

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

P.O. BOX 270
HARTFORD, CONNECTICUT 06141-0270
(203) 665-5000

May 17, 1985

Docket Nos. 50-213
50-245
B11537

Director of Nuclear Reactor Regulation
Attn: Mr. C. I. Grimes, Chief
Systematic Evaluation Program Branch
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Haddam Neck Plant
Millstone Nuclear Power Station, Unit No. 1
Integrated Safety Assessment Program (ISAP)

On April 2, 1985, representatives of Connecticut Yankee Atomic Power Company (CYAPCO) and Northeast Nuclear Energy Company (NNECO) met with the Staff to discuss the scope and schedule for the Integrated Safety Assessment Program (ISAP) review of Haddam Neck and Millstone Unit No. 1. This meeting included discussions on specific programmatic elements of the ISAP review, and on specific plant betterment projects and engineering studies which would be included in the scope of the review for each unit. At the conclusion of the meeting, CYAPCO and NNECO were requested to provide the Staff with the following information:

- (1) Identification and description of all plant betterment projects and engineering studies which will be included for ISAP review. This is to include both projects originating from regulatory requirements and utility initiated projects.
- (2) Identification of other projects and/or studies which, although not included within the scope of ISAP from a review and evaluation standpoint, will be considered in overall resource planning and development of an integrated schedule.
- (3) A brief discussion of the evaluation and prioritization process being developed by CYAPCO and NNECO.
- (4) A schedule for submittal and a summary description of documentation which will be provided in support of the Millstone Unit No. 1 Probabilistic Safety Study.
- (5) A proposed format for the submittal to the NRC of project-specific information to facilitate the Staff's review and evaluation of those projects.

8506070287 850517
PDR ADOCK 05000213 PDR
P

Acc
1/40

In response to this request, the following information is being provided. The information contained in this letter and its attachments constitutes what CYAPCO and NNECO believe to be the appropriate scope for the ISAP review of Haddam Neck and Millstone Unit No. 1. It also briefly describes the process which is presently under development by CYAPCO and NNECO for reviewing these projects, and the scope of information to be docketed in support of the probabilistic safety study of Millstone Unit No. 1. We believe that this information will be sufficient to respond to the Staff's request and to formalize and initiate the ISAP review process.

The scope of review is summarized in the following attachments:

- o Attachment 1: Identification of currently existing projects for Haddam Neck which are to be included for ISAP review, and which originate from regulatory requirements or "regulatory guidance." The discussion of each project includes a brief description of the project, identification of the specific requirement which it is intended to address, the currently required implementation date, and references to pertinent docketed information on the issue. For the majority of these projects, no firm inservice date has been established. The NRC has previously granted deferrals⁽¹⁾ on implementation of these projects for the purpose of conducting an integrated review and developing a long term integrated schedule. At the conclusion of the ISAP review, completion dates will be established for those projects which are justified.
- o Attachment 2: Identification of the currently existing CYAPCO-initiated projects and studies for Haddam Neck which are to be included for ISAP review. The discussion of each project includes a brief description of the project, identification of the concern or problem which it is intended to address, and the planned inservice date.
- o Attachment 3: Description of the currently planned scope of plant modifications for the upcoming (1986) refueling outage.
- o Attachment 4: Other ongoing projects and/or studies which will not be explicitly evaluated in ISAP, and which constitute a portion of the "base-load" for resource allocation purposes.
- o Attachments 5-8: Information for Millstone Unit No. 1 similar to that provided for Haddam Neck in Attachments 1-4.

(1) D. G. Eisenhut letter to W. G. Counsil, dated April 5, 1984.

We have also indicated for Millstone Unit No. 1, in Attachments 5 and 6, which projects by our best estimate will be evaluated in part using the Millstone Unit No. 1 Probabilistic Safety Study. These projects are indicated by an asterisk (*) located next to the project title. For these projects, either a detailed risk assessment or a limited risk-oriented (i.e.: not limited to subjective judgment) evaluation will form a part of the evaluation and prioritization process described below.

ISAP Evaluation Process

Each project that is reviewed in ISAP will be evaluated and prioritized with respect to five criteria. These criteria are as follows:

- o **Public Safety:** The impact of a specific project on risk to the public will be evaluated. This can include evaluation of both radiological and non-radiological risk. The probabilistic safety studies will be a part of the decision process, where applicable.
- o **Personnel Safety:** The impact of a specific project on plant personnel safety will be evaluated. This includes both industrial safety and occupational radiation exposure (ALARA) considerations.
- o **Economic Performance:** The impact of a specific project on plant reliability, availability, maintainability, efficiency, and capacity will be evaluated. Plant-specific Reliability, Availability, and Maintainability (RAM) models, which are currently being developed, will be an input to this evaluation.
- o **Personnel Productivity:** The impact of each project on personnel productivity will be evaluated. This includes the impact of tools, equipment, environment, etc. on personnel performance.
- o **External Impact:** The potential impact of performing or not performing a project on external organizations such as NRC, Public Utilities Commission, Environmental Protection Agency, etc. will be evaluated.

Each issue or project will be evaluated and ranked with respect to each of the five attributes. The individual impact scores for each project will be consolidated and the appropriate weighting factors applied to determine an overall relative net benefit. This total benefit will then be divided by the remaining cost to complete the project, which will yield a benefit/cost ratio. This ratio will form the basis for the overall prioritization effort. Individual projects with a net benefit which is either zero or negative will be candidates for cancellation. Additionally, criteria will be developed for decision-making on those projects which show only a small benefit/cost ratio. At the conclusion of the prioritization effort, the prioritized listing of projects will then be factored into development of a long-term integrated schedule. This latter process will include consideration of the full complement of scheduling parameters including resource (dollar and manpower) limitations, procurement lead times, site limitations, etc.

An integral part of the process being developed by CYAPCO and NNECO is the implementation of procedures for alternate fix evaluation and technical integration. These procedures, which are currently under development, will require explicit consideration of alternate means of addressing the same issue, and a formalized process for identifying inter-relationships between projects to identify the most cost-effective modifications and eliminate repeated modifications to the same structure or component. These procedures will be incorporated into the existing plant design change procedures, and it is envisioned that all major future projects will undergo the alternate fix and technical integration reviews.

Proposed ISAP Topic Format

To facilitate Staff review and understanding of the specific projects to be evaluated in ISAP, CYAPCO and NNECO plan to provide the Staff with issue-specific deterministic evaluations which will provide the background information necessary to judge the merits of specific backfits. To accomplish this, CYAPCO and NNECO propose to utilize the review format used during the Systematic Evaluation Program (SEP) reviews. We propose that this information be formatted as follows:

- | | |
|--|--|
| I. Introduction - | A brief summary statement of the safety concern being addressed by the project. |
| II. Review Criteria - | Identification of the pertinent regulatory criteria which form the basis for the evaluation. |
| III. Related Projects and Interfaces - | Identification of other projects, whether NRC required or utility initiated, which affect the same plant design features or whose scope could be impacted by the issue at hand. |
| IV. Evaluation - | The results of a comparison of the plant design to the criteria identified in Section II. |
| V. Conclusions - | A brief summary of the differences between actual plant design and the review criteria from Section II. This could also include a description of the plant modifications that would be necessary to upgrade the plant design to meet current criteria. |

We note that a large number of the NRC-required projects resulted from the SEP or similar reviews, and for many of these projects this information is already available in docketed correspondence. In these cases, CYAPCO and NNECO will provide references to the pertinent information, and update such information where appropriate. For utility-initiated projects, the attachments to this letter provide a brief summary of the issue or project. We do not plan on providing detailed reviews of these projects to the Staff, however, additional information on these projects is available upon request.

Probabilistic Safety Study

A plant-specific Probabilistic Safety Study (PSS) has recently been completed for Millstone Unit No. 1, and we are presently in the process of documenting the final results and addressing some of the engineering insights which were obtained from the PSS effort. The scope of the PSS for Millstone Unit No. 1 is internally initiated events and fires, up to the point of core melt. Specific details of the Millstone Unit No. 1 PSS, including a comparison to the Millstone Unit No. 1 Interim Reliability Evaluation Program (IREP) study, have previously been provided to the Staff.⁽²⁾

As noted above, final quantification of accident sequences has recently been completed, and we are in the process of documenting the results. The PSS has provided us with some significant insights into dominant risk contributors that were not identified by IREP. We are in the process of investigating and addressing those insights, some of which have already resulted in plant betterment projects and/or engineering studies. As specific modifications are identified from these insights, we will inform the Staff of the details of these modifications so that they may be factored into the overall ISAP review effort.

In support of the Millstone Unit No. 1 PSS, NNECO is planning to docket a summary report on or about July 10, 1985. This report will cover the following items:

1. Determination of Initiating Events
 - systems investigations
 - initiator frequency calculations
2. Accident Sequence Analysis
 - classification of event sequence outcomes
 - plant systems event tree models
 - plant support system event tree models
3. Plant Systems Reliability Analysis
 - plant systems reliability data collection and analysis
 - plant systems reliability modeling

(2) W. G. Council letter to J. A. Zwolinski, dated January 3, 1985.

4. Human Reliability Analysis

- introduction and methodology
- screening analysis
- summary of results

5. Accident Sequence Quantification

- matrix quantification methodology
- core melt accident sequence quantification results
- engineering insights

Additionally, in order to facilitate Staff review and understanding of the Millstone Unit No. 1 PSS and how it is to be applied in our ISAP decision process, NNECO is prepared to work with the Staff in meetings, either in Bethesda or our corporate offices, to review relevant portions of the PSS to understand its utility for the ISAP process. These meetings can be scheduled at your convenience following receipt of the summary report in July.

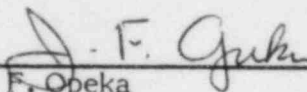
Summary

We believe that the information contained in this letter and its attachments will serve to set the scope of the ISAP review for both Haddam Neck and Millstone Unit No. 1. During the course of the ISAP review, as new projects or issues are identified either by the NRC or the licensees, they will be added to the existing scope for evaluation, prioritization, and scheduling.

We remain available to discuss this information, and we look forward to continuing the ISAP review for these two facilities.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY



J. F. Opeka
Senior Vice President

cc: J. A. Zwolinski

Docket No. 50-213

Attachment 1

Haddam Neck Plant

Proposed ISAP Scope - Regulatory Required Projects

May, 1985

Plant: Haddam Neck Plant

Title: Switchgear Room Cooling Modifications (PA81-153)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic IX-5, Ventilation Systems

Description: The review of SEP Topic IX-5 for Haddam Neck identified a concern regarding the adequacy of the existing ventilation system for safety-related equipment in the switchgear room. This project involves modifications to the power supplies for the ventilation supply and exhaust fans to permit operation on emergency power sources. The modifications currently planned to address Appendix R include substantial changes to equipment located in the switchgear. New heat loads due to equipment changes could impact the scope of this project.

References:

- (A) NUREG-0826, Section 4.33
- (B) W. G. Council letter to D. M. Crutchfield, dated September 20, 1983.
- (C) D. M. Crutchfield letter to W. G. Council, dated November 1, 1983.

Plant: Haddam Neck Plant

Title: High/Low Pressure Interface Valve Interlocks (PA 83-182)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic V-11.A, Requirements for Isolation of High and Low Pressure Systems.

Description: The review of SEP Topic V-11.A for Haddam Neck identified two low pressure systems which interface with the reactor coolant system and which could potentially be subject to overpressurization (i.e. - interfacing systems LOCA). These systems are the High Pressure Safety Injection (HPSI) and Low Pressure Safety Injection (LPSI) systems. Both HPSI and LPSI are isolated from reactor coolant system pressure by motor operated valves, which automatically open on a safety injection signal, and by check valves. These motor operated valves do not meet current NRC criteria in that they are not equipped with pressure interlocks to prevent opening until reactor coolant system pressure is below system design pressure. This project would result in the addition of pressure interlocks to prevent potential overpressurization. This project also includes an evaluation of various interlock configurations to select the optimum approach from a risk and reliability standpoint. The referenced correspondence provides additional discussion of this topic.

References:

- (A) NUREG-0826, Section 4.20.
- (B) W. G. Counsil letter to D. G. Eisenhut, dated December 28, 1983.

Plant: Haddam Neck Plant

Title: Containment Penetration Evaluations (PA 82-204 and 83-046).

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic VI-4, Containment Isolation

Description: The evaluation of SEP Topic VI-4 for Haddam Neck included an assessment of the existing containment penetrations against General Design Criteria 54 thru 57. Differences from the General Design Criteria were noted for several systems. This project includes a review of penetrations which differ from the GDCs to determine if modifications are necessary. Additionally, as a result of Amendment 49 to DPR-61, CYAPCO is committed to modify containment leak rate testing provisions for a number of penetrations. Where both 10CFR50 Appendix A and Appendix J requirements impact the same penetration, these reviews should be coordinated. The affected penetrations are identified in detail in NUREG-0826, Section 4.22.

References:

- (A) W. G. Council letter to D. M. Crutchfield, dated August 18, 1983.
- (B) Amendment #49 to DPR-61.
- (C) NUREG-0826, Section 4.22.

Plant: Haddam Neck Plant

Title: Seismic Qualification of Safety Related Piping (PA 81-057)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic III-6, Seismic Design Considerations

Description: As part of the review of SEP Topic III-6, a commitment was made to analyze and modify, as necessary, all piping systems greater than 2" NPS needed to achieve and maintain a safe shutdown condition. This includes the following nine systems:

- o High Pressure Safety Injection
- o Low Pressure Safety Injection
- o Service Water
- o Main Feedwater
- o Main Steam
- o Auxiliary Feedwater
- o Chemical and Volume Control System
- o Residual Heat Removal
- o Reactor Coolant System
- o Diesel Fuel Oil and Starting Air

The total scope of this project includes approximately 450 pipe supports and pipe racks, of which approximately 180 have been completed. Work planned to be completed during the 1986 refueling outage is described in Attachment 3.

References:

Plant: Haddam Neck Plant

Title: Seismic Structural Modifications (PA 83-036)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic III-6, Seismic Design Considerations

Description: The seismic reanalysis effort for Haddam Neck required by SEP Topic III-6 identified modifications which were needed to satisfy acceptance criteria for safe shutdown earthquake loadings. Modifications identified for the turbine building, service building, containment, and primary auxiliary building have been completed. The remaining scope of this project is the completion of modifications to the auxiliary feedwater pumphouse and modifications to structural elements that are required to handle new pipe loadings generated by the review of safety-related piping systems to the SEP seismic criteria.

References:

- (A) NUREG-0826, Section 4.10.
- (B) W. G. Council letter to D. M. Crutchfield, dated May 2, 1984.

Plant: Haddam Neck Plant

Title: Wind and Tornado Loadings/Tornado Missiles (PA 83-105)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topics III-2, Wind and Tornado Loadings, and III-4.A, Tornado Missiles.

Description: The review of SEP Topics III-2 and III-4.A for Haddam Neck concluded that structures, systems, and components required for safe shutdown were not adequately protected from postulated wind loadings and were vulnerable to the effects of tornado missiles. A scoping study has been performed to identify the modifications that would be required to provide wind and tornado protection to a safe shutdown system. This evaluation is based on what is considered to be a conservative site-specific windspeed from SEP Topic II-2.A, Severe Weather Phenomena.

References:

(A) NUREG-0826, Sections 4.3 and 4.6.

Plant: Haddam Neck Plant

Title: Vital Bus Feed Realignment Modifications (PA 83-117)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic VI-7.C.1, Independence of Redundant Onsite Power Systems.

Description: The review of SEP Topic VI-7.C.1 identified several areas of concern regarding independence between redundant power divisions. As a result, modifications to the breakers in both the AC and DC power systems were implemented. These modifications provide redundant fault protection between the AC power divisions, and physically and administratively restrict use of the tie breaker between the two DC buses. The remaining scope of this issue concerns the power sources for the four vital buses. The current configuration is such that the alternate feed for each vital bus is from an inverter in the opposite power division. In response, CYAPCO proposed to modify the alternate feeds so that the alternate supply for a vital bus is from the other inverter in the same power division. These modifications were proposed to be performed as part of the planned fire protection modifications in the switchgear room.

References:

- (A) NUREG-0826, Section 4.24.
- (B) W. G. Council letter to D. M. Crutchfield, dated December 29, 1982.

Plant: Haddam Neck Plant

Title: Seismic Modifications to Reactor Coolant System (PA 82-181)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic III-6, Seismic Design Considerations

Description: Reanalysis of the Haddam Neck reactor coolant system identified several modifications that were necessary to maintain stresses within acceptance criteria. The scope of the modifications consists of replacement of steam generator hold-down bolts, and modifications to the pressurizer lateral support, the pressurizer surge line, and reactor coolant pump spring hangers.

References:

- (A) W. G. Counsil letter to D. G. Eiserhut, dated December 28, 1983.

Plant: Haddam Neck Plant

Title: Design Codes, Design Criteria, Load Combinations.

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic III-7.B, Design Codes, Design Criteria, and Load Combinations.

Description: This project involves a review of design codes and criteria, and load combinations used in original plant design against current design codes and load combination criteria. This review should be coordinated with other projects affecting relevant load combinations so that the most limiting loadings can be considered.

References:

- (1) D. M. Crutchfield letter to W. G. Council, dated February 23, 1983.

Plant: Haddam Neck Plant

Title: Torque Switch Modifications (PA 84-058)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic III-10.A, Thermal Overload Protection for Motor Operated Valves.

Description: The review of SEP Topic III-10.A included an evaluation of the use of torque switches in the control circuitry for motor operators on safety related valves. CYAPCO committed to modify the affected control circuits so that valve travel in the "open" direction will be terminated by a limit switch, and travel in the "close" direction will be terminated by a torque switch. Torque switch protection will be bypassed near the closed seat when the valve is moving in the "open" direction, and near the fully open position when the valve is moving in the "close" direction. This will provide protection against spurious operation of the torque switches while still retaining the protection afforded by them. The effect of these proposed modifications on valve reliability and their overall impact on plant safety should be evaluated.

References:

- (A) NUREG-0826, Section 4.13.
- (B) W. G. Council letter to D. M. Crutchfield, dated December 29, 1982.

Plant: Haddam Neck Plant

Title: PAB Ventilation System Modifications (PA 83-179)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic IX-5, Ventilation Sytems

Description: The review of SEP Topic IX-5 for Haddam Neck identified a concern regarding the possible effects of a loss of ventilation in the primary auxiliary building on safety related equipment in that area. Adequate time exists to justify operator action to manually restart the PAB ventilation system, however, access to the PAB may not be possible during severe accident conditions. Therefore, CYAPCO proposed to provide controls outside of the PAB that would allow for remote starting of the supply and exhaust fans. The evaluation of this issue should include a realistic assessment of the accessibility of the PAB during accident conditions and of heat loads in the area to determine the necessity of those modifications. Additionally, a re-evaluation of this issue should include an evaluation of expected heat loads, heat-up rates, and the effect of available heat sinks on environmental conditions in the area.

References:

- (A) NUREG-0826, Section 4.33.
- (B) W. G. Counsil letter to D. M. Crutchfield, dated September 20, 1983.

Plant: Haddam Neck Plant

Title: Control Room Habitability (PA 80-113)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NUREG-0737, Item III.D.3.4, Control Room Habitability

Description: An evaluation of the Haddam Neck control room ventilation system to the criteria of NUREG-0737 Item III.D.3.4 resulted in plans to significantly upgrade the ventilation system. New air handling units, chillers, HEPA filters, and associated ductwork, water supplies, and control logic are required. The scope of the project includes the design and installation of a fully redundant, low leakage, filtered ventilation system. New air handling units, chillers, HEPA filters, and associated ductwork, water supplies, and control logic are required. In the interim, supplies of bottled air as per the criteria of Regulatory Guide 1.78 have been provided. The use of this air supply would limit doses to the operators from a design basis accident to within acceptance criteria. The need for and scope of the proposed modifications should be reevaluated considering realistic accident conditions and potential for crediting the use of self-contained breathing systems in lieu of costly and extensive modifications to the control room ventilation system. The impact of the leak-before-break concept and potential source term reductions should also be considered as these factors could significantly impact the scope of this project.

References:

- (A) NUREG-0737, Item III.D.3.4.
- (B) W. G. Counsil letter to D. G. Eisenhut, dated July 1, 1981.

Plant: Haddam Neck Plant

Title: Inadequate Core Cooling Instrumentation (PA 80-109)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NUREG-0737, Item II.F.2

Description: Item II.F.2 of NUREG-0737 requires the installation of instrumentation for detection of inadequate core cooling. The scope of the requirement includes the installation of a reactor vessel water level monitoring system, upgrading of core exit thermocouples to specified qualification requirements, installation of a subcooled margin monitor, and development of an integrated inadequate core cooling information display system. Details on how CYAPCO plans to address the criteria of NUREG-0737 Item II.F.2 were provided in the referenced correspondence. Specifically, the scope includes upgrading of the existing single train subcooled margin monitor to provide two redundant trains and qualified to the requirements of 10CFR50.49, qualification of core exit thermocouples to meet 10CFR50.49, installation of the heated junction thermocouple system, and installation of the ICC display system. The ISAP evaluation of this issue is limited to an assessment of the need to install the HJTC system; the balance of the ICC project is to be completed on the schedule previously provided.

References:

- (A) W. G. Council letter to D. G. Eisenhut, dated March 11, 1983.
- (B) D. M. Crutchfield letter to W. G. Council, dated August 6, 1984.
- (C) W. G. Council letter to J. A. Zwolinski, dated February 1, 1985.

Plant: Haddam Neck Plant

Title: Appendix R Modifications (PA 83-115 thru 83-124)

Current Inservice Date: As defined in 10CFR50.48, based on NRC SER dated November 14, 1984.

Origin of Project: 10CFR50.48 and 10CFR50, Appendix R

Description: The fire protection review of Haddam Neck resulted in a number of projects being identified. The scope of this issue includes all of the modifications planned to address Appendix R. These modifications which are described in more detail in the referenced correspondence include rerouting of power cables, piping changes for auxiliary feedwater supply, installation of curbs and fire dampers, installation of water curtain suppression systems, rerouting of instrumentation channels, installation of Halon suppression equipment and a safe shutdown instrumentation panel, and extensive modifications and additions to equipment arrangements in the switchgear room. These planned modifications should be evaluated and prioritized with respect to all other projects.

References:

- (A) W. G. Counsil letter to D. G. Eisenhut, dated March 1, 1982.
- (B) W. G. Counsil letter to D. G. Eisenhut, dated December 21, 1983.
- (C) J. A. Zwolinski letter to W. G. Counsil, dated November 14, 1984.

Plant: Haddam Neck Plant

Title: FDSA Update (PA 77-587)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: 10CFR50.71

Description: 10CFR50.71 requires that each licensee periodically update its Final Safety Analysis Report (Facility Description and Safety Analysis (FDSA) for Haddam Neck). Updates are required to be submitted annually and are required to be up-to-date as of not more than six months prior to submittal. As a participant in the SEP program, Haddam Neck was not required to submit an updated FDSA until 24 months after completion of the SEP review. An exemption from the schedule requirement of 10CFR50.71 until October 11, 1985 permits an evaluation of the priority and schedule for updating of the FDSA.

References:

- (A) W. G. Council letter to J. A. Zwolinski, dated February 4, 1985.
- (B) J. A. Zwolinski letter to W. G. Council, dated April 11, 1985.

Plant: Haddam Neck Plant

Title: Anticipated Transients Without Scram (ATWS) (PA 80-080)

Current Inservice Date: Schedule to be submitted by October 11, 1985, as required by 10CFR50.62 and Reference (B).

Origin of Project: Final Rule on ATWS; 10CFR50.62

Description: The scope of this requirement for Haddam Neck includes installation of equipment to trip the turbine and initiate auxiliary feedwater independently of the reactor trip system, and the implementation of QA for ATWS equipment which is not safety-related. The need for any ATWS modifications for Haddam Neck should be evaluated as part of the ISAP review.

References:

- (A) Final Rule on ATWS, Federal Register, July 31, 1984.
- (B) Generic Letter 85-06, dated April 16, 1985.

Plant: Haddam Neck Plant

Title: Replacement of Motor Operated Valves (PA 80-201)

Current Inservice Date: November 30, 1985

Origin of Project: Environmental Qualification of Electrical Equipment
(10CFR50.49)

Description: In order to comply with the environmental qualification requirements of 10CFR50.49, modifications are to be performed on the motor operators for 14 safety related MOVs. The affected valves are in the low pressure safety injection, high pressure safety injection, residual heat removal and pressurizer auxiliary spray systems, and the PORV block valves. Detailed information on these MOVs will be submitted on or about June 30, 1985 to support requested exemptions from the schedular requirement of 10CFR50.49.

References:

- (A) W. G. Counsil letter to H. R. Denton, dated February 28, 1985 and incorporated references.
- (B) H. R. Denton letter to W. G. Counsil, dated March 29, 1985.

Plant: Haddam Neck Plant

Title: RCP Seal Cooling Modifications

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NUREG-0737, Item II.K.3.25

Description: Item II.K.3.25 requires that reactor coolant pump seals be capable of withstanding a loss of AC power for a period of two hours. The NRC acceptance criteria for this issue require that the cooling supply for the reactor coolant pump seals be automatically started on emergency power, without reliance on operator action. As a result, CYAPCO committed to evaluate in ISAP potential modifications to the diesel generator loading logic to automatically start the charging pump (to provide seal injection flow) following a loss of offsite power, provided it is not coincident with a safety injection signal. In this latter case, the charging pumps are stripped to allow powering other safety-related loads. The need to perform these modifications and a priority for implementation should be evaluated. Inclusion of this issue in ISAP constitutes CYAPCO's response to Reference (C) below.

References:

- (A) NUREG-0737 Item II.K.3.25
- (B) W. G. Counsil letter to D. M. Crutchfield, dated October 4, 1984.
- (C) J. A. Zwolinski letter to J. F. Opeka, dated May 1, 1985.

Plant: Haddam Neck Plant

Title: Control Room Design Review (PA 81-046)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This project requires that a human factors engineering review of the Haddam Neck control room be performed. The intent of this review is to identify areas where improvements in the man-machine interface are desirable. The CRDR is also intended to verify the adequacy, from a human factors standpoint, of the upgraded emergency operating procedures. A program plan for the CRDR for Haddam Neck is scheduled to be submitted by February 28, 1986, and a schedule for any modifications identified would also be provided at that time.

References:

- (A) Order Confirming Licensee Commitments on Emergency Response Capability, dated June 12, 1984.

Plant: Haddam Neck Plant

Title: Safety Parameter Display System (PA 80-105)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This project involves the design and installation of a Safety Parameters Display System (SPDS) to meet the requirements of Supplement 1 to NUREG-0737. The SPDS is intended to provide the operator with essential plant status information in a concise and timely manner to facilitate actions required to ensure safe shutdown. A safety analysis and implementation plan is scheduled to be submitted by May 13, 1986. A schedule for the SPDS to be fully operational is to be provided at that time.

References:

- (A) Order Confirming Licensee Commitments on Emergency Response Capability, dated June 12, 1984.

Plant: Haddam Neck Plant

Title: Regulatory Guide 1.97 Instrumentation (PA 79-190)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This project involves an evaluation of available post-accident monitoring instrumentation to the criteria of Regulatory Guide 1.97, and upgrading of this instrumentation where necessary. A report describing how the provisions of Reg Guide 1.97 have been or will be met was submitted to the NRC on May 31, 1984.

References:

- (A) Order Confirming Licensee Commitments on Emergency Response Capability, dated June 12, 1984.
- (B) W. G. Counsil letter to J. R. Miller and D. M. Crutchfield, dated May 31, 1984.

Plant: Haddam Neck Plant

Title: Emergency Response Facilities Instrumentation
(Related to PA 79-190)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This issue concerns an evaluation of the instrumentation and plant status information which should be provided to emergency response facilities in accident conditions. Information concerning our preliminary assessment of which instrumentation should be provided was contained in our docketed submittals addressing compliance with Reg. Guide 1.97.

References:

- (A) W. G. Council letter to J. R. Miller and D. M. Crutchfield, dated April 9, 1984.

Plant: Haddam Neck Plant

Title: Post Accident Hydrogen Monitor (Reg. Guide 1.97) (PA 79-190)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: Regulatory Guide 1.97 requires that a redundant Class IE hydrogen monitoring system be provided. This issue should be evaluated with respect to the criteria of 10CFR50.44 and CYAPCO's demonstration of compliance with the requirements of 10CFR50.44 concerning hydrogen recombiner capability.

References:

- (A) W. G. Counsil letter to D. M. Crutchfield, dated March 4, 1983.

Attachment 2

Haddam Neck Plant

Proposed ISAP Scope - CYAPCO Initiated Projects

May, 1985

Plant: Haddam Neck

Title: Secondary Side Chemistry Monitoring (PA 82-171)

Current Inservice Date: December 31, 1986

Origin of Project: Northeast Utilities

Description: Procurement and installation of equipment for monitoring steam generator chemistry.

Plant: Haddam Neck

Title: DWST Oxygen Reduction (PA 82-197)

Current Inservice Date: April 1, 1986

Origin of Project: Northeast Utilities

- Description:
- a) Engineering services to determine an effective method to minimize oxygen in the demineralizer water storage tank at Haddam Neck.
 - b) Engineering and design for the installation of a nitrogen blanketing system at Haddam Neck.

It is expected that controlling oxygen in the Demineralized Water Storage Tank will result in improvements in steam generator chemistry control.

Plant: Haddam Neck

Title: Additional Atmospheric Steam Dump (PA 82-192)

Current Inservice Date: December 31, 1986

Origin of Project: Northeast Utilities

Description: Engineering study to evaluate:

- a) need for additional atmospheric steam dump(s) such that one dump line services no more than two steam generators.
- b) need to enlarge the flow capacity of the atmospheric steam dump to adequately cool the RCS during steam generator tube rupture or any small break LOCA.

References: NUSOER 8-82
NUSOER 7-82

Plant: Haddam Neck

Title: Modernize Reactor Protection & Control Systems (PA 83-113)

Current Inservice Date: June 1, 1986

Origin of Project: Northeast Utilities

Description: Study to analyze aging and life limiting effects of instrumentation in the following systems:

- a) Pressurizer Pressure and Level System
- b) Reactor Coolant Flow System
- c) Reactor Makeup System
- d) HP Steam Dump System
- e) Flow Charging Control System.

Plant: Haddam Neck

Title: Process Computer Replacement (PA 80-105)

Current Inservice Date: June 1, 1987

Origin of Project: Northeast Utilities

Description: Engineering, design, and construction management services for the replacement of the Plant Process Computer.

Attachment 3

Haddam Neck Plant

1985 Projects and 1986 Refueling Outage Projects

May, 1985

Plant: Haddam Neck

Title: Emergency Diesel Generator Trip and Lockout (PA 78-740)

Origin of Project: SEP Topic VIII-2, Onsite Emergency Power System

Description: The review of SEP Topic VIII-2 for Haddam Neck identified differences from current NRC criteria regarding the use of protective trips on diesel generators. The scope of the total project was to modify the trips to meet NRC criteria. The remaining scope of work to be performed during the upcoming refueling outage consists of installation and testing of over-current relays.

Plant: Haddam Neck

Title: Process Computer UPS Installation (PA 80-105)

Origin of Project: Supplement 1 to NUREG-0737/CYAPCO

Description: CYAPCO is planning to replace the plant process computer during a future refueling outage. One of the functions of the new process computer will be to supply plant status information to the Safety Parameter Display System (SPDS). In order to meet power supply requirements for the SPDS, an uninterruptible power supply (UPS) for the process computer will be installed. The scope of work planned for the upcoming outage is the installation of the UPS.

Plant: Haddam Neck

Title: Inadequate Core Cooling Instrumentation (PA 80-109)

Origin of Project: NUREG-0737, Item IL.F.2

Description: The scope of work planned for the upcoming refueling outage is to complete the installation and qualification of the inadequate core cooling detection systems. CYAPCO is presently planning to install the heated junction thermocouple system during the upcoming refueling outage, however, this aspect of the ICC project will be evaluated per the ISAP criteria to determine if changes to this schedule are warranted.

Plant: Haddam Neck

Title: Replacement of Motor Operated Valves (PA 80-201)

Origin of Project: Environmental Qualification of Electrical Equipment,
10CFR50.49

Description: As a result of the environmental qualification requirements of 10CFR50.49, modifications are required for the motor operators associated with 14 safety related MOVs at Haddam Neck. CYAPCO is presently planning to upgrade the qualification status for a number of these MOVs during the upcoming (1986) refueling outage. For these MOVs which will not achieve full qualification during the 1986 refueling outage, detailed information will be provided in support of a proposed exemption request to 10CFR50.49. The specific MOVs to be qualified, and the bases for the exemption request are planned to be submitted to the Staff on or about June 30, 1985.

Plant: Haddam Neck

Title: RCS Loop RTD Replacements (PA 80-208)

Origin of Project: Environmental Qualification of Electrical Equipment,
10CFR50.49

Description: The reactor coolant system hot and cold leg resistance temperature detectors (RTDs) are required to be replaced in order to satisfy environmental qualification requirements. The RTDs are planned to be replaced during the 1986 refueling outage with fully qualified devices.

Plant: Haddam Neck

Title: Seismic Qualification of Safety Related Piping (PA 81-057)

Origin of Project: SEP Topic III-6, Seismic Design Considerations

Description: The scope of work to be performed during the 1986 refueling outage will result in completion of all seismic piping upgrades planned for inside containment. It is currently planned that approximately 8 pipe racks and 90 pipe supports will be modified inside containment, and 31 pipe supports will be completed in the primary auxiliary building.

Plant: Haddam Neck

Title: Plant Paging System Upgrade (PA 83-053)

Origin of Project: INPO Finding

Description: As a result of the findings of a previous inspection by the Institute of Nuclear Power Operations (INPO), CYAPCO made plans to upgrade the plant paging system. During the 1986 refueling outage, the paging system inside containment will be modified.

Plant: Haddam Neck

Title: MOV Thermal Overload Modifications (PA 83-096)

Origin of Project: SEP Topic III-10.A, Thermal Overload Protection for Motor Operated Valves/CYAPCO.

Description: The review of Topic III-10.A for Haddam Neck included an evaluation of the use of thermal overloads in the control circuits for motor operated valves which are required to change position during an accident. An evaluation of the thermal overload devices was performed against overload sizing criteria approved by the NRC. Although all of the thermal overloads were found to be conservatively set (i.e. - setpoints were high enough to prevent inadvertent actuation), some were found to be significantly oversized. Therefore, CYAPCO intends to replace these oversized thermal overloads with properly sized devices.

Plant: Haddam Neck

Title: Appendix R Modifications (PA 83-115, 83-118, 83-120, 83-123)

Origin of Project: 10CFR50.48 and 10CFR50, Appendix R

Description: The scope of work planned for the 1986 refueling outage in response to the Appendix R fire protection review includes installation of a radiant energy shield, modifications to 4160 volt circuit breakers, installation of a Halon suppression system in the main control board, and installation of fire dampers in ductwork.

Plant: Haddam Neck

Title: Refuel Cavity Drain Piping Seismic Upgrade (PA 85-010)

Origin of Project: IE Bulletin 84-03, Refueling Cavity Water Seals

Description: As a result of IE Bulletin 84-03, CYAPCO evaluated all potential mechanisms that could result in draining of the refueling cavity. This evaluation identified the need to seismically qualify the refueling cavity drain line to preclude an earthquake - induced draining of the refueling cavity. The scope of this project is to modify the drain line, as necessary, to satisfy SSE loadings.

Plant: Haddam Neck

Title: Reactor Cavity Seal Ring Modifications (PA 84-138)

Origin of Project: IE Bulletin 84-03, Refueling Cavity Water Seals

Description: After the failure of the reactor cavity seal ring at Haddam Neck, the NRC approval to resume refueling activities approved the use of that seal design for the 1984 refueling only. Future use of the cavity seal was dependent on resolution of several concerns identified in the design review. It is presently planned that a new cavity seal design will be fabricated and implemented during the upcoming (1986) refueling outage.

Plant: Haddam Neck

Title: Replace Main Control Board Category IE Relays (PA 85-009)

Origin of Project: Northeast Utilities

Description: Engineering support for specifications, seismic mounting and electrical connection of qualified Category 1E auxiliary relays to replace existing Westinghouse relays in the Main Control Boards.

Plant: Haddam Neck

Title: Feedwater Heater Modifications (PA 84-106)

Origin of Project: Northeast Utilities

Description: The current plans for the 1986 refueling outage are to replace the 4B feedwater heater in its entirety, and to replace the 5B, 6A, and 6B feedwater heater tube bundles. The objective of these replacements is to facilitate better secondary side chemistry control. These modifications will complete the feedwater heater replacement plan.

Plant: Haddam Neck

Title: Steam Generator Wet Layup Recirculation (PA 83-082)

Origin of Project: Northeast Utilities

Description: Installation of a steam generator chemical addition and continuous recirculation system for use during refueling outages when the steam generators are in a wet layup condition. This includes installation of pumps, chemical additional tank, and associated piping, power, and controls. These modifications will permit better corrosion control for the steam generators during refuelings, and are needed to meet the guidelines established by the Steam Generator Owners Group (SGOG).

Plant: Haddam Neck

Title: Review of Existing Control Air System (PA 79-172)

Origin of Project: Northeast Utilities

Description: Review of the operating capabilities and system parameters of the control air system at Haddam Neck including:

- a) consequences of worst case failures
- b) system capacities and capabilities
- c) compliance with latest criteria and regulations

This evaluation has resulted in a decision to replace dryers in the instrument air lines and to replace the main steam isolation valve accumulator tank.

References: NUSOER 3-83

Plant: Haddam Neck

Title: Documentation and Coordination of Protective Relay and Circuit Breaker Settings. (PA 82-050)

Origin of Project: Northeast Utilities

Description: Engineering evaluation to:

- 1) recoordinate all protective relays settings and circuit breaker settings down to and including the 480 volt motor control centers.
- 2) establish criteria for setting selection for all protection devices being recoordinated.

Plant: Haddam Neck

Title: Replace Main Generator Neutral Grounding Transformer (PA 84-055)

Origin of Project: Northeast Utilities

Description: Replacement of the existing Askarel filled main generator neutral grounding transformer with a dry type transformer with a higher voltage rating. The existing transformer contains PCBs.

Plant: Haddam Neck

Title: Review and Upgrade Evaluation for Diesel Air Start System (DASS)
(PA 84-020)

Origin of Project: Northeast Utilities

Description: Engineering evaluation of:

- a) effects of corrosion on interior surfaces of DASS piping and components.
- b) probability of existing piping and components corrosion products entering the air stream and degrading DASS operation.

Modifications of DASS to be implemented this outage include the installation of control air system filters. The need for additional modifications will be evaluated following an assessment of inspection results.

References: NUSOER 9-83
Generic Letter 84-15

Plant: Haddam Neck

Title: Waterbox "A" Retubing (PA 85-024)

Origin of Project: Northeast Utilities

Description: Complete retubing of the main condenser waterbox "A". Replacement is necessary because of degradation due to corrosion which has resulted in tube plugging and lost thermal performance, and for steam generator chemistry considerations. This will complete the retubing of the entire main condenser.

Plant: Haddam Neck

Title: Steam Generator Manway Cover Handling Device (PA 82-080)

Origin of Project: Northeast Utilities

Description: Structural modifications and equipment installation design requirements for implementation and use of the Steam Generator Manway Cover Handling Device.

Plant: Haddam Neck

Title: Limitorque Motor Operated Valves - Lubrication

Origin of Project: Northeast Utilities

Description: Provision of support in sampling, analyzing, and rebuilding Limitorque motor operated valves which have a mixture of Lithium-based and Calcium-based lubricants in the main gear cases and geared limit switch assemblies.

References: INPO Significant Event Report 84-7.

Plant: Haddam Neck

Title: Elevated Well Water Temperature (PA 84-038)

Origin of Project: Northeast Utilities

Description: Engineering evaluation of elevated well temperatures to determine options for cooling the well water. Well water is used as a source of coolant to the exciter cooler and is a supplement to the closed cooling water system for secondary system components. Presently, new wells are being drilled on site to provide this cooling water supply.

Plant: Haddam Neck

Title: RCCA Changeout Tool (PA 84-091)

Current Inservice Date: November 1, 1985

Origin of Project: Northeast Utilities

Description: Procurement of a Rod Cluster Control Assembly (RCCA) changeout tool for the Haddam Neck Spent Fuel Pool as part of the NUSCO Control Rod Inspection program.

Plant: Haddam Neck

Title: Emergency Plan Radiological Assessment Equipment (PA 83-178)

Origin of Project: Northeast Utilities

Description:

- a) Purchase of radiological monitoring kits compatible with the present Haddam Neck monitoring kits used for plume tracking onsite and offsite during an emergency.
- b) Purchase of equipment for emergency use at Yale-New Haven Hospital for monitoring of contaminated personnel.

Plant: Haddam Neck

Title: Microwave System (PA 83-144)

Origin of Project: Northeast Utilities

Description:

- a) Engineering, design, procurement and installation services for installation of a functional microwave radio system at Haddam Neck.
- b) Provision of a fiber optics link between the Haddam Neck plant and the Haddam Neck substation to interconnect with the microwave-system to improve security at the substation.

Attachment 4

Haddam Neck Plant
Significant CYAPCO Initiatives Not In ISAP Scope

May, 1985

Plant: Haddam Neck

Title: Plant Training Simulator (PA 82-201)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Engineering and project management of the design, procurement, and testing of the Haddam Neck plant simulator to be installed at the new training facility at the Millstone site. The simulator is scheduled to be fully operational by the end of 1985.

Plant: Haddam Neck

Title: Probabilistic Safety Study (PA 84-045)

Current Inservice Date: March 31, 1986

Origin of Project: Northeast Utilities

Description: Development of Probabilistic Safety Analysis models for the Haddam Neck plant including development of:

- a) plant initiating event data base(s)
- b) plant component failure rate data base(s)
- c) best estimate transient and LOCA analyses
- d) plant system event/fault tree models
- e) probabilistic qualification of component/system/human error probabilities and uncertainties.

The PSA model will be used as an integral part of the Integrated Safety Assessment Program (ISAP).

Plant: Haddam Neck

Title: Unit Availability Model (PA 84-028)

Current Inservice Date:

Origin of Project: Northeast Utilities

Description: Development of a computerized plant system model to assist in evaluating the impact of proposed modifications on unit reliability, availability, and maintainability (RAM). The model will be used as an integral part of the Integrated Safety Assessment Program (ISAP).

Plant: Haddam Neck

Title: Evaluation of RCS Loop Isolation Valves to Mitigate SGTR (PA 84-001)

Current Inservice Date: July 1, 1985

Origin of Project: Northeast Utilities

Description: Evaluation of utilizing the RCS Loop Isolation valves to mitigate the consequences of a steam generator tube rupture.

References: NUSOER 7A-82, Item #7

Plant: Haddam Neck

Title: Computerized Analysis for Generation of Plant Heatup and Cooldown
(PA 81-143)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Engineering services to implement and check a computerized analysis program for generation of plant heatup & cooldown Pressure-Temperature limit curves per 10CFR50, Appendix G.

References: 10CFR50, Appendix G

Plant: Haddam Neck

Title: Conversion to Standard Technical Specifications (STS) (PA 81-084)

Current Inservice Date: December 1, 1985

Origin of Project: Northeast Utilities

Description: Conversion of Haddam Neck Technical Specifications to Standard Technical Specifications. Conversion to include Technical Reviews, Safety Evaluations, and improvement to the bases. The proposed Standard Technical Specifications are scheduled to be submitted to the Staff during the last quarter of 1985.

Plant: Haddam Neck

Title: Auxiliary Pressurizer Spray Nozzle (PA 84-003)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Evaluation of potential thermal shock of the auxiliary spray nozzle if auxiliary spray is used to depressurize the RCS during a SGTR, assuming the maximum expected temperature differential between the auxiliary spray water and the pressurizer.

References: NUSOER 7A-82 Item #5

Plant: Haddam Neck

Title: Loss of DC Power (PA 81-069)

Current Inservice Date: March 1, 1986

Origin of Project: Northeast Utilities

Description: Examination of:

- a) response to turbine and generator trip schemes
- b) response of normal to reserve (auxiliary) power fast transfer schemes.
- c) emergency diesel response to a partial loss of 125 VDC power.

References: NUSOER 1-81, Recommendation #1

Plant: Haddam Neck

Title: Reactor Coolant Pump Vibration Monitoring System Upgrade (PA 84-013)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Preliminary engineering, design, cost estimate and installation schedule to upgrade the reactor coolant pump vibration monitoring system.

Plant: Haddam Neck

Title: Administration Building Modification (PA 84-037)

Current Inservice Date: December 1, 1986

Origin of Project: Northeast Utilities

Description: Evaluation of increasing Haddam Neck Administrative Building space and construction of a records vault.

Plant: Haddam Neck

Title: Main Steam System Evaluation (PA 80-236)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Engineering evaluation of the energy required from the Main Steam System for operating the various auxiliary steam loads necessary for Haddam Neck operation. Recommendation of permanent or temporary instrumentation as required for monitoring the energy usage.

Plant: Haddam Neck

Title: Turbine/Generator Electrical Trip Logic (PA 82-090)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Evaluation of delaying the opening of the main generator breakers until after the turbine stop valves are closed for all mechanical trips and certain electrical trips (loss of field, negative phase sequence, and generator overcurrent.)

Plant: Haddam Neck

Title: Plant Design Change Task Group Support (PA 85-011)

Current Inservice Date: October 1, 1985

Origin of Project: Northeast Utilities

Description: Engineering support services to be provided to the Haddam Neck Plant Design Change Task Group (PDCTG). The function of the PDCTG is to review the adequacy of past plant design changes and of the design modification process, in response to the Order Modifying Licensing issued to CYAPCO on December 13, 1985.

References:

- (A) J. M. Taylor letter to W. G. Counsil, dated December 13, 1984, Order Modifying License and Notice of Violation and Proposed Imposition of Civil Penalty, Docket No. 50-213, EA-84-115.
- (B) W. G. Counsil letter to J. M. Taylor/T. E. Murley, dated January 28, 1985.
- (C) T. E. Murley letter to J. F. Opeka, dated April 23, 1985.

Attachment 5

Millstone Nuclear Power Station, Unit No. 1
Proposed ISAP Scope - Regulatory Required Projects

Plant: Millstone Unit 1

Title: Gas Turbine Generator Start Logic Modifications (PA 83-127)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic VIII-2, Onsite Emergency Power System

Description: During the SEP review of Topic VIII-2, NRC criteria regarding the use of protective trips on diesel generators were utilized to review the gas turbine generator, and differences from those criteria were identified. This project involves the modification of certain protective trips associated with the generator output breaker and the start-up and steady state operation of the gas turbine, in accordance with the commitments described in NUREG-0824, Section 4.28. The intent of the NRC criteria for utilizing protective trips is to increase overall reliability of the AC power system by limiting the use of protective trips to only those which are essential to protect either the diesel engine or the operator from immediate, severe damage. Other protective trips are required to utilize multiple sensors to minimize diesel operator shutdowns caused by spurious operation of a single sensor.

References:

- (A) NUREG-0824, Section 4.28
- (B) W. G. Counsil letter to D. M. Crutchfield, dated September 27, 1982.
- (C) D. M. Crutchfield letter to W. G. Counsil, dated September 30, 1981.

Plant: Millstone Unit 1

Title: Tornado Missile Protection (PA 83-160)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic III-4.A, Tornado Missiles

Description: During the SEP review of Topic III-4.A, it was identified that no single safe shutdown method at Millstone 1 was fully protected from the effects of tornado generated missiles. This project is intended to provide a fully protected means of providing make-up water to the isolation condenser and makeup to the reactor vessel. This would fully protect one means for maintaining a safe shutdown condition until normal plant systems could be restored to operation.

References:

- (A) NUREG-0824, Section 4.7.
- (B) J. J. Shea letter to W. G. Council, dated May 25, 1982.
- (C) W. G. Council letter to D. M. Crutchfield, dated June 29, 1982.

Plant: Millstone Unit 1

Title: Containment Isolation - Appendix A Modifications (PA 83-085)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic VI-4, Containment Isolation

Description: The containment spray pump cooling water return lines which branch off of the lines penetrating primary containment at penetrations X-204A, B, and C were determined to have containment isolation provisions which differ from the guidance of the General Design Criteria and the SEP review criteria. The proposed modification was to relocate the tie-in points of the cooling water return lines to branches installed downstream of valves 1-LP-2A, 2B, 2C, and 2D. This would put these branches outside of the containment boundary valves for penetrations X-204A, B, and C. In this location, the containment isolation provisions would satisfy NRC criteria. The evaluation of this issue should include an assessment of the safety significance of this item.

References:

- (A) NUREG-0824, Section 4.20.7
- (B) W. G. Counsil letter to D. M. Crutchfield, dated June 22, 1983.

Plant: Millstone Unit 1

Title: RWCU System Pressure Interlock (PA 83-147)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic V-11.A, Requirements for Isolation of High and Low Pressure Systems

Description: The SEP review of Topic V-11.A for Millstone Unit 1 identified a potential for inadvertent overpressurization of a system connected to the reactor coolant system. The isolation valves for the reactor water cleanup system, which interfaces with the primary coolant system, automatically close upon high pressure in the cleanup system, however all of these valves receive a pressure signal from the same pressure transmitter, and are thus vulnerable to a single failure. This project would add a redundant pressure transmitter to the isolation logic.

References:

- (A) NUREG-0724, Section 4.18
- (B) D. M. Crutchfield letter to W. G. Council, dated July 8, 1981.

Plant: Millstone Unit 1

Title: Ventilation System Modifications (PA 83-067)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NRC review of SEP Topic IX-5, Ventilation Systems

Description: The SEP review of Topic IX-5 identified a concern regarding a potential loss of ventilation in the turbine building and in the intake structure. This project involves modifications to automatically provide emergency power for certain ventilation supply and exhaust fans and space coolers. These modifications would eliminate the need to rely on operator action to restore forced ventilation to safety related equipment.

References:

- (A) NUREG-0824, Section 4.32.
- (B) W. G. Council letter to D. M. Crutchfield, dated April 18, 1983.
- (C) J. J. Shea letter to W. G. Council, dated July 5, 1983.

Plant: Millstone Unit 1

Title: Seismic Qualification of Safety Related Piping (PA 79-162)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: IE Bulletins 79-02 and 79-14.

Description: In response to IE Bulletins 79-02, Pipe Support Plate Designs Using Concrete Expansion Anchor Bolts and 79-14, Seismic Analysis for As-Built Safety Related Piping Systems, NNECO initiated an extensive reanalysis and modification effort to qualify safety-related piping for Safe Shutdown Earthquake loadings. The scope of this effort involves the following systems:

- o Service Water
- o RBCCW
- o Isolation Condenser
- o Standby Liquid Control
- o Secondary Cooling Water
- o Core Spray
- o Containment Cooling
- o Shutdown Cooling
- o Condensate
- o Feedwater
- o Reactor Water Cleanup
- o Standby Gas Treatment
- o Control Rod Drive
- o Reactor Head Cooling
- o Atmospheric Control
- o Main Steam
- o Demineralized Water and Condensate Storage and Transfer
- o Primary Containment Cooling Service Water
- o Diesel Generator Fuel Oil
- o Reactor Vessel Vent and Drain

Analyses have been completed on 2007 supports out of a total of 2008. Approximately 1074 modifications have been identified, of which approximately 700 have been completed. Also, analyses of the recirculation system (83 supports) and of torus-attached piping (200 supports) have been completed. All required modifications to the recirculation system (25 supports) and torus-attached piping (140 supports) have been completed.

References:

- (A) IE Bulletin 79-02, Pipe Support Plate Designs Using Concrete Expansion Anchor Bolts.
- (B) IE Bulletin 79-14, Seismic Analyses for As-Built Safety Related Piping Systems.
- (C) IE Inspection Report 50/245/85-04, dated April 18, 1985.

Plant: Millstone Unit 1

Title: Control Room Design Review (PA 81-047)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This project requires that a human factors engineering review of the Millstone Unit 1 control room be performed. The intent of this review is to identify areas where improvements in the man-machine interface are desirable. The CRDR is also intended to verify the adequacy, from a human factors standpoint, of the upgraded emergency operating procedures. A program plan for the CRDR for Millstone 1 is scheduled to be submitted by March 2, 1987, and a schedule for any modifications identified would also be provided at that time.

References:

- (A) Order Confirming Licensee Commitments on Emergency Response Capability, dated June 12, 1984.

Plant: Millstone Unit 1

Title: Safety Parameter Display System (PA 80-106)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This project involves the design and installation of a Safety Parameter Display System (SPDS) to meet the requirements of Supplement 1 to NUREG-0737. The SPDS is intended to provide the operator with essential plant status information in a concise and timely manner to facilitate actions required to ensure safe shutdown. A safety analysis and implementation plan is scheduled to be submitted by April 9, 1987. A schedule for the SPDS to be fully operational is to be provided at that time.

References:

- (A) Order Confirming Licensee Commitments on Emergency Response Capability, dated June 12, 1984.

Plant: Millstone Unit 1

Title: Reg. Guide 1.97 Instrumentation (PA 82-036)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This project involves an evaluation of available post-accident monitoring instrumentation to the criteria of Regulatory Guide 1.97, and upgrading of this instrumentation where necessary. A report describing how the provisions of Reg. Guide 1.97 have been or will be met was submitted to the NRC on April 9, 1984.

References:

- (A) Order Confirming Licensee Commitments on Emergency Response Capability, dated June 12, 1984.
- (B) W. G. Council letter to J. R. Miller and D. M. Crutchfield, dated April 9, 1984.

Plant: Millstone Unit 1

Title: Emergency Response Facilities Instrumentation (Related to PA 82-036 and PA 80-106)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737

Description: This issue concerns an evaluation of the instrumentation and plant status information which should be provided to emergency response facilities in accident conditions. Information concerning our preliminary assessment of which instrumentation should be provided was contained in our docketed submittals addressing compliance with Reg. Guide 1.97.

References:

- (A) W. G. Counsil letter to J. R. Miller and D. M. Crutchfield, dated April 9, 1984.

Plant: Millstone Unit 1

Title: Post Accident Hydrogen Monitor (PA 79-212)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: Supplement 1 to NUREG-0737 (Reg Guide 1.97)

Description: Regulatory Guide 1.97 indicates that a redundant Class IE hydrogen monitoring system should be provided. NNECO has installed a single-channel hydrogen monitor which meets all NRC criteria with the exception of redundancy. The issue involves an evaluation of the need to upgrade this system to meet the redundancy criterion.

References:

- (A) W. G. Council letter to W. A. Paulson, dated October 24, 1984.
- (B) W. G. Council letter to W. J. Dircks, dated August 6, 1982.

Plant: Millstone Unit 1

Title: Control Room Habitability (PA 80-114)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NUREG-0737, Item III.D.3.4

Description: An evaluation of the Millstone Unit 1 control room ventilation system to the criteria of NUREG-0737, Item III.D.3.4, resulted in plans to significantly upgrade the ventilation system. The scope of the project includes design and installation of a fully redundant, low-leakage, filtered ventilation system. New air handling units, chillers, HEPA filters, and associated ductwork, and control logic are required. In addition to radiological concerns, a portion of the project would provide protection to the control room operators in the event of a chlorine gas release. In the interim, Scott air packs per the criteria of Regulatory Guide 1.78 have been provided. The use of Scott air packs would limit radiological dose to the operators from a design basis accident to within acceptance criteria.

References:

- (A) NUREG-0737, Item III.D.3.4.
- (B) W. G. Counsil letter to D. G. Eisenhut, dated July 1, 1981.

Plant: Millstone Unit 1

Title: BWR Vessel Water Level Instrumentation (PA 80-196)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: NUREG-0737, Item ILF.2, Generic Letter 84-23

Description: This issue involves an evaluation of potential modifications to BWR reactor vessel water level instrumentation that would reduce instrument error and improve operator response. Generic Letter 84-23 identified three potential improvement categories for upgrading water level instrumentation. The first two improvements are required by the NRC Staff to satisfy NUREG-0737 Item ILF.2; the third improvement is still under evaluation by the NRC Staff and may be promulgated as a requirement in the future. The three improvements recommended in Generic Letter 84-23 should be evaluated on a plant-specific basis for Millstone Unit 1.

References:

- (A) NUREG-0737, Item ILF.2.
- (B) Generic Letter 84-23, dated October 26, 1984.
- (C) W. G. Counsil letter to D. G. Eisenhut, dated March 8, 1985.
- (D) J. A. Zwolinski letter to W. G. Counsil, dated March 26, 1985.

Plant: Millstone Unit 1

Title: Appendix J Modifications (PA 81-106)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: 10CFR50, Appendix J

Description: Significant modifications have been performed at Millstone Unit 1 during the 1980, 1982, and 1984 refueling outages to facilitate Appendix J leak rate testing. The penetrations which do not currently meet Appendix J test requirements are X-23, X-24, X-35A thru E, X-204A thru C, and X-210 A and B. The penetrations which have already been modified for Type C testing include X-2, 8, 9A, 9B, 10A, 11A, 12, 16A, 16B, 17, 25, 26, 36, 39A, 39B, 41, 42, 43, 45, 202A, 202B, 202C, 202D, 202E, 202F, 205, 211A, and 211B.

For the remaining penetrations, it is planned that a motor operated gate valve will be installed outside containment for X-23 and X-24, with manual gate valves and associated test connections. New procedures are being developed for penetrations X-35A thru E; no hardware modifications are presently anticipated. For X-204 A thru C and X-210A and B, NNECO is considering requesting an exemption from Appendix J test requirements on the basis of an available torus water supply for greater than 30 days.

References:

- (A) W. G. Counsil letter to D. M. Crutchfield, dated November 6, 1980.

Plant: Millstone Unit 1

Title: FSAR Update (PA 77-588)

Current Inservice Date: (See discussion in cover letter)

Origin of Project: 10CFR50.71

Description: 10CFR50.71 requires that each licensee periodically updates its Final Safety Analysis Report (FSAR). Updates are required to be submitted annually, and are required to be up-to-date as of not more than six months prior to submittal. As a participant in the SEP program, Millstone 1 was not required to submit an updated FSAR until 24 months after completion of the SEP review. An exemption from the schedular requirement of 10CFR50.71 until October 11, 1985 permits an evaluation of the priority and schedule for updating of the FSAR.

References:

- (A) W. G. Council letter to J. A. Zwolinski, dated February 4, 1985.
- (B) J. A. Zwolinski letter to W. G. Council, dated April 11, 1985.

Plant: Millstone Unit 1

Title: Appendix R (PA 83-125, 83-127 thru 83-132, 85-034 thru 85-038, 83-156)*

Current Inservice Date: (See discussion in cover letter)

Origin of Project: 10CFR50.48 and 10CFR50, Appendix R

Description: The fire protection review of Millstone Unit 1 resulted in a number of projects being identified. These modifications include implementation of administrative controls, installation of Halon suppression equipment, fire retardant cable coatings, modifications to permit local manual operation of equipment, cross-tie to Millstone Unit 2 emergency power sources, fire stops, installation of water deluge systems, and curbs and dikes, and enclosing of cable trays with fire resistant barriers.

References:

- (A) W. G. Council letter to D. G. Eisenhut, dated March 1, 1982.
- (B) D. M. Crutchfield letter to W. G. Council, dated June 25, 1982.
- (C) W. G. Council letter to D. G. Eisenhut, dated July 16, 1982.
- (D) W. G. Council letter to D. G. Eisenhut, dated December 4, 1984.

Plant: Millstone Unit 1

Title: Replacement of Motor Operated Valves (PA 80-211)*

Current Inservice Date: November 30, 1985

Origin of Project: 10CFR50.49

Description: In order to comply with the environmental qualification requirements of 10CFR50.49, modifications are to be performed to the motor operators for 28 safety related valves. The affected valves are in the low pressure coolant injection, recirculation core spray, isolation condenser, reactor water cleanup, makeup water, and service water systems. Additionally, detailed information on these MOVs will be submitted on or about June 30, 1985 to support requested exemptions from the schedular requirements of 10CFR50.49.

References:

- (A) W. G. Counsil letter to H. R. Denton, dated February 28, 1985, and incorporated references.
- (B) H. R. Denton letter to W. G. Counsil, dated March 29, 1985.

Plant: Millstone Unit 1

Title: Anticipated Transients Without Scram (ATWS) (PA 80-081)*

Current Inservice Date: Schedule to be submitted by October 11, 1985, as required by 10CFR50.62 and Reference (B).

Origin of Project: Final Rule on ATWS; 10CFR50.62

Description: This project involves modifications to meet the requirements of the final rule on Anticipated Transients Without Scram (ATWS).

For Millstone Unit 1, the ATWS rule requires installation of a diverse scram system and increased capacity of the Standby Liquid Control System. The automatic recirculation pump trip and alternate rod insertion features have already been installed at Millstone 1. The remaining scope of required modifications should be reviewed for Millstone 1 to determine their impact on overall plant safety and relative priority for implementation.

References:

- (A) Final Rule on ATWS, Federal Register, July 31, 1984.
- (B) Generic Letter 85-06, dated April 16, 1985.

Docket No. 50-245

Attachment 6

Millstone Nuclear Power Station, Unit No. 1

Proposed ISAP Scope - NNECO Initiated Projects

May, 1985

Plant: Millstone Unit 1

Title: LPCI Remotely Operated Valve 1-LP-50A & B (PA 83-020)*

Current Inservice Date: December 31, 1987

Origin of Project: Northeast Utilities

Description: Feasibility study to determine the need and cost justification associated with providing remote operation capability for LPCI Valves 1-LP-50 A&B. These valves, located below the torus, provide a drain path from the torus to radwaste and may be inaccessible during an accident (due to high radiation levels) when draining of the torus may be necessary.

Plant: Millstone Unit 1

Title: Drywell Humidity Instrumentation (PA 83-049)

Current Inservice Date: (To be determined)

Origin of Project: Northeast Utilities

Description: Engineering and installation of a system for better monitoring of drywell humidity, airborne, gaseous and particulate contamination.

Plant: Millstone Unit 1

Title: Process Computer Replacement (PA 80-106)

Current Inservice Date: February 1, 1988

Origin of Project: Northeast Utilities

Description: Engineering, design and construction management services for the replacement of the Plant Process Computer.

Plant: Millstone Unit 1

Title: Emergency Gas Turbine Generator Vibration Switches (PA 83-041)*

Current Inservice Date: 1987 Refueling Outage

Origin of Project: Northeast Utilities

Description: Engineering, design, and procurement of transducers and vibration protection modules/switches for the Emergency Gas Turbine Generator to maintain Emergency Gas Turbine Generator reliability.

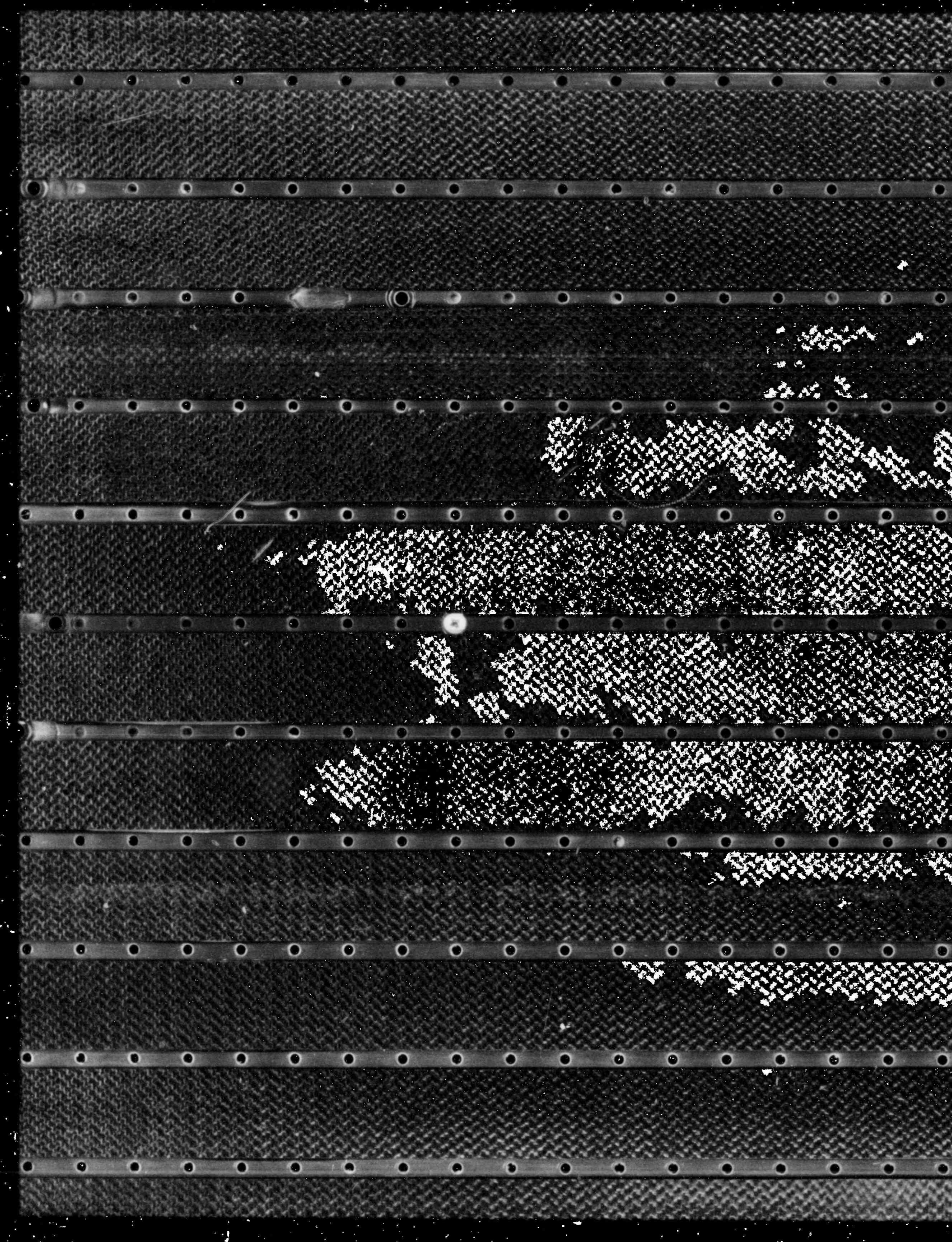
Plant: Millstone Unit 1

Title: High Steam Flow Setpoint Increase (PA 82-096)*

Current Inservice Date: December 31, 1986

Origin of Project: Northeast Utilities

Description: Engineering analysis to support an increase in the reactor trip setpoint for the main steam line high flow from 120% to 140% in order to eliminate the need to reduce power to 90% for weekly turbine stop valve testing.



Plant: Millstone Unit 1

Title: Hydrogen Water Chemistry Study (PA 83-210)

Current Inservice Date: December 31, 1986 (completion of study only)

Origin of Project: Northeast Utilities

Description: Evaluation of hydrogen addition to the BWR primary coolant as a means of IGSCC prevention. Evaluation to include but is not limited to the following issues:

- a) hydrogen storage, monitoring and injection
- b) radiation level increases in steam and turbine systems
- c) increased primary coolant pH and conductivity
- d) in-reactor and ex-reactor tests to measure increased IGSCC resistance
- e) effects of hydrogen water chemistry on fuel and cladding performance.

Plant: Millstone Unit 1

Title: Condenser Retube (PA 81-105)*

Current Inservice Date: 1987 Refueling Outage

Origin of Project: Northeast Utilities

Description: Evaluation of retubing the main condenser in order to:

- a) control radwaste costs
- b) increase plant availability.

Plant: Millstone Unit 1

Title: Sodium Hypochlorite System (PA 80-129)

Current Inservice Date: April 31, 1988

Origin of Project: Northeast Utilities

Description: Engineering, procurement and installation of a bulk, on-site sodium hypochlorite storage and distribution system. This system, which will replace the existing chlorination system, will be used as the biofouling control for the service and circulating water systems.

Plant: Millstone Unit 1

Title: Extraction Steam Piping Replacement (PA 83-078)*

Current Inservice Date: 1987 Refueling Outage

Origin of Project: Northeast Utilities

Description: Engineering, design, procurement and construction management services for replacement of portions of the 8th, 9th and 11th stage carbon steel extraction steam piping.

Plant: Millstone Unit 1

Title: Upgrading of Piping & Instrumentation Diagrams (PA 84-025)

Current Inservice Date: September 30, 1986

Origin of Project: Northeast Utilities

Description: Piping & Instrumentation Diagrams are to be reviewed and redrawn. Revision of P&ID's to include review of plant systems and field inspections to verify actual installations.

Plant: Millstone Unit 1

Title: Drywell Ventilation System (PA 83-017)

Current Inservice Date: January 1, 1988

Origin of Project: Northeast Utilities

Description: Engineering evaluation, procurement, and installation of replacement components for the American Standard/Trane Cooling Units in the Drywell Ventilation system. Five cooling coils are scheduled to be replaced during the 1985 refueling outage.

Plant: Millstone Unit 1

Title: Stud Tensioners (PA 83-048)

Current Inservice Date: January 1, 1986

Origin of Project: Northeast Utilities

Description: Engineering evaluation of procurement of new stud tensioners for the MP1 reactor vessel studs. Evaluation to include:

- a) review of alternate stud tensioner mechanisms
- b) man-rem savings
- c) critical path time savings.

References:

Plant: Millstone Unit 1

Title: Reactor Vessel Head Stand Relocation (PA 85-041)

Current Inservice Date: May 31, 1986

Origin of Project: Northeast Utilities

Description: Engineering services required to relocate the centerline of the reactor vessel head stand 10 inches north. A modification to the crane in 1975 installed a new trolley with a redundant crane hook, which limited travel with respect to the floor. The present method of landing the vessel head utilizes a chainfall and a lift pad bolted to the south wall to drift the head into position. Damage to the vessel head and potential personnel injury could occur if the chainfall or lift pad failed. Any modifications will need to address the requirements of NUREG-0612, Control of Heavy Loads.

References:

Plant: Millstone Unit 1

Title: Turbine Water Induction Modifications (PA 83-181)

Current Inservice Date: July 30, 1987

Origin of Project: Northeast Utilities

Description: Evaluation and implementation of the recommendations of an NU study to preclude the potential for turbine water induction.

Docket No. 50-245

Attachment 7

Millstone Unit No. 1

1985 Refueling Outage and Non-Outage Projects

May, 1985

Plant: Millstone Unit 1

Title: Seismic Qualification of Safety-Related Piping (PA 79-162)

Origin of Project: IE Bulletins 79-02 and 79-14

Description: The reanalysis of safety related piping for Millstone Unit 1 required by the referenced IE Bulletins identified approximately 1074 modifications to pipe supports. Approximately 700 of these have been completed. Additionally, modifications to the recirculation system (25 supports modified) and to torus-attached piping (140 supports modified) have been completed. The presently planned scope to be performed during 1985 includes approximately 39 supports which will be modified pre-outage, and approximately 70 supports to be modified during the outage.

Plant: Millstone Unit 1

Title: Primary Containment Leak Rate Monitoring (PA 79-224)

Origin of Project: Technical Specification 4.7.A.3.g

Description: Over the past several years, NNECO has performed a significant amount of analyses and plant modifications related to containment atmosphere control. One of these modifications was the installation of a nitrogen compressor system to eliminate the use of instrument air inside the drywell. As a result, there is no longer a need to purge to control oxygen concentration. Additionally, NNECO is planning modifications to eliminate the need for purging or venting to control drywell-to-torus or drywell-to-atmosphere differential pressure. This modification will allow the nitrogen compressors to take a suction on either the drywell or the torus. NNECO has also decided to install with this modification the instrumentation necessary to allow continuous monitoring of the containment leak rate.

The scope of work to be performed during the 1985 refueling outage is the installation of 2 branch connectors on the pumpback system with associated isolation valves, piping, and caps. This will enable the balance of the pump back system to be implemented during operation, with completion achieved during the 1987 refueling outage.

References:

- (A) D. M. Crutchfield letter to W. G. Counsil, dated June 7, 1984.
- (B) W. G. Counsil letter to D. M. Crutchfield, dated March 19, 1985.

Plant: Millstone Unit 1

Title: Undervoltage Protection - Emergency Bus (PA 80-135)

Origin of Project: NRC-Degraded Grid Protection for Class IE Power Systems

Description: The purpose of the project is to address NRC criteria related to undervoltage protection for Class IE emergency buses. The majority of the undervoltage protection modifications were completed during previous refueling outages. The remaining scope of work is to rewired the existing control circuits and terminate cables, and perform system testing.

References:

- (A) W. G. Council letter to D. M. Crutchfield, dated October 14, 1982.

Plant: Millstone Unit 1

Title: Replacement of Motor Operated Valves (PA 80-211)

Origin of Project: Environmental Qualification of Electrical Equipment,
10CFR50.49

Description: As a result of the environmental qualification requirements of 10CFR50.49, modifications are required for the motor operators associated with 28 safety related MOVs at Millstone Unit 1. NNECO is presently planning to upgrade the qualification status for a number of these MOVs during the 1985 refueling outage. For those MOVs which will not achieve full qualification during the 1985 refueling outage, detailed information will be provided in support of a proposed exemption request to 10CFR50.49. The specific MOVs to be qualified, and the bases for the exemption request are planned to be submitted to the Staff on or about June 30, 1985.

References:

- (A) W. G. Council letter to H. R. Denton, dated February 28, 1985 and incorporated references.
- (B) H. R. Denton letter to W. G. Council, dated March 29, 1985.

Plant: Millstone Unit 1

Title: Floodgate Modifications and Installation of Scuppers (PA 84-077)

Origin of Project: SEP Topics IL.3.A, Hydrologic Description, and IL.3.B.1, Capability of Operating Plant to Cope with Design Basis Flooding Conditions.

Description: During the SEP hydrologic review of Millstone Unit 1, a concern was identified regarding postulated wave surging effects resulting from the Probable Maximum Hurricane (PMH). As a result, NNECO committed to modify the flooding protection at Millstone Unit 1 to fully protect a safe shutdown system from the PMH surge effects. The scope of this project is to extend the east flood gate on the fire water pump house to 21.75 ft MSL to provide complete flood protection for the isolation condenser make-up water supply system.

The balance of the project is for the installation of scuppers in the roofs of safety related buildings to prevent accumulations of water which could exceed design load limits. This portion of the project will be completed in conjunction with the replacement of selected roofs during 1986.

References:

- (A) NUREG-0824, Section 4.5.1.
- (B) W. G. Council letter to D. M. Crutchfield, dated March 16, 1984.

Plant: Millstone Unit 1

Title: Refueling Cavity Seal Evaluation (PA 84-118)

Origin of Project: IE Bulletin 84-03, Refueling Cavity Water Seals

Description: This project involves a review, evaluation, and modification as necessary, of the refueling cavity seal at Millstone Unit 1. NNECO's response to IE Bulletin 84-03 was provided in the referenced correspondence. That response also identified a number of additional items which were to be evaluated. Any modifications required as a result of this review will be accomplished prior to or during the 1985 refueling outage. Modifications identified to date include installation of refueling cavity drain line isolation valves and seismic supports, and installation of spent fuel pool level and refueling bellows leak detection instrumentation.

References:

- (A) W. G. Counsil letter to T. E. Murley, dated November 29, 1984.

Plant: Millstone Unit 1

Title: Records Vault Temperature and Humidity Control (PA 80-001)

Origin of Project: NRC Inspection Unresolved Item/NNECO

Description: This project involves engineering, design, and construction associated with installation of a complete heating and air conditioning system to provide for proper control of temperature and humidity within the records vault. Equipment to be installed includes a new condenser/compressor unit, air handling unit, duct heater, humidifier, ductwork, and associated piping conduit, wiring, controls, and hangers. Inadequate temperature and humidity control in the past has resulted in some degradation of drawings and other plant design documentation.

References:

- (A) IE Inspection Report Nos. 50-245/82-10 and 50-336/82-14, dated August 13, 1982, Item 7.4.

Plant: Millstone Unit 1

Title: Process Computer UPS Installation (PA 80-106)

Origin of Project: Supplement 1 to NUREG-0737/Northeast Utilities

Description: NNECO is planning to replace the plant process computer during a future refueling outage. One of the functions of the new process computer will be to supply plant status information to the Safety Parameter Display System (SPDS). In order to meet power supply requirements for the SPDS, an uninterruptible power supply (UPS) for the process computer will be installed. The scope of work planned for the upcoming outage is limited to the installation of the UPS.

Plant: Millstone Unit 1

Title: MS Relief Valve Vacuum Breaker Load Qualification (PA 83-217)

Origin of Project: Northeast Utilities

Description: The scope of this project includes testing of the main steam relief valve discharge line vacuum breaker, and replacement of the valve internals if required. Operating experience at similar plants has resulted in vacuum breaker damage associated with SRV actuation at normal containment pressure.

Plant: Millstone Unit 1

Title: Station Battery "A" Replacement (PA 83-068)

Origin of Project: Northeast Utilities

Description: Engineering, design and procurement services to replace station Battery "A" with IEEE qualified batteries. Evaluation to include modification of existing seismically qualified battery racks if necessary. Station "B" battery was replaced during the 1984 outage.

References: IE Information Notice 83-11

Plant: Millstone Unit 1

Title: Review and Upgrade Evaluation for Diesel Air Start System (DASS)
(PA 84-019)

Origin of Project: Northeast Utilities

Description: Engineering evaluation of:

- a) effects of corrosion on interior surfaces of DASS piping and components.
- b) probability of existing piping and components corrosion products entering the air stream and degrading DASS operation.

The scope of work planned for the 1985 refueling outage is inspection of the air system piping and tanks for corrosion, and installation of new air start valves with larger ports to resist plugging. Additional modifications will be evaluated.

References: NUSOER 9-83
Generic Letter 84-15

Plant: Millstone Unit 1

Title: Gas Turbine Generator Electrical Equipment Protection (PA 81-204)

Origin of Project: Northeast Utilities

Description: Production of a design package, including hardware, for protecting electrical equipment within the gas turbine building. Previous failures of the gas turbine generator to start and run have been attributed to the corrosive effects of salt air on electrical components. A controlled environment for this equipment should preclude further degradation.

Plant: Millstone Unit 1

Title: Auxiliary Electrical System Oscillograph (PA 82-117)

Origin of Project: Northeast Utilities

Description: Design, procurement and installation of a high speed, automatic recording oscillograph that will monitor parameters on the plant auxiliary electrical system.

Plant: Millstone Unit 1

Title: Supervisory and Events Recorder Systems (PA 82-112)

Origin of Project: Northeast Utilities

Description: Evaluation of replacing the obsolete Switchyard Supervisory and Sequence Events Recorder Systems. Procurement and installation of replacement equipment to be implemented based on the results of the engineering evaluation.

Plant: Millstone Unit 1

Title: Replace Main Generator Neutral Grounding Transformer (PA 84-056)

Origin of Project: Northeast Utilities

Description: Replacement of the Askarel filled main generator neutral grounding transformer with a dry type transformer. The original basis for replacement of this transformer was to eliminate PCBs, which are contained in the transformer oil.

This project has recently been evaluated with respect to the recently completed PRA, and it has been determined that replacement of this transformer with a dry type transformer will result in a very significant reduction in the most dominant fire induced core melt accident sequence.

Plant: Millstone Unit 1

Title: Limitorque Motor Operated Valves: Lubrication (PA 84-067)

Origin of Project: Northeast Utilities

Description: Provision of support in sampling, analyzing, and rebuilding Limitorque motor operated valves which have a mixture of Lithium-based and Calcium-based lubricants in the main gear cases and geared limit switch assemblies.

Plant: Millstone Unit 1

Title: 460 Volt Motor Soft Start Capability (PA 83-071)

Origin of Project: Northeast Utilities

Description: Evaluation, and if necessary, engineering, procurement and installation of unloading couplings on the motors of turbine building exhaust fans HVE-1A, 1B and 1C, to decrease the current long start times of the fans, and to prevent possible inadvertent plant trips due to voltage dips on the 120/480V vital bus during startup of the fans.

The scope of work planned for 1985 is the replacement of one of the unloading couplings. The effect of this modification will be evaluated and a determination made on replacement of the remaining couplings.

Plant: Millstone Unit 1

Title: IGSCC Countermeasures (PA 84-149)

Origin of Project: Northeast Utilities

Description: Engineering services to provide IGSCC countermeasures, including:

- a) pipe replacement
- b) inspection equipment and procedures
- c) IHSI/weld overlay on piping
- d) study of chemical decontamination of piping benefits
- e) provide upgraded instrumentation for monitoring piping.

Plant: Millstone Unit 1

Title: Circulating Water Piping Thrust Block Repairs (PA 84-095)

Origin of Project: Northeast Utilities

Description: Preparation of procedures and specifications required to repair circulating water piping thrust blocks.

Plant: Millstone Unit 1

Title: Gas Turbine Generator Battery Replacement (PA 84-061)

Origin of Project: Northeast Utilities

Description: Replacement of the gas turbine generator batteries, enclosure, and battery rack. The scope of this project includes seismic qualification of the battery racks.

Plant: Millstone Unit 1

Title: Solid Radwaste Building Ventilation and Roof Modifications (PA 83-108)

Origin of Project: Northeast Utilities

Description: Engineering evaluation of the existing solid and liquid radwaste ventilation systems to determine the most effective method for eliminating current and future problems associated with contamination.

As a result of this evaluation, extensive modifications are being performed to the building and ventilation system. A new building is being constructed around the old structure to prevent future contamination and release problems from the roof area. Additionally, a new fan and air handling unit are being installed.

Plant: Millstone Unit 1

Title: Spent Fuel Pool Cleanup (PA 84-122)

Origin of Project: Northeast Utilities

Description: Removal and disposal of non-fuel components from the Millstone
1 spent fuel pool.

Plant: Millstone Unit 1

Title: Voltage Regulator Instrument Transformer Replacements (PA 32-040)

Origin of Project: NRC - Degraded Grid Protection for Class IE Power Systems

Description: Installation of two 50 KVA transformers with voltage regulation to replace the existing transformers IRP-1 and IV-1. The existing transformers are not regulating transformers. Replacement of IRP-1 and IV-1 will satisfy a commitment to the NRC (see referenced correspondence).

References: (A) W. G. Council letter to D. M. Crutchfield, dated November 14, 1980.

Plant: Millstone Unit 1

Title: House Heating Boiler Stack (PA 85-013)

Origin of Project: Northeast Utilities

Description: The existing exhaust stack for the Millstone Unit 1 house heating boiler is severely corroded and must be replaced. This project involves an evaluation of the existing design and revision, if necessary, and procurement, fabrication, and installation of a new stack.

Plant: Millstone Unit 1

Title: Procurement of Nuclear Grade Material for Service Sensitive Lines
(PA 84-150)

Origin of Project: Northeast Utilities

Description: Procurement of nuclear-grade materials for potential replacement due to Intergranular Stress Corrosion Cracking (IGSCC) problems. If as a result of inspections being performed during the 1985 refueling outage piping replacement is warranted, these long lead time materials will be available. Materials being purchased possess greater resistance to IGSCC.

Attachment 8

Millstone Nuclear Power Station, Unit No. 1
Significant NNECO Initiatives Not in ISAP Scope

May, 1985

Plant: Millstone Unit 1

Title: Plant Training Simulator (PA 82-214)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Engineering and project management of the design, procurement, and testing of the Millstone 1 plant simulator to be installed at the new training facility at the Millstone site. The Millstone 1 simulator is scheduled to be fully operational by the end of 1985.

Plant: Millstone Unit 1

Title: Probabilistic Safety Study (PA 84-044)

Current Inservice Date: June 30, 1985

Origin of Project: Northeast Utilities

Description: Development of Probabilistic Safety Analysis models for the Millstone-1 plant including development of:

- a) plant initiating event data base(s)
- b) plant component failure rate data base(s)
- c) best estimate transient and LOCA analyses
- d) plant system event/fault tree models
- e) probabilistic qualification of component/system/human error probabilities and uncertainties.

The PSA model will be used as an integral part of the Integrated Safety Assessment Program (ISAP).

Plant: Millstone Unit 1

Title: Unit Availability Model (PA 84-027)

Current Inservice Date: September 1, 1985

Origin of Project: Northeast Utilities

Description: Development of a computerized plant system model to assist in evaluating the impact of proposed modifications on unit reliability, availability, and maintainability (RAM). The model will be used as an integral part of the Integrated Safety Assessment Program (ISAP).

Plant: Millstone Unit 1

Title: Evaluation and Implementation of NUREG 0577 (PA 81-104)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Engineering services to comply with NUREG-0577 - "Potential for Low Fracture Toughness and Lamellar Tearing in Component Supports".

Plant: Millstone Unit 1

Title: Torque Switch Evaluation for Motor Operated Valves (PA 84-059)

Current Inservice Date: November 15, 1985

Origin of Project: Northeast Utilities

Description: Performance of a design basis investigation of safety related motor operated valves to determine appropriate torque switch setpoints.

References: IE Information Notice 84-10

Plant: Millstone Unit 1

Title: Reactor Protection Trip System (PA 83-072)

Current Inservice Date: December 31, 1987

Origin of Project: Northeast Utilities

Description: Evaluation of the safety aspects of the Reactor Protection Trip System Setpoint drift problems.

Plant: Millstone Unit 1

Title: Roof Replacement (PA 84-109)

Current Inservice Date: December 31, 1986

Origin of Project: Northeast Utilities

Description:

- a) Replacement of roofs which have deteriorated to a point warranting replacement.
- b) Investigation of remaining roofs to determine current conditions.

Plant: Millstone Unit 1

Title: 4.16 KV, 480 V, and 125 VDC Plant Distribution Protection (PA 82-051)

Current Inservice Date: January 31, 1986

Origin of Project: Northeast Utilities

Description: Engineering evaluation to include:

- a) verification of all protective relay and circuit breaker settings on the 4.16 KV and 480V systems.
- b) establishment and verification of criteria for circuit breaker setting selection.
- c) verification and documentation of the protective relaying calculations and settings in accordance with procedures for nuclear safety related equipment.

Any required modifications resulting from this evaluation would be scheduled at that time.

Plant: Millstone Unit 1

Title: Spent Fuel Pool Storage Racks and Transportation Cask (PA 82-176)

Current Inservice Date: September 29, 1987

Origin of Project: Northeast Utilities

Description:

- a) Engineering evaluation including design, licensing, fabrication and installation, of high density spent fuel racks in the Millstone Unit 3 spent fuel pool to accommodate BWR spent fuel from Millstone Unit 1. Analysis to include evaluation of a spent fuel transportation cask for fuel shipment between Unit 1 and Unit 3.
- b) Feasibility study of re-racking the Millstone Unit 1 Spent Fuel Pool to enlarge spent fuel storage capacity at the station.

Plant: Millstone Unit 1

Title: DC System Review (PA 84-070)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Comprehensive evaluation of the DC system including:

- a) compilation of a list of each DC system circuit and associated function(s) for each main DC system bus.
- b) determination of the cumulative plant effort needed due to degenerization of each main DC system bus.
- c) determination of the efforts needed for plant recovery due to regenerization of each main DC system bus.

References: NUSOER 84-04, Recommendation #4

Plant: Millstone Unit 1

Title: Reactor Water Clean-up System Isolation Setpoint Reduction (PA 83-174)

Current Inservice Date: December 31, 1987

Origin of Project: Northeast Utilities

Description: Determination through an engineering evaluation of the most cost effective method for detecting leakage from the RWCU system. Leak detection is necessary due to the high radiological consequences and adverse EEQ impact following an RWCU pipe break.

Plant: Millstone Unit 1

Title: 480V Load Center-Replacement of Oil Filled Breaker Trip Devices
(PA 83-154)

Current Inservice Date: March 30, 1987

Origin of Project: Northeast Utilities

Description: Engineering evaluation of replacing General Electric 480 volt load center breakers. Evaluation to include the feasibility of replacing the existing oil filled ECI trip devices with solid state trip devices, or permanently repairing the existing dash pots.

Plant: Millstone Unit 1

Title: Control Rod Drive System Water Hammer Analysis (PA 83-037)

Current Inservice Date: December 31, 1986

Origin of Project: Northeast Utilities

Description: Evaluation of scram event generated water hammer loads in the CRD system piping.

Plant: Millstone Unit 1

Title: Instrument, Service, and Breathing Air System Improvements (PA 82-037)

Current Inservice Date: December 31, 1987

Origin of Project: Northeast Utilities

Description: Engineering review of the Instrument and Service Air System to evaluate changes required to improve their reliability and integrity. System modifications to ensure "Grade A" air supplies to all breathing stations.

Plant: Millstone Unit 1

Title: Offsite Power Systems (PA 79-267)

Current Inservice Date: December 31, 1986

Origin of Project: Northeast Utilities

Description: Review of the present offsite power system design for Millstone Units 1 and 2 with respect to improving reliability, capacity, and availability. Specific areas to be reviewed include possible installation of additional circuit breakers, slow speed bus transfer schemes, generator disconnect devices, and a full capacity reserve station services transformer, and modification of the 23KV Flanders line to be available to all units.

Plant: Millstone Unit 1

Title: Drywell Temperature Monitoring System Upgrade (PA 82-182)

Current Inservice Date: 1987 Refueling Outage

Origin of Project: Northeast Utilities

Description: Review and upgrade as necessary of the existing drywell temperature monitoring system to allow a more accurate determination of drywell bulk air temperature. Major safety-related equipment to be considered for monitoring includes MSIVs, SRVs, radiation monitors, selected MOVs, electrical penetrations, snubbers, and cable runs.

Plant: Millstone Unit 1

Title: Reliability Equipment (PA 84-090)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Procurement of computerized UT instrumentation, vibration monitoring and diagnostic equipment, CCTV cameras for visual inspections, and miscellaneous accessories. This equipment will be utilized for performing special tests and analyses on generating station systems and components.

Plant: Millstone Unit 1

Title: Spare Recirculation Pump Motor (PA 83-098)

Current Inservice Date: December 31, 1985

Origin of Project: Northeast Utilities

Description: Procurement of a spare recirculation pump motor.

Plant: Millstone Unit 1

Title: Long Term Cooling Study (PA 85-049)

Current Inservice Date:

Origin of Project: Northeast Utilities; Millstone 1 PSS

Description: Engineering study of long term cooling at Millstone Unit 1, including:

- o The design bases specifications, and system requirements of the LPCI/containment cooling system.
- o Scenarios to determine long term torus heat-up requirements.
- o Calculations of torus heat-up based on decay heat and actual performance characteristics of cooling systems.
- o Determination of LPCI pump NPSH requirements and impact of inadequate NPSH on long term cooling.
- o Recommendations for modifications to the plant, as necessary, to ensure long term cooling capability.

Plant: Millstone Unit 1

Title: FWCI Assessment Study (PA 85-022)

Current Inservice Date: September 13, 1985

Origin of Project: Northeast Utilities

Description: Engineering study of the Millstone 1 Feedwater Coolant Injection system (FWCI) including:

- o Definition of FWCI response assumptions for design basis analyses
- o Comparison of as-wired FWCI logic to control wiring diagrams, schematics, and block diagrams.
- o Revision of drawings, as necessary
- o Definition of system response and limitations.
- o Recommendations for improvement, if required.