nutech ENGINEERS

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November 4, 1985
JVM-85-186

Mr. Jack G. Spraul
U.S. Nuclear Regulatory Commission
Mail Stop EWS 305B
Quality Assurance Branch
Washington, DC 20555

Subject: Response to NRC Comments on Section 11.0 of the NUHOMS Topical Report

Reference:

1. Topical Report for the NUTECH Modular Storage System for Irradiated Nuclear Fuel (NUH-001), Revision 1, November 1985.
2. Letter from L. C. Rouse to J. V. Massey dated September 25, 1985.
3. Letter from J. V. Massey to J. G. Spraul dated August 27, 1985.
4. Project No. M-39

Dear Mr. Spraul:

This letter summarizes NUTECH's response to your request for additional information on the QA program described in the draft section 11.0 of the referenced Topical Report which was submitted to you on August 27, 1985.

Responses fall into three categories: (1) those which NUTECH regards as clarifications and which do not result in changes to the draft section 11.0, (2) those which describe existing procedural (QEP) requirements not explicitly found in the QA Manual that have been added to the draft section 11.0, and (3) those which make commitments that are not currently made by the NUTECH QA Program and which will be incorporated into the next revision of the QA Manual as well as the referenced Topical Report.

Attached are NUTECH's responses to individual items in the referenced letter dated September 25, 1985. Section 11.0 of the referenced Topical Report is also attached for your convenience. You will receive one uncontrolled copy of NUTECH's Quality Engineering Procedures (QEPs) which are for information only. In an effort to provide a timely response, several commitments have been incorporated into the revised Topical

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Report which do not explicitly appear in the existing QA Manual (response types 2 and 3 above). Those commitments shall be incorporated into the next revision of the NUTECH QA Manual which will be issued prior to the end of the second quarter, 1986.

I am confident that these responses satisfy the request for additional information, and that the revised QA Manual will consistently reflect the QA commitments made in the referenced Topical Report. If you have any questions related to NUHOMS, do not hesitate to contact either myself or Brandon Thomas. Questions regarding NUTECH corporate quality assurance policy may be directed to NUTECH's Corporate QA Manager, Mr. Wayne E. Booth.

Very truly yours,

John V. Massey, Ph.D.
Engineering Manager, Fuel Cycle and
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BDT/JVM/sjm

Enclosure

cc: N. W. Edwards
J. P. Roberts (NRC)
W. E. Booth
M. Shamszad
D. M. Koss (CP&L)
R. K. Kunita (CP&L)

Question No. 1

Describe the qualification requirements for the Corporate Quality Assurance Manager, the Quality Assurance Administrators, and the Field Quality Assurance Supervisor. The requirements should demonstrate management and technical competence commensurate with the responsibilities noted in the QA Manual sections 1.2.2, 1.5, and 1.6 respectively.

RESPONSE:

This commitment is not currently made by the NUTECH QA Program. The next revision of the NUTECH QA Manual shall include a requirement that Corporate QA Managers, QA Administrators, and Field QA Administrators either meet the requirements contained in ANSI N45.2.23 for Lead Auditors, or shall have had prior NUTECH experience executing those duties and responsibilities.

The next revision of the QA Manual will contain these requirements. The Topical Report has been revised to include the requirements.

Question No. 2

QA Manual sections 1.2.2 and 1.6 indicate that the Corporate QA Manager and Field QA Supervisors can "control or stop further processing...." QA Manual section 1.5 indicates that the QA Administrators can "control further processing...." without the "or stop" authority. Clarify that the QA Administrators have stop work authority or justify why they do not. Describe how the stop work authority is carried out.

RESPONSE:

NUTECH Quality Engineering Procedure (QEP) 2-5, "Administration of Stop Work Authority" states in paragraph 2.1, "The Quality Assurance Administrator and the Corporate Quality Assurance Manager have the responsibility and authority to issue a Stop Work Order..." The intent of QA Manual section 1.5 is that the QA Administrator may stop work. The words "stop work" will be added to paragraph 1.5 in the next revision of the QA Manual to clarify this authority level.

Stop work authority is carried out through NUTECH form QEP 2-5.1 which may be initiated by any NUTECH employee. The QA Administrator, Field QA Supervisor, and QA Manager evaluates the stop work request. Should the problem require work stoppage, the Project Manager is notified to stop work and a Corrective Action Report is generated. The signed Stop Work Order is distributed to the Project Manager, Engineering Manager, and the responsible Project Engineer. It is the project Manager's responsibility to ensure that the work has been stopped.

Methods for clearing the Stop Work Order are described in QEP 2-5. Corrective Action Reports serve as a vehicle for identifying and correcting the condition which required adverse work to be halted.

This clarification and description does not result in a revision to the proposed Topical Report.

Question No. 3

QA Manual section 2.1.4 indicates that Nutech uses Project Plans to assure adequate QA coverage. Provide a commitment that the extent of QA controls is determined by the QA staff in combination with the line staff and is dependent upon the specific activity, item complexity, and its importance to safety or justify not doing so.

RESPONSE:

Project QA controls are determined by the Project Manager (line staff) and approved by the QA Administrator. All Project Plans, regardless of the indicated applicability of QA requirements, are reviewed by the QA Administrator to assure that QA controls are commensurate with the specific activity, item complexity, importance to safety, and client-imposed contractual requirements.

Section 11.3 of the NUHOMS Topical Report has been revised to include the above commitment.

Question No. 4

Describe provisions for the resolution of disputes involving quality, arising from a difference of opinion between QA/QC personnel and other department (engineering, procurement, etc.) personnel.

RESPONSE:

Disputes involving quality are resolved in the same manner as technical disputes. The Engineering Manager has the final authority. Should the dispute arise from departments other than engineering, the Engineering Manager is verbally summoned by the involved parties and a resolution is obtained. Disputes within the engineering department, such as between the preparer and checker, are resolved by the Project Engineer or, as a final effort, by the Engineering Manager.

The above provisions are consistent with QEP 3-3. Section 11.11 of the Topical Report has been revised to include the provisions.

Question No. 5

QA Manual section 2.4 addresses indoctrination and training. Provide a commitment that indoctrination, training, and qualification programs are established such that:

a. Personnel responsible for performing activities affecting quality are instructed as to the purpose, scope, and implementation of the quality-related manuals, instructions, and procedures.

b. Personnel performing activities affecting quality are trained and qualified in the principles and techniques of the activity being performed.

c. Proficiency of personnel performing quality-affecting activities is maintained by retraining, reexamining, and/or recertifying.

d. Specific documentation of completed training and qualification should be described in general terms.

e. Qualified personnel are certified in accordance with applicable codes and standards.

RESPONSE:

These commitments are made in QEP 2-1. As an example of item "e" above, the following codes and standards are invoked by QEPs: ANSI N45.2.6 (QEP 2-2), ASME Section III (QEP 2-3), ANST TC-1A (QEP 9-1), ANSI N45.2.23 (QEP 18.1).

Section 11.3 of the Topical Report has been revised to indicate that indoctrination, training, and qualification is performed in accordance with the NUTECH QA Manual and QEPs.

Question No. 6

Provide a commitment that designs are reviewed to ensure that:

a. Design characteristics can be controlled, inspected, and tested.

b. Inspection and test criteria are identified.

RESPONSE:

QEP 3-4, "Design Verification" requires independent reviews of designs and changes to designs. Many review criteria are presented, including items a and b above.

Section 11.4 of the Topical Report has been revised to indicate that design reviews are performed in accordance with the NUTECH QA Manual and QEPs.

Question No. 7

Provide a commitment that a review and concurrence of the adequacy of quality requirements stated in procurement documents is performed by qualified personnel and that this review determines that 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.

RESPONSE:

QEP 3-3 requires that procurement specifications include the above information. Procurement documents are reviewed by the QA Administrator in accordance with QEP 4-1.

The above commitment has been included in Section 11.5 of the revised Topical Report.

Question No. 8

Provide a commitment that a QA individual (i.e., the Corporate QA Manager, a QA Administrator, or a Field QA Supervisor) reviews and concurs with project plans; inspection plans; test, calibration, and special process procedures; drawings and specifications; and changes thereto.

RESPONSE:

Project plans are approved by the QA Administrator. Refer to NUTECH's response to question #3.

Inspection procedures are approved by the Field QA Supervisor. Refer to QA Manual Section 9.2.2.

Special process procedures and calibration procedures are approved by the QA Administrator, or the Field QA Supervisor, as required by QEP 5-3.

Test procedures, design drawings, and design specifications do not receive an in-line QA review. An audit program has been established to assure that they contain appropriate QA control features.

Section 11.6 of the Topical Report has been revised to reflect the above commitments.

Question No. 9

Provide a commitment that surveillance of Nutech suppliers during fabrication, inspection, testing, and shipment of materials, equipment, and components is planned and performed in accordance with written procedures to assure conformance to the purchase order requirements and that these procedures provide for:

a. Instructions that specify the characteristics or processes to be witnessed, inspected or verified, and accepted; the method of surveillance and the extent of documentation required; and those responsible for implementing these instructions.

b. Audits and surveillance which assure that the supplier complies with the quality requirements. Surveillance is performed on those items where verification of procurement requirements cannot be determined upon receipt.

RESPONSE:

Surveillance of NUTECH suppliers is planned and performed in accordance with the requirements of QEP 4-1, "Procurement Document Control," QEP 18-2, "Audits, Surveys, and Corrective Action," and QEP 18-3, "Quality Assurance Surveillance." These procedures specify the items contained in "a" above. Commitment "b" is made in QA Manual section 7.0, "Control of Purchased Items and Services."

The Topical Report has been revised to reflect commitment "a." NUTECH considers this response a clarification with regard to commitment "b," and has not included it explicitly in the Topical Report.

Question No. 10

Provide a commitment that Nutech suppliers furnish the following records as a minimum:

a. Documentation that identifies the purchased material or equipment and the specific procurement requirements (e.g., codes, standards, and specifications) met by the items.

b. Documentation that identifies any procurement requirements which have not been met together with a description of those nonconformances dispositioned "accept as is" or "repair."

Describe the review and acceptance of these documents which should, as a minimum, be undertaken by a responsible QA individual.

RESPONSE:

NUTECH does not require suppliers to furnish the documentation stated in item "a" above for purchased items. NUTECH believes that these certificates of conformance do not provide sufficient objective evidence to be used for a basis of acceptance, as explained in NUTECH's response to question 11. Therefore, no further action is required on item "a." Commitment "b," however, will be incorporated into the revised QA Manual.

The review and acceptance of such documents is performed in accordance with QEP 10-1, "Receiving Inspection." Receiving inspection checklists are prepared by the QA Administrator and include manufacturing/calibration documentation. A qualified receiving inspector is designated by the QA Administrator to perform the receipt inspection. The completed, approved inspection checklist is maintained as a nonpermanent quality record.

The Topical Report has been revised to meet commitment "b" above.

Question No. 11

Provide a commitment that certificates of conformance from Nutech suppliers are periodically evaluated by audits, independent inspections, or tests to assure that they are valid.

RESPONSE:

NUTECH does not currently require certificates of conformance for purchased items because they provide little or no basis for accepting the item. NUTECH does, however, require calibration reports, NDE reports, actua test or inspection reports, laboratory results, etc. as applicable to the item or service being procured. This data is periodically evaluated by audits, independent inspections or tests to assure they are valid. (QEP 10-1, for example, describes procedures for periodic performance of calibration overchecks.

NUTECH considers this response a clarification and no changes to the Topical Report or QA Manual will be implemented.

Question No. 12

Provide a commitment that hardware identification requirements are determined during generation of design drawings and specifications such that the location and method of identification do not affect the fit, function, or quality of the item being identified.

RESPONSE:

This commitment is not currently made by the NUTECH QA Program. It will be included in the next revision of the QA Manual and has been included in the revised Topical Report.

Question No. 13

Provide a commitment that, unless limited by the state-of-the-art, calibrating standards have an error requirement of no more than 1/4 of the tolerance of the equipment being calibrated.

RESPONSE:

This commitment is not currently made by the NUTECH QA Program. It will be included in the next revision of the QA Manual and has been included in the revised Topical Report.

Question No. 14

Provide a commitment that special handling, preservation, storage, cleaning, packaging, and shipping requirements are established and accomplished by qualified individuals in accordance with predetermined work and inspection instructions.

RESPONSE:

QEP 13-1 requires the "...special handling, shipping, and storage activities this is intended to include operations such as preservation, cleaning, and packaging shall be performed as described on the traveler...or by written approved procedures, instructions, or drawings, per QEP 5-3..." The Engineering Manager or appropriate technical group is responsible for establishing such requirements, including the use of appropriately qualified individuals where necessary.

Section 11.14 of the Topical Report has been expanded to include the above commitment.

Question No. 15

Provide a commitment that bypassing of required inspections, tests, and other critical operations is procedurally controlled under the cognizance of QA.

RESPONSE:

Bypassing a required inspection, test, or other critical operation is considered a significant programmatic condition adverse to quality which requires the generation of a Corrective Action Report (QEP 16-1).

NUTECH considers this response a clarification.

Question No. 16

Provide a commitment that nonconforming items dispositioned use-as-is are reported to the client.

RESPONSE:

QEP 15-1, "Control of Nonconforming Items," requires that the Project Manager obtain Client approval of "Use-As-Is" dispositions prior to releasing the items when specified by contract.

This commitment, and the recommendation that such contractual requirements be made, have been added to the Topical Report, Section 11.16.

Question No. 17

Provide a commitment that nonconformance reports are periodically analyzed to show quality trends and to help identify root causes of nonconformances and that significant results are reported to responsible management for review and assessment.

RESPONSE:

All nonconformance reports are submitted to the QA Administrator (or Field QA Supervisor, as applicable) and retained in the QA files for tracking and trending purposes (QEP 15-1).

The above commitment has been added to the Topical Report, Section 11.16. In addition, the next revision of the QA Manual, Section 2.3.2, will be revised to reflect NUTECH's current practice of including nonconformance reports in the Corporate QA Manager's semi-annual review.

Question No. 18

Provide a commitment that QA records include results of reviews, audits, and material analyses; monitoring of work performance; qualification of personnel, procedures, and equipment; drawings; specifications; procurement documents; calibration procedures and reports; design review reports; nonconformance reports; corrective action reports; and inspection and test records which contain the following when applicable:

a. A description of the type of observation.
b. The date and results of the inspection or test
c. Information related to conditions adverse to quality.
d. Inspector or data recorder identification.
e. Evidence as to the acceptability of the results.
f. Action taken to resolve any discrepancies noted.

RESPONSE:

QEP 17-1, "Identification, Transmittal, Storage, and Maintenance of Quality Records," contains an extensive list of documents which are considered Quality Records. That list includes the subject records (without particular content requirements such as items c - f above).

NUTECH regards this item as a clarification. Section 11.18 of the Topical has not been changed since the statement, "...sufficient records are maintained to provide documentary evidence of the quality of items and the activities affecting quality" implies the above commitment.

Question No. 19

Provide a commitment that requirements and responsibilities for record creation, transmittal, retention (such as duration, location, fire protection, and assigned responsibilities), and maintenance subsequent to completion of work are consistent with applicable codes, standards, and procurement documents.

RESPONSE:

This broad commitment is made in section 2.1.2 of the QA Manual which states that the QA Program conforms to the requirements of 10CFR50 Appendix B, ANSI/ASME NQA-1-1983, ANSI N45.2-1977, ANSI N45.2.9-1974, ANSI N45.2.11-1974, and associated Regulatory Guides. Section 2.1.4 of the QA Manual identifies the project plan as the key controlling feature utilized by NUTECH to specify the contractual QA program requirements.

Note that maintenance of records subsequent to completion of work is the Client's responsibility unless contractually specified otherwise.

NUTECH considers this response to be a clarification. The Topical Report has not been revised to include the subject commitment.

Question No. 20

Provide a commitment that audit deficiency data are analyzed and trended and that resultant reports, which indicate quality trends and the effectiveness of the QA program, are given to management for review, assessment, corrective action, and follow-up.

RESPONSE:

This commitment is made in section 2.3.2 of the QA Manual. The QA Manager prepares semi-annual summary reports of the quality assurance program. The summary includes audit finding reports and a discussion of any adverse quality trends. It is distributed to NUTECH senior management for their review, assessment, and corrective action and follow-up as necessary.

NUTECH considers this response to be a clarification. The Topical Report has not been revised to include the subject commitment.

Question No. 21

Section 11.2 of the topical report identifies the NUHOMS system components important to safety. It indicates that the design of the horizontal storage module is important to safety but that the procurement, fabrication, etc. will be considered important to safety only if defined as such by a utility. It appears that the procurement, inspection, testing, fabrication, and construction of the horizontal storage module are also important to safety.

Clarify that Nutech will treat its involvement in these activities as important to safety and, thus, under the control of its QA program or justify not doing so.

RESPONSE:

The intent of the existing paragraph is that the procurement, inspection, etc. of the HSM will be in accordance with site-specific license requirements and existing site construction practices.

The Topical Report has been revised to state that the "Procurement, inspection, testing, fabrication and construction of the HSM shall be in accordance with site-specific license requirements."

Question No. 22

The last sentence of section 11.2 of the topical report states: "Suitable transfer casks licensed under 10 CFR 71 shall be employed to transport the DSC," i.e., the dry shielded canister. It appears that transfer casks licensed under 10 CFR 71 will require modification before being used to transport the DSC. Therefore, delete this last sentence of section 11.2 or justify not doing so.

RESPONSE:

The subject sentence shall be deleted. Any modifications to existing transfer casks shall be addressed in site-specific license applications.

11.0 Quality Assurance

11.1 Introduction

This chapter describes the quality assurance (QA) controls which apply to activities that affect the quality of safety-related NUHOMS system components. System components which are important to safety are defined herein. Activities affecting quality are defined by site specific contract and may include any or all of the following: design, procurement, fabrication, handling, shipping, storage, cleaning, erection, inspection, repair, or modification.

As invoked by contract, NUTECH's QA program shall be applied to Important-To-Safety activities, including the control of subcontracted Important-To-Safety activities. The NUTECH Quality Assurance Program satisfies the requirements of 10CFR50, Appendix B and is described in the NUTECH Quality Assurance Manual. Quality Engineering Procedures (QEPs) contain procedural methods for implementing program requirements. Project Instructions (PIs) are utilized to address unique project requirements which are not specifically addressed in QEPs.

A matrix comparing 10CFR50, Appendix B criteria with the NUTECH QA Manual and QEPs is provided in Table 11.1-1.

11.2 "Important-To-Safety" NUHOMS System Components

The design, procurement, inspection, testing, fabrication, and construction off the DSC and DSC internals shall be considered Important-To-Safety for the purpose of applying quality assurance program requirements. The design of the HSM shall be similarly considered Important-To-Safety. Procurement, inspection, testing, fabrication, and construction of the HSM shall be in accordance with site-specific license requirements.

Additional system components such as the transporter, skid, hydraulic ram, and consumables (including the dry film lubricant) shall not be considered Important-To-Safety.

11.3 Project Organization

The NUHOMS system has been designed by a dedicated project organization at NUTECH Engineers, Inc., with corporate offices located in San Jose, California.

QA duties are performed by the NUHOMS project organization and by the Corporate QA Manager, QA Administrator, and Field QA Supervisor. The latter individuals meet the qualification requirements for Lead Audit personnel in ANSI N45.2.23, or have had prior NUTECH experience executing those duties and responsibilities.

The organizational structure for a typical NUHOMS project is presented in Figure 11.2-1. A description of NUTECH's organizational structure, functional responsibilities, levels of authority, and lines of internal communication may be found in the NUTECH Quality Assurance Manual.

Project QA controls are determined by the Project Manager and approved by the QA Administrator. All Project Plans, regardless of the indicated applicability of QA requirements, are reviewed by the QA Administrator to assure that QA controls are commensurate with the specific activity, item complexity, importance to safety and client-imposed contractual requirements.

Project personnel are indoctrinated, trained, and qualified in accordance with the NUTECH QA Manual and QEPs.

11.4 Design Control

Important-To-Safety NUHOMS design activities including the performance of design verifications shall be implemented in accordance with the NUTECH Quality Assurance Manual and QEPs.

Errors and deficiencies in the design, including the design process are documented in the form of Audit Finding Reports or Corrective Action Reports.

Typically, valid industry standards and specifications are used for the selection of suitable materials, parts, equipment and processes for Important-To-Safety structures, systems, or components. Standard, or off-the-shelf items, and items previously approved for a different application are reviewed for suitability prior to selection.

11.5 Procurement Document Control

Procurement documents are prepared in accordance with the NUTECH Quality Assurance Manual and QEPs which delineate the actions to be accomplished in the preparation, review, approval, and control of procurement documents. Review and approval of procurement documents by the QA Administrator are documented on the Purchase Authorization prior to release to assure the adequacy of quality requirements stated therein. This review determines that 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.

The procurement documents shall identify the documentation required to be submitted for information, review, or approval by NUTECH or NUTECH's client. The time of submittal shall also be

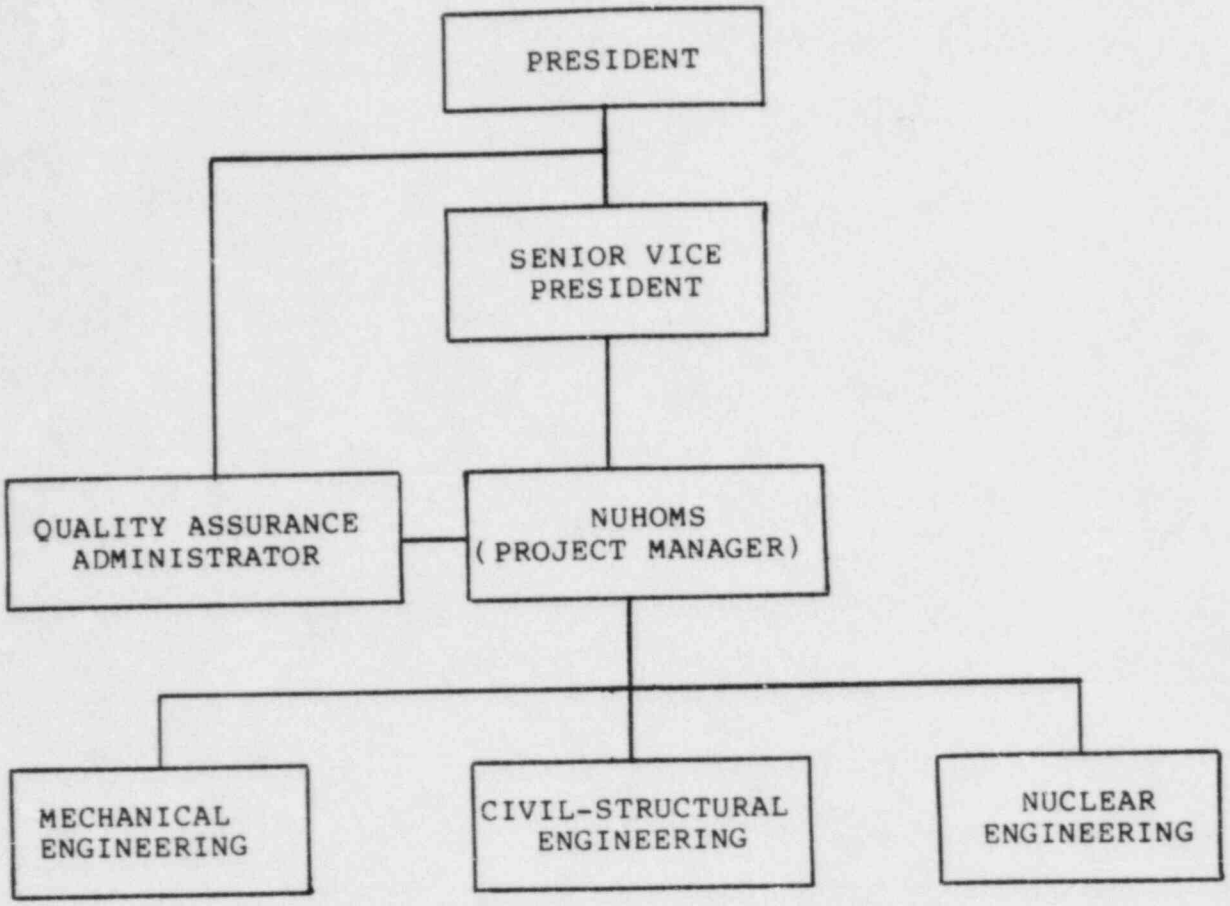

Figure 11.2-1

NUHOMS PROJECT ORGANIZATION CHART

established. When NUTECH requires the Supplier to maintain specific quality assurance records, the retention times and disposition requirements shall be prescribed.

11.6 Procedures, Instructions, and Drawings

Activities affecting quality are prescribed and accomplished in accordance with the NUTECH Quality Assurance Manual, QEPs, Project Instructions, or other documented means. Project plans, calibration procedures, inspection procedures, special process procedures and changes thereto are reviewed by responsible QA individuals.

11.7 Document Control

The issuance, distribution, and receipt of documents which prescribe activities affecting quality are controlled in accordance with the NUTECH Quality Assurance Manual and QEPs. Controlled documents include, but are not limited to the NUTECH design specifications and criteria documents, drawings, instructions, and test procedures.

The individuals or groups responsible for reviewing, approving, and issuing documents and revisions thereto are identified by the QEP which generates the document.

11.8 Control of Purchased Items and Services

The control of purchased items and services shall be implemented in accordance with the NUTECH Quality Assurance Manual and QEPs.

Surveillance of subcontracted activities is planned and performed in accordance with written procedures to assure conformance to the purchase order. These procedures provide for instructions that specify the characteristics to be witnessed, inspected or verified, and accepted; the method of surveillance and the extent of documentation required and those responsible for implementing these instructions.

NUTECH suppliers shall furnish documentation that identifies any procurement requirements which have not been met together with a description of those nonconformances disposition "use-as-is" or "repair."

Documentation from NUTECH suppliers which demonstrates compliance with procurement requirements (such as calibration reports, NDE results, test results, etc. is periodically evaluated by audits, independent inspections, or tests as necessary to assure its validity.

11.9 Identification and Control of Materials, Parts, and Components

Materials, parts and components shall be identified and controlled in accordance with the NUTECH Quality Assurance Manual and QEPs. Hardware identification requirements are determined during generation of design drawings and specifications such that the location and method of identification do not affect the fit, function, or quality of the item being identified.

11.10 Control of Special Processes

The control of special processes, such as nondestructive examination, chemical cleaning, welding, and heat treating shall be performed in accordance with the NUTECH Quality Assurance Manual and QEPs.

11.11 Inspection

Receipt inspections, and in-process and final inspections of NUTECH fabricated constructed, or erected items, systems, components, or structures shall be performed in accordance with the NUTECH Quality Assurance Manual and QEPs.

Disputes arising from a difference of opinion between QA/QC personnel are resolved by the appropriate Engineering Manager.

11.12 Test Control

Test control shall be accomplished in accordance with the NUTECH Quality Assurance Manual and QEPs.

11.13 Control of Measuring and Test Equipment

Measuring and Test Equipment shall be calibrated to NBS and controlled in accordance with the NUTECH Quality Assurance Manual and QEPs. The error of calibrating standards shall be no more than 1/4 of the tolerance of the equipment being calibrated unless limited by the state-of-the-art.

11.14 Handling, Storage and Shipping

Handling, storage and shipping shall be conducted in accordance with the NUTECH Quality Assurance Manual and QEPs. Special handling, preservation, storage, cleaning, packaging, and shipping requirements are established and accomplished by qualified individuals in accordance with predetermined work and inspection instructions.

11.15 Inspection and Test Status

The use of inspection and test status tags shall be accomplished in accordance with the NUTECH Quality Assurance Manual and QEPs.

11.16 Control of Nonconforming Items

The NUTECH Quality Assurance Manual and QEPs define the requirements and assign the responsibilities for the control, identification, segregation, documentation, and close-out of nonconforming items to prevent their inadvertent installation or use in fabrication, construction, or erection.

Nonconformance reports identify the item description and quantity, the disposition of the nonconformance, the inspection requirements, and signature approval of the disposition. They are retained in the QA files and are periodically analyzed to show quality trends and help identify root causes of noncon-

formances. Significant results are reported to responsible management for review and assessment.

Nonconforming items are segregated from acceptable items and tagged "rejected" or "conditional release" until properly dispositioned and closed out.

Nonconforming items disposition "use-as-is" are reported to the client when specified by contract.

11.17 Corrective Action

Corrective action for significant conditions adverse to quality shall be taken in accordance with the NUTECH Quality Assurance Manual and QEPs.

11.18 Records

The NUTECH Quality Assurance Manual and QEPs define the scope of the records program such that sufficient records are maintained to provide documentary evidence of the quality of items and the activities affecting quality.

11.19 Audits and Surveillances

A comprehensive system of planned and documented audits including audits of suppliers and site construction activities verifies compliance with all aspects of the NUTECH Quality Assurance Program and to determine the effectiveness of the program.

Audits are performed by certified lead auditors and are planned, performed, and documented in accordance with the NUTECH Quality Assurance Manual and QEPs.

Unannounced QA surveillances may be performed on activities affecting quality by the NUTECH Quality Assurance Administrator, or his designee, on an as-needed basis to further assure compliance with QA requirements.