP heavy load handling near or over the Spent Fuel Pool. Specifically, the guidelines of Section 5.1.1 include guidance concerning: (a) safe load paths, (b) procedures, (c) qualifications of crane operators, (d) lifting devices, and (e) the inspection, testing, and maintenance of cranes and lifting devices used to lift heavy loads near or over irradiated fuel.

The proposed amendment supports conformance with this guidance.

Alternative Criteria Sets of NUREG-0612 Section 5.1.2

In addition to identifying the applicability of the guidelines of Section 5.1.1, Section 5.1.2 (NUREG-0612 Phase II) also states that “heavy load handling operations in the spent fuel pool area” should satisfy one of four alternative sets of criteria.

The proposed license amendment corresponds to the first of the four alternative sets of criteria from NUREG-0612 Section 5.1.2, Alternative Criterion 5.1.2(1).

Specifically, Alternative Criterion 5.1.2(1) states:

“The overhead crane and associated lifting devices used for handling heavy loads in the spent fuel pool area should satisfy the single-failure-proof guidelines of Section 5.1.6 of this report. [Section 5.1.6 of NUREG-0612 concerns “Single-Failure-Proof Handling Systems.”]

Unlike the other three alternative criteria sets of NUREG-0612 Section 5.1.2, Criterion 5.1.2(1) includes no requirements concerning analysis of postulated load drop or resulting consequences.

For the Haddam Neck Plant, the application of alternative criterion 5.1.2(1) is implementation of a Single-Failure-Proof Handling System that includes:

- An upgraded Yard Crane
- Special lifting devices
- Interfacing lift points such as lifting lugs and cask trunnions.

The proposed license amendment includes proposed changes to Technical Specifications and Bases that correspond to the application of a Single-Failure-Proof Handling System, as defined by NUREG-0612 Sections 5.1.1, 5.1.2(1), and 5.1.6, for the following types of crane loads:

- Any load in excess of 1800 pounds that is moved over any fuel assembly in the Spent Fuel Pool
- Any heavy load as defined in NUREG-0612, including a spent fuel cask, that is moved near or over any area of the Spent Fuel Pool.

Technical Analysis

CYAPCO is presently awaiting NRC approval of the NAC International (NAC) Request for Amendment of the Certificate of Compliance for the NAC, Multi-Purpose Canister (MPC) System (Certificate No. 1025) to incorporate the Haddam Neck Plant spent fuel as approved contents. In describing operations for the transfer of spent fuel assemblies from a Spent Fuel Pool to a Transportable Storage Canister within a Vertical Concrete Cask (components of the MPC system), the submitted NAC MPC SAR, Reference (10), refers to the application of a "cask handling crane" and specific handling devices that comply with the single-failure-proof system criteria of NUREG-0612 for the movement of heavy loads over or near the Spent Fuel Pool.

The NAC-MPC SAR identifies a combined weight of a Transportable Storage Canister within a Transfer Cask that is within the approximate weight range for a Spent Fuel Shipping Cask (15 – 110 tons) as listed in the categories of heavy loads from Table 3.1-1 of NUREG-0612. The NAC-MPC SAR also identifies a weight for a fully loaded Transfer Cask and canister that is within the approximate weight range for a Spent Fuel Shipping Cask as listed in Table 3.1-1 of NUREG-0612.

Currently, CYAPCO has no cask handling crane that is qualified to one of the four alternative sets of criteria from NUREG-0612 Section 5.1.2. Therefore, in anticipation of transfers of spent fuel in compliance with a Certificate of Compliance for an approved dry cask storage system, it is necessary to upgrade the existing Yard Crane to meet the single-failure-proof criterion of NUREG-0612 Section 5.1.2(1).

Additionally, as stated in the NAC-MPC SAR, anticipated transfer of spent fuel assemblies from a Spent Fuel Pool include the movement of a canister shield lid over irradiated fuel within a transportable storage canister located in the Cask Laydown Area of the Spent Fuel Pool. The NAC-MPC SAR identifies that the weight of the canister shield lid is greater than 1800 pounds, the maximum permissible weight over a fuel assembly as specified in existing Technical Specification 3/4.9.7. Therefore, it is necessary to upgrade the existing Yard Crane to meet the single-failure-proof criterion of NUREG-0612 Section 5.1.2(1).

Ederer Incorporated has been contracted to upgrade the existing Yard Crane. The upgrade work is currently scheduled to occur during the third and fourth quarter of 2001.

The upgraded system will include: (a) the existing support structure, (b) the modified bridge, (c) the modified trolley from the Turbine Building Crane, and (d) an X-SAM main hoist.

The resulting combination of bridge, trolley and hoist components for the upgraded Yard Crane corresponds to that described in Ederer Incorporated Generic Licensing Topical Report EDR-I(P)-A, entitled "Ederer's Nuclear Safety-Related Extra Safety and Monitoring (X-SAM) Cranes," Revision 3 (Reference (2)). That topical report describes the design and testing of the 'single-failure-proof' features which are intended for handling heavy loads near and over the Spent Fuel Pool.

By letter dated January 2, 1980, Reference (3), the NRC issued a Topical Report Evaluation concluding that "...the design features described in the topical report [Revision 1] are acceptable for assuring that a single failure will not result in the loss of capability to safely retain a critical load." This NRC Topical Report Evaluation was later updated by a NRC Safety Evaluation issued on August 26, 1983, Reference (4).

In accordance with the stipulation in the NRC's January 2, 1980 Topical Report Evaluation, we have enclosed as Attachments 2 and 3, the Appendix B and Appendix C supplements to the generic licensing topical report EDR-I(P)-A. These supplements provide a summary of plant-specific information supplied by Ederer Incorporated and CYAPCO.

No Significant Hazards Consideration

CYAPCO has reviewed the proposed changes to the Technical Specifications in accordance with the requirements of 10 CFR 50.92, "Issuance of Amendment," and concluded that the changes do not involve a significant hazards consideration (SHC). The proposed changes do not involve an SHC because the change would not:

1. *Involve a significant increase in the probability or consequences of an accident previously evaluated.*

Concerning the application of a single-failure-proof handling system for handling heavy loads near or over the Spent Fuel Pool, NUREG-0612 "Control of Heavy Loads at Nuclear Power Plants" asserts that the probability of an accidental load drop while handling loads over the spent fuel is insignificant.

Under the proposed amendment, the evaluation criteria of NUREG-0612 Section 5.1 are satisfied by the combination of (a) the continued implementation of procedures and the practices for both the Fuel Handling Cranes and the Yard Crane that provide conformance with the guidelines of Section 5.1.1 of NUREG-0612, and (b) the application of a single-failure-proof handling system that satisfies the criteria of NUREG-0612 Sections 5.1.2(1) and 5.1.6 for the movement of any load with a weight greater than 1800 pounds either (i) over any spent fuel assembly in the Spent Fuel Pool or (ii) near or over any area of the Spent Fuel Pool, including the Spent Fuel Cask Laydown Area.

The proposed amendment retains existing restrictions on crane travel for the Fuel Handling Cranes, which are not qualified to the single-failure-proof criteria of NUREG-0612. These retained restrictions continue to support the existing safety analysis of Section 15.2.2 "Fuel Handling Accident" of the UFSAR, Reference (9).

Additionally, the proposed amendment corresponds to the application of a single-failure-proof handling system to fulfill the NUREG-0612 Phase II condition that is required prior to the handling of a spent fuel cask near or over any area of the Spent Fuel Pool.

Therefore, the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. *Create the possibility of a new or different kind of accident from any accident previously evaluated.*

The proposed changes will allow the handling by a single-failure-proof handling system of loads in excess of 1800 pounds over fuel assemblies in any region of the Spent Fuel Pool, including the Spent Fuel Cask Laydown Area.

Additionally, the proposed changes correspond to the application of a single-failure-proof handling system for the fulfillment of the required condition for the handling of spent fuel casks near or over any area of the Spent Fuel Pool. This required condition is identified in the documentation for the NRC Issuance of License Amendment 125, Ref. (7); and it is acknowledged in the CYAPCO submittal for the proposed license amendment that was issued as License Amendment 188, Ref. (5) and the NRC Issuance of License Amendment 195, Ref. (6).

NUREG-0612 Section 5.1.2 identifies that the capability of a single-failure-proof handling system to handle heavy loads has been identified as equivalent in risk to the capabilities of a non-single-failure-proof heavy load handling system that complies with the criteria of one of the other three alternative sets from NUREG-0612 (including alternative criteria that include analyses concerning postulated heavy load drops.)

A structural evaluation of the heavy load interfaces within the Spent Fuel Cask Laydown Area and the Cask Transfer Bay was performed per the requirements of EDR-1 Appendix B and C (Attachments 2 and 3). The results of the evaluation confirmed the design bases for the Spent Fuel Pool and the Spent Fuel Building are maintained.

As such, use of a single-failure-proof handling system precludes the possibility of a heavy load drop which could cause an accident outside of the existing design bases.

Additionally, the proposed changes retain existing restrictions on the travel of non-single-failure-proof cranes over fuel assemblies in the Spent Fuel Pool. These retained restrictions continue to support the existing safety analysis of Section 15.2.2 "Fuel Handling Accident" of the UFSAR, Reference (9).

Therefore, operation of the facility in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. *Involve a significant reduction in a margin of safety.*

Section 5.1.2 of NUREG-0612 identifies that each of the four alternative sets of criteria for the handling of heavy loads near or over the Spent Fuel Pool, including over fuel assemblies, provides a level of safety that is essentially equivalent to the level of safety provided by any of the other three alternative sets of criteria.

The proposed change corresponds to the application of the first of the four alternative sets of criteria, which is described in NUREG-0612 Section 5.1.2(1), implementation of a single-failure-proof handling system.

Additionally, the proposed change includes the retention of existing crane travel restrictions for the Fuel Handling Cranes, therefore, maintaining the existing margin of safety concerning the operation of those other cranes.

Therefore, operation of the facility in accordance with the proposed amendment will not involve a significant reduction in a margin of safety.

Similar Changes

In the March 6, 1986 Federal Register Notice, the NRC listed examples of changes which are considered not likely to involve significant hazards considerations. Example (iv) from the list states:

“A relief granted upon demonstration of acceptable operation from an operating restriction that was imposed because acceptable operation was not yet demonstrated. This assumes that the operating restriction and criteria to a request for relief has been established in a prior review and that it is justified in a satisfactory way that the criteria have been met.”

The proposed amendment is similar to the above example. The “operating restriction” that has “been established in a prior review” is the prohibition on the movement of a crane load with a weight in excess of 1800 pounds over any fuel assembly by the application of any crane (existing LCO 3.9.7). The “criteria to be applied to a request for relief” that “have been established in a prior review” are the alternative criteria for a single-failure-proof handling system corresponding to Sections 5.1.2(1) and 5.1.6 of NUREG-0612.

Conclusion

Thus, the proposed amendment to the Facility Operating License does not involve a significant hazards consideration as defined in 10CFR50.92.

Environmental Consideration

CYAPCO has reviewed the proposed license amendment against the criteria of 10CFR51.22 for environmental considerations.

This amendment request satisfies the criteria specified in 10CFR51.22(c)(9) for a categorical exclusion from the requirements to perform an environmental assessment or to prepare an environmental impact statement. The criteria of 10CFR51.22(c)(9) are addressed as follows:

(i) *The amendment involves no significant hazards consideration.*

As discussed in the "No Significant Hazards" Section above, the proposed changes to the Technical Specifications do not involve a significant hazards consideration.

(ii) *There is no significant change in the types or significant increase in the amounts of effluents that may be released offsite.*

The proposed license amendment corresponds to the direct implementation of systems, structures, and procedures that satisfy the requirements of NUREG-0612 Section 5.1.1 and the first of the four alternative sets of criteria from Section 5.1.2, Alternative Criterion 5.1.2(1), a single-failure-proof handling system for heavy loads.

As previously discussed, NUREG-0612 identifies that application of the single-failure-proof heavy load handling system criteria, defined by NUREG-0612 Section 5.1.2(1), provides an acceptable alternative to documented analysis of the radiological release consequences of a postulated heavy load drop. For any planned movement of a spent fuel cask or other heavy load near or over the Spent Fuel Pool, there will be application of an upgraded Yard Crane and handling devices that comply with the single-failure-proof criteria of NUREG-0612 Sections 5.1.2(1) and 5.1.6.

The proposed changes have been compared with the requirements of the Radiological Effluent Monitoring program and the Offsite Dose Calculation Manual. No changes to these radioactive monitoring and effluent programs are needed as a result of the proposed changes.

Therefore, the proposed changes involve no significant change in the types or significant increase in the amounts of effluents that may be released offsite.

- (iii) *There is no significant increase in individual or cumulative occupational radiation exposure.*

As stated previously, the proposed license amendment corresponds to the direct implementation of systems, structures, and procedures that satisfy the requirements of NUREG-0612 Section 5.1.1 and the first of the four alternative sets of criteria from Section 5.1.2, Alternative Criterion 5.1.2(1), a single-failure-proof handling system for heavy loads.

As previously discussed, NUREG-0612 identifies that application of the single-failure-proof heavy load handling system criteria, defined by NUREG-0612 Section 5.1.2(1), provides an acceptable alternative to documented analysis of the radiological release consequences of a postulated heavy load drop. For any planned movement of a spent fuel cask or other heavy load near or over the Spent Fuel Pool, there will be application of an upgraded Yard Crane and handling devices that comply with the single-failure-proof criteria of NUREG-0612 Section 5.1.2(1) and NUREG-0612 Section 5.1.6.

Additionally, prior to use of the single-failure-proof handling system for activities corresponding to 10 CFR 72 Subpart K (General License for Storage of Spent Fuel at Power Reactor Sites), CYAPCO will perform written evaluations compliant with the requirements of 10CFR72.212(b). Among these are evaluations that: (i) Establish that the conditions set forth in the applicable Certificate of Compliance have been met, (ii) Establish that the radioactive material requirements of 10 CFR 72.104 have been met, and (iii) Determine if the effectiveness of radiation protection program is decreased.

Therefore, the proposed changes to Technical Specifications involve no significant increase in individual or cumulative occupational radiation exposure.

Conclusion

Thus, the proposed changes to Technical Specifications satisfy the criteria provided in 10CFR51.22(c)(9) for categorical exclusion from the requirements of an environmental impact statement or environmental assessment.

References

- (1) US NRC NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," published July 1980.
- (2) Generic Licensing Topical Report EDR-1 (P) – A, "EDERER'S Nuclear Safety Related eXtra Safety And Monitoring (X-SAM) CRANES," Revision 3, Amendment 3, dated October 8, 1982.
- (3) NRC Topical Report Evaluation for EDR-1 (P)-A, Rev. 1, included in letter from USNRC to Ederer Incorporated, "Review and Acceptance of Topical Report EDR-1, Ederer's Nuclear Safety Related eXtra-Safety And Monitoring (X-SAM) Cranes, Revision 1," dated January 2, 1980.
- (4) NRC Safety Evaluation Report for Generic Licensing Topical Report EDR-1, Rev. 3 included in Letter from USNRC to Ederer Incorporated, "Acceptance for Referencing of Licensed Topical Report EDR-1 (P), Ederer Nuclear Safety-Related Extra Safety and Monitoring (X-SAM) Cranes," dated August 26, 1983.
- (5) Letter from J.F. Opeka (CYAPCO) to USNRC, "Haddam Neck Plant Proposed Revision to Technical Specifications Spent Fuel Pool Capacity Expansion," Letter Number B15136, dated March 31, 1995.
- (6) Letter from T.L. Fredrichs (NRC) to R.A. Mellor (CYAPCO), "Haddam Neck Plant – Issuance of Amendment RE: Relocation of Requirements to Licensee-Controlled Documents (TAC No. MA5756)," dated October 19, 1999.
- (7) Letter from US NRC to CYAPCO, dated April 26, 1990, Issuance of Amendment 125.
- (8) NRC Generic Letter 85-11, "Completion of Phase II of 'Control of Heavy Loads at Nuclear Power Plants' NUREG-0612," dated June 28, 1985.
- (9) Haddam Neck Plant Updated Final Safety Analysis Report (UFSAR), Change 34, dated August 2, 2000.
- (10) NAC-MPC Safety Analysis Report for the NAC Multi-Purpose Canister System Amendment for Connecticut Yankee Atomic Power Company, Revision MPC-01B, dated April 2001.

Docket No. 50-213
CY-01-108

Attachment 2

Haddam Neck Plant

Proposed Revision to Technical Specifications

Appendix B Supplement to Generic Licensing Topical Report EDR-1

September 2001

APPENDIX B SUPPLEMENT TO
 GENERIC LICENSING TOPICAL REPORT
 EDR-1

SUMMARY OF PLANT SPECIFIC CRANE DATA
 SUPPLIED BY EDERER, INCORPORATED

HADDAM NECK PLANT

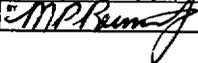
YARD CRANE

BECHTEL SUBCONTRACT NO. 24265-SC-117

EDERER S.O. NO. F2675

REVISION B

07/02/01

		BECHTEL		JOB NO. 24265	
SUPPLIER DOCUMENT REVIEW STATUS					
STATUS NO.					
1 <input checked="" type="checkbox"/> Work may proceed					
2 <input type="checkbox"/> Revise and resubmit. Work may proceed subject to resolution of comments indicated					
3 <input type="checkbox"/> Rejected. Revise and resubmit. Work may not proceed.					
4 <input type="checkbox"/> Revise not required. Work may proceed					
<small>Permission to proceed does not constitute acceptance or approval of design details, calculations, analysis, test methods or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.</small>					
Reviewed	Civil	Elec.	Mech.	Plant Fac.	CS
					DATE
					7/11/01

PREPARED: 
 PROJECT ENGINEER, EDERER INCORPORATED

CHECKED: 
 EDERER, INCORPORATED

REVIEWED: 
 QUALITY ASSURANCE MANAGER
 EDERER, INCORPORATED

APPROVED: 
 CHIEF ENGINEER, EDERER INCORPORATED

REVISION B 07/02/01

EDR-1 APPENDIX B SUPPLEMENT
SUMMARY OF PLANT SPECIFIC CRANE DATA
SUPPLIED BY EDERER, INCORPORATED

HADDAM NECK PLANT

TABLE OF CONTENTS AND REVISION STATUS

<u>DESCRIPTION</u>	<u>PAGE NO.</u>	<u>REVISION</u>
TITLE PAGE	i	B
TABLE OF CONTENTS & REVISION STATUS	ii	B
	iii	B
 <u>TOPICAL REPORT SECTION</u>		
III.C (C.1.a)	1	B
III.C (C.1.b)	1	B
III.C (C.2.b) & III.E.4	1	B
III.C (C.2.b) & III.E.4	2	B
III.C (C.3.e)	2	B
REG. GUIDE 1.104 (C.3.f)	3	B
III.C (C.3.h) & III.E.11	3	B
III.C (C.3.i)	3	B
III.C (C.1.j)	4	B
III.C (C.3.k)	5	B
REG. GUIDE 1.104 (C.3.o)	5	B
REG. GUIDE 1.104 (C.3.p)	5	B
REG. GUIDE 1.104 (C.3.q)	6	B
III.D.1	6	B
III.D.2	6	B

REVISION B 07/02/01

EDR-1 APPENDIX B SUPPLEMENT
SUMMARY OF PLANT SPECIFIC CRANE DATA
SUPPLIED BY EDERER, INCORPORATED

HADDAM NECK PLANT

TABLE OF CONTENTS AND REVISION STATUS

<u>TOPICAL REPORT SECTION</u>	<u>PAGE NO.</u>	<u>REVISION</u>
III.D.3	7	B
III.D.5	7	B
III.D.6	7	B
III.F.1	7	B
III.F.1	8	B

EDR-1 APPENDIX B SUPPLEMENT
SUMMARY OF FACILITY SPECIFIC CRANE DATA SUPPLIED BY EDERER FOR
HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.1.a	III.C (C.1.a)	1. THE ACTUAL CRANE DUTY CLASSIFICATION OF THE CRANE SPECIFIED BY THE APPLICANT	1. THE CRANE HAS A CLASS "A" CRANE DUTY CLASSIFICATION IN ACCORDANCE WITH CMAA SPECIFICATION #70 - 2000.
C.1.b	III.C (C.1.b)	1. THE MINIMUM OPERATING TEMPERATURE OF THE CRANE SPECIFIED BY THE APPLICANT.	1. THE MAIN HOIST WAS DESIGNED AND FABRICATED FOR A MINIMUM OPERATING TEMPERATURE OF -25°F.
C.2.b	III.C (C.2.b) III.E.4	1. THE MAXIMUM EXTENT OF LOAD MOTION AND THE PEAK KINETIC ENERGY OF THE LOAD FOLLOWING A DRIVE TRAIN FAILURE.	1. THE MAIN HOIST WAS DESIGNED SUCH THAT THE MAXIMUM VERTICAL LOAD MOTION FOLLOWING A DRIVE TRAIN FAILURE IS LESS THAN 1.5 FOOT AND THE MAXIMUM KINETIC ENERGY OF THE LOAD IS LESS THAN THAT RESULTING FROM ONE INCH OF FREE FALL OF THE MAXIMUM CRITICAL LOAD.

EDR-1 APPENDIX B SUPPLEMENT
SUMMARY OF FACILITY SPECIFIC CRANE DATA SUPPLIED BY EDERER FOR
HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.2.b		2. PROVISIONS FOR ACTUATING THE EMERGENCY DRUM BRAKE PRIOR TO TRAVERSING WITH THE LOAD, WHEN REQUIRED TO ACCOMMODATE THE LOAD MOTION FOLLOWING A DRIVE TRAIN FAILURE.	2. PROVISIONS FOR AUTOMATICALLY ACTUATING THE EMERGENCY DRUM BRAKE PRIOR TO TRAVERSING WITH THE LOAD ARE NOT REQUIRED. PLANT PROCEDURES WILL LIMIT THE HEIGHT OF CRITICAL LIFTS TO GREATER THAN THAN 1.5 FEET ABOVE ANY SURFACE IN THE SPENT FUEL BUILDING WHICH HAS NOT BEEN DEMONSTRATED BY EVALUATION TO SUPPORT SAFE OPERATION OF THE FACILITY FOLLOWING DAMAGE RESULTING FROM A DRIVE TRAIN FAILURE.
C.3.e	III.C(C.3.e)	1. THE MAXIMUM CABLE LOADING FOLLOWING A WIRE ROPE FAILURE IN TERMS OF THE ACCEPTANCE CRITERIA ESTABLISHED IN SECTION III.C (C.3.e)	1. THE MAXIMUM CABLE LOADING FOLLOWING A WIRE ROPE FAILURE IN THE MAIN HOIST MEETS THE MAXIMUM ALLOWED BY THE ACCEPTANCE CRITERIA ESTABLISHED IN SECTION III.C (C.3.e).

EDR-1 APPENDIX B SUPPLEMENT
SUMMARY OF FACILITY SPECIFIC CRANE DATA SUPPLIED BY EDERER FOR
HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.3.f	--	<ol style="list-style-type: none"> 1. MAXIMUM FLEET ANGLE 2. NUMBER OF REVERSE BENDS 3. SHEAVE DIAMETER 	<ol style="list-style-type: none"> 1. 3.5 DEGREES. 2. NONE, OTHER THAN THE ONE BETWEEN THE WIRE ROPE DRUM AND THE FIRST SHEAVE IN THE LOAD BLOCK. 3. 16 X WIRE ROPE DIAMETER.
C.3.h	III.C (C.3.h) III.E.11	<ol style="list-style-type: none"> 1. THE MAXIMUM EXTENT OF MOTION AND PEAK KINETIC ENERGY OF THE LOAD FOLLOWING A SINGLE WIRE ROPE FAILURE. 	<ol style="list-style-type: none"> 1. THE MAIN HOIST WAS DESIGNED SUCH THAT THE MAXIMUM LOAD MOTION FOLLOWING A SINGLE WIRE ROPE FAILURE IS LESS THAN 1.5 FOOT AND THE MAXIMUM KINETIC ENERGY OF THE LOAD IS LESS THAN THAT RESULTING FROM ONE INCH OF FREE FALL OF THE MAXIMUM CRITICAL LOAD.
C.3.i	III.C (C.3.i)	<ol style="list-style-type: none"> 1. THE TYPE OF LOAD CONTROL SYSTEM SPECIFIED BY THE APPLICANT. 2. WHETHER INTERLOCKS ARE RECOMMENDED BY REGULATORY GUIDE 1.13 TO PREVENT TROLLEY AND BRIDGE MOVEMENTS WHILE FUEL ELEMENTS ARE BEING LIFTED AND WHETHER THEY ARE PROVIDED FOR THIS APPLICATION. 	<ol style="list-style-type: none"> 1. EDERER AC FLUX VECTOR (MAIN HOIST) 2. THE CRANE WILL NOT BE USED TO LIFT FUEL ELEMENTS FROM THE REACTOR CORE OR SPENT FUEL RACKS. THEREFORE, INTERLOCKS TO PREVENT TROLLEY AND BRIDGE MOVEMENTS WHILE HOISTING HAVE NOT BEEN PROVIDED.

EDR-1 APPENDIX B SUPPLEMENT
 SUMMARY OF FACILITY SPECIFIC CRANE DATA SUPPLIED BY EDERER FOR
 HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.3.j	III.C (C.3.j)	<ol style="list-style-type: none"> <li data-bbox="772 420 1346 691">1. THE MAXIMUM CABLE AND MACHINERY LOADING THAT WOULD RESULT IN THE EVENT OF A HIGH SPEED TWO BLOCKING, ASSUMING A CONTROL SYSTEM MALFUNCTION THAT WOULD ALLOW THE FULL BREAKDOWN TORQUE OF THE MOTOR TO BE APPLIED TO THE DRIVE MOTOR SHAFT. <li data-bbox="772 1011 1346 1094">2. MEANS OF PREVENTING TWO BLOCKING OF AUXILIARY HOIST, IF PROVIDED 	<ol style="list-style-type: none"> <li data-bbox="1434 420 2024 971">1. THE ENERGY ABSORBING TORQUE LIMITER (EATL) WAS DESIGNED SUCH THAT THE MAXIMUM MACHINERY LOAD, WHICH WOULD RESULT IN THE EVENT A TWO BLOCKING OCCURS WHILE LIFTING THE RATED LOAD AT THE RATED SPEED AND THAT ALLOWS THE FULL BREAKDOWN TORQUE OF THE MOTOR TO BE APPLIED TO THE DRIVE SHAFT, WILL NOT EXCEED 3 TIMES THE DESIGN RATED LOADING. IN ADDITION, THE EATL DESIGN DOES NOT ALLOW THE MAXIMUM CABLE LOADING TO EXCEED THE ACCEPTANCE CRITERIA ESTABLISHED IN SECTION III.C (C.3.e) DURING THE ABOVE DESCRIBED TWO-BLOCKINGS. <li data-bbox="1434 1011 2024 1250">2. THE 20 TON AUXILIARY HOIST HAS ONE ROTARY LIMIT SWITCH AND ONE BLOCK ACTUATED LIMIT SWITCH THAT EACH INDEPENDENTLY PREVENTS TWO BLOCKING. THE AUXILIARY HOIST IS NOT BEING UPGRADED TO SINGLE-FAILURE-PROOF CRITERIA; AND IT WILL <u>NOT</u> BE UTILIZED FOR CRITICAL LIFTS.

EDR-1 APPENDIX B SUPPLEMENT
SUMMARY OF FACILITY SPECIFIC CRANE DATA SUPPLIED BY EDERER FOR
HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.3.k	III.C(C.3.k)	1. TYPE OF DRUM SAFETY SUPPORT PROVIDED.	1. THE ALTERNATE DESIGN DRUM SAFETY RESTRAINT SHOWN IN FIGURE III.D.4 OF EDR-1 IS ARRANGED TO COUNTER GEAR AND BRAKE FORCES AS WELL AS DOWNWARD LOADS. THESE BRACKETS ACT ON THE DIAMETER OF THE ENDS OF THE DRUM ON THE MAIN HOIST.
C.3.o	--	1. TYPE OF MAIN HOIST DRIVE TO PROVIDE INCREMENTAL MOTION.	1. AC FLUX VECTOR.
C.3.p	--	1. MAXIMUM TROLLEY SPEED	1. THE TROLLEY SPEED IS 50 F.P.M. REFERENCE CMAA SPECIFICATION 70, 1975 FIGURE 70-6, 100 TONS, SLOW SPEED.
		2. MAXIMUM BRIDGE SPEED	2. THE BRIDGE SPEED WILL BE REDUCED TO 50 F.P.M. REFERENCE CMAA SPECIFICATION 70,1975 FIGURE 70-6, 100 TONS, SLOW SPEED.
		3. TYPE OF OVERSPEED PROTECTION FOR THE TROLLEY AND BRIDGE DRIVES.	3. BOTH THE TROLLEY AND BRIDGE DRIVES ARE POWERED BY AC MOTORS THAT CANNOT OVERSPEED, SINCE THEIR MAXIMUM SPEED IS LIMITED BY THE 60 HZ LINE FREQUENCY. THEREFORE, OVERSPEED SENSORS THAT ACTUATE THE TROLLEY AND BRIDGE DRIVE BRAKES HAVE NOT BEEN PROVIDED.

EDR-1 APPENDIX B SUPPLEMENT
SUMMARY OF FACILITY SPECIFIC CRANE DATA SUPPLIED BY EDERER FOR
HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.3.q	--	1. CONTROL STATION LOCATION	1. THE COMPLETE OPERATING CONTROL SYSTEM, INCLUDING THE EMERGENCY STOP BUTTONS, ARE LOCATED ON THE REMOTE RADIO CONTROL STATION AND THE BACKUP CRANE PENDANT STATION.
--	III.D.1	1. THE TYPE OF EMERGENCY DRUM BRAKE USED, INCLUDING TYPE OF RELEASE MECHANISM.	1. PNEUMATICALLY RELEASED BAND BRAKE WILL BE USED FOR THE MAIN HOIST.
		2. THE RELATIVE LOCATION OF THE EMERGENCY DRUM BRAKE.	2. THE EMERGENCY DRUM BRAKE ENGAGES THE WIRE ROPE DRUM OF THE MAIN HOIST.
		3. EMERGENCY DRUM BRAKE CAPACITY.	3. THE MAIN HOIST EMERGENCY DRUM BRAKE HAS A MINIMUM CAPACITY OF 125% OF THAT REQUIRED TO HOLD THE DESIGN RATED LOAD.
--	III.D.2	1. NUMBER OF FRICTION SURFACES IN EATL.	1. THE MAIN HOIST EATL HAS 21 FRICTION SURFACES.
		2. EATL TORQUE SETTING	2. THE SPECIFIED EATL TORQUE SETTING IS APPROXIMATELY 130% OF THE MAIN HOIST DESIGN RATED LOAD.

EDR-1 APPENDIX B SUPPLEMENT
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HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
--	III.D.3	1. TYPE OF FAILURE DETECTION SYSTEM.	1. A TOTALLY MECHANICAL DRIVE TRAIN CONTINUITY DETECTOR AND EMERGENCY DRUM BRAKE ACTUATOR HAVE BEEN PROVIDED IN ACCORDANCE WITH APPENDIX G OF REVISION 3 OF EDR-1 FOR THE MAIN HOIST.
--	III.D.5	1. TYPE OF HYDRAULIC LOAD EQUALIZATION SYSTEM.	1. MAIN HOIST HYDRAULIC LOAD EQUALIZATION SYSTEM INCLUDES BOTH FEATURES DESCRIBED IN SECTION III.D.5.
--	III.D.6	1. TYPE OF HOOK.	1. THE MAIN HOOK HAS A SINGLE LOAD PATH.
		2. HOOK DESIGN LOAD	2. THE MAIN HOOK DESIGN CRITICAL LIFT LOAD IS 100 TONS WITH A 10:1 FACTOR OF SAFETY ON ULTIMATE.
		3. HOOK TEST LOAD	3. THE TEST LOAD FOR EACH LOAD PATH OF THE MAIN HOOK WILL BE 200 TONS.
--	III.F.1	1. DESIGN RATED LOAD.	1. MAIN HOIST - 100 TONS
		2. MAXIMUM CRITICAL LOAD RATING.	2. MAIN HOIST - 100 TONS

EDR-1 APPENDIX B SUPPLEMENT
 SUMMARY OF FACILITY SPECIFIC CRANE DATA SUPPLIED BY EDERER FOR
 HADDAM NECK PLANT

REG.GUIDE I.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
--	III.F.1	3. TROLLEY WEIGHT (NET). 4. TROLLEY WEIGHT (WITH LOAD) 5. HOOK LIFT. 6. NUMBER OF WIRE ROPE DRUMS 7. NUMBER OF PARTS OF WIRE. 8. DRUM SIZE (PITCH DIAMETER). 9. WIRE ROPE DIAMETER 10. WIRE ROPE TYPE. 11. WIRE ROPE MATERIAL. 12. WIRE ROPE BREAKING STRENGTH. 13. WIRE ROPE YIELD STRENGTH 14. WIRE ROPE RESERVE STRENGTH. 15. NUMBER OF WIRE ROPES.	3. 90,000 LBS. (INCLUDING HOOKS). 4. 290,000 LBS. 5. MAIN HOOK – 76 FEET, 0 INCHES 6. THE MAIN HOIST HAS ONE WIRE ROPE DRUM. 7. MAIN HOIST - 4 PARTS PER WIRE ROPE, 2 ROPES, WITH (2) ROPES OFF DRUM. 8. MAIN HOIST - 34 INCHES 9. MAIN HOIST – 1 .25 INCH 10. MAIN HOIST-6x37 CLASS EEIPS/IWRC 11. CARBON STEEL 12. MAIN HOIST – 215,800 LBS. 13. MAIN HOIST – 172,640 LBS. 14. MAIN HOIST – 0.582 15. THE MAIN HOIST HAS TWO ROPES.

Docket No. 50-213
CY-01-108

Attachment 3

Haddam Neck Plant

Proposed Revision to Technical Specifications

Appendix C Supplement to Generic Licensing Topical Report EDR-1

September 2001

APPENDIX C SUPPLEMENT TO
 GENERIC LICENSING TOPICAL REPORT
 EDR-1

SUMMARY OF REGULATORY POSITIONS
 TO BE ADDRESSED BY THE APPLICANT

HADDAM NECK PLANT

YARD CRANE

BECHTEL SUBCONTRACT NO. 24265-SC-117

EDERER S.O. NO. F2675

 BECHTEL		JOB NO.	
		24265	
SUPPLIER DOCUMENT REVIEW STATUS			
STATUS NO.			
1 <input checked="" type="checkbox"/> Work may proceed. 2 <input type="checkbox"/> Review and resubmit. Work may proceed subject to resolution of comments indicated. 3 <input type="checkbox"/> Rejected. Review and resubmit. Work may not proceed. 4 <input type="checkbox"/> Review not required. Work may proceed.			
<small>Permission to proceed does not constitute acceptance or approval of design details, calculations, analyses, test methods or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.</small>			
Reviewed	Civil	Elec.	Mech.
BY <u>M.P. B...</u>			
			DATE <u>7/11/01</u>

REVISION B

07/02/01

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EDR-1 APPENDIX C SUPPLEMENT
SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
HADDAM NECK PLANT
REVISION B 07/02/01

TABLE OF CONTENTS AND REVISION STATUS

<u>DESCRIPTION</u>	<u>PAGE NO.</u>	<u>REVISION</u>
TITLE PAGE	i	B
TABLE OF CONTENTS & REVISION STATUS	ii	B
 <u>TOPICAL REPORT SECTION</u>		
III.C (C.1.b(1))	1	B
III.C (C.1.b(3))	1	B
III.C (C.1.b(4))	1	B
III.C (C.4.d)	1	B
III.C (C.1.c)	1	B
 III.C (C.1.d)	 2	 B
III.C (C.1.e)	3	B
III.C (C.1.f)	3	B
 III.C (C.2.b) III.E.4	 4	 B
III.C (C.2.c)	4	B
III.C (C.2.d)	4	B
 III.C (C.2.d)	 5	 B
III.C (C.3.b)	5	B
 III.C (C.3.t)	 6	 B
REG. GUIDE 1.104 (C.3.u)	6	B
 REG. GUIDE 1.104 (C.4.a)	 7	 B
REG. GUIDE 1.104 (C.4.b)	7	B
REG. GUIDE 1.104 (C.4.c)	7	B
REG. GUIDE 1.104 (C.4.d)	7	B
III.C (C.5.a)	7	B

EDR-1 APPENDIX C SUPPLEMENT
SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
--	III.C(C.1.b.(1))	1. THE EXTENT OF VENTING OF CLOSED BOX SECTIONS.	1. CLOSED BOX SECTIONS ARE NOT VENTED SINCE THE CRANE IS NOT HOUSED IN A PRESSURIZED CONTAINMENT BUILDING.
C.1.b(3)	III.C(C.1.b(3))	1. THE NONDESTRUCTIVE AND COLD PROOF TESTING TO BE PERFORMED ON EXISTING STRUCTURAL MEMBERS FOR WHICH SATISFACTORY IMPACT TEST DATA IS NOT AVAILABLE.	1. THE EXISTING CRANE BRIDGE, INCLUDING ALL ACCESSIBLE STRUCTURAL WELDS, WILL BE INSPECTED BY A COMPETENT STRUCTURAL ENGINEER. VISUAL INDICATIONS OF STRUCTURAL DEGRADATION OF THE EXISTING BRIDGE WILL BE INVESTIGATED FURTHER BY THE APPROPRIATE NONDESTRUCTIVE EXAMINATION TECHNIQUES. THE AMBIENT TEMPERATURE WHEN THE 125% STATIC LOAD TEST IS PERFORMED WILL BE THE MINIMUM OPERATING TEMPERATURE FOR THE CRANE. IN THE EVENT THAT THE CRANE MUST BE OPERATED AT A LOWER TEMPERATURE, ANOTHER 125% STATIC PROOF TEST WILL BE PERFORMED AT THE LOWER TEMPERATURE.
C.1.b(4)	III.C(C.1.b(4))	1. THE NONDESTRUCTIVE AND COLD PROOF TESTING TO BE PERFORMED ON EXISTING STRUCTURAL MEMBERS FOR WHICH SATISFACTORY IMPACT TEST DATA IS NOT AVAILABLE.	1. THE EXISTING CRANE BRIDGE, INCLUDING ALL ACCESSIBLE STRUCTURAL WELDS, WILL BE INSPECTED BY A COMPETENT STRUCTURAL ENGINEER. VISUAL INDICATIONS OF STRUCTURAL DEGRADATION OF THE EXISTING BRIDGE WILL BE INVESTIGATED FURTHER BY THE APPROPRIATE NONDESTRUCTIVE EXAMINATION TECHNIQUES. THE AMBIENT TEMPERATURE WHEN THE 125% STATIC LOAD TEST IS PERFORMED WILL BE THE MINIMUM OPERATING TEMPERATURE FOR THE CRANE. IN THE EVENT THAT THE CRANE MUST BE OPERATED AT A LOWER TEMPERATURE, ANOTHER 125% STATIC PROOF TEST WILL BE PERFORMED AT THE LOWER TEMPERATURE.
C.4.d	III.C(C.4.d)	1. THE NONDESTRUCTIVE AND COLD PROOF TESTING TO BE PERFORMED ON EXISTING STRUCTURAL MEMBERS FOR WHICH SATISFACTORY IMPACT TEST DATA IS NOT AVAILABLE.	1. THE EXISTING CRANE BRIDGE, INCLUDING ALL ACCESSIBLE STRUCTURAL WELDS, WILL BE INSPECTED BY A COMPETENT STRUCTURAL ENGINEER. VISUAL INDICATIONS OF STRUCTURAL DEGRADATION OF THE EXISTING BRIDGE WILL BE INVESTIGATED FURTHER BY THE APPROPRIATE NONDESTRUCTIVE EXAMINATION TECHNIQUES. THE AMBIENT TEMPERATURE WHEN THE 125% STATIC LOAD TEST IS PERFORMED WILL BE THE MINIMUM OPERATING TEMPERATURE FOR THE CRANE. IN THE EVENT THAT THE CRANE MUST BE OPERATED AT A LOWER TEMPERATURE, ANOTHER 125% STATIC PROOF TEST WILL BE PERFORMED AT THE LOWER TEMPERATURE.
C.1.c	III.C(C.1.c)	1. THE EXTENT THE CRANE'S STRUCTURES WHICH ARE NOT BEING REPLACED ARE CAPABLE OF MEETING THE SEISMIC REQUIREMENTS OF REGULATORY GUIDE 1.29.	1. THE CRANE SUPPORT STRUCTURE, MODIFIED BRIDGE AND REPLACEMENT TROLLEY STRUCTURE FROM THE EXISTING TURBINE CRANE, WITH THE NEW MAIN HOIST, ARE SEISMICALLY QUALIFIED WHILE SUPPORTING THE MAXIMUM CRITICAL LOAD BASED UPON THE ACCELERATIONS USED IN CURRENT PLANT DESIGN. REFERENCES: FOR SUPPORT STRUCTURE - CY CALCULATION 97C2968(B)-01 FOR BRIDGE AND TROLLEY STRUCTURES - REPORT # 24265-500-V00-MJG-G0019

**EDR-1 APPENDIX C SUPPLEMENT
SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
HADDAM NECK PLANT**

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.1.d	III.C(C.1.d)	<ol style="list-style-type: none"> <li data-bbox="674 461 1171 581">1. THE EXTENT WELDS JOINTS IN THE CRANE'S STRUCTURES, WHICH ARE NOT BEING REPLACED, WERE NONDESTRUCTIVELY EXAMINED. <li data-bbox="674 1024 1171 1143">2. THE EXTENT THE BASE MATERIAL, AT JOINTS SUSCEPTIBLE TO LAMELLAR TEARING, WAS NONDESTRUCTIVELY EXAMINED. 	<ol style="list-style-type: none"> <li data-bbox="1230 461 1923 764">1. NONDESTRUCTIVE EXAMINATIONS OF THE EXISTING BRIDGE STRUCTURE WERE NOT REQUIRED BY EXISTING REGULATIONS AT THE TIME OF CONSTRUCTION. HOWEVER, THE X-SAM SYSTEM PROVIDES ADDITIONAL OVERLOAD PROTECTION, AND THE INSPECTIONS OF THE EXISTING STRUCTURE DESCRIBED IN C.1.b(3) ABOVE ARE ADEQUATE TO ENSURE THE STRUCTURAL INTEGRITY OF THE EXISTING BRIDGE. <li data-bbox="1230 1024 1923 1203">2. THE WELD GEOMETRIES USED IN (A) THE EXISTING BRIDGE STRUCTURE AND (B) THE REPLACEMENT TROLLEY STRUCTURE FROM THE EXISTING TURBINE BUILDING CRANE ARE NOT CONSIDERED TO BE SUSCEPTIBLE TO LAMELLAR TEARING.

EDR-1 APPENDIX C SUPPLEMENT
 SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
 HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.1.e	III.C(C.1.e)	1. THE EXTENT THE CRANE'S STRUCTURES, WHICH ARE NOT BEING REPLACED ARE CAPABLE OF WITHSTANDING THE FATIGUE EFFECTS OF CYCLIC LOADING FROM PREVIOUS AND PROJECTED USAGE, INCLUDING ANY CONSTRUCTION USAGE.	1. THE YARD CRANE BRIDGE- ALL PAST AND PROJECTED USE OF THE YARD CRANE BRIDGE, AT A MAXIMUM LOADING OF 100 TONS, IS WELL WITHIN THE CYCLIC LOADING CAPABILITY OF THE EXISTING CRANE STRUCTURE. THE CRANE TROLLEY BEING UPGRADED FROM THE TURBINE BUILDING CRANE WAS DESIGNED FOR A RATED CAPACITY OF 125 TONS WITH A 25% OCCASIONAL OVERLOAD AND A 33% ONE TIME CONSTRUCTION LIFT OVERLOAD CAPACITY FOR THE GENERATOR STATOR.
C.1.f	III.C(C.1.f)	1. THE EXTENT THE CRANE'S STRUCTURES WHICH ARE NOT BEING REPLACED, WERE POST-WELD HEAT-TREATED IN ACCORDANCE WITH SUB ARTICLE 3.9 OF AWS D1.1, "STRUCTURAL WELDING CODE".	1. THE MATERIAL THICKNESSES OF (A) THE EXISTING BRIDGE STRUCTURE AND (B) THE REPLACEMENT TROLLEY STRUCTURE FROM THE EXISTING TURBINE BUILDING CRANE ARE SUCH THAT PARAGRAPH III.C (C.1.f) OF EDR-1 DOES NOT REQUIRE POST-WELD HEAT-TREATMENT.

**EDR-1 APPENDIX C SUPPLEMENT
SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
HADDAM NECK PLANT**

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.2.b	III.C(C.2.b)	1. PROVISIONS FOR ACCOMMODATING THE LOAD MOTION AND KINETIC ENERGY FOLLOWING A DRIVE TRAIN FAILURE WHEN THE LOAD IS BEING TRAVERSED AND WHEN IT IS BEING RAISED OR LOWERED.	<p>EVALUATED AREAS IN THE SPENT FUEL CASK LAYDOWN AREA AND THE CASK TRANSFER BAY IN THE SPENT FUEL BUILDING ARE CAPABLE OF WITHSTANDING A MAXIMUM KINETIC ENERGY EQUIVALENT TO ONE (1) INCH OF FREE FALL OF THE LOAD, FOLLOWING A DRIVE TRAIN FAILURE, WITHOUT COMPROMISING THE SAFE OPERATION OF THE FACILITY.</p> <p>PLANT PROCEDURES WILL BE USED TO MAINTAIN A VERTICAL DISTANCE OF GREATER THAN 1.5 FEET BETWEEN A CRITICAL LOAD AND ANY SURFACE WITHIN THE SPENT FUEL BUILDING WHICH HAS NOT BEEN DEMONSTRATED BY EVALUATION TO SUPPORT SAFE OPERATION OF THE FACILITY FOLLOWING DAMAGE RESULTING FROM A DRIVE TRAIN FAILURE OF THE CRANE.</p>
C.2.c	III.C(C.2.c)	1. LOCATION OF SAFE LAYDOWN AREAS FOR USE IN THE EVENT REPAIRS TO THE CRANE ARE REQUIRED THAT CANNOT BE MADE WITH THE LOAD SUSPENDED.	1. IN THE EVENT THAT SUCH REPAIRS TO THE CRANE ARE REQUIRED, THE LOAD CAN BE PLACED IN THE EVALUATED SPENT FUEL POOL CASK LAYDOWN AREA OR CASK TRANSFER BAY WITHIN THE SPENT FUEL BUILDING.
C.2.d	III.C(C.2.d)	1. SIZE OF REPLACEMENT COMPONENTS THAT CAN BE BROUGHT INTO THE BUILDING FOR REPAIR OF THE CRANE WITHOUT HAVING TO BREAK THE BUILDING INTEGRITY.	1. NOT APPLICABLE AS THE CRANE IS LOCATED OUTSIDE THE SPENT FUEL BUILDING.

EDR-1 APPENDIX C SUPPLEMENT
 SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
 HADDAM NECK PLANT

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.2.d	III.C(C.2.d)	2. LOCATION OF AREA WHERE REPAIR WORK CAN BE ACCOMPLISHED ON THE CRANE WITHOUT AFFECTING THE SAFE SHUT-DOWN CAPABILITY OF THE REACTOR.	2. N/A THE FACILITY OPERATING LICENSE: (A) DOES NOT AUTHORIZE REACTOR OPERATIONS; AND (B) PROHIBITS PLACEMENT OF FUEL IN REACTOR VESSEL.
		3. ANY LIMITATIONS ON REACTOR OPERATIONS THAT WOULD RESULT FROM CRANE REPAIRS.	3. N/A THE FACILITY OPERATING LICENSE: (A) DOES NOT AUTHORIZE REACTOR OPERATIONS; AND (B) PROHIBITS PLACEMENT OF FUEL IN REACTOR VESSEL
C.3.b	III.C(C.3.b)	1. THE DESIGN MARGIN AND TYPE OF LIFTING DEVICES THAT ARE ATTACHED TO THE HOOK TO CARRY CRITICAL LOADS.	1. AS AN ALTERNATIVE TO A DUAL LOAD PATH SYSTEM, THE NORMAL STRESS DESIGN FACTORS HAVE BEEN DOUBLED. EACH LIFTING DEVICE ATTACHED TO THE HOOK TO CARRY CRITICAL LOADS WILL SUPPORT A LOAD SIX TIMES THE STATIC PLUS DYNAMIC LOAD BEING HANDLED WITHOUT PERMANENT DEFORMATION. THE SAFETY FACTOR IS 10:1 WHEN COMPARED TO ULTIMATE. THIS IS IN ACCORDANCE WITH NUREG 0612 - 1980, SECTION 5.1.6, PARAGRAPH 1(A) AND ANSI N14.6 - 1993, SECTION 7.2.1.

**EDR-1 APPENDIX C SUPPLEMENT
SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
HADDAM NECK PLANT**

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.3.t	III.C(C.3.t)	<p>1. THE EXTENT CONSTRUCTION REQUIREMENTS FOR THE CRANE'S STRUCTURES, WHICH WILL NOT BE REPLACED, ARE MORE SEVERE THAN THOSE FOR PERMANENT PLANT SERVICE.</p> <p>2. THE MODIFICATIONS AND INSPECTIONS TO BE ACCOMPLISHED ON THE CRANE FOLLOWING CONSTRUCTION USE, WHICH WAS MORE SEVERE THAN THOSE FOR PERMANENT PLANT SERVICE.</p>	<p>1. THE YARD CRANE BRIDGE- ALL PAST AND PROJECTED USE OF THE YARD CRANE BRIDGE, IS A MAXIMUM LOADING OF 100 TONS. THE CRANE TROLLEY BEING UPGRADED FROM THE TURBINE BUILDING CRANE WAS DESIGNED FOR A RATED CAPACITY OF 125 TONS WITH A 25% OCCASIONAL OVERLOAD AND A 33% ONE TIME CONSTRUCTION LIFT OVERLOAD CAPACITY FOR THE GENERATOR STATOR</p> <p>2. A) AS DESCRIBED IN C.1.e THE CRANE TROLLEY WAS PREVIOUSLY UTILIZED ON THE TURBINE BUILDING BRIDGE FOR MORE SEVERE LOADS THAN THOSE FOR PERMANENT PLANT SERVICE.</p> <p>B) THE MAIN HOIST ASSEMBLY AND LOAD GIRT ARE BEING REPLACED AND THE INSPECTIONS OF THE EXISTING MODIFIED TROLLEY DESCRIBED IN C.1.b (3) AND THE CHECKOUT TESTING DESCRIBED IN C.4.a ARE ADEQUATE TO ENSURE THE INTEGRITY OF THE TROLLEY ASSEMBLY. NO FUTURE CONSTRUCTION LIFTS ARE PLANNED THAT WILL BE MORE SEVERE THAN THE PERMANENT PLANT SERVICE.</p>
C.3.u	--	<p>1. THE EXTENT OF INSTALLATION AND OPERATING INSTRUCTIONS.</p>	<p>1. THE INSTALLATION AND OPERATING INSTRUCTIONS WILL BE UPDATED BY EDERER TO FULLY COMPLY WITH THE REQUIREMENTS OF SECTION C.3.u OF REGULATORY GUIDE 1.104 AND SECTIONS 7.1 AND 9 OF NUREG-0554 - 1979.</p>

**EDR-1 APPENDIX C SUPPLEMENT
SUMMARY OF REGULATORY POSITIONS TO BE ADDRESSED BY THE APPLICANT
HADDAM NECK PLANT**

REG.GUIDE 1.104 POSITION	TOPICAL REPORT SECTION	INFORMATION TO BE PROVIDED	SPECIFIC CRANE DATA
C.4.a C.4.b C.4.c C.4.d	--	1. THE EXTENT OF ASSEMBLY CHECKOUT, TEST PROCEDURES, LOAD TESTING AND RATED LOAD MARKING OF THE CRANE.	1. PRIOR TO HANDLING CRITICAL LOADS, THE CRANE WILL BE GIVEN A COMPLETE ASSEMBLY CHECKOUT, AND THEN GIVEN A NO-LOAD TEST OF ALL MOTIONS IN ACCORDANCE WITH UPDATED PROCEDURES PROVIDED BY EDERER. A 125% STATIC LOAD TEST AND 100% PERFORMANCE TEST WILL ALSO BE PERFORMED AT THIS TIME IN ACCORDANCE WITH UPDATED TEST PROCEDURES PROVIDED BY EDERER. A NO-LOAD TEST OF ALL MOTIONS AND A TWO BLOCKING TEST WILL BE PERFORMED BY EDERER PRIOR TO DELIVERY OF THE CRANE PER TOPICAL REPORT EDR-1. THE MAXIMUM CRITICAL LOAD IS PLAINLY MARKED ON EACH SIDE OF THE CRANE.
C.5.a	III.C(C.5.a)	1. THE EXTENT THE PROCUREMENT DOCUMENTS FOR THE CRANE'S STRUCTURE'S, WHICH WILL NOT BE REPLACED, REQUIRED THE CRANE MANUFACTURER TO PROVIDE A QUALITY ASSURANCE PROGRAM CONSISTENT WITH THE PERTINENT PROVISIONS OF REGULATORY GUIDE 1.28.	1. THE PROCUREMENT DOCUMENTS FOR (A) THE EXISTING BRIDGE STRUCTURE AND (B) THE REPLACEMENT TROLLEY STRUCTURE FROM THE EXISTING TURBINE BUILDING CRANE DID NOT INVOKE 10CFR50 APPENDIX B, SINCE THE CRANES WERE BUILT PRIOR TO THE ISSUANCE OF THIS FEDERAL REGULATION. HOWEVER, BOTH CRANES WERE DESIGNED AND MANUFACTURED BY MANNING, MAXWELL & MOORE PER THE REQUIREMENTS OF AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, AND THE ELECTRIC OVERHEAD CRANE INSTITUTE SPECIFICATION. MATERIAL FOR STRUCTURAL PARTS WAS SPECIFIED TO CONFORM WITH THE LATEST REVISION OF SPECIFICATION FOR STEEL FOR BRIDGES OF THE ASTM DESIGNATION A-7.

Docket No. 50-213
CY-01-108

Attachment 4
Haddam Neck Plant
Proposed Revision to Technical Specifications
Marked Up Pages

September 2001

INDEXBASES

<u>SECTION</u>		<u>PAGE</u>
<u>3/4.0</u>	<u>APPLICABILITY</u>	
3.0.1	.....	B 3/4 0-1
3.0.2	.....	B 3/4 0-2
3.0.3	DELETED	
3.0.4	.....	B 3/4 0-3
4.0.1	.....	B 3/4 0-4
4.0.2	.....	B 3/4 0-4
4.0.3	.....	B 3/4 0-4
4.0.4	.....	B 3/4 0-5
<u>3/4.1</u>	DELETED	
<u>3/4.2</u>	DELETED	
<u>3/4.3</u>	DELETED	
<u>3/4.4</u>	DELETED	
<u>3/4.5</u>	DELETED	
<u>3/4.6</u>	DELETED	
<u>3/4.7</u>	DELETED	
<u>3/4.8</u>	DELETED	
<u>3/4.9</u>	<u>SPENT FUEL BUILDING OPERATIONS</u>	
3/4.9.1	DELETED	
3/4.9.2	DELETED	
3/4.9.3	DELETED	
3/4.9.4	DELETED	
3/4.9.5	DELETED	
3/4.9.6	DELETED	
3/4.9.7	CRANE TRAVEL - SPENT FUEL BUILDING.....	B 3/4 9-1
3/4.9.8	DELETED	
3/4.9.9	DELETED	
3/4.9.10	DELETED	
3/4.9.11	WATER LEVEL - SPENT FUEL POOL.....	B 3/4 9- 2 3
3/4.9.12	DELETED	
3/4.9.13	MOVEMENT OF FUEL IN SPENT FUEL POOL.....	B 3/4 9- 2 3
3/4.9.14	SPENT FUEL POOL - REACTIVITY CONDITION.....	B 3/4 9- 2 3
3/4.9.15	DELETED	
3/4.9.16	SPENT FUEL POOL COOLING - DEFUELED.....	B 3/4 9- 2 3
<u>3/4.10</u>	DELETED	
<u>3/4.11</u>	DELETED	

SPENT FUEL BUILDING OPERATIONS

3/4.9.7 CRANE TRAVEL - SPENT FUEL BUILDING

LIMITING CONDITION FOR OPERATION

3.9.7 Loads > 1800 pounds shall be prohibited from travel over fuel assemblies in the spent fuel pool. ← Insert A

APPLICABILITY: With fuel assemblies in the spent fuel pool.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition.

SURVEILLANCE REQUIREMENTS

4.9.7 Administrative controls that prevent the travel of loads > 1800 pounds over fuel assemblies shall be in place prior to lifting a load > 1800 pounds.

Insert B
Insert C

Insert A

unless such loads are handled by the Single-Failure-Proof Handling System

Insert B

shall

Insert C

unless handled by the Single-Failure-Proof Handling System

3/4.9 SPENT FUEL BUILDING OPERATIONS

BASES

Insert D

3/4.9.7 CRANE TRAVEL - SPENT FUEL BUILDING

Insert E

The restriction on movement of loads in excess of the weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the spent fuel pool ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the spent fuel pool racks will not result in a critical array. This is consistent with the activity release assumed in the safety analysis.

The restriction also ensures that the effects of any load drop on the spent fuel pool structural integrity is enveloped by the load drop analysis (Holtec Report HI-941225, Rev. 0, "Accident Analysis Report for CY Spent Fuel Racks," Dr. Yu Wang, Item 11, Holtec Project 40264) performed for License Amendment 188.

Insert F

3/4.9.11 WATER LEVEL - SPENT FUEL POOL

The restrictions on minimum water level ensure that sufficient water inventory is available, so that in the event of a complete loss of forced cooling, the time to boil is > 50 hours (as of December 1997), based on an initial spent fuel pool temperature of 150 °F and no evaporative cooling.

3/4.9.13 MOVEMENT OF FUEL IN SPENT FUEL POOL

The limitations of this specification ensure that, in the event of any fuel handling accident in the spent fuel pool, K_{eff} will remain ≤ 0.95 .

3/4.9.14 SPENT FUEL POOL - REACTIVITY CONDITION

The limitations described by Figures 3.9-2, 3.9-3, and Figure 3.9-4 ensure that the reactivity of fuel assemblies introduced into the spent fuel pool racks, with no credit taken for soluble boron in the spent fuel pool, are conservatively within the assumptions of the safety analysis.

SPENT FUEL BUILDING OPERATIONS

BASES

3/4.9.16 SPENT FUEL POOL COOLING - DEFUELED

The primary basis for 150 °F is to limit thermal stresses on the spent fuel pool concrete structures due to the differential temperature across the internal and exterior surfaces of the walls and floor. The basis is further discussed in License Amendment No. 188.

As of May 1998, the spent fuel heat load was calculated to be $< 2.3E+06$ BTU/hr. Each heat exchanger has the capability of removing this heat load. One spent fuel pool heat exchanger and one spent fuel pool cooling pump, that can be operated intermittently, is sufficient to remove the decay heat load.

Assuming no forced or evaporative cooling, the calculated May 1998 heatup rate is approximately 1.2 °F/hr. Thus, in the event of a complete loss of forced cooling and assuming an initial spent fuel pool temperature of 150 °F, the time to boil, assuming no evaporative cooling, is > 50 hours. Therefore, sufficient time exists to either reestablish forced cooling or to provide makeup to maintain the spent fuel pool inventory.

Insert D

FUEL HANDLING CRANES

For the Fuel Handling Cranes, the Technical Specification Limiting Condition for Operation and Surveillance Requirement provide a

Insert E

That restriction

Insert F

SINGLE-FAILURE-PROOF HANDLING SYSTEM

Compliance with Alternative Criteria of NUREG-0612 Section 5.1.2

Compliance with at least one of the alternative sets of criteria from NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," Section 5.1.2 is a requirement for the handling of heavy loads near or over any area of the Spent Fuel Pool.

Application of the Single-Failure-Proof Handling System conforms to the first of these alternative sets which is a combination of the criteria of Section 5.1.1 and the criteria of Section 5.1.2(1). Specifically:

Compliance with Criteria of NUREG-0612 Section 5.1.1

Administrative procedures and controls for the Single-Failure-Proof Handling System support compliance with the general criteria of Section 5.1.1. The general criteria of Section 5.1.1 address requirements concerning: (a) safe load paths, (b) procedures, (c) the training and qualification of crane operators, (d) special lifting devices, (e) lifting devices that are not specifically designed, and (f) the inspection, testing and maintenance of the crane.

In compliance with the criteria of Section 5.1.1, operating procedures include definitions of approved safe load paths for all areas within the Spent Fuel Pool.

Compliance with Criteria of NUREG-0612 Section 5.1.2(1)

NUREG-0612 Section 5.1.2(1) identifies an alternative to the performance of specific analysis concerning a postulated drop of a heavy load near or over the Spent Fuel Pool, including over spent fuel assemblies. This identified alternative is the application of a handling system that consists of a single-failure-proof crane, defined by NUREG-0544, "Single-Failure-Proof Cranes for Nuclear Power Plants," and lifting devices and interfaces compliant with the criteria of NUREG-0612 Section 5.1.6.

The Technical Specification LCO restriction is not applicable to crane loads near or over the Spent Fuel Pool that are handled by the Single-Failure-Proof Handling System.

(continued)

The design of the Single-Failure-Proof Handling System includes (a) Yard Crane modified to include bridge, trolley, and hoist features described in NRC-approved Generic Topical Report EDR-1 (P)-A, "EDERER'S Nuclear Safety Related eXtra-Safety And Monitoring (X-SAM) CRANES," Rev. 3 and (b) lifting devices and interfaces that comply with the criteria of NUREG-0612 Section 5.1.6.

The main hoist of the Single-Failure-Proof Handling System was designed such that: (a) The maximum load motion following either failure of the drive train or a single wire rope is no greater than 1.5 feet; and (b) The maximum kinetic energy of the load following either failure of the drive train or a single wire rope is less than that resulting from one inch of free fall of the maximum evaluated load.

The Single-Failure-Proof Handling System will not be used to lift spent fuel assemblies from Spent Fuel Pool racks.

The auxiliary hoist of the Yard Crane is not qualified for crane lifts that require the use of the Single-Failure-Proof Handling System; and it will not be used for any crane load > 1800 pounds that is near or over the Spent Fuel Pool.

Administrative controls, subject to compliance with 10 CFR 50.59, are used to maintain a vertical distance of greater than 1.5 feet between any critical load (load > 1800 pounds) and any surface within the Spent Fuel Building which has not been demonstrated by evaluation to support safe operation of the facility following damage resulting from postulated failure of drive train or a single wire rope.

In the event that repairs to the crane are required that cannot be made with the load suspended, the load can be placed in the evaluated Spent Fuel Pool Cask Laydown Area or the evaluated Cask Transfer Bay within the Spent Fuel Building.

Docket No. 50-213
CY-01-108

Attachment 5
Haddam Neck Plant
Proposed Revision to Technical Specifications
Retyped Pages

September 2001

INDEX

BASES

<u>SECTION</u>		<u>PAGE</u>
<u>3/4.0</u>	<u>APPLICABILITY</u>	
3.0.1	.....	B 3/4 0-1
3.0.2	.....	B 3/4 0-2
3.0.3	DELETED	
3.0.4	.....	B 3/4 0-3
4.0.1	.....	B 3/4 0-4
4.0.2	.....	B 3/4 0-4
4.0.3	.....	B 3/4 0-4
4.0.4	.....	B 3/4 0-5
<u>3/4.1</u>	DELETED	
<u>3/4.2</u>	DELETED	
<u>3/4.3</u>	DELETED	
<u>3/4.4</u>	DELETED	
<u>3/4.5</u>	DELETED	
<u>3/4.6</u>	DELETED	
<u>3/4.7</u>	DELETED	
<u>3/4.8</u>	DELETED	
<u>3/4.9</u>	<u>SPENT FUEL BUILDING OPERATIONS</u>	
3/4.9.1	DELETED	
3/4.9.2	DELETED	
3/4.9.3	DELETED	
3/4.9.4	DELETED	
3/4.9.5	DELETED	
3/4.9.6	DELETED	
3/4.9.7	CRANE TRAVEL - SPENT FUEL BUILDING.....	B 3/4 9-1
3/4.9.8	DELETED	
3/4.9.9	DELETED	
3/4.9.10	DELETED	
3/4.9.11	WATER LEVEL - SPENT FUEL POOL.....	B 3/4 9-3
3/4.9.12	DELETED	
3/4.9.13	MOVEMENT OF FUEL IN SPENT FUEL POOL.....	B 3/4 9-3
3/4.9.14	SPENT FUEL POOL - REACTIVITY CONDITION.....	B 3/4 9-3
3/4.9.15	DELETED	
3/4.9.16	SPENT FUEL POOL COOLING - DEFUELED.....	B 3/4 9-3
<u>3/4.10</u>	DELETED	
<u>3/4.11</u>	DELETED	

SPENT FUEL BUILDING OPERATIONS

3/4.9.7 CRANE TRAVEL - SPENT FUEL BUILDING

LIMITING CONDITION FOR OPERATION

3.9.7 Loads > 1800 pounds shall be prohibited from travel over fuel assemblies in the spent fuel pool unless such loads are handled by the Single-Failure-Proof Handling System.

APPLICABILITY: With fuel assemblies in the spent fuel pool.

ACTION:

With the requirements of the above specification not satisfied, place the crane load in a safe condition.

SURVEILLANCE REQUIREMENTS

4.9.7 Administrative controls shall prevent the travel of loads > 1800 pounds over fuel assemblies unless handled by the Single-Failure-Proof Handling System.

3/4.9 SPENT FUEL BUILDING OPERATIONS

BASES

3/4.9.7 CRANE TRAVEL - SPENT FUEL BUILDING

FUEL HANDLING CRANES

For the Fuel Handling Cranes, the Technical Specification Limiting Condition for Operation and Surveillance Requirement provide a restriction on movement of loads in excess of the weight of a fuel and control rod assembly and associated handling tool over other fuel assemblies in the spent fuel pool. That restriction ensures that in the event this load is dropped: (1) the activity release will be limited to that contained in a single fuel assembly, and (2) any possible distortion of fuel in the spent fuel pool racks will not result in a critical array. This is consistent with the activity release assumed in the safety analysis.

The restriction also ensures that the effects of any load drop on the spent fuel pool structural integrity is enveloped by the load drop analysis (Holtec Report HI-941225, Rev. 0, "Accident Analysis Report for CY Spent Fuel Racks," Dr. Yu Wang, Item 11, Holtec Project 40264) performed for License Amendment 188.

SINGLE-FAILURE-PROOF HANDLING SYSTEM

Compliance with Alternative Criteria of NUREG-0612 Section 5.1.2

Compliance with at least one of the alternative sets of criteria from NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," Section 5.1.2 is a requirement for the handling of heavy loads near or over any area of the Spent Fuel Pool.

Application of the Single-Failure-Proof Handling System conforms to the first of these alternative sets which is a combination of the criteria of Section 5.1.1 and the criteria of Section 5.1.2(1). Specifically:

Compliance with Criteria of NUREG-0612 Section 5.1.1

Administrative procedures and controls for the Single-Failure-Proof Handling System support compliance with the general criteria of Section 5.1.1. The general criteria of Section 5.1.1 address requirements concerning: (a) safe load paths, (b) procedures, (c) the training and qualification of crane operators, (d) special lifting devices, (e) lifting devices that

BASES

are not specifically designed, and (f) the inspection, testing and maintenance of the crane.

In compliance with the criteria of Section 5.1.1, operating procedures include definitions of approved safe load paths for all areas within the Spent Fuel Pool.

Compliance with Criteria of NUREG-0612 Section 5.1.2(1)

NUREG-0612 Section 5.1.2(1) identifies an alternative to the performance of specific analysis concerning a postulated drop of a heavy load near or over the Spent Fuel Pool, including over spent fuel assemblies. This identified alternative is the application of a handling system that consists of a single-failure-proof crane, defined by NUREG-0544, "Single-Failure-Proof Cranes for Nuclear Power Plants," and lifting devices and interfaces compliant with the criteria of NUREG-0612 Section 5.1.6.

The Technical Specification LCO restriction is not applicable to crane loads near or over the Spent Fuel Pool that are handled by the Single-Failure-Proof Handling System.

The design of the Single-Failure-Proof Handling System includes (a) Yard Crane modified to include bridge, trolley, and hoist features described in NRC-approved Generic Topical Report EDR-1 (P)-A, "EDERER'S Nuclear Safety Related eXtra-Safety And Monitoring (X-SAM) CRANES," Rev. 3 and (b) lifting devices and interfaces that comply with the criteria of NUREG-0612 Section 5.1.6.

The main hoist of the Single-Failure-Proof Handling System was designed such that: (a) The maximum load motion following either failure of the drive train or a single wire rope is no greater than 1.5 feet; and (b) The maximum kinetic energy of the load following either failure of the drive train or a single wire rope is less than that resulting from one inch of free fall of the maximum evaluated load.

The Single-Failure-Proof Handling System will not be used to lift spent fuel assemblies from Spent Fuel Pool racks.

The auxiliary hoist of the Yard Crane is not qualified for crane lifts that require the use of the Single-Failure-Proof Handling System; and it will not be used for any crane load > 1800 pounds that is near or over the Spent Fuel Pool.

3/4.9 SPENT FUEL BUILDING OPERATIONS

BASES

Administrative controls, subject to compliance with 10 CFR 50.59, are used to maintain a vertical distance of greater than 1.5 feet between any critical load (load > 1800 pounds) and any surface within the Spent Fuel Building which has not been demonstrated by evaluation to support safe operation of the facility following damage resulting from postulated failure of drive train or a single wire rope.

In the event that repairs to the crane are required that cannot be made with the load suspended, the load can be placed in the evaluated Spent Fuel Pool Cask Laydown Area or the evaluated Cask Transfer Bay within the Spent Fuel Building.

3/4.9.11 WATER LEVEL - SPENT FUEL POOL

The restrictions on minimum water level ensure that sufficient water inventory is available, so that in the event of a complete loss of forced cooling, the time to boil is > 50 hours (as of December 1997), based on an initial spent fuel pool temperature of 150 °F and no evaporative cooling.

3/4.9.13 MOVEMENT OF FUEL IN SPENT FUEL POOL

The limitations of this specification ensure that, in the event of any fuel handling accident in the spent fuel pool, K_{eff} will remain ≤ 0.95 .

3/4.9.14 SPENT FUEL POOL - REACTIVITY CONDITION

The limitations described by Figures 3.9-2, 3.9-3, and Figure 3.9-4 ensure that the reactivity of fuel assemblies introduced into the spent fuel pool racks, with no credit taken for soluble boron in the spent fuel pool, are conservatively within the assumptions of the safety analysis.

3/4.9.16 SPENT FUEL POOL COOLING - DEFUELED

The primary basis for 150 °F is to limit thermal stresses on the spent fuel pool concrete structures due to the differential temperature across the internal and exterior surfaces of the walls and floor. The basis is further discussed in License Amendment No. 188.

As of May 1998, the spent fuel heat load was calculated to be < 2.3E+06 BTU/hr. Each heat exchanger has the capability of removing this heat load. One spent fuel pool heat exchanger and

SPENT FUEL BUILDING OPERATIONS

BASES

one spent fuel pool cooling pump, that can be operated intermittently, is sufficient to remove the decay heat load.

Assuming no forced or evaporative cooling, the calculated May 1998 heatup rate is approximately 1.2 °F/hr. Thus, in the event of a complete loss of forced cooling and assuming an initial spent fuel pool temperature of 150 °F, the time to boil, assuming no evaporative cooling, is > 50 hours. Therefore, sufficient time exists to either reestablish forced cooling or to provide makeup to maintain the spent fuel pool inventory.