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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Docket Nos. STN 50-596
and STN 50-597

MAY 18 1979

Mr. Allen E. Kintigh
Vice President - Generation
New York State Electric & Gas Corporation
4500 Vestal Parkway East
Binghamton, New York 13902

Dear Mr. Kintigh:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION CONCERNING NEW HAVEN 1 & 2

As a result of our review of the New Haven 1 & 2 Preliminary Safety Analysis Report, we find that we need additional information to continue our evaluation. The specific information requested in the Enclosure concerns the areas of structural engineering, meteorology, and quality assurance.

Our review schedule is based on the assumption that the additional information requested will be available for our review by July 13, 1979. If you cannot meet this date, please inform us within seven days after receipt of this letter so that we may consider the need to revise our review schedule.

Please contact us if you desire any discussion or clarification of the Enclosure.

Sincerely,

Alan D. Parr
Alan D. Parr, Chief
Light Water Reactors Branch No. 3
Division of Project Management

Enclosure:
As Stated

cc w/enclosure:
See next page

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Mr. Allen E. Kinigh

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130.0 STRUCTURAL ENGINEERING BRANCH

130.4 New Haven PSAR Section 3.4.1 states that "the east bank of the
(3.4.1) diverted stream... serves to keep the probable maximum flood
water level in the stream diversion around the site". Since
Section 3.4.2 of the PSAR has been omitted, it is not clear that
this stream bank has been designed for loads due to the static
and dynamic effects of the flood. Discuss how the stream bank
design incorporates the static and dynamic effects of the flood
such as delineated in the U.S. Army Coastal Engineering Research
Center Technical Report No. 4, "Shore Protection Planning and
Design", 1966 issue. Also, indicate the degree of compaction
and provide a sketch of the cross section of the bank indicating
the slope and any special materials used.

130.5 The justificaition given for use of ductility factors greater
(3.5.3) than 10 is not adequate. Provide a more detailed discuss of the
technical justification. Note that references dated 1961 have, in
most cases, been factored into the current staff position limiting
ductilities to less than or equal to 10.

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130.6
(3.8.4.1)

The design of the ultimate heat sink is not within the scope of SWESSAR-P1. Therefore, in addition to the information provided in Section 9.2.5 of the New Haven PSAR, supply the following design information:

- (1) Provide a discussion of the analysis procedure employed, the design criteria (including load combinations), and structural sketches of the cooling tower and pumphouse cross-sections; and
- (2) List the material strengths, f_y and f_c' , and the cement admixtures.

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372.0 HYDROLOGY-METEOROLOGY BRANCH - METEOROLOGY SECTION

372.16 Provide a copy of the Golde reference "Protection of Structures
(2.3.1) against Lightning," 1978.

372.17 The tornado swath areas in Table 2.3-151 do not agree with the
(2.3.1) path lengths and path widths which they are computed from. Provide
the corrected swath areas for Table 2.3-151.

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- 421.0 Quality Assurance Branch - Quality Assurance Section
- 421.5 Section 17.1.2 should reference Revision C instead of
(17.1.2) Revision B of SWSQAP-1-74A.
- 421.6 Provide a commitment that the development, control, and
(17.1.1.2) use of computer code programs will be conducted in
 accordance with the QA program, and describe how the
 QA program will be applied.
-
- 421.7 List the expendable and consumable items covered by the QA
(17.1.1.2) program. Describe the measures which will be taken to assure
 the quality of these items that are required for the proper
 performance of safety-related structures, systems, and
 components. (Examples of such items are weld rods, tendon
 grouting and grease, hydraulic snubber oil, diesel generator
 oil and fuel, and boric acid.) Also include in your
 description the measures which will be taken to: (1) identify
 those individuals authorized to approve changes to the list,
 and (2) control the distribution of changes to the list.
- 421.8 Describe NYSEG's QA program for fire protection. The quality
(17.1.1.2) assurance program for fire protection should be under the
 management control of the quality assurance organization.
 This control consists of (1) formulating or verifying a
 fire protection quality assurance program that incorporates
 suitable requirements and is acceptable to management
 responsible for fire protection, and (2) verifying the
 effectiveness of the quality assurance program for fire
 protection through review, surveillance, and audit. Clarify
 that the quality assurance program for fire protection is
 under the management control of the Manager, QA, or provide
 an alternative position for the staff's evaluation.
 Attachment 421-8 provides supplemental guidance on quality
 assurance for fire protection. Modify your PSAR so that
 it is responsive to this supplemental guidance or provide
 an alternative for the staff's evaluation. Note that if
 the fire protection quality assurance program criteria are
 met as part of the quality assurance program under 10 CFR
 Part 50 Appendix B (PSAR Chapter 17), it is not necessary
 to submit a detailed description for NRC review.

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- 421.9
(17.1.1.25) Describe those provisions established to assure that procedures required to implement the QA program are consistent with QA program commitments and corporate policies and are properly documented, controlled, and made mandatory through a policy statement or equivalent document signed by the responsible official.
- 421.10
(17.1.1.25) Provide a commitment that the procedural controls of NYSE&G's principal contractors will provide for NYSE&G's review and documented agreement of acceptance of a QA program prior to the initiation of activities affected by the program.
- 421.11
(17.1.1.2) Provide a commitment that programmatic changes to the NYSE&G quality assurance program description (SAR Sections 17.1.1 and 17.2) will be submitted to the NRC for review prior to implementation and that organizational changes will be submitted no later than 30 days after announcement. (Note: editorial changes or personnel reassignments of a non-substantive nature do not require NRC notification.)
- 421.12
(Table 17.1-1) Update Table 17.1-1 to address Regulatory Guide 1.28, Rev. 1, dated 3/78.
- 421.13
(17.1.1.1.1) Section 17.1.1.1.1 of the PSAR is not complete. Provide a description of how management (above or outside the QA organization) regularly assesses the scope, status, adequacy, and compliance of the QA program to 10 CFR 50 Appendix B. These measures should include:
- (1) Frequent contact with program status through reports, meetings, and/or audits; and
 - (2) Performance of an annual assessment which is preplanned and documented. Any corrective action should be identified and tracked.
- 421.14
(17.1, 17.1.1.2.6) Section 17.1.1.2.6 is not complete. Describe the provisions which assure that approved procedures and trained personnel are available to implement the applicable portion of the QA program prior to the initiation of the activity.
- 421.15
(17.1.1.2.6) Provide a commitment that records of formal indoctrination and training will be maintained and will show the objective and content of each session, attendees, and date of attendance.

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- 421.16
(17.1.1.3) Provide a commitment that the scope of the design control program implemented by each of NYSE&G's major contractors will include: (1) field design engineering, (2) SAR accident analysis, (3) associated computer programs, (4) compatibility of materials, (5) accessibility for inservice inspection, maintenance, and repairs, and (6) quality standards.
- 421.17
(17.1.1.3) Describe NYSE&G's role in assuring that errors and deficiencies in approved design documents, including design methods (such as computer codes), that could adversely affect structures, systems, and components important to safety are documented and that action is taken to assure that all errors and deficiencies are corrected.
- 421.18
(17.1.1.3) Describe NYSE&G's role in assuring that deviations from specified quality standards are identified and that procedures are established to ensure their control.
- 421.19
(17.1.1.3) Describe how NYSE&G assures that internal and external design interface controls, procedures, and lines of communication among participating design organizations and across technical disciplines are established and described for the review, approval, release, distribution, and revision of documents involving design interfaces.
- 421.20
(17.1.1.3) Describe NYSE&G's role in assuring that guidelines or criteria are established and described for determining the method of design verification (design review, alternate calculations, or test).
- 421.21
(17.1.1.3) Describe the roles of NYSE&G, S&W, and CE with respect to the following design verification positions:
- (1) Procedures must be established, described, and implemented for design verification activities which assure the following:
 - (a) The verifier is qualified and is not directly responsible for the design (i.e., neither the performer or his immediate supervisor). In exceptional circumstances, the designer's immediate supervisor can perform the verification provided:
 - (i) The supervisor is the only technically qualified individual;
 - (ii) The need is individually documented and approved in advance by the supervisor's management; and
 - (iii) QA audits cover frequency and effectiveness of use of supervisors as design verifiers to guard against abuse.

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- (b) Design verification, if other than by qualification testing of a prototype or lead production unit, is completed prior to release for procurement, manufacturing, construction or to another organization for use in other design activities. In those cases where this timing cannot be met, the design verification may be deferred, providing that the justification for this action is documented and the unverified portion of the design output document and all design output documents, based on the unverified data, are appropriately identified and controlled. Construction site activities associated with a design or design change should not proceed without verification past the point where the installation would become irreversible (i.e., require extensive demolition and rework). In all cases, the design verification should be complete prior to fuel load.
 - (c) Procedural control is established for design documents that reflect the commitments of the PSAR; this control differentiates between documents that receive formal design verification by interdisciplinary or multiorganizational teams and those which can be reviewed by a single individual (a signature and date is acceptable documentation for personnel certification). Design documents subject to procedural control include, but are not limited to: specifications, calculations, computer programs, system descriptions, SAR when used as a design document, and drawings (including flow diagrams, piping and instrument diagrams, control logic diagrams, electrical single line diagrams, structural systems for major facilities, site arrangements, and equipment locations). Specialized reviews should be used when uniqueness or special design considerations warrant.
 - (d) The responsibilities of the verifier, the areas and features to be verified, the pertinent considerations to be verified, and the extent of documentation are identified in procedures.
- (2) The following provisions must be included if the verification method is only by test:
- (a) Procedures provide criteria that specify when verification should be by test;

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- (b) Prototype, component, or feature testing is performed as early as possible prior to installation of plant equipment, or prior to the point when the installation would become irreversible.
- (c) Verification by test is performed under conditions that simulate the most adverse design conditions as determined by analysis.

- (3) Procedures must be established to assure that verified computer codes are certified for use and that their use is specified.

421.22
(17.1.1.3)

Describe NYSE&G's role in assuring that design and specification changes, including fields changes, are subject to the same design controls that were applicable to the original design.

421.23
(17.1.1.3.4)

The penultimate sentence in Section 17.1.1.3.4 states: "Where standard designs are applied and no change to standard design documents is required for NYSE&G 1 and 2, design verification is not mandatory." This is unacceptable. Eliminate this sentence or revise it such that it indicates that NYSE&G does not necessarily verify standard designs since these designs have already undergone design verification in accordance with Regulatory Guide 1.64, Revision 2.

421.24
(17.1.1.5)

Provide a commitment that procedures will be established to assure that instructions, procedures, and drawings include quantitative (such as dimensions, tolerances, and operating limits) and qualitative (such as workmanship samples) acceptance criteria for determining that important activities have been satisfactorily accomplished.

421.25
(17.1.1.6.1)

Provide a commitment that the scope of the document control program will provide for:

- (1) Calculations, drawings, specifications, and analyses (including documents related to computer codes);
- (2) As-built drawings;
- (3) Topical reports; and
- (4) Nonconformance reports.

421.26
(17.1.1.6.1)

Provide a commitment that procedures will be established to assure that obsolete or superseded documents are removed and replaced by applicable revisions in work areas in a timely manner.

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- 421.27
(17.1.1.10.1) Provide a commitment that inspection procedures, instructions, and checklists will provide for the following: --
- (1) Identification of required procedures, drawings, specifications and revisions.
 - (2) Recording the identification of the inspector or data recorder and the results of the inspection operation.
 - (3) Specifying necessary measuring and test equipment, including accuracy requirements.
- 421.28
(17.1.1.10) Sections 17.1.1.10.1 and 17.1.1.11.1 are incomplete. Provide a more detailed description of NYSE&G's role in evaluating inspection and test results and their acceptability.
- 421.29
(17.1.1.7.1)
(17.1.1.15) Describe how NYSE&G determines the validity of certificates of conformance.
- 421.30
(17.1.1.17.1) Provide a commitment that inspection and test records will contain the following information:
- (1) A description of the type of observation;
 - (2) The date and results of the inspection or test;
 - (3) Information related to conditions adverse to quality;
 - (4) Inspector or data recorder identification;
 - (5) Evidence as to the acceptability of the results; and
 - (6) Action taken to resolve any discrepancies noted.
- 421.31
(1 1.1.18.1) Provide a commitment that NYSE&G will prepare an audit plan which identifies audits to be performed, their frequencies, and schedules. Audits will be regularly scheduled, based upon the status and safety importance of the activities being performed, and initiated early enough to assure effective QA during design, procurement, manufacturing, construction, installation, inspection, and testing.
- 421.32
(17.1.1.18.1) Provide a commitment that provisions will be established which require audits to be performed in all areas where the requirements of Appendix B to 10 CFR Part 50 are applicable. Areas which are often neglected but should be included are activities associated with:

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- (1) The determination of site features which affect plant safety (e.g., core sampling, site and foundation preparation, and methodology;
- (2) The preparation, review, approval, and control of early procurements;
- (3) Indoctrination and training programs;
- (4) Interface control among the applicant and the principal contractors;
- (5) Corrective action, calibration, and nonconformance control systems; and
- (6) PSAR commitments.

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QUALITY ASSURANCE ATTACHMENT 421 d

The quality assurance (QA) program should assure that the requirements for design, procurement, installation, testing, and administrative controls for the fire protection program for safety related areas approved by NRC are satisfied. The Quality Assurance provisions for fire protection should apply to activities performed after the effective date of the adoption of said provisions. The QA program should be under the management control of the QA organization. This control consists of (1) formulating and/or verifying that the fire protection QA program incorporates suitable requirements and is acceptable to the management responsible for fire protection and (2) verifying the effectiveness of the QA program for fire protection through review, surveillance, and audits. Performance of other QA program functions for meeting the fire protection program requirements may be performed by personnel outside of the QA organization. The QA program for fire protection should be part of the overall plant QA program. These QA criteria apply to those items within the scope of the fire protection program, such as fire protection systems, emergency lighting, communication and emergency breathing apparatus as well as the fire protection requirements of applicable safety related equipment.

Applicants/licensees can meet the fire protection quality assurance (QA) program criteria of Appendix A to BTP 9.5-1 or Regulatory Guide 1.120 by either:

- 1) implementing those fire protection QA criteria as part of their QA program under 10 CFR Part 50 Appendix B, where such a commitment is made, it is not necessary to submit a detailed description of the fire protection QA program or its implementation for NRC review; or
- 2) providing for NRC review a description of the fire protection QA program and the measures for implementing the program. Supplemental guidance is provided below on acceptable measures for implementing each of the fire protection QA program criteria of Appendix A to BTP 9.5-1 or Regulatory Guide 1.120.

1.0 Design Control and Procurement Document Control - Measures should be established to assure that the applicable guidelines of the Regulatory Guide 1.120 or approved NRC alternatives are included in design and procurement documents and that deviations therefrom are controlled. These measures should assure that:

- a. Design and procurement document changes, including field changes and design deviations are subject to the same level of controls, reviews, and approvals that were applicable to the original document.

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- b. Quality standards are specified in the design documents such as appropriate fire protection codes and standards, and deviations and changes from these quality standards are controlled.
- c. New designs and plant modifications, including fire protection systems, are reviewed by qualified personnel to assure inclusion of appropriate fire protection requirements. These reviews should include items such as:
 - (1) Design reviews to verify adequacy of wiring isolation and cable separation criteria.
 - (2) Design reviews to verify appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers).
- d. A review and concurrence of the adequacy of fire protection requirements and quality requirements stated in procurement documents are performed and documented by qualified personnel.

This review should determine that fire protection requirements and quality requirements are correctly stated, inspectable and controllable; there are adequate acceptance and rejection criteria; and the procurement document has been prepared, reviewed, and approved in accordance with QA program requirements.

2.0 Instructions, Procedures, and Drawing - Inspections, tests, administrative controls, fire drills, and training that govern the fire protection program should be prescribed by documented instructions, procedures or drawings and should be accomplished in accordance with these documents. The following provisions should be included.

- a. Indoctrination and training programs for fire prevention and fire fighting are implemented in accordance with documented procedures.
- b. Activities such as design, installation, inspection, test, maintenance, and modification of fire protection systems are prescribed and accomplished in accordance with documented instructions, procedures, and drawings.
- c. Instructions and procedures for design installation, inspection, test, maintenance, modification and administrative controls are reviewed to assure that proper inclusion of fire protection requirements, such as precautions, control of ignition sources and combustibles, provisions for backup fire protection of the activity requires disabling a fire protection system, and restriction on material substitution unless specifically permitted by design and confirmed by design review.

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- d. The installation or application of penetration seals and fire retardant coatings is performed by trained personnel using approved procedures.
- 3.0 Control of Purchased Material, Equipment, and Services - Measures shall be established to assure that purchased material, equipment and services conform to the procurement documents. These measures should include:
- a. Provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor, inspections at suppliers, or receiving inspections.
 - b. Source or receiving inspection, as a minimum, for those items whose quality cannot be verified after installation.
- 4.0 Inspection - A program for independent inspection of activities affecting fire protection should be established and executed by, or for, the organization performing the activity to verify conformance to documented installation drawings and test procedures for accomplishing activities. This program should include:
- a. Inspections of (1) installation, maintenance and modification of fire protection systems; and (2) emergency lighting and communication equipment to assure conformance to design and installation requirements.
 - b. Inspection of penetration seals and fire retardant coating installations to verify the activity is satisfactorily completed.
 - c. Inspections of cable routing to verify conformance with design requirements.
 - d. Inspections to verify that appropriate requirements for room isolation (sealing penetrations, floors, and other fire barriers) are accomplished during construction.
 - e. Measures to assure that inspection personnel are independent from the individuals performing the activity being inspected and are knowledgeable in the design and installation requirements for fire protection.
 - f. Inspection procedures, instructions, and check lists which provide for the following:
 - (1) Identification of characteristics and activities to be inspected
 - (2) Identification of the individuals or groups responsible for performing the inspection operation
 - (3) Acceptance and rejection criteria

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- (4) A description of the method of inspection
 - (5) Recording evidence of completing - verifying a manufacturing, inspection or test operation
 - (6) Recording inspector or data recorder and the results of the inspection operation
- g. Periodic inspections of fire protection systems, emergency breathing and auxiliary equipment, emergency lighting, and communication equipment to assure the acceptable condition of these items.
 - h. Periodic inspection of materials subject to degradation such as fire stops, seals, and fire retardant coatings to assure these items have not deteriorated or been damaged.
- 5.0 Test and Test Control - A test program should be established and implemented to ensure that testing is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. The tests should be performed in accordance with written test procedures; test results should be properly evaluated and acted on. The test program should include the following:
- a. Installation Testing - Following construction, modification, repair or replacement, sufficient testing is performed to demonstrate that fire protection systems, emergency lighting and communication equipment will perform satisfactorily in service and that design criteria are met. Written test procedures for installation tests incorporate the requirements and acceptance limits contained in applicable design documents.
 - b. Periodic testing - The schedules and methods for periodic testing are developed and documented. Fire protection equipment, emergency lighting, and communication equipment are tested periodically to assure that the equipment will properly function and continue to meet the design criteria.
 - c. Programs are established for QA/QC to verify testing of fire protection systems and to verify that test personnel are effectively trained.
 - d. Test results are documented, evaluated, and their acceptability determined by a qualified responsible individual or group.
- 6.0 Inspection, Test, and Operating Status - Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections. These measures should include provisions for:
- a. Identification by means of tags, labels, or similar temporary markings to indicate completion of required inspections and tests, and operating status.

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- 7.0 Nonconforming Items - Measures should be established to control items that do not conform to specified requirements to prevent inadvertent use of installation. These measures should include provisions to assure that:
- a. Nonconforming, inoperative, or malfunctioning fire protection systems, emergency lighting, and communication equipment are appropriately tagged or labelled.
 - b. The identification, documentation, segregation, review disposition, and notification to the affected organization of nonconforming materials, parts, components, or services are procedurally controlled.
 - c. Documentation identifies the nonconforming item, describes the nonconformance and the disposition of the nonconforming item and includes signature approval of the disposition.
 - d. Provisions are established identifying those individuals or groups delegated the responsibility and authority for the disposition and approval of nonconforming items.
- 8.0 Corrective Action - Measures shall be established to ensure that conditions adverse to fire protection such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material and nonconformances are promptly identified, reported and corrected. These measures should assure:
- a. Procedures are established for evaluation of conditions adverse to fire protection (such as nonconformance, failures, malfunctions, deficiencies, deviations, and defective material and equipment) to determine the necessary corrective action.
 - b. In the case of significant or repetitive conditions adverse to fire protection, including fire incidents, the cause of the conditions is determined and analyzed, and prompt corrective actions are taken to preclude recurrence. The cause of the condition and the corrective action taken are promptly reported to cognizant levels of management for review and assessment.
- 9.0 Records - Records should be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program. The following provisions should be included:
- a. Records are identifiable and retrievable and should demonstrate conformance to fire protection requirements. The records should

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include results of inspections, tests, reviews, and audits; non-conformance and corrective action reports; construction, maintenance and modification records; and certified manufacturers' data.

- b. Record retention requirements are established.

10.0 Audits - Audits should be conducted and documented to verify compliance with the fire protection program, including design and procurement documents, instructions, procedures, and drawings, and inspection and test activities. The following provisions should be included:

- a. Audits are periodically performed to verify compliance with the administrative controls and implementation of quality assurance criteria including design and procurement, instructions, procedures and drawings and inspection and test activities. These audits are performed by QA personnel in accordance with preestablished written procedures or check lists and conducted by trained personnel not having direct responsibilities in the areas being audited.
- b. Audit results are documented and then reviewed with management having responsibility in the area audited.
- c. Followup action is taken by responsible management to correct the deficiencies revealed by the audit.
- d. Audits are annually performed to provide an overall assessment of conformance to fire protection requirements.

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