



Nuclear Assurance Corporation
 24 Executive Park West
 Atlanta, Georgia 30329

NAC RECORDS MANAGEMENT
 CONTROLLED DOCUMENT
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PROCEDURE: QAM
 EFFECTIVE: 3-15-80
 REVISION NO.: 1
 EFFECTIVE: 10-7-80
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QUALITY ASSURANCE PROCEDURE

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				QA	Eng'g	Pres.
	10-7-80	1	Preface, 01.1, 03.1, 15.1, & 20.1	DAW	<i>[Signature]</i>	<i>[Signature]</i>

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TITLE: ORGANIZING FOR QUALITY ASSURANCE

PURPOSE: To ensure that the organization of the Quality Assurance Function is established and maintained to provide the independence to achieve corporate quality objectives and all contractual requirements.

REFERENCES: QAM 00.1

GENERAL: The assurance of quality at NAC is an interdisciplinary function which involves several organizations. Furthermore, quality assurance encompasses many diversified functions and activities and extends to various job levels within these organizations, including all executives and all employees whose activities affect quality. The implementation of quality assurance throughout the various functions of design, procurement, construction and operation at NAC must, therefore, be considered the direct responsibility of the organization performing the work and cannot be considered the sole domain of any single quality assurance group.

Persons or organizations charged with the development, the enforcement, or the measurement of the sufficiency and effectiveness of the quality assurance program shall have the authority and organizational freedom necessary to effectively discharge those responsibilities. Such persons or organizations shall be independent of direct pressures of cost, schedule or production, and their authority and organizational freedom shall be sufficient to (1) identify quality problems; (2) initiate, recommend, or provide solutions; (3) verify implementation of solutions; and (4) withhold and segregate nonconforming material or other action including stopping work for maintaining program integrity. Furthermore, they shall have direct access to responsible management at a level where appropriate action can be mandated.

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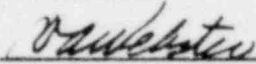
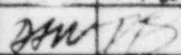
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Persons performing such quality assurance functions as checking, verifying or reviewing the work of another (functions which do not encompass the development, enforcement or measurement of the sufficiency or effectiveness of the NAC Corporate Quality Assurance Program), shall have authority and organizational freedom to a degree sufficient to properly discharge their assigned quality assurance responsibilities. However, when authority and organizational freedom are restricted for any person performing quality assurance functions, an established line of communication to responsible management must exist sufficient to prevent the suppression of those quality assurance functions and/or to resolve any disputes.

Final responsibility for the effectiveness and sufficiency of the NAC Corporate Quality Assurance Program shall reside with NAC; however, NAC may delegate the establishment and execution of the Program, or any part thereof, to other organizations. These organizations may, in turn, delegate responsibility for applicable portions of the Program to other organizations. Whenever such delegation occurs, the organizational structure for the assurance of quality of those to whom this responsibility is delegated shall, in principle, conform to this organizational policy to an extent consistent with the importance of their work to quality. Organization structuring for the assurance of quality by those to whom such responsibility has been delegated shall be subject to the approval of the delegator and the delegator shall adequately monitor the implementation of the organizational structuring for compliance with such approval.

The President of NAC is responsible for the maintenance of an effective quality assurance program for NAC. Responsibility for the establishment, administration and enforcement of the NAC Corporate Quality Assurance Program has been delegated

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by the President to the Corporate Manager, Quality Assurance. The Quality Assurance Department functions as a staff position reporting to the President, is independent of all other Company organizations, and assumes line responsibility for ensuring compliance with the NAC Quality Assurance Policy.

Also reporting to the President, but having direct line responsibility for design assurance and operations, is the Vice President and General Manager of the Engineering and Transportation Services (ETS) Division. Figure 1 indicates the organizational structure of NAC and of ETS.

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Any dispute between Quality Assurance and Engineering that cannot be resolved by the General Manager of ETS and the Corporate Manager of Quality Assurance shall be referred to the President for resolution.

PROCEDURE:

1. Engineering and Transportation Services (ETS) shall perform assigned quality functions for drawings, specifications, analyses, and other activities by assigning qualified personnel with organizational freedom and authority to:
 - 1.1 Identify potential quality problems.
 - 1.2 Initiate, recommend, or provide solutions.
 - 1.3 Verify implementation of solutions.
 - 1.4 Verify accuracy and completeness of item being reviewed.
 - 1.5 Communicate with responsible management.
2. Quality Assurance shall through scheduled and un-planned audits verify the accomplishment of the quality assurance function in-house and at NAC suppliers.

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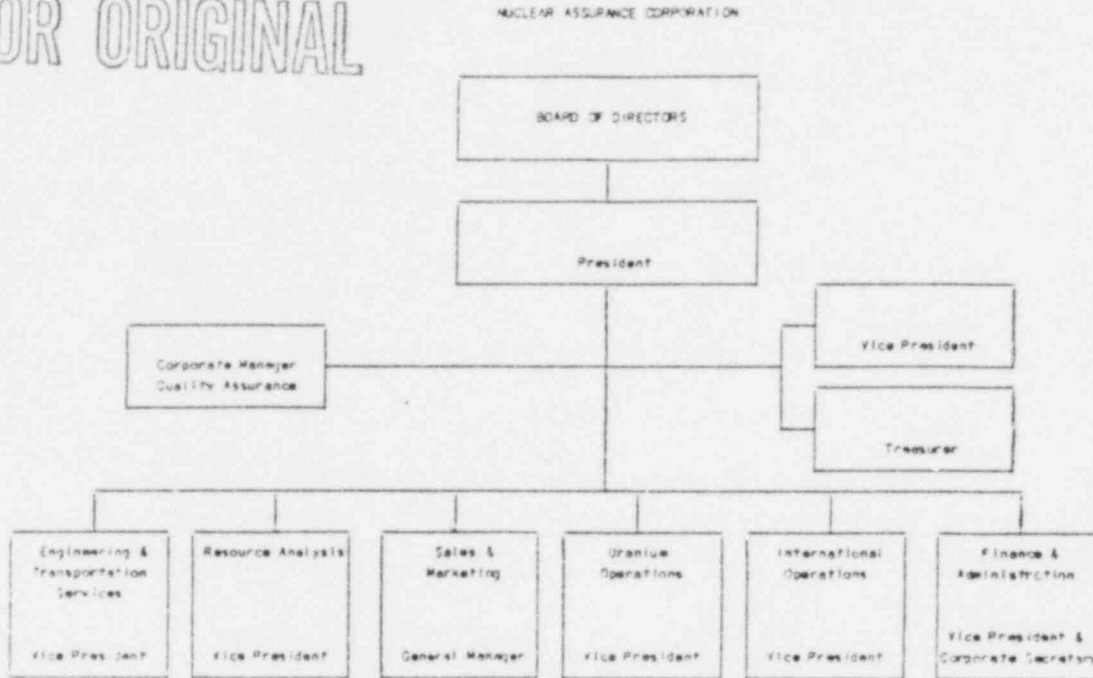
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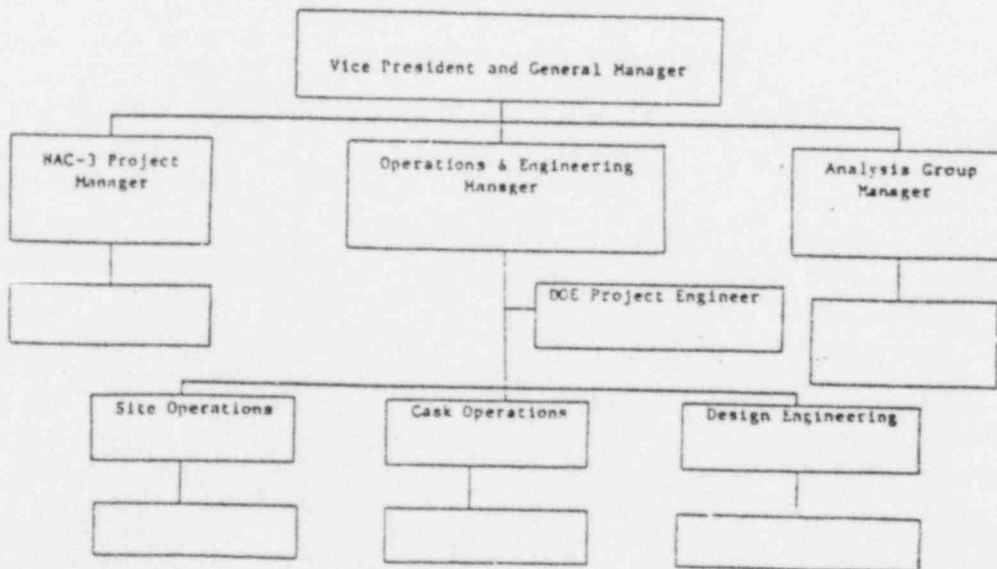
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FIGURE 1 Corporate and ETS Organization

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Engineering and Transportation Services



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3. The corporate total quality program and the implementation and adequacy of the QAM shall be audited at least annually.
4. The attached Audit Checklist shall be used as a guide for audits for this procedure.

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TITLE: DESIGN CONTROL

PURPOSE: To provide an independent review of program planning and design review from initial concepts through completion of design, manufacturing and inspection plans, and planning for customer support.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC that design shall be accomplished within the framework of a system of design controls. This system shall be structured to provide assurance of design adequacy through the planned, controlled and documented application of reviewing, checking, re-evaluating and/or verifying. The system shall assure the incorporation of all regulatory and contract requirements, engineering criteria and appropriate standards of quality into design documents and provide for the control of deviations from such quality standards. All characteristics of design such as physics, stress, thermal, hydraulic and accident analyses, compatibility of materials, accessibility for in-service inspection, maintenance and repair, and delineation of acceptance criteria for inspections and tests shall be performed within the framework of the system. Independent re-evaluation shall take the form of (1) design reviews, (2) a check of the adequacy of design by a competent person (not involved with the original design) using alternate or simplified calculational methods, and/or (3) an implementation of a suitably controlled testing program, performed under the most adverse design conditions.

When more than one design organization participates in related design activities, the system shall provide for the delineation and control of design interfaces, establish design interfaces and boundaries, identify areas of mutual responsibility, and prescribe the authority of the several design organizations so that each design organization is aware and beyond which one organization cannot proceed prior to action by interfacing design organizations.

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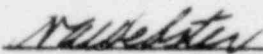
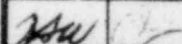
Changes in design, including field changes, shall be subjected to the same rigorous examinations and re-evaluations as the original design, and shall be performed within the framework of the design control system. Design changes may be made by technically competent personnel when delegated by NAC but all such changes are approved by NAC. All changes are reviewed for effectivity, retroactivity, retrofit, and for changes required in the Quality Assurance Plan.

A flow diagram of the Design Assurance Function is shown in Figure 1.

PROCEDURE:

1. Engineering and Transportation Services (ETS) shall:
 - 1.1 Maintain a continuing review of all criteria pertinent to the technical and performance requirements of each program including:
 - 1.1.1 All characteristics of design such as physics, stress, thermal, hydraulic, and accident analysis.
 - 1.1.2 Compatibility of materials.
 - 1.1.3 Accessibility for in-service inspection.
 - 1.1.4 Maintenance and repair.
 - 1.1.5 Delineation of acceptance criteria for in-process inspections and tests, qualification and/or functional tests, and final acceptance criteria.
 - 1.1.6 Specify traceability of materials, special calibration requirements, and shelf-life limitations.
 - 1.2 Identify safety related structures, systems, and/or components and their critical characteristics which will require:

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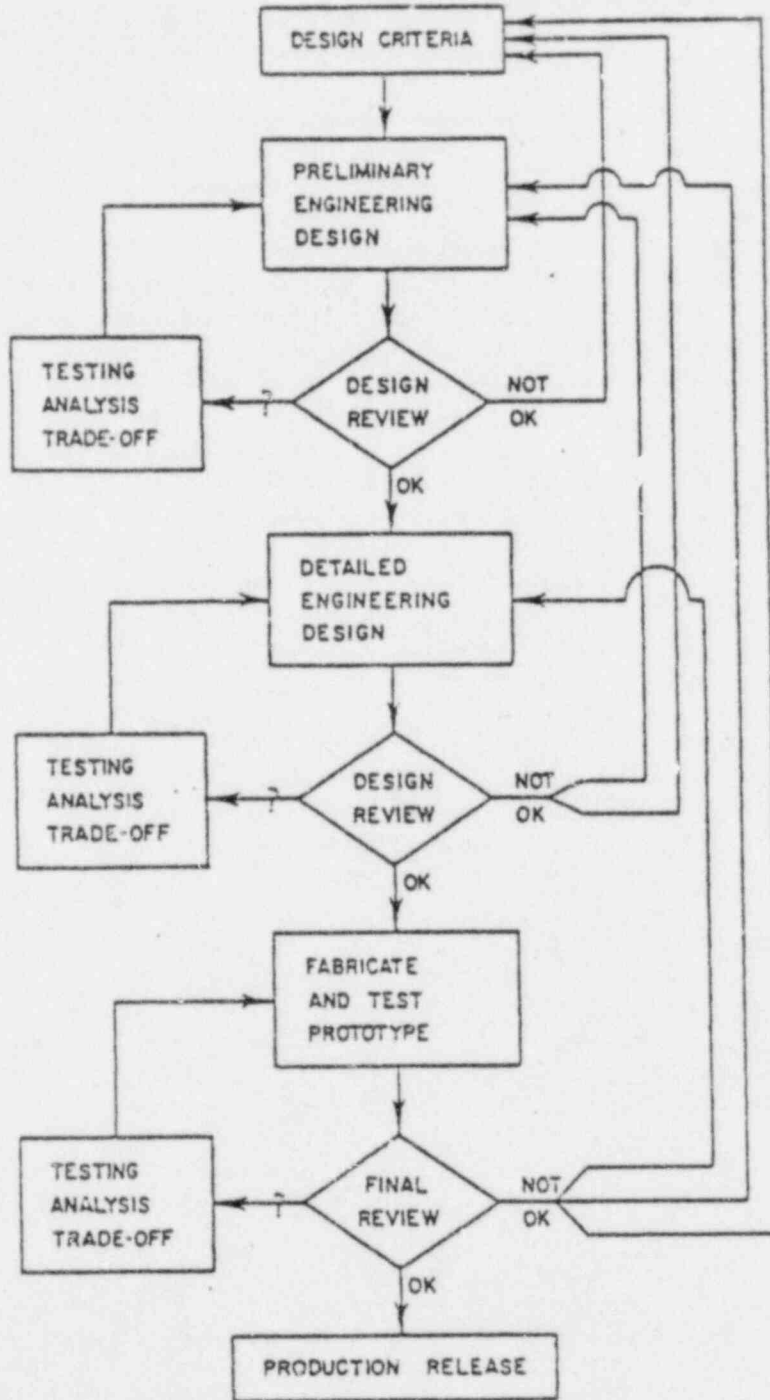
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FIGURE 1
DESIGN ASSURANCE



□ PROGRAM TECHNICAL ACTIVITY
 ◇ PROGRAM DESIGN REVIEW COMMITTEE ACTIVITY

DESIGN ASSURANCE is an engineering iterative process of design, analyze and/or test and then redesign until objectives are achieved. It is first applied to the total design concept for allocating/specifying parameters of parts, components, and systems. The same process is then applied for each of the portions of the total. Finally, the portions are integrated into the end product and again evaluated. Finally, the complete specifications and drawings are reviewed and checked before final release for procurement and production.

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- special controls
- acceptance test criteria, and/or
- preventative maintenance actions.

Safety related items are those which could affect public or employee safety in the event of a failure or malfunction when being operated by authorized personnel.

- 1.3 Through the iterative process of design, analyses and test, develop drawings and specifications for a complete description of the product being designed.
- 1.4 Conduct and document design reviews with engineering and quality assurance personnel with the technical expertise required for the design concept under review.
- 1.5 Maintain documentation, e.g., a design log, of the development of the final design together with documentation of reasons for all changes.
- 1.6 Using technically competent personnel independent of the designer, review all drawings and specifications prior to final approval for release. Apply the same review procedure for all design changes made to the initial release.
- 1.7 Maintain a list of all design errors or deficiencies including material applications, that could adversely affect safety-related structures, systems, and components and corrective action to preclude repetition. This should include items found during design, in fabrication, and from field usage.
- 1.8 Review the suitability of all standard, commercial (off-the-shelf) material or components previously approved for use for suitability prior to selection.

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- 1.9 Utilize valid industry standards and specifications for the selection of suitable materials, parts, equipment and processes.
- 1.10 Specify identification of parts, assembly, and components as required and when there are changes, reidentification.
- 2. Quality Assurance shall:
 - 2.1 Maintain a continuing review of the engineering design activity as outlined in 1. above with particular attention to:
 - 2.1.1 Safety-related designated structures, systems, and components and those characteristics that must be controlled during manufacturing and verified by inspection.
 - 2.1.2 Design details and their inspectability.
 - 2.1.3 Applicability and currency of national and industry standards on drawings and in specifications.
 - 2.1.4 Conformance to all regulatory and contractual requirements.
 - 2.1.5 Operation, maintenance, and repair considerations.
 - 2.2 Initiate a preliminary inspection plan of items that will require special inspections and tests, verifying inspection acceptance criteria specified by engineering, and utilization of nondestructive test methods.
 - 2.3 Participate in all design reviews.
- 3. The Audit Checklist for this procedure shall be utilized to assist in verifying basic elements in the design assurance program in-house and at suppliers.

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QUALITY ASSURANCE PROCEDURE

- TITLE: NONCONFORMING MATERIAL, PARTS, OR COMPONENTS
- PURPOSE: To ensure that material, when first found to be non-conforming to engineering requirements, be immediately identified and properly withheld to preclude inadvertent commingling with acceptable material. Immediate reporting of the defect shall be made by either an NAC supplier or NAC employee if the same material had been previously delivered to a customer as required by 10CFR21 (Corporate Policy VII.3).
- REFERENCE: QAM 00.1
- GENERAL: It is the policy of NAC to establish measures to prevent improper operation or the inadvertent use or installation of materials, parts, components, or systems which do not conform to the requirements of engineering drawings, applicable standards, codes, license commitments, procurement specifications, or test procedures. These measures shall, as appropriate, provide for the identification, documentation, segregation, disposition, corrective action, and notification to affected organizations including reports in compliance with 10CFR21, 10CFR50.55(e), and/or 10CFR71.61.
- PROCEDURE:
1. All Suppliers to NAC shall:

When required by purchase order or contract:

 - 1.1 Document all nonconformances to purchase order or contract requirements and immediately withhold the material.
 - 1.2 Subject each nonconformance report to a review by the Material Review Board consisting of approved Engineering and Quality Assurance representatives. The non-conforming material shall be reviewed and the following decisions considered:
 - 1.2.1 If in receiving inspection, return to supplier for correction or hold pending receipt of required data, e.g. certifications.

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- 1.2.2 Scrap if nonconformance can not be reworked or repaired to an equal or better condition than specified.
- 1.2.3 Rework/Repair if the nonconformance can be fixed to a condition equal to or better than specified.
- 1.2.4 Complete if a specified operation(s) can return the material to its specified configuration.
- 1.2.5 Use-as-is if the nonconformance is determined to be a minor deviation and form, fit, or function will not be impaired.
- 1.3 Submit all suggested dispositions of Rework/Repair or Use-as-is to NAC for ETS and Quality Assurance review and evaluation. NAC may approve or reject the requested action.
- 1.4 Submit all other nonconformance reports - material found to be nonconforming in receiving inspection, Scrap, or Complete - to NAC for review and follow-up for corrective action effectiveness.
- 1.5 Immediately segregate and positively identify material that is designated Scrap until disposal to preclude the possible use on a product to be delivered to NAC or its customer(s).
- 1.6 Identify and document the cause of the defect(s) on all nonconformance reports and specify corrective action to be taken to preclude a recurrence.
- 1.7 Follow-up and verify that the corrective action committed effectively corrected the cause.
- 1.8 Include all nonconformance reports and related data in the manufacturing inspection records.
- 1.9 Periodically analyze all nonconformance reports for quality trends and report the results to management for review and assessment.

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2. Engineering and Transportation Services (ETS) shall:

- 2.1 Review and evaluate all nonconforming reports from suppliers.
- 2.2 Technically evaluate and document the accept or reject decision for all supplier suggested dispositions of Repair/Rework or Use-as-is.
- 2.3 If the supplier's disposition is unacceptable, consider alternative actions that may be acceptable-document and report to supplier.
- 2.4 Approve the application of standard repairs to be specified in the contract or purchase order, e.g., weld repair as specified in the ASME Boiler and Pressure Vessel Code.

3. Quality Assurance shall:

Verify through audits, survey, and/or source inspection that all NAC suppliers have documented and implemented procedures for:

- 3.1 Identification and segregation of all nonconforming material, parts, components, or work-in-process with appropriate controls to preclude the inadvertent commingling with accepted material.
- 3.2 Appropriate documentation of the nonconformance and corrective action with reporting as applicable by contract or purchase order.
- 3.3 Utilizing re-acceptance inspection criteria of reworked or repaired material ensure that it meets all requirements originally specified.

4. Quality Assurance shall:

- 4.1 Review and accept or reject all supplier suggested dispositions or an alternate disposition proposed by NAC engineering from a quality point of view and verify that the reinspection criteria will ensure the reworked or repaired material meets all requirements originally specified.

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Each disposition shall be reviewed to ensure that the performance of the final product is not degraded and that all contractual and regulatory requirements can be met.

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4.2 Nonconformance reports documented at NAC and at suppliers shall be periodically analyzed to show quality trends and submit reports to management for review and assessment.

5. The Designated Quality Assurance Representative (performing the receiving inspection of material received at (NAC) shall:

Verify conformance to all requirements of the purchase order or contract. If there are any nonconformances found, the material shall be withheld and the nonconformance and related pertinent data documented. All material so documented will be returned to the supplier for correction and action to preclude future nonconformances. A copy of this documentation shall be filed in the Supplier History Folder.

Prior to returning the material to the supplier, the nonconformance may be reviewed by ETS and by Quality Assurance for determining if it is acceptable for "Use-as-is". This decision shall be documented and filed.

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TITLE: CORRECTIVE ACTION

PURPOSE: To ensure appropriate managerial action is taken on each documented nonconformance to determine the cause of the defect and take appropriate corrective action.

REFERENCE: QAM 00.1

GENERAL: It is the policy to promptly identify and correct conditions such as failure, malfunctions, defective material, or equipment, or other nonconformances which are adverse to the quality of material, components, structures, systems or operations. All documented nonconformances shall be investigated for determining the cause and then action taken to prevent recurrence.

PROCEDURE:

- a- 1. Engineering and Transportation Services (ETS) and Quality Assurance personnel shall document deficiencies within NAC operations on a Corrective Action Request form, as shown in Figure 1 for management concurrence that a deficiency exists or improvements should be made on future programs. All deficiencies shall be analyzed for disposition and corrective actions as to cause which are to be taken by a specified date. Improvement lists shall be maintained and reviewed for application in future programs.
- 2. Engineering and Transportation Services (ETS) shall:
 - r- 2.1 Through design reviews, independent checking of drawings and specifications, test and development programs assure the adequacy of the product definition. All errors found shall be evaluated and action documented for future reference.
 - 2.2 Review all corrective action commitments from suppliers for technical adequacy and/or if a design change would be the most effective action to preclude recurrence.
- 3. Quality Assurance shall:
 - 3.1 Ensure that all material received at NAC is in accordance with all procurement requirements. For any non-

<u>APPROVED:</u> <i>[Signature]</i> Corporate Manager Quality Assurance	<u>REVISION:</u>	0	1				
	<u>DATE:</u>	3-15-80	10-7-80				
	<u>APPROVAL:</u>	<i>[Signature]</i>	<i>[Signature]</i>				



Nuclear Assurance Corporation
 24 Executive Park West
 Atlanta, Georgia 30329

NAC RECORDS MANAGEMENT
 CONTROLLED DOCUMENT
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PROCEDURE: QAM 16.1
 EFFECTIVE: 3-15-80
 REVISION NO.: 1
 EFFECTIVE 10-7-80
 PAGE 2 OF 3

QUALITY ASSURANCE PROCEDURE

conformance, the cause of the defect shall be determined and corrective action as to cause shall be requested of the supplier. This request and the action taken shall be documented in the Supplier History Folder for consideration in future procurement and for follow-up on the effectiveness of the action.

- 3.2 Require all fabricators of NAC designed products to have a corrective action program for the prompt correction of the cause for each nonconformance documented as a part of their quality assurance program.
- 3.3 Through audits, surveys, and/or source inspection verify that an effective corrective action program at all suppliers is implemented and that closure is effected for each action.
- 3.4 Maintain a quality reporting system which will highlight the effectiveness of a supplier's corrective action system for NAC program management and for their action whenever there are recurrences.

APPROVED:

Paul Winters

Corporate Manager
 Quality Assurance

REVISION:

DATE:

APPROVAL:

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3-15-80	10-7-80						
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 Atlanta, Georgia 30329

NAC RECORDS MANAGEMENT
 CONTROLLED DOCUMENT


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 EFFECTIVE
 REVISION NO. 1
 EFFECTIVE 10-7-80
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QUALITY ASSURANCE PROCEDURE

Figure 1 - Corrective Action Request Form

-a-

 Nuclear Assurance Corporation 24 Executive Park West Atlanta, Georgia 30329 CORRECTIVE ACTION REQUEST	CAR NO. _____
	PREVIOUS CAR NO. OR NONCONFORMANCE REPORT NO. _____
	DATE _____
TO: _____ <small>MANAGER OF AFFECTED DEPARTMENT OR SUPPLIER</small>	PROCEDURE OR DOCUMENT NO. _____
1. IDENTIFICATION OF CONDITION DESCRIPTION OF DEFICIENCY 	
APPROVED BY _____	PREPARED BY _____
2. _____ <small>TO BE COMPLETED BY MANAGER OF THE AFFECTED DEPARTMENT OR SUPPLIER</small>	
CORRECTIVE ACTION WILL BE COMPLETE BY _____	MANAGER OF COMPANY _____
3. FEEDBACK COMMENTS 	
4. CORRECTIVE ACTION VERIFIED BY _____ DATE _____	

POOR ORIGINAL

APPROVED:

[Signature]

Corporate Manager
 Quality Assurance

REVISION: 1

DATE: 10-7-80

APPROVAL: *[Signature]*

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10-7-80							
<i>[Signature]</i>							



Nuclear Assurance Corporation
 24 Executive Park West
 Atlanta, Georgia 30329

NAC RECORDS MANAGEMENT
 CONTROLLED DOCUMENT

COPY NO. 12

PROCEDURE: QAM 20.1
 EFFECTIVE: 3-15-80
 REVISION NO.: 1
 EFFECTIVE: 10-7-80
 PAGE 1 OF 1

QUALITY ASSURANCE PROCEDURE

NAC-1 SPENT FUEL SHIPPING CASKS HANDLING & MAINTENANCE PROCEDURES

Handling and maintenance procedures for the NAC-1 spent fuel shipping casks are controlled documents and are issued as a part of the Engineering and Transportation Services Procedures. A list of the current procedures are shown below:

<u>Number</u>	<u>Title</u>	<u>Revision</u>	<u>Dated</u>
510	NAC-1 Spent Fuel Shipping Cask Transportation Emergency Procedure	1	11/79
520	NAC-1 Spent Fuel Shipping Cask Handling and Loading Procedure	2	11/79
525	NAC-1 Spent Fuel Shipping Cask Handling and Unloading Procedure	2	11/79
530	NAC-1 Cask Annual Maintenance Procedure	2	11/79
540	NAC-1 Spent Fuel Shipping Cask Quarterly Maintenance Procedure	3	11/79
550	NAC-1 Neutron Shield Tank Rupture Disk Replacement Procedure	2	11/79
555	NAC-1 Relief Valve Rebuilding/Replacement Procedure	2	11/79
560	NAC-1 Ball Valve Maintenance Procedure	2	11/79
565	NAC-1 Cask Cavity Rupture Disk Replacement Procedure	1	11/79
570	NAC-1 Cask Lifting Yoke Load Test Procedure	0	11/79
-r- 580	NAC-1 Cask Cavity Measurement Procedure	2	8/80
585	NAC-1 Cask Thermal Test Procedure	1	11/79
590	NAC-1 Cask Neutron Shield Tank Freeze Point Determination	2	11/79
591	NAC-1 Cask Neutron Shield Tank Boron Analysis	1	11/79

APPROVED:

[Signature]

Corporate Manager
 Quality Assurance

REVISION:

DATE:

APPROVAL:

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