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August 12, 1982

Docket No. 50-213  
LS05-82 -08-021

Mr. W. G. Council, Vice President  
Nuclear Engineering and Operations  
Connecticut Yankee Atomic Power Company  
Post Office Box 270  
Hartford, Connecticut 06101

Dear Mr. Council:

SUBJECT: SEP TOPIC III-1, QUALITY GROUP CLASSIFICATION OF COMPONENTS  
AND SYSTEMS - HADDAM NECK PLANT

Enclosed is the staff's draft safety evaluation of SEP Topic III-1 for the Haddam Neck Plant. Our evaluation (Enclosure 1) is based upon our contractor's final evaluation (Enclosure 2) of this topic. This assessment compares your facility with the criteria currently used for licensing new facilities. You are requested to examine the facts upon which the staff has based its evaluation and respond either by confirming that the facts are correct or by identifying errors and supplying the correct information.

The staff was unable to complete this topic due to the lack of information on the original design requirements for various components. The need to supply additional information and to complete the evaluation for this topic will be determined during the integrated assessment. We have concluded, for those components where a comparison of codes was possible, that the changes in the codes since the original design do not significantly affect the safety of the plant. Based on our sampling of code comparisons to date, we do not expect the remaining open items to pose a significant hazard from continued plant operation.

Your response is requested within 30 days of receipt of this evaluation. If no response is received in this time, we will assume the evaluation is correct.

SEO4  
DSU WE(02)  
ADD:  
S. BROWN

Sincerely,

ORB#5:PM ORB#5:MC AD:SA:DL Dennis M. Crutchfield, Chief  
CTropf 8/10/82 Tippolito Operating Reactors Branch No. 5  
8/9/82 8/10/82 8/10/82 Division of Licensing

Enclosure: As stated

OFFICE	cc w/enclosure: See next page	SEPB:DL <i>MLB</i>	SEPB:DL <i>B</i>	SEPB:DL <i>(E)</i>	SEPB:DL
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Mr. W. G. Council

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SYSTEMATIC EVALUATION PROGRAM  
TOPIC III-1

HADDAM NECK PLANT

TOPIC: III-1, CLASSIFICATION OF STRUCTURES, SYSTEMS AND COMPONENTS  
(SEISMIC AND QUALITY)

I. INTRODUCTION

SEP plants were generally designed and constructed during the time span from the 1950's to the late 1960's. The plants were designed to generally recognized codes, standards and criteria in effect at that time; however, the codes, standards and criteria have been periodically revised. Therefore, the SEP plants may have been designed and constructed to codes, standards and criteria no longer in effect or acceptable to the NRC.

The purpose of Topic III-1 is the review of the classification of structures, systems and components of as-built plants compared to the current classifications required for seismic and quality groups in the codes, standards and criteria. Since the review of seismic classification is addressed in other SEP topics (See Section III of this evaluation), this topic has been limited to the evaluation of quality group classifications.

II. REVIEW CRITERIA

The review criteria for this topic are presented in Appendix A of Technical Evaluation Report C5257-435, "Quality Group Classification of Components and Systems - Haddam Neck Plant," prepared for the NRC by Franklin Research Center (attached).

III. RELATED SAFETY TOPICS

The scope of review for this topic was limited to avoid duplication of effort since some aspects of the review are performed in related topics. As stated previously, the seismic aspect of this topic has been deleted. The quality aspects for the reactor vessel and steam generators (PWRs only) and the quality assurance have been deleted. The related safety topics, and the subject matter covered in the topics, that cover the aspects deleted in Topic III-1 are identified below.

III-6	Seismic Design Considerations
III-7.B	Design Codes, Design Criteria, Load Combinations and Reactor Cavity Design Criteria
V-6	Reactor Vessel Integrity
V-8	Steam Generator Integrity
XVII	Operational Quality Assurance Program

The resolution of Topic V-8 is part of Unresolved Safety Issues A-3, A-4 and A-5.

#### IV. REVIEW GUIDELINES

The review guidelines are presented in Section 3 of Report C5257-435 (attached).

#### V. EVALUATION

The basic input for this report is Table 4.1 in Section 4 of Report C5257-435. Table 4.1 is a compilation of all systems and components which are required to be classified by Regulatory Guide 1.26 and the original codes, standards and criteria used in the plant design. After comparing the original codes, standards and criteria with those currently used for licensing facilities the following areas were identified where the requirements have changed.

1. Fracture Toughness
2. Quality Group Classification
3. Code Stress Limits
4. Radiography Requirements
5. Fatigue Analysis of Piping Systems

An evaluation of each of these areas is presented in Section 5 of Report C5257-435 with a detailed discussion in the Appendix of the report.

We have determined that changes in the following areas have not significantly affected the safety functions of the systems and components reviewed in this report.

1. Quality Group Classification
2. Code Stress Limits
3. Fatigue Analysis of Piping Systems

In the remaining two areas, we have concluded the following.

1. Fracture Toughness - The current code requires that pressure retaining materials be impact tested. For 36 of 87 components reviewed, sufficient information was available to exempt them from this requirement.
2. Radiography Requirements - We have determined that:
  - a. A primary vessel designed to ASME Section VIII, for which Code Cases 1270N and 1273N were invoked, meets current full radiography requirements. Secondary vessels designed to ASME Code Section VIII, for which Code Case 1270N was invoked and which have material thickness of at least 1-1/2 inches, meet current full radiography requirement.

- b. Austenitic stainless steel piping design to ASA B31.1, for which Code Cases N7, N9 or N10 were invoked, meets the current full radiography requirements.
- c. Valves designed to ASA B31.1-1955, for which Code Cases N-1 and N-7, N-9 or N-10 were invoked, meet the current full radiography requirement.

Our review has not identified any significant deviations from past codes. However, we were unable to complete our evaluation due to insufficient information for the following:

- 1. Fracture Toughness - For some components there is insufficient information on materials to complete our review. The licensee should provide the necessary information using the format provided in Items 1 thru 8 of Tables A4-4 through A4-6 in Appendix A of Report CS257-435. Table 5-1 of the report identifies those components for which this information is necessary.
- 2. Radiography Requirements - The following information should be provided:
  - a. Radiography requirements imposed on Class 1 vessels not designed as primary vessels for which Code Case 1273N was not invoked.
  - b. Radiography requirements imposed on Class 2 and 3 vessels for which Code Case 1273N was not invoked and with welded thicknesses less than 1-1/2 inches.
  - c. Radiography requirements imposed on Class 1 and 2 piping and valves designed only to ASA B31.1-1955.
  - d. Radiography requirements imposed on Class 1 and 2 pumps.
- 3. Pressure Vessels - Demonstration of compliance with the current ASME Code fatigue analysis requirements should be provided.
- 4. Piping - Identify the code cases invoked for piping designed to ASA B31.1-1955.
- 5. Valves - Information should be provided, on a sample basis, regarding the design of valves in order to evaluate if they meet current ASME Code body shape and pressure-temperature rating requirements.
- 6. Pumps - Information should be provided on the codes used for designing 8 out of 12 pumps discussed in this report. Manufacturer's standards for these 8 pumps should be provided in order to determine whether they meet current requirements. Proof of compliance with current fatigue analysis requirements for current Class 1 pumps (the reactor coolant pumps) should be provided.

7. Storage Tanks - Specifications for the demineralizer storage tank designed to USAS B96.1-1967 should be provided. For the refueling water storage tanks, the boron injection tank, the boron injection recirculation tank and the spray chemical storage tank provide the design code or specification.
8. Missing Information - The following information, which is incomplete or missing from the Tables in Section 4 of Enclosure 2 should be provided:
  - a. Codes, classes, or code cases in Table 4-2.
  - b. Confirmation of assumed code editions.
  - c. Clarification of notes 3, 4, 6, and 7 in Table 4-1.

## VI. CONCLUSION

We have determined that for the following changes between current and original code requirements for the Haddam Neck Plant will not significantly affect the safety functions of the systems and components reviewed:

1. Quality Group
2. Code Stress
3. Fatigue Analysis for Piping Systems

We were unable to complete our review due to insufficient information regarding various other systems and components. The required information is discussed in Section V of this evaluation.

Based on our sampling of code comparisons to date, we do not expect the remaining items to pose a significant hazard to safe plant operation and, therefore, have determined that the schedule and need for providing the remaining information can be determined during the integrated plant safety assessment.