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March 30, 1994

Docket No. 50-213
R14756

Re: License Condition 2.C.6

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

Gentlemen:

Haddam Neck Plant
Integrated Safety Assessment Program

Connecticut Yankee Atomic Power Company (CYAPCO) is hereby submitting to the NRC Staff an updated report on the Haddam Neck Plant Integrated Safety Assessment Program (ISAP) in accordance with the license condition issued by the NRC Staff in License Amendment No. 150 to the Haddam Neck Plant license in a letter dated February 26, 1992.⁽¹⁾

Since the last ISAP report was submitted to the NRC Staff, CYAPCO has performed reviews and updates of previous active ISAP topics. In those cases where there were a substantial change in scope, a full ISAP reevaluation was performed. Several new topics were added and evaluated if sufficient project scope was available. As a result, revised analytical ranking methodology (ARM) scores were defined and a new integrated implementation schedule (IIS) was developed. The revised IIS, provided in this report, was developed fully consistent with the program plan submitted to the NRC Staff in a December 23, 1991,⁽²⁾ letter.

CYAPCO continues to pursue the closure of open ISAP commitments. This submittal includes closure documentation for 5 topics. If the Staff concurs, the number of active ISAP topics would be reduced to 19.

Attachment 1 to this letter provides a list of all ISAP topics, including both open topics and those topics considered closed by CYAPCO. Attachment 2 provides updates on those open, active ISAP topic reviews discussed previously. Attachment 3 describes new topics being added to the Haddam Neck Plant ISAP or existing topics which have recently been reevaluated in ISAP. For this update there are no new or re-evaluated tasks for the Haddam Neck Plant. Attachment 4

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- (1) J. F. Stolz letter to J. F. Opeka, "Issuance of Amendment (TAC Nos. M67774 and M67799)," dated February 26, 1992.
 - (2) J. F. Opeka letter to U.S. Nuclear Regulatory Commission, "Integrated Safety Assessment Program," dated December 23, 1991.

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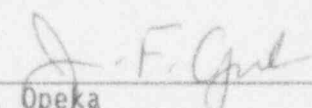
provides a summary table of the ISAP ARM scores and installation man-rem for each project recently reevaluated. Attachment 5 provides the updated IIS, including both old and new topics. Attachment 6 provides a list and summary discussion for those topics being proposed for closure by CYAPCO.

CYAPCO respectfully requests that the NRC Staff review and respond back to CYAPCO within 60 days of receipt of this letter as to whether or not you concur with our positions outlined herein. We remain available to discuss the report with you at your convenience.

Please contact us if you have any questions.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY



J. F. Opeka
Executive Vice President

Attachment 1--List of ISAP Topics
Attachment 2--Update on ISAP Topic Reviews
Attachment 3--Evaluation of New ISAP Topics or Reevaluation of Existing
Topics
Attachment 4--ISAP ARM Summary Table
Attachment 5--Integrated Implementation Schedule
Attachment 6--Proposed Topics for Closure

cc: T. T. Martin, Region I Administrator
A. B. Wang, NRC Project Manager, Haddam Neck Plant
W. J. Raymond, Senior Resident Inspector, Haddam Neck Plant

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B14756

Attachment 1
Haddam Neck Plant
Integrated Safety Assessment Program
List of ISAP Topics

March 1994

Haddam Neck Plant
Integrated Safety Assessment Program
List of ISAP Topics

<u>Topic Number</u>	<u>Closed⁽¹⁾</u>	<u>Title</u>
1.01	3-2-89	Switchgear Room Cooling Modifications
1.02		High/Low Pressure Valve Interlocks
1.03	11-1-93	Containment Penetration Evaluations
1.04		Seismic Qualification of Safety-Related Piping
1.05		Seismic Structural Modifications
1.06	11-1-93	Wind and Tornado Loadings/Tornado Missiles
1.07	3-2-89	Vital Bus Feed Realignment Modifications
1.08	3-2-89	Seismic Modifications to Reactor Coolant System
1.09	3-23-93	Design Codes, Design Criteria, and Load Combinations
1.10	9-28-90	Torque Switch Modifications
1.11	4-30-90	PAB Ventilation System Modifications
1.12	3-23-93	Control Room Habitability
1.13	3-2-89	Inadequate Core Cooling Instrumentation
1.14	9-28-90	Appendix R Modifications
1.15	3-2-89	FDSA Update
1.16	4-30-90	Anticipated Transients Without Scram (ATWS)
1.17	3-2-89	Replacement of Motor Operated Valves
1.18		Reactor Coolant Pump Seal Cooling Modifications
1.19		Control Room Design Review
1.20	3-2-89	Safety Parameter Display System
1.21	3-30-94	Regulatory Guide 1.97 Instrumentation
1.22	3-2-89	Emergency Response Facilities Information
1.23	4-30-90	Post-Accident Hydrogen Monitors
1.24	3-2-89	Technical Specification Surveillance for Hydraulic Snubbers
1.25	3-2-89	Technical Specification Surveillance for Mechanical Snubbers
1.26	3-2-89	Relief Valve and Safety Valve Testing
1.27	3-2-89	Compliance with 10CFR50.46
1.28	3-2-89	Reactor Coolant Pump Trip
1.29	3-2-89	Flooding Evaluation
1.30	8-4-92	Reactor Protection System Isolation
1.31	3-23-93	Pipe Breaks Outside Containment
1.32	3-2-89	Item 2.1, Equipment Classification and Vendor Interface Reactor Trip System Components)
1.33	3-2-89	Items 3.1.1 and 3.1.2, Post-Maintenance Testing Procedures
1.34	3-2-89	Item 3.1.3, Post-Maintenance Testing Technical Specification Changes

<u>Topic Number</u>	<u>Closed⁽¹⁾</u>	<u>Title</u>
1.35	3-2-89	Item 4.1, Reactor Trip System Reliability (Vendor-Related Modifications)
1.36	12-6-91	Item 2.2, Equipment Classification and Vendor Interface (Programs for all Safety-Related Components)
1.37	3-2-89	Items 3.2.1 and 3.2.2, Post-Maintenance Testing Procedures
1.38	3-2-89	Item 3.2.3, Post-Maintenance Testing Technical Specifications.
1.39	12-6-91	Items 4.2.3 and 4.2.4, Preventative Maintenance Procedures for Reactor Trip Breakers
1.40	4-30-90	Items 4.5.2 and 4.5.3, Reactor Trip System Testing
1.41	3-2-89	Item 4.5.1, Reactor Trip System Functional Testing
1.42	4-30-90	Reactor Coolant System Vents Technical Specifications
1.43	4-30-90	Technical Specifications from Generic Letter 83-37
1.44	3-2-89	Diesel Generator Reliability
1.45	3-2-89	Inservice Inspection Update to 1980 Code
1.46	3-2-89	Inservice Testing for Diesel Generator Auxiliaries
1.47	3-2-89	Reliability Engineering
1.48		Seismic Qualification of Equipment
1.49	3-2-89	Steam Generator Tube Integrity
1.50	3-2-89	Fracture Toughness in Supports
1.51	3-2-89	Systems Interactions
1.52	3-2-89	Reactor Vessel Pressure Transient Protection
1.53	3-2-89	Containment Emergency Sump Performance
1.54	3-28-91	Safety Implications of Control Systems
1.55	3-2-89	Radiation Protection Plans
1.56	3-2-89	Bolting Degradation
1.57	3-2-89	Flooding of Safety Equipment by Backflow
1.58	3-2-89	Steam Binding of Auxiliary Feedwater Pumps
1.59	3-2-89	Additional Low Temperature Over-Pressure Protection
1.60	3-2-89	RCS/RHR Suction Line Valve Interlock
1.61	3-2-89	Pressurized Thermal Shock
1.62	3-2-89	Feed-and-Bleed System Modifications
1.63	4-30-90	Hydrogen Control
1.64		System Dependencies on MCC-5
1.65	3-2-89	Steam Generator Tube Rupture Thermal-Hydraulic Analysis
1.66	3-2-89	Containment Integrated Leak Rate Test
1.100	4-30-90	Appendix J Modifications (P74-77)
1.101	4-30-90	Steam Generator Overfill Protection (Combined with Topic 1.54)
1.102		RCS Vent System Upgrade
1.103	12-6-91	Fire Barrier Penetration Seal Program Upgrade

<u>Topic Number</u>	<u>Closed⁽¹⁾</u>	<u>Title</u>
1.104	11-1-93	Containment Isolation Valve Position Indication
1.105	12-6-91	NRC Bulletin 88-8, Piping Thermal Stress
1.106	4-30-90	Further Event V Analyses (Combined with Topic 1.02)
1.107	4-30-90	Charging Pump Importance
1.108	4-30-90	Review of Bayesian Updating
1.109	4-30-90	Refueling Cavity Seal Gate Closure
1.110	3-2-89	(Project Dropped)
1.111	12-6-91	Cable Vault Flooding
1.112	9-28-90	Fire Protection System Upgrades
1.113	3-23-93	Loss of Control Air Supply
1.114	3-23-93	Category 1 Piping Evaluation
1.115	8-4-92	Generic Letter 87-12, Loss of Residual Heat Removal (RHR), and Generic Letter 88-17, Loss of Decay Heat Removal
1.116	3-23-93	Station Blackout
1.117	4-30-90	CY Single Failure Modifications
1.118		Main Steam Safety Valve Capacity
1.119		MOV Testing, Generic Letter 89-10
1.120	8-4-92	Service Water, Generic Letter 89-13
1.121		Post Accident Sample System Enhancement Modifications
1.122	8-4-92	Auxiliary Feedwater (AFW) Modifications
1.124	11-1-93	Replace NG-SOV-470
1.125		Electric AFW Pump--Core Melt Frequency
2.01	4-30-90	Secondary Side Chemistry Monitoring
2.02	3-28-91	Demineralized Water Storage Tank Oxygen Reduction
2.03	11-1-93	Additional Atmospheric Steam Dump
2.04		Modernize Reactor Protection and Control Systems
2.05	3-2-89	Process Computer Replacement
2.06	3-2-89	Evaluation of RCS Loop Isolation Valves to Mitigate SGTR
2.07	3-2-89	Auxiliary Pressurizer Spray Nozzle
2.08	3-2-89	Loss of DC Power Study
2.09	3-2-89	RCP Vibration Monitoring System Upgrade
2.10	3-2-89	Administration Building Upgrades
2.11	3-2-89	Main Steam System Evaluation
2.12	3-2-89	Turbine Generator Trip Logic
2.13	9-28-90	Fire Detection System Upgrade
2.14	3-28-91	Radiation Monitoring System Upgrade
2.15	4-30-90	Long-Term Small Break LOCA and ECCS Modifications
2.16	4-30-90	Variable Overpower Trip Modifications
2.17	8-4-92	Zircaloy Clad Conversion
2.18	9-28-90	Nuclear Instrumentation Replacement
2.19	3-2-89	PCB Oil-Filled Transformers
2.100	4-30-90	Reactor Head Stud Tensioner

<u>Topic Number</u>	<u>Closed⁽¹⁾</u>	<u>Title</u>
2.101	4-30-90	Spare Reactor Coolant Pump Motor Storage Facility
2.102	4-30-90	Radiological Assessment Equipment Procurement
2.103	3-28-91	Primary Auxiliary Building Monorails over LPSI Pumps
2.104	4-30-90	Service Water System Surge Analysis
2.105	9-28-90	Control Rod Drive Cooling Duct
2.106	11-1-93	Hotwell Sampling System
2.107		Secondary Makeup Water Inventory
2.108	4-30-90	Core Exit Thermocouple Modifications
2.109	11-1-93	DH-MOV-310 Replacement
2.110	12-6-91	Security Computer Replacement
2.111	3-28-91	ALARA Modifications
2.112	3-23-93	Permanent Shielding
2.113	11-1-93	Pressurizer Spray Valves
2.114	8-4-92	Auxiliary Feedwater Pump Turbine Overspeed Trip Protection
2.115	11-1-93	Site Facilities Modifications
2.116	8-4-92	EDG Fuel Oil Supply
2.117	3-28-91	Steam Generator ECT Inspection
2.118	3-30-94	Service Water Control Switch/Position Indication
2.119	8-4-92	Service Water Trip Valve/Waste Evaporation Steam Valve
2.120	3-28-91	Reactor and Pressurizer Head Vent Valve Replacement
2.121	3-28-91	Site Foundation Issue
2.122		Spent Fuel Storage Program
2.123	8-4-92	Flux Mapping System Replacement
2.124	8-4-92	Charging Pump Mini-Flow Valve Replacement
2.125	9-4-92	Service Water System Filters and Strainers
2.126	3-30-94	Service Water System Pump and Turbine Header Upgrade
2.127	8-4-92	Turbine Generator Hydrogen Dryer Replacement
2.128		Steam Generator Repair Analysis
2.129	11-1-93	High Pressure Turbine Replacement
2.130	3-30-94	Service Water Supply to Closed Cooling Water System
2.131	11-1-93	Charging Pump Operation Upon Loss of Semi-Vital Power
2.132	8-4-92	Emergency Diesel Generator Service Water Header Crosstie
2.133	11-1-93	345 kV Supervisory Control Equipment
2.134	12-6-91	Intake Structure Debris Boom Upgrade
2.135	11-1-93	Low Voltage Molded Case Circuit Breaker Replacement
2.136	11-1-93	Auxiliary Feedwater Supply Study--New Storage Tank
2.137	11-1-93	Hypochlorite System Upgrade
2.138	8-4-92	Radiation Information Tracking System Update
2.139	3-23-93	Reactor Coolant System Drain Cooler Replacement
2.140	8-4-92	Modify Pressurizer Level Sensing Lines
2.141	8-4-92	Electrical Separation Modifications

<u>Topic Number</u>	<u>Closed</u> ⁽¹⁾	<u>Title</u>
2.142	8-4-92	Adams Filter Bypass MOV Actuator Replacement
2.143	3-23-93	Auxiliary Feedwater--Direct Flowpath to Steam Generators
2.144	11-1-93	Primary Water Makeup Modifications
2.145		Installation of New Air Cooled Diesel Generator
2.146		Individual RPI Upgrade
2.148	11-1-93	Containment Isolation Valve Replacement
2.149	11-1-93	Spare Station Service Transformer
2.150	3-23-93	Spent Fuel Pool Cleanup
2.151		Simulator Upgrade--Phase 3
2.152	11-1-93	ADT System Evaluation
2.153	11-1-93	Reactor Vessel Level Indication System
2.154	3-30-94	Emergency Diesel Generation Ventilation
2.155	11-1-93	Removal of Abandoned Water Treatment Components (task not evaluated-canceled)
2.156	11-1-93	CY's Environmental DG Tank Berm(task not evaluated- canceled)
2.157	11-1-93	CY On-Site Radwaste Storage Area(task not evaluated- canceled)

(1) Date refers to the periodic ISAP/IIS submittal providing proposed justification for closure of topic.

Docket No. 50-213
B14756

Attachment 2

Haddam Neck Plant
Integrated Safety Assessment Program
Update on ISAP Topic Reviews

March 1994

Haddam Neck Plant
Integrated Safety Assessment Program
Update on ISAP Topic Reviews

Topic 1.02--High/Low Pressure System Interface & Event V Analysis

This topic involves the addition of pressure interlock circuitry to the motor-operator valves (MOV's) used for the isolation of the Reactor Coolant System (RCS) from other systems that have lower design pressure ratings. The objective is to prevent potential overpressurization of connected systems caused by the RCS pressure. The existing plant configuration does provide a reasonable level of protection against overpressurization, but enhancements are recommended to consider Event V scenarios. The addition of the pressure sensor interlocks and RWST level analog computer point will enhance the current overpressurization protection system to adequately protect against Event V scenarios.

The addition of the pressure interlock circuitry has a benefit in public safety. The Economic Performance, Personnel Safety and Personnel Productivity are essentially zero. Therefore, this task has received a medium ARM ranking. This task is scheduled for installation during the Cycle 18 refueling outage.

Topic 1.04--Seismic Qualification of Safety Related Piping

This topic addresses CYAPCO's program to demonstrate the seismic adequacy of the safety-related piping at the Haddam Neck Plant.

A detailed description of this topic was provided in the September 28, 1990 ISAP update report.

The planned seismic supports have been divided into several groups and may be evaluated individually. Service water supports in the Primary Auxiliary Building (PAB), main steam supports outside containment, and main feed supports outside containment require further engineering analysis. The entire issue of seismic qualification of piping is being reevaluated at the Haddam Neck Plant. This reevaluation centers around the degree of modifications necessary, to demonstrate the seismic adequacy of the piping systems. A discussion on the proposed approach to address seismic adequacy was provided in CYAPCO's letter of July 9, 1993.⁽¹⁾ A meeting was held with the NRC staff on March 8, 1994. Further discussions with the Staff indicate a revised approach using the results of IPEEE on seismic adequacy may be acceptable to the NRC Staff. The results of this approach will be reported in a future ISAP/IIS report.

Topic 1.05--Seismic Structural Modifications

This topic encompasses CYAPCO's analysis of safety-related structures based on seismic piping loads developed as part of Topic 1.04. The only open issue remaining under this topic is qualification of the auxiliary feedwater building

as affected by the attachment of new loads resulting from the seismic qualification of safety-related piping (Topic 1.04).

An updated ISAP evaluation was performed for this topic and reported in the April 30, 1990 report. The results revealed a moderate public safety benefit. Additional discussion of this topic was provided in a letter dated September 30, 1991⁽²⁾ as part of the response to SEP Topic III-6, Seismic Design Considerations. Included in the response were a listing of all the related open items understood by CYAPCO as needing resolution; and a detailed response for each open item and supporting information.

As part of our seismic reanalysis of the auxiliary feedwater (AFW) pumphouse (Terry turbine building), potential structural modifications may be identified. The results of this evaluation and a schedule for implementation, as appropriate will be documented in a future ISAP/IIS update report.

Topic 1.18--Reactor Coolant Pump Seal Cooling Modifications

Previous ISAP reports have detailed how this issue has been largely resolved for the Haddam Neck Plant. The only open issue remaining under this topic is Generic Issue 23. CYAPCO is awaiting NRC Staff action in this area.

Topic 1.19--Control Room Design Review

This topic encompasses the Control Room Design Review (CRDR) performed at the Haddam Neck Plant to meet the provisions of NUREG-0737, Supplement 1, as implemented by Generic Letter 82-33. The individual Human Engineering Discrepancies (HEDs) have been organized into individual work packages to facilitate resolution. These packages have been described in previous ISAP reports.

Implementation of all the individual groups of HEDs, as reported to the NRC Staff in previous ISAP reports, is scheduled in the IIS as follows:

- o Group 1: EDG Controls--Cycle 18 refueling outage (R.O.)
- o Group 2: Main Control Board--Cycle 18 R.O.
- o Group 3: Containment Isolation Valve Position--Cycle 18 R.O.
- o Group 4: HVAC Modifications--Cycle 16 R.O. (Completed)
- o Group 5: Master Silence Switch--Cycle 16 R.O. (Completed)
- o Group 6: Rewiring Turbine Drain Valve Switches--(not to be corrected)

- o Group 7: Improved Communications in Masks--Cycle 17 R.O. (Completed)
- o Group 8: Individual Main Steam Line Monitors (Canceled)
- o Group 9: Main Control Board Railing--Cycle 16 R.O. (Completed)
- o Group 10: Computer Displays--Cycle 17 R.O. (Completed)
- o Group 11: Meter and Recorder Scales--Cycle 17 R.O.(Completed)
- o Group 12: Eliminate Annunciator Nuisance Alarms--Cycle 17 R.O.(Completed)
- o Group 13: Control Board Relabeling--Cycle 18 R.O.

The November 1, 1993, ISAP submittal documented that the implementation of Group 1 and Group 2 HEDs were completed during the Cycle 17 refueling outage. A recent audit performed for the purpose of providing the Staff with a compilation of status on each HED resulted in the discovery that 1 out of 83 Group 1 HEDs and 28 out of 229 Group 2 HEDs have yet to be implemented. A summary of the results from this audit will be provided to the NRC Staff. CYAPCO has assured the Staff that these HEDs will be implemented before the end of the Cycle 18 refueling outage. Group 8 modifications have been canceled since there are alternate means available at Haddam Neck to identify a steam generator tube rupture. This cancellation is a result of a detailed analysis performed by CYAPCO which determined the modification was not justified. The implementation of the remaining HEDs will be completed during the upcoming Cycle 18 refueling outage.

In a letter dated March 13, 1991,⁽³⁾ the NRC Staff provided a safety evaluation closing out this issue.

Topic 1.48--Seismic Qualification of Equipment

This topic encompasses CYAPCO's plant-specific response to USI A-46, "Seismic Qualification of Equipment in Operating Plants." CYAPCO is addressing this issue in conjunction with the Seismic Qualification Utility Group (SQUG) and has reported details in previous ISAP reports.

In a letter dated May 22, 1992, the NRC Staff issued Supplement No. 1 to their Generic Letter No. 87-02. The letter provides their Supplemental Safety Evaluation Report on the SQUG Generic Implementation Procedure (GIP), Revision 2. In this letter, the Staff required a response to GL 87-02 within 120 days of the date of the letter. CYAPCO's September 21, 1992 letter provided the Haddam Neck response to Supplement 1 of Generic Letter 87-02. CYAPCO indicated that they intend to comply with the SQUG commitments set forth in Revision 2 of the GIP, including the clarifications, interpretations, and exceptions identified in SSER-2 in order to satisfy Generic Letter 87-02. In addition, CYAPCO stated

that, at our option, CYAPCO may use any of the methods recommended by Section 4.2 of the GIP for defining in-structure response spectra for comparison to the SQUG Bounding Spectrum and the Generic Earthquake Ruggedness Spectra.

During the Cycle 17 refueling outage, CYAPCO completed all of the final walkdowns of the safe shutdown equipment list (SSEL). CYAPCO submitted the SSEL Report, the relay evaluation report, and the Seismic Evaluation Report, via a letter dated January 13, 1994.⁽⁴⁾ Using details from these reports, and combined with the future report which will discuss outliers, a proposed schedule for the complete resolution, future modification, and/or replacement of equipment outliers will be provided. A review of the identified outliers indicated that a majority are minor in nature and will be resolved during the upcoming Cycle 18 refueling outage by modifying, replacing and/or reinstalling the component as proposed in Attachment A of the January 13, 1994, letter. The priority and course of action for the remainder will be evaluated by using ISAP.

Topic 1.64 - System Dependencies on MCC-5 Electrical Separation Modifications

This ISAP topic was identified by the NRC Staff in the draft Integrated Safety Assessment Report (ISAR). The topic addresses a failure of MCC-5 as a contributor to the total core melt frequency in the Haddam Neck PSS. The Staff proposed that CYAPCO evaluate further design changes to help reduce overall core melt frequency. Additional details regarding this topic were provided in the September 28, 1990 ISAP update report.

Two efforts which are closely related to the study conducted under this ISAP topic are ISAP Topic 1.06, "Wind and Tornado Loadings/Tornado Missiles," and the Haddam Neck Risk Reduction Initiatives. All together, these efforts investigated the core melt frequency and risk reduction benefits of further design and procedural changes at Haddam Neck. Modifications to MCC-5, which were installed in Cycle 17, are repowering certain (some redundant) equipment from MCC-5 to MCC12-11 in the new switchgear building. This was done as a result of the large contribution to risk that the loss of MCC-5 would cause the plant. A manual valve (RH-V-808A) planned for a replacement with a motor-operated valve (MOV) has been deferred. The project to replace RH-V-808A is being reevaluated to determine the risk reduction/cost benefit.

Topic 1.102--RCS Vent System Upgrade

This project will be discussed in a future ISAP/IIS update report.

Topic 1.118--Main Steam Safety Valve Capacity

CYAPCO has identified several options which will resolve this issue. An engineering evaluation will consider each recommendation. Once the project assignment detailed review is complete, any forthcoming potential modifications will be reviewed within the ISAP process. This evaluation and associated information will be submitted in a future ISAP/IIS update report.

Topic 1.119--Safety-Related Motor Operated Valve Testing, Generic Letter 89-10

This topic addressed evaluation of potential modifications which may result from implementation of guidance as detailed in NRC Generic Letter (GL) 89-10, Safety Related Motor Operator Valve Testing and Surveillance, dated June 28, 1989. In a letter dated December 15, 1989,⁽⁵⁾ CYAPCO responded to the GL discussing development of the MOV program and proposed schedule. The NRC conducted an inspection at the Haddam Neck Plant the week of October 5 through 9, 1992 on the MOV program.

Proposed modifications that result from CYAPCO's GL 89-10 valve testing program will be evaluated in ISAP. The results of these evaluations will be reported in a subsequent ISAP/IIS update report.

Topic 1.121--Post Accident Sample System Enhancement Modifications

This topic involves modifications to improve the Post Accident Sampling System Reactor Coolant Sample Module. Procedure and hardware changes are proposed to improve the ability to separate dissolved gas samples from the reactor coolant system and quantitatively analyze the sample for hydrogen and noble gases.

This topic has been scheduled for installation during Cycle 18.

Topic 1.125--Electric AFW Pump--Core Melt Frequency

CYAPCO has determined that certain postulated high energy line break (HELB) scenarios could render the existing turbine-driven AFW pumps and associated instrumentation inoperable. A main steam or feedwater line break inside the Terry turbine building would create a harsh environment due to the increased temperature in the building. CYAPCO has committed to the NRC Staff to incorporate this proposed modification which will mitigate the consequences of an HELB inside the Terry turbine building.

The proposed project will install an additional nonsafety-related auxiliary feedwater pump. This electric-driven pump would be powered by off-site or any emergency on-site diesel generator and would provide 100 percent of the design basis accident flow. The pump would be manually initiated from the control room. The electric pump would be used to feed the steam generators in the event a HELB occurs inside the Terry turbine Building that disables both steam-driven pumps coincident with a loss of normal off-site power.

Valves will be added to facilitate operation of the electric pump from the Control Room. One MOV will isolate the new pump suction from the DWST supply and a check valve will isolate the new pump discharge from the existing safety-related AFW piping inside the Terry Turbine Building.

This project was evaluated previously as reported in the August 4, 1992, ISAP update report. As documented in this update, the project reevaluation has resulted in a significant decrease in overall ISAP ranking due to decrease in

public safety and economic performance benefits and an increase in projected remaining cost. This task remains scheduled for implementation during the Cycle 18 refueling outage as committed to the NRC Staff. A more detailed status is presented in CYAPCO's letter dated January 21, 1994.⁽⁶⁾

Topic 2.04--Modernize Reactor Protection and Control Systems

This topic addresses aging of instrumentation in the reactor protection and control systems. It includes projects originally included under Topic 1.30. CYAPCO's evaluation has yielded cost estimates and recommendations for a four-phased approach for implementing hardware/system replacements.

Phase IV is the remaining phase. Phase IV, ISAP topic 2.04.2, would upgrade the manual initiation and reset of containment isolation and main steam isolation. This task will be re-scheduled in a future IIS.

Topic 2.107--Secondary Makeup Water Inventory

The purpose of the topic was to study alternate methods of increasing the on-site inventory of seismically qualified secondary makeup water.

CYAPCO has placed this project on hold pending the completion of related issues (i.e., ISAP Topic 1.06) that will directly affect the approach CYAPCO will take to resolve the concerns associated with this topic.

Topic 2.122--Spent Fuel Pool Storage Program

In the 1998 time frame, the spent fuel pool at the Haddam Neck Plant will be too full to allow the flexibility necessary for reracking. Therefore, to correct this situation, CYAPCO is considering a partial reracking of the spent fuel pool to allow storage capability until the end of life.

The project received a high overall ARM ranking based on its high economic performance evaluation. Also, the project is essential to accommodate continued future plant operation. The schedule will be discussed in a future ISAP/IIS report once future engineering studies are complete.

Topic 2.128--Steam Generator Repair Analysis

This topic involves engineering evaluation and potential modifications to repair degraded steam generator tubes. The steam generator tubes are currently experiencing primary water stress corrosion cracking (PWSCC). Repair methods, which will preserve the useful life of the steam generator tubes or return to service those tubes which have already been plugged due to PWSCC defects, are being evaluated.

This includes evaluation of design acceptability and cost-effectiveness. Planned

modifications will be reviewed within the ISAP process. Any developments will be discussed in future ISAP/IIS update reports.

Topic 2.145--Installation of New Air Cooled Diesel Generator

This project addresses the installation of a tornado protected air-cooled diesel generator to provide power to selected equipment. The new diesel generator (DG) would provide a diverse source of emergency AC power independent of service water.

For station blackout and certain fire, and tornado scenarios, the existing DGs are potentially unavailable. This unavailability has a significant impact upon the core melt frequency. An additional DG that is tornado protected, air cooled (i.e., independent of Service Water), and serving key components powered from the "B" switchgear room could have a significant effect upon core melt frequency reduction.

This project received the highest public safety benefit, zero attribute scores in economic performance and personnel safety and negative attribute score for personnel productivity. An air-cooled diesel generator has been procured and will be installed during the Cycle 19 refueling outage.

Topic 2.146--Individual RPI Upgrade

The existing Rod Position Indication system presently requires multiple recalibrations during start-up to obtain proper rod position indication during power operation. This is because in 1989, the Haddam Neck Plant changed over to a completely new set of revised technical specifications (RTS) based on Westinghouse Standard Technical Specification (STS) which are more limiting on RPI accuracy than the original custom technical specifications. Historically, rod positions were compared to rod insert limits (RIL) based on group position indication. The RTS were written for plants with digital rod position indication, which compare individual rod position indication to RIL. The Haddam Neck Plant's analog system was not designed to accommodate the newer RTS requirements.

This project received moderate economic performance, and personnel productivity and near zero public safety and personnel safety rankings.

Further studies are being conducted on how best to implement any proposed modifications. The results of this evaluation and associated information will be submitted in a future ISAP/(IIS) update report.

Topic 2.151--Simulator Upgrade--Phase 3

This proposed project proposes to replace the existing simulator process computers with state of the art computers. The existing computers are difficult to maintain and are being operated at capacity. Additionally, since the system is being operated at capacity newer and more complex training scenarios cannot be adequately simulated. The new process computers would eliminate the problems

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associated with the existing computers.

Studies are being conducted with regards to the type of equipment required to support system operation. The project received a high ARM score due to the calculated benefit from an economic performance standpoint. Continued excellent performance of the plant-specific simulator is considered a key contributor to continued safe and reliable plant operation. Modifications are scheduled for implementation during Cycle 18.

References:

- (1) J. F. Opeka letter to the U.S. Nuclear Regulatory Commission, "Verification of Seismic Adequacy of Piping," dated July 9, 1993.
- (2) E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission, "Haddam Neck Plant, Seismic Design Considerations, Wind and Tornado Loadings/-Tornado Missiles, New Switchgear Building," dated September 30, 1991.
- (3) A. B. Wang letter to E. J. Mroczka, "Haddam Neck Plant, Safety Evaluation for Detailed Control Room Design Review (TAC No. 56128)," dated March 13, 1991.
- (4) J. F. Opeka letter to the U.S. Nuclear Regulatory Commission, "USI A-46 Walkdown Summary Report and Proposed Expansion of Licensing Basis for Verification of Equipment Seismic Adequacy," dated January 13, 1994.
- (5) E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission, "Haddam Neck Plant, Millstone Nuclear Power Station, Unit Nos. 1, 2, and 3, Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillances," dated December 15, 1989.
- (6) J. F. Opeka letter to the U.S. Regulatory Commission, "Update on the Proposed Modifications to the Auxiliary Feedwater System," dated January 21, 1994.

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Attachment 3

Haddam Neck Plant

Evaluation of New ISAP Topics or
Reevaluation of Existing Topics

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Evaluation of New ISAP Topics or
Reevaluation of Existing Topics

THERE ARE NO NEW TOPICS IN THIS ISAP PERIOD

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Attachment 4
Haddam Neck Plant
Integrated Safety Assessment Program
ARM Summary Table

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HADDAM NECK ARM RANKINGS

ISAP #	Title	PA #	Overall Rank	Public Safety	Economic Performance	Personnel Safety	Personnel Productivity	Remaining Project Cost	Total Value	Rank Value	Public Man-Rem	Occ B/A Man-Rem	Occ Inst Man-Rem	Net Man-Rem
2.151	SIMULATOR UPGRADE - PHASE 3	91-063	1	500	86,119,560	0	1,280	404,000	60,285,101	14,922.05	0.00	0.00	0.00	0.00
2.122	SPENT FUEL STORAGE PROGRAM	88-020	2	0	66,673,842	0	0	8,000,000	46,671,689	583.40	0.00	0.00	-20.00	-20.00
2.145	INST. NEW AIR COOLED DIESEL GENERAT	91-014	3	481,780	0	0	-16,960	2,000,000	669,982	33.50	4576.00	0.00	0.00	4576.00
2.146	INDIVIDUAL RPI UPGRADE	89-054	4	0	117,972	120	32,000	600,000	100,341	16.72	0.00	0.00	-10.00	-10.00
1.02	HIGH/LOW PRESS. VALVE INTERLOCKS	91-006	5	16,720	0	0	-50	300,000	23,548	7.85	171.00	0.00	0.00	171.00
1.64	SYSTEM DEPENDENCIES ON MCC-5	90-092	6	30,176	0	-400	-2,560	691,000	40,604	5.88	1.00	-6.00	-5.00	-10.00
1.19.1	CONTROL ROOM DESIGN REVIEW Gp 1	90-019	7	15,725	2,131	0	1,280	570,000	24,368	4.28	1.67	0.00	0.00	1.67
2.144	PRIMARY WATER MAKEUP MODS.	91-013	8	42,359	0	-840	-1,280	2,000,000	57,897	2.89	3.00	-13.00	-15.00	-25.00
2.04.1	MODERNIZE FEEDWATER CONTROL SYS.	90-013	9	6,035	128,713	180	6,464	3,575,000	102,405	2.86	0.09	0.00	0.00	0.00
2.152	CY ADT SYSTEM EVALUATION	89-052	10	0	0	1,200	200	100,000	1,718	1.72	0.00	9.80	-5.00	4.80
2.109	DH-MOV-310 REPLACEMENT	86-257	11	0	0	1,909	1,280	400,000	3,262	0.82	0.00	6.00	-10.00	-4.00
1.19.13	CONTROL RM. DESIGN REVIEW Gp 13	88-005	12	0	880	0	1,280	186,000	1,320	0.71	0.00	0.00	0.00	0.00
1.05	SEISMIC STRUCTURAL MODIFICATIONS	83-036	13	6,356	0	0	0	1,484,000	8,962	0.60	0.00	0.00	TBD	TBD
1.19.2	CONTROL ROOM DESIGN REVIEW Gp 2	88-005	14	15,725	3,195	0	0	4,600,000	24,409	0.53	1.67	0.00	0.00	1.67
1.125	AUX. FEEDWATER MODIFICATIONS	91-009	15	7,511	0	-60	-8,000	2,200,000	6,110	6.28	-5.50	0.00	0.00	-5.50
1.19.3	CONTROL ROOM DESIGN REVIEW Gp 3	88-005	16	2,620	0	-58	0	5,283,000	3,616	0.07	0.84	0.00	0.00	0.84
1.104	CTMT. ISOL. VALVE POS. INDICATION	-----	17	0	0	0	-1,280	1,000,000	-704	-0.07	0.00	0.00	TBD	TBD
1.21	REG GUIDE 1.97 INSTRUMENTATION	90-029	18	390	0	-1,047	-1,280	300,000	-1,557	-0.52	0.00	-1.60	-15.00	-16.60

TBD - To be determined

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Attachment 5
Haddam Neck Plant
Integrated Safety Assessment Program
Integrated Implementation Schedule

March 1994

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Attachment 6
Haddam Neck Plant
Integrated Safety Assessment Program
Proposed Topics for Closure

March 1994

I. Topics Proposed for Closure--Awaiting NRC Staff Response

(Topics will remain in this category until a closeout letter is received from the NRC Staff.)

Topic 1.09--Design Codes, Design Criteria and Load Combinations

This topic addresses CYAPCO's review of safety-related structural elements at the Haddam Neck Plant against current codes and standards. CYAPCO had proposed to evaluate each potentially significant load combination to demonstrate that a more detailed analysis would identify only localized effects that would not adversely affect the integrity of the structure. If CYAPCO was unable to generically demonstrate this result, a sampling program would have been used to identify and evaluate specific locations and/or elements.

As a result of a detailed study, CYAPCO has determined that no modifications are required and this topic may be closed. A formal letter to the NRC Staff was transmitted on January 15, 1993 requesting closure of this task.

Topic 1.21--Regulatory Guide 1.97 Instrumentation

This topic addresses Regulatory Guide (RG) 1.97 which describes a method acceptable to the NRC for providing instrumentation to monitor plant variables and systems during and following an accident. On December 17, 1982, Generic Letter (GL) 82-33, was issued and subsequently published as Supplement 1 to NUREG-0737 requesting submittal of a report describing how plants meet the criteria of RG 1.97, and its application to a proposed emergency response facility.

Details regarding past correspondence between CYAPCO and the NRC Staff have been provided in previous ISAP update reports. More recently, in a letter dated April 13, 1992, the NRC Staff requested that CYAPCO provide a status of the 12 remaining Regulatory Guide 1.97 instruments and provide technical justifications or acceptable alternatives for deviations from the Regulatory Guide.

In a letter dated July 6, 1992, CYAPCO provided the NRC Staff with the information requested. Subsequent discussions have been held with the NRC Staff. During these discussions, the NRC Staff has requested additional information on selected RG 1.97 variables. CYAPCO, via letters dated December 20, 1993, and March 14, 1994, provided the Staff with the additional details. With this additional information, RG 1.97 will be able to be closed.

Topic 1.39--Items 4.2.3 and 4.2.4, Preventative Maintenance Procedures for Reactor Trip Breakers

This topic addresses CYAPCO's preventative maintenance and surveillance program to ensure reliable reactor trip breaker operation.

Based on previous information provided to the Staff, CYAPCO maintains that plant procedures currently in place constitute an acceptable ongoing testing program. Pending Staff review and approval of that information, CYAPCO considers this topic resolved.

II. Topics that are Closed

These topics are being closed out for one of the following reasons:

- (1) a closeout letter has been received from the NRC Staff;
- (2) all CYAPCO commitments recognized by the NRC Staff have been fulfilled; or
- (3) This is a CYAPCO initiated project with no associated regulatory obligations;

Topic 1.104--Containment Isolation Valve Position Indication

This project involves the replacement of 21 cables with environmentally qualified ones. This project was evaluated and received a low ISAP value as discussed in the March 2, 1989 ISAP/IIS update report. As such, no work has been scheduled. CYAPCO is continuing to evaluate this topic.

Based on the low benefit of this task and high cost associated with replacement, the task has been closed.

Topic 2.118--Service Water Control Switches/Position Indication

The proposed project would have provided additional control capabilities and position indication of these valves within the control room. The new switches would have been functionally identical and in addition to the existing switches. The existing switches are located on MCC-5 (SW-MOV-1 & 2) and on the PAB wall (SW-MOV-3 & 4). This project was re-evaluated and was subsequently cancelled. Therefore, this ISAP topic is closed.

Topic 2.126--Service Water System Pump and Turbine Building Header Upgrade

The proposed modification involves enhancing service water flow to the secondary side components to: improve heat transfer capability during high river temperatures; protect the main turbine during plant trips; provide a back up source of water to the fire protection system; and reduce demand of the existing safety related service water pumps during normal plant operation. This project was determined to not be cost effective and was cancelled. Therefore, this ISAP topic is closed.

Topic 2.130--Closed Cooling Water System Modifications

The proposed modifications would perform piping modifications to the closed loop cooling system (CLCS). This change would have allowed series heat exchanger operation. This task was re-evaluated and significantly reduced in scope. The future modifications will be made as a level of effort task. Therefore, this ISAP topic is closed.

Topic 2.154--Emergency Diesel Generator Ventilation

A concern with smoke and hot gases caused by a fire in one cubicle of the emergency diesel generator backing up into the intake penthouse was identified. With the second diesel operating properly, pulling air from the same penthouse, smoke and hot gases could potentially enter the second cubicle and choke off the diesel. The effects of this would be the loss of redundant on-site emergency power, or at the very least the reduction of diesel capacity.

The diesel generator ventilation system has been modified to prevent back drafts from one diesel compartment to the other during a fire in one cubicle. This task is now complete, and we consider this ISAP topic closed.