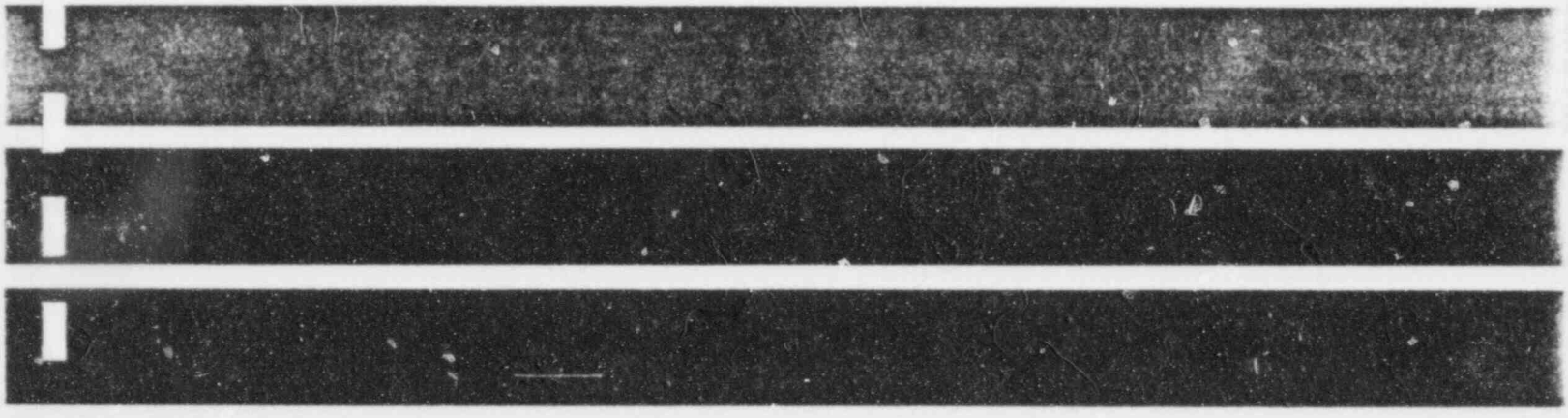
QUALITY ASSURANCE MANUAL



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NUCLEAR ASSURANCE CORPORATION

NUCLEAR ASSURANCE CORPORATION

QUALITY ASSURANCE MANUAL

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QUALITY ASSURANCE PROCEDURE

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QUALITY ASSURANCE PROCEDURE

PREFACE

The Quality Assurance procedures in this manual implement the basic policy for quality of products and services of the Nuclear Assurance Corporation (NAC). The Quality Assurance related corporate policies and procedures are included as a reference section to this manual and will be maintained to the latest revision.

The Quality Assurance Manual (QAM), through individual procedures provides detailed requirements for the corporate quality assurance policy which meets the requirements of 10CFR50, Appendix B, and 10CFR71, Appendix E. Procedural coverage is included for design assurance, product quality assurance, and operating and maintenance requirements. It is to be applied in a graded approach depending on the complexity, criticality, and safety requirements of each program.

Each QAM procedure is circulated within NAC in draft form with a request for "Approval" or "Approved as Noted" with the appropriate signature. All comments shall be reviewed and mutually resolved, using additional drafts if necessary. The initial release of the QAM and all subsequent revisions will be transmitted with a memo approved by the Corporate Manager, Quality Assurance. All comments received on drafts will be retained in the specific procedure folder. Additional procedures will be prepared under the appropriate section or in subsequently identified sections for special coverage as required for contracts if not adequately covered in the basic manual.

This manual has been completely rewritten and supercedes previously published Quality related Procedures and Instruction.

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TITLE: QUALITY ASSURANCE MANUAL (QAM)

PURPOSE: To clearly identify with procedures the Quality Assurance Program requirements as a portion of the total corporate quality of products and services.

REFERENCES:

1. NAC Corporate Policy I.11, "Quality of Products and Services"
2. NAC Corporate Policy VII.1, "Quality Assurance"
3. NAC Corporate Policy VII.2, "Corporate Quality Assurance Program"
4. NAC Corporate Policy VII.3, "Reporting of Defects and Nonconformances" (10CFR21)
5. 10CFR50 Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"
6. 10CFR71 Appendix E, "Quality Assurance Criteria for Shipping Packages and Radioactive Material"
7. NRC Regulatory Guide 7.xx (Draft), "Establishment of a Quality Assurance Program for Shipping Packages for Irradiated Fuel, High Level Waste, and Plutonium," dated 15 May 1978.

GENERAL: The total Quality Program for the Nuclear Assurance Corporation has been defined in Corporate Policy I.11 (Reference 1). The quality assurance portion of the total program is defined in Policy VII.1 (Reference 2). In the Corporate Quality Assurance Plan (Reference 3), the basic elements are outlined for implementation to meet the basic requirements of 10 CFR50 Appendix B and 10CFR71 Appendix E. Because of the total response required to meet the requirements of 10CFR21, Corporate Policy VII.3 (Reference 4), defines the internal actions by the various organizations and with its suppliers, customers, and the U.S. Nuclear Regulatory Commission.

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The basic Quality Assurance Program plan from Reference 3 is then divided into sections of the QAM with procedures for implementation of the plan. These requirements will be applied in a graded approach for each program, i.e., applied to an extent consistent with their importance to safety and to contractual requirements.

A Matrix of the NAC Quality Assurance Procedures by section is shown in Table 1 with the applicable requirements of 10CFR criteria and other Quality Assurance requirement documents.

DEFINITIONS: Quality Assurance - comprising all those planned and systematic actions necessary to provide adequate confidence that a system or component will perform satisfactorily in service.

Component - a part, assembly, or combination of parts, subassemblies or assemblies mounted together to perform a design function.

PROCEDURE:

1. Engineering and Transportation Services (ETS) and Quality Assurance shall:

   1.1 Prepare procedures for systematic control of the in-house Quality Assurance Program and for the control of its suppliers. The procedures shall be updated as required and additional procedures shall be prepared for unique requirements for specific contracts.

   1.2 Detailed checklists for each procedure shall be prepared and utilized both for in-house or for supplier audits. The specific items identified on the list will be only a guide and each audit reviewer shall supplement the list as applicable to the purpose and objective of his audit.

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TABLE 1 - Matrix Quality Assurance Requirements

NAC Manual		10CFR50 App B 10CFR71 App E	MIL-Q 9585A	ASME NA4000	ANSI N45.2	NQT F2-2	IAEA C-QA
00.1	Quality Assurance Manual						
01	Organization	I	3.1	4210	3	2.3	1.,1.1,1.2,1.3
02	Quality Assurance Plan Review and Approval of Plan	II	3.2 1.2	4111 4112,4120	2 Not specified	2.2 2.2.2	2.,2.1,2.3
03	Design Control	III	4.1	4410	4	3	5.,5.1,5.2,5.3
04	Procurement Document Control	IV	5.1 5.2	4430 4441	5	4	6.,6.1,6.2
05	Instructions, Procedures and Drawings	V	6.2	4440 4420	6	2.4 5.3	3.2
06	Document Control	VI	4.1	4430	7	3.4,5.7	4.,4.1,4.2,4.3
07	Control of Purchased Materials	VII	5.1	4431	8	4	6.3,7.
08	Identification and Control of Materials, Parts and Components	VIII	6.1 No traceability	4442	9	5.4	7.1
09	Control of Special Processes	IX	6.2	4451	10	5.5	8.
10	Inspection	X	6.3	4510	11	5.6	9.,9.1
11	Test Control	XI	6.3	4510 4520,4530	12	5.6	9.2
12	Control of Measuring and Test Equipment	XII	4.2,4.3 4.4,4.5	4600	13	5.8	9.3
13	Handling Storage and Shipping	XIII	6.4	4460	14	5.12	7.2
14	Inspection, Test and Operating Status	XIV	6.7	4452 4540	15	5.6.4	9.4
15	Nonconforming Materials, Parts or Components	XV	6.5	4550	16	5.10	10.,10.1,10.2
16	Corrective Action	XVI	3.5	4800	17	2.6	11.
17	Quality Assurance Records	XVII	3.4	4900	18	2.4	12.,12.1,12.2
18	Audits	XVIII	None	4700	19	8	13.,13.1-13.2
19	Maintenance & Control	NRC REG. GUIDE 7.9(Dra/T)	--	--	--	--	--

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1.3 Each procedure shall be clearly identified as QAM - xx.x on each page for the Quality Assurance Manual as well as the revision number and the effective date. On revisions, the symbols (a), (d), and/or (r) shall be used in the margin to show "additions", "deletions", and/or "revisions".

1.4 Procedures shall be distributed in controlled manuals with an Index indicating the procedure by Title, Number, and Revision.

2. Quality Assurance Manual

The Quality Assurance Manual shall consist of the Procedures required for the implementation of the Quality Assurance Program. These will be controlled documents with issuance to individuals involved in the mandatory execution of the Quality Program. The QAM will be included in the indoctrination and training of all new employees and in the retraining of all employees in quality related jobs.

3. Distribution and Control

3.1 Each controlled copy of the QAM will be serialized by a consecutive numbering system. Manual recipients shall be identified in the Quality Assurance Office.

3.2 Revisions to the manual shall be distributed by the NAC inter-office mail system and external to NAC by the United States mail. An attachment, "Manual Issue and Revision Notification Form," shall accompany revisions and attest to the recipient's receipt of the revision(s) and the destruction or return of the superseded pages as directed by the form by returning the attachment.

3.3 A revised Inde will be issued with each revision showing the current effective revisions.

3.4 The Quality audit program shall include review and verification of the status of individual manuals as compared with the records maintained in the QA office.

3.5 Uncontrolled copies may be distributed, at the discretion of the QA Manager, with each page clearly marked "Uncontrolled". Bound copies will only be marked on the cover and

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titlepage.

3.6 Controlled manuals may be assigned to customers who require them by contract. Revision control will be the same as for NAC employees.

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AUDIT CHECKLIST

At NAC or any supplier under review:	Yes	No	N/A	*
1. Does the Manual Title page include a: Document Title, Document Number, and Company Identification including office location?	☐	☐	☐	☐
2. Is each Revision noted on the Index of each Policy or Procedure?	☐	☐	☐	☐
Each revision dated and signed by responsible management individual?	☐	☐	☐	☐
3. Is there a Table of Contents?	☐	☐	☐	☐
Matrix of Regulatory and/or Contractual Provisions?	☐	☐	☐	☐
QAM Procedure for all requirements?	☐	☐	☐	☐
Any Exceptions?	☐	☐	☐	☐
4. Is the Manual up to date?	☐	☐	☐	☐
5. Supplementary data in Appendix?	☐	☐	☐	☐

List

_____ . _____ . _____

ORGANIZATION BEING REVIEWED: _____

PERSONS CONTACTED: ADDRESS: _____

_____ _____

_____ _____

_____ PHONE NO: _____

SIGNED: _____ TITLE: _____

DATE: _____ ORGANIZATION: _____

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* See Attached Sheet

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QUALITY ASSURANCE PROCEDURE

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 executvies 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.

Person 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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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 and 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.

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 unplanned audits verify the accomplishment of the quality assurance function in-house and at NAC suppliers.

3. The attached Audit Checklist shall be used as a guide for audits for this procedure.

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FIGURE 1
Corporate and
ETS Organization

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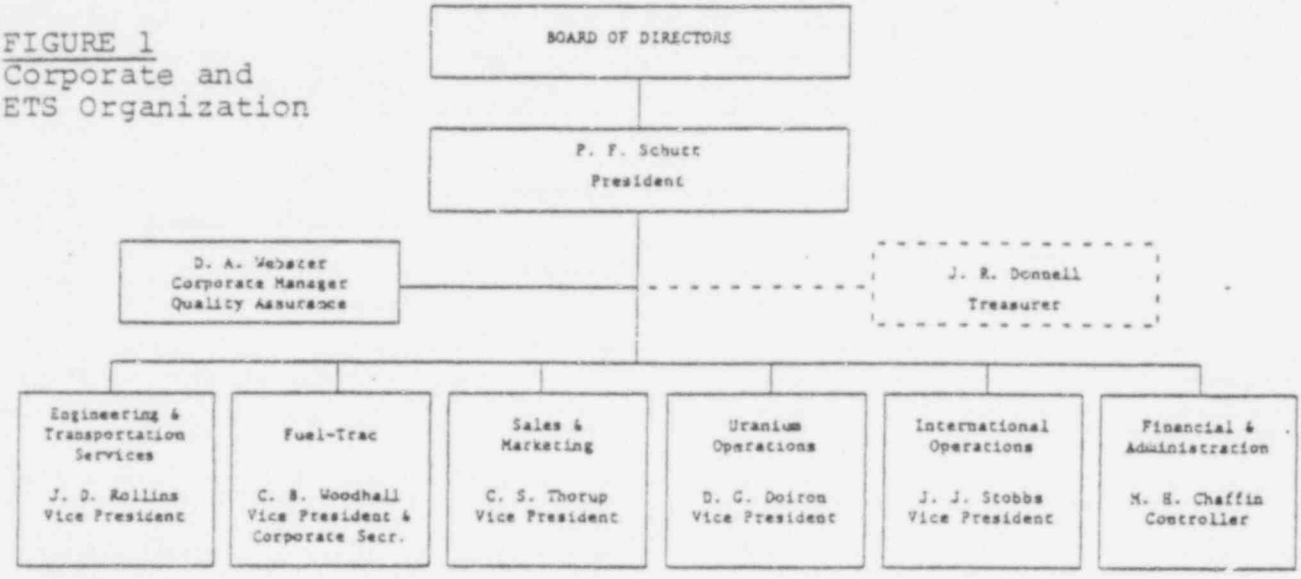
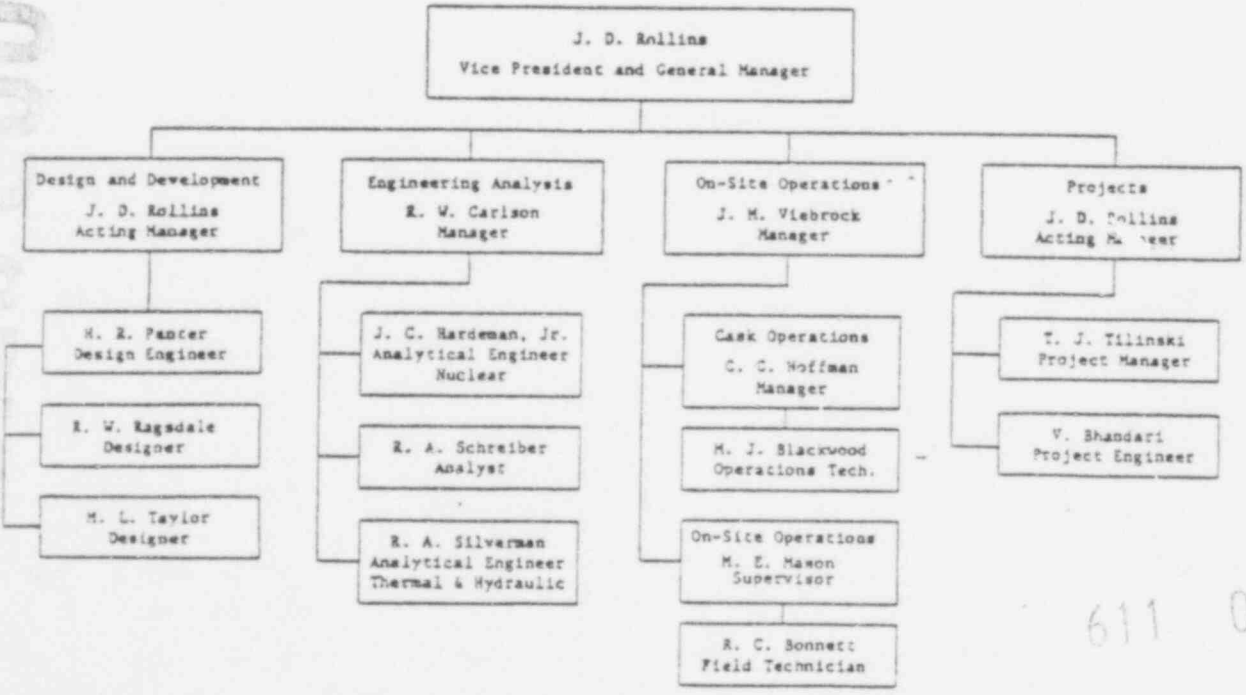


Engineering and Transportation Services



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AUDIT CHECKLIST

At NAC or supplier being reviewed, check:

		Yes	No	N/A	*
				(N/A - Not Applicable)	
1.	Established and implemented a QA program?	☐	☐	☐	☐
	From policy to job instructions?	☐	☐	☐	☐
2.	Are authority and duties of persons and organization clearly established and delineated in writing?	☐	☐	☐	☐
3.	Is authority delegated to supplier(s)?	☐	☐	☐	☐
	Is surveillance implement for control by company?	☐	☐	☐	☐
	Contracted out?	☐	☐	☐	☐
4.	Does organization have sufficient freedom to administer QA program?	☐	☐	☐	☐
5.	Control/stop processes or operations for positive corrective action?	☐	☐	☐	☐
6.	Organizational independence of person performing quality functions?	☐	☐	☐	☐
7.	Organization provides quality reporting?	☐	☐	☐	☐
	QA Audits?	☐	☐	☐	☐
	Preplanned/regularly?	☐	☐	☐	☐
	Selective?	☐	☐	☐	☐
8.	Independent of pressure from schedule and cost?	☐	☐	☐	☐

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AUDIT CHECKLIST

		Yes	No	N/A	*
9.	Direct access to responsible management where appropriate action can be required? _____	☐	☐	☐	☐
10.	Designated qualified personnel for accomplishing quality function? _____	☐	☐	☐	☐
	Re-training program? _____	☐	☐	☐	☐
	Certification program? _____	☐	☐	☐	☐
	Identify _____	☐	☐	☐	☐
11.	Other (Specify)				
	_____	☐	☐	☐	☐
	_____	☐	☐	☐	☐

ORGANIZATION BEING REVIEWED: _____

PERSONS CONTACTED: ADDRESS:

_____ _____

_____ _____

_____ _____

_____ PHONE NO: _____

SIGNED: _____ TITLE: _____

DATE: _____ ORGANIZATION: _____

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* See Attached Sheet

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QUALITY ASSURANCE PROCEDURE

TITLE: QUALITY PROGRAM PLANNING

PURPOSE: To develop quality assurance planning at the proposal stage of all programs and prepare a Quality Assurance Plan after contract award. Depending on the complexity of the program and the specific contract requirements, this plan may be the application of pertinent portions of the Quality Assurance Manual or may require the preparation of a separately published plan and/or the addition of specific implementing procedures.

REFERENCE: QAM 00.1

GENERAL: The Quality Assurance Program for NAC consists of the quality assurance programs of (1) NAC, (2) contractors, design specialists/consultants, suppliers, etc., under contract to NAC and (3) their subtier suppliers. The quality assurance programs of organizations under contract to NAC and the programs of their suppliers are subject to approval by the NAC Corporate Manager, Quality Assurance prior to inclusion in the NAC program.

The NAC Corporate Quality Assurance Program complies with the quality assurance requirements of 10CFR50, Appendix B; 10CFR71, Appendix E; and related statutory/regulatory and customer contractual requirements. The programs of contractors, consultants, suppliers, and their sub-tier suppliers which are a part of the overall NAC program, shall comply with applicable quality assurance criteria of the above regulations and as specified by contract.

The NAC Program is documented by this policy, and implemented through procedures and instructions. These courses of action are delineated in writing, prepared prior to the start of activity, specific in nature, bear management approval and shall be continuously controlled. They are so designed that activities affecting quality are accomplished under suitably controlled conditions which include (1) the use of appro-

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priate equipment, (2) suitable environmental conditions for accomplishing the activity, (3) trained personnel, and (4) assurance that all prerequisites for the given activity have been satisfied. The program shall take into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality and the need for verification of quality by inspection and test.

Assessment of the status and adequacy of the NAC Program and the effectiveness of the NAC Quality Assurance Function is made on a continuing basis under the audit program. The NAC quality assurance activities and those of organizations under contract to NAC are audited under the direction of the NAC Quality Assurance Department in accordance with a preplanned audit schedule with additional audits as required. Responsibility for the assessment of the quality assurance activities of suppliers to NAC contractors is inherent in their contractual requirements. All contacts by NAC with any supplier to a NAC contractor will only be made through that contractor.

The NAC quality program provides for a continuing program for indoctrination and training of all personnel performing quality related functions as to the purpose, scope, and implementation instructions. This documented program is maintained through retraining, re-examination, and/or recertification not only at NAC but also at suppliers when required.

All Requests for Quotation (RFQs) and Requests for Proposals (RFPs), as well as NAC originated projects or unsolicited proposals, initial program plans will be outlined in a Program Management Plan or in a Project specification. The Program Management Plan is usually prepared for "design and build" programs while the Project Specification is oriented to technical services.

In all programs, Engineering shall identify all safety related structures, systems, and components and designate critical characteristics which will require special manufacturing and inspection planning and/or

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acceptance testing, both for initial fabrication and for operations and maintenance.

The implementing Quality Assurance Plan to meet corporate policy and contract requirements may be a separate plan or be included in the program planning documents with the applicability of the Quality Assurance Manual applied in a graded approach depending on the complexity and criticality of the program.

DEFINITIONS: Program Management Plan - a basic management document covering the scope of the work to be performed, plans for accomplishing it, manpower requirements and schedule, and other pertinent data.

Project Specification - usually applicable to services and will establish the applicable contract specifications, codes, documents, and quality assurance requirements which will constitute the parameters to which the level of work is to be accomplished.

PROCEDURE:

1. Engineering and Quality Assurance shall:

1.1 Review each RFP, RFQ, and NAC projects or unsolicited proposal for the timely identification of quality requirements. This review shall consider those elements of the program that can be accomplished with existing capabilities and procedures and those where outside assistance and new systems and procedures would be required. Input shall be made on suggested and/or required changes which may be required for pricing and contract negotiations. The normal flow for developing these inputs for contract negotiations is summarized in Figure 1.

1.2 Work with program management after contract award in finalizing a documented Design Assurance and Quality Assurance Plan considering the basic planning outlined in Figure 2. The documented plan may be:

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1.2.1 A separately published and maintained plan

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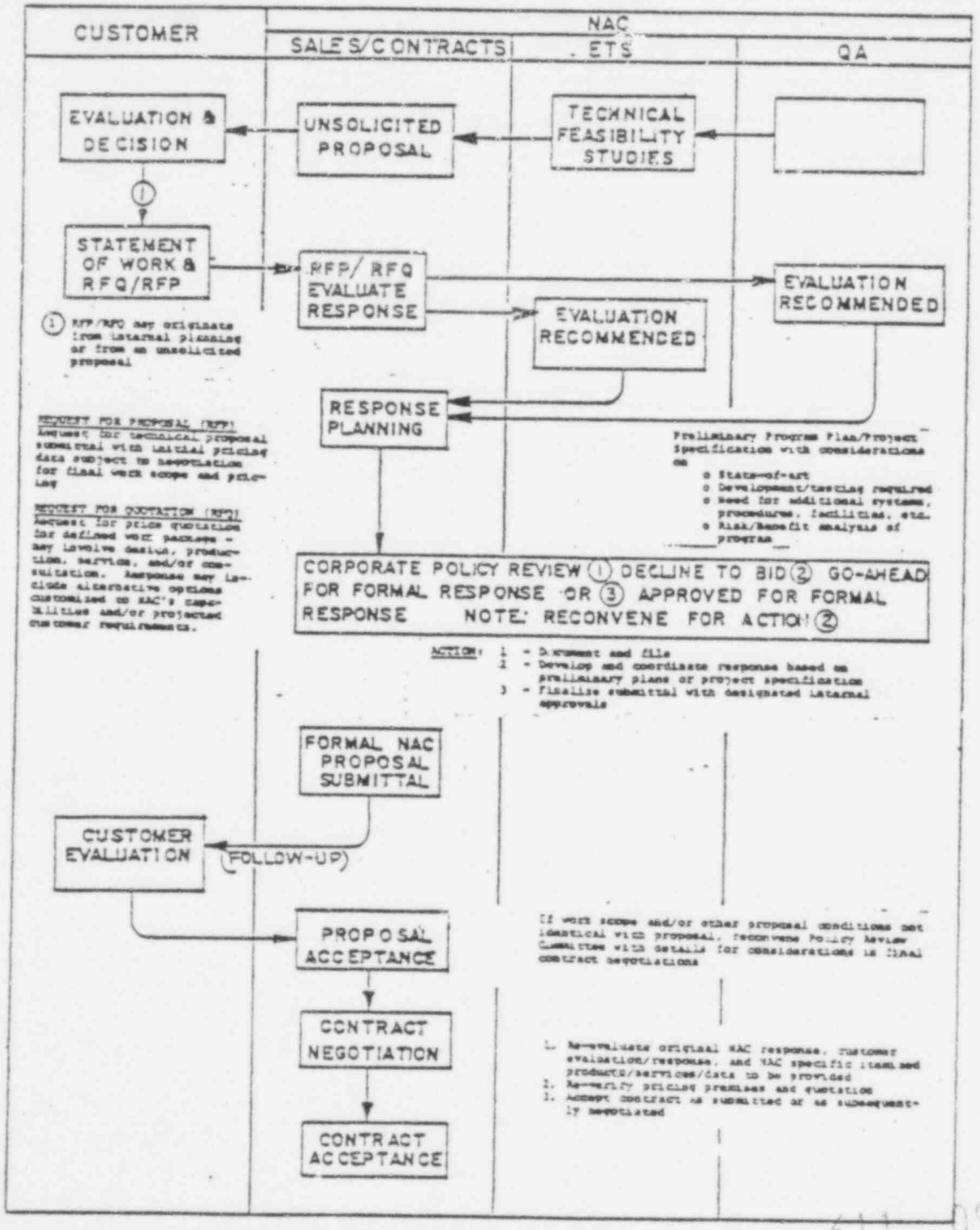
FIGURE 1 Precontract Program Planning



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—A— ADDITION

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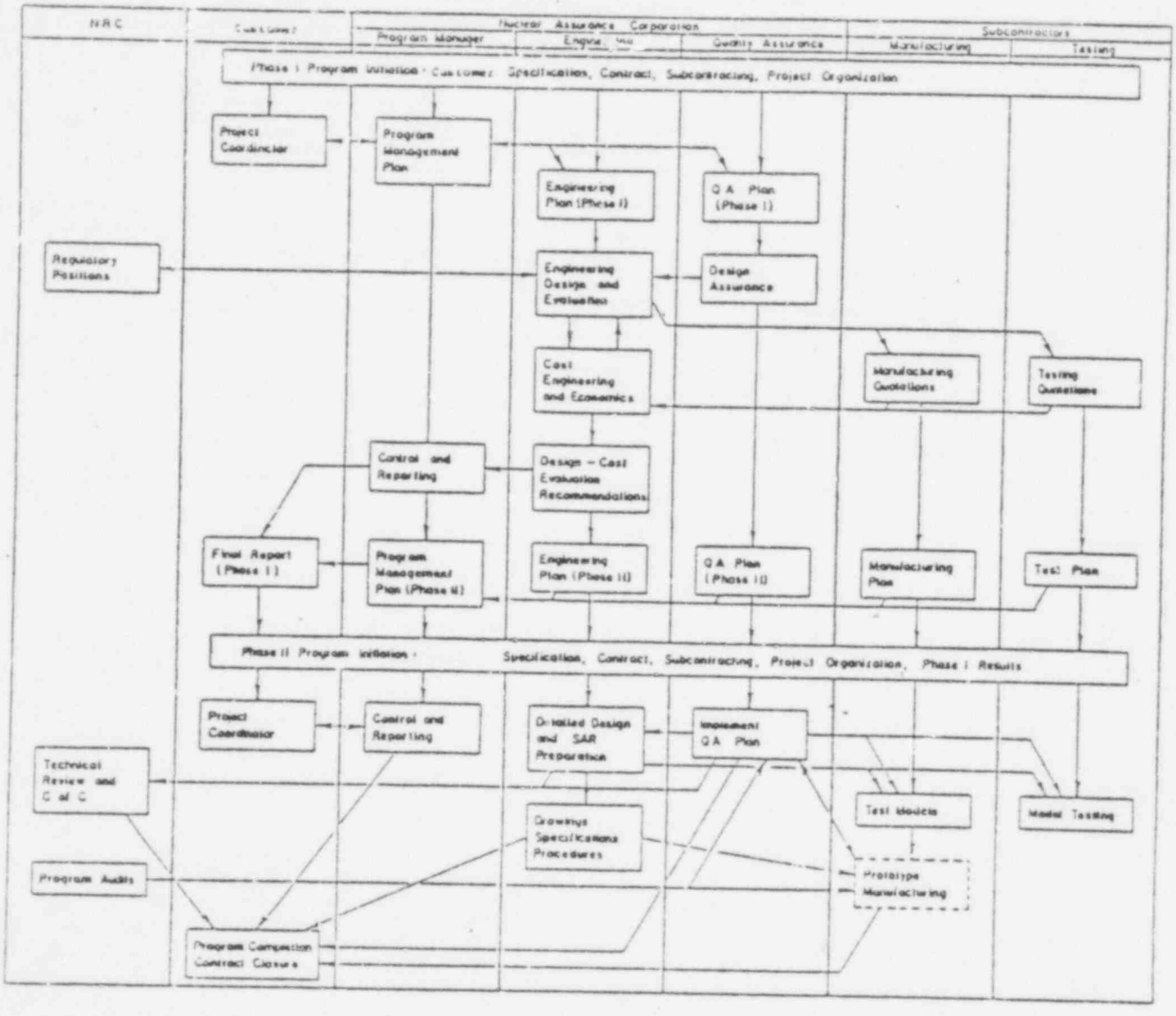
FIGURE 2 Program Management Concepts



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1.2.2 Applicable elements of the QAM included in the Project Specification

1.2.3 Use of the QAM with additional procedures, if required, applied in a graded approach depending on the complexity and criticality of the program and documented in the Program Management Plan.

2. Program plan documents shall be issued as controlled document(s) to assigned NAC personnel and change control shall be implemented for revisions that may be published.

3. Engineering shall establish and maintain a Design Assurance program for each program as indicated in Figure 2. This may be included in the Program Management Plan or as a separately controlled document. This program shall include the early identification of safety related structures, systems, and components and the drawing paramters, test and analysis requirements, and in-process and final acceptance inspections and testing. Considerations for operating and maintenance shall be included in this plan.

4. Quality Assurance shall continually review the design assurance plan and work with manufacturing planning to develop the sequence of operations and test/inspections to meet all quality requirements.

5. The Audit Checklist for Quality Assurance Planning shall be utilized as a basic guide for performing in-house audits and in surveying suppliers, These basic system elements will also be utilized for audits by source or itinerant inspections.

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AUDIT CHECKLIST

QUALITY PROGRAM PLANNING

Elements to be included in the evaluation of a quality program planning system should include at least the following:

		Yes	No	N/A	*
		(N/A = Not Applicable)			
1.	Management - above and outside Quality Assurance - regularly review/assess the scope, status, implementation and effectiveness of quality planning?	☐	☐	☐	☐
2.	Company Quality Policies are documents and implementing procedures are utilized at appropriate levels of lower management?	☐	☐	☐	☐
3.	Quality Assurance activities are designated for the implementation of the activities in the Quality Assurance Manual?	☐	☐	☐	☐
4.	Quality Assurance Manuals - Control established for distribution and for revisions thereto?	☐	☐	☐	☐
5.	Quality Assurance requirements are communicated to all responsible organizations and individuals?	☐	☐	☐	☐
6.	Provisions are available for resolving differences of opinions/disputes involving quality among quality personnel and between other organizations?	☐	☐	☐	☐
7.	A Matrix of all regulatory requirements and the Quality Assurance Procedures assure compliance with all requirements?	☐	☐	☐	☐
	Contractual requirements?	☐	☐	☐	☐

*See Attached Sheet

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—A— ADDITION —D— DELETION —R— REVISION

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AUDIT CHECKLIST

QUALITY PROGRAM PLANNING (CONT.)

		Yes	No	N/A	*
8.	Future work (RFPs and RFQs) reviewed by Quality Assurance personnel to identify quality requirements?	☐	☐	☐	☐
9.	When contract is received, is it reviewed by Quality Assurance for ensuring existing quality policies and procedures are applicable or if new ones are required?	☐	☐	☐	☐
10.	Review of Drawings, specifications, and procedures for contractual compliance by Quality Assurance?	☐	☐	☐	☐
	Safety-related systems, structures, and components identified?	☐	☐	☐	☐
	Controls planned through Quality Planning?	☐	☐	☐	☐
	Critical dimensions and criteria identified?	☐	☐	☐	☐
	Acceptance criteria specified?	☐	☐	☐	☐
	Material traceability specified?	☐	☐	☐	☐
11.	Are definitive inspection and test plans prepared for in-process and final acceptance?	☐	☐	☐	☐
	Hold points specified?	☐	☐	☐	☐
12.	Is Quality Assurance monitoring change control during design and production phases?	☐	☐	☐	☐
	Configuration Management?	☐	☐	☐	☐
	Interchangeability?	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

QUALITY PROGRAM PLANNING (CONT.)

		Yes	No	N/A	*
13.	Is there a planned review of the Quality Programs of all suppliers for assurance of proper planning?_____	☐	☐	☐	☐
14.	Are Quality-related activities performed with specified equipment under suitable environmental conditions?_____	☐	☐	☐	☐
	Is equipment selected with accuracy and capability to perform the designated functions?_____	☐	☐	☐	☐
	There is a planned preventative maintenance program for ensuring performance of equipment?_____	☐	☐	☐	☐
	There is a calibration system in operation to assure measurement to the specified accuracy?_____	☐	☐	☐	☐
15.	Are work instructions used and systematically reviewed for accuracy, completeness, and worker compliance?_____	☐	☐	☐	☐
16.	Personnel selection and training programs established to:				
	Provide instructions as to purpose, scope, and implementation of the quality program as presented in manuals, procedures, etc.?_____	☐	☐	☐	☐
	Personnel performing quality related activities are trained and qualified for assigned jobs?_____	☐	☐	☐	☐
	Scope, objectives, and implementation of the training and re-training program documented?_____	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

QUALITY PROGRAM PLANNING (CONT.)

	Yes	No	N/A	*
17. Are there regular quality reports for documenting progress/status of the program?_____	☐	☐	☐	☐

ORGANIZATION BEING REVIEWED_____

PERSONS CONTACTED: ADDRESS:

_____ _____

_____ _____

_____ PHONE NO._____

SIGNED:_____ TITLE:_____

DATE:_____ ORGANIZATION:_____

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QUALITY ASSURANCE PROCEDURE

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-serivce 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 Transport Services 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 Compatability 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 components and the critical characteristics which will require special controls.

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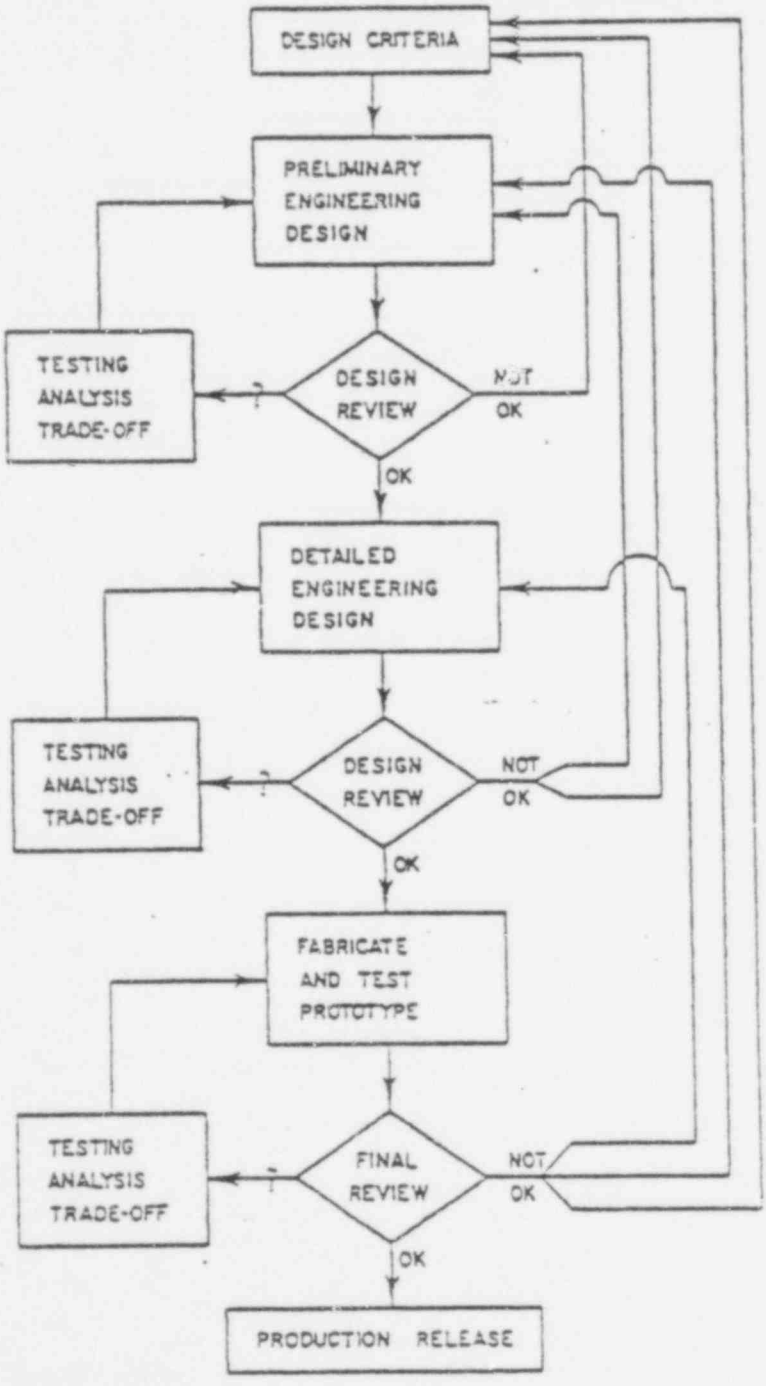
QUALITY ASSURANCE PROCEDURE

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 portion 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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QUALITY ASSURANCE PROCEDURE

1.3 Through the iterative process of design, analyze, 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 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.

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.

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QUALITY ASSURANCE PROCEDURE

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

AUDIT CHECKLIST

The basic elements in design control are listed below:

(N/A - Not Applicable)

		Yes	No	N/A	*
1.	Plans for carrying out the design activities in a planned, controlled and orderly manner?	☐	☐	☐	☐
2.	All criteria identified, both regulatory and contractually, for the design including drawings, specifications, and other documentation?	☐	☐	☐	☐
3.	Quality standards are identified in the engineering documentation for determining acceptability?	☐	☐	☐	☐
4.	Design considerations include stress, thermal, hydraulic, radiation, accident analysis; safety evaluations; material selection and compatibility; and considerations for in-service inspections, maintenance, and repair?	☐	☐	☐	☐
5.	Designs are reviewed to assure that (1) design characteristics can be controlled, inspected, and tested and (2) inspection and test criteria are specified?	☐	☐	☐	☐
6.	Internal and external design interface controls established including review, approval, release, distribution, and revision of documents involving interfaces with participating design organizations?	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

		Yes	No	N/A	*
7.	Selection and planned accomplishment of design verification through checking, design reviews, alternate calculations, and testing?	☐	☐	☐	☐
8.	Design verification is performed by an independent capable reviewer?	☐	☐	☐	☐
9.	Document changes, including field changes, are subject to the same controls as the original design?	☐	☐	☐	☐
10.	Errors in design that could affect safety-related systems, structures, and components are documented and corrective action is taken?	☐	☐	☐	☐
11.	Materials, parts, and equipment which are standard or previously used considered for selection?	☐	☐	☐	☐
12.	The individuals and/or groups involved in design reviews shall be specified and their responsibilities specified?	☐	☐	☐	☐
13.	Specific Items				
	a. Identification of safety related equipment?	☐	☐	☐	☐
	b. Selection of critical characteristics and their identification -- mandatory 100% inspection verification/ no sampling. Documentation of the requirement for quantitative inspection acceptance data be recorded?	☐	☐	☐	☐
	c. Calibration requirements before/ during/after tests or can a recall system be used?	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE
AUDIT CHECKLIST

	Yes	No	N/A	*
d. Documentation required for the inspection acceptance of quantitative data or can the accept/reject decision be that of the inspector?	☐	☐	☐	☐
e. Traceability of material required? Does this include the processing of test samples for destructive testing afterwards to verify the process?	☐	☐	☐	☐
f. Can the final product be inspected for conformance to all requirements or will in-process inspections/control be required?	☐	☐	☐	☐
g. Have calendar limited life materials been identified, shelf life listed, and/or special storage during production and/or service been identified?	☐	☐	☐	☐
h. Has serialization been specified for each part and/or assembly for subsequent inspection, control, and/or record of location?	☐	☐	☐	☐
i. Have all design trade-off studies and drawing changes been completely documented for the record? Status of the design log?	☐	☐	☐	☐
j. Identification of serialization effectivity on changes and instructions for material already produced or in-process?	☐	☐	☐	☐

14. Other (List)

* See Attached Sheet

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AUDIT CHECKLIST

	Yes	No	N/A	*
14. Other (cont.)				

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PERSONS CONTACTED: _____ ADDRESS: _____

_____ _____

_____ _____

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SIGNED: _____ TITLE: _____

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QUALITY ASSURANCE PROCEDURE

TITLE: PROCUREMENT OF PRODUCTS AND SERVICES

PURPOSE: To provide a procurement control system for the initiation of a PROCUREMENT REQUEST, the Purchase Order placement, and when the receipt and verification of the acceptability to requirements.

REFERENCE:
1. QAM 00.1
2. NAC Corporate Policy III.2
3. NAC Corporate Policy III.5

GENERAL: It shall be the policy of NAC that all suppliers of materials, equipment or services shall receive controlled, approved procurement documents which contain or reference all applicable regulatory requirements, appropriate design drawings and specifications and other requirements necessary to produce a product or service which meets NAC's quality requirements. In addition, procurement documents shall contain provisions which require suppliers and their sub-tier suppliers to execute quality assurance programs in a manner and to the extent specified by NAC. Furthermore, procurements documents shall provide for the right of NAC to audit its contractors on their implementation of these controls and with his sub-tier suppliers.

All procurement will be made only from NAC approved suppliers based on their past history, pre-awared and/or post-award surveys.

PROCEDURE:

1. Program Management -

The Program Manager, or his designated personnel, shall identify the procurement requirements for his program. These requirements shall initially be documented on a PROCUREMENT REQUEST form which identifies the material/services to be supplied, applicable approved drawings and specifications, special manufacturing and/or quality assurance insturctions, and then approved by Program Management and Quality Assurance as directed by NAC Policy III.5. 611 111

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QUALITY ASSURANCE PROCEDURE

1.1 The designated Program Management representative shall initiate the Procurement Request and complete all of the information required for the review and approval. After approval, he shall negotiate the final steps for the placement of the purchase order.

1.2 The status of approval for each supplier will be noted from the Supplier Directory maintained by Quality Assurance. If the supplier has not been APPROVED, appropriate action will be initiated for the approval, for source inspection or another source shall be selected.

1.3 To clearly identify specific quality assurance requirements, the clauses attached to this procurement may be specified for inclusion in the Purchase Order. The clauses required may be designated by number, e.g., QA-14 for material conformance certification on the Purchase Request form for inclusion by Administrative Services on the Purchase Order.

1.4 The originator of the Purchase Request will receive a Receiving Inspection form from Administrative Services and will verify that the material and/or services and supplementary data is in accordance with all requirements of the Purchase Order. An independent review shall then be made for accuracy and completeness before approved and material is accepted.

1.5 All material shall be properly controlled prior to final acceptance. For material not acceptable, the nonconformance shall be documented including Purchase Order Number, Supplier, Material ordered and the nonconformance and a copy placed in the Supplier's history folder. Normally all material will be returned to the Supplier for correction. At the direction of the NAC Program Manager, material review board action may be taken. In all cases, corrective action will be requested of the Supplier.

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QUALITY ASSURANCE PROCEDURE

1.6 Each change to a Purchase Order shall receive the same approvals as the original order.

2.0 QUALITY ASSURANCE

Quality Assurance shall review all Purchase Requests for products and services except those for administrative supplies and services. Specific items to be verified include:

2.1 Approval status of the supplier. If not APPROVED, coordinated appropriate action based on past experience, complexity of product/service being procured, and inspectability on receipt by NAC.

2.2 Complete identification by approved current drawings and/or specifications of the item being procured; special inspection/quality assurance requirements (Attachment A); identification; data record retention requirements; and other requirements required by regulations or contract, e.g., 10CFR71, Appendix E and 10CFR21.

2.3 Planned actions including pre- and/or post-award surveys, supplier quality plans for specific procurements and their approval by NAC, and other actions that may be required for the control of the procurement including access for itinerant or source inspection and for audits including applicable records, procurement control.

2.4 Utilizing the Procurement Control Checklist, perform regular audits of the procurement system. Equivalent data shall be reviewed and documented in surveying suppliers.

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QUALITY ASSURANCE PROCEDURE

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QUALITY ASSURANCE CLAUSES FOR

PURCHASE ORDERS

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QUALITY ASSURANCE PROCEDURE

ATTACHMENT

QUALITY ASSURANCE CLAUSES FOR PURCHASE ORDERS

QA-01 QUALITY PROGRAM AND/OR INSPECTION SYSTEM REQUIREMENTS

The Supplier's quality program and/or inspection system shall comply with the document or specification listed in this purchase agreement. The Contractor reserves the right to perform initial survey to ascertain compliance and periodic surveillance to assure continued adherence of the listed document.

QA-02 GOVERNMENT SURVEILLANCE

During the performance of this order, the Supplier's quality program and/or inspection system and manufacturing processes are subject to review by authorized Government representatives. Government release of product prior to shipment is not required unless otherwise specified.

QA-03 CONTRACTOR INSPECTION AT SUPPLIER'S FACILITY - SOURCE

When items are ready for inspection, or if practical ten (10) days in advance thereof, the designated NAC representative shall be notified. The Contractor's representative shall witness and/or perform functional test prior to shipment, if applicable. Required documentation for shipment shall be completed and signed by a responsible representative of Supplier's quality department. This documentation shall include evidence of performance to the Supplier's approved acceptance plan if the submittal of an acceptance plan is a requirement of this purchase agreement.

QA-04 CONTRACTOR INSPECTION AT SUPPLIER'S FACILITY - SURVEILLANCE

Work under this order is subject to Contractor surveillance at the Supplier's facility. Contractor's quality control representative may elect to conduct inspection either on a random basis or to the extent of 100% inspection. Supplier will be notified if Contractor inspection is to be conducted on specific shipments. No shipments are to be held for Contractor inspection unless notification is received prior to, or at time of, material being ready for shipment.

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QUALITY ASSURANCE PROCEDURE

ATTACHMENT (CONT.)

QA-05 FIRST-PART INSPECTION

The Supplier shall perform 100% first-part inspection prior to initial shipment. Actual findings of all dimensional and functional characteristics shall be recorded and copies of these records shall be included with the initial shipment. When required by this purchase agreement, Contractor's quality representative will participate in all phases of the first-part inspection.

QA-06 IN-PROCESS AND FINAL ACCEPTANCE TEST PROCEDURES

Supplier shall prepare separate detail test procedures encompassing all tests required for in-process and final acceptance. Each item of hardware or part thereof, which requires acceptance testing, shall be covered by an acceptance test procedure. All subsequent changes also require Contractor approval prior to incorporation.

QA-07 APPLICABLE DRAWINGS, SPECIFICATIONS, AND DOCUMENTS

Standard specifications and documents invoked in applicable drawings, product control specifications, and/or listed in the invitation to Quote will apply to all services and supplies to be furnished under this procurement. Revisions in effect as of the date of the solicitation of bids apply. Other revisions of specifications shall not apply to the work under a resulting purchase order unless incorporated by change order or contract agreement.

QA-08 FINAL ACCEPTANCE AT DESTINATION

All articles defined in this agreement are subjected to final acceptance at destination and will not be accepted if the Supplier fails to submit the certification, documentation, test data, and reports specified in this agreement.

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ATTACHMENT (CONT.)

QA-09 CONTRACTOR-OWNED TOOLS

All accountable tools covered by this order shall, upon acquisition or completion of manufacture by Supplier and before same are used, become the property of the Contractor. Supplier shall be responsible for such tools; and such tools shall be identified, recorded, and subject to disposition pursuant to the Contractor's instructions. If, pursuant to the provisions of the prime contract with the Government under which this purchase agreement is issued, upon title vesting in the Contractor, it will immediately thereafter vest in the United States Government. All tools shall be subjected to inspection and accountability by the Contractor's quality representative.

QA-10 SUPPLIER-OWNED TOOLING

All tooling manufactured or acquired under this order shall remain the property of Supplier, and Supplier shall identify said tools with Supplier's own identification tags which shall contain an appropriate reference to this purchase agreement. Supplier agrees not to use any of such tooling on work for customers other than Contractor without prior written approval of Contractor. As additional consideration for the service charge to be paid to Supplier by Contractor, Supplier agrees that, upon the written requests of Contractor, it will transfer all or part of the tooling manufactured or acquired hereunder to such place or places as Contractor may designate and allow the unrestricted use and possession thereof for such period of time and by such parties and for such purposes as Contractor may request, all without any additional charge to Contractor, except for actual moving expenses. All tools shall be subjected to inspection and accountability by the Contractor's quality representative.

QA-11 PROCESS APPROVAL

Special processes required by the Contractor's drawings, procedures, or specifications must be performed by source approved by the Contractor. The Contractor shall provide an up-to-date copy of his approved process source list. Approval for use of Supplier's process specifications in

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QUALITY ASSURANCE PROCEDURE

ATTACHMENT (CONT.)

lieu of those Contractor process specifications required shall be reflected by appropriate formal documentation.

QA-12 INSPECTION PROCESS APPROVAL

All special inspection processes performed at Supplier's or sub-tier supplier's, such as magnetic inspection, penetrant inspection, ultrasonic inspection, etc., require Contractor approval or certification of facilities, equipment, and operating personnel. This approval shall be obtained prior to manufacture of the articles of this contract. If the Supplier does not wish to become approved for the inspection processes required, the Contractor will provide an up-to-date copy of his approved inspection sources.

QA-13 INSPECTION AND QUALITY CONTROL RECORDS

All quality control charts, frequency distributions charts, etc., of process control used as acceptance devices, all physical and chemical test reports on which material certifications are based, in-process, functional test and final inspection results that are evidence of product acceptance, and all other pertinent data that assures adequate quality control operations shall be retained as permanent records. Where records are traceable by serial or lot designation to material supplied to Contractor, they shall be retained for a period of three years. All parts and material designated as safety related shall be retained for seven years.

QA-14 MATERIAL CONFORMANCE CERTIFICATE

A certificate or statement of material conformance is required covering the articles contracted for hereunder. This certificate or statement of conformance must stipulate that the items contracted for meet all drawings, specifications, and other applicable documentation. This certificate or statement shall also specify that process certifications and chemical and physical test reports -- as required by drawings, specifications, and/or other applicable documentation -- are on file and may be inspected by the Contractor's quality representative and/or Government representative upon request. This certificate must be attached to the packing sheet and accompany each shipment to be delivered

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QUALITY ASSURANCE PROCEDURE

ATTACHMENT (CONT.)

hereunder. This certificate or statement shall be validated by an authorized representative of the Supplier's quality department. In addition, when chemical and/or physical test data submittal is required by specification, one copy for each lot, batch, or heat, whichever is applicable, must be attached to the packing sheet and accompany each shipment to be delivered hereunder.

QA-15 TEST SPECIMEN SUBMITTAL

Furnish (quantity) test specimens, to the dimension indicated in this agreement representative of each lot, identified to that lot, and shipped with the lot.

QA-16 FUNCTIONAL TEST CERTIFICATION

Actual functional test reports referencing purchase order, Supplier's part number, part name, serial numbers if applicable, date and run time if applicable must accompany each shipment to be delivered. These reports will be validated by an authorized representative of the Supplier's quality department by either an inspection stamp or a signature.

QA-17 CHEMICAL AND/OR PHYSICAL TEST REPORTS

One copy of the actual chemical and/or physical test report for each lot, batch, or heat must accompany each shipment to be delivered hereunder.

QA-18 PART MARKING, IDENTIFICATION, PACKING SHEET, AND SHIPPING REQUIREMENTS

All of the clauses noted below (19.a. through 19.l.), that are itemized in the purchase agreement, shall be requirements in effect throughout the term of this agreement.

a. Identify cartons with Contractor's stock/part number.

b. Mark cartons with purchase order number.

c. Identify shipping containers unit of measure and quantity.

d. Mark individual packages within shipping container with material description and quantity.

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QUALITY ASSURANCE PROCEDURE

ATTACHMENT (CONT.)

e. Mark shipping containers with Supplier's name.

f. Parts to be packed in individual containers.

g. Package to show date of manufacture.

h. Serial numbers to be included on containers and packing sheets.

i. Package per Contractor's design drawing, specification, or description.

j. Mark batch number and cure date on all parts.

k. Complete part number, including revisions and engineering orders incorporated, shall be reflected on packing sheets.

l. Shelf life limitation/cure date shall be included on parts and packing sheets.

QA-19 CORRECTIVE ACTION

The Supplier's procedures shall, on request of the Contractor, on forms designated by Contractor, provide statements of corrective action on failures of Supplier's hardware. Corrective action statements, at Contractor's option, may require approval signature by Contractor quality representatives. All rejected articles resubmitted by Supplier to Contractor shall bear adequate identification, including reference to Contractor's rejection documentation.

QA-20 RADIOGRAPHY APPROVALS

Radiography and interpretation to be accomplished by Supplier. Applicable X-ray film properly identified to be forwarded with each statement. Before shipment, individual parts to be rubber stamped indicating X-ray acceptance. X-ray approval does not necessarily guarantee acceptance of material.

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	DATE:							
Corporate Manager Quality Assurance	APPROVAL:							

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QUALITY ASSURANCE PROCEDURE

ATTACHMENT (CONT.)

QA-21 TIME- AND/OR TEMPERATURE-SENSITIVE MATERIAL

Time and temperature storage conditions must be attached to the packing sheet and accompany each shipment to be delivered hereunder. The outermost shipping boxes will be marked to indicate "time- and temperature-sensitive material." All rubber goods shall have the quarter and year of manufacture indicated on packing sheets and shipping containers and require certification to acceptable industry standards for age control.

QA-22 MATERIAL REVIEW AUTHORITY

The Supplier is approved to hold material review actions on the items defined in this agreement providing a qualified list of quality control and engineering personnel acting in this capacity is maintained and provided to the Contractor. Contractor reserves the right to disapprove any Material Review Board emeber or reject the decision of the Supplier's material review.

QA-23 CONTROLLED AND/OR DESIGNATED SAFETY RELATED PARTS

The Supplier's approved documented procedure to assure contr l of material procurement, traceability, and subsequent machining and processing is Manufacturing Operation Sheet, ed . Requests for changes to operati eets must be formally approved by Contractor. Complete records reflecting all process and inspection shall e maintained for the time period indicated in this agreement.

QA-24 FORGING QUALIFICATION

Initial forging qualification tests for mechanical and grain flow properties shall be reviewed by Supplier's quality control. Supplier to notify Contracto's quality control department five (5) days prior to availability of data for Contractor's review if deemed necessary.

QA-25 CASTING AND FORGING

Two test coupons or bars shall accompany each lot submitted. The samples shall be representative of the lot

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QUALITY ASSURANCE PROCEDURE

ATTACHMENT (CONT.)

and comply with all requirements of the material specification. A certification of compliance shall be submitted with each shipment and shall include, if applicable:

a. Dimensional inspection results.

b. Penetrant inspection results.

c. Magnetic particle inspection results.

d. Pressure test.

e. Radiographic inspection results.

f. Ultrasonic inspection results.

g. Grain flow examination.

h. Chemical and physical test results.

QA-26 INTERCHANGEABILITY AND REPLACEABILITY

Supplier shall perform the necessary inspections and tests required to physically demonstrate mechanical and functional interchangeability and replaceability. Demonstrations shall be effected by actual interchange of supplies between assemblies and shall be witnessed, if required, by Contractor. When the item being procured is interchangeable with Contractor or other Supplier-produced coordinating parts, Supplier-made or Contractor-supplied tooling interface single sources shall be inspected and tested by the Supplier to Contractor-supplied or -approved master tools, interface single source prior to first-piece fabrication or testing.

QA-27 QUALITY PROGRAM PLAN

The Supplier shall provide a quality program plan for the specific product being purchased. This plan shall define the methods of manufacture and control that will be applied in order to assure a product which consistently conforms to all technical and contract requirements. This plan shall be received and approved prior to shipment of the first production articles.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

PROCUREMENT REQUEST

An audit shall be regularly made on the Procurement of products and services, from the initiation of Purchase Request to the placements of the Purchase Order and then the Receiving Inspection report.

(N/A - Not Applicable)

	Yes	No	N/A	*
1. Complete description of product/service being requested?	☐	☐	☐	☐
Applicable approved drawings & specifications included?	☐	☐	☐	☐
Special manufacturing/inspection requirements?	☐	☐	☐	☐
Quality Assurance clauses indicated?	☐	☐	☐	☐
Approved Status of the potential Supplier?	☐	☐	☐	☐
Purchase Request approvals required for placement of Purchase Order?	☐	☐	☐	☐
Government Contract requirements documented?	☐	☐	☐	☐
Adequate acceptance and rejection criteria specified?	☐	☐	☐	☐
Identification requirements specified?	☐	☐	☐	☐
Qualification of personnel for special processes?	☐	☐	☐	☐
Applicable codes and regulatory requirements identified?	☐	☐	☐	☐
Are Purchase Orders for spares and replacement parts subject to the same requirements as original equipment?	☐	☐	☐	☐

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	DATE:							
Corporate Manager Quality Assurance	APPROVAL:							

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

PROCUREMENT REQUEST

(N/A - Not Applicable)

	Yes	No	N/A	*
2. Purchase Order review for completeness to the Purchase Request?	☐	☐	☐	☐
3. Receiving Inspection report completed and verified?	☐	☐	☐	☐
Material accepted?	☐	☐	☐	☐
Data requirements met?	☐	☐	☐	☐
Shipping and other instructions followed?	☐	☐	☐	☐
4. Capability of supplier reviewed to assure that past performance and program plans will result in delivery of a quality product?	☐	☐	☐	☐
5. Supplier has a documented control plan for all of his sub-tier suppliers?	☐	☐	☐	☐
6. Changes of drawings, specifications, and other purchase order requirements are routinely transmitted to effected suppliers in a timely manner?	☐	☐	☐	☐
7. All data to be provided with the purchase ordered material and a record identification and retention schedule is clearly identified?	☐	☐	☐	☐
8. Supplier's certificates of conformance periodically evaluated by audits, independent inspections, or tests?	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

PROCUREMENT REQUEST

9. Other (Specify)

ORGANIZATION BEING REVIEWED: _____

PERSONS CONTACTED: ADDRESS: _____

_____ _____

_____ _____

_____ _____

_____ PHONE NO: _____

SIGNED: _____ TITLE: _____

DATE: _____ ORGANIZATION: _____

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APPROVED:	REVISION:							
	DATE:							
Corporate Manager Quality Assurance	APPROVAL:							

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QUALITY ASSURANCE PROCEDURE

TITLE: SUPPLIER APPROVAL AND THE SUPPLIER DIRECTORY

PURPOSE: To maintain a directory of suppliers who may provide material requirements or services to Nuclear Assurance Corporation and continually update their approval status from procurement history, surveys, and other pertinent data.

REFERENCE:
1. QAM 00.1
2. QAM 04.1

GENERAL: Nuclear Assurance Corporation is responsible for ensuring that material procured meets all requirements of the procurement document including all referenced documents. This is accomplished by using historical records of previous procurements, supplier surveys, and/or source inspection (resident or itinerant) for in-process and/or final acceptance through inspection and tests. Final acceptance will be determined on receipt of the material together with all required documentation.

DEFINITIONS: Approval status of suppliers will be categorized as follows:

APPROVED: No restrictions on placing orders for the type/class of material described in the Supplier Directory.

UNAPPROVED: This describes a new supplier who hasn't been surveyed, still has some open items from a survey, or who hasn't been on the active supplier category within the last 4 quarters. (A change in owners or significant management reorganization will be the basis for considering a supplier as a new one.) Procurement may be placed subject to post-award survey or planned source inspection.

DISAPPROVED: Because of past history or other reasons, approval of the ETS/VP and the Corporate Manager, Quality Assurance are required for each Purchase Order with conditions as documented to ensure receipt of a quality product that meets all requirements.

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APPROVED:	REVISION:							
	DATE:							
Corporate Manager Quality Assurance	APPROVAL:							

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QUALITY ASSURANCE PROCEDURE

PROCEDURE:

1. Quality Assurance shall:

   1.1 At the request of a potential supplier or by NAC action, prepare a Supplier Directory form as shown in Figure 1 for each potential supplier with pertinent information including type of material or service which he can provide. Depending on future procurement plans, a Seller Quality Assurance Vendor Evaluation Report (Attachment A) shall be submitted for pertinent information prior to a planned NAC vendor survey. After evaluating the acceptability of the response and on the type of material for which the Purchase Request specifies, a survey may not be deemed necessary. On more sophisticated material, unless acceptability can be verified on receipt, no procurement shall be authorized until a satisfactory survey has been conducted or an acceptable history documented through the use of hold points and source inspection. The approval status, survey history, and other pertinent data shall be maintained on the Supplier History sheet for each supplier.

   1.2 Supplier History File

   Maintain a Supplier History File for each Supplier. The appropriate data from procurement actions shall be documented as noted in Figure 2. Future Approval Status will depend on the demonstrated performance of each supplier. Nonconformances found after delivery, either in subsequent production operations or premature failures after delivery, will be appropriately evaluated and noted on the Supplier History Sheet.

2. For each Purchase Request, Quality Assurance shall:

   2.2 Verify supplier approval status and review past performance prior to approving the Purchase Request.

   2.3 Audit each Receiving Inspection Record for completeness and document pertinent data on the Supplier History sheet.

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QUALITY ASSURANCE PROCEDURE

FIGURE 1 - Supplier Directory Form

SUPPLIER DIRECTORY

NAME: _____

ADDRESS: _____

_____

_____

TELEPHONE _____ TELEX _____

CONTACTS (NAME & TITLE) -

_____

_____

PRODUCTS/MATERIALS

_____

_____

_____

_____

_____

_____

APPROVAL CLASSIFICATION

APPROVED	☐ Date _____	☐ Date _____	☐ Date _____
UNAPPROVED	☐ Date _____	☐ Date _____	☐ Date _____
DISAPPROVED	☐ Date _____	☐ Date _____	☐ Date _____

Classifications: Approved - may ship without source inspection - survey current
Unapproved - as a minimum requires certificate of conformance and in-process and/or final inspection at source by NAC
Disapproved - shall only be used with approval of ETS VP & Mgr QA

SURVEY CHRONOLOGY

Date	Contacted By	Type of Survey	Result	(Date) Resurvey

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APPROVED: _____
Corporate Manager
Quality Assurance

REVISION:							
DATE:							
APPROVAL:							

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QUALITY ASSURANCE PROCEDURE

FIGURE 2 - SUPPLIER HISTORY FORM

SUPPLIER HISTORY

SUPPLIER ADDRESS

Purchase Order No.	Purchase Order Date	Date Received Quote	Date Received Actual	Cost Quote	Cost Actual	Accepted Yes/No	Part Number	Part Name

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APPROVED:	REVISION:							
	DATE:							
Corporate Manager Quality Assurance	APPROVAL:							

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QUALITY ASSURANCE PROCEDURE

3. The attached checklist shall be utilized for preplanned in-house audits and for Supplier Surveys.

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	DATE:							
Corporate Manager Quality Assurance	APPROVAL:							

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ATTACHMENT
PROCEDURE 04.2
EFFECTIVE
REVISION NO.
EFFECTIVE
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NAC Seller

QUALITY ASSURANCE VENDOR EVALUATION REPORT

This report is intended to furnish data relative to the capability of the Seller to control the quality and conformance of applicable supplies and services to NAC contract requirements.

Please complete this report in accordance with instructions below and return one copy with your comments, if any, within ten days. The additional copy is for your convenience and file. A typewritten form is preferable; otherwise, it must be legibly printed in ink.

INSTRUCTIONS

1. All elements must be answered by the Seller in sufficient detail to permit NAC to evaluate the capability of furnishing the listed supplies or services.
2. All elements must be completed. Enter the letter "X" in the appropriate spaces or "NA" for those items that are not applicable.
3. The report must be signed below as prescribed.
4. When supplemental data is submitted, the text shall reference the related item of this report.
5. Submittal of an incomplete report will be cause for delay in completing the evaluation.
6. If more than one Seller facility is applicable, a separate report shall be submitted for each.
7. "Customer" as used herein refers to NAC.
8. The application of the requirements as stated in this report is subject to an audit by the NAC Quality Assurance organization at any time.
9. Seller is encouraged to attach information not requested by this report but which may be beneficial in effecting a complete evaluation.

Please direct your reply and any inquiries to:

David A. Webster, Corporate Manager, Quality Assurance

Seller Name and Address

Phone:

Division or Subsidy of

The data furnished herein pertain to the facility listed above and are applicable to the execution of NAC contracts. It is agreed that NAC will be notified upon any relocation or transfer of Seller manufacturing operations, or upon any change in quality control organization or procedures which affects conformity verification of applicable supplies or services. It is recognized that failure to furnish a description of such change for NAC review, or willful misrepresentation of fact specified herein, constitutes a material breach of contract and, among other rights of NAC, shall result in disapproval as a NAC Source.

Signed Date Title of Administrative Head of Quality Assurance

A. Category of Supply

1. List supplies or services to be or which can be furnished

2. Existing Products	Supplied As a (✓): Product	Distributor	X	How Long (Years)
Proprietary Design:				
NAC Design:				
Other Design (Specify):				
Commercial Design:				

3. Have facilities previous been surveyed by NAC	Approval Status	Date

B. Facilities

1. Buildings

a. Type

b. Floor area current: Expandable to: c. Plant capacity in current operation (percent)

d. Are clean room facilities available within your plant?	If yes, to what class	To what specification

2. Engineering Design (Describe briefly, including number of personnel, area)

3. Tool design (Describe briefly, including number of personnel, area)

POOR ORIGINAL

4. Productive Equipment (Describe briefly and/or attach list)

5. Inspection Equipment (Describe briefly and/or attach list)

6. Functional Test Equipment (Describe briefly and/or attach list)

7. Nondestructive Test Equipment (Describe briefly and/or attach list)

8. Chemical/Physical Laboratory (Describe briefly and/or attach list)

9. Certification/Calibration Laboratory (Describe briefly and/or attach list)

10. Special Processes - Plating, Etc. (Also attach list of current special process suppliers)

C. Organization

1. Head of Quality Assurance Title

2. Reports to Title

3. Chief Inspector

4. Number of Quality Control Personnel	5. Number of Inspection Personnel: Full Time	Part Time	6. Ratio of Inspection to Production Personnel (Direct Labor Only)	7. Total Number Of Personnel Employed

D. Quality Control System and Procedures

1. A Written Manual of Quality Control Procedures is available and maintained for use by all Inspection Personnel?
Yes ☐ No ☐ a. Issued to: Manager ☐ Supervisor ☐ Inspector ☐ Others ☐

2. The Quality Control System is derived from a Quality Control System Specification as follows:
RDT F2-20 ☐ MIL-Q-9858 ☐ 10CFR50 Appendix B ☐ 10CFR71 Appendix E ☐
ASTM IX ☐ ASME ☐ MIL-I-45208 ☐ Other (Specify) ☐

3. The Manual of Quality Control Procedures is updated continually to the latest industry practices and requirements of the customer and Government Agency, and implements elements affirmatively answered in this report
Yes No

4. The Manual of Procedures includes an authorized statement describing assigned responsibilities and delegated authority of the Quality Control Organization, together with Quality Control Organization Charts indicating functional relationship to management and other organizational components. Yes No

5. Statistical sampling procedures, if applied, are based on:
MIL-STD-105 ☐ MIL-STD-414 ☐ Other (Specify) ☐

6. A current copy of Seller's Quality Control Manual of Procedure
Is Attached ☐ Is not currently available ☐ If not, when?

E. Design Data and Change Control

	YES	NO	NA	*
1. Technical data and revisions thereto are available to and used as acceptance criteria by inspection personnel, and include:				
a. Seller drawings and specifications	☐	☐	☐	☐
b. Government drawings and specifications	☐	☐	☐	☐
c. Customer drawings and specifications	☐	☐	☐	☐
2. Technical data are controlled and disbursed from a central point and promptly removed when superseded	☐	☐	☐	☐
3. The accomplishment of contract changes is verified and recorded by inspection for the affected unit(s)	☐	☐	☐	☐
4. A notice of changes in characteristics for which Seller has design responsibility to meet NAC drawings or specifications is furnished to the customer for approval prior to shipment of affected supplies	☐	☐	☐	☐
5. Units affected by above changes (E.4) are reidentified to reflect the incorporation of approved changes	☐	☐	☐	☐

F. Inspection Records

1. Inspection records are maintained which display:				
a. Identification of the item	☐	☐	☐	☐
b. Traceability to place and date of manufacture	☐	☐	☐	☐
c. The date of inspection	☐	☐	☐	☐
d. Number of units inspected	☐	☐	☐	☐
e. Quantitative (measured) results of inspection	☐	☐	☐	☐
f. Number of units rejected	☐	☐	☐	☐
g. Description and cause of discrepancy	☐	☐	☐	☐
h. Disposition of material	☐	☐	☐	☐
i. Identification of the Inspector	☐	☐	☐	☐

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POOR ORIGINAL

	YES	NO	NA	*
2. The following inspection records are kept on file for a minimum of three years from date of final payment:				
b. Receiving How long_____	☐	☐	☐	☐
c. Production How long_____	☐	☐	☐	☐
d. Process How long_____	☐	☐	☐	☐
e. Sampling How long_____	☐	☐	☐	☐
f. Final Acceptance How long_____	☐	☐	☐	☐
g. Certification of measuring and test equipment How long_____	☐	☐	☐	☐
h. Qualification of personnel for special processes How long_____	☐	☐	☐	☐
i. Product Qualification Tests How long_____	☐	☐	☐	☐
j. Nonconforming Supplies How long_____	☐	☐	☐	☐
k. Corrective action How long_____	☐	☐	☐	☐
l. Lower-tier quality performance How long_____	☐	☐	☐	☐
3. Copies of the above inspection records are:				
a. Available for examination by Customer	☐	☐	☐	☐
b. Will be furnished upon request by Customer	☐	☐	☐	☐

G. Measuring and Testing Equipment

The following elements apply to those devices, equipment, or instruments whose normal intended function is to measure, indicate, record, or otherwise provide a reference of comparison of characteristics during inspection, calibration, adjustment and repair activities.

	YES	NO	NA	*
1. Procedures are in effect which describe the method and frequency of calibration of measuring and test equipment to master gauges or standards	☐	☐	☐	☐
2. Adequate measuring equipment is available to inspection for verifying the conformance of applicable supplies and services	☐	☐	☐	☐
3. New and reworked equipment is calibrated before use	☐	☐	☐	☐
4. Measuring and test equipment is marked to designate certification and indicate when the next calibration is due	☐	☐	☐	☐
5. Master gauges and standards are periodically certified as to accuracy	☐	☐	☐	☐

	YES	NO	NA	*
6. Master gauges and standards are traceable to the National Bureau of Standards	☐	☐	☐	☐
7. The services of an outside organization are used for the above certifications. If answer is "yes," describe on an attachment	☐	☐	☐	☐
8. Equipment is stored so as to prevent damage or loss of calibration when not in use	☐	☐	☐	☐
9. Employees' personal equipment is controlled to the same degree as company-owned equipment	☐	☐	☐	☐

H. Tool Control

The following elements refer to those tools used as media of inspection whether issued for that purpose alone or are the same tools used for production.

	YES	NO	NA	*
1. Tools are proved for accuracy prior to production	☐	☐	☐	☐
2. A scheduled reinspection of tools to applicable drawings and specifications is performed	☐	☐	☐	☐
3. Tools are marked to show when the next inspection is due/or reinspected prior to production run	☐	☐	☐	☐
4. All tools not in productive use are stored as to prevent damage or loss of accuracy	☐	☐	☐	☐

I. Inspection

The following elements apply to inspections performed from the time of receipt of incoming material to the final acceptance prior to delivery including fabrication, assembly, and packing inspection.

	YES	NO	NA	*
1. Check lists for incoming material are furnished to Receiving Inspection showing degree and extent of inspection to be performed	☐	☐	☐	☐
2. Shop travelers, operation sheet and/or inspection instructions are furnished to indicate inspection operations performed during manufacturing processes	☐	☐	☐	☐
3. Final inspection is conducted on all characteristics not previously inspected and accepted	☐	☐	☐	☐

	YES	NO	NA	*
4. Statistical quality control procedures are employed for characteristics not 100% inspected	☐	☐	☐	☐
5. If answer to I.4 above is yes, do procedures describe the method of sample selection and acceptance criteria?	☐	☐	☐	☐
6. Inspections are performed in accordance with Interchangeability and Replaceability requirements and recorded	☐	☐	☐	☐
7. Material subject to deterioration is periodically re-inspected	☐	☐	☐	☐
8. Personnel and equipment for special processes are approved and/or certified	☐	☐	☐	☐
9. Periodic training and re-training of inspection personnel is performed	☐	☐	☐	☐

J. Procurement Control

1. Quality capability of sources including sources furnishing special process services is evaluated prior to procurement.				
2. Seller approval of sources is invoked:				
a. Independent of approval by the Customer	☐	☐	☐	☐
b. Subsequent to approval by the Customer	☐	☐	☐	☐
3. A list of approved sources is maintained and periodically reviewed	☐	☐	☐	☐
4. A summary of inplant and service quality performance datum is maintained and utilized for the selection of sources and corrective action	☐	☐	☐	☐
5. A performance rating system of sources is maintained to ensure continued quality	☐	☐	☐	☐
6. Applicable drawings and specifications and changes thereto are referenced or included on purchase orders to lower-tier sources	☐	☐	☐	☐
7. Requirements for evaluation of quality capability and approval of sub-tier sources are referenced or included on the purchase order to lower-tier sources	☐	☐	☐	☐
8. Latest changes to drawings and/or specifications are furnished to lower-tier sources	☐	☐	☐	☐

	YES	NO	NA	*
9. Quality Assurance personnel review purchase orders to assure the incorporation of applicable product design and quality requirements	☐	☐	☐	☐
10. Certified test reports and/or certificates of conformance of tests performed on purchased material are required	☐	☐	☐	☐
11. Periodic tests are conducted to verify accuracy of lower-tier certificates and test reports	☐	☐	☐	☐
12. When specified by the contract, notice is submitted to the customer of lower-tier sources furnishing supplies not inspectable on receipt	☐	☐	☐	☐

K. Material Control

1. Purchased material is identified by stamp or tag to show the inspection status prior to release to production or stock	☐	☐	☐	☐
2. Purchased material not yet accepted by Receiving Inspection is released to production only if positively controlled to retrieve items determined to be unacceptable	☐	☐	☐	☐
3. All materials are identified to assure storage and disbursement to applicable requirements	☐	☐	☐	☐
4. Materials not disbursed for usage are segregated in controlled stores area	☐	☐	☐	☐
5. Age control procedures applicable to materials that are subject to deterioration include:				
a. Identification and marking	☐	☐	☐	☐
b. Instructions for preservation methods	☐	☐	☐	☐
c. Stock rotation	☐	☐	☐	☐
d. Scheduled reinspection	☐	☐	☐	☐
6. Lot identity is maintained throughout production processes.	☐	☐	☐	☐
7. Stock rooms/stores are periodically inspected	☐	☐	☐	☐
8. Parts and assemblies shipped are individually identified with the applicable seller and customer part number	☐	☐	☐	☐

L. Design Qualification

	YES	NO	NA	*
1. Written test procedures are prepared and approved by the customer for items requiring qualification tests	☐	☐	☐	☐
2. Qualification tests are witnessed and verified by quality control personnel	☐	☐	☐	☐
3. Records of qualification tests are maintained including date and results of tests	☐	☐	☐	☐
4. Written procedures are in effect to assure that only qualified products are purchased and incorporated in the end product	☐	☐	☐	☐

M. Nonconforming Supplies

1. Procedures are in effect to detect minor and major variations in supplies from customer and/or Seller drawings and specifications	☐	☐	☐	☐
2. The system includes the collection, classification and analysis of inplant and service generated defect data	☐	☐	☐	☐
3. Defect datum is utilized to prevent defect recurrancy and determine required changes in design requirements and/or manufacturing technique	☐	☐	☐	☐
4. Supplies not in compliance with drawings and specifications are identified and diverted from normal production channels and where practical placed in a controlled material review area	☐	☐	☐	☐
5. Minor departures are approved by a Material Review Board consisting of representatives of the Seller Quality Control Organization and a representative of the Seller's design engineering department	☐	☐	☐	☐
6. Departures in excess of contractual requirements, are submitted to the customer for approval prior to incorporation into affected supplies	☐	☐	☐	☐
7. Seller obtains specific customer approval for Seller material review board authority on Customer designed parts/components	☐	☐	☐	☐
8. MRB authorization is not delegated to lower-tier supplies	☐	☐	☐	☐

	YES	NO	NA	*
9. Supplies that are reworked or repaired to an approved variation are inspected to determine compliance with the disposition	☐	☐	☐	☐
10. Supplies that are designated for scrap are identified or positively controlled to prevent reissue and use	☐	☐	☐	☐
11. Procedures are in effect to provide the reporting of nonconforming Government furnished property to the cognizant military representative	☐	☐	☐	☐

N. Inspection Status

1. Procedures prescribe the method of indicating inspection status (stamps, tags, labels, etc.)	☐	☐	☐	☐
2. The control of issue and use of identification devices is under the jurisdiction of authorized quality control personnel	☐	☐	☐	☐
3. Parts and assemblies are identified to indicate the extent of inprocess inspection status	☐	☐	☐	☐
4. Material is identified to show completion of rework or repair to an approved variation	☐	☐	☐	☐
5. Material that is finally accepted shows evidence of inspection acceptance and is identifiable to the Seller	☐	☐	☐	☐

O. Packaging/Shipping

1. Procedures are issued relating to the control of preservation, packaging, and shipping processes to assure conformance to contractual requirements	☐	☐	☐	☐
2. Facilities are available to furnish packaging which meet customer/government specifications	☐	☐	☐	☐
3. Seller's shipping document lists or references:				
a. Seller name, date of shipment, Customer and Seller identification number and nomenclautre of the item	☐	☐	☐	☐
b. Applicable Customer and Seller engineering drawing number, including latest drawing revision	☐	☐	☐	☐
c. Serial and lot number, when applicable	☐	☐	☐	☐

	YES	NO	NA	*
d. Report of or reference to applicable material review action(s).....	☐	☐	☐	☐
e. List of authorized shortage items including identity of the Customer authorizing document.....	☐	☐	☐	☐

P. Housekeeping/Safety

1. Work and storage areas are clean and free from dirt, refuse or other articles which could contaminate or damage acceptable material.....	☐	☐	☐	☐
2. Facilites are equipped with automatic sprinklers.....	☐	☐	☐	☐
3. Facilities have well marked and located fire protection system such as, extinguishers, hose racks, etc.....	☐	☐	☐	☐
4. Supplier has fire and safety program for disaster prevention.....	☐	☐	☐	☐

Q. 10CFR21

1. 10CFR21 "Reporting of Defects and Noncomformances" is implemented by internal procedures and reporting will be made when applicable.....	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

SUPPLIER APPROVAL AND THE SUPPLIER DIRECTORY

An audit shall be regularly made on the maintenance of the Supplier Directory and the Supplier History Records in the procurement process.

		Yes	No	N/A	*
1.	Supplier Directory and approval status for designated procurements for each supplier available?	☐	☐	☐	☐
2.	Survey status documented for each supplier?	☐	☐	☐	☐
3.	Have all suppliers been surveyed by questionnaire within the last year in lieu of an on-site survey?	☐	☐	☐	☐
4.	Have on-site surveys been conducted on selected suppliers, e.g., quality problems, change in management, or inactivity?	☐	☐	☐	☐
5.	Is appropriate data documented on a supplier history sheet for each Purchase Order and/or receipt?	☐	☐	☐	☐
6.	Is there a supplier rating system based on quality of material supplied?	☐	☐	☐	☐
7.	Other (Specify)				

* See Attached Sheet

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

PROCUREMENT REQUEST (CONT.)

	Yes	No	N/A	*
Review of Quality Assurance supplier folder for selected procurement for satisfactory replies to Corrective Action Requests and other actions required from surveys and/or previous procurements? _____	☐	☐	☐	☐

Suppliers reviewed (list)

_____

_____

_____

_____

_____

_____

ORGANIZATION BEING REVIEWED: _____

PERSONS CONTACTED:

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_____ _____

_____ PHONE NO: _____

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DATE: _____ ORGANIZATION: _____

* See Attached Sheet

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QUALITY ASSURANCE PROCEDURE

TITLE: INSTRUCTIONS, PROCEDURES, AND DRAWINGS

PURPOSE: To ensure that written, controlled instructions and procedures toether with specifications, standards, and codes are utilized in the development, production, and support of products and services.

REFERENCES: QAM 00.1

GENERAL: It is the policy of NAC that all activities affecting the quality of structures, systems, components, and/or their operations, shall be in accordance with written, controlled instructions, procedures, or drawings of a type appropriate to accomplish the desired purpose. Such documents shall include necessary quality standards so that the satisfactory accomplishments of quality related activities and services may be determined. If available, national consensus standards, codes, and specifications shall be utilized in product definition, production, and operations in meeting all contractual, regulatory, and statutory requirements and in verifying (through test and inspections) that the acceptability of the product and/or service.

PROCEDURES:

1. All organizations with activities affecting quality will have instructions, procedures, and/or drawings for control of those aspects of quality as specified by contract and by regulatory requirements.

2. Quality Assurance shall:

   2.1 Publish and maintain a Quality Assurance Manual with Quality procedures providing specific instructions for the accomplishments of all elements of the quality program as specified in 10CFR50, Appendix B and 10CFR71, Appendix E.

   2.2 Through contract review of each program, verify that existing procedures are available for accomplishing contract objectives. Prepare specific written instructions for requirements not otherwise covered.

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2.3 Through planned and periodic quality in-house audits, specifically check for the compliance with written instructions and the use of nationally accepted standards and specifications. Review the use of contractually applicable documents and other requirements, including drawings, for the proper effectivity and/or change requirements.

2.4 Utilize the same elements of the in-house review for vendor surveys, resident inspection audits and surveillance, and supplier's conformance to a disciplined plan of documentation and compliance.

2.5 Supplement the NAC QAM with additional procedures and instructions when required for specific contracts.

2.6 Utilize the attached audit checklist for preplanned in-house audits and for supplier surveys.

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AUDIT CHECKLIST

Written procedures, instruction, and/or drawings are utilized to derive and control quality elements.

(N/A - Not Applicable)

		Yes	No	N/A	*
1.	Are activities affecting quality documented in procedures, instructions, and drawings for				
	a. Engineering?	☐	☐	☐	☐
	b. Procurement?	☐	☐	☐	☐
	c. Manufacturing?	☐	☐	☐	☐
	d. Quality Assurance?	☐	☐	☐	☐
	e. Maintenance, Repair & Use?	☐	☐	☐	☐
	f. Services?	☐	☐	☐	☐
2.	Is there a documented sequence of preparation, review, approval, control including revisions of procedures, instructions, and drawings?	☐	☐	☐	☐
3.	Is there a method for verifying compliance with regulatory and contractual quality criteria?	☐	☐	☐	☐
4.	Are quantitative (dimensions, tolerance, tests) and qualitative (samples) criteria provided to verity acceptability?	☐	☐	☐	☐
5.	Does the Quality Assurance function with organizational independence, partipate in				
	a. Inspection Planning?	☐	☐	☐	☐
	b. Design Reviews?	☐	☐	☐	☐

*See Attached Sheet

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	Yes	No	N/A	*
c. Test, calibration and special processes approval?	☐	☐	☐	☐
d. Drawings and specifications approval?	☐	☐	☐	☐
e. Changes and effectivity of drawings and specifications?	☐	☐	☐	☐
6. Is there a planned program for utilizing national standards and codes?	☐	☐	☐	☐
7. Other (Specify)?	☐	☐	☐	☐

ORGANIZATION BEING REVIEWED: _____

PERSONS CONTACTED: ADDRESS: _____

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_____ PHONE NO: _____

SIGNED: _____ TITLE: _____

DATE: _____ ORGANIZATION: _____

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QUALITY ASSURANCE PROCEDURE

TITLE: DOCUMENT CONTROL

PURPOSE: To control all designated "Control Documents" from initial release and for each revision thereto for accuracy, completeness, and effectivity and to preclude the use of obsolete material.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC that all documents prescribing activities affecting quality shall be controlled so that they are reviewed for adequacy, completeness, effectivity, and approved for release by authorized personnel, distributed in a manner which assures that the applicable issues are available and used at the work source. Furthermore, the system of document control shall be so structured that changes to quality related documents will receive the same degree of review and approval as the original document although the reviewing and approval organization may be different. Applicability of all revisions will be documented for material in service, completed but not delivered, and work in process. Obsolete material shall be removed to prevent its use.

The types of documents that shall be controlled include:

- Engineering drawings
- Design specification
- Procurement documents
- ETS/Operations Procedures
- QA Manual
- Corporate Policy Manual
- Technical Reports
- Operating, Maintenance, & Modification Procedures
- Test Procedures
- Design Change requests
- Nonconformance reports, Waivers, & Deviations
- Operating Licenses & SARs

PROCEDURE:

1. Engineering and Transport Services shall: 611 138

1.1 Prepare NAC drawings, specifications, and revisions

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thereto, utilizing all applicable requirements, analyses, test data, and considerations for manufacturing and verifying through in-process and final inspection for acceptability of the product or service. Change control and the effect on configuration management, interchangeability, work in process, completed but not delivered, and material already delivered shall be considered. Measures shall be taken to assure that obsolete drawings, specifications, and other controlled documents are removed from use.

1.2 Utilize an independent, technically competent checker to review all 1) NAC drawings, 2) specifications, 3) changes, and 4) subcontractor documents requiring NAC approval prior to release and who will sign the document or approval transmittals verifying that this check has been made. The same degree of review and approval shall be made on all revisions as that given to the original release.

2. Records Management shall:

2.1 Establish and maintain a program for designated controlled documents to include

2.1.1 System of approvals for document release and controlled known distribution. This system shall include control of revisions, distribution, disposition of previously issued documents, and other actions that may be designated.

2.1.2 The controlled document system shall provide, on request, the status of any document in the system.

3. Quality Assurance shall:

3.1 Make regularly scheduled audits of the drawing and specification preparation and other controlled documents affecting quality, the release system, change control and status.

3.2 Review and concur on all inspection planning, test, calibration, and special process procedures as well as all operating and maintenance procedures and instruction.

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QUALITY ASSURANCE PROCEDURE
AUDIT CHECKLIST
DOCUMENT CONTROL

Review the following questions in evaluating the preparation and release of drawings and specifications including revisions thereto and other documents requiring control:

(N/A - Not Applicable)

		Yes	No	N/A	*
1.	Identification of individuals/groups designated for reviewing, approving, and issuing documents and their revisions?	☐	☐	☐	☐
	Same review of changes as for original documents?	☐	☐	☐	☐
2.	A master list, or equivalent, is established to identify current status of controlled documents?	☐	☐	☐	☐
	Updated and distributed to personnel and suppliers requiring such?	☐	☐	☐	☐
	Availability of current status by telephone call to "Status Center"?	☐	☐	☐	☐
3.	Was an independent quality check made of the document prior to release?	☐	☐	☐	☐
4.	Is there documentation on the effectivity of the document?	☐	☐	☐	☐
	Incorporation into other documents prior to implementation?	☐	☐	☐	☐
	Disposition/Action to be taken on parts produced? In Service?	☐	☐	☐	☐
	Work in Progress?	☐	☐	☐	☐
	Purchase Order changes made for work in progress?	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE
AUDIT CHECKLIST
Document Control (Cont.)

		Yes	No	N/A	*
5.	Obsolete documents removed from use?	☐	☐	☐	☐
6.	Are referenced specifications, standards, codes, etc. compatible with the latest revision? (Dates, numbers, ...)	☐	☐	☐	☐
	Other interface documents?	☐	☐	☐	☐
7.	Have referenced NAC drawings and specifications been revised to incorporate the changes made on the document(s) under review?	☐	☐	☐	☐
8.	Has the change been incorporated into all shop orders and related documents?	☐	☐	☐	☐
	Tooling changes made?	☐	☐	☐	☐
9.	If documents prepared for NAC, has NAC approved the document and/or the change?	☐	☐	☐	☐
10.	Are documents available in locations where required?	☐	☐	☐	☐
11.	Controlled Documents include:				
	Design Specifications	☐	☐	☐	☐
	Engineering Drawings	☐	☐	☐	☐
	Procurement Documents	☐	☐	☐	☐
	QA Manual	☐	☐	☐	☐
	Operating and Maintenance Procedures	☐	☐	☐	☐
	Manufacturing Inspection and Test Instructions	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

Document Control (Cont.)

	Yes	No	N/A	*
(11.) Control Documents (Cont.)				
Test Procedures _____	☐	☐	☐	☐
Design Change Requests _____	☐	☐	☐	☐
Nonconformance Reports _____	☐	☐	☐	☐
Other (Specify) _____	☐	☐	☐	☐

ORGANIZATION BEING REVIEWED _____

PERSONS CONTACTED: ADDRESS _____

_____ _____

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PHONE NO. _____

SIGNED: _____ TITLE: _____

DATE: _____ ORGANIZATION: _____

* See Attached Statement

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QUALITY ASSURANCE PROCEDURE

TITLE: CONTROL OF PURCHASED MATERIAL, EQUIPMENT , AND SERVICES

PURPOSE: To ensure that capabilities of potential suppliers are evaluated and only those who can supply quality products to the documented requirements of the purchase order are utilized and that all supplies are inspected to verify their conformance to requirements prior to acceptance.

REFERENCE:
1. QAM 00.1
2. QAM 04.1
3. QAM 04.2

GENERAL: It is the policy of NAC to establish approriate measures to assure that purchased materials, equipment or services conform to procurement document requirements. It is recognized that suppliers of the above may differ greatly in size, organization and methods of quality administration. NAC shall, therefore, institute such evaluation, inspection, audit or assistance measure as may be necessary to assure (1) that suppliers are selected who are capable of performing the specified activities, (2) that objective evidence of the accomplishment of quality and procurement requirements is obtained, and (3) that shipment has not been detrimental to the item. Furthermore, the measures shall provide that documentation attesting to the accomplishment of quality shall be received at the job site prior to installation of the item and that this documentation shall be retained as required by applicable regulations and in accordance with Records Management requirements.

PROCEDURE:

1. ALL ORGANIZATIONS shall initiate requests for products and services by preparing a Purchase Request as specified by Corporate Policy III.5 and QAM Procedures 04.1 and 04.2.

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QUALITY ASSURANCE PROCEDURE

2. The receiving area shall be a specified, controlled area in which all incoming material will be inspected for compliance with all purchase order requirements. The originator of the purchase order shall make an inspection of the incoming material and a re-inspection by an independent NAC representative shall be documented. The receiving inspection shall include the following:

   2.1 Material identification is as specified by purchase order.

   2.2 Material and acceptance records are verified in accordance with specific instructions on the receiving inspection report.

   2.3 All data, records, and certifications are available prior to the release of the material from receiving.

   2.4 Completion of the receiving inspection documentation and release of the accepted material.

3. Quality Assurance shall:

   Maintain a Supplier Directory listing the products available and supplier approval status for future procurements as specified in QAM 04.2. This approval shall be based on past performance and on periodic supplier surveys by engineering and/or quality assurance for capability to perform to NAC requirements. For safety-related items, the survey team shall include both engineering and quality assurance.

   3.1 Maintain a Supplier Directory listing the products available and supplier approval status for future procurements as specified in QAM 04.2. This approval shall be based on past performance and on periodic supplier surveys by engineering and/or quality assurance for capability to perform to NAC requirements. For safety-related items, the survey team shall include both engineering and quality assurance.

   3.2 Review all Procurement Requests for products and services related to NAC products and services and approve after verifying approval status and past performance.

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QUALITY ASSURANCE PROCEDURE

If not APPROVED, take appropriate action as specified in QAM 04.2.

3.3 If the request is for a safety-related product or service, ensure the requirements of 10CFR21 are included.

3.4 For all purchase requests under a government contract, ensure that the designated Corporate Purchasing Manager reviews for inclusion of all contractual flowdown requirements.

3.5 Participate in in-process and final acceptance inspections and tests at suppliers' plants when required by purchase order and verify that the receiving inspection at NAC is utilized and documented on the acceptability of the material and/or other actions are taken.

3.6 Make regular reviews of the control of purchased material in combination with Procurement Procedures using Checklists 04.1 and 04.2.

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QUALITY ASSURANCE PROCEDURE

This page intentionally left blank. See 04.1 and 04.2 for checklists.

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QUALITY ASSURANCE PROCEDURE

TITLE: IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

PURPOSE: To ensure that the requirements for the control of material is identified on the engineering drawings and that identification and control are maintained from procurement through the manufacturing and repair or modification process including partially fabricated assemblies either in the work package in progress or records traceable to the completed work package.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to establish measures for the identification during the development of drawings and specifications for the control of materials, parts, and components to prevent the use of incorrect or defective items from procurement through manufacturing and operation. The location and the method of identification shall not affect form, fit, function or quality of the item.

PROCEDURES:

1. Engineering and Transport Service shall:

   Utilize a part numbering system for the identification and control of parts and components during the design phase for procurement and production with the subsequent requirements for operations and support. Material traceability will be specified when chemical and physical properties are required for the initial procurement. The requirement will also be noted if traceability is to be continued throughout the production process including the requirement for testing coupons from the same material for verification of properties when subjected to the same processes as the production material; e.g., heat treating.

   The location and number of identification shall not affect form, fit, function or quality of the part.

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QUALITY ASSURANCE PROCEDURE

2. Quality Assurance shall:

2.1 At drawing release verify that the identification and traceability requirements are specified as required.

2.2 Prior to approval of an NAC Procurement Request or subcontract, ensure that all identification requirements are documented and data requirements specified.

2.3 During all surveys and audits, verify the procedural identification requirements from procurement, through receiving, inspection, stores, and production. This identification may be either on the material in process or on records directly traceable to the material.

2.4 Verify that identification is maintained throughout production even when processing obliterates the previous marking and that tags or other means are utilized until material is reidentified.

2.5 When parts are built into assemblies and further maintenance of individual part identification is not possible, ensure that the manufacturing inspections records are appropriately documented.

2.6 Throughout surveys and audits, verify that the identification methods used will provide the necessary controls and will not affect the performance or functioning of the part, component, or assembly.

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QUALITY ASSURANCE PROCEDURE
AUDIT CHECKLIST

IDENTIFICATION AND CONTROL OF MATERIAL, PARTS, AND COMPONENTS

The following checklist should be used in combination with similar lists from QAM 03.1 and 03.2 for a total review of procurement/material control at NAC or at a supplier.

		Yes	No	N/A	*
1.	Are identification requirements included on Drawings and/or Specifications for safety-related material, parts, and components and other designated material?	☐	☐	☐	☐
2.	Are all identification requirements clearly specified for all procurement actions?	☐	☐	☐	☐
3.	Is there traceability of all designated materials, parts, and components from the supplier, verified on receipt, and maintained throughout manufacturing?	☐	☐	☐	☐
	Is this data available in the receiving inspection and manufacturing records?	☐	☐	☐	☐
	Are these records available for review throughout the record retention required by contract/regulations?	☐	☐	☐	☐
4.	Assurance that only correct and accepted items are used and installed?	☐	☐	☐	☐
	Pertinent data including supplier, purchase order, physical and chemical test data, acceptance test data, and deviations or nonconformances are available for all safety-related material, parts, and components?	☐	☐	☐	☐
	All material is verified as that required prior to release from stock?	☐	☐	☐	☐

*See Attached Sheet

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QUALITY ASSURANCE PROCEDURE
AUDIT CHECKLIST

IDENTIFICATION AND CONTROL (CONT.)

		Yes	No	N/A	*
5.	Identification is clearly indicated on materials, parts, and components?	☐	☐	☐	☐
	Fit, function, and/or structural integrity is not affected by the identification?	☐	☐	☐	☐
6.	When separate unique identification (serial numbers) are not used, batch, lot, or other identification is maintained with designated material until it is built into the final product?	☐	☐	☐	☐
	Are records document to maintain identification of designated material, parts, and components in the final product?	☐	☐	☐	☐
7.	Are designated methods used to maintain identification of parts removed during the manufacturing process (e.g., tags)?	☐	☐	☐	☐
8.	Are the above items applicable to operating, maintenance, and support of delivered items?	☐	☐	☐	☐
9.	Are there plans and procedures for incorporating changes, modifications, or other changes into final product or portion thereof with appropriate re-identification and records of the work?	☐	☐	☐	☐
10.	Are limited life material (shelf life, operating environment, and/or factors affecting proper functioning) identified on drawings and in specifications?	☐	☐	☐	☐

*See Attached Sheet

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

IDENTIFICATION AND CONTROL (CONT.)

	Yes	No	N/A	*
11. Are these materials properly controlled from the supplier until the delivery of the final product?	☐	☐	☐	☐
Are operating and maintenance procedures clearly written for the control of inventory and time limits for the product before replacement?	☐	☐	☐	☐

*See Attached Sheet

ORGANIZATION BEING REVIEWED _____

PERSONS CONTACTED: ADDRESS: _____

_____ _____

_____ _____

_____ _____

_____ PHONE NO.: _____

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SIGNED: _____ TITLE: _____

DATE: _____ ORGANIZATION: _____

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QUALITY ASSURANCE PROCEDURE

TITLE: CONTROL OF SPECIAL PROCESSES

PURPOSE: To control special processes through utilizing qualifications of personnel, in-process controls, nondestructive testing, destructive testing of control test specimens, and procedures of applicable codes, standards, and other criteria.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to establish and maintain measures to assure that special processes such as welding, heat treating, cleaning, finishes, and nondestructive evaluation which affect the quality of the structures, components, or systems are accomplished by trained personnel using approved procedures in accordance with applicable codes, standards, specifications, and other special requirements. Records shall be maintained as evidence of verification together with qualification program documentation.

PROCEDURE:

1. Engineering shall identify on drawings and specifications those special process which must be controlled in-process and or after completion of the part, assembly, component, ore assembly. Specific reference will be made to standards, specifications, codes, and techniques that shall be utilized to verify conformance.

2. Quality Assurance shall:

   2.1 During engineering design and again at drawing release, verify that criteria have been designated for the control and acceptance of special processes. Techniques that should be considered include:

      2.1.1 Nondestructive testing utilizing qualified personnel to accepted levels as defined in standard codes and specifications.

      2.1.2 Destructive testing of controlled parts processed concurrently with the production parts and destructively tested afterwards.

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QUALITY ASSURANCE PROCEDURE

2.1.3 Qualification training programs with certification of workers to verify their ability to produce quality material with a planned re-training and re-examination as required.

2.1.4 Statistical techniques for in-process controls of the special processes.

2.2 Verify documentation of written process instructions and recorded evidence of acceptance.

2.3 Verify documentation of qualification system (procedures, equipment, and personnel) including initial and re-training, testing of personnel, and controls for assuring competent personnel perform planned special process work.

2.4 The audit checklist for this procedure shall be used for quality reviews at NAC and at suppliers.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

SPECIAL PROCESSES

An audit for the control of special processes starts with the engineering definition of the end p.oduce, codes/standards called out, and special acceptance and/or controls that may be required. Control in manufacturing is achieved through adequate planning, trained personnel, and manufacturing capabilities (equipment and processes) that are appropriate for the product being manufactured. The following list identifies pertinent items for determining the acceptability of a quality program:

1. List special processes being used:

Name	Reference -Code/Std/Spec.

	Yes	No	N/A	*
2. Are special processes designated on engineering documents?				
Is acceptance criteria specified?	☐	☐	☐	☐
Are national standards designated for acceptance methods/techniques?	☐	☐	☐	☐
In-house specification/standards used?	☐	☐	☐	☐
3. Is inspection planning included in the shop traveler?	☐	☐	☐	☐
Acceptance criteria specified?	☐	☐	☐	☐
Documentation requirements stated?	☐	☐	☐	☐
4. Are there procedures for the initial control and requalification of				
Equipment?	☐	☐	☐	☐

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QUALITY ASSURANCE PROCEDURE

	Yes	No	N/A	*
Process Tanks?	☐	☐	☐	☐
Personnel				
Inspectors?	☐	☐	☐	☐
Production?	☐	☐	☐	☐
5. Are statistical quality control methods (charts or tests) used for in-process controls with periodic (hourly, daily, or weekly) tests/analysis?	☐	☐	☐	☐
Record identification and retention program?	☐	☐	☐	☐
6. Are personnel trained and ability-to-perform demonstrated by				
Written and demonstration tests?	☐	☐	☐	☐
Periodically retrained and retested?	☐	☐	☐	☐
Only Retested periodically?	☐	☐	☐	☐
National standards utilized for training and testing, e.g., ASNT or ASME?	☐	☐	☐	☐
7. Are all designated special processes performed by written procedures with recorded evidence of performance by qualified personnel?	☐	☐	☐	☐
8. Are records maintained which reflect the certification status of machines and operators?	☐	☐	☐	☐
9. Do all certified personnel for special processes carry a unique identification which indicates the processes for which they are certified and date of requalification?	☐	☐	☐	☐
10. Are there adequate current specifications, procedures and/or instructions for special processes in				
Engineering?	☐	☐	☐	☐
Production?	☐	☐	☐	☐
Inspection?	☐	☐	☐	☐
Sub-tier suppliers?	☐	☐	☐	☐

* See Attached Sheet

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11. Other (Specify)

ORGANIZATION BEING REVIEWED:

PERSONS CONTACTED: ADDRESS:

_____ _____

_____ _____

_____ Phone No. _____

Signed: _____ Title: _____

Date: _____ Organization _____

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QUALITY ASSURANCE PROCEDURE

TITLE: INSPECTION

PURPOSE: To assure that written instructions and documented inspection points during the manufacturing process--receiving, in-process and final assembly--verify conformance of parts, components, and assemblies to engineering data.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to establish and maintain a program or inspection to verify the quality of structures, systems, components, and their operation from receiving through final acceptance. Inspection activities shall be accomplished through the use of written instructions, checklists, or other inspection criteria and are based upon engineering or manufacturing planning requirements. Should inspection of materials or products be impossible or disadvantageous, indirect control by the monitoring of processing methods, equipment and personnel will be acceptable. However, when proper control is not obtainable by inspection or process monitoring alone, the two methods shall be sued in combination. When inspection procedures include mandatory "hold Points", which require witnessing by the inspector or his representatives, work shall not proceed beyond such points without the consent of the inspector.

Normally, the inspector shall exercise the "accept/reject" decision based on measurements and tests. Rejected material shall be processed in accordance with Nonconforming Material Procedures. When specified by engineering quantitative data used to make the "accept" decision will be recorded as specified.

These same requirements shall be applied in a graded approach to all suppliers.

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QUALITY ASSURANCE PROCEDURE

PROCEDURE:

1. Engineering shall:

   Provide criteria for determining the acceptability of material, parts, components, and assemblies. These criteria may be dimensions, performance under test/operational conditions, and other criteria including final acceptance criteria.

2. Quality Assurance shall:

   2.1 During engineering design and again at drawing release, verify that inspection accept and reject criteria have been designated for determining the acceptability of the part, component and/or assembly as well as the inspectability during manufacturing and at completion.

   2.2 During surveys and audits, as well as during source inspection, review the total procurement and manufacturing plans for the identification of inspection points, criteria, methods and procedures, training requirements, and other elements (e.g., measuring equipment, tolling, test fixtures, and performance testing) provide for conformance of the end item to engineering data. Selected checklists shall be used, oriented to the product and the facilities of the supplier.

   2.3 Verify evidence of completing and verifying a manufacturing inspection or test operation in which an inspector or data recorder documents the results of the inspection operation.

   2.4 Verify that all inspections are performed by:

      2.4.1 Using documented procedures and instructions using designated drawings and specifications to specified revision numbers.

      2.4.2 Personnel qualified in accordance with codes standards and company training programs with documented status on current qualifications and certification.

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QUALITY ASSURANCE PROCEDURE

2.5 Ensure that all inspections of modifications, repairs, and replacements are made to original design and inspection requirements or to designated acceptable alternatives.

2.6 Verify and document conformance of all material to requirements through source inspection and/or receipt at NAC.

2.7 Withhold all nonconforming material as specified in QAM 15.1.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

INSPECTION

The following items are to be used in verifying the acceptability of an inspection system:

GENERAL

		Yes	No	N/A	*
1.	Does the engineering definition of the end product (drawings and specifications) provide inspection acceptance criteria for all requirements?	☐	☐	☐	☐
	Reviewed during preparation and/or before release for inspectability?	☐	☐	☐	☐
	Specify quantitative data that is to be recorded and retained?	☐	☐	☐	☐
2.	Is there a documented inspection system integrated with the procurement plan for suppliers?	☐	☐	☐	☐
	For Manufacturing?	☐	☐	☐	☐
3.	Are inspections made by personnel independent of of those who supervise or perform the activities being inspected?	☐	☐	☐	☐
4.	Are mandatory "Hold Points" used in the manufacturing plan for inspection and/or the customer?	☐	☐	☐	☐
	Properly documented to ensure intended action?	☐	☐	☐	☐
5.	Are sampling plans utilized in determining acceptability of material on receipt?	☐	☐	☐	☐
	During Manufacturing?	☐	☐	☐	☐
	Final inspection?	☐	☐	☐	☐
6.	Is both inspection and process monitoring utilized when control is inadequate without both?	☐	☐	☐	☐

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		Yes	No	N/A	*
7.	Are the results of all inspections documented and retained as a part of the manufacturing records,- from receiving through final acceptance?	☐	☐	☐	☐
	Inspection makes the "accept-reject" decision and only documents quantitative data when specified by plan?	☐	☐	☐	☐
	Is nonconforming material immediately documented, segregated, and then handled through a material review system?	☐	☐	☐	☐
8.	Are there inspection procedures, instructions, checklists or other designated means for-				
	Identifying the characteristics and/or activities to be inspected?	☐	☐	☐	☐
	Identification of the individuals or groups responsible for performing the inspection operations?	☐	☐	☐	☐
	Acceptance and rejection criteria?				
	Describing the method of inspection?	☐	☐	☐	☐
	Recording evidence of completing and verifying a manufacturing inspection or test operation?	☐	☐	☐	☐
	Identification of the inspector?	☐	☐	☐	☐
	Documentation of the result?	☐	☐	☐	☐
	Periodic re-inspections or audits for verifying accuracy of inspections?	☐	☐	☐	☐
	Feedback and corrective action when an improper inspection decision is made?	☐	☐	☐	☐
	Ensuring that the proper revision of the engineering drawing and/or other criteria is available and used?	☐	☐	☐	☐

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	Yes	No	N/A	*
Removal of obsolete drawings, instructions, procedures, and other documentation?	☐	☐	☐	☐
9. Are inspectors qualified in accordance with applicable codes and standards by company training programs for assigned work?	☐	☐	☐	☐
Is a periodic retraing program utilized?	☐	☐	☐	☐
Is there a system in which each inspector has a unique identification, e.g. a numbered stamp, for documenting inspection actions?	☐	☐	☐	☐
Does this system provide for loss of stamp?	☐	☐	☐	☐
For maintaining current qualifications and certifications?	☐	☐	☐	☐
10. Are all modifications, repairs, or replacement items inspected to criteria verifying acceptability to original design requirements?	☐	☐	☐	☐
11. Are all personnel properly trained in reporting defects which might require reporting in accordance with 10CFR21, 10CFR50.55(e), and/or 10CFR71.61?	☐	☐	☐	☐

RECEIVING INSPECTION

1. For incoming raw material				
Is the supplier's certificate of conformity used as evidence of material acceptability?	☐	☐	☐	☐
Is quantitative data required in lieu of a statement of conformity?	☐	☐	☐	☐
Are there periodic retesting to verify the accuracy of the supplier's data?	☐	☐	☐	☐
2. For all incoming material submitted				
Checklist for each item?	☐	☐	☐	☐

* See Attached Sheet

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PROCEDURE EFFECTIVE REVISION NO.: EFFECTIVE PAGE 4 OF 7 CXL 10.1

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QUALITY ASSURANCE PROCEDURE

	Yes	No	N/A	*
Supplier history folder checked for past history?	☐	☐	☐	☐
Purchase Order and reference data available?	☐	☐	☐	☐
Records of material ordered, quantity tested, quantity accepted and/or rejected and related pertinent data documented?	☐	☐	☐	☐
Evidence of proper control and segregation to prevent damage, deterioration, loss or substitution of materials?	☐	☐	☐	☐
Identification of all material is verified and retained with the material when going to stock?	☐	☐	☐	☐
3. Is the receiving inspection area controlled to preclude material getting into stock or on the production line without proper inspection?	☐	☐	☐	☐
4. Is all nonconforming material withheld, documented, and submitted for proper review?	☐	☐	☐	☐
5. Are records properly filed for controlled materials so that traceability can be maintained throughout the production cycle and in the manufacturing records?	☐	☐	☐	☐
6. Is sampling used for determining acceptability of material?	☐	☐	☐	☐
For checking only on the supplier's inspection system?	☐	☐	☐	☐

List sampling plans used:

_____

_____

_____

_____

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IN-PROCESS INSPECTION

	Yes	No	N/A	*
1. Is there a single integrated manufacturing inspection work instruction for each part?	☐	☐	☐	☐
For each assembly?	☐	☐	☐	☐
2. Are inspection points called out in the work instructions?	☐	☐	☐	☐
Does the inspector document each inspection callout as "accept" or "reject"?	☐	☐	☐	☐
If "reject" is it immediately documented and processed as nonconforming material?	☐	☐	☐	☐
Are there specific instructions on the work to be performed at each inspection callout?	☐	☐	☐	☐
3. Is current reference material - drawings, specifications, and standard - readily available for production for for inspection?	☐	☐	☐	☐
Are obsolete documents purged continually from the shop area?	☐	☐	☐	☐
4. Is the recording of quantitative data from the inspection specified on some callouts?	☐	☐	☐	☐
5. Is the flow through the manufacturing area controlled so that material for each part is that originally released from stock?	☐	☐	☐	☐
6. Does inspection verify that the designated material is issued from stock as required by the work instructions?	☐	☐	☐	☐
7. Are raw material stockrooms controlled to preclude unauthorized material disbursements?	☐	☐	☐	☐
8. Is each part closed-to-stock properly identified for subsequent use?	☐	☐	☐	☐
9. Are stockrooms for finished parts routinely inspected for proper storage, etc.?	☐	☐	☐	☐

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	Yes	No	N/A	*
10. Are manufacturing inspection records completed and retained in proper storage for future reference as specified by record retention requirements?	☐	☐	☐	☐

FINAL INSPECTION

1. Is final acceptance conducted on all characteristics not previously inspected and accepted?	☐	☐	☐	☐
2. Are all final inspections made to written instructions, procedures, or checklists?	☐	☐	☐	☐
3. Is the final inspection made by Inspection (as contrasted to under their surveillance)?	☐	☐	☐	☐
4. Does quality assurance review and approve all acceptance and test procedures?	☐	☐	☐	☐
5. Do final acceptance and test procedures identify the product configuration?	☐	☐	☐	☐
Is change control to the planned configuration verified?	☐	☐	☐	☐
6. Are the record formation and retention for all final acceptance inspections and test documented?	☐	☐	☐	☐
7. Do the records identify actual quantitative test or measurment data together with the list of what is required for acceptance?	☐	☐	☐	☐
8. Are inspections made to verify interchangeability and/or replaceability program requirements?	☐	☐	☐	☐
9. Is calender limited material monitored to ensure that it is not out of date?	☐	☐	☐	☐
10. Are products properly protected and handled to prevent damage?	☐	☐	☐	☐

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	Yes	No	N/A	*
11. Is good "housekeeping" maintained in the assembly and final test and inspection area?	☐	☐	☐	☐

12. Other (Specify)

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_____ _____

_____ _____

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QUALITY ASSURANCE PROCEDURE

TITLE: TEST CONTROL

PURPOSE: To assure that all test and technical consulting service programs for substantiating analyses, evaluating design/alternatives, failure analyses, and/or simulating operating conditions are completely documented including objectives, test conditions, instrumentation, test procedures, results, and evaluation. Similar controls shall be utilized for all product testing including in-process, functional and final acceptance are similarly controlled.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to document and control all programs for the analysis and/or testing of structures, systems, components, and/or their operation and to provide assurance that such programs achieve planned objectives. The test and/or operating program shall assure that all required tests and/or operations are identified and performed in accordance with acceptance limits contained in applicable documents. The testing or operating program shall include, as appropriate, (1) proof tests prior to installation, (2) pre-operational tests, (3) operational tests, or (4) applicable combination of these tests. The program shall assure that prerequisites for a given test, analysis, or operation are specified and met, that adequate test instrumentation is available and calibrated, that tests are performed under suitable environmental conditions and that the results of the tests are documented and evaluated by competent individuals to assure tests or analyses have been satisfied.

PROCEDURE:

1. Engineering and Transport Service shall:

   1.1 Define the test program or analysis by drawing, standards and/or specifications; define the application of static, dynamic, thermal, or other loading with input and output data requirements; specify test instrumentation (as required) to be used and

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calibration before, during, and/or after testing; specify all controlled environmental conditions; identify data to be taken and data reduction techniques for evaluation of the test data, and specify any ppecial training qualifications or certifications of test personnel. Hold points and witness requirements shall be identified.

1.2 Monitor the program from initial planning throughout the setup, testing, and evaluation to provide an independent technical review of testing done by suppliers.

1.3 Ensure that the final report includes all relevant data for any future need and that all test data is retained for the required period.

1.4 Evaluate the test report for acceptability and utilize the results as planned.

2. Quality Assurance shall:

2.1 Review the specific test or analysis plan, prepared by NAC or by the supplier subject to NAC approval, for compliance with documented test requirements--contractually and regulatory.

2.2 Verify through inspection the conformity of the test specimens to engineering requirements.

2.3 Inspect the test set-up for conformance to plans including data collection, loading, and other input/output scheduled for the test.

2.4 Utilize a preplanned checklist for reviewing the adequacy of test planning, testing, data recording, records, and reporting.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

TEST CONTROL

Test control of engineering programs for design development or product qualification/evaluation, testing during the manufacturing cycle and, later, operations and maintenance is an integral portion of the total quality program. Specific elements to be reviewed include:

	Yes	No	N/A	*
1. For test/analysis planning -				
Objective and test plans documented?	☐	☐	☐	☐
Test set-up and specimens defined by drawings, specifications, or codes?	☐	☐	☐	☐
Load conditions identified (static, dynamic, thermal, environmental, etc.)?	☐	☐	☐	☐
Test instrumentation and accuracy specified?	☐	☐	☐	☐
Calibration requirements identified?	☐	☐	☐	☐
Data to be recorded?	☐	☐	☐	☐
Data reduction method specified?	☐	☐	☐	☐
Special qualifications, certifications, and/or special training requirements?	☐	☐	☐	☐
Test Hold Points specified?	☐	☐	☐	☐
Witness requirements?	☐	☐	☐	☐
Verification of planned data reduction methods and test evaluation by Benchmarking?	☐	☐	☐	☐
Separate calculations for verifying orders-of-magnitude?	☐	☐	☐	☐

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	Yes	No	N/A	*
2. Conducting the test(s)/analysis phase:				
Program set-up verified to plan?	☐	☐	☐	☐
Test specimen(s) inspected to requirements?	☐	☐	☐	☐
Instrumentation checked out, calibrated, and documentation of types, serial numbers, and related data?	☐	☐	☐	☐
Data recorded to Plan?	☐	☐	☐	☐
Witnesses and/or holdpoints documented?	☐	☐	☐	☐
Trained/certified/qualified personnel running the test and names documented?	☐	☐	☐	☐
Photographs of set-up, specimens, etc.?	☐	☐	☐	☐
3. Test/Analysis Evaluation				
Data reduction to plan?	☐	☐	☐	☐
Data reduction evaluated by alternate method?	☐	☐	☐	☐
Final report with results and conclusions backed up by complete descritpion of specimen(s), set-up, loading, performance measurements, etc.?	☐	☐	☐	☐
Variability/scatter of data analyzed?	☐	☐	☐	☐
Reproducibility of test results?	☐	☐	☐	☐
4. Other (Specify)				

* See Attached Sheet

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QUALITY ASSURANCE PROCEDURE

4. (Continued)

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_____ _____ _____

_____ _____

_____ PHONE NO. _____

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QUALITY ASSURANCE PROCEDURE

TITLE: CONTROL OF MEASURING AND TESTING EQUIPMENT

PURPOSE: To ensure the availability and use of gages and other measuring equipment for verifying conformance of supplies to technical requirements and which are calibrated against certified standards at established periods.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC that tools, gages, instruments, and other measuring and testing devices used in activities affecting the quality of items are properly identified, controlled, calibrated and adjusted (if required) at a stated frequency in order to maintain accuracy requirements.

For the testing of safety-related structures, systems, and components, documentation of the measuring equipment used for acceptance testing, by serial number or an equivalent unique identification designator, shall be recorded. This will permit retesting if the measuring equipment is found to be out of calibration at the next recall period. An alternate to this will be the calibration of measuring equipment before and after testing.

Unless limited by the state-of-the-art, the accuracy of calibration shall be 1/4th of the tolerance of the parameter being measured.

PROCEDURE:

1. ETS shall:

1.1 Acquire and maintain tools, gages, instruments, and other measuring and test devices for use in services provided to customers. The specific calibration internals and accuracy shall be documented in the Project Specification or operating and maintenance procedures for each program and will specify calibration to standards traceable to the National Bureau of Standards. For test and development programs all measuring devices will be calibrated before, during, and/or selectively after use.

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1.2 For products designed and performance/acceptance tested by NAC suppliers, include calibration requirements in specifications and drawings. The supplier's calibration system will be included in their quality assurance program evaluation and their detailed procedures will be subject to NAC approval after contract award.

1.3 For in-house equipment, a system shall be utilized to assure that all measuring and test equipment is identified for recalibration with the date indicated or a locked stockroom shall be used and all equipment will be calibrated prior to use. Depending on the duration of the test, interim recalibration may be required. For other test programs, calibration will be required after completion of the test and prior to storage.

2. Quality Assurance shall:

2.1 Audit individual records of identified in-house measuring equipment for:

2.1.1 Records of documentation of calibration, dates and results.

2.1.2 Procedures and instruction for calibration of each instrument and/or measuring system.

2.1.3 Retesting of safety-related structures, systems, and components when acceptance was made with instruments subsequently found to be out of calibration.

2.2 Verify that all suppliers have a controlled calibration system through audits, surveys, and/or source inspections for assurance that material accepted by their system meets all quality requirements.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

CONTROL OF MEASURING AND TEST EQUIPMENT

The following list of questions shall be used in evaluating the conformance of a control system for measuring and test equipment to requirements:

	Yes	No	N/A	*
1. Written description of calibration system covering measuring and test equipment covering the following:				
Calibration intervals?	☐	☐	☐	☐
Source of calibration?	☐	☐	☐	☐
Environmental conditions under which equipment will be calibrated?	☐	☐	☐	☐
Controls for segregation of obsolete, damaged, or otherwise inaccurate equipment?	☐	☐	☐	☐
Control for verification of productive tooling (jigs, fixtures, etc.) when used?	☐	☐	☐	☐
Maintenance of system description?	☐	☐	☐	☐
Availability of system description, procedures, and records?	☐	☐	☐	☐
2. Written description of calibration system covering measurement standards including:				
A list of reference standards (reference & standard)?	☐	☐	☐	☐
Nomenclature and identification number?	☐	☐	☐	☐
Calibration interval?	☐	☐	☐	☐
Sources of calibration?	☐	☐	☐	☐
Environmental condition under which measurement standards will be applied and calibrated?	☐	☐	☐	☐

*See Attached Sheet

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	Yes	No	N/A	*
Traceability of accuracy to a national standard?	☐	☐	☐	☐
Maintenance of system description?	☐	☐	☐	☐
Availability of system description, procedures, and calibration reports?	☐	☐	☐	☐
3. Adequacy of standards. Measurement standards established for calibration of test and measuring equipment have the capability of:				
Accuracy?	☐	☐	☐	☐
Stability?	☐	☐	☐	☐
Range?	☐	☐	☐	☐
Sensitivity required for the intended use?	☐	☐	☐	☐
4. Environmental controls -				
Environmental conditions controlled to the extent necessary to assure continued measurements of the required accuracy?	☐	☐	☐	☐
Considerations given to				
Temperature?	☐	☐	☐	☐
Humidity?	☐	☐	☐	☐
Vibration?	☐	☐	☐	☐
Cleanliness?	☐	☐	☐	☐
Other controlled conditions?	☐	☐	☐	☐
Controls for the application of compensating corrections to calibration results obtained in environments other than standard?	☐	☐	☐	☐

* See Attached Sheet

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	Yes	No	N/A	*
5. Calibration Intervals. Do procedures provide control for:				
Calibration of measuring and test equipment and measuring standards at periodic intervals?	☐	☐	☐	☐
The establishment of an interval period based stability, purpose, degree of usage?	☐	☐	☐	☐
The adjustment of interval periods when evidenced by results of calibrations?	☐	☐	☐	☐
6. Calibration procedures.				
Preparation, preparation and utilization of written procedures for the calibration of measuring and test equipment and measurement standards?	☐	☐	☐	☐
Requirement for calibration to be performed by comparison with higher accuracy level standards?	☐	☐	☐	☐
Utilization of published standard practices or manufacturers instructions?	☐	☐	☐	☐
Surveillance or checks that procedures are being followed?	☐	☐	☐	☐
Availability of procedures?	☐	☐	☐	☐
7. Calibration Sources. Do procedures provide for *				
Calibration by a source whose standards are traceable to the National Bureau of Standards?	☐	☐	☐	☐
Calibration of reference standards by a capable commercial facility, a Government Laboratory, or the National Bureau of Standards?	☐	☐	☐	☐
A report, certificate, or data sheet attesting to the date, accuracy, and conditions under which the calibration results of reference standards were obtained?	☐	☐	☐	☐

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	Yes	No	N/A	*
Reports, record cards, etc. for subordinate standards, measuring and test equipment when such is deemed essential?	☐	☐	☐	☐
Evidence that calibration sources other than National Bureau of Standards have their standards compared with a national standard at planned intervals?	☐	☐	☐	☐
Producing such reports for the government or NAC?	☐	☐	☐	☐
8. Application and records. Do procedures provide for control of -				
Supporting records to show that established schedules and procedures are applied to maintain the accuracy of measuring and test equipment and measurement standards?	☐	☐	☐	☐
An individual record of calibration for each item of measuring and test equipment and measurement standard providing calibration interval, date of certification, and result of last calibration?	☐	☐	☐	☐
9. Calibration Labeling. Do procedures provide control of -				
Labeling to indicate the date of last calibration, by whom, and the date when the next calibration is due?	☐	☐	☐	☐
An identifying code to reflect the status of serviceability for those items whose size or functional characteristics prohibit the application of a label?	☐	☐	☐	☐
The monitoring of recall records to assure adherence to calibration schedule?	☐	☐	☐	☐
10. Are measures taken and documented to determine the validity of previous inspections performed when measuring and test equipment is found to be out of calibration?	☐	☐	☐	☐

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	Yes	No	N/A	*
11. Calibration at suppliers - does the supplier have procedures for assuring that his sub-tier suppliers have a calibration system which meets NAC requirements?	☐	☐	☐	☐

12. After verifying the adequacy of procedures and instructions, select representive measuring and/or test equipment and check records and item being reviewed for conformance with requirements.

Equipment Item (List)	Result

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QUALITY ASSURANCE PROCEDURE

TITLE: HANDLING, STORAGE, AND SHIPPING

PURPOSE: To assure that there are documented handling, storage, packaging, preservation, and shipping procedures to preclude damage or degradation of NAC material.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to establish measures for the control of handling, storage, shipping, cleaning and preservation of material and equipment in accordance with established instructions, procedures, design requirements, and applicable codes and standards to prevent damage or deterioration. When necessary for particular items, special coverings, special equipment, and special protective environments, such as inert gas atmosphere, specific moisture content levels, and temperature levels, shall be specified and provided. Storage time limits will be specified when applicable.

PROCEDURE:

1. Engineering shall specify on drawings and specifications the requirements, in addition to industry standard practices for:

   1.1 Handling methods or techniques from receipt of material to storage and storage to installation.

   1.2 Special instructions on storage and/or after installation but prior to use.

   1.3 Environmental storage requirements including cleanliness level.

   1.4 Shipping techniques, recommendations and special precautions or requirements.

   1.5 Instrucitons for marking and labeling for packaging and shipping.

   1.6 Protective coatings or packaging for materials subject to deterioration in storage.

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QUALITY ASSURANCE PROCEDURE

2. Quality Assurance shall:

   2.1 Review all NAC drawings and specifications and supplier proposals for appropriate inclusion of special handling, storage, and shipping requirements.

   2.2 Review all Purchase Requests for adequacy of instructions on identification and marking, packaging and shipping, and handling.

   2.3 Through audits, surveys, and/or source inspection, utilize preplanned checklists for procedures and their implementation to meet all handling, storage and shipping requirements.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

HANDLING, STORAGE, AND SHIPPING

The following list of items is to be reviewed and should be supplemented depending on the supplier and/or the product:

	Yes	No	N/A	*
1. Is there a documented program which provides instructions specifying requirements to prevent damage or deterioration including -				
Preservation?	☐	☐	☐	☐
Storage?	☐	☐	☐	☐
Cleaning?	☐	☐	☐	☐
Packaging?	☐	☐	☐	☐
Shipping?	☐	☐	☐	☐
2. Is there a documented program for accomplishing the specified requirements of handling, storage, and shipping?	☐	☐	☐	☐
3. Are personnel qualified and trained?	☐	☐	☐	☐
4. Are all regulatory shipping requirements, e.g. NRC and DOT, satisfied for each shipment?	☐	☐	☐	☐
Each shipment documented and records maintained on times, routes, material being transported, shipper, carrier, etc.?	☐	☐	☐	☐
5. Inspections and tests of special handling equipment documented?	☐	☐	☐	☐
6. For material in storage after receipt but prior to issuance for use -				
Properly stored with required environmental conditions?	☐	☐	☐	☐

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	Yes	No	N/A	*
Adequately identified for traceability to all required certifications, guarantees, warranties, and/or shelf life limitations?	☐	☐	☐	☐
7. Is each shipment inspected on receipt for -				
Shipping damage?	☐	☐	☐	☐
Completeness to all purchase order requirements including packaging, labels, and identification?	☐	☐	☐	☐
8. Other (Specify)				

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QUALITY ASSURANCE PROCEDURE

TITLE: INSPECTION, TEST, AND OPERATING STATUS

PURPOSE: To provide for the use of stamps, tags, labels, routing sheets, or other suitable means for inspection, test, or operating status.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to establish measures to assure that the status of tests and inspections pertaining to structures, systems or components is clearly indicated. The indications shall be made by markings such as stamps, tags, labels, routing sheets or other suitable means which are on or immediately adjacent to the item. The measures shall provide for the identification of items which have satisfactorily passed required inspection and tests to preclude inadvertent bypassing of such inspections and tests. Any nonconforming condition shall be immediately documented and withheld pending disposition.

Furthermore, it is the policy of NAC to identify structures, systems, or components which are inoperable or not to be operated by the use of tags, locks or other suitable means to prevent inadvertent operation.

PROCEDURE:

1. Quality Assurance shall:

   1.1 Through audits, surveys, and source inspection, verify that all suppliers have implemented procedures for identification of inspection, test and operating status of parts, components, and/or systems during the manufacturing span.

   1.2 Verify that the inspection, test, and operating status system precludes missing any required inspection or test requirement.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

INSPECTION, TEST, AND OPERATING STATUS

The following items are to be reviewed for verify the adequacy of the status of material in-work. Additional items should be added as required for documenting the system.

	Yes	No	N/A	*
1. Is a documented program implemented from the receipt of material thoughout the manufacturing cycle to indicate the status of all work by stamps, tage, or routing sheets?	☐	☐	☐	☐
2. Does the system preclude missing any planned inspections or tests?	☐	☐	☐	☐
3. Are nonconforming material immediately identified and withheld?	☐	☐	☐	☐
4. Are the status indicators controlled?	☐	☐	☐	☐
Authority for application and for removal documented?	☐	☐	☐	☐
5. Other (Specify, e.g., in stockrooms)				

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PERSONS CONTACTED: ADDRESS: _____

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QUALITY ASSURANCE PROCEDURE

TITLE: NONCONFORMING MATERIAL, PARTS, OR COMPONENTS

PURPOSE: To ensure that material, when first found to be nonconforming to engineering requirements, be immediately identified and properly withheld to preclude inadvertent comingling with acceptable material. Immediate reporting of the defect shall be made by either a 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, when required by purchase order or contract, shall:

   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 the designated Engineering and Quality Assurance representatives. The nonconforming 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

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data, e.g. certifications

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

1.2.3 Complete if a specified operation(s) can return the material to its specified configuration

1.2.4 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 Engineering 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 Transport Service 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, surveys, 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 co-mingling 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 to ensure that it meets all requirements originally specified

4. Quality Assurance shall 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. 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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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 Engineering 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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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

NONCONFORMING MATERIAL, PARTS, OR COMPONENTS

The following checklist shall be utilized in evaluating the acceptability of policies and procedures for the control of nonconforming material, parts, or components:

	Yes	No	N/A	*
1. Are written procedures established for				
Control of nonconforming material?	☐	☐	☐	☐
Prevention of inadvertent use or installation?	☐	☐	☐	☐
2. Does the quality system provide for				
Identification, documentation, segregation and dispositioning of nonconforming items?	☐	☐	☐	☐
Notification of affected organizations?	☐	☐	☐	☐
Review, acceptance or rejection, repair or rework to documented procedures	☐	☐	☐	☐
Identification of personnel/functions authorized to disposition nonconforming items?	☐	☐	☐	☐
Documentation of the dispositioning decision and inclusion in the manufacturing records?	☐	☐	☐	☐
3. Are there controls to ensure that all reworked or repaired material is re-inspected to criteria at least equal to that of the original inspection?	☐	☐	☐	☐
4. Are there controls to prevent the inadvertent comingling of nonconforming material with accepted items	☐	☐	☐	☐
To prevent the use of the defective item until dispositioned and re-inspected?	☐	☐	☐	☐

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	Yes	No	N/A	
5. Documented procedures provide for customer review with the right of rejection of the proposed disposition?	☐	☐	☐	☐
6. Documented procedures for the reporting of nonconformances to the customer and/or regulatory requirements?	☐	☐	☐	☐

7. Other (Specify)

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QUALITY ASSURANCE PROCEDURE

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 of NAC 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 coumented nonconformances shall be investigated for determining the cause and then action taken to prevent recurrence.

PROCEDURE:

1. ETS shall:

   1.1 Through design reviews and independent checking of drawings and specifications assure the correctness of the product definition. All errors found shall be evaluated and action documented for future reference.

   1.2 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.

2. Quality Assurance shall:

   2.1 Ensure that all material received at NAC is in accordance with all procurement requirements. For any nonconformance, 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.

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2.2 Require all fabricators of NAC designed products to have a corrective action program for each nonconformance documented as a part of their quality assurance program.

2.3 Through audits, surveys, and/or source inspection verif that an effective corrective action program at all suppliers is implemented and that closure is effected for each action.

2.4 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.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

CORRECTIVE ACTION

Verify the basic elements in a corrective action program by using the elements list below, adding elements as required:

		Yes	No	N/A	*
1.	Is there a documented program that identifies all conditions adverse to quality?	☐	☐	☐	☐
2.	Is each condition documented reviewed by the appropriate personnel for identification of the cause of the nonconformance?	☐	☐	☐	☐
3.	Is the corrective action to be taken documented?	☐	☐	☐	☐
	Followed up to verify that the condition is corrected?	☐	☐	☐	☐
4.	Is there a reporting system that management reviews for assessing the effectiveness of the program?	☐	☐	☐	☐
5.	Is there a documented corrective action program for al suppliers and for their sub-tier suppliers?	☐	☐	☐	☐
6.	Other (Specify)				

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QUALITY ASSURANCE PROCEDURE

TITLE: QUALITY ASSURANCE RECORDS

PURPOSE: To ensure the formation and retention of design and product quality assurance records for documenting and manufacturing inspection of products and from maintenance and operations of NAC designed products.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to maintain records which furnish evidence of activities affecting the quality of structures, systems, and components in accordance with regulations and established records management retention requirements. These records, as a minimum, shall include design logs, test and development reports, and design review results for design assurance; procurement documents together with manufacturing and inspections records from receiving inspection throughout the fabrication and final inspections and tests; and operating logs and documented maintenance actions on equipment owned by NAC. Necessary supporting data shall be retained such as qualifications of personnel, procedures, and equipment. Inspection and test records shall identify the inspector or data recorder, the type of observation, the results, and the action taken for all deficiencies noted. All records shall be identifiable and retrievable and stored in facilities to preclude destruction or deterioration.

PROCEDURE:

1. Program management shall document overall program objectives and the management plan for achieving these. This document will be formalized after contract award and will be updated throughout the program. Design and Quality Assurance plans will be included or will be separately documented. Formation and retention of records shall be specified to meet contractual and regulatory requirements.

2. Engineering shall develop and maintain supporting documentation for design and specification decisions including trade-offs, design reviews, analyses, and tests and the results thereof.

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3. Quality Assurance shall:

3 1 Participate in the design of an assurance program through drawing and specification release for ensuring identification inspectability and quality requirements, their call-out and documentation. Review and approve drawings, specifications and program plans to ensure the requirements for record formation.

3.2 Using Quality Assurance Supplier Directory and Supplier History Records as well as survey results, review all procurement actions for ensuring that documentation and data requirements are included on all purchase orders and contracts.

3.3 Through audits, surveys and/or source inspection verify the procedural documentation and implementation at NAC and by each supplier of the required record formation and retention requirements including:

3.3.1 Identification of the inspector or data recorder the type of observation, the results, and the action taken for all deficiencies noted.

3.3.2 Records of receiving inspection including data supplied verifying the conformance of the material to requirements.

3.3.3 Fabrication records identifying the operations performed and the operator planned inspections and tests.

3.3.4 Final inspections and tests.

3.3.5 Documentation of all nonconformances, disposition, and corrective action and results.

3.3.6 Supporting data such as qualifications of personnel, procedures, and equipment.

3.3.7 Operating and maintenance actions records.

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3.3.8 Storage of records and record retention schedules are consistent with applicable codes, standards, and contract requirements.

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

QUALITY ASSURANCE RECORDS

The basic elements of a record formation and retention pgoram are listed below. Supplement this list as required depending upon the supplier and/or the product.

	Yes	No	N/A	*
1. Does the record system provide for record formation, identification and retrieval for products				
Designed?	☐	☐	☐	☐
Products fabricated from receiving inspection throughout the manufacturing cycle including final inspection and tests?	☐	☐	☐	☐
Operations, maintenance, and/or customer feedback?	☐	☐	☐	☐
2. Do these records include:				
Design assurance logs, tests and analysis, trade-off studies, and design reviews?	☐	☐	☐	☐
Inspection, tests, operating logs, audits, material cert ifications and test data for traceability?	☐	☐	☐	☐
Recording the operations and the operator for manufacturing?	☐	☐	☐	☐
Identification of the inspector or data recorder, date of test or inspection, type of observation, results of the inspection?	☐	☐	☐	☐
Documentation of all nonconforming material, its disposition and re-inspection criteria for rework or repair dispositions?	☐	☐	☐	☐
Corrective action for all nonconformances and results of the action?	☐	☐	☐	☐

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		Yes	No	N/A	*
	Qualifications of personnel, procedures, and equipment?	☐	☐	☐	☐
3.	Are these records indexed, filed, retrievable?	☐	☐	☐	☐
4.	Are the records stored in a suitable location to prevent deterioration or damage?	☐	☐	☐	☐
5.	Does the record management program define the retention schedule and disposition of documents?	☐	☐	☐	☐
6.	Is the record management program consistent with all applicable codes, standards, and contract requirements?	☐	☐	☐	☐

7. State the record retention period from completion of the contract

_____ (years)

8. State the disposition of the records after the end of this period

_____

_____

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* See Attached Sheet

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24 Executive Park West
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QUALITY ASSURANCE PROCEDURE

TITLE: QUALITY ASSURANCE AUDITS

PURPOSE: Through planned and periodic audits, verify compliance by NAC and its suppliers to Corporate policies and procedures and regulatory and contractual requirements.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to implement a program of planned and periodic audits to verify compliance with all aspects of the NAC Quality Assurance Program and to provide a comprehensive independent verification and evaluation of quality-related procedures and activities. The audit program shall be implemented in accordance with approved audit procedures and check lists by appropriately trained personnel who have no responsibility in the areas audited. Audit results shall be documented, submitted to appropriate management personnel for corrective action as required to minimize recurrence of deficiencies reaudited and for corrective action verification.

Records of audits and audit results shall be retained as management records in accordance with established retention schedules.

DEFINITIONS:

1. Quality Assurance Internal Audits - Audits of NAC design and quality assurance functions for compliance with documented policies and procedures and for adequacy of procedures for compliance with all regulatory and contract compliance.

2. Quality Assurance External Audits - Audits of suppliers for compliance with contract and regulatory requirements, with their quality plan and/or internal procedures and/or with special audits directions. These audits may be:

   2.1 General supplier surveys.

   2.2 Specific surveys for predetermined functions or operational areas; e.g., records or nondestructive testing.

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2.3 Source inspection (resident or itinerant) for pre-selected in-process and/or final test, inspection, and acceptance.

3. Management Audits - Conducted by a multi-discipline in compliance with corporate policies and procedures and regulatory requirements and on the adequacy of such policies and procedures to achieving corporate goals. Quality Assurance will usually be a memeber of such audit teams.

PROCEDURES:

1. Quality Assurance shall perform audits in those areas in which safety related activities are associated with:

1.1 Use, repair, maintenance, modifications, and operation of NAC designed products.

1.2 The preparation, review, approval, and control of designs, specifications, procurement documents, procedures, and drawings.

1.3 Receiving inspection.

1.4 Training programs.

1.5 Implementation of use, test, operations, and maintenance procedures.

1.6 Calibration of measuring and testing equipment.

Audit shcedules shall be reviewed and updated when required to ensure that each safety-related area and other procedural areas related to the NAC Qualtiy Program are reviewed at least annually or as otherwise specified tor shorter periods depending on findings and/or anticipated activity in that area.

2. Quality Assurance shall conduct unscheduled audits of internal operations or at suppliers whenever there ar any indications that conditions are conducive to a degradation of desired quality levels. These audits shall be designated by the Quality Assurance Manager at

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the recommendation of Program Management, customers, unsatisfactory quality reports, or other indications.

3. All quality assurance related audits shall be organized into the following phases:

   3.1 Identification of audit requirements--schedule or unscheduled.

   3.2 Development of audit plant - all audits will be planned with stated objectives, audit procedure/ method with identification of related pertinent policies, procedures, purchase order/contract requirements, specifications, regulatory requirements, licenses, previous audits and findings, and other pertinent data. This plan will include checklists of functions/areas to be audited and criteria for measuring acceptability if other than a "go-no go" determination.

   3.3 Audit Plan Review - each plan will be reviewed by the Manager of Quality Assurance and then with the manager(s) of the function/area to be audited.

   3.4 Conducting the Audit - the audit shall be performed according to the approved plan with additions or modifications as required by on-sight findings. Particular emphasis shall be placed on correction of previous unacceptable findings. Audits shall include an objective evaluation of work areas, process, systems, and a review of documents and records.

   3.5 Findings - during the audit, all unsatisfactory findings will be reviewed with management of the function/ area being audited and immediate corrective action shall be encouraged so that it will not be reported as an open item. An exit intrview shall be held with designated personnel on completion of the audit on the findings.

4. Audit Reports

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   4.1 Identification - each audit shall be identified by the year originated and then the next consecutive

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number assigned by the Manager of Quality Assurance when the plan is approved, e.g., 79-4 for the fourth audit in 1979.

4.2 Review of the final draft of the audit report shall be made by the manager of the function/area audited as well as others who may be designated within that organization. Approval by the Manager of Quality Assurance is required prior to final typing and distribution.

4.3 Format - the format for preparation of final audit reports is shown in the attachment to this procedure.

4.4 Distribution - distribution of published audit reports shall be to the President, VP/ETS, Manager QA, Manager of the function/area audited, others designated by any of those previously indicated, and corporate files.

4.5 External audit reports shall be as directed by the Manager of Quality Assurance.

5. Action on Quality Assurance Audit Reports

5.1 Within 5 days after distribution, the Manager of Quality Assurance shall meet with the President and/or management responsible for taking corrective action on all documented unsatisfactory findings. Action to be taken shall be prepared by the designated manager with scheduled commitments for correct- each unsatisfactory finding.

5.2 An identified repeat unsatisfactory finding in the final report shall require a separate written report shall be prepared by the responsible manager, approved by the affected VP, to the president with the action to be taken.

5.3 Audit reports shall be analyzed by the Manager of Quality Assurance for quality trends and the effectiveness of the quality assurance program for reporting to management for review and assessment.

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QUALITY ASSURANCE PROCEDURE

AUDIT REPORT OUTLINE

QUALITY ASSURANCE AUDIT REPORT XX-X

SUBJECT:

Date(s) of Audit

Facility Visited

Personnel Contacted

NAC Audit Team Member(s)

Purpose of the Audit

Summary

Findings/Open Items

Audit Report

- Background
- Plan
- Narrative of audit

Findings

Recommendations (future audits & related functions/areas for audit)

Audit Review (Exit interview and reviews of the draft report)

Prepared by: Approved by:

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QUALITY ASSURANCE PROCEDURE

AUDIT CHECKLIST

QUALITY ASSURANCE AUDITS

The quality assurance audit shall be used for assessing compliance with all aspects of the program and to determine its effectiveness. The following items should be supplemented as required for evaluation of the audit program in-house or at suppliers.

		Yes	No	N/A	*
1.	Are audits performed with pre-established procedures or checklists?	☐	☐	☐	☐
	By trained personnel not having direct responsibility in the area(s) being audited?	☐	☐	☐	☐
2.	Audit results are documented and then reviewed with management in area(s) audited?	☐	☐	☐	☐
	Reviewed with higher management?	☐	☐	☐	☐
3.	Responsible management takes necessary action to correct any deficiencies?	☐	☐	☐	☐
	Follow-up maintained to assure closure?	☐	☐	☐	☐
4.	Re-audits made on a timely basis to verify implementation of corrective action?	☐	☐	☐	☐
5.	Audits include an objective evaluation of quality-related practices, procedures, and systems?	☐	☐	☐	☐
	Effective implementation and compliance?	☐	☐	☐	☐
6.	Audits include objective evaluation of work areas, activities, processes, and equipment?	☐	☐	☐	☐
	Review of pertinent documents and records?	☐	☐	☐	☐
	Qualifications and training of personnel?	☐	☐	☐	☐

* See Attached Sheet

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		Yes	No	N/A	*
7.	In the audit of the overall Quality Program-				
	Does the Quality Assurance organization provide a comprehensive independent verification and evaluation of quality related procedures, implemention, and activites?	☐	☐	☐	☐
	Verify and evaluate all suppliers' quality assurance programs, procedures, and activities?	☐	☐	☐	☐
8.	Are audit programs implemented for all safety-related activities associated with -				
	Use, maintenance, modification & repair of products?	☐	☐	☐	☐
	Preparation, review, approval, and control of designs, specifications, procurement documents, instructions, procedures, and drawings?	☐	☐	☐	☐
	Receiving Inspection?	☐	☐	☐	☐
	Training Programs?	☐	☐	☐	☐
	Implementation and use of test procedures?	☐	☐	☐	☐
	Calibration and use of measuring and test equipment?	☐	☐	☐	☐
9.	Audits are scheduled on the basis of safety and safety importance?	☐	☐	☐	☐
10.	Audit data analyzed and effectiveness of the quality assurance program reported to management for review and assessment?	☐	☐	☐	☐
11.	Other (Specify) -(Continue on next page)				

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QUALITY ASSURANCE PROCEDURE

11. Other (Continued)

ORGANIZATION BEING REVIEWED: _____

PERSONS CONTACTED: ADDRESS: _____

_____ _____

_____ _____

_____ PHONE: _____

SIGNED: _____ TITLE: _____

DATE: _____ ORGANIZATION: _____

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QUALITY ASSURANCE PROCEDURE

TITLE: QUALITY OF SPARE PARTS

PURPOSE: To ensure that spare parts procured by NAC are in conformance with engineering and quality requirements and that storage at NAC is controlled to preclude degradation prior to use.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to procure spare parts for its use of NAC designed items in conformance with original design requirements and that appropriate shipping and storage preclude degradation prior to use.

DEFINITIONS: Spare Parts - Components or assemblies identified in NAC Maintenance Publications that will be replaced as specified or as required. Configuration of each spare will be documented for future procurement.

Maintenance and Overhaul (M&) Parts - Replacement parts specified by the manufacturer for rebuilding/ regurbishing components or assemblies.

PROCEDURE:

1. Engineering and Transport Services shall maintain a list of spare and M&O parts with a complete procurement description and suggested supplier(s) for future procurement. The procurement description shall be equal to that of the original design or to an engineering approved interchangeable replacement part. Parts shall be ordered as required for inventory.

2. Quality Assurance shall:

   2.1 Review all Procurement Requests for spare and M&O parts, ensuring that all quality and acceptance data are as specified by engineering. Except for standard hardware, e.g., nuts, bolts, and other standard parts,

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ensure that material ordered is identical to that supplied by the original manufacturer unless alternate sources have been approved by Engineering and Quality Assurance

2.2 Ensure that Receiving Inspection verifies conformance to procurement requirements including data to be supplied and part identification

2.3 Through audits, verify shipping and storage are adequate to prevent deterioration in quality from shipment by the supplier until installation.

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QUALITY ASSURANCE PROCEDURE

TITLE: CONTROL OF LIFTING DEVICES

PURPOSE: To ensure that procurement and periodic maintenance of all lifting devices, slings, hooks, etc., are in accordance with all procedural and/or regulatory requirements.

REFERENCE: QAM 00.1

GENERAL: It is the policy of NAC to establish and maintain records of all lifting devices, slings, hooks, etc. used under-the-hook and document the specified periodic maintenance. Permanent identification numbers shall be used with maintenance testing/ inspections (including nondestructive) methods specified for initial procurement and periodic re-inspection at stated intervals.

PROCEDURE:

1. Engineering and Transport Services shall establish maintenance and use instructions for all lifting devices to be used under-the-hook. Each device shall be uniquely identified with a serial number for control and recording related procurement and periodic tests and inspection data.

2. Quality Assurance shall:

   2.1 Review all Purchase Requests for lifting devices for inclusion of all requirements including serial identification, test requirements, and data to be submitted.

   2.2 Audit the maintenance and control of all NAC owned lifting devices for periodic maintenance and testing as required.

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QUALITY ASSURANCE PROCEDURE

TABLE I - NAC-1 Cask-Associated, Safety-Related Equipment*

1. Standard Cask Yoke
2. Sister Hook Yokes
3. Yoke for MSF
4. Long Adapter
5. Long Extension Bar and Coupler
6. Lid Lifting Spider
7. 60-Tone Whiting (Crosby-Laughlin) Hook

* Although these equipment items are identified herein as safety-related, all components thereof may not be safety-related.

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QUALITY ASSURANCE PROCEDURE

LIST OF CASK HANDLING

AND

MAINTENANCE PROCEDURES *

			Rev. Date
20.1	NAC-1 Spent Fuel Shipping Cask Handling and Loading Procedure	(Supersedes NAC-C-7503-1	4/6/79
20.2	NAC-1 Spent Fuel Shipping Cask Handling and Unloading Procedure	(Supersedes NAC-C-7503	4/6/79
20.3	NAC-1 Emergency Procedures		
20.4	NAC-1 Spent Fuel Shipping Cask Quarterly Maintenance	(Supersedes NAC-C-7513-1)	4/6/79
20.5	NAC-1 Spent Fuel Shipping Cask Annual Maintenance Procedure	(Supersedes NAC-C-7518-1)	4/6/79
20.5.1	NAC-1 Spent Fuel Shipping Cask Neutron Shield Tank Burst Disc Replacement	(Supersedes NAC-C-7520-1)	4/6/79
20.5.2	NAC-1 Spent Fuel Shipping Cask Relief Valve Rebuilding	(Supersedes NAC-C-7521)	4/6/79
20.5.3	NAC-1 Fuel Shipping Cask Ball Valve Rebuilding	(Supersedes NAC-C-7519)	4/6/79
20.5.4	NAC-1 Spent Fuel Shipping Cask Cavity Burst Disc Replacement	(Supersedes NAC-C-7522)	4/6/79
20.5.5	Ethylene Glycol Freeze Point. Determination	(Supersedes 113-5-A1)	4/6/79
20.5.6	Neutron Shield Tank Boron Analysis		
20.6	Thermal Test Procedure NAC-1 Cask	(Supersedes 113-3-A1)	4/6/79

* Published and distributed separately

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