U.S. NUCLEAR REGULATORY
COMMISSION
DOCKET 50-410
LICENSE NPF-69

NINE MILE POINT
NUCLEAR STATION
UNIT 2

UPDATED SAFETY
ANALYSIS REPORT

OCTOBER 2016

REVISION 22

Chapter 17

LIST OF EFFECTIVE FIGURES

Figure No.	Revision Number
17.1-1	A28
17.1-2	R00

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CHAPTER 17

QUALITY ASSURANCE

17.0 INTRODUCTION

The responsibility for compliance with regulatory requirements rests with Nine Mile Point Nuclear Station, L.L.C. (NMPNS). Fundamental in implementing this responsibility is the Quality Assurance (QA) organization which includes all departments and company personnel that perform any element of the QA program. This organization monitors and implements the program set forth in this chapter. The resources and the management of NMPNS are available to the QA organization to ensure that effective QA controls exist and are implemented. An endorsement of the original Niagara Mohawk Power Corporation (NMPC) QA program is evidenced by Exhibit 17.0-1.

Compliance with regulatory guides regarding quality assurance is provided in Table 17.0-1.

EXHIBIT 17.0-1
(HISTORICAL)

From	J. G. Haehl, Jr.	District Date	System November 29, 1982
To	Officers, Department Heads, Superintendents and Managers	Subject	Authority of Quality Assurance Department

The Niagara Mohawk Quality Assurance Department is charged with the establishment and administration of the Quality Assurance Program. The Vice President of Quality Assurance shall report directly to the President of the Corporation. This Department has the responsibility and is delegated requisite authority to observe, investigate, survey, audit, and report concerning activities directly or indirectly related to the quality of design, procurement, fabrication, materials management, construction, installation, inspection, test, operation, modification, repair and maintenance. These functions may be performed by internal Niagara Mohawk departments, including the Quality Assurance Department where applicable, or by outside contractors/vendors.

The purpose of the Quality Assurance Department's activities is to:

1. Inform appropriate management personnel, possessing authority, to take corrective action wherever such action is needed, and/or

2. Take direct action where deemed necessary by the Vice President of Quality Assurance (or his authorized delegate).

The responsibility of the Quality Assurance Department includes, but is not limited to, a charge to assure senior management that the Company's activities comply with approved procedures and prescribed codes, standards and criteria (including nuclear standards), as applicable, thereby assuring that these activities and facilities are safe, reliable and economical.

All employees affected by this delegation of authority are directed to cooperate with Quality Assurance Department personnel in the discharge of their responsibilities.

TABLE 17.0-1
(Sheet 1 of 1)

QUALITY ASSURANCE
REGULATORY GUIDE COMPLIANCE[1]

Regulatory Guide	QA	Engineering	Nuclear Generation	Remarks
1.8 (5/77)	[2]	[2]	[2]	
1.28 (2/79)	[2]	[2]	[2]	
1.30 (8/72)	[2]	[2]	[2]	
1.33 (2/78)	[2]	[2]	[2]	
1.37 (3/73)	[2]	[2]	[2]	
1.38 (5/77)	[2]	[2]	[2]	
1.39 (9/77)	[2]	NA	[2]	
1.54 (6/73)	[2]	[2]	[2]	
1.58 (9/80)	[2]	NA	[2]	
1.64 (6/76)	[2]	[2]	[2]	
1.74 (2/74)	[2]	[2]	[2]	
1.88 (10/76)	[2]	[2]	[2]	
1.94 (4/76)	[2]	[2]	[2]	
1.116 (5/76)	[2]	[2]	[2]	
1.123 (7/77)	[2]	[2]	[2]	
1.144 (9/80)	[2]	NA	NA	
1.146 (8/80)	[2]	NA	NA	

[1] The specific commitment to, or compliance with, regulatory guides listed or referenced in portions of the regulatory guides addressed in this table are covered separately. Compliance with the regulatory guide does not include compliance with other regulatory guides that may be referenced within the regulatory guide.

[2] Program complies with the regulatory guide.

17.1 QUALITY ASSURANCE PROGRAM DURING DESIGN AND CONSTRUCTION PHASES (HISTORICAL)

Appendix D to the Nine Mile Point Nuclear Station - Unit 2 (Unit 2) Preliminary Safety Analysis Report (PSAR), as updated in accordance with 10CFR50 submitted under separate cover, defines the NMPC QA program used for the design and construction phase of Unit 2. This section describes the QA program to be used during the preliminary and preoperational/acceptance tests and retests performed in the period starting with fuel load and ending with the 100-hr warranty run.

17.1.1 Organization

17.1.1.1 General Organizational Structure

The QA Department is a corporate department under the direction of a Vice President of Quality Assurance (see Figure 17.1-1) who reports on quality matters to the President. Further definition of the administrative and functional organizations is included in the procedures developed to implement specific parts of this program. Table 17.1-1 contains tabular cross-references from 10CFR50 Appendix B to the applicable NMPC procedures. The QA Department regularly reviews the status and adequacy of the QA program, including a quality compliance review of all contractors and a self-appraisal.

The organization of the Safety Review and Audit Board (SRAB) and the Site Operations Review Committee (SORC) is discussed in Section 13.4.

QA-related activities are performed by other individuals and groups in accordance with the requirements of the NMPC QA program manuals and Appendix B to 10CFR50. The NMPC organizations that perform these activities for Unit 2 include:

1. Nuclear Engineering and Licensing.
2. Nuclear Construction.
3. Purchasing.
4. SRAB (Technical Specifications).
5. SORC (Technical Specifications).
6. Site Maintenance Superintendent Nuclear and Staff.

7. Technical Superintendent Nuclear and Staff.

8. Superintendent Chemical and Radiation Management.

9. Superintendent Training Nuclear.

10. Station Superintendent and Staff.

11. Manager System Materials Management and Staff.

17.1.1.2 Program Responsibility

Total responsibility for the QA program is retained by NMPC. The QA Department is responsible to the President for execution and implementation of the QA program. This program includes control measures such as audit, surveillance, and review and/or approval to assure QA compliance for the design, procurement, fabrication, storage, construction, test, operation, and maintenance of the facility or any modifications.

Within this program, those individuals and organizations assigned specific QA functions, as described herein, have the responsibility for assuring the establishment of specific criteria for measurement and verification of the correctness of work performed against these criteria. Additionally, the size of the QA Department will be determined by the scope of the design, construction, and operations activities and their importance to safety.

The management of NMPC at the presidential or chief executive officer (CEO) level assesses the scope, status, adequacy, and compliance of the QA program for the nuclear stations at a predetermined regularity. Management at this level employs the following means:

- The Vice President Quality Assurance normally attends CEO's staff meeting attended by appropriate members of executive management (CEO and/or President and/or Administrative Assistant) as well as by the senior vice presidential level. The Vice President Quality Assurance is expected to provide oral presentations or furnish an assessment of QA matters.

- The Vice President Quality Assurance is listed on the agenda of the corporate monthly operating review meetings and normally presents an oral capsule assessment of QA matters to the executive management level and to other attendees.

Certain actions of the SRAB and of the SORC result in audits and/or reports by which members of these offsite and onsite review committees are made aware, on a regular basis, of the effectiveness of the QA program. The action of these committees

and their reporting on a regular basis to the Vice President Quality Assurance and other specified vice presidential levels is described in Section 13.4.2.

Management above the QA organization utilizes, on at least an annual basis, the services of a combined utility assessment team and/or the contracted services of qualified QA assessors. The combined utility assessment team is composed of appropriately qualified auditors from a consortium of nuclear utilities.

17.1.1.2.1 Vice President Quality Assurance

The Vice President Quality Assurance reports directly to the President and is responsible for the overall control and implementation of the QA program. The Vice President Quality Assurance is organizationally independent from the various functional groups and has the freedom to deal independently with matters concerning quality activities performed by those groups. To ensure that the Vice President Quality Assurance may deal with quality problems effectively, the Vice President Quality Assurance has the authority to take direct action concerning matters affecting quality. Direct action includes the initiation of an order to "stop work" or consultation with NMPC corporate management concerning unresolvable quality problems.

The Vice President Quality Assurance effects overall QA policy through approval of the content of this document and through approval of the QA Department Procedures, as delegated.

In addition, the requirements exist for the Manager Nuclear Quality Assurance Operations to review top level procedures of other departments and to indicate, in writing, acceptance of (concurrence with) these procedures which cover quality-related activities. This must be accomplished prior to implementation and applies equally to changes to these procedures. This requirement makes it possible for the Vice President Quality Assurance to achieve an acceptable level of control over all activities which relate to quality.

The Vice President Quality Assurance exercises the control and direction of NMPC's QA program from:

1. This being the highest NMPC corporate position totally and exclusively concerned with quality activities.

2. This position reporting to the President.

3. This position exercising total functional control over the QA organization.

4. This position having the responsibility and authority to formulate and establish QA policy for NMPC.

5. This position having the responsibility to approve QA Department procedures.

6. This position having the responsibility to indicate acceptance prior to implementation of other procedures that contain quality provisions. Such procedures are those that deal with operation, design, repair, maintenance, modification, and procurement.

7. This position directing the audit/follow-up program of the QA organization.

8. This position having the authority to indicate or delegate initiation of "stop work" action and maintain control to completion of acceptable corrective action.

17.1.1.2.2 Quality Assurance Supervisors/Managers

Quality Assurance Supervisors/Managers have the responsibility for supervision of the members of their staffs assigned to evaluate and coordinate necessary QA functions. More specifically, some of their activities include:

1. Supervising, directing, and coordinating the staff personnel and consultants within the framework of established policies and QA Department procedures.

2. Bringing unresolved quality-related problems to the attention of the Vice President Quality Assurance.

3. Coordinating and evaluating necessary audit functions.

4. Implementing QA Department procedures and instructions regarding safety-related modification and refueling operations.

5. Implementing all required quality control (QC) activities in accordance with applicable QA procedures and instructions.

6. Regularly reporting to the Vice President Quality Assurance the status of quality activities being performed.

7. Initiating "stop work" action at the site, when appropriate. This is further described in Section 17.1.10.2.1.

The Quality Assurance Supervisors/Managers maintain the necessary independence to perform QA activities by reporting directly to the Vice President Quality Assurance. Organizational independence from those performing actual work will be maintained.

Personnel performing verification of conformance to established requirements are members of the QA Department or their designee. This department is headed by the Vice President Quality Assurance, who reports directly to the President of NMPC.

Personnel performing the work being verified (Nuclear Engineering, Nuclear Generation, Purchasing, Materials Management, etc.) report to other Vice Presidents.

The Manager Nuclear Quality Assurance Operations exercises control and direction of NMPC's Operations Nuclear QA program by:

1. Being the highest position within the QA Department devoted exclusively to Operations Nuclear QA activities.

2. Having the responsibility to ensure implementation of the NMPC nuclear policy and procedures established by the Vice President Quality Assurance.

3. Having the responsibility to advise the Vice President Quality Assurance of serious QA concerns regarding identified nuclear problems.

The Manager Corporate Quality Assurance provides support for the Nuclear QA Operations unit by having the responsibility to:

1. Conduct corporate QA audits and provide a trend analysis program.

2. Recommend corporate QA Department procedures and policy to the Vice President Quality Assurance for his approval.

3. Coordinate QA Department training.

4. Advise the Vice President Quality Assurance and the Manager Nuclear Quality Assurance Operations of serious QA concerns regarding identified nuclear problems.

The Manager Quality and Reliability Engineering provides technical support to the Nuclear QA Operations section. Responsibilities include:

1. Reviewing plant modification design documents for inspectability, developing quality planning to support installation of plant changes, and coordinating the technical aspects of QA modification package implementation during plant shutdowns.

2. Providing for control of purchased equipment through the contractor qualification program, source surveillance, and the preparation for receiving

inspection planning (for implementation by Nuclear QA Operations personnel).

3. Providing materials engineering support in the areas of material selection, welding, corrosion prevention, nondestructive examination, and fuels quality assurance.

4. Advising the Vice President Quality Assurance and the Manager Nuclear Quality Assurance Operations of nuclear quality activities.

5. Providing reliability engineering support for the equipment qualification program, establishment of system and equipment availability goals, follow-up with suppliers on achievements of equipment reliability requirements, and performance of studies on extending equipment life.

6. Reviewing and concurring with various documents and other department procedures, where applicable, which implement this QA program.

7. Recommending to appropriate management courses of corrective action, when required, including initiation of “stop work” orders. This “stop work” authority is delineated in writing.

17.1.1.2.3 Quality Assurance Staff

The QA staff for Unit 2 consists of those members of the QA Department who are assigned by the QA Supervisors/Managers. Some of the duties of the staff include:

1. Conducting audits of the various NMPC departments, architect-engineers, contractors and subcontractors, including QA groups within these organizations.

2. Preparing and updating policy manuals, certain procedures, and instructions necessary to implement the QA program.

3. Reviewing the procedures, programs, and results of the various organizations performing the quality activities within or for NMPC, including the incorporation of hold or "witness" points therein.

4. Trending of quality-related problems.

5.a. Reviewing and approving quality programs of contractors involved in modification and refueling.

b. Reviewing and approving QA programs and manuals of contractors supplying services for maintenance, repair, and tests conducted at the site.

6. Appraising the quality-related capabilities of contractors and vendors.

7.a. Reviewing and accepting procurement documents, specifications, documentation of design calculations and related documents and drawings generated by the Nuclear Division relating to modification and refueling.

b. Reviewing and accepting procurement documents, specifications, and drawings relating to maintenance, repair, inspections, and tests conducted at the site.

8.a. Surveillance/auditing of NMPC and vendor activities relating to modification and refueling.

b. Surveillance of site activities regarding modifications, maintenance, repair, fuel handling operations, inspections, and tests.

9. Preparing reports for the Vice President Quality Assurance, as assigned.

10. Performing other duties delineated in subsequent sections of this document and in the appropriate QA Department procedures.

11. Performing or assuring performance of the independent inspections associated with corrective maintenance, receipt inspections, and modifications.

QA staff personnel have expertise in various disciplines such as mechanical, nuclear, electrical, structural, nondestructive examination (NDE), and metallurgical.

The responsibility for the in-service inspection (ISI) resides with the Nuclear Generation staff. The QA Department provides surveillance and inspection of this function as part of the audit program.

The QA staff has the responsibility and authority to audit any organization, both within and outside NMPC, performing quality-related activities. This allows the QA Department to evaluate/investigate the performance of applicable QA groups and to provide additional assurance of proper accomplishment of activities affecting quality.

Additionally, the QA staff is responsible to assist the QA Department Supervisors through regular audits, reviews, surveillances, and other assigned functions.

17.1.1.2.4 Nuclear Engineering and Licensing

The Manager Nuclear Engineering and Licensing has overall responsibility for engineering services at fuel load. The corporate engineering staff currently performs, or controls the performance of, design activities relating to modifications to Unit 1 and will support Unit 2 in the same manner. Established Engineering Department procedures will be utilized for such activities. The Engineering Department organization chart is provided on Figure 13.1-4. The Manager Nuclear Engineering or his designee is the engineering contact for plant-to-engineering interfaces.

A number of engineers from this organization have actively engaged in technical aspects of the Unit 2 design. This organization presently consists of over 100 engineers with a variety of disciplines and backgrounds in power plant technology. Support in plant chemistry, health physics, fueling and refueling operations, and maintenance support, as required in nuclear, mechanical, structural, electrical, thermal-hydraulic, and instrument and control engineering, are provided. Specific headquarters support group descriptions are discussed in Chapter 13.

Most design-related requests (after commercial operation) are relayed from the Station Superintendent through the Manager Nuclear Engineering, who assigns appropriate engineering support groups the design responsibility and/or hires a vendor or contractor to perform the work. Conceptual designs are formulated and sent to the site for approval after engineering approval. Conceptual site approval is made by the Station Superintendent after review by the appropriate site discipline. Final design is provided by Engineering for review by the appropriate site discipline, the Station Superintendent, and the SORC, and is approved by the General Superintendent Nuclear Generation and reviewed by the SRAB.

Any design-related activities not performed as described above are performed onsite or controlled onsite. Such activities are controlled in a similar manner except that technical review and approval and procurement are maintained by site personnel, with Engineering acting as a consultant if requested by the Station Superintendent.

17.1.1.2.5 Nuclear Construction

The Senior Vice President has the overall responsibility for project management of Unit 2. The project organization is shown on Figure 13.1-2. The project management efforts include management of construction, design, and support for turnover of plant equipment and systems to Nuclear Generation for preliminary, preoperational, and startup testing (fuel load). These activities are governed by the Project Manual and procedures for Unit 2.

17.1.1.2.6 Purchasing

The Vice President Purchasing reports directly to a Senior Vice President and is responsible for formulating, establishing, and enforcing compliance with procurement requirements. The Vice President Purchasing and his staff are responsible to ensure that all applicable procurement documents and changes are reviewed and accepted by the QA Department.

17.1.1.2.7 Safety Review and Audit Board

The SRAB is responsible to the Manager Nuclear Engineering and Licensing and the Vice President Nuclear Generation. In addition to other specified duties, this board reports its observations regarding Unit 2 QA functions to the previously mentioned Manager and Vice President and the Vice President of Quality Assurance. The organization and functions of the SRAB are discussed in Chapter 13.

17.1.1.2.8 Site Operations Review Committee

The SORC is responsible to the General Superintendent Nuclear Generation and transmits reports to the SRAB. In addition to other specified duties, the SORC reviews all initial and revised procedures utilized at the site by the Nuclear Generation Department. The organization and functions of the SORC are discussed in Chapter 13.

17.1.1.2.9 General Superintendent Nuclear Generation

The General Superintendent Nuclear Generation reports directly to the Vice President Nuclear Generation. The General Superintendent is responsible for implementing NMPC QA policies as applicable to operation, maintenance, modification, and repair conducted at the site. He is responsible for formulating, establishing, and enforcing compliance with all Nuclear Generation Department procedures implemented at the site.

The General Superintendent is authorized to approve all site Nuclear Generation Department procedures, to continually analyze site operations to detect potential safety problems, and to implement "stop work" action at his discretion and when requested by the QA Department in accordance with applicable procedures.

17.1.1.2.10 Site Superintendent Maintenance - Nuclear and Staff

The Site Maintenance Superintendent Nuclear and his staff report to the General Superintendent Nuclear Generation. This superintendent is primarily concerned with:

1. Originating procurement documents for maintenance, modification, and repair.

2. Welding.

3. Equipment testing for maintenance (electrical, structural, mechanical), repair, and modification.

4. Supervision of maintenance, repair, and site-controlled modifications.

5. Control of Maintenance Department measuring and test (M&TE) equipment.

17.1.1.2.11 Technical Superintendent Nuclear Generation

The Technical Superintendent Nuclear and his staff report to the General Superintendent Nuclear Generation. The Superintendent Technical Services Nuclear and his staff report to the Technical Superintendent Nuclear and are concerned with:

1. Control of Instrument and Control (I&C) and Operations Department M&TE, and maintenance and testing of process, instrumentation, and control equipment.

2. Reactor core management receipt, storage, inspection, utilization, and disposal of nuclear fuel.

3. Operations maintenance of computer-related services.

4. Technical support services.

5. In-service inspection.

6. Fire protection.

7. Administrative services (Chapter 13).

17.1.1.2.12 Superintendent Chemistry and Radiation Management

The Superintendent Chemistry and Radiation Management and his staff report to the General Superintendent - Nuclear Generation. They are responsible for chemistry, radiochemistry, radiation protection, environmental protection, and emergency planning, including control of M&TE for these activities (Chapter 13).

17.1.1.2.13 Superintendent Training

The Superintendent Training and his staff report to the General Superintendent Nuclear Generation. They are responsible for the training of personnel (Chapter 13).

17.1.1.2.14 Station Superintendent and Staff

The Station Superintendent reports directly to the General Superintendent Nuclear Generation. The Station Superintendent is responsible for the operation of the Station and for

establishing, formulating, and enforcing compliance with procedures concerning the quality aspects of technical work performed by the staff.

The Station Superintendent is also responsible for control of construction, and installation of modifications to structures, systems, and components from the time materials are issued by the Materials Management organization through preoperational testing. This responsibility includes documentation of this control. The responsibility for performance of construction may be retained by'the Station operating and maintenance organizations, or delegated by the Station Superintendent.

17.1.1.2.15 Manager System Materials Management and Staff

The Manager System Materials Management reports to the Vice President Purchasing. Included on his staff and reporting to him through a Manager Division Materials Management is the Supervisor Generation Storeroom (Nine Mile Point). The Supervisor Generation Storeroom is responsible for storage of materials and for performing or arranging receipt inspection in accordance with purchase order provisions.

17.1.1.3 Functional Assignments and Responsibilities

17.1.1.3.1 General

QA functional assignments and responsibilities are established in writing. NMPC delegates to appropriate NMPC personnel or external organizations as appropriate the authority to assume responsibility for all activities required to implement the QA program.

The independence of the QA organization is defined in Section 17.1.1.2. The QA requirement imposed on contractors and subcontractors to assure that QA functions are effectively implemented is described in Section 17.1.4.3.

17.1.1.3.2 Quality Assurance Personnel

The QA Department evaluates the manner in which all activities with respect to quality are being implemented in the design, fabrication, procurement, construction, storage, test, operation, modification, and maintenance work done by NMPC and by those supplying materials, equipment, and services to NMPC. In making this evaluation, QA personnel audit or conduct surveillance of quality activities in all of the above-mentioned areas. QA personnel are responsible to assure the identification of quality problems, to initiate or recommend solutions to these problems, to verify corrective actions relative to these problems, and to verify that quality instructions are implemented. The Vice President Quality Assurance regularly informs the President and the appropriate Senior Vice President as to findings.

17.1.1.3.3 "Stop Work"

To ensure that the Vice President Quality Assurance may deal with quality problems effectively, he has authority to take direct action concerning matters affecting quality. Direct action includes the initiation of an order to stop work or consultation with NMPC senior executives concerning unresolved quality problems. Sections 17.1.1.2.9 and 17.1.10.2.1 identify other personnel who have the authority to initiate "stop work" action.

17.1.1.4 Quality Assurance Interfaces

The QA communications interfaces established are described below:

1. The interfacing groups are knowledgeable about the scope of each others' activities affecting quality by exchanging controlled documents as required.

2. For the life of certain modification projects, interfaces, including QA interfaces, are identified in appropriate documents furnished to major project participants including contractors.

Examples of QA communications interfaces include the following:

- QA/QC nuclear operations organization personnel will attend informal planning sessions with the maintenance department. These are generally held daily.

- During normal operation, QA/QC may attend plant operation meetings. These are generally held weekly.

- QA/QC may attend SORC meetings as a nonvoting member. These are generally held weekly.

- QA/QC will review all Class I work requests prior to the initiation of work and all modification requests.

- QA/QC hold points are established or being established in appropriate maintenance procedures for corrective maintenance of Class I equipment, components, etc. This activity is, or will be, established in the appropriate site administrative procedures for Unit 2. This ensures proper acceptance criteria.

- QA/QC, in accordance with administrative procedure, is required to be notified prior to the start of all preoperational tests.

- QA/QC staffing and qualification requirements will be based on identified needs from Unit 1 projections for the Unit 2 organization, with qualification requirements derived from appropriate ANSI, ASME, etc., code and standard requirements.

17.1.2 Quality Assurance Program

17.1.2.1 Program Development

The NMPC QA program was developed in accordance with the requirements of Appendix B to 10CFR50. Degree of compliance to applicable QA regulatory guides is provided in Table 17.0-1.

17.1.2.2 Quality Assurance Program Applicability

The structures, systems, and components covered by the QA program are listed in Table 3.2-1. Activities affecting structures, systems, and components important to safety will be subject to the applicable controls of the QA program.

17.1.2.3 Program Implementation

The QA program relates to activities performed by the entire QA staff, as well as to quality-related activities in the task-oriented groups involved. These task-oriented organizations are required to operate in accordance with properly approved written procedures when performing activities relating to safety-related systems and/or components. This QA program will be initiated during the initial testing program to ensure the continuity of QA activities in accordance with 10CFR50 Appendix B. The QA organization and program for initial testing through fuel load are shown on Figures 17.1-1 and 17.1-2. The operational QA program will be implemented at least 90 days prior to fuel loading. Further explanation concerning preparation, review, and approval of such procedures is included in Sections 17.1.5 and 17.1.6.

17.1.2.4 Communication of Program Requirements

Administrative controls assure that QA program policies, procedures, and instructions, including changes thereto, are distributed and implemented in a timely manner and are controlled in accordance with Section 17.1.6. A listing of applicable QA procedures is provided in Table 17.1-1.

17.1.2.5 Policies, Goals, and Objectives

Exhibit 17.0-1 provides the corporate QA policies, goals, and objectives. Additionally, Chapter 17 in its entirety defines the program to implement these established responsibilities. Quality-related concerns are resolved in accordance with applicable QA procedures.

17.1.2.6 Training

The indoctrination and training program that has been established for personnel performing QA-related activities consists of:

1. Familiarization with the content of:

a. Regulatory criteria such as Appendix B to 10CFR50.

b. NMPC QA policy and procedures.

c. Regulatory guides.

d. Safety analysis reports.
e. Engineering codes and standards such as ANSI, ASME, ASTM, and ASNT.

2. On-the-job training (OJT): Personnel performing QA-related activities are assigned responsibilities within an active project. Their activities are reviewed by a supervisor or other experienced member of the QA organization. OJT includes:

   a. Audit and/or surveillance, i.e., planning, preparation, conducting, reporting, responding, and follow-up.

   b. Review of purchase documents for adequacy of QA content.

   c. Preparation or revision of detailed procedures implementing NMPC QA policies.

   d. Preparation of responses to inquiries from regulatory agencies regarding QA.

   e. Preparation of portions of the NMPC QA documents.

   f. Evaluation of vendor's QA programs and manuals.

   g. Observations of skilled QA consultants and inspection personnel inside and outside NMPC.

   h. Use of files containing QA-type records.

3. Participation in vocational and technical courses in various special processes, metallurgy, testing, etc.

4. The provision of texts and periodicals concerning QA-related activities.

In addition to the foregoing, the QA Department has conducted (and will continue to conduct) meetings and seminars covering a number of topics including the following:

1. History of QA.

2. Need for QA.

3. Function of a QA system.

4. Detailed explanations of all QA policies, procedures, and instructions.

5. Application of various regulations, standards, codes, and guides.

6. The role to be performed by all personnel performing activities subject to QA coverage, including engineering, plant operations, maintenance, purchasing, and storeroom.

7. The purpose of audits, to ensure that the system is functioning and to recommend improvements.

These orientation programs will be repeated periodically. QA Department personnel and/or outside QA consultants will conduct these sessions, which are to be attended by personnel performing QA-related activities. Records are maintained on each individual participating in the indoctrination training program.

Personnel performing activities affecting quality will be trained in accordance with Regulatory Guide (RG) 1.58 as described in departmental procedures.

Personnel performing inspection functions will be qualified in accordance with ANSI N45.2.6.

Personnel performing NDE will be qualified in accordance with the procedures in the Non-Destructive Examination Procedures Manual, which conforms to the requirements of ANSI N45.2.6-1978.

17.1.2.7 Qualification Requirements for Managerial and Supervisory Personnel Within the QA Department

A QA Department Manager or Supervisor shall have, as a minimum, a B.S. degree or equivalent. He must have at least 7 yr of experience in responsible assignments within the field of QA, design, manufacturing, construction, operations, or related activities, and a minimum of 3 yr of equivalent experience related to nuclear QA activities. He must have knowledge of QA regulations, policies, practices, and standards.

Managers and supervisors must have demonstrated their management expertise through assignment to increasingly more responsible positions.

17.1.2.8 Program Development

Copies of NMPC and contractors' QA procedures, instructions, or manuals are available for reference in the NMPC QA organization offices or at the contractors' offices. The procedures require provision for controlled conditions when carrying out activities affecting quality. These procedures require the use of

appropriate equipment in suitable environments and verification that quality prerequisites have been achieved.

17.1.2.9 Program Assessment

The Vice President Quality Assurance periodically assesses the implementation and effectiveness of the QA program through review of reports concerning audits and surveillances conducted by the QA organization. The QA Department regularly performs audits and surveillances of the activities of the various organizations performing QA-related activities (Section 17.1.18). Copies of the reports of audits/surveillances are sent to the Vice President Quality Assurance, who in turn reports significant findings/problems to the President. The audits of the SRAB are conducted and reports distributed as indicated in Section 17.1.18.

The QA programs and the QA manuals for contractors and vendors involved in repair, maintenance, in-service testing (IST), and modifications to, and the refueling of, Unit 2 are reviewed and accepted by QA personnel under the direction of a QA Manager/Supervisor. Documentation of the review and acceptance action is audited by the QA group.

17.1.2.10 QA Interfaces During Initial Testing

The QA interfaces are described in Section 17.1.1.4. This will include interfaces between architect-engineers, nuclear steam supply system (NSSS), and other NMPC groups to assure successful transition and implementation of the QA program.

17.1.2.11 Review and Approval of Program Manuals/Procedures

The frequency of audits and surveillance is commensurate with the safety significance of the activities performed. The audit frequency is sufficient (Section 17.1.18) to provide QA Department management and, in turn, NMPC corporate management, with means to continually evaluate the QA program.

All QA Department policies and procedures that are used by the QA Department require the approval of the Vice President Quality Assurance or his designee. QA Department procedures are originated by QA Department staff personnel, reviewed by the QA Department Supervisors, and approved by the Director of Quality Assurance or his designee.

The QA program description will be kept current by annual review and update of the Final Safety Analysis Report (FSAR) as required by 10CFR50. Substantive changes to the accepted QA program will be submitted to the Nuclear Regulatory Commission (NRC) for review and concurrence before implementation. Additionally, the NRC will be notified of organization changes within 30 days of announcement.

17.1.3 Design Control

17.1.3.1 Program Provisions

The program provisions applicable to the operations phase ensure that:

1. Applicable regulatory requirements and design bases for safety-related structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions.

2. Procedures are established requiring a documented check to verify the dimensional accuracy and completeness of design drawings and specifications.

3. Procedures are established requiring that design drawings and specifications be reviewed by the QA organization to assure that the documents are prepared, reviewed, and approved in accordance with company procedures and that the documents contain the necessary QA requirements such as inspection and test requirements, acceptance requirements, and the extent of documenting inspection and test results.

4. Appropriate quality standards are specified in design documents.

5. Changes to such standards are controlled by procedures.

6. Procedures are established requiring control of the use of safety-related computer programs.

These activities are implemented through applicable QA procedures, site administrative procedures, and engineering procedures. Design review elements and management guidelines are delineated in engineering design procedures.

17.1.3.2 Controls

Measures are implemented for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related function of the structures, systems, and components. The essential elements required to implement design control are discussed in the following sections. Written procedures are established for the identification and control of interface activities and for coordination of design operations among architect-engineers, contractors, consultants, and internal engineering. Refer to Section 17.1.7.3.2 for a description of the control for off-the-shelf (commercial) materials.

17.1.3.3 Control of Designs

The responsible engineer controls the design of a modification. His responsibility for design includes items such as:

1. Capacity, rating, and system output.

2. Design conditions such as pressure, temperature, and voltage.

3. Loads such as seismic, wind, thermal, and dynamic loads imposed by the system itself.

4. Mechanical requirements, such as vibration, stress, shock, and reaction forces.

5. Layout and arrangement requirements.

6. Failure effects requirements of structures, systems, and components, including a definition of those events and accidents which they must be designed to withstand.

7. Accessibility and maintenance requirements.

8. Safety requirements such as radiation hazards, escape provisions from enclosures, and grounding of electrical systems.

9. ISI requirements.

10. Materials capability.

11. Associated computer codes and programs. Provisions will be established to assure that procedures are established to assure that verified computer codes are certified for use and that their use is specified. Such provisions are subject to audit by the QA Department.

The applicable regulatory requirements, such as the Code of Federal Regulations, regulatory guides, Technical Specifications or the FSAR, will be listed. Errors and deficiencies that adversely affect safety-related structures, systems, and components, when detected in the design review process, are documented and brought to the attention of the responsible engineer who is responsible for appropriate corrective and preventive action. Appropriate corrective action requires reviews and approvals in accordance with the original design control requirements. The responsible engineer or his suitably qualified designee conducts an independent review of the designer's activities.

The reviewer is other than the designer. Alternatively, the responsible engineer, or his designee, may elect the performance of alternative or simplified calculations or a suitable testing

program of a prototype unit under the most adverse design conditions.

17.1.3.4 Design Verification

Design review shall be conducted by architect-engineers, vendors, contractors, and NMPC, as appropriate to the design problem, in accordance with properly approved procedures.

Design review of safety-related systems is coordinated by the design office. Design review is conducted by persons or groups other than those who performed the original design but who may be from the same organization.

Verification procedures are part of the contractor's quality program accepted by the QA Department. Alternative calculational methods, when used for design verification, are independently conducted by another qualified individual of the same discipline.

Test programs for the verification of design are conducted when appropriate design review of the subject indicates that test programs are required in accordance with applicable codes and standards. Testing shall demonstrate adequacy of performance under the most adverse design conditions. Modifications shall be retested for acceptable performance as necessary. If the verification method is only by test, prototype, component, or feature, testing shall be performed as early as practical and shall include provisions that assure the following:

1. Procedures provide criteria that specify when verification should be by test.

2. Prototype, component, or feature testing is performed as early as possible prior to installation of plant equipment, or prior to the point when the installation would become irreversible.

3. Verification by test is performed under conditions that simulate the most adverse design conditions as determined by analysis.

Responsibility for selection of the design verification methods rests with the design offices and is executed by the appropriate design organization. Documentation of the design verification shall be in accordance with written procedures. Independent design verification will be accomplished in accordance with RG 1.64.

17.1.3.5 Control of Design Activities

Design activities are controlled by a responsible engineer through the use of design control procedures. The actual design may be delegated to an architect-engineer, vendor, consultant or contractor, and/or internal department. Such designee or design

office shall develop and use design control procedures and instructions applicable to performing design and interface activities. As an alternative, a design office or designee may comply with NMPC-prescribed design control procedures. The QA Department shall provide assurance of design control by audit and/or surveillance measures described in applicable procedures. Additionally, the QA Department provides assurance that design documents contain the necessary QA requirements such as inspection/test requirements, acceptance requirements, and the extent of documenting inspection and test results.

17.1.3.5.1 Changes to the Site Design

Recommendations for changes to Unit 2 come from many sources. These recommendations are brought before the SORC for consideration of their suitability. The changes recommended by this committee for implementation are reviewed by the SRAB and are approved if found suitable.

When the NMPC Nuclear Engineering and Licensing Department is assigned to prepare a change to Unit 2, the responsibility for its accomplishment is assigned to a qualified individual. He is responsible for design, procurement, and fabrication and performs these activities in accordance with procedures.

These procedures apply to modifications, or additions to safety-related systems, structures, and components, and require that applicable regulatory requirements and design bases are identified. They require the establishment and identification of design interfaces between all participating organizations, both inside and outside NMPC.

17.1.3.5.2 Design Criteria

Basic design criteria such as 10CFR50, Appendix A, other design bases described in the application and safety analysis reports, QA requirements, and cross verification of design interfaces are essential elements of the architect-engineers', vendors', contractors', and internal design control systems. These elements are incorporated into the design through specifications, procedures, instructions, and drawings. Review of these documents by other than the original designer provides assurance that the proper design criteria have been incorporated.

17.1.3.5.3 Drawings and Specifications Control

Control of drawings and specifications, and of the changes/revisions to drawings and specifications, is the responsibility of the design office (architect-engineer, vendor, contractor, consultant, or NMPC) performing the work. Interface control is contained in the appropriate project documents. Each organization must have or must adopt procedures detailing its control of design documents during such operations as review, approval, distribution, changes, and revisions.

17.1.3.5.4 Design Office Approval

All design offices are to require, in their design control procedures, that all design documents are approved by appropriate designated personnel, and that approvals are properly documented. Evidence of their performance is to be readily apparent on each document. Design offices are to require responsible approval of any changes (including field changes) to drawings or specifications in accordance with the original approval of that document. Nonconformities that may be accepted as design changes are submitted for design office approval in similar fashion.

17.1.3.5.5 Selection and Applicability of Materials

Selection and applicability of materials, parts, equipment, and processes follow prescribed methods. All design offices are required, in their design control procedures, to select appropriate materials by means of past experience, material-testing, and/or code cases.

17.1.3.5.6 Design Documents

Design documents, and changes thereto, such as drawings, specifications, and procedures are distributed by a predetermined recipients list on a return receipt basis if they are controlled documents. The responsible engineer is responsible for accumulating and transmitting to the Unit 2 site files adequate copies of required design documents, reviews, records, and changes thereto. These items are filed in accordance with Section 17.1.17.

17.1.3.5.7 Commercial Items

In those instances where standard commercial materials, parts, and equipment are selected for safety-related applications, their suitability shall be determined by the responsible engineer or his designee in accordance with procedures. Alternatively, the SORC may conduct such a review for suitability of applications on those items whose procurement is originated at Unit 2.

17.1.3.6 Design Changes

Design changes, including those originating in the field, are controlled to the same standards as was the original design. A change control system is used to control and document design changes originating either with the architect-engineer, a vendor, NMPC, or in the field. The provisions of this section are contained in the design control procedures of all design offices (architect-engineers, vendors, contractors, consultants, and internal departments).

17.1.4 Procurement Document Control

The assurance that applicable regulatory requirements, design bases, and other requirements are suitably included or referenced in the documents for procurements of material, equipment, and services is obtained through review of procurement documents by NMPC or a designated representative, i.e., an architect-engineer. The efforts are directed toward assuring that the review of available procurement documents is thoroughly executed before placement of an order. It is the responsibility of the NMPC QA organization to verify that appropriate procedures for control of procurement documents are written and implemented. These include, but are not limited to, procurement planning; preparation, review, approval, and control of procurement documents; supplier selection; bid evaluation; and review and concurrence of supplier QA programs. Procedures are prepared in accordance with Section 17.1.5.

Engineering procedures and administrative procedures contain methods for preparation, review, approval, and control of procurement documents. In procurement documents for the purchase of safety-related materials and services, these procedures provide for consideration of the following:

1. Regulatory requirements or references thereto.
2. Component and material identification.
3. Drawings.
4. Specifications.
5. Codes and standards.
6. Test and inspection requirements.
7. Special instructions.
8. Requirements for furnishing and/or retention of documentation.
9. Rights of access of NMPC, and/or their agent, to audit and inspect the contractor's activities and records.
10. Provision for supplier reporting and disposition of nonconformance from procurement requirements.

The procedures also require that the procurement documents be reviewed by the QA Department.

The QA Department accomplishes their review according to procedures. The review determines that the quality requirements of the procurement document are adequate.

Results of the reviews are documented and retained in accordance with requirements contained in the procedures for preparation of

procurement documents. These include, as a minimum, retention, control, and maintenance of records in accordance with applicable codes, standards, and procedures.

17.1.4.1 Procurement Document Review

Reviews of procurement documents shall verify that the documents are consistent with the applicable regulatory requirements, design bases, control requirements, QA requirements, specifications, and drawings. Technical content of procurement documents is reviewed by appropriate NMPC personnel or their designated representative in accordance with appropriate procedures.

QA provisions in procurement documents for safety-related materials and services are to be reviewed for adequacy by the QA Department of NMPC or their designated representative, in accordance with prescribed procedures.

Any change to procurement documents will be reviewed in the same manner as the original document.

17.1.4.2 Contractors and Subcontractors

Procurement documents for safety-related materials and services shall require contractors and their subcontractors to provide appropriate QA programs and procedures to the extent necessary to comply with NMPC QA policies and Appendix B to 10CFR50. The contractor/subcontractor QA programs must be presented to and accepted by NMPC prior to material release in the case of manufactured items or start of work in the case of a service contract. Items/services will be procured only from qualified vendors. NMPC or their designated representative will qualify vendors in accordance with applicable regulatory requirements, codes, standards, and procedures.

All procurement documents will impose upon the principal contractors the responsibility to ensure that their subcontractors provide, to the extent necessary, QA tests, documentation, and access to their facilities by NMPC or their designated agents.

17.1.4.3 Review

The NMPC QA Department or a designated representative is responsible for assuring that reviews of procurement documents are performed properly.

17.1.5 Instructions, Procedures, and Drawings

17.1.5.1 General

The intent of this section is to assure that quality-related activities are prescribed by documented instructions, procedures,

and drawings and are accomplished in accordance with these instructions, procedures, and drawings.

17.1.5.2 Quality Activities

The NMPC QA Department or their designated representative will verify that appropriate QA measures exist and are implemented in all quality-related activities. Quality measures include, but are not limited to, instructions, procedures, and drawings.

The NMPC design office, operations group, or designated representative, as applicable, is responsible for establishing appropriate quantitative and/or qualitative acceptance criteria for determining that quality-related activities are satisfactorily accomplished. In the case of equipment and components, these criteria are made a part of the design documents for procurement and/or installation of each piece of equipment, component, or order of material. In the case of operations, these criteria are set forth in the applicable operations and maintenance procedures.

The description of compliance to the requirements of 10CFR50.55a is described in various FSAR sections (such as conformance to ASME Section XI, described in FSAR Section 6). Procedures will be developed to address the implementation of plant modifications to ensure continuing conformance to 10CFR50.55a and QA procedures to assure conformance.

The description of compliance to regulatory guides is described in Section 1.8. Procedures will be developed to address the implementation of the regulatory guides listed in Table 17.0-1 and QA procedures to ensure conformance.

QA Department procedures for the preparation, review, and control of procedures requires that reviews be performed on a scheduled basis. All changes or revisions are reviewed, approved, and controlled in the same manner as the original procedure. The reviews are performed by the Corporate QA Section with input provided by the affected QAD sections. QA Department procedures are approved by the Vice President Quality Assurance and may be concurred with by other NMPC organizations whose responsibilities are affected by the QA procedure.

Assurance that similar procedures are established and implemented in other departments is obtained by audit and surveillance by the QA Department.

The QA Department reviews all engineering and site administrative procedures for QA-related aspects. Concurrence by the Quality Assurance Manager is required before implementation. Concurrence is indicated by signature and date on the title page of the procedure.

17.1.5.2.1 Document Procedures

Procedures for directing quality-related activities will be prepared to comply with each of the 18 criteria within 10CFR50 Appendix B.

17.1.5.2.2 Preparation of Procedures, Instructions, and Drawings

All quality-related activities shall be performed in accordance with properly approved instructions, procedures, and drawings. The preparation of necessary written procedures and instructions is the responsibility of the department or group performing the activity. Required procedures, instructions, and drawings are prepared in accordance with controlling procedures that include requirements for review, approval and issuance of the documents involved.

All NMPC QA Department procedures are reviewed and approved by the Vice President Quality Assurance or his designated representative. Certain other procedures including NMPC Engineering procedures, the Nine Mile Point site administrative procedures, and certain controlling procedures of the Nuclear Construction Department, Materials Management, and Purchasing Departments require the concurrence prior to issuance of the Manager Nuclear Quality Assurance Operations for quality-related content.

17.1.5.2.3 Requirements

NMPC imposes on their architect-engineers, vendors, and contractors the requirement for utilizing approved written procedures and instructions, as appropriate. The architect-engineers, vendors, and contractors are obligated to impose applicable requirements on their suppliers and subsuppliers.

17.1.6 Document Control

17.1.6.1 Document Issuance Maintenance and Control

The purpose of this section is to assure the implementation of programs for establishing and maintaining control over documents that affect the quality and safe operation of Unit 2. This policy is implemented through written procedures. It is imposed upon contractors, suppliers, and subsuppliers, when appropriate, through contractual arrangements.

The measures that control the issuance and revision of these documents require:

1. Review of controlled documents for accuracy.

2. Approval of controlled documents by authorized personnel prior to release.

3. Distribution of controlled documents to the points of use.

4. Use of controlled documents where the prescribed activity is carried out.

5. Changes and alterations to documents affecting quality are made by subjecting the revised document to the same controls (review, approval for release, distribution, and use) as the document that it replaces, changes, or alters. The changes are reviewed and approved by the same organizations that performed the original review and approval. Document control provides that changes are included in a timely manner, when applicable. Unit 2 will maintain marked-up copies of all drawings to reflect the as-built condition until a formal revision has been made. Engineering procedures require that final as-built drawings be transmitted to the permanent file after project completion. This documentation is subject to audit and surveillance by the QA Department.

6. Obsolete or superseded copies of all the cited documents distributed on a controlled basis are destroyed or appropriately marked to prevent their inadvertent use, with the exception of one master copy which is retained for historical purposes.

17.1.6.2 Controlled Documents

Examples of documents in a controlled status include, but are not limited to, the following:

1. QA Department procedures.

2. Purchase specifications for materials and services that are determined to be safety related.

3. Drawings for items affecting quality that are determined to be safety related.

4. Instructions and operating procedures (including inspection, modification, installation preoperational and IST procedures, and instructions) for activities affecting safety-related functions.

5. Design documents (e.g., calculations, drawings, specifications, computer codes).

6. Nonconformance reports (both NMPC and contractor).

7. As-built drawings and related documents reflecting actual plant design.

8. Topical Reports.

9. Safety Analysis Report (SAR) and changes thereto.

Document control lists indicating the current revision of the preceding documents are maintained by the QA, Nuclear Engineering, Nuclear Generation, and Purchasing Departments.

These lists will be combined into a master list which will be updated as required and distributed to predetermined responsible personnel.

The review of controlled documents, and changes thereto, is performed by appropriate technical and/or QA Department personnel. The approvals for release of controlled documents and changes thereto are performed by personnel authorized in writing by appropriate levels of management.

Maintenance of a current distribution list for controlled documents is the responsibility of the issuing office.

Engineering procedures govern the activities of design offices within NMPC and external organizations as applicable. The minimum distribution list for these procedures and changes thereto is established within the engineering procedures themselves. These procedures include a description of the controlled drawings.

Unit 2 site-originated procedures (and changes thereto), such as operating procedures, maintenance procedures, and administrative procedures, are distributed to a list of recipients determined by the General Superintendent Nuclear Generation or the Station Superintendent, as appropriate. A record is maintained of all personnel to whom the procedures and changes thereto are furnished. Implementation of the procedures is by direction of the supervisors who are responsible for the work activities. Verification of compliance with the quality aspects of the procedures is accomplished through audit or surveillance by the QA Department.

The requirement to obtain the approval signature of the Vice President Quality Assurance or his designated representative on all QA Department procedures, prior to the start of work, assures that activities affected by these documents are commenced only with proper directives.

17.1.6.3 Maintenance, Modification, and Inspection Procedures

Maintenance, modification, and inspection procedures are reviewed by qualified personnel knowledgeable in QA requirements to determine:

1. The need for inspection, identification of inspection personnel, and documentation of inspection results.

2. That the necessary inspection requirements, methods, and acceptance criteria have been identified.

17.1.7 Control of Purchased Material, Equipment, and Services

17.1.7.1 Policies for Purchasing

The purpose of this section is to describe the policies necessary to assure that all materials, equipment, parts, and services, whether purchased directly or through contractors or their subcontractors, conform to all requirements specified in the procurement documents and/or contracts. The Purchasing Department and the department or office actually requesting the purchase are charged with implementing these policies.

Safety-related equipment, parts, supplies, materials, and services (hereafter referred to as materials or services) will be purchased for use in accordance with the following:

1. Normally, bids for material and services are solicited from and subsequent orders are placed only with contractors appearing on the NMPC Qualified Contractor List. Contractors are placed on or removed from the Qualified Contractor List in accordance with procedures approved by the NMPC QA Department. Reinstatement of a contractor once removed from the qualified contractors list requires consideration and reevaluation.

   Procedures for the evaluation and approval of a vendor, supplier, or distributor (hereafter called the contractor), prior to being placed on the Qualified Contractor List, are approved for QA content by the NMPC QA Department or their designated representative as appropriate. These procedures include use of historical quality performance data, contractor audits or surveys, or source qualification programs, and indicate how the required qualifications of personnel performing contractor evaluation, as well as the bases for evaluation, are determined.

2. Contractor activities, including design, procurement, fabrication, inspection, testing, shipping, and handling, are surveyed or audited by the NMPC QA Department, or their designated agent, in accordance with approved procedures that include, as a minimum, requirements for:

   a. Instructions that specify those characteristics or processes to be witnessed, inspected, or verified, and the parties responsible for implementation of the instructions.

b. A description of the method of surveillance and documentation required that will assure compliance by the contractor with all quality requirements.

Procurement documents shall specifically require access to contractor facilities and records to allow surveillance by the NMPC QA Department or their designated agent in the case of items where verification of procurement requirements cannot be determined upon receipt. It shall be the responsibility of the design office to determine the necessity of this requirement subject to review and acceptance by the NMPC QA Department.

3. All material for which inspection is specified is inspected in accordance with approved procedures and applicable regulatory guides, codes, and standards. Receiving inspection attributes and accept/reject criteria shall be provided by the design office. As a minimum, receiving inspection should verify that materials, components, or equipment are properly identified and correspond to identification on the purchase document and receiving documentation. Inspection procedures shall include requirements to apply appropriate qualitative/quantitative acceptance criteria and means of documenting and verifying conformance.

   Damaged or nonconforming items are handled in accordance with policies described in Sections 17.1.15 and 17.1.16.

4. Documentation supporting the conformance of material and equipment with the procurement documents is to be available at the site prior to installation whenever possible. In those instances when equipment and material are received without the required documentation, installation may be accomplished if:

   a. Installation is controlled in accordance with the requirements of Sections 17.1.15 and 17.1.16, and

   b. Installed items are readily removable, and

   c. Equipment or material is more readily protected by installation than by segregated storage, and

   d. Supporting documentation is reasonably expected to arrive prior to use of the equipment or material.

5. Site administrative, engineering, and QA Department procedures provide for the review of procurement documents and require that criteria for traceability and identification of material, parts, and components

are included in the procurement documents. Verification of these requirements may be made during vendor/contractor inspections or other means in accordance with procedure. Verification of these requirements is made during receipt inspection in accordance with existing procedures.

6. Verification that identification of material, parts, and components is maintained onsite during storage and installation is accomplished by means of surveillance and inspection in accordance with QA Department procedures.

7. QA procedures delineate the implementation of periodic evaluation of suppliers' certificates of conformance. Via vendor surveys and audits, on a sampling basis, inspections and documentation reviews are performed to ensure that certificates of conformance are valid.

In no case shall material or equipment be placed in an operating status without receipt of proper documentation.

17.1.7.2 Procurement Documents

Specifications, drawings, and other applicable documents are produced and controlled in accordance with Sections 17.1.3 and 17.1.4. Purchase specifications shall provide for inspection by NMPC or their designated agents at the contractor's plant. Audits are conducted in accordance with Section 17.1.18.8.

17.1.7.3 Special Purchasing Requirements

Specific provisions allow for purchasing materials and services from other than contractors appearing on the Qualified Contractor List, provided certain control measures are employed. These measures are described in the following sections.

17.1.7.3.1 Purchasing Materials

Materials may be ordered but may not be put into normal operation in safety-related systems until one of the following conditions is satisfied:

1. The contractor is qualified by the QA Department in accordance with all the requirements of the NMPC QA program and is placed on the Qualified Contractor List.

2. The contractor permits the imposition of an approved QA program in his offices and shops, as applicable, by NMPC or their agent during the period of fabrication.

3. The contractor permits the imposition of a product inspection program at his shop by NMPC or their agent during the period of fabrication. The inspection

program demonstrates compliance with design specifications and end-use requirements in addition to and in accordance with Item 2 of Section 17.1.7.1.

4. At the time of receipt, the materials are subjected to a special test and inspection program which adequately demonstrates compliance with the specifications acceptable to the NMPC QA Department, and is performed outside the plant system. Alternatively, a NMPC QA test program is performed within the system prior to normal operation in addition to and in accordance with Item 3 of Section 17.1.7.1.

Determination of the applicability of this section is established by the QA Department.

17.1.7.3.2 Purchasing Off-the-Shelf or Commercial Grade Materials

If materials have no specific requirements in either codes or the original specification and the materials are shelf, catalog, or commercial grade items, NMPC or their agent may obtain the materials from any source. However, NMPC must have instituted a qualification of the materials by a program of one or more of the following before normal operation is begun:

1. Receiving inspection to quality requirements included on the purchase requisition.

2. Functional testing of the material after installation to specified test procedures.

3. Historical and failure-rate data.

Materials that may be purchased in accordance with the foregoing policy include, but are not limited to, the following:

1. Expendable items whose life is diminished through use or which are normally replaced as part of maintenance, e.g., fuel oil, lubricating oil, grease, gaskets, filter cartridges.

2. Inert hardware such as common nuts, bolts, screws, and fasteners.

3. Specific parts of a component that are of a standard, noncomplex nature and which are normally catalog items and do not require imposition of extensive technical requirements.

The applicability of this section is the responsibility of the appropriate design office.

17.1.7.3.3 Purchasing Replacement Parts

Replacement parts may be purchased from other than approved vendors provided that the replacement part requirements are equal to or better than the original requirements of the part replaced.

If the original requirements are not available or the requirements of the replacement part differ in any way from the original, the case shall be referred to the appropriate department within NMPC for a documented analysis and resolution.

When the failure or replacement frequency of such materials is of an unexpected or undesirable frequency, such items are referred to the appropriate department within NMPC for review, evaluation, and recommendation for corrective action, and for trend analysis.

Administrative procedures delineate the requirements for procurement of spare or replacement parts for safety-related systems, structures, and components. Administrative procedures are part of the QA program.

17.1.7.4 Purchased Services

Services may be ordered and performed on safety-related materials and systems, but the safety-related materials and systems cannot be put into normal operation until one of the following requirements is satisfied:

1. The service organization appeared on the Qualified Contractor List during the period of service, or

2. The service organization performed in accordance with a QA program acceptable to NMPC during the period of service.

17.1.7.5 Documentation Required From Contractors

Upon the award of contracts, contractors are expected to review all procurement documents and/or contracts and determine what supporting documentation has been called for. Procurement documents are required to include a list of all documents required to be submitted by the contractor. This includes documentation originated by the contractor's suppliers. All sequentially required documentation must be reviewed and accepted by NMPC or their agent before release of any affected assemblies or parts for operation.

In addition, documentation that identifies procurement requirements that have not been met and nonconformances from the procurement documents dispositioned as accept-as-is or repair shall be submitted.

17.1.7.6 Records and Reports

NMPC maintains a file of all required documents affecting the quality of purchased equipment, parts, and materials at the site in accordance with the policies stated in Section 17.1.17.

17.1.8 Identification and Control of Materials, Parts, and Components

17.1.8.1 General Requirements

Measures for the identification and control of materials, parts, and components are established to ensure that the identification of the item is maintained throughout its fabrication, storage, erection, installation, and use. Identification and control procedures are designed to prevent the use of incorrect or defective materials, parts, and components, as well as to ensure that these materials, parts, and components are correctly installed.

It is the responsibility of the NMPC QA Department to verify that appropriate procedures for identification and control of materials, parts, and components are written and implemented as necessary.

17.1.8.2 Identification of Materials

Materials, parts, and components, including partial assemblies, to the extent necessary, shall be permanently identified and controlled by heat numbers, part numbers, or serial numbers at the earliest practical point in fabrication (i.e., at the contractor, subcontractor, or supplier level). The identification, control, and traceability requirements of applicable codes and standards shall be specified as required. Requirements for identification and control of materials for other than coded equipment and materials are specified in the purchase documents as required.

NMPC shall ensure, by review of purchase documents, that requirements for the identification and control of materials are specified as required in accordance with policies outlined in Section 17.1.4.

17.1.8.3 Identification Through Fabrication, Installation, and Use

Identification of materials and components during fabrication, storage, erection, installation, and ultimate use shall be in conformance with applicable regulations, codes, or standards. Where no identification method is required by regulations, codes, or standards, the identification method shall conform either to a manufacturing standard acceptable to NMPC, or to NMPC's approved procedures as applicable.

17.1.8.4 Methods of Identification

Identification of materials may be marked on the item, attached to it, or included in records clearly traceable to the item. Location and method of identification shall not impair the function or quality of the item being identified.

Site administrative procedures provide provisions which will ensure that items accepted and released are identified as to their inspection status prior to forwarding them to a controlled storage area or releasing them for installation or further work.

17.1.8.5 Records

A history is maintained on materials, parts, and components in accordance with policies outlined in Section 17.1.17.

17.1.9 Control of Special Processes

17.1.9.1 General Requirements

The intent of this section is to ensure that specialized production, fabricating, and testing processes are under the control of and executed by qualified personnel using authorized and qualified procedures in accordance with governing or specified codes, standards, specifications, or other special criteria included in purchase documents. Special processes are generally those processes where direct inspection is not practical and include, as a minimum, welding, heat treating, nondestructive testing (NDT), and chemical cleaning. NMPC may delegate the identification, preparation of specifications, details of inspection, and limits of documentation of special processes. Assurance that these tasks are implemented in accordance with applicable criteria is the responsibility of the NMPC QA Department. This includes the review and verification of personnel qualification, procedure qualification, and equipment calibration. This does not relieve the designee of his responsibility to NMPC for discharging his assigned tasks.

17.1.9.2 Technical Details

Control of special processes is by one or more of the following means, each of which is approved by qualified personnel:

1. Written instructions on the drawing(s) of the piece or assembly.

2. Written procedure(s) including the specific application involved.

3. Reference to a recognized code or standard published by a national society or institute.

4. Combinations of above with addenda, exceptions, or alternates clearly indicated and in terminology familiar to all personnel involved in planning, or

executing, inspecting, and testing the process or results.

The execution of special processes is by qualified personnel. Qualification, instruction, and testing of these personnel may be by outside laboratories, schools, or in-house supervisory personnel in special process departments. Personnel may be qualified by one or more of the following methods:

1. Formal education by accredited school or institution, supplemented by a proficiency test to verify capability.

2. Qualification to a procedure of a code or standard.

3. In-house testing under qualified instructors with supplementary proficiency tests.

4. Satisfactory completion of an apprenticeship program in the special process involved.

Implementation of these requirements is found in appropriate QA Department procedures and site administrative procedures.

17.1.9.3 Record Requirements

NMPC shall specify in procurement documents which records are to be kept by vendors and/or forwarded to NMPC. The document retention policy and requirements are stated in Section 17.1.17. Qualifications of procedures, personnel, and equipment will be filed and reviewed periodically, and when required by governing codes or standards, the qualification records will be updated or revised as appropriate.

Examples of typical records that may be specified are:

1. Qualification test results for welders, within date limits, as specified in applicable codes or standards.

2. Procedures for welders, signed and dated by authorized personnel.

3. Results of special inspections with results of tests, any corrective action taken, retest if required, and the dated acceptance signature of an authorized inspector. The inspection document must identify the part, assembly, and/or section of the system with its own number or code for future identification and reference. Supporting evidence or documentation must bear the same number or code.

4. NDT reports, including radiographs, photos, and ultrasonic test (UT) reports, with identification of the part and the system inspected. If necessary, a

sketch or descriptive paragraph is included to show the angle of view and exact location covered by radiographs or photos.

5. Charts of the heat cycle in heat treating operations showing test equipment numbers, temperatures, and time, or certified documents by authorized personnel attesting to test equipment numbers, temperature, and time used in the heat treating cycle.

If the assembly is part of a system, mating parts of connections must be identified by drawing or part number. Information must be complete to permit timely retrieval from NMPC's or vendor's files of all supporting QA documentation when requested by NMPC or NRC inspectors.

17.1.10 Inspection

17.1.10.1 Inspection Policies

The purpose of this section is to describe the inspection policies that assure that safety-related components, parts, and systems are procured, stored, installed, and maintained at the site in compliance with documented instructions and drawings.

These inspections are performed by qualified personnel or may be delegated to qualified outside consultants. Departmental procedures, as well as QA/QC procedures/instructions, require documentation of inspection results. Results, by procedure/instructions, are reviewed by qualified groups/individuals other than those who actually performed the inspections. The QA Department has the assigned responsibility and authority to verify that an independent, objective acceptance inspection has been performed on all safety-related items and/or activities.

In no case shall an individual be called upon to inspect an item when that same individual has been responsible, in whole or in part, for placing the inspected item in its present condition. Inspection personnel are selected on the basis of their qualifications, and documentation of their qualifications is maintained at the site.* Inspectors are recertified periodically to established criteria. The requirements for independence of inspection personnel are imposed on vendors and contractors performing work for the plant. The NMPC QA Department assesses the adequacy of independence by means of audits and surveillances. Independence of contractors' inspectors is a requirement in purchase documents for safety-related items. This independence is determined by QA Department appraisal of contractors' QA programs and is verified during the life of the contract by surveillance or audit.

* Inspectors, including NDE personnel, will be qualified/certified in accordance with appropriate QA Department procedures and/or specific codes and standards.

Maintenance/modification procedures, QA/QC procedures/instructions, and QA/QC checklists are developed and reviewed by qualified individuals prior to the start of any work.

These procedures, instructions, and checklists delineate the requirements of Items a. through g. below.

a. Identification of characteristics and activities to be inspected.

b. A description of the method of inspection.

c. Identification of the individuals or groups responsible for performing the inspection operation in accordance with the provisions of Item 10B1 (Section 17.1).

d. Acceptance and rejection criteria.

e. Identification of required procedures, drawings, and specifications and revisions.

f. Recording inspector or data recorder and the results of the inspection operation.

g. Specifying necessary M&TE including accuracy requirements.

The methods of inspection are delineated in procedures, instructions, checklists, drawings, or procurement documents consistent with the established quality requirements of the component and are subject to review by the NMPC QA Department. These requirements include accept/reject criteria, when applicable. Replaced or reworked items are inspected by methods that are the same as the original inspection methods. Modified or repaired items are inspected by methods that are equivalent to the original inspection methods.

In the event that direct inspection of processed material is not feasible, measures are established to employ indirect control as a means of determining product quality. This may take the form of monitoring of processing, equipment, and personnel. Indirect control methods supplement direct inspection whenever required to verify product quality.

17.1.10.1.1 Implementation

Inspections are conducted, but are not limited to:

1. The contractor's manufacturing facility.

2. Receipt inspection at the site.

3. Installation inspection.

4. In-service inspections.

5. Operations inspections.

6. Corrective maintenance.

7. Preventive maintenance.

At the Unit 2 site, QC is responsible to perform receipt inspection. Normally, inspection will be performed by QC personnel, although qualified and appropriately certified independent personnel from other departments or outside contractors may be used.

Instructions for inspection are documented and are furnished to inspectors prior to an inspection activity. Equipment used in an inspection operation is controlled in accordance with Section 17.1.12. The Engineering or QA Department evaluates and determines the accuracy requirements.

Completion of inspection and/or certification that all inspection operations have been performed shall be provided consistent with the requirements of the inspection. Responsibility for verification of inspection shall be accomplished by the QA Department prior to placing the equipment into service.

Records of inspections are maintained by contractors in accordance with their procedures and with NMPC specification requirements. Records required prior to the use or installation of the inspected item are to be shipped with the item, or as specified.

QA audits or surveillances provide assurance that fabrication, receiving, installation, maintenance, and ISIs are performed in accordance with written approved procedures.

Most inspections are either performed by QA Department personnel or by agents under contract; other inspections are performed by the I&C Department, with periodic surveillance by the QA Department.

If inspections associated with normal operations of the plant (such as routine maintenance, surveillance, and tests) are performed by individuals other than those who performed or directly supervised the work, but are within the same group, the following controls must be met:

1. The quality of the work can be demonstrated through a functional test when the activity involves breaching a pressure-retaining item.

2. The qualification criteria for inspection personnel are reviewed and found acceptable by the QA organization prior to initiating the inspection.

When these types of inspections are required, the department supervision is responsible to assign individuals who are qualified to perform the inspections.

The quality of the work is demonstrated by further surveillance test or operability test to verify that the equipment performs its intended function.

The QA organization verifies the qualifications through surveillances and audits.

17.1.10.1.2 Sampling Verification

Where a sample is used to verify acceptability of a group of items, the sampling procedure shall be based on recognized standard practices and shall provide adequate justification for the sample size and selection process.

17.1.10.2 Notification/Hold Points

Inspection "Notification/Hold Points" are designated in the procurement documents or other documents as required. Controls are available to assure that procedures will identify those mandatory inspection hold points beyond which work may not proceed until inspected by a designated inspector.

17.1.10.2.1 "Stop Work" Policy

The Vice President Quality Assurance or his designated representative has the authority to initiate "stop work" action. Where normal Station operation or maintenance work is involved, the General Superintendent Nuclear Generation is also authorized to issue "stop work" action. He may designate that certain of his personnel have the authority to issue "stop work" actions. For major repairs or modifications delegated to it, the design office is also authorized to issue "stop work" action.

When a process on a safety-related system fails to meet established criteria due to noncompliance with specifications, procedures, or drawings, unsatisfactory workmanship, or deviation from operational standards, authorized personnel may deem it necessary to issue "stop work" instructions. When safety-related Station changes or modifications are involved, either the NMPC design office or the General Superintendent Nuclear Generation (as previously described) shall issue "stop work" instructions to:

1. Forbid the use of materials, equipment, or workmanship that do not conform to specifications, or that would cause improper installation relative to specifications.

2. Stop any work in progress that is not being done in accordance with properly approved plans, specification, or procedures.

3. Require the removal or repair of faulty installation or installation performed without inspection that is impossible to inspect in place.

4. Prohibit the start of various phases of work until required inspection documentation has been provided.

"Stop work" orders for deviations from operational standards shall be issued by the General Superintendent Nuclear Generation or his designee. Following the issuance of a "stop work" order, work will not recommence until conditions that caused the "stop work" order have been rectified to the issuer's satisfaction. Inspection reports shall be retained in accordance with Section 17.1.17.

A "stop work" order shall be documented and recorded in accordance with approved procedures as soon as practical. These records shall include documentation of authorization for the restart of work.

17.1.11 Test Control

17.1.11.1 Control of Test Program

A program of test control is established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures that incorporate the requirements and acceptance limits contained in applicable design and procurement documents (Section 17.1.1).

It is the responsibility of the QA Department to verify that appropriate procedures for test control are written, approved, implemented, and updated, as necessary.

The test program includes, as appropriate, prototype, preinstallation, preoperational, and operational testing. Additionally, criteria for determining when a test is required or how and when testing activities are performed will be provided as necessary. The prerequisites for testing, and the adequacy and availability for use of test instrumentation, are established and documented prior to the conduct of tests.

Measures are established within test programs to ensure that test performance and test results are documented and evaluated and

that test requirements have been satisfied by predetermined qualified personnel.

Prototype and preinstallation tests are specified in the specifications and reviewed by NMPC's responsible engineer and the appropriate QA Department staff member in accordance with Sections 17.1.3 and 17.1.4. Specified prototype and preinstallation tests conducted in vendors' shops are witnessed, inspected, or audited by NMPC and/or their agent. NMPC may also participate in "notification point" or "hold point" tests. Specified prototype and preinstallation tests performed in the field are witnessed, inspected, or audited by NMPC and/or their agent.

17.1.11.1.1 Preliminary, Preoperational, Startup and Operational Tests

Station operations personnel perform necessary preliminary, preoperational, startup, and operational tests in accordance with guidelines established in both the startup and site administrative procedures. Test procedures are prepared and reviewed by Station operations personnel in accordance with these procedures.

Preliminary testing is that phase in the test program which is performed prior to preoperational testing to verify that individual components or subsystems and setpoints function correctly. These tests serve as a prerequisite to preoperational test.

Preoperational testing is that testing necessary to initially verify that a structure, system, or component, or modification thereto, meets certain design and performance requirements prior to placing that structure, system, or component into commercial operation. Preoperational testing may include some tests that must be run while the unit is operating. Therefore, preoperational test procedures must define the basis for completion of the test, thus establishing the point at which the structure, system, or component is in commercial operation. Preoperational test procedures are reviewed for QA adequacy by the QA Department and approved by the Joint Test Group Chairman or other responsible approved authority.

Operational testing is testing conducted to establish that a structure, system, or component placed into commercial operation continues to meet specified requirements, including those contained in the Technical Specification. These procedures are reviewed and approved by the SORC prior to implementation.

17.1.11.2 Test Procedures

Written test procedures are developed for each test consistent with the requirements of the test subject and include the testing methods and test equipment. Appropriate test prerequisites are

stated in the procedures and may include, but are not limited to, the following:

1. Requirements and acceptance limits contained in applicable design and procurement documents.

2. Instructions for performing the test.

3. Mandatory inspection hold points for witness by owner, contractor, or inspector (as required).

4. Provisions for assuring test prerequisites have been met.

5. Preparation, condition, and completeness of the item to be tested.

6. Required, environmental conditions.

7. Adequate and appropriate equipment.

8. Calibrated instrumentation.

9. Qualification of personnel, if required.

10. Data collection and storage provisions.

11. Accept/reject criteria.

12. Test data and results documentation methods.

The requirements of the site administrative procedures reference the criteria of ANSI 18.7. The format of test procedures will be in compliance with the ANSI 18.7 standard or its equivalent.

17.1.11.3 Test Data and Results

Test data and results are reviewed and evaluated in accordance with written procedures. These procedures include the requirements that the evaluation be documented and that it establish the basis for acceptance of the test. A history of audits and reviews is maintained on test controls in accordance with policies outlined in Section 17.1.17.

17.1.12 Control of Measuring and Test Equipment

This section states the policy that gives assurance that all measuring and testing devices used either in producing materials, parts, or components having specified quality standards, or in testing and operating the Station, are adequately calibrated, adjusted, and controlled in use. NMPC may delegate the performance of this task to outside agents. NMPC requires in purchase contracts that contractors adhere to the policies stated herein.

It is the responsibility of the department, division, or shop having physical custody and control of M&TE to provide the physical facilities, procedures, and records required by this section.

Site administrative procedures delineate the responsibilities for the control of the site calibration program.

QA procedures/instructions delineate the QA responsibilities for review of the calibration programs by monitoring, surveillance, and audit.

QA procedures/instructions will delineate the QA Department's own calibration control program.

17.1.12.1 Requirements of Control Program

Procedures are established for Unit 2 that provide for the following, as a minimum:

1. Positive identification of all M&TE. This includes measuring and test instruments, tools, gauges, fixtures, reference standards, transfer standards, and NDE equipment used in the measurement, inspection, and monitoring of safety-related components, systems, and structures.

2. Description of the calibration technique used for each type of equipment.

3. Establishment of frequency of calibration intervals for each type of measuring equipment consistent with the required accuracy, purpose, degree of usage, stability characteristics, and other conditions affecting the measurement.

4. Positive means to prevent the use of measuring or test equipment by inspection or production personnel unless it has been calibrated and properly adjusted in accordance with the approved procedure for that type of equipment.

5. Procedures to evaluate or recall and re-inspect material inspected during the period the test equipment was used preceding the calibration test which found test equipment to be out of calibration.

6. The use of recognized calibrating equipment whose calibration is traceable to the National Institute of Standards and Technology (NIST) or other recognized national standard group where such standards exist. System standards laboratory procedures require that calibrating standards have an accuracy greater than

M&TE being calibrated. Provisions assure that calibration of M&TE be against standards that have an accuracy of at least four times the required accuracy of the equipment being calibrated or, when this is not possible, have an accuracy that assures the equipment being calibrated will be within required tolerance and that the basis of acceptance is documented and authorized by responsible management. The minimum ratio of accuracy from M&TE to plant equipment shall be equal to or greater than 1 to 1, or the basis of acceptance will be documented and authorized by responsible management. The management authorized to perform this function is identified.

7. Determination of the allowable inaccuracies using the reference standards.

8. Establishment and maintenance of calibration records to provide objective evidence that all M&TE is being calibrated and maintained in accordance with approved procedures. These records are to provide traceability to the calibration data for each identified piece of testing and measuring equipment.

17.1.12.2 Tagging

Site administrative procedures provide the method of tagging or labeling of measuring or test equipment. Procedures require that each primary test device or portable measuring device will be identified by serial number, nameplate data, or individualized permanent tagging and will be incorporated in a log. In addition, each of these devices will bear a label denoting the latest calibration date, initials of calibrator, and date of next scheduled calibration.

The procedures also require that any test device which has exceeded its calibration tenure, or which displays erratic or inaccurate behavior, or which has been mishandled in any way will be removed from normal use and controlled via a hold tag attached to the device. The instrument must be recalibrated before this tag may be removed.

A method that represents "otherwise controlled" could be where, because of the nature of the instrument, calibration could occur just prior to use. In this case, the instrument would be evaluated, logged in the Use Record Log, and then used in the shop or field, returned to the controlled storage area, and logged in at time of use completion. This would be done for each use of the instrument.

17.1.12.3 Records

Records are to be established for each inspection device required in the conduct of acceptance and performance inspections. These

records are to be available to provide confirmation of a current and valid calibration check, and the past history of any testing or measuring device when called for by a qualified worker, an inspector, or an auditor. These records are to contain the dates of each calibration check, a reference to the procedure used, and the signature of the responsible person performing the check.

17.1.13 Handling, Shipping, and Storage

This section states the policy that gives the assurance of safe and reliable handling, shipping, and storage of materials, parts, and components to prevent damage, deterioration, or loss. The responsibility for these tasks shall be established and implemented from arrival through final installation in accordance with properly approved procedures.

NMPC may delegate the preparation of programs and procedures to implement the policies stated in this section. Assurance that these tasks are implemented is the responsibility of the NMPC QA Organization. This does not relieve the delegate of his responsibility to NMPC for discharging his assigned tasks.

17.1.13.1 Requirements

Proper requirements for packaging, preservation, shipping, storage, handling, cleaning, and monitoring of materials, parts, and components are established by qualified individuals in accordance with applicable codes and standards. For procured items, these requirements shall be included in the purchasing documents. For plant operations, these requirements are delineated in appropriate procedures, as required, and are accomplished by qualified personnel.

Provision for the segregation of nonconforming items from accepted items is made. Documentation of the status of each of these items is maintained at the site. Site procedures provide for the protection of equipment in the reject or hold status unless a decision is made to scrap.

Special provisions will be provided for environmentally sensitive or shelf-life limited items such as chemicals, reagents, lubricants, and other consumables. Specific handling tools and equipment are provided and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment shall be inspected and tested in accordance with written procedures and at specified times to verify that the tools and equipment are adequately maintained.

Adequate instructions cover marking and labeling of items for packaging, shipment, and storage. Marking is to be adequate to identify the shipment and to indicate the need for maintaining special environments and special control. Procedures shall be

established and implemented for shipping of materials, parts, and components, including radioactive materials from the site.

17.1.13.2 Records

Records are generated in accordance with accepted procedures documenting such items as packaging, inspection prior to shipment, receipt inspection, storage period, and cleaning. Retention of documents and records is in accordance with the provisions of Section 17.1.17.

17.1.14 Inspection, Test, and Operating Status

NMPC maintains a system that ensures that the inspection, test, and operational status of systems and components is known at all times. Nonoperational status of systems and components for inspections and tests is indicated by appropriate tagging to prevent inadvertent use.

17.1.14.1 Inspection and Test Status

Safety-related material and equipment received at Unit 2 are identified and controlled in accordance with Sections 17.1.7, 17.1.8, and 17.1.12. Requirements for identification, segregation, traceability, receipt inspection, status, etc., for all items in storage are audited by the NMPC QA Department for implementation of procedures covering these areas.

Any equipment or component that has been removed from a safety-related system and that is to be stored must meet similar identification and control requirements as a received item. No item may be returned to a safety-related system without meeting the same type of identification and control requirements as a replacement part. If the removed item is no longer to be used for a safety-related system, identification and traceability may not be required.

Systems and components are removed from service for periodic test, inspection, and calibration as prescribed in the Technical Specifications and Bases. The control and performance of testing, inspection, and calibration are in accordance with appropriate procedures, instructions, and drawings. A checklist and log are maintained to record the results of testing/inspections, and the status of completeness of required tests or inspections. The use of such checklists precludes the inadvertent omission of prescribed tests and inspections. Procedures specify that deviations from these requirements, including bypassing of a required inspection or test and other critical operations, are controlled through documented measures.

QA monitoring, surveillance, and audit activities assure that the procedures are followed as written. Site administrative procedures describe the methods used to revise or make temporary changes to approved procedures. These administrative procedures

require that permanent changes to test procedures require the same review and approval as the original procedure.

The Station Superintendent or his designee has authority and maintains control of the application and removal of inspection and test status indicators such as tags, markings, labels, and stamps, and control of the inspection/test schedule.

17.1.14.2 Operational Status

The operational status of all inoperable systems, components, and supporting structures is indicated by a method appropriate to the circumstances, which is kept up-to-date at all times to preclude inadvertent control operations.

When removed from operating status for the performance of inspections or tests, all systems, components, and parts are controlled by procedures that require the posting of status and the use, as appropriate, of tag systems, lock-out systems, and checklists. Equipment is governed by procedures that require the use of suitable unambiguous identification showing existing status, tests passed, and tests still required as appropriate.

The Station Superintendent is responsible for procedures relating to the operational status of the entire Station. The status of plant operations is regulated from the control room in accordance with these procedures. No activity pertaining to reactor operations or plant safety may be performed within the plant without prior approval from the control room for such activity. Documentation of plant operations is recorded and maintained in accordance with procedures. These records include the Control Room Log Book, the Fuel Log Book, and the Shift Supervisor Book.

Control of the operational status of any structure, system, or component, when removed from service for test, inspection, or maintenance is maintained by means of "markup" procedures contained in Section IX of the NMPC Accident Prevention Rules.

17.1.14.3 Records

Records of vendor and contractor tests and inspections are to be supplied by the vendor and contractor in accordance with procurement documents. Records of tests and inspections performed by vendors, contractors, or the NMPC operating forces are maintained at the site in accordance with the provisions of Section 17.1.17. Records of tests and inspections performed by the NMPC Operating Department are generated in accordance with prescribed procedures.

17.1.15 Nonconforming Materials, Parts, or Components

The establishment of procedures to ensure that nonconforming materials, parts, or components are properly identified, documented, and reviewed is required of the organization

responsible for performing the inspection or test. Assurance that these tasks are implemented is the responsibility of the NMPC QA Department.

Plant failure control and evaluation are described in site administrative procedures.

17.1.15.1 Control of Nonconforming Items

Procedures for the control of nonconforming materials, parts, components or, as applicable, services (including computer programs) include measures to ensure the identification, segregation, documentation review, and disposition of nonconforming items and the notification of affected organizations. The procedures cover the cycle from procurement through operation.

For items in a manufacturing status other than certain replacement parts or catalog off-the-shelf items, procedures require the review of a contractor's QA program, by the QA staff, for acceptability of the control and documentation of nonconformities. Implementation of this program is verified by inspection, survey, or audit.

When any nonconformance is detected either in hardware or in required documentation, the item is immediately segregated, where practicable, tagged, and placed in a hold status by the inspecting department. The nonconformance may be resolved by subsequent receipt of the required documentation, correction of the hardware problem, and/or issuance of appropriate documentation which is transmitted to the responsible department for disposition. When repair or rework is indicated, the nonconformance documentation remains in an open status until implementation is verified, re-inspection is performed, and the item is accepted in accordance with the original requirements or an acceptable alternative.

The nonconformance documentation identifies the nonconforming item, describes the nonconformance and the disposition of the nonconformance, and requires signature acceptance of the disposition. Documentation of nonconforming material, parts, and components may be made by nonconformance reports, surveillance reports, work requests, or inspection reports. Procedures cover the preparation, review, follow-up, and closure of these reports. Procedures require that:

1. Nonconforming items are identified as such and, if practicable, segregated from acceptable items until all disposition requirements have been completed.

2. Repair or rework is performed in accordance with documented procedures.

3. For those nonconforming items departing from design specifications, and for which disposition is made to use as-is, such disposition must undergo the same review and approval as required for the original specification.

4. Copies of nonconformance documentation are available to the applicable QA Department for review and trend analysis, and significant results are reported to upper management for review and assessment.

5. Nonconformance documentation, either received from the fabricator as part of the documentation for the item, or generated onsite, shall be filed with the documentary records of the material, part, or component.

The Responsible Engineer has the responsibility and authority for determining the disposition of nonconforming items, subject to the acceptance of such disposition by the appropriate QA Department Supervisor.

17.1.15.2 Records

Nonconformance documentation is retained in accordance with the policy delineated in Section 17.1.17.

17.1.16 Corrective Action

17.1.16.1 Identification and Correction

Corrective action systems are essential elements in the QA program. It is a responsibility of the QA Department to determine that the systems are properly implemented and functioning. Conditions adverse to quality, such as deviations, nonconformances, defective items, failures, and malfunctions, are identified and appropriate corrective and preventive action is to be taken in accordance with established procedures.

The documentation required to report quality problems and the distribution thereof is identified in appropriate procedures. The QA Department shall determine that it is on distribution or that it has audit accessibility to all documents reporting quality problems. An example of a document that identifies quality problems is the Nonconformance Report. These reports shall receive proper evaluation and determination of disposition and/or corrective action in reasonable time. Reports involving significant conditions adverse to quality shall indicate corrective action to such extent as to prevent recurrence. These reports are reviewed by the QA Department for accuracy, completeness, assignment to proper personnel for corrective action, and verification of the accomplishment of corrective action.

17.1.16.2 Implementation of Corrective Action

The deficiency and corrective action system, as established, covers all areas of design, procurement, installation, and operation. Deficiency and corrective action reporting includes documentation of defective equipment, or failure or malfunction of equipment in operating status, procedure deficiency, and deviation from or nonconformance to established procedures.

Malfunctions, deficiencies, or nonconformances are reported in accordance with procedures. The mechanics for implementing the deficiency and corrective action system are the responsibility of the QA Department. This implementation is accomplished by means of the established procedures which require that:

1. The reported condition is identified and evaluated with regard to the need for corrective action.

2. The cause of the condition is determined and prompt corrective action is implemented.

3. Determination of corrective action is made by cognizant and responsible personnel.

4. Follow-up action is taken to provide implementation, verification, and closure of the documentation by the appropriate QA Department supervisory personnel.

It is the responsibility of the particular QA Department Supervisor to control the deficiency and corrective action reporting system in his area of responsibility. He shall determine which of those reported conditions are significant conditions adverse to quality, and shall ensure that they are immediately reported to appropriate management levels including the Vice President Quality Assurance. Corrective action for significant deficiency reports is handled in a manner consistent with their importance to safety. Corrective action includes preventive measures to preclude recurrence of the condition.

The appropriate Manager/Supervisor of the organization upon which a deficiency citation has been prepared is responsible for determining the corrective action to be applied, preparing any procedures required, and ensuring that the corrective action is implemented.

Contractors involved in Station modification, repair, or services are required to have procedures that require that nonconformance and corrective action documentation and reporting be implemented. The QA Department is responsible for ensuring that such requirements are stated in procurement documents by review, and for ensuring implementation by surveillance and/or audit.

The Vice President Quality Assurance maintains overall responsibility for, and control of, the deficiency and corrective

action reporting system. He has the approval authority for all procedures and changes thereto involved in the Nonconformance Reports system. He maintains control by means of audits, surveillance, and reviews of Nonconformance Reports by personnel of the QA staff. Procedures require that a copy of any report indicating a significant condition adverse to quality be transmitted to the Vice President Quality Assurance or his designee.

17.1.16.3 Analysis

Reports indicating quality problems are reviewed by the QA Department for trend analysis. The QA Department staff is also required by procedures to document and report adverse trends, QA program breakdowns, or other significant deficiencies to the Vice President Quality Assurance or his designee. He has the authority, through reporting to corporate management, to ensure that proper corrective and preventive measures are undertaken to satisfy the requirements of the applicable safety criteria.

17.1.16.4 NRC Notification of Problem Areas

Procedures are established regarding the reporting of failures to comply or defects to the NRC, as required by 10CFR21. Procedures provide for internal reporting and analysis of deviations and require the imposition of the requirements of 10CFR21 on suppliers as part of procurement documents.

17.1.16.5 Records

The QA Department shall maintain a file of records generated relating to this section as delineated in Section 17.1.17.

17.1.17 Quality Assurance Records

17.1.17.1 General

It is the policy of NMPC to maintain a record retention system which contains an easily retrievable quality history for each safety-related item. All records must be consistent with applicable codes, standards, specifications, and contracts. This policy requires that Station operating and maintenance records be maintained. Design offices, vendors, and contractors are required to generate and provide to NMPC records covering the period of design, manufacture, and installation. The purpose of this system is to permit reconstruction of the significant events that cause any given part to be located where it is, in regard to physical position and operating status, at any particular point in time. These records can be used for such purpose as analysis of failures, maintenance programs, and replacement frequency.

The following are examples of records to be maintained: procurement documents, calibration procedures and results, nonconformance reports, operating logs, refueling records,

results of reviews, maintenance and modification procedures and records, inspection results, test results, audit plans, audit reports, records of monitoring or work performance, materials analysis, personnel qualifications, qualified procedures, qualification of equipment, QA procedures, specifications, as-built drawings, operating instructions/procedures, reportable occurrences and other records required by the Technical Specifications.

17.1.17.2 Measures Assuring Record Maintenance and Retention

Design offices, vendors, and contractors are required to generate and provide to NMPC records covering the period of design, manufacture, and installation. Written procedures describe the system that provides for identifying and retrieving records. The procedures specify the record retention period, file location, method of safeguarding records, and delegated responsibility. When not otherwise specified, the minimum retention period is for the life of the equipment concerned. Provision may be made for the continuous retention of copies of those superseded documents that are in a controlled status.

17.1.17.3 Responsibilities

Unless otherwise stated in approved procedures, Unit 2 management is responsible through its document control system for maintenance of QA records upon receipt at the Station.

The responsibility for the preparation and implementation of procedures dealing with retention and storage of quality-related records maintained at the site rests with the General Superintendent Nuclear Generation. The actual implementation of these procedures is performed by the Superintendent, Records Management. It is the responsibility of the QA Department to determine that these administrative procedures comply with ANSI N45.2.9-1974 and to verify implementation of these procedures.

17.1.17.4 Procedures

Administrative procedures indicate that the quality-related records to be retained are (with some variation due to nomenclature) those identified in ANSI N45.2.9-1974. The procedures state that the retention period for each type of quality-related record is to be as indicated in that standard. The procedures specify that the storage location for these records, except those retained by others (e.g., major vendors), will be at the site. Further, the site storage facilities are specified to provide the features listed in Paragraph 5.6 of ANSI N45.2.9 except as previously referenced in Section 17.0.

17.1.17.5 Inspection and Test Records

Records of inspections and tests include, as applicable, the date, identity, or signature of the inspector or data recorder,

type of observation, identification of equipment or part inspected, identification of test equipment utilized, information related to conditions adverse to quality, observer's results, acceptability of the results, and action taken to resolve the noted deficiencies.

17.1.18 Audits and Surveillances

17.1.18.1 General

Both audits and surveillances are used as methods for determining the effectiveness of the QA programs of architect-engineers, vendors, and internal corporate departments. Audits and surveillances are accomplished by reviewing, in detail, selected areas of performance and comparing the results with objectives as stated in Appendix B to 10CFR50, the SAR, the Technical Specification and Bases, and approved QA program documents such as specifications, instructions, and procedures.

For the purposes of distinction, an audit normally includes several functions performed by a particular organization or group and involves formal notification of the audited organization or group and the use of pre-established written checklists. Surveillances are planned to coincide with events of interest and in general involve reviewing in detail one particular function or activity. While a certain amount of preplanning is always involved prior to performance of a surveillance, formal notification to the group involved and written checklists are not necessarily required.

Contractors, subcontractors, and suppliers of QA programs will be reviewed and evaluated for conformance to specification requirements on a periodic basis.

17.1.18.2 Audit/Surveillance Procedures

The NMPC QA Department conducts audits and surveillances in accordance with written procedures.

17.1.18.3 Audit and Surveillance Personnel

The NMPC QA policy for personnel performing audits/surveillances is that they (with the exception of SRAB auditors) shall be under the direction of the NMPC QA Department, independent from those individuals or groups performing the activities examined, that they are suitably qualified, and that they participate in appropriate training/orientation programs. These requirements are established and implemented in the QA Department procedures.

17.1.18.4 Audit/Surveillance Documentation and Review

The results of each audit and surveillance are reported in writing to the management-level individuals empowered to take corrective action and to NMPC QA Department supervision. The

reports list all discrepancies found, and the individual or organization requested to respond. Further, the QA Department management issues nonconformance status reports periodically to NMPC corporate management.

The requirements relative to audit/surveillance reporting and review are established and implemented in appropriate QA Department procedures.

17.1.18.5 Management Action on Deficiencies

The NMPC QA Department procedures require that audit/surveillance reports be reviewed by the NMPC QA Department for accuracy, completeness, assignment for corrective action to proper personnel, and verification of the accomplishment of corrective action. Appropriate procedures prepared by the QA Department describe the actions to be taken to inform responsible management in order that corrective actions can be implemented for deficiencies detected during audit/surveillance activities.

17.1.18.6 Re-examination of Deficient Areas

QA Department procedures require that deficient areas be re-examined to ensure that appropriate corrective and preventive action requirements have been fulfilled.

17.1.18.7 Audit/Surveillance Content

Activities affecting components and systems listed in Table 3.2-1 are subject to audit/surveillance. Quality-related practices, procedures, instructions, and their implementation, as well as conformance with policy directives and evaluation of work activities, processes, and records, are included in audit/surveillance activities. The audit/surveillance procedures prepared by the QA Department provide for the implementation of those actions.

17.1.18.8 Audits/Surveillances by the Quality Assurance Department Staff

Independent audits as well as surveillances shall be conducted by the QA Department staff. These include, but are not limited to:

1. Operation, maintenance, receipt inspection, testing, modification, installation, repair, technical services, training, and chemical and radiation management.

2. Engineering, Project Management, Purchasing, and Materials Management.

3. Audits of records of SORC and SRAB.

4. Contractors' activities, design offices, shops, and field erection.

5. Corrective action and nonconformance content.

6. FSAR commitments.

7. Compliance with regulatory requirements.

8. Calibration facilities.

9. Activities associated with computer programs.

Audits and surveillances are scheduled at appropriate intervals to ensure that all safety-related activities, procedures, and programs are in compliance with their intended functions and regulatory requirements. Checklists shall be prepared in advance when appropriate.

Audit and surveillance reports are distributed, as applicable, to:

1. Vice President Quality Assurance.

2. QA Department Managers and Supervisors.

3. General Superintendent Nuclear Generation or SRAB Chairman.

4. Station Superintendent.

5. QA Department files.

6. Organizations involved in audit/surveillance.

All audits include an objective evaluation of quality-related practices, procedures, instructions; activities and items; and review of documents and records to ensure that the QA program is effective and properly implemented in accordance with procedures.

17.1.18.9 Audits by the Safety Review and Audit Board

NMPC corporate management utilizes the services of the SRAB to audit QA-related activities at the site, as well as within applicable portions of the QA and Nuclear Departments.

The SRAB conducts audits in the areas and at the frequency specified in the Technical Specifications using checklists prepared in advance. SRAB audits of QA-related activities are conducted under the immediate direction of a board member or consultant who has no direct responsibilities in the areas being audited. He may invite the participation of a member of the QA Department and/or other concerned groups as observers. The scope of audits conducted by the SRAB is of such nature as to appraise the QA program policies, activities, and procedures. These policies, activities, and procedures are evaluated against the

criteria of Appendix B to 10CFR50. Deficiencies observed in the QA program policies, activities, and procedures are described in the audit report. Ensuing corrective action is verified on subsequent audits by the SRAB.

An annual summary of SRAB audits performed is reported. The distribution of this report is, as a minimum, to the Vice President Nuclear Generation, the Manager Nuclear Engineering and Licensing, the Chairman of the SRAB, and the Vice President Quality Assurance.

17.1.18.10 Records

Audit reports are maintained as delineated in Section 17.1.17.

17.1.19 Fire Protection Quality Assurance Program

NMPC commits to the general requirements provided in the Fire Protection Quality Assurance Program (FPQAP) for Unit 2 (see Section 9A.3.4).

TABLE 17.1-1
(Sheet 1 of 4)

QUALITY ASSURANCE PROGRAM PROCEDURAL MATRIX

Item	References			
	NMPC QA Procedures	NMPC Engineering Procedures Internals[1]	NMPC Site Administrative Procedures	ANSI N18.7-1976
Criterion I				
Organization	1.02	010	2	3.1
Program responsibilities	1.10	010	2	3.1
Function assignments and responsibilities	1.02	010	2,2A	3.2
	1.10			3.2
Criterion II				
QA documentation	2.30	-	17	3.2
	2.50	-	-	-
QA applicability	1.02	020	-	3.2
	2.50	190	-	-
Participants and functions	1.02	010	2	3.2
	2.40	-	-	-
	2.50	-	-	-
Personnel qualifications and experience	2.10	-	-	3.3
	18.01	-	-	-
Personnel training	2.10	015	10	3.3
	2.20	-	10A-10F	-
Criterion III				
Control of design activities	3.10	080	9	5.2.7.2
	2.50	090	-	-
	18.10	100	-	-
Drawing and specification control	3.10	130	9	5.2.7.2
Material selection and applicability	3.10	060	9	-
Design review	3.10	090	9	5.2.7.2
Design changes	3.10	090	9	5.2.7.2
	-	100	-	-
	-	130	-	-
Interface control	1.02	040	9	5.2.7.2
	3.10	050	-	-
	2.50	080	-	-
	18.10	-	-	-

TABLE 17.1-1
(Sheet 2 of 4)

QUALITY ASSURANCE PROGRAM PROCEDURAL MATRIX

Item	References			
	NMPC QA Procedures	NMPC Engineering Procedures Internals[1]	NMPC Site Administrative Procedures	ANSI N18.7-1976
Criterion IV				
Procurement document review	2.50 4.10 4.20	090 100 -	14 - -	5.2.13.1 - -
Contractors and subcontractors	4.10 4.25 7.21	100 - -	14 - -	5.2.13.1 - -
Procurement records	4.25 7.21 18.10	100 - -	14 - -	5.2.13.1 - -
Criterion V				
Instructions, procedures, and drawings	5.01	100	1,3,5,6	5.2.7
Criterion VI				
Document control	6.10 2.50	130 -	1,5,17 -	5.2.15 -
Changes to control documents	6.10 6.20	130 -	1,5 -	5.2.15 -
Criterion VII				
Source evaluation and selection	7.20 7.21	100 110	14 -	5.2.13.2 -
Inspection after shipment	7.30	100	14	5.2.13.2
Documentary evidence	7.30 8.10 17.20	100 110 -	14 - -	5.2.13.2 - -
Criterion VIII				
Identification of materials	8.10 4.10	120 -	14 -	5.2.13.3 -
Methods of identification	4.10	120	-	5.2.13.3
Control of materials, parts, and components	8.10 7.20 Checklist	120 - -	- - -	5.2.13.3 - -

TABLE 17.1-1
(Sheet 3 of 4)

QUALITY ASSURANCE PROGRAM PROCEDURAL MATRIX

Item	References			
	NMPC QA Procedures	NMPC Engineering Procedures Internals[1]	NMPC Site Administrative Procedures	ANSI N18.7-1976
Criterion IX				
Control of special processes	9.10 9.20 9.30 6.20 4.25	- - - - -	22[2] - - - -	5.2.18 - - - -
Criterion X				
Shop inspection	7.10 10.10 7.20 Checklist	- - - -	- - - -	5.2.17 - - -
Receiving inspection	7.30 10.20	- -	14 -	5.2.17 -
Field inspection	10.21 10.20 10.21 10.30	- - - -	8 - - -	5.2.17 - - -
Hold point policies	4.10 7.10 10.30	- - -	8 - -	5.2.17 - -
Criterion XI				
Test controls	10.20 10.21 10.22	140 - -	8,8A - -	5.2.19 - -
Test documentation	10.20 10.21 10.22	140 - -	8,8A - -	5.2.19 - -
Criterion XII				
Control of measuring and test equipment	12.10	-	15	5.2.16
Criterion XIII				
Handling, storage, and shipping	4.10 13.10	100 -	11,14 -	5.2.13.4 -
Criterion XIV Inspection, tests, and status	14.10	-	2A,7,7A	5.2.6

TABLE 17.1-1
(Sheet 4 of 4)

QUALITY ASSURANCE PROGRAM PROCEDURAL MATRIX

Item	References			
	NMPC QA Procedures	NMPC Engineering Procedures Internals[1]	NMPC Site Administrative Procedures	ANSI N18.7-1976
Criterion XV				
Control of nonconforming items	16.20	160	14	5.2.14
Documentation of nonconforming items	16.20	160	14	5.2.14
Criterion XVI				
Identification and correction	10.21	-	14	5.2.11
	18.10	-	-	-
	18.20	-	-	-
	16.40	-	-	-
Documentation, review, and distribution	-	-	14	5.2.11
	16.20	-	-	-
	16.30	-	-	-
	16.40	-	-	-
Criterion XVII				
QA records	7.20	170	17	5.2.12
	16.40	-	-	-
	17.10	-	-	-
	17.20	-	-	-
Criterion XVIII				
Audit planning and implementation	7.20	-	-	4.5
	10.21	-	-	-
	18.10	-	-	-
Auditor qualifications	2.10	-	-	4.5
	18.01	-	-	-
Audit reports	7.20	-	-	4.5
	10.21	-	-	-
	18.20	-	-	-
Follow-up action	10.21	-	-	4.5
	16.40	-	-	-

[1] These procedures are not applicable when design work has been delegated to qualified engineering firms approved by NMPC.
[2] Other applicable procedures are those found in the NMPC welding program for Nuclear Fueled Generating Stations and in the Nondestructive Examination Procedure Handbook for the site.

17.2 QUALITY ASSURANCE PROGRAM DURING THE OPERATIONS PHASE

Startup testing and operational activities subsequent to preoperational testing will be governed by the QA Topical Report (QATR). Figures 17.1-1 and 17.1-2 depict the original organizational structure and lines of responsibility for the three program phases. Figure 17.1-2 also shows that during the interval between fuel load and full-power commercial operation, all three programs were employed to handle components or systems requiring reworking or retesting by the construction and preoperational test groups at Unit 2. Following the 100-hr warranty run at full power, the Preliminary Safety Analysis Report (PSAR) Appendix B and FSAR Chapter 17 programs were replaced by the QATR.