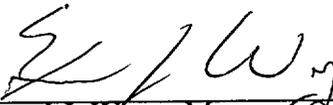


**MANUAL
OF
QUALITY ASSURANCE**

FOR

BNFL FUEL SOLUTIONS

Approved By:  Date: 1/27/00
Howard J. Wong, Manager Quality Assurance

Approved By:  Date: 1/28/2000
A. Scott Dam, Acting President/Chief Executive Officer

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PREFACE

This manual has been developed for and applies to BNFL Fuel Solutions and any wholly or partially owned subsidiary or partnership. The owner of the design and Certificate of Compliance for the VSC-24 Ventilated Storage System is Pacific Sierra Nuclear Associates (PSNA), a partnership between BNFL Fuel Solutions Corporation (BFS) and Sierra Nuclear Corporation (SNC). Both BFS and SNC are wholly owned subsidiaries of BNFL USA Group Inc.

The Quality Assurance Manual (QAM) sections contained herein describe BNFL Fuel Solutions' basic policy for the control of quality of products and services being provided by BNFL Fuel Solutions and meets the requirements of Title 10 Code of Federal Regulations, Part(s), 71 Subpart H, 72 Subpart G, and 50 Appendix B, and other comparable industry standards such as ANSI/ASME NQA-1.

The QAM is supported by project, engineering and quality procedures, which provide detailed requirements for implementing this corporate quality assurance policy. Procedural coverage is included for design assurance, product quality assurance, and operating and maintenance requirements. The application of this program uses the "graded" approach, as defined in Regulatory Guide 7.10, depending on the complexity, criticality, and safety requirements of each project or component.

The initial release of the QAM and all subsequent revisions will be transmitted with a memo approved by the Manager Quality Assurance or equivalent position. Additional procedures will be prepared under appropriate sections or in subsequently identified sections for special coverage as required for contracts, if not adequately covered in the basic manual.

STATEMENT OF MANAGEMENT POLICY

The Quality Assurance Program described herein is applicable to all products and services provided by BNFL Fuel Solutions and any wholly or partially owned subsidiary or partnership to clients requiring a Quality Program meeting the requirements of Title 10 Code of Federal Regulations Part(s) 50 Appendix B, 71 Subpart H, and 72 Subpart G, or other comparable industry standards such as ANSI/ASME NQA-1.

The executive management of BNFL Fuel Solutions is devoted to the support of this program and charges all employees involved in activities affecting quality with the responsibility of upholding and abiding by the Quality Assurance procedures in this manual. The Quality Assurance organization is authorized sufficient freedom to identify quality problems; initiate, recommend or provide solutions; verify implementation of solutions; and control further processing of service(s) or delivery of a nonconforming item, deficiency or unsatisfactory condition until proper disposition has been completed.

While it is the responsibility of everyone at BNFL Fuel Solutions to assure that quality and reliability objectives are achieved, the overall responsibility for the development, maintenance and assurance of the implementation of the Quality Assurance Program has been assigned to the Manager Quality Assurance who reports directly to the President and Chief Executive Officer of BNFL Fuel Solutions.

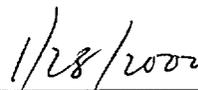
Quality Assurance is recognized by corporate management as an interdisciplinary function for which the Manager Quality Assurance is charged by the President with the responsibility for establishing, implementing and maintaining a system to assure the conformance of BNFL Fuel Solutions' activities to the applicable requirements.

The Manager Quality Assurance has the complete support of Corporate Management in the performance of required duties and, by organizational arrangement, has no responsibility for production costs or schedules. The authority, as defined herein, extends to all activities performed by or for BNFL Fuel Solutions that may affect product quality. Decisions made by the Manager Quality Assurance within scope of duties, responsibilities and authority as defined in this program may be changed or modified only by direction of the President.

All personnel assigned to operations subject to the requirements of this program shall be required to familiarize themselves with the policies and objectives set forth in this program. They shall be responsible for executing those policies, explicitly or implied, pertinent to their assignments.



A. Scott Dam
Acting President/Chief Executive Officer
BNFL Fuel Solutions



Date

SECTION 1

ORGANIZATION

Organizational Structure

BNFL Fuel Solutions (BFS) is organized as shown in Figure 1.1. Management responsibilities are identified by management level (manager, lead, etc.) and department (QA, Projects, Engineering, etc.).

The President is responsible for management of BFS, setting overall company policy and identification of long-term company goals and resources, and retains ultimate authority and responsibility for review of the status and adequacy of the Quality Assurance Program. The President is responsible for assuring that the status and adequacy of the Quality Assurance Program are reviewed annually.

The assurance of quality at BFS is an interdisciplinary function that involves, as applicable, all organizations. Furthermore, quality assurance encompasses many diversified functions and activities and extends to various job levels within these organizations, including all executives and all employees whose activities effect quality. The implementations of quality assurance throughout the various functions of design, procurement, construction, operation and services at BFS must, therefore, be considered the direct responsibility of the organization performing the work and cannot be considered the sole domain of any single quality assurance group.

Persons or organizations charged with the development, enforcement or measurement and 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 to maintain program integrity. Furthermore, they shall have direct access to responsible management at a level where appropriate action can be mandated.

Persons performing quality assurance functions such as checking, verifying or reviewing the work of others (functions that do not encompass the development, enforcement or measurement of the sufficiency or effectiveness of BFS's Quality Assurance Program) shall have authority and organizational freedom to a degree sufficient to properly discharge their assigned quality assurance

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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 suppression of those quality assurance functions and/or to resolve any disputes.

Final responsibility for the effectiveness and sufficiency of BFS's Quality Assurance Program resides with BFS; however BFS may delegate the establishment and execution of the program, or any part thereof, to other organizations. Those organizations may, in turn, delegate responsibility for applicable portions of the Program to other organizations.

The President of BFS assumes overall responsibility for ensuring the development and maintenance of an effective quality assurance program for BFS. Responsibility for the establishment, administration and enforcement of the BFS Quality Assurance Program has been delegated by the President to the Manager Quality Assurance. The Quality Assurance Department functions as a staff position reporting to the President of BFS and is independent of all other organizations within BFS, and assumes line responsibility for ensuring compliance with BFS's Quality Assurance Policy.

The Manager Quality Assurance may delegate any of the functions assigned to him by this Manual to another individual, but he shall retain the responsibility for accomplishment of the function in accordance with the provisions of this Manual.

Any dispute over Quality Assurance with the management of other functions (engineering, projects, manufacturing, purchasing, etc.), which cannot be resolved with the respective department manager, shall be referred to the President for resolution.

BFS shall verify the accomplishment of Quality, through scheduled and or unscheduled audits, of in-house functions and, as applicable, at sub-vendors and/or at suppliers.

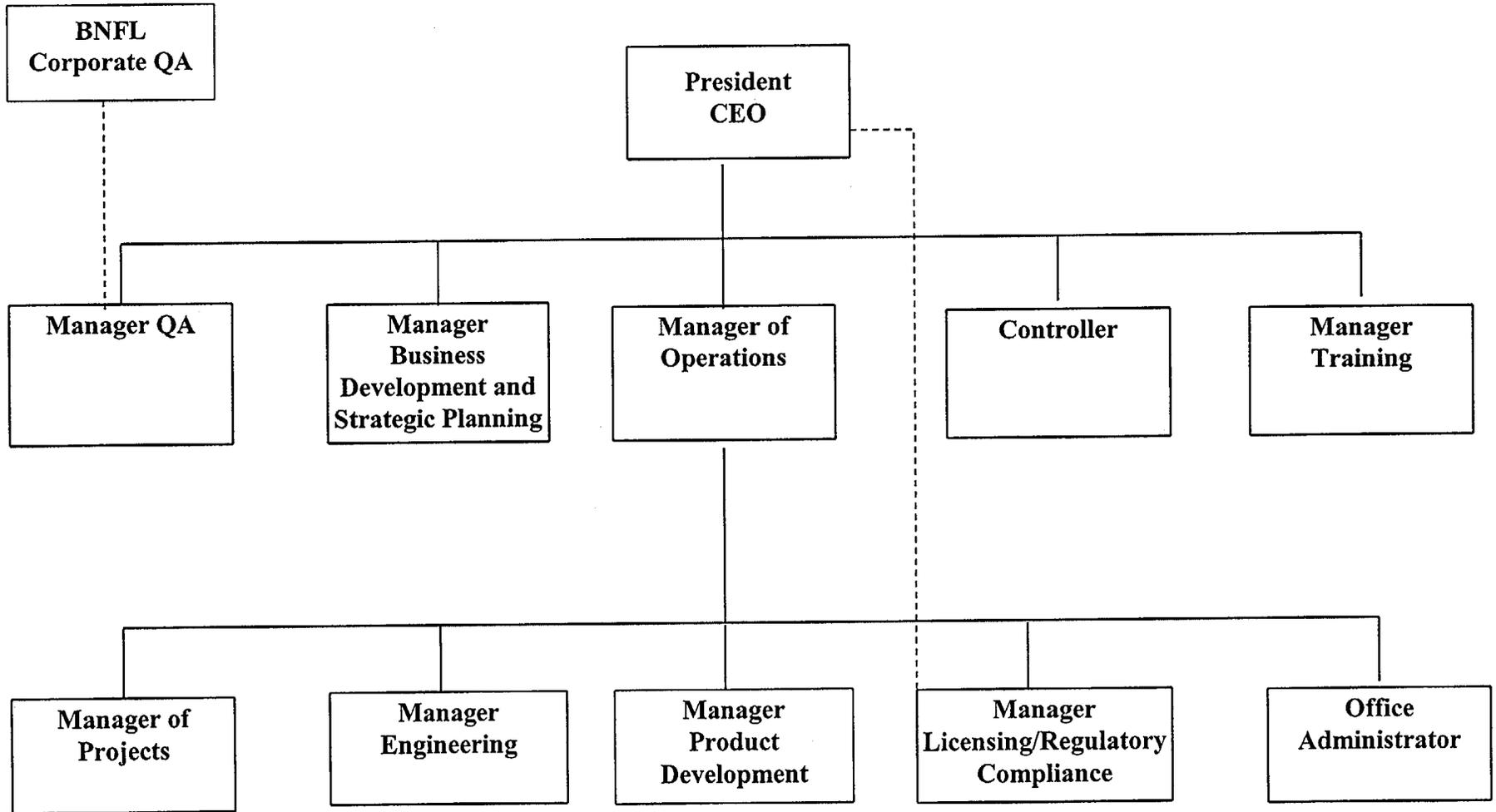
Project Organization

Each large project which BFS undertakes is assigned a Project Manager who is responsible for the technical, financial and quality aspects of that project. The Project Manager and Manager of Projects assign a project staff which is typically organized as shown in Figure 1.2. The Project Manager is responsible for interface control. The Manager of Projects is responsible for all fabrication and construction subcontract management and also provides purchasing activities.

In small, single discipline project, the Project Manager and the Project Engineer will be the

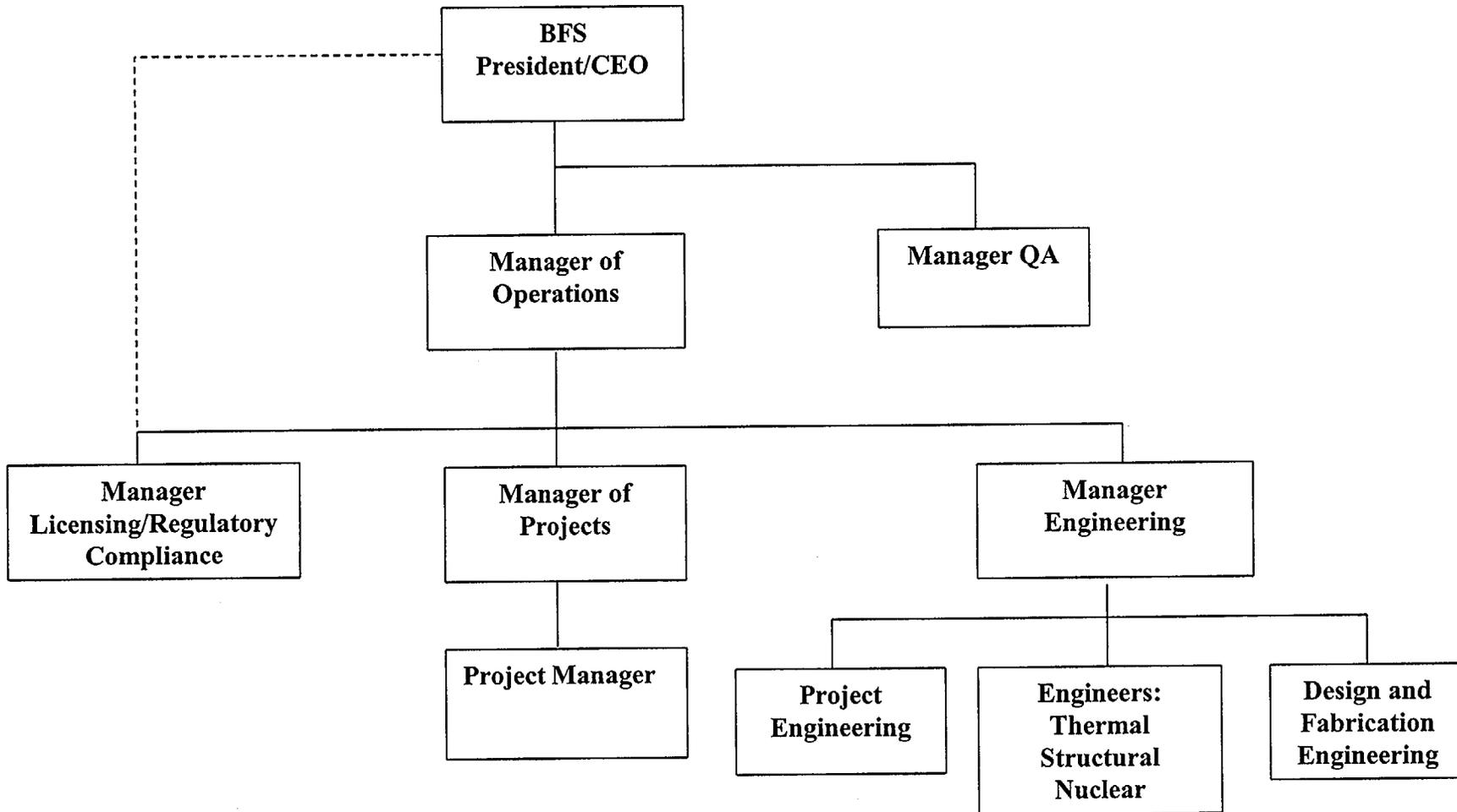
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BFS Organization
Figure 1.1



BFS Project Organization

Figure 1.2



SECTION 2

QUALITY ASSURANCE PROGRAM

This Quality Assurance Program shall apply to activities which are nuclear safety-related (or important to safety) and require compliance with any or all of the documents listed below.

10 CFR 71, Subpart H
10 CFR 50, Appendix B
10 CFR 72, Subpart G
ANSI N45.2
NQA-1

Events which may be reportable either as "significant deficiencies" under 10CFR50.55(e) or as "substantial safety hazards" under 10CFR21 shall be reported in accordance with this Manual.

Manual Review and Approval

The BFS Quality Assurance Program is fully described in and implemented in accordance with this document, the BFS Quality Assurance Manual. The Manual is reviewed annually or more frequently as directed by the President. The intent of this review is to keep the Manual current with the documents specified above. Revisions to the Manual required for compliance to the referenced documents are authorized only by the President as necessary to meet client commitments.

Approval of this Manual, and revisions thereto, is documented by the signature of the President on the title page with the respective date of approval. All revisions to the Manual are implemented within thirty (30) days of approval of the revision by the President.

Revision Control

Manual revisions are highlighted by a vertical line in the margin or double shading the changes, and the revision number is indicated at the bottom of the page. When a revision to the Manual requires

page reformatting to the extent that the text is relocated and not changed, the relocation is highlighted by an asterisk next to the revision number. Previous revisions are unshaded (or the line removed) when a new revision is issued.

A history of revisions is maintained for each section as indicated on the Section History of Revisions Page (II). The current revision of the Manual, in addition to being indicated on the title page is also indicated on the Table of Contents and History of Revision pages, in the lower left hand corner.

Transmittal Control

The recipient of the Controlled Manual and revisions verifies the receipt of the Manual and subsequent revisions and certifies that his/her Manual is in agreement with the latest revision as indicated on the table of contents, by signing and returning the BFS Quality Assurance Controlled Document Transmittal. The recipient is required to return the completed Controlled Document Transmittal Form to the designated BFS person. The recipient shall be responsible for the destruction of the obsolete pages.

The Manager Quality Assurance or designee shall take appropriate measures to secure delinquent BFS Quality Assurance Controlled Document Transmittal Forms. Except for BFS personnel, delinquent Transmittals may result in uncontrolling the subject Manual after thirty (30) days. Transmittals not returned from BFS personnel within thirty days after transmittal date shall be investigated by the designated QA personnel and followed up with corrective action as necessary.

Control Log

The Quality Assurance Department maintains a Control Log that records the holders of Controlled Manuals.

Holders of Uncontrolled Manuals receive a copy of the Manual that is current at the time of issue, but will not receive subsequent revisions to the Manual. Holders of Controlled Manuals automatically receive future revisions to the Manual.

Indoctrination and Training

The Manager Quality Assurance or designee will ensure that personnel performing activities affecting quality are indoctrinated, trained and qualified according to their level of responsibility and assigned functions. Indoctrination and training shall consist of informal, on-the-job activities under the guidance of trained personnel and/or formal meetings, classes, lectures, and seminars. Formal training shall be documented on a Quality Assurance Indoctrination Log by the individual who leads the indoctrination and training session, or a designee. The record shall include names of personnel

trained and a description of the material covered. The form shall be forwarded to the Manager Quality Assurance, who will maintain it as a Quality Assurance Record in accordance with Section 17.

Qualification and Certification of Personnel

BFS does perform inspections, examinations or tests for which a formal BFS program of training qualification and certification is required per QAM Section 10.0 and Section 11.0. When these inspection, examination or test activities are performed, they shall be performed by appropriately certified personnel.

Surveys and audits for which BFS is responsible are conducted by Lead Auditors who are qualified as specified in ANSI/ASME N45.2.23; 10 CFR 50, Appendix B; and NQA-1. Records of Lead Auditor qualification are maintained in the BFS files (refer to Section 18).

Quality Assurance Program Implementation

Quality Assurance Procedures (QAP) are developed to implement the requirements defined by this Quality Assurance Program. QAPs, or project specific procedures, may be developed for each project because of different interface requirements between clients and suppliers. These project specific procedures shall be part of the project plan. In all cases, the QAPs shall conform to the requirements specified in this Quality Assurance Program description.

Table 1 identifies the relationships among the 18 criteria and the BFS Quality Assurance Manual and implementing Quality Assurance Procedures.

RELATIONSHIP OF 18 CRITERIA TO BFS QA PROGRAM

Criteria of

10 CFR 50 Appendix B 10 CFR 71 Subpart H 10 CFR 72 Subpart G	Corresponding QA Manual Section and QA Procedures*
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I. Organization	QAM Section 1 and Organization Charts QAP 1.0: Project Organization
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II. Quality Assurance Program	QAM Section 2 QAP 2.0: Quality Forms Control QAP 2.1: Control and Distribution of BFS QAP's QAP 2.2: Certification of Inspection personnel QAP 2.3: Control and Distribution of Project Specific QA Plans QAP 2.4: BFS Projects Quality Assurance Program Assessment and Reporting System QAP 2.5: QA Indoctrination of Personnel
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III. Design Control	QAM Section 3 QAP 3.0: Design Control QAP 3.1: QA Review of Design Documents QAP 3.2: Document Change Request/Notice QAP 3.3: Specification Selection and Qualification of items & Services QAP 3.4: Computer Software Control
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IV. Procurement Document Control	QAM Section 4 QAP 4.0: Procurement Document Control QAP 4.1: Review of Safety-Related Purchases QAP 4.2: Review of Commercial Quality Procurement Documents
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V. Instruction, Procedures & Drawings	QAM Section 5 QAP 5.0: Instructions, Procedures and Drawings QAP 5.1: Control of Fabrication, Construction, and Inspection Procedures
VI. Document Control	QAM Section 6 QAP 6.0: Document Control QAP 6.1: Control of Preliminary Documents
VII. Control of Purchased Material, Equipment & Services	QAM Section 7 QAP 7.0: Control of Purchased Items and Services QAP 7.1: Supplier Evaluation QAP 7.2: Source Inspection QAP 7.3: Receiving Inspection QAP 7.4: Supplier "Readiness-Reviews"
VIII. Identification & Control of Material, Parts, & Components	QAM Section 8 QAP 8.0: Identification and Control of Material, Parts, & Components
IX. Control of Special Processes	QAM Section 9 QAP 9.0: Control of Special Processes
X. Inspection	QAM Section 10 QAP 10.0: Inspection
XI. Test Control	QAM Section 11 QAP 11.0: Test Control
XII. Control of Measuring & Test Equipment	QAM Section 12 QAP 12.0: Control of Measuring and Test Equipment
XIII. Handling, Storage & Shipping	QAM Section 13 QAP 13.0: Handling, Storage, and Shipping
XIV. Inspection, Test & Operating Status	QAM Section 14 QAP 14.0: Inspection, Test & Operating Status

XV. Nonconforming Materials, Parts, or Components	QAM Section 15 QAP 15.0: Nonconforming Material, Parts, or Components QAP 15.1: Material Review Board QAP 15.2: Reporting of Defects and Noncompliance QAP 15.3: Not used QAP 15.4: Safety Reviews and Evaluations
XVI. Corrective Action	QAM Section 16 QAP 16.0: Corrective Action
XVII. QA Records	QAM Section 17 QAP 17.0: QA Records
XVIII. Audits	QAM Section 18 QAP 18.0: Audits QAP 18.1: Qualification and Certification of QA Audit Personnel QAP 18.2: Quality Assurance Surveillance of Suppliers

* This listing and the content of these Quality Assurance Procedures may change as needed to provide procedural direction applicable to BFS's commercial activities, or as necessary to reflect changes in governing standards/regulations. Such procedural direction will not deviate from the BFS QA Manual.

SECTION 3

DESIGN CONTROL

The purpose of this section establishes the basic minimum requirements to provide an independent review of program planning and design review from initial concepts through completion of design, manufacturing, inspection and planning for BFS and Client-based projects. BFS provides designs, investigations, analyses and reports based on specific project requirements.

Before any work including design input, conclusion or review remarks can be provided on a project the following actions are taken by BFS.

The Manager of Projects shall appoint a Project Manager.

The Project Manager and Manager of Projects will appoint project engineers and other support staff, commensurate with the project scope.

The Project Manager shall prepare a "Project Plan". The Project Plan lists all of the intended activities required to accomplish/support specific project needs for BFS and/or client based projects, including all design bases and/or regulatory requirement documents applicable to the project. Design interfaces and quality requirements shall be described in the Project Plan.

The Project Manager is responsible for the preparation of a list of task assignments along with a schedule of milestone completion dates and for providing each designated project participant with a copy.

The Project Manager is responsible for holding a project orientation meeting to review all of the above items and to identify project needs. He is also responsible for in-progress project meetings to track the project and assure the proper design interface.

The Engineering Manager is responsible for assuring the technical adequacy and correctness of the design and that the final design meets the BFS, client and regulatory requirements. Procedures have been developed to assist in assuring and documenting the quality of the design output. These procedures cover the following:

- Preparation of calculations
- Review and checking of calculations and reports

- Computer program control and usage
- Drawing preparation
- Design verification
- Change control
- Procured design services

BFS Quality Assurance Procedures (QAP's) have been developed, approved and implemented to control the design process in such a manner to assure the following:

- That QA personnel participate in the design development and review process. This is done to assure adherence to all applicable design criteria. This activity is accomplished through review and approval of drawings and specifications developed in support of the design.
- That the design activity is planned, controlled and documented.
- The design documents contain Quality Assurance requirements for inspections and test that will assure control, inspection and testing of design characteristics.
- That deviations from quality requirements are controlled.
- That design verification is performed by qualified personnel independent of the design activity, but with a skill level at least equal to that of the original design personnel. These verifications may include tolerance studies, alternate calculations or tests. Qualification tests are conducted in accordance with approved test programs and procedure.
- That the design verification method selection is based on regulatory and contractual requirements, level of complexity of the design and "state-of-the-art" considerations, i.e., materials, fabrication processes, etc., and operating conditions.
- That interface control is established and adequate to assure that the review, approval, release, distribution and revision of design documents involving interfaces are performed with all cognizant design personnel.
- That design and specification changes are reviewed and approved by the same organization(s) as the original issue.
- That design errors and deficiencies are documented and corrective action to prevent recurrence is taken.

SECTION 4

PROCUREMENT DOCUMENT CONTROL

The QA Program provides controls to assure that all purchased material, components, equipment, and services adhere to design specifications, regulatory and contractual requirements.

Evaluation and selection of suppliers, objective evidence of supplier quality, assignment of quality requirements to procurement documents, and related design documents, and source, in-process and receiving inspection are all administered and controlled in accordance with this section of the Quality Assurance Manual and approved procedures.

Procurement is performed under the supervision of the Manager of Projects. Particular emphasis is placed on assuring that revisions to procurement documentation are reviewed and approved by the same groups as the original.

Quality Assurance requirements, when applicable, are included with request for quotes. Quality Assurance requirements are always provided with the purchase orders and/or applicable specifications.

Procurement of engineering design services are addressed in Section 3. BFS may procure any design, manufacturing, inspection, testing, auditing or job site construction activity described in this Manual. Procurement documents for these services shall include requirements which assure that the requirements of this Manual, as applicable to BFS, will be met by the subcontractor. BFS retains final responsibility to assure the service is acceptable for the BFS project.

Contract documents such as Purchase Orders, drawings, specifications are reviewed to assure the inclusion of all requirements. Personnel qualification requirements are either defined or verified by reference on a procurement document. Review also includes verification of the suitability of standard items for the use required by the applicable drawings and design specifications with the inclusion of valid industry standards, references, and related data, when applicable.

The Project Manager assures that requirements for acceptance of hardware and documentation, such as the affiliate's or a supplier's submittal and retention instructions appropriate to the contract, are included in procurement documentation.

BFS maintains the right of access to all supplier facilities and documentation for source inspection and/or audit activities. A statement to this effect is included on procurement documentation when it is appropriate to the contract.

Changes to procurement documents shall be prepared, reviewed, approved and authorized for use in the same manner as established for the original issue of the document.

BFS QA personnel check procurement documents for completeness and the inclusion of quality requirements. The procurement documents are reviewed in accordance with written procedures and require the approval of the BFS Manager Quality Assurance.

SECTION 5

INSTRUCTIONS, PROCEDURES AND DRAWINGS

Inspection procedures and instructions are developed by a qualified engineer assigned by the Manager Quality Assurance. Procedures are developed for activities requiring design and/or fabrication, performance verification, witnessing, measurements, testing or other Quality Assurance related activities. These procedures are approved by the Project Manager.

All fabrication documents (i.e., drawings, specifications, special processes, test and calibration procedures, etc.) are reviewed by Quality Assurance and a qualified engineer as assigned by the Project Manager, Project Engineer, or Manager Engineering. The fabrication documents are also referenced in Inspection Procedures as necessary to assure adherence to package, system or other design approvals and the applicable regulatory and contractual requirements.

The Inspection Procedures also include appropriate acceptance criteria such as dimensions, tolerances, operating limits, workmanship standards, and other qualitative and quantitative measures.

All instructions, procedures, and drawings are developed, reviewed, approved, utilized and controlled in accordance with approved procedures.

Changes to Instructions, Procedures and Drawings shall be prepared, reviewed, approved and authorized for use in the same manner as established for the original issue of the document.

SECTION 6

DOCUMENT CONTROL

The policy for review, approval, release and revision of quality related documents establishes review and approval cycles and sequences as well as requires that revisions/changes to all such approved documents be subjected to the same approval cycle and sequence. Provisions are made for identifying individuals/organizations responsible for review, approval and issuance of documents with the Controlled Document Transmittal Log. Document control responsibilities, facilities and distribution requirements are also addressed by Controlled Document Transmittal. Transmittal sheets with provision for acknowledging receipt are utilized to provide proper records of the transmittal and receipt of controlled documents and subsequent revisions.

The Project Engineer shall assure that documentation listings are maintained specifying the title, number and current revision for all drawings, procedures, specifications and purchase orders.

Controlled documents include but are not limited to:

- Design Specifications
- Calculations
- Analyses
- Safety Analysis Report(s)
- Drawings
- Specifications (Procurement, Equipment, etc.)
- Special Process Procedures (Welding, Forming, Heat Treating, NDE, Etc.)
- Inspection Procedures
- QA Manuals and Procedures
- Source Surveillance and Inspection Reports
- Test Procedures and Reports
- Operational Test and Inspection Reports
- Subvendor Procedures, Specifications and Drawings
- Client Specifications, Procedures and Drawings

When revised documents appear in other documents as references, supplements or exhibits, appropriate revisions are made to the affected documents prior to the release of the approved change.

Documentation listings are maintained listing the title, document number and current revision for all controlled documents.

SECTION 7

CONTROL OF PURCHASED MATERIALS, PARTS AND COMPONENTS

It is the policy of BFS that all suppliers of materials, components, systems or services received, controlled and approved procurement documents that contain or reference all applicable regulatory requirements, appropriate design/engineering drawings and specifications, and other requirements necessary to produce a product or service that meets the Quality requirements of BFS. In addition, procurement documents shall contain provisions that require suppliers and their subtier suppliers to execute quality assurance programs in a manner, and to the extent, specified by BFS. Furthermore, procurement documents shall provide for the right of BFS to audit its contractors as well as their subtier suppliers, on their implementation of these controls. All procurement will be made only from BFS approved suppliers based on their past history, pre-award and/or post-award audits and surveys. BFS shall maintain an Approved Suppliers List (ASL).

As directed by the Manager Quality Assurance or designee, audits and surveys are conducted by BFS QA qualified personnel to further assure supplier acceptability and performance. These evaluations are based on one or all of the following criteria:

The capability of the supplier to comply with the requirements of 10CFR72 Subpart G, 10CFR71 Subpart H, 10CFR50 Appendix B, ANSI N45.2, ASME/ANSI NQA-1, or other requirements appropriate to the contract as determined by BFS QA.

A review of previous records and performance of the supplier by BFS Quality Assurance.

A survey/audit by an BFS multi-discipline team (QA, Engineering, and Fabrication), but in all cases at least by QA, of the supplier's facilities and Quality Program to determine their capability to supply a product that meets the design, manufacturing, and quality requirements.

Results of the supplier evaluations and audits are appropriately recorded and included as part of the vendors history file, which are retained by Quality Assurance.

Audits are conducted at active supplier's facilities during the performance of activities, to assure continued adherence to the imposed Quality Assurance, design and contract performance criteria. These audits are conducted at least once every three years (during active periods) or more often as directed by the Manager Quality Assurance or designee.

Quality Assurance requirements are stated in procurement documents as required by regulatory or contractual requirements.

As directed by the Manager Quality Assurance source and/or receiving inspections, are performed by qualified personnel to assure the following:

The material, component, or equipment is properly identified, refers to applicable codes, standards and specifications, and corresponds with the identification on receiving documentation.

Prior to their use or installation, materials, components, equipment and acceptance records are inspected and are accepted in accordance with appropriate contractual requirements

Inspection records and/or certificates of conformance are available that attest to the acceptance of materials and components prior to their installation or use.

Items accepted and released are identified as to their inspection status prior to forwarding to a controlled storage area or release for further work.

All described activities are delineated in approved BFS Quality Assurance procedures.

SECTION 8

IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

A process for identifying and controlling materials, parts, components and completed and in-process assemblies is administered by Quality Assurance in accordance with approved Quality Assurance procedures. These procedures address quality status tags, marking, and/or stamping to assure maintenance of material identification, traceability, and part identification, to related documentation. Some of the details of these procedures are as follows:

- Material identification procedures included in Quality Assurance inspection instructions and fabrication drawings require that identification of material, components, and/or hardware be maintained on the item or in traceable records to prevent use of incorrect or defective material.
- Specifications, procurement documentation, fabrication and inspection records, discrepancy reports and material test data are also periodically audited to assure continued adherence to design, regulatory and contractual requirements.

Identification requirements such as method and size may be specified on applicable drawings or in applicable procurement/equipment specifications. Such identification shall not interfere with fit, interface or performance.

Quality Assurance shall assure that material and equipment are controlled, protected, stored, handled, operated and packaged so that identification, traceability and condition are maintained. Some or all of the material control functions described herein may be delegated to approved suppliers.

SECTION 9

CONTROL OF SPECIAL PROCESSES

This section delineates the policies and practices established to control such special processes as: welding, heat treating, lead pouring, non-destructive examination, etc., in accordance with the applicable regulatory requirements and other applicable codes, standards, specifications or requirements. Special processes developed by suppliers and/or BFS are documented, reviewed and approved by the responsible technical personnel within the company, and/or customer organizations. In addition, special process equipment is identified, inspected and performance tested, prior to use.

All procedures for special processes are performed in accordance with applicable codes, standards, specifications and contract requirements. The personnel performing such processes are likewise qualified under the cognizance of the Quality Assurance function. Both the procedures and personnel are subjected to full review and approval cycles as defined herein, by personnel qualified and approved by the Manager Quality Assurance or designee for the subject matter relating to the special process.

Qualification records and support data are retained in the Quality Assurance files.

All documentation shall be administered and controlled in accordance with the requirements of the BFS Quality Assurance Program.

SECTION 10

INSPECTION

Receiving, source, test, in-process, shipping and in-service inspection activities are performed in accordance with the requirements of this manual and approved procedures. Inspection personnel and/or organization qualifications are reviewed and accepted by the Manager Quality Assurance prior to inspection activity. The inspection activity is performed to verify conformance to drawings, procedures and/or specifications.

Inspection personnel report to the Manager Quality Assurance.

The qualifications of inspection personnel are based on their capability to perform the required inspection functions in accordance with applicable codes, standards, professional society programs (such as the ASQC quality technician certification or SNT-TC-1A) and company training programs. Qualification reviews are performed periodically to maintain personnel proficiency and assure current qualification.

Inspection procedures and instructions include hold points, inspection equipment requirements, accept-reject criteria, personnel requirements, characteristics to inspect, variable attributes, recording instructions, reference documentation and other requirements, as appropriate.

The inspection procedures and instructions include inspection results with supporting information such as variables, attributes, data, test results, NDE records, welding information, certified materials test report (and/or certification), special process data, discrepancy reports, related dispositions and resultant reinspection data.

SECTION 11

TEST CONTROL

A quality related test control program is defined by approved test procedures. Prerequisites, accept/reject criteria, data recording criteria, instrumentation calibration, environmental conditions, documentation and evaluation requirements, etc., are defined in the test procedures.

The Project Engineer assures that both "normal" and anticipated "off-normal" operational performance described in applicable design, regulatory and contractual documents are recreated by testing activities. Changes to test procedures are required to be reviewed/approved by the same organization(s) in the same cycle and sequence as the original issue.

Whenever equipment, components, and/or assemblies require modification, repairs, or replacement that could result in requirements for re-test or additional testing, the Project Engineer shall assure that original or new test inspection instructions are prepared and adhered to as appropriate.

Test results are documented, evaluated and accepted by the Project Engineer as required by the test procedure prepared for the test under the cognizance of the Project Engineer.

SECTION 12

CONTROL OF MEASURING AND TESTING EQUIPMENT

Calibration of measuring equipment and instrumentation is established by the Manager Quality Assurance. The calibration process assures that all standard measuring instruments used in the acceptance of material, equipment, and assemblies are calibrated and properly adjusted at specified intervals to maintain accuracy within pre-determined limits.

Calibrated equipment is identified and is traceable to the calibration test data. Identification includes the equipment property number, next calibration due date and inspector's or calibrator's signature or initials attesting to the accuracy and validity of the calibration.

Calibration accuracy is maintained by utilizing standards traceable to the National Institute of Standards Technology (NIST), derived from accepted values for natural physical constants, or by the ratio type of self-calibration.

SECTION 13

HANDLING, STORAGE AND SHIPPING

Requirements for handling, storage and shipping shall be documented in project specific procedures or specifications. These requirements are designed to prevent damage or deterioration of material and equipment. Information pertaining to shelf life, environment, packaging, temperature, cleaning, handling, preservation, etc., is included as required to meet design, regulatory and/or client requirements.

Inspection procedures and instructions contain assessment of criteria for handling, storage, preservation and shipping requirements.

Shipping documentation preparation, departure, and arrival time and destination data recording is also to be addressed, when applicable. The requirements pertaining to shipping must be met prior to release for shipment.

SECTION 14

INSPECTION, TEST AND OPERATING STATUS

The use of inspection status tags, quality inspection stamps, and other means to indicate inspection and test status at or for BFS, is described in project specific procedures or specifications.

Such procedures provide that indications of status are clear, inspection and/or test steps are not bypassed, and removal or modification of status indication are prohibited, except with Project Manager and/or Manager Quality Assurance approval. The Manager Quality Assurance assures via procedure, interoffice memoranda, training sessions, and audit that personnel are aware of and understand the meaning and uses of status tags on hardware, material, and test setups and that the status tags are being satisfactorily used.

SECTION 15

NONCONFORMING MATERIAL, PARTS OR COMPONENTS

Material, components, and equipment that do not conform to requirements are controlled to prevent their inadvertent use. This control is through identification, segregation, discrepancy reporting, disposition of nonconformances by authorized individuals and reinspection activities. These are performed and controlled in accordance with written procedures.

Nonconformance Reports (NCR) are utilized and logged to identify discrepant items, describe the discrepancy and provide disposition and reinspection requirements. The signatures of authorized cognizant personnel are placed on the NCR to signify approval of the disposition.

NCR's are reviewed by the Project Manager and Manager Quality Assurance to assure that "accept-as-is" or "repair" dispositions include technical justification to indicate and assure continued compliance with design, regulatory and contractual requirements. When appropriate, copies of dispositions are forward to the owners and users of the affected equipment.

In conjunction with "repair" or "rework" dispositions, Quality Assurance personnel provide supplemental inspection planning to verify compliance with the NCR disposition. This assures that the item is re-tested and/or reinspected to a degree at least equal to the original acceptance level.

SECTION 16

CORRECTIVE ACTION

Failures, malfunctions, and deficiencies in material, components, equipment and services are identified and reported to the Project Manager. Significant conditions adverse to quality and deviations will be reported to the President. A copy of each Corrective Action Request (CAR) is also forwarded to the Manager Quality Assurance for review and analysis. The Manager Quality Assurance also logs the CAR. The cause of the condition and the corrective action necessary to prevent recurrence is identified, implemented and then followed up to verify corrective action effectiveness.

Analyses of discrepancies are conducted within thirty days of their submittal. These analyses establish quality trends and help to pin-point areas in need of corrective action. The analyses, quality trends and related reports are prepared and presented to the President for review and action at that level. Copies of these reports and analyses are also provided to the Manager Quality Assurance for review.

SECTION 17 QUALITY ASSURANCE RECORDS

BFS's QA records system is established and is administered in accordance with approved BFS QA procedures. The purpose of the QA records system is to assure that documented evidence pertaining to quality related activities is maintained and available for use by company, customer, and/or regulatory agency personnel, as appropriate. QA records include, but are not limited to, design related records (calculations, drawings, research, development test reports and, design reviews), inspection and test records (including identification of inspectors and data recorders), audit reports, quality personnel qualification(s), quality related procurement data, supplier evaluation reports, material's analyses (certified material test reports or certificates of compliance as applicable), fabrication/manufacturing records, modification records, repair records, and maintenance records. The retention period for the above identified records is as follows: 1) Transportation Packaging – Life of the packaging plus three years; 2) Spent Fuel Storage Packaging – Shall be maintained by or under the control of the licensee until the commission (NCR) terminates the license. Additionally, records of use, for all transport packages, shall be maintained for a period of three years after the shipment. Records are identified by work order number, part number, contract number, or drawing number as appropriate to the record type. BFS maintains a complete list of QA records to provide identify and location information.

For all other equipment, quality related records are retained for a minimum of three years, but no more than five years unless otherwise specified by applicable regulatory, code, standard or contractual requirements.

Inspection records retained in the QA records system provide the following data when applicable:

- (a) Inspection type, i.e., in-process, in-service, testing, receiving and shipping.
- (b) Evidence of completion and verification of manufacturing, inspection or test operation.
- (c) The date and results of the inspection or test.
- (d) Information related to noted discrepancies.
- (e) Inspector or data recorder identification.
- (f) Evidence of acceptance.

Protection for QA records is provided by using one of the following storage methods:

- (a) Two sets of identical records are maintained at separate and equivalent storage locations, with access control, security and protection from fire, flooding and abnormal deterioration;
or
- (b) The official copies of all QA records are maintained in approved fireproof files or vault, at a single location.

SECTION 18

AUDITS

Internal Program audits are performed annually, (or more often, if deemed necessary by the Manager Quality Assurance), by personnel qualified in accordance with the requirements of the BFS QA Program and may be project specific or cover multiple projects. These audits provide comprehensive, independent verification and evaluation of the implementation of the entire Quality Assurance system established in response to the appropriate requirements of 10CFR72 Subpart G, 10CFR71 Subpart H, 10CFR50 Appendix B, ANSI N45.2, ASME/ANSI NQA-1, and other applicable codes, standards, specifications and requirements.

Audit Logs, Audit Plans and Audit Check Lists are prepared and utilized by the auditor. At the completion of each audit, the Manager Quality Assurance evaluates the planning sheets and check lists to confirm that the audit effectively addressed all the appropriate Program elements.

Audit results and corrective action activities are documented in an Audit Finding Report and reported to the Manager Quality Assurance and President and are retained in the Quality Assurance records files. Responsible management personnel are required to respond to audit findings with the necessary action to correct the noted deficiencies.

Areas found deficient during these audits are re-audited on a first priority basis to verify corrective action implementation and effectiveness.

Records of the qualifications of Auditors are maintained by the Manager Quality Assurance.

External Audits

BFS auditors perform audits of active suppliers once every three years to assure continued adherence to imposed design, procurement and quality requirements.

Written audit check lists are utilized during all supplier audits conducted by affiliated Quality Assurance personnel.

Written audit results are reviewed with the affected supplier, and appropriate and mutually accepted corrective actions are prescribed. Corrective action implementation and effectiveness is evaluated by designated personnel as part of subsequent audits to review the supplier for continued approval.