

NORTHEAST UTILITIES



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NORTHEAST UTILITIES SERVICE COMPANY
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April 8, 1986

Docket No. 50-213

B12049

Office of Nuclear Reactor Regulation
Attn: Mr. Christopher I. Grimes, Director
Integrated Safety Assessment Project Directorate
Division of PWR Licensing - B
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Gentlemen:

Haddam Neck Plant

Additional Information for Fire Protection Scheduler Exemption Request

By letter dated March 7, 1986⁽¹⁾, the Connecticut Yankee Atomic Power Company (CYAPCO) submitted an application in accordance with 10CFR50.12 for exemption from the scheduler provisions of 10 CFR 50.48(c)(4) for the switchgear room of the Haddam Neck Plant. During a meeting between Northeast Utilities and the NRC Staff on April 1, 1986, the NRC Staff posed several questions in connection with the review of this application. This letter responds to the Staff's questions and provides additional information in support of the CYAPCO exemption request with respect to the criteria specified in SECY-85-306.

Staff Questions

One important thrust of the Staff's questions appeared to focus on the status of the engineering analysis and design work associated with the Haddam Neck switchgear room. In preparing this response, CYAPCO found that much of the requested information was previously submitted to the Staff. Thus, CYAPCO believes that the responses provided herein neither represent a departure from previous proposals or positions nor do they contain significant new information not previously submitted on the docket. Rather, the information has been reformatted to facilitate review of the issue at hand.

Six Staff questions were provided to CYAPCO at a meeting on April 1, 1986. The questions and associated responses are provided below.

1. Please comment on the validity of the feasibility study performed by CYAPCO in 1982 for the proposed switchgear room modifications.

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- (1) J. F. Opeka letter to C. I. Grimes, dated March 7, 1986, Subject: Fire Protection - Scheduler Exemption.

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Response

It must be emphasized that the intent of CYAPCO's approach to resolving safe shutdown separation deficiencies in the Haddam Neck switchgear room has not changed appreciably since its original proposal in July 16, 1982(2). This approach consists of physically separating load and motor control centers (MCC) and DC and vital AC power supplies for redundant safe shutdown equipment. This separation would be accomplished by performing major modifications to the Haddam Neck electrical power system, as follows:

- 1) A new safety-related 480 volt load control center (LCC) connected to a diesel generator powered bus to provide AC power to such equipment as a service water pump, residual heat removal pump and a MCC. Additionally, the desirability of using the metering charging pump for certain post-fire shutdown scenarios requires that pump to be repowered.
- 2) The new safety-related 480 volt MCC will provide AC power to such equipment as a battery charger, diesel generator AC distribution cabinet, several valves required for safe shutdown including the RCS loop isolation valves, and a fuel oil transfer pump.
- 3) Relocation of one station battery division, its connected DC bus, two static inverters, and one battery charger.
- 4) Rerouting two channels of safe shutdown instrumentation and incorporation of an instrumentation panel outside of the control room. This panel, while not proposed in July of 1982, is now required due to our mutually negotiated resolutions of the control room issue.

The only significant engineering change which has occurred since these modifications were first proposed is the precise equipment location. Initially, CYAPCO intended to achieve the requisite physical separation by locating much of the equipment in the south end of the switchgear room. Since that time, a number of regulatory-driven issues have matured to the point that a more preferable location would be outside the switchgear room proper. One of the major benefits of this move would be a major reduction in our need to use the granted exemption for intervening combustibles in the switchgear room.

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- (2) W. G. Counsil letter to D. G. Eisenhut, dated July 16, 1982, Subject: Additional Information Supporting Exemption Request from Appendix R.

First, CYAPCO's July 16, 1982 application for exemption from Appendix R requirements in the switchgear room was itself dependent on the control room exemption application. This application underwent substantial scrutiny and refinement and was not finalized until December 1983. The exemption itself was not approved until November 14, 1984⁽³⁾. The unique, precedent setting nature of this approach was an important factor in the time required to achieve resolution. In this regard we call your attention to the H. R. Denton memorandum dated September 21, 1984, in which it was noted that:

"In my view the approach taken by the licensee in this instance provides an adequate level of fire protection for control room fires while not introducing needless additional hardware which could reduce overall plant safety or reliability."

One result of the control room review process was the requirement to incorporate a new remote instrumentation panel in the Switchgear Room's south end. This change to CYAPCO's safe shutdown approach added to the south end's congestion and generated some uncertainty concerning the desirability of the location for placement of the new LCC, MCC and related equipment.

Second, CYAPCO's concept for the power supply rearrangement depended upon the use of the last spare breaker position in 4,160V bus 1-3 to repower a LCC bus presently powered via a diesel generator. That position was, shortly after the July 16, 1982 submittal, spoken for to accommodate a new load (spare generator step-up transformer backfeed). This resulted in the requirement to add a new breaker position to the one remaining "future" location at the east end of 4,160V bus 1-3. Our response to SECY-85-306 Criterion #2 delineates the complications presented by this change.

Finally, since the issuance of the Haddam Neck Plant IPSAR in June, 1983 (NUREG-0826), it has become evident that the proposed modifications for the Appendix R switchgear room could also resolve many SEP issues provided these modifications were moved outside of the switchgear room. Taken together with the new instrumentation panel requirement and the 4,160V breaker complication factor, it was clear by the summer of 1985 that the best location for the electrical power system modifications is outside the switchgear room.

This discussion points out that changes in approach to Haddam Neck's switchgear room compliance plan are minor and do not significantly affect the system modifications. Only the equipment location has changed. However, this change still meets Appendix R criteria. The substance of the change, in fact, continues to meet Appendix R separation requirements and does not detract from the validity of CYAPCO's proposal or previous Staff approvals.

(3) J. A. Zwolinski letter to W. G. Counsil, dated November 14, 1984, Subject: Exemptions from Appendix R.

2. What additions have occurred to the switchgear room modifications since 1982?

Response

Other than precise equipment location and the need for repowering of the charging metering pump, no substantive changes to CYAPCO's proposal have occurred since 1982.

3. Why didn't CYAPCO perform detailed design and engineering on the switchgear room modifications during 1982-1984?

Response

The CYAPCO modifications proposed for the switchgear room represent a major change to the plant's electrical power system. As significant as these changes were, however, they were dependent on the ultimate form of the control room shutdown approach. In fact, a change in that approach contributed significantly to the need to change the location of the new equipment.

These considerations highlight the precise and complex characteristics of designing modifications to a nuclear power plant's electrical power system. CYAPCO's concern for properly discharging its responsibilities motivated awaiting final Commission decision before initiating design activities. The Staff was aware of CYAPCO's intent in this regard as early as March 1, 1982⁽⁴⁾.

"It would be inappropriate to proceed with a subset of the total number of modifications recognizing that the Staff may deny some of the exemption requests. Staff denial of certain key exemption requests may significantly alter the method by which CYAPCO and NNECO ultimately satisfy Appendix R requirements. Such denial may render other proposed modifications inappropriate, of an interim nature, or superfluous. We are concerned about the possibility of initiating plant backfits without reasonable assurance as to their permanence and regulatory adequacy for reasons articulated in my letter to Chairman Palladino dated September 14, 1981. Nonetheless, we are prepared to conduct telephone discussions and/or meetings with the Staff and their consultants to arrive at a mutually acceptable implementation plan and schedule at your earliest convenience. However, we are not planning to implement any of the modifications proposed herein without prior written NRC acceptance or approval."

(4) W. G. Counsil letter to D. G. Eisenhut, dated March 1, 1982, Subject: Fire Protection.

4. Please provide a chronology of CYAPCO/NRC Appendix R discussions since 1982.

Response

See Attachment (1).

5. Why were SEP weaknesses not considered until 1985 when CYAPCO committed to factor them in 1983?

Response

The SEP issues did not enter serious consideration until it became clear that the Appendix R modifications would have to be moved out of the switchgear room. This occurred when the control room exemption was approved in November, 1984. With this event, it became clear to CYAPCO that the detailed design would have to be based on a different location. It was during this period in early 1985 when CYAPCO fully realized the benefits of combining the SEP and Appendix R modifications.

6. After the November 1984 control room exemption was received, why did CYAPCO take 1½ years to select a new location?

Response

CYAPCO's initial decision to construct a new switchgear room was actually made in the late summer of 1985. CYAPCO's decision to select a new location was viewed as a normal engineering design process evolution as the design intent remained consistent with the original shutdown approach and relied on Appendix R separation. These conditions have been met in this case.

SECY-85-306 Criteria for Appendix R Schedule Exemption Requests

The following discussion provides additional information which supports our position that the four criteria of SECY-85-306 have been satisfied in order to receive a schedular exemption request for Appendix R.

CY Appendix "R" Schedular Exemption - SECY-85-306 Criteria

Criterion #1

The utility has, since the promulgation of Appendix R in 1980, proceeded expeditiously to meet the Commission's requirements.

CYAPCO Position

CYAPCO has worked diligently in the review of and submittals for compliance with the fire protection rule. Considerable interaction, in both face-to-face meetings and docketed submittals, has occurred over this period, finally culminating in a negotiated compliance plan as described in the November 14, 1984 NRC Safety Evaluation Report (SER). Upon receipt of the SER, CYAPCO proceeded to incorporate all modifications per the schedular requirements of

10CFR50.48 with the exception of those clearly dependant upon incorporation of the new switchgear room modification request. Attachment 2 is an abbreviated listing of those efforts which are or will be, upon startup from the present refueling outage, completed and in-service. Also listed are the approximate costs of these modifications which, in total, exceed 3.2 million dollars. A detailed listing of Appendix R modifications was provided in CYAPCO's letter of September 16, 1985⁽⁵⁾. Attachment 2 does not include the costs expended to comply with Appendix A fire protection requirements prior to Appendix R.

Section #3 to CYAPCO's March 7, 1986 letter provides additional detail relative to CYAPCO's diligence in dealing with this issue.

Criterion #2

The delay is caused by circumstances beyond the utility's control.

CYAPCO Position

CYAPCO's March 7, 1986 letter provides details relative to the three factors beyond CYAPCO's control which have resulted in delays. Further delineation of utility efforts regarding switchgear room (Fire Area S-2) modifications is appropriate, as follows, since a necessary change in approach by the utility resulted in additional delays.

CYAPCO's March 1, 1982 Appendix R submittal contained several exemption requests; primary among these were those for the Control Room (FA-S1) and the Switchgear Room (FA-S2). In a unique approach to this issue, CYAPCO had contracted a prominent consulting organization to generate a PRA based fire-related risk document for specific plant fire areas. These PRA results were used in our March submittal as one element of our defense-in-depth support of proposed modifications and requested exemptions. In March of 1982, the switchgear room as presently configured was determined, based on the consultants' study, to be a negligible contributor to risk via internal fire events. Thus, major modifications to this fire area (S-2) were not proposed in the March 1, 1982 submittal.

On May 13, 1982, CYAPCO personnel met with NRC Chemical and Auxiliary System Branch personnel to attempt to assist the NRC in the review of the March submittal and to determine negotiating space for those fire areas wherein proposed exemptions were not deemed to be sufficient to NRC reviewers. The meeting was productive with much time spent attempting to reach agreement on details of the proposed modifications for the switchgear room. The scope of work, as envisioned by CYAPCO and, from our perspective, NRC, was minimal at this time.

(5) J. F. Opeka letter to H. L. Thompson, dated September 6, 1985, Subject: Fire Protection.

Shortly after the May meeting, CYAPCO determined that the PRA consultant had made a major switchgear room assumption error which, when corrected, significantly impacted the risk quantified result. Fire area S-2 was now understood by CYAPCO to be in need of significant modifications such that meaningful gains in risk reduction could be recognized.

On July 16, 1982, CYAPCO submitted a supplement to our March submittal. A major switchgear room re-arrangement was proposed, that arrangement being conceptually depicted on Sketch SKRBAT0605822 of the report. A copy of the arrangement sketch is included as Attachment 3 in a marked-up form. It is appropriate to reflect on the level of detail of CYAPCO's conceptual/preliminary reviews conducted before arriving at a suitable confidence level to be able to propose the re-arrangement depicted on that sketch, as follows:

- o The free space at the South end of Fire Area S-2 was sufficiently sized to contain the equipment depicted. 480 volt LCC transformer removal requirements were reviewed to the extent that a removal path (as marked on Attachment 3) would be available, but that control switch handles on the faces of 4160 volt breaker compartments would need to be removed to allow transformer passage. The free space was in excess of the required 20 foot separation from redundant Appendix R credited equipment, however many intervening combustibles, primarily cabling, existed. These were identified and fixes proposed in the July 16, 1982 Fire Area S-2 exemption request.
- o With relatively minor modifications, the south end space would possess the same integrity (EQ, seismic, tornado, etc.) credentials as those of the existing switchgear area. While these credentials are not sufficient by today's standards, at this time CYAPCO personnel were diligently attempting to resolve Appendix R issues, not those being addressed in parallel SEP efforts for which the IPSAR had not yet been issued.
- o To accommodate the proposed modification as conceptualized at this time, a new 4160 volt breaker would be needed to feed the LCC transformer for the bus to be freed of Appendix R loads such that the existing 4160 volt feed from the emergency 4160 volt bus could be diverted to power the new LCC. The 4160 volt Bus 1-3 was determined to have an installed spare breaker position that could be used for this purpose.

Subsequent to the July 16, 1982 submittal, several things transpired which effectively resulted in the south end of the switchgear room being inappropriate for the re-arrangement plan, as follows:

- o CYAPCO, in our March 1, 1982 submittal, requested a complete exemption from the Section III.G.2 requirements of Appendix R for the Control Room (Fire Area S-1), effectively supporting a position that no remote shutdown panel was required. The switchgear room re-arrangement was based on the assumption that the exemption would be allowed, as presented. Negotiations between the NRC and CYAPCO ultimately (1983 time frame) resulted in a compromise Control Room position. Of importance to switchgear room rearrangement plans was the need to now include a remote instrumentation panel, resulting in minor area congestion.

- o The spare breaker position in 4160 volt bus 1-3 was assigned to power a new 4160 volt load for the backfeed of the spare main generator step-up transformer. To now accommodate the planned rearrangement, a breaker position would need to be added to the single remaining space at the east end of 4160 volt bus 1-3. With this breaker in place, it would now be impossible to remove the 480 volt LCC transformers intact, i.e., without major disassembly by cutting of steel plate members. The transformers also could no longer traverse the original intended removal path since the new switchgear arrangement now blocked that path; therefore, no provision to remove the transformers could be identified.
- o The IPSAR was issued in June of 1983 providing the first comprehensive indication of the improvements required to be made at Haddam Neck as a result of the SEP review process. Issues which could be prudently addressed in whole or part by the Appendix R required switchgear room modifications could not be resolved without a change to a new location of higher integrity.

In December of 1983, it was reasonably clear what the finally negotiated Control Room (Fire Area S-1) position would resemble. Unclear however, due to its precedent setting nature, was whether or not the exemption would ever be granted. CYAPCO could not prudently proceed with the majority of proposed plant modifications (most fire areas) without firm and documented NRC acceptance since the compliance plan was built around the key issue of the control room. As an example of the risks involved, denial of the Control Room exemption would require that a remote shutdown panel be installed, in addition to the previously negotiated position to install a remote instrumentation panel. This new panel would have to be located near the remote instrument panel and switchgear rearrangement in order to allow the actions required to be accomplished by the minimum on-site complement of operators. Along with other compliance plan coordination issues, the space problem would be further exacerbated.

In February, 1984, CYAPCO began the switchgear room concept development and "other issues" integration process. This move was prompted by a variety of factors, including plant personnel concerns for the lack of breaker positions at all voltage levels to feed presently identified as well as unforeseeable future loads.

Even as late as the Fall of 1984, the Control Room issue was far from decided. Only after a September 1984 site visit by Mr. Harold Denton and other NRC personnel was the issue finally resolved. Due to the substantial uncertainties involved, CYAPCO could not prudently proceed with major expenditures which could be rendered superfluous by a negative ruling.

In June, 1985, CYAPCO made a firm decision to abandon the south end of the switchgear room as the location for the required rearrangement. CYAPCO then began an extensive search for suitable space, finally identifying the need for a consultant to study the issue in depth. That consultant's report is included as Attachment 4 to this submittal. The report contains evidence that such issues as constructability, cable routing pathways and structural design simplicity are addressed in depth. As such, CYAPCO has a high degree of confidence that the proposed modifications are feasible.

CYAPCO formally notified the NRC by letter dated August 15, 1985⁽⁶⁾ that a schedular exemption request for the switchgear room modifications would be submitted. All other Appendix R outage related modifications would be implemented per 10CFR50.48 schedules.

In March 1986, station (CYAPCO) and corporate (NU) approval was given to proceed with the engineering and construction effort required to incorporate the consultant's recommended option #5.

Based on the above, it is CYAPCO's opinion that a good faith effort was made and that the path to completion of the required Appendix R modifications could not have been made meaningfully shorter. In any event, the process could not have been accelerated to the point where implementation during the 1987 refueling outage would have been achievable. It is clear that the modifications now being developed in greater detail will result in a much improved compliance position with less reliance on the exemptions deemed necessary and acceptable in our original proposals.

Additionally, the modifications will provide positive benefits in the provision of solutions to many outstanding regulatory issues, only one of which is Appendix R. MCC-5 related issues discussed in our recent Probabilistic Safety Study submittal of March 31, 1986⁽⁷⁾ will also be addressed, in part, by these proposed modifications.

Criterion #3

The proposed schedule for completion represents a best effort under the circumstances.

CYAPCO Position

CYAPCO believes our response to and position on Criterion #2 is fully supportive of this Criterion also. The milestone schedule contained in our March 7, 1986 letter is further evidence of the complex and lengthy process involved in the incorporation of modifications of this extent.

Criterion #4

Adequate interim compensatory measures will be taken until compliance is received.

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- (6) J. F. Opeka letter to J. A. Zwolinski dated August 15, 1985, Subject: Status of Appendix R Modifications.
 - (7) J. F. Opeka letter to C. I. Grimes, dated March 31, 1986, Subject: Probabilistic Safety Study - Summary Report and Results.

CYAPCO Position

CYAPCO hereby revises its previous position and proposes to provide 20 minute roving fire patrols for the areas identified in Table 1-1 of our March 7, 1986 submittal except for the containment (Fire Area R-3). In addition we reserve the right to continue discussions with the Staff to relax this requirement for the containment area cable vault where personnel safety may be jeopardized. CYAPCO also reserves the right to propose an equivalent level of fire protection to the 20 minute fire patrol at a future date, subject of course to Staff approval.

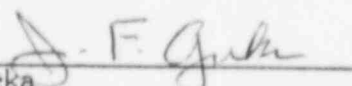
Summary

In conclusion, we are hopeful that the information presented and commitments made in this letter will be sufficient to allow the NRC Staff to act favorably on the scheduler exemption request for the Haddam Neck Plant. To the extent that the NRC Staff proposes to take action that differs from this position, CYAPCO requests an appeal meeting with Mr. Frank J. Miraglia prior to issuance of the final scheduler exemption SER for the Haddam Neck Plant.

When evaluating the above summary, we urge the Staff to focus on the entire spectrum of regulatory and non-regulatory issues which influence a "good faith" determination, rather than narrowing the focus on just Appendix R issues. CYAPCO recognizes that its proposed final Appendix R implementation schedule is later than many other nuclear units, but this is not indicative of lack of diligence. CYAPCO faced unique complications in securing NRC approval of its approach to Appendix R. Other regulatory issues, space limitations, feasibility of modification implementation, and other factors were all impacting the same equipment in the switchgear room. Further, the importance of Appendix R issues notwithstanding, many other safety significant activities correctly consumed CYAPCO and NU resources during this same time period. Numerous SEP issues were resolved, millions of dollars were spent on seismic upgrades, many TMI backfits were implemented, emergency plans were put in place, environmental qualification upgrades were implemented, a plant-specific PSS was completed, an independent review of past design changes was completed and improvements identified, and numerous other initiatives were undertaken. It is important to appreciate these other factors when evaluating our performance on the issue at hand, and we urge the Staff to view it in this context. We also invite you to ask any questions of us on the above items if needed to ensure a complete understanding of our position.

Very truly yours,

CONNECTICUT YANKEE ATOMIC POWER COMPANY


J. F. Opeka
Senior Vice President

cc: F. J. Miraglia
D. M. Crutchfield

HADDAM NECK
APPENDIX R
CHRONOLOGY*

Starting from January 1, 1982

- January 15, 1982 W. G. Counsil letter to D. G. Eisenhut identifying a schedule for providing plans for alternate shutdown capability and requesting an exemption until March 1, 1982 to the requirements of 10CFR50.48(c)(2), (c)(3) and (c)(5). This request extends a previous exemption request from February 1, 1982.
- March 1, 1982 W. G. Counsil letter to D. G. Eisenhut providing a discussion of the Fire Protection Rule (Appendix R to 10CFR50), the approach used in the past to address the alternate shutdown capability issue and forwarding a report for the Haddam Neck Plant on Fire Protection - Appendix R Review. This report provided also implementation schedules for compliance with Appendix R. CYAPCO asserted that submittal of this report fulfilled the requirements of 10CFR50.48(c)(5). NRC Staff informed that detailed engineering and design work must await final NRC action.
- May 10, 1982 H. R. Denton letter to W. G. Counsil in which the requested exemptions from certain schedular requirements of 10CFR50.48(c) were granted by the Commission. The exemption was, however, conditional upon the completeness of the March 1 submittal. A grace period of 60 days after receipt of this exemption was granted for submittal of supplements to the March 1 report, if necessary, after which noncompleteness of the report will be deemed to be a violation of 10CFR50.48(c).
- June 3, 1982 C. G. Tropf letter to CYAPCO forwarding a summary of a May 13, 1982 meeting between the Staff and CYAPCO on Appendix R (fire protection) for the Haddam Neck Plant.
- June 22, 1982 D. M. Crutchfield letter to W. G. Counsil which stated the SEP Topic IX-6, Fire Protection, evaluation criteria are encompassed by the ongoing separate staff review for compliance with 10CFR50.48 and Appendix R. The letter noted that the NRC Staff had intended to consider any plant modifications necessary as a result of the Appendix R review during the integrated assessment in order to assure that backfitting decisions related to "alternate" or "dedicated" shutdown capability would be made on a consistent basis with other modifications which may be required for other SEP issues. Those aspects of the implementations of Appendix R that were known prior to the completion of the integrated assessment would be considered to the extent practicable.

*Excludes routine Region I inspection reports and responses thereto.

July 16, 1982 W. G. Counsil letter to D. G. Eisenhut submitting additional information to support the previously submitted exemption request from 10CFR50.48(c). The additional information consisted of Safe Shutdown Fire Zone Analysis for the Service Building Switchgear Room and expanded discussions of each of the original exemption requests. CYAPCO proposes major modifications to the Haddam Neck electrical power system to bring the room in substantial compliance with Appendix R, except for the presence of intervening combustibles. CYAPCO plans to continue verification of the information provided to the Staff and provide whatever clarification is necessary.

August 25, 1982 W. G. Counsil letter to W. J. Dircks stating NU's concerns that not enough Staff resources were being devoted to review of Appendix R exemption requests, and that certain staff members may not believe in the exemption process.

September 17, 1982 W. J. Dircks letter to W. G. Counsil offering assurances that NRC Staff resources devoted to the review of Appendix R exemption requests were being evaluated to make certain that all such exemption requests receive full and careful consideration. He also extended an offer to review the situation if Mr. Counsil's concerns continued.

October 6, 1982 Generic Letter 82-21 was issued to inform all licensees and applicants to the differences in the three types of audits that are required in the technical specifications for fire protection. Enclosures were provided which discussed the general scope of each audit, additional information regarding the 24-month audit and elements that should be included in the annual and triennial audits.

December 9, 1982 A meeting was held between the NRC Staff and CYAPCO representatives on December 1, 1982 to discuss additions and revisions to the Haddam Neck Plant's request for exemption from Appendix R shutdown requirements and separation, and to resolve NRC concerns with the Control Room, the Cable Spreading Room, the Screenwell Pump House, and CYAPCO's interpretation of Appendix R requirements.

At the close of the meeting, the Staff proposed to issue a response to the current exemption request which would grant the request for the four remaining areas but would deny the request for the three areas discussed at this meeting. CYAPCO could then reapply for exemptions for those three areas.

December 15, 1982	W. G. Council letter to D. G. Eisenhut providing for the record all information intended for presentation at, and agreements reached during, the December 1, 1982 meeting in order that the Staff may use it in finalizing the fire protection SER for the Haddam Neck Plant.
January 31, 1983	W. G. Council letter to D. G. Eisenhut in which CYAPCO maintains that the information enclosed together with that submitted on March 1, 1982, July 16, 1982 and December 15, 1982, provides reasonable assurance that adequate safe shutdown capability is available in the event of a credible Control Room fire. If the Staff takes action to deny the exemption request, CYAPCO reaffirms its request for an appeal meeting with Mr. Richard Vollmer.
January 31, 1983	W. G. Council letter to D. G. Eisenhut submitting CYAPCO's results of a probabilistic risk assessment to quantify the overall frequency of a failure to achieve safe shutdown as a result of a fire. The mean frequency of such a failure was calculated to be 7.9×10^{-6} per reactor-year, which value compares favorably with Commission policy on the safety goal issue.
March 30, 1983	W. G. Council letter to D. G. Eisenhut providing response, where appropriate, to the information requested by Generic Letter 81-12 regarding alternate shutdown actions for the Haddam Neck Plant. This information was requested verbally by the Staff.
March 31, 1983	T. T. Martin letter to W. G. Council forwarding copies of "Temporary Instructions" which will be used by NRC Inspectors to inspect the status of safe shutdown at nuclear power plants.
April 22, 1983	W. G. Council letter to D. G. Eisenhut providing photographs and descriptions illustrating auxiliary panel enclosures, as well as the negligible fire loading existing within these cabinets. CYAPCO intends to develop procedures outlining the operator actions necessary to bring the plant to safe shutdown following a Control Room fire.
May 10, 1983	W. G. Council letter to D. G. Eisenhut documenting agreements reached during a May 5, 1986 telephone conversation between our respective staffs. These agreements involved instrumentation to facilitate safe shutdown following a Control Room fire.
June 22, 1983	Information Notice 83-41 is issued regarding automatic initiation of fire suppression systems which could result in degrading or jeopardizing the operability of systems important to safety.

August 17, 1983	W. G. Council letter to T. E. Murley forwarding our response to Bulletin 83-05, regarding nuclear code pumps and spare parts.
October 19, 1983	Generic Letter 83-33, D. G. Eisenhut letter to all licensees and applicants regarding Staff positions on certain requirements of Appendix R. The Staff was concerned that licensees interpretation of conformance to 10CFR50.48 be consistent with the NRC interpretation.
October 21, 1983	Information Notice 83-69 was issued regarding improperly installed fire dampers at nuclear power plants.
November 4, 1983	W. G. Council letter to D. G. Eisenhut presenting materials given to the Staff at an October 13, 1983 meeting between CYAPCO and the Staff. Also submitted was material synthesized from previous submittals. CYAPCO again stated that the material thus submitted provides reasonable assurance that adequate safe shutdown capability is available in the event of a credible control room fire, thus enabling the Staff to grant CYAPCO the Control Room exemption request.
December 21, 1983	W. G. Council letter to D. G. Eisenhut providing further clarification to material provided previously supporting CYAPCO's Control Room exemption request, so that the Staff will have sufficient information to grant the pending exemption request. The intent of the November 4, 1983 submittal was to provide sufficient information to allow the Staff to conclude that forced evacuation of the Control Room for a limited interval of time would not compromise our ability to achieve safe shutdown.
February 13, 1984	Information Notice 84-09 was issued regarding lessons learned from NRC inspections of fire protection safe shutdown systems. Based on information gained from these inspections, the Staff has prepared Supplemental Guidance on 10CFR50 Appendix R Fire Protection Safe Shutdown Requirements.
March 2, 1984	Information Notice 84-16 was issued regarding failure of automatic sprinkler system valves to operate.
March 13, 1984	T. E. Murley letter to W. G. Council providing notification of a workshop on lessons learned from recent inspections on Appendix R Fire Protection Safe Shutdown.

May 17, 1984	W. G. Council letter to T. E. Murley providing information on required tri-annual drills of fire brigades.
June 18, 1984	W. G. Council letter to R. H. Vollmer providing, for information only, CYAPCO's intention to conduct a revalidation and verification of the completeness and accuracy of its previous submittals regarding Appendix R to 10CFR50. If the reevaluation makes it necessary to provide additional engineering justifications for certain deviations or to otherwise clarify previous submittals, CYAPCO will promptly do so.
October 15, 1984	W. A. Paulson letter to W. G. Council, in which CYAPCO is informed that a "Finding of No Significant Impact" regarding exemption from the requirements of Appendix R to 10CFR50 will be noticed in the Federal Register.
November 14, 1984	J. A. Zwolinski letter to W. G. Council informing CYAPCO that eight Appendix R exemptions have been issued for the Haddam Neck Plant. The exemptions include the key control room exemption as well as the exemption for the switchgear room. Also attached to the letter is a lengthy discussion by H. R. Denton and certain members of the Staff on the resolution of the Differing Professional Opinion filed against the control room exemption.
December 17, 1984	E. L. Jordan letter to all licensees forwarding Information Notice 84-92, which was issued regarding cracking in flywheels on Cummins fire pump diesel engines. This cracking has not resulted in any catastrophic failures to date and appears to be generic to the flywheel design.
January 9, 1985	Generic Letter 85-01 is issued and contains Staff recommendations regarding the implementation of Appendix R to 10CFR50. These recommendations included: 1) issuance of a generic letter with Attachments 3, 4, 5 and 6 of GL85-01; 2) conduct of fire protection inspections and 3) replacement of the fire protection license condition.
January 31, 1985	Information Notice 85-09 is issued regarding post-fire shutdown capability as potentially affected by isolation transfer switches.
February 14, 1985	W. G. Council letter to J. A. Zwolinski documenting the verbal understanding reached between the Staff and CYAPCO, with sketches and photographs depicting the design and location of ramps to divert spilled flammable liquid away from the main control panel and auxiliary control panels.

July 1, 1985	J. F. Opeka letter to J. A. Zwolinski informing the Staff of CYAPCO's schedule for the human factors review of fire protection, which will be included in our CRDR program plan.
August 15, 1985	J. F. Opeka letter to J. A. Zwolinski informing the Staff that modifications required to be implemented by August 14, 1985 have been completed. CYAPCO plans to request schedular relief for the Switchgear Room and remote fire instrumentation panel modifications. All other outage modifications are planned to be implemented during the upcoming refueling outage.
August 16, 1985	J. F. Opeka letter to J. A. Zwolinski providing requested information on the Control Room Halon Fire Suppression System. This system will satisfy CYAPCO's previous commitment to provide a Halon fire suppression system inside the main control panels.
August 30, 1985	J. F. Opeka letter to T. E. Murley providing information regarding CYAPCO's finding that combustible gas detectors in the chemistry laboratory were not tested or calibrated, contrary to the commitment to install and maintain this system as specified in License Condition (4). The gas detectors will be tested and recalibrated as necessary prior to returning the system to service.
September 16, 1985	J. F. Opeka letter to H. L. Thompson informing the Staff of substantial additional clarifications and interpretations that have been agreed upon between the Staff and the industry since submittal of CYAPCO's original Appendix R submittal and subsequent supplemental submittals. CYAPCO has contracted with an independent consultant to verify that our Appendix R evaluations continue to remain valid. In this evaluation, certain areas were revealed which required exemptions involving fire barrier integrity. CYAPCO requested the Staff to evaluate and incorporate comments into a supplemental SER which should ensure accuracy in docketed documentation.
September 17, 1985	W. J. Dircks issues the Commissioners a "SECY" paper, SECY-85-306, on Staff recommendations regarding the implementation of Appendix R to 10CFR50. These recommendations included: 1) issuance of a generic letter with Attachments 4, 5 and 7 to the paper; 2) conduct of fire protection inspections; 3) removal of the fire protection license condition from future licenses if the fire protection plan is incorporated into the FSAR; and 4) evaluate the appropriate approach and need for fire protection Technical Specifications.

October 31, 1985

Information Notice 85-85 is issued regarding a system interaction event resulting in reactor system safety relief valves opening following a fire protection deluge system malfunction.

March 7, 1986

J. F. Opeka letter to C. I. Grimes providing additional information in support of September 16, 1985 status report. This letter summarizes the modifications which will not be completed in the 1986 refueling outage, provides the basics for the schedule required to complete the remaining items, and describes interim fire protection in place. The letter also provides supporting discussion for the exemption application which conforms with the guidelines of SECY 85-306.

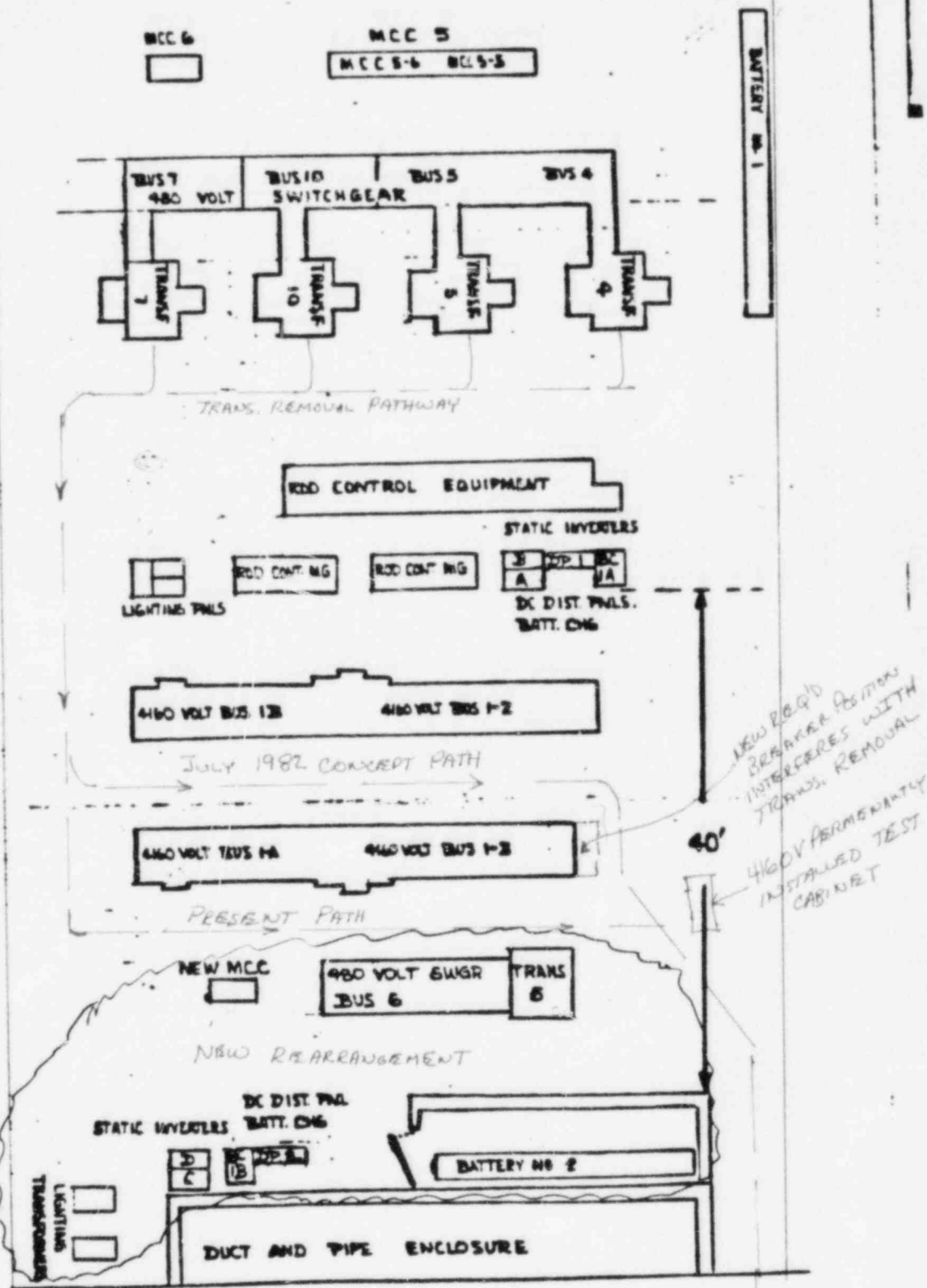
CONNECTICUT YANKEE
 APPENDIX R MODIFICATIONS COMPLETED BY
START-UP FROM 1986 OUTAGE

	<u>APPROXIMATE COST</u>
o APPENDIX R ANALYSIS ENGINEERING & CONSULTANT COST	\$ 271,000
o CURBS, RAMPS, SHIELDS, DOORS & MI CABLE	\$ 656,000
o CONTROL ROOM HALON SYSTEM	\$ 471,000
o 3 HOUR FIRE DAMPER IN PRIMARY AUXILIARY BUILDING	\$ 190,000
o FIRE WRAPS	\$ 154,000
o EMERGENCY LIGHTING	\$ 766,000
o DIESEL GENERATOR ISOLATION/ LOCAL CONTROL & KILL SWITCHES	\$ 405,000
o MISCELLANEOUS DETECTION & SUPPRESSION SYSTEMS	\$ 100,000
o HI/LOW PRESSURE SYSTEM INTERFACE	\$ 35,000
o RCP LUBE OIL COLLECTION SYSTEM	<u>\$ 250,000</u>
TOTAL	\$3,298,000

NOTES

BUS 7 LOADS ARE NOT REQUIRED FOR A FIRE IN THIS AREA. RELOCATED BUS 6 SERVES DIVISION B UNDER THESE CIRCUMSTANCES.

MCC 5 CAN RECEIVE POWER FROM EITHER DIVISION A OR DIVISION B THEREFORE IT IS COLORED YELLOW. AFTER THE PROPOSED MODIFICATIONS ONLY DIVISION A (RED) SAFE SHUTDOWN LOADS WILL BE POWERED FROM MCC 5.



SKETCH NO. 2

NORTHEAST UTILITIES SERVICE COMPANY
CONNECTICUT WASTE SWITCHGEAR RM
APPENDIX N STUDY
SKBAT 0605822