**EF3 Sup 17.5-3** **Appendix 17AA Fermi 3 Quality Assurance Program Description**

DTE Energy®

Detroit Edison

*Enrico Fermi, Unit 3*

**Program Description**

**Title: Fermi 3 Quality Assurance Program Description**

| **Fermi 3 QAPD** | **Revision Number**<br>**4** | |
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**Revision Summary**

Rev 3 – Incorporation of COLA markups associated with responses to NRC RAI Letter Nos. 25, 37, 39, 44, and 50, including responses to RAIs 17.5-9, 17.5-10, 17.5-11, 17.5-12, 17.5-13, 17.5-14, 17.5-15, 17.5-20, 17.5-21, 17.5-22, 17.5-23, 17.5-24, 17.5-25, 17.5-26, and 17.5-27. Updated to NEI 06-14A Revision 7 (see RAI 17.5-26). Updated organizational description (dissociated Chairman position from the CEO position throughout organizational description). Editorial and typographical corrections have been made throughout, including punctuation and spelling corrections, grammatical corrections not affecting content, formatting for consistency, and clarifications of acronyms.

Rev 4 – Incorporated editorial corrections including; correction of grammatical errors, spelling, punctuation, addition of acronym definitions, consistent use of acronyms, figure keys, section cross-references, and minor wording changes to be consistent with NEI-06-14A, Revision 7.

Revision bars denote changes associated with Revisions 3 and 4 of the Fermi 3 QAPD.

| Approved By / Date | Approved By / Date |
|---|---|
| Director, Quality Management | Senior Vice President,<br>Major Enterprise Projects |

***Detroit Edison Company Fermi 3 Policy***

**Quality Assurance During Construction and Operation**

Detroit Edison (DECO) shall design, procure, construct and operate Fermi 3 in a manner that will ensure the health and safety of the public and workers. These activities shall be performed in compliance with the requirements of the Code of Federal Regulations (CFR), the applicable Nuclear Regulatory Commission (NRC) Facility Operating Licenses, and applicable laws and regulations of the state and local governments.

The Detroit Edison Fermi 3 Quality Assurance Program (QAP) is the Quality Assurance Program Description (QAPD) provided in this document and the associated implementing documents. Together they provide for control of Fermi 3 activities that affect the quality of safety-related nuclear plant structures, systems, and components (SSCs) and include all planned and systematic activities necessary to provide adequate confidence that such SSCs will perform satisfactorily in service. The QAPD may also be applied to certain equipment and activities that are not safety-related, but support safe plant operations, or where other NRC guidance establishes program requirements.

The QAPD is the top-level policy document that establishes the manner in which quality is to be achieved and presents Fermi 3's overall philosophy regarding achievement and assurance of quality. Implementing documents assign more detailed responsibilities and requirements and define the organizational interfaces involved in conducting activities within the scope of the QAP. Compliance with the QAPD and implementing documents is mandatory for personnel directly or indirectly associated with implementation of the Fermi 3 QAP.

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Ron May Date

Senior Vice President,
Major Enterprise Projects

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# PART I. INTRODUCTION

## SECTION 1 GENERAL

Detroit Edison Company Fermi 3 Quality Assurance Program Description (QAPD) is the top-level policy document that establishes the quality assurance policy and assigns major functional responsibilities for combined construction and operating license (COL) activities conducted by or for Fermi 3. The QAPD describes the methods and establishes Quality Assurance (QA) and administrative control requirements that meet 10 CFR 50, Appendix B and 10 CFR 52. The QAPD is based on the requirements of ASME NQA–1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I, II, and III, as specified in this document.

The QA Program (QAP) is defined by the NRC-approved regulatory document that describes the QA elements (i.e. the QAPD), along with the associated implementing documents. Procedures and instructions that control Fermi 3 activities will be developed prior to commencement of those activities. Detroit Edison policies establish high level responsibilities and authority for carrying out important administrative functions which are outside the scope of the QAPD. Procedures establish practices for certain activities which are common to all Fermi 3 organizations performing those activities so that the activity is controlled and carried out in a manner that meets QAPD requirements. Site or organization specific procedures establish detailed implementation requirements and methods, and may be used to implement policies or be unique to particular functions or work activities.

### 1.1 Scope / Applicability

This QAPD applies to COL, construction/pre-operation and/or operation activities affecting the quality and performance of safety-related structures, systems, and components, including, but not limited to:

| | |
|---|---|
| Designing | Cleaning |
| Siting | Testing |
| Training | Inspecting |
| Constructing | Preoperational activities (including ITAAC) |
| Procuring | Startup |
| Receiving | Operating |
| Storing | Maintaining |
| Handling | Repairing |
| Shipping | Refueling |
| Erecting | Modifying |
| Installing | Decommissioning |
| Fabricating | |

Safety-related systems, structures, and components, under the control of the QAPD, are identified by design documents. The technical aspects of these items are considered when determining program applicability, including, as appropriate, the item's design safety function. The QAPD may be applied to certain activities where regulations other than 10 CFR 50 and 10 CFR 52 establish QA requirements for activities within their scope.

The policy of Fermi 3 is to assure a high degree of availability and reliability of its nuclear plant while ensuring the health and safety of its workers and the public. To this end, selected elements of the QAPD are also applied to certain equipment and activities that are not safety-related, but support safe, economic, and reliable plant operations, or where other NRC guidance establishes quality assurance requirements. Implementing documents establish program element applicability.

The definitions provided in ASME NQA-1-1994, Part 1, Section 1.4, apply to select terms as used in this document.

# PART II. QAPD DETAILS

## SECTION 1 ORGANIZATION

This section describes the Fermi 3 organizational structure, functional responsibilities, levels of authority and interfaces for establishing, executing, and verifying QAPD implementation. The organizational structure includes corporate support and on-site functions for Fermi 3 including interface responsibilities for multiple organizations that perform quality-related functions. Implementing documents assign more specific responsibilities and duties, and define the organizational interfaces involved in conducting activities and duties within the scope of the QAPD. Management gives careful consideration to the timing, extent, and effects of organizational structure changes.

Major Enterprise Projects (MEP), specifically the Nuclear Development (ND) organization, is responsible for new nuclear plant licensing, engineering, procurement, construction, startup and operations development activities. During these phases, several organizations within Detroit Edison implement and support the QAPD. These organizations include, but are not limited to MEP, MEP Program Office, and Corporate Services.

Design, engineering and environmental services may be provided to the Fermi 3 organization by suppliers in accordance with their 10 CFR 50 Appendix B QAPDs, as established contractually to assure that applicable regulatory requirements are satisfied and that Detroit Edison's responsibility to ensure adequate quality assurance under 10 CFR 50 Appendix B, Criterion I is satisfied.

The Fermi 3 Site organization is responsible for operational activities. During operations, the corporate services organization within Detroit Edison also implements and supports the QAPD.

The following sections describe the reporting relationships, functional responsibilities and authorities for organizations implementing and supporting the Fermi 3 QA Program. The Fermi 3 Pre-COL organization, the Fermi 3 Design and Construction organization, and the Fermi 3 Site organization are shown in QAPD Figure II.1-1, Figure II.1-2, and Figure II.1-3 respectively.

### 1.1 Fermi 3 Pre-COL Organization

This section describes the organizational structure for the COL application activities of Fermi 3 and the Fermi 3 Pre-COL organizational structure is shown in Figure II.1-1.

The Pre-COL organizational structure applies to the Pre-COL phase, which encompasses the activities associated with the COL application process, including pre-COL design activities associated with adapting the ESBWR DCD design to site specific conditions and other activities. The Pre-COL phase may overlap temporally with the Design and Construction Phase. Pre-COL

activities will phase out as Fermi 3 transitions into the next project phase. Transition activities are described in Section 1.1.8.

### 1.1.1 Chief Executive Officer

The Chief Executive Officer (CEO) is responsible for all aspects of design, construction and operation of Detroit Edison's nuclear plants. The CEO is also responsible for all technical and administrative support activities provided by Detroit Edison and contractors. The CEO directs the Senior Vice President Major Enterprise Projects and the Senior Vice President/Chief Nuclear Officer (CNO) in fulfillment of their responsibilities. The CEO reports to the DTE Energy Company Board of Directors with respect to all matters.

### 1.1.2 Major Enterprise Projects

The Major Enterprise Projects (MEP) organization, specifically Nuclear Development, is responsible for new nuclear plant licensing, engineering, procurement, construction, startup and operational development activities necessary to deliver new nuclear generating capacity to the CNO.

#### 1.1.2.1 Senior Vice President, MEP

The Senior Vice President MEP (Sr. VP MEP) ultimately reports to the CEO and is responsible for the administration of the Fermi 3 QAPD. The Sr. VP MEP also directs the planning and development of the Nuclear Development staff and organization resources as well as the initial Fermi 3 staff and organization resources. The Sr. VP MEP is responsible to size the Fermi 3 Quality Assurance staff commensurate with the duties and responsibilities assigned from Pre-COL through construction including startup and initial testing. The Sr. VP MEP is also responsible for establishing and managing contracts for the development of new nuclear generation. The Sr. VP MEP shall transition the Nuclear Development organization through the Pre-COL / Design and Construction / Operations responsibilities described in the QAPD, as those Fermi 3 activities commence.

#### 1.1.2.2 Nuclear Development

Nuclear Development is responsible for new nuclear plant licensing, engineering and procurement, construction, startup and operational development activities necessary to deliver new nuclear generating capacity. Nuclear Development will facilitate organizational transitions between Fermi 3 project phases. Nuclear Development is responsible for controlling interfaces between the operating units and any preconstruction or construction activities.

##### 1.1.2.2.1 Director, Nuclear Development

The Director, Nuclear Development reports to the Sr. VP MEP and to the CNO and is responsible for the implementation of quality assurance requirements specified by the QAPD, including management of the corrective action and non-conformance process. For the purposes of this program, the description of the duties of the Director, Nuclear Development and the

Nuclear Development staff will be limited to those activities that support the Fermi 3 COL application development.

#### 1.1.2.2.2 Nuclear Development, Nuclear Licensing and Engineering

The Nuclear Development Nuclear Licensing and Engineering (NDLE) organization is responsible for support of the Nuclear Development organization by providing engineering, licensing and document control support.

##### 1.1.2.2.2.1 Director, Nuclear Licensing and Engineering

The Director, Nuclear Licensing and Engineering reports to the Director, Nuclear Development and is responsible for the administration of engineering and nuclear licensing for Fermi 3 under the QAPD.

##### 1.1.2.2.2.2 Reactor Technology Vendor

The reactor technology vendor (RTV), identified in FSAR Subsection 1.4.2, reports to the Director, Nuclear Licensing and Engineering and supports the COL application through the review and subsequent approval of the Design Certification application for the selected standard design. A QAPD submitted by the Design Certification application covering design QA activities in support of the COL application would be implemented under the QAPD submitted by the RTV vendor and reviewed and approved by the NRC as part of the Design Certification reviews.

##### 1.1.2.2.2.3 COLA Contractor

The COLA Contractor, identified in FSAR Subsection 1.4.3, reports to the Director, Nuclear Licensing and Engineering and provides engineering services for the development of the COL application. These engineering services include site-specific license engineering, and design activities necessary to support development of the COL application in accordance with the COLA Contractor's 10 CFR 50 Appendix B QAPD, as established contractually to assure that applicable regulatory requirements necessary to assure adequate quality are satisfied. The COLA Contractor also provides engineering services in planning and support for preconstruction activities for Fermi 3.

#### 1.1.2.3 MEP Program Office

The MEP Program Office is responsible for supporting the Nuclear Development organization through performing activities related to procurement, budget, planning, etc. where applicable.

##### 1.1.2.3.1 Director, MEP Program Office

The Director, MEP Program Office reports to the Sr. VP MEP and is responsible for managing the MEP support functions for Nuclear Development activities in accordance with the QAPD.

### 1.1.3 Nuclear Operations

Nuclear Operations is responsible for Detroit Edison's nuclear units: Fermi 1, Fermi 2 and Fermi 3.

#### 1.1.3.1 Senior Vice President / Chief Nuclear Officer

The Senior Vice President/Chief Nuclear Officer (CNO) ultimately reports to the CEO and is responsible for the overall administration of Detroit Edison nuclear plants. The CNO is the ultimate management authority for establishing QA policy and responsibility for the QA function. The CNO will support Nuclear Development activities through the Director, Nuclear Development and the Director, Quality Management.

#### 1.1.3.2 Quality Assurance

The Quality Assurance organization is responsible for independently planning and performing activities to verify the development and effective implementation of the Fermi 3 QAPD including but not limited to Nuclear Development, engineering, licensing, document control, corrective action program and procurement that support preconstruction activities for Fermi 3. The QA organization's function includes:

- Coordinating the development of audit schedules,
- Auditing, performing surveillances, and evaluating suppliers of quality services,
- Supporting general QA indoctrination and training for Detroit Edison personnel performing activities covered by the QAPD, and
- Quality Control.

The QA organization reports to the Director, Quality Management.

##### 1.1.3.2.1 Director, Quality Management

The Director, Quality Management (DQM) reports to the CNO and to the Sr. VP MEP for Fermi 3 activities and is responsible for developing and maintaining the Fermi 3 QAPD, evaluating compliance with the program and managing the QA organization resources. The DQM is responsible for developing and verifying implementation of the QAPD described in this document. The DQM is responsible for assuring compliance with regulatory requirements and procedures through audits and technical reviews; for administering the Auditor and Lead Auditor Certification process; for monitoring organization processes to ensure conformance to commitments and licensing document requirements; for performing QA technical reviews of procurement documents, acceptance of contractor QA programs, and oversight of contractor QA program implementation; and for ensuring that vendors providing quality services, parts and materials to Fermi 3 are meeting the requirements of 10 CFR 50, Appendix B through Nuclear Procurement Issues Committee (NUPIC) or Detroit Edison vendor audits. The DQM has sufficient independence from other Nuclear Development priorities to bring forward issues affecting safety and quality and makes judgments regarding quality in all areas necessary regarding Fermi 3's Nuclear Development activities. The DQM may make recommendations to Fermi 3 management regarding improving the quality of work processes. If the DQM disagrees

with any actions taken by the Nuclear Development organization and is unable to obtain resolution, the DQM shall bring the matter to the attention of the CNO who will determine the final disposition.

### 1.1.4 Corporate Services

The Corporate Services organization is responsible for supporting the Nuclear Development organization and the MEP Program Office by performing activities related to procurement, contract management, and business performance. Corporate Services also supports Nuclear Development and the MEP Program Office by providing records management, logistics, etc.

#### 1.1.4.1 Director, Corporate Services

The Director, Corporate Services reports to the DTE Energy Executive Vice President and CFO and is responsible for managing the overall Corporate Services organization including assuring that Supply Chain Management, Financial and Operational Performance, and Materials and Logistics support for Nuclear Development activities.

### 1.1.5 Authority to Stop Work

Quality assurance and inspection personnel have the authority, and the responsibility, to stop work in progress which is not being performed in accordance with approved procedures or where safety or SSC integrity may be jeopardized. This extends to off-site work performed by suppliers that furnish safety-related materials and services to Fermi 3.

### 1.1.6 Quality Assurance Organizational Independence

For COL application activities, independence shall be maintained between the organization or organizations performing the checking (quality assurance and control) functions and the organizations performing the functions. This provision is not applicable to design review/verification.

### 1.1.7 NQA-1-1994 Commitment

In establishing its organizational structure, Detroit Edison, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 1 and Supplement 1S-1.

### 1.1.8 Transition from Pre-COL to Design and Construction

Upon commencement of Design and Construction activities, those positions which are identified for the Design and Construction (D&C) phase, QAPD Section 1.2, will be staffed and have the appropriate authority required to perform design and construction activities. Those positions required to support Pre-COL activities will retain their applicable responsibilities until it is deemed that they are no longer necessary. Oversight, configuration, design, and construction responsibilities are transitioned as discussed below for each transitional position. During the transition, responsibilities will be clearly defined in instructions and procedures to ensure appropriate authority is maintained for each SSC.

The CEO position described in QAPD Sections 1.1.1, 1.2.1, and 1.3.1 transitions throughout each project phase and maintains responsibility for Fermi 3.

The Sr. VP / CNO position described in QAPD Sections 1.1.3.1, 1.2.3.1, and 1.3.2.1 transitions through each project phase and maintains responsibility for Detroit Edison nuclear facilities.

The MEP Organization, including Sr. VP MEP (Section 1.1.2.1), Director Nuclear Development (Section 1.1.2.2.1), Director Nuclear Licensing and Engineering (Section 1.1.2.2.2.1), COLA Contractor (1.1.2.2.2.3), Reactor Technology Vendor (Section 1.1.2.2.2.2), and Director MEP Program Office (Section 1.1.2.3.1) transitions from the Pre-COL phase to the Design and Construction phase as D&C activities commence. Position responsibilities and activities described in the Pre-COL phase transition to the position responsibilities and activities of the Design and Construction phase (Sections 1.2.2.1, 1.2.2.2.1, 1.2.2.2.2.1, 1.2.2.2.2.2, 1.2.5.2, and 1.2.2.3.1).

The Director, Quality Management position described in QAPD Sections 1.1.3.2.1, 1.2.3.2.1, and 1.3.2.2.1 transitions through each project phase and maintains responsibility for the Fermi 3 QA program as described. Upon commencement of D&C activities, the Fermi 3 Quality Assurance Project Manager position described in Section 1.2.3.2.1.1 is activated.

The Director, Corporate Services position described in QAPD Sections 1.1.4.1, 1.2.4.1, and 1.3.4.1 transitions through each project phase and maintains responsibilities for corporate services as described.

Commencement of D&C activities includes establishment of an Engineering Procurement and Construction (EPC) Contractor, Section 1.2.5, EPC Executive, Section 1.2.5.1, and Architect / Engineer (A/E), Section 1.2.5.3. The Reactor Technology Vendor scope described in Section 1.1.2.2.2.2 is transitioned to encompass the definition of Section 1.2.5.2.

## 1.2 Fermi 3 Design and Construction Organization

This section describes the organizational structure through the design and construction phase of the Fermi 3 project. It is anticipated that even after fuel load, construction activities will be ongoing. Those positions required to support these activities will retain their applicable construction / preoperational responsibilities until it is deemed that they are no longer necessary. As the construction of systems, structures, and components (SSC), or portions thereof is completed, control and authority (including oversight, configuration and operations) is transferred from the contractor to the cognizant owner departments in the operations phase fully described in Section 1.3. During the transition, responsibilities will be clearly defined in instructions and procedures to ensure appropriate control is maintained over each SSC. The Fermi 3 Design and Construction organization is represented in Figure II.1-2.

The Design and Construction organizational structure applies to the Design and Construction (D&C) phase associated with developing Fermi 3 detailed design and construction of the

Fermi 3 plant. The D&C phase includes detailed site specific design activities and construction activities associated with the Fermi 3 project as well as other associated activities. The Design and Construction phase may overlap temporally with the Pre-COL phase in the beginning of the D&C phase and with the Operations phase at the end of the D&C phase. D&C activities will phase out as the Fermi 3 project transitions into the next project phase. D&C transition activities are described in Sections 1.1.8 and 1.2.9

### 1.2.1 CEO

The CEO is responsible for all aspects of design, construction and operation of Detroit Edison's nuclear plants as described in Section 1.1.1.

### 1.2.2 Major Enterprise Projects

The Major Enterprise Projects (MEP) organization, specifically Nuclear Development, is responsible for new nuclear plant licensing, engineering, procurement, construction, startup, and operational development activities necessary to deliver new nuclear generating capacity to the CNO.

#### 1.2.2.1 Senior Vice President, MEP

The Sr. VP MEP ultimately reports to the CEO and is responsible for the administration of the Fermi 3 QAPD. The Sr. VP MEP also directs the planning and development of the Nuclear Development staff and organization resources as well as the initial Fermi 3 staff and organization resources. The Sr. VP MEP is responsible to size the Fermi 3 Quality Assurance organization commensurate with the duties and responsibilities assigned through construction. The Sr. VP MEP is also responsible for establishing and managing contracts for the development of new nuclear generation. The Sr. VP MEP shall transition the MEP organization through the Pre-COL / Design and Construction / Operations responsibilities described in the QAPD, as those Fermi 3 activities commence.

The Sr. VP MEP is also responsible for developing and implementing a plan for transition of the site organization from the construction phase to the operating phase. The plan shall be fully implemented and transition completed prior to commencement of commercial operations. Once the transition is complete, operational responsibility for Fermi 3 will be with the CNO and under the direction of the site executive (see FSAR Subsection 13AA.2.4).

As the construction of systems, or portions thereof, is completed, control and authority, including oversight, configuration and operations, is transferred from the contractor to the cognizant department in the site organization (see FSAR Subsection 13AA.2).

During the transition, responsibilities will be clearly defined in instructions and procedures to ensure appropriate authority is maintained for each system, structure and component.

It is anticipated that even after fuel load, construction activities will be ongoing. Those positions required to support these activities will retain their applicable construction or preoperational responsibilities until it is deemed that they are no longer necessary.

#### 1.2.2.2 Nuclear Development

Nuclear Development is responsible for new nuclear plant licensing, engineering and procurement, construction, startup and operational development activities necessary to deliver new nuclear generating capacity. Nuclear Development will facilitate organizational transitions between Fermi 3 project phases. Nuclear Development is responsible for controlling interfaces between the operating units and any preconstruction or construction activities.

##### 1.2.2.2.1 Director, Nuclear Development

The Director, Nuclear Development reports to the Sr. VP MEP and to the CNO and is responsible for the implementation of quality assurance requirements specified by the QAPD, including management of the corrective action and non-conformance process. For the purposes of this program, the description of the duties of the Director, Nuclear Development and the Nuclear Development staff will be limited to those activities that support the Fermi 3 Design and Construction activities.

##### 1.2.2.2.2 Nuclear Development, Nuclear Licensing and Engineering

The Nuclear Development, Nuclear Licensing and Engineering (NDLE) organization is responsible for support of the Nuclear Development organization by providing engineering, licensing and document control support where applicable.

###### 1.2.2.2.2.1 Director, Nuclear Licensing and Engineering

The Director, Nuclear Licensing and Engineering reports to the Director, Nuclear Development and is responsible for the administration of engineering, nuclear fuel and nuclear licensing and support activities for Fermi 3 under the QAPD.

###### 1.2.2.2.2.2 COL Contractor

The COL Contractor, identified in FSAR Subsection 1.4.3, reports to the Director, Nuclear Licensing and Engineering and provides engineering services in support of licensing activities necessary to support updates, changes, etc. to the COL. These engineering services include site-specific license engineering, and design activities necessary to support development of proposed COL updates, changes etc., and planning and support for preconstruction and construction of Fermi 3.

#### 1.2.2.3 MEP Program Office

The MEP Program Office is responsible for supporting the Nuclear Development organization through performing activities related to procurement, budget, planning, etc. where applicable.

#### 1.2.2.3.1 Director, MEP Program Office

The Director, MEP Program Office reports to the Sr. VP MEP and is responsible for managing the MEP support functions for Nuclear Development activities in accordance with the QAPD.

### 1.2.3 Nuclear Operations

Nuclear Operations is responsible for Detroit Edison's nuclear units: Fermi 1, Fermi 2 and Fermi 3.

#### 1.2.3.1 Senior Vice President / CNO

The Senior Vice President/CNO ultimately reports to the CEO and is responsible for the overall administration of Detroit Edison nuclear plants as described in Section 1.3.2.1.

#### 1.2.3.2 Quality Assurance

The Fermi 3 Quality Assurance Organization is responsible for independently planning and performing activities to verify the development and effective implementation of the Fermi 3 QAPD as described in Section 1.3.2.2

#### 1.2.3.2.1 Director, Quality Management

The DQM is responsible for developing and maintaining the Fermi 3 QAPD from COL through to and including operations as described in Section 1.3.2.2.1

#### 1.2.3.2.1.1 Fermi 3 Quality Assurance Project Manager

The Fermi 3 Quality Assurance Project Manager (QAPM) reports to the DQM and is responsible for the development and verification of implementation of the QAPD described in this document. The QAPM is responsible for assuring compliance with regulatory requirements and procedures through audits and technical reviews; monitoring organization processes to ensure conformance to commitments and licensing document requirements; QA technical reviews of procurement documents; acceptance of contractor QA programs; oversight of contractor's QA program implementation; oversight of the quality of design and construction; management of the training and qualification program for Inspection and Test personnel; and ensuring that vendors providing quality services, parts and materials to Fermi 3 are meeting the requirements of 10 CFR 50, Appendix B through Nuclear Procurement Issues Committee (NUPIC) or Detroit Edison vendor audits.

The Fermi 3 Quality Assurance Project Manager is responsible for the following during startup and testing operations:

- Quality Assurance support of the Preoperational and Startup Testing organization (see FSAR Subsection 13AA.2.2)
- Oversight of startup activities

- QA selected reviews and oversight of programs developed for operations including, but not limited to, the identification of QA Level I systems, structures or components, and any changes thereto, their performance, and verifying and maintaining the facility design basis
- QA selected reviews and oversight of operations, including maintenance, testing and modification procedures
- Review and concurrence of changes to the identified QA Level I items that could affect their function
- QA oversight of operating procedure implementation
- Quality Control (QC) inspection certification process
- Applicable discipline QC inspections of modifications to QA Level I components
- QA oversight of implementation of controls for measuring and test equipment

The QAPM has sufficient independence from other Fermi 3 priorities to bring forward issues affecting safety and quality and makes judgments regarding quality in all areas necessary regarding Fermi 3 activities. The QAPM may make recommendations to Fermi 3 management regarding improving the quality of work processes. If the QAPM disagrees with any actions taken by the Fermi 3 organization and is unable to obtain resolution, the QAPM shall inform the DQM who will bring the matter to the attention of the CNO to determine the final disposition. As the QA organization transitions from design and construction to operations (i.e. the project phase ends), the QAPM becomes the Fermi 3 Quality Assurance Manager described in Section 1.3.2.2.1.1.

#### 1.2.3.3 Site Organization

The Fermi 3 site organization consists of the operating organization (see FSAR Subsection 13.1.2) led by the site executive, the Management and Technical Support Organization (see FSAR Subsection 13.1.1), and during construction includes the Preoperational and Startup Testing Organization (see FSAR Subsection 13AA.2.2) reporting to the plant manager. The site organization executes all activities for operations, maintenance, security, training, pre-operational testing, startup testing, emergency planning, etc. of the Fermi 3 systems, structures and components (SSC), or portions thereof to support transfer from the construction contractor to the cognizant owner departments as described in FSAR Appendix 13AA, Section 13AA.2.2.

### 1.2.4 Corporate Services

The Corporate Services organization is responsible for supporting the Nuclear Development organization, the MEP Program Office, and the operating (see FSAR Subsection 13.1.2) and technical support (see FSAR Subsection 13.1.1) organizations through executing activities related to procurement, contract management and business performance. Corporate Services

also supports Nuclear Development, the MEP Program Office and the site organization providing records management, logistics, etc.

#### 1.2.4.1 Director, Corporate Services

The Director, Corporate Services reports to the DTE Energy Executive Vice President and Chief Financial Officer and is responsible for overall management of the Corporate Services organization, including Supply Chain Management, Financial and Operational Performance, and materials and logistic support for Nuclear Development through the MEP Program Office, and the operating organization (see FSAR Subsection 13.1.2) through the technical support (see FSAR Subsection 13.1.1) organization.

### 1.2.5 Engineering Procurement and Construction (EPC) Contractor

The EPC contractor is contracted to deliver a commissioned nuclear generating unit to Detroit Edison and includes as key elements the reactor technology vendor and the Architect/Engineer (AE) (see FSAR Appendix 13AA).

#### 1.2.5.1 Engineering Procurement Construction Executive

The EPC Executive retains and exercises responsibility for the scope and implementation of the EPC contractor's QA program. The EPC Executive shall have sufficient authority to accomplish those parts of the overall QA program for which the EPC contractor is responsible including responsibility and authority to stop unsatisfactory work and control of further processing, delivery, installation, or use of nonconforming items. The EPC executive shall ensure that the applicable portion of the EPC contractor's or any subcontractor or vendor's QA program is properly documented, approved, and implemented (people are trained and resources are available) before any activity within the scope of the QA program is undertaken. The EPC contractor shall ensure that the size of the EPC contractor's QA organization is commensurate with its duties and responsibilities. The EPC executive may assign responsibility for ensuring effective execution for any portion of the EPC contractor's QA program but shall ensure that authority as may be necessary to perform the function is provided. The EPC contractors QA program is binding on all participating organizations, including all employees or contractors whose activities may influence quality.

The EPC contractor's QA performance shall be formally evaluated by the Fermi 3 Quality Assurance Project Manager.

The EPC Executive provides a single point of contact for Detroit Edison and accountable to the site executive as described in FSAR Section 13AA.1.9. Controls and lines of communication between the site executive and the EPC Executive shall be identified and documented. Responsibility for QA functions and the extent of oversight shall be clearly established.

#### 1.2.5.2 Reactor Technology Vendor

The reactor technology vendor, identified in FSAR Subsection 1.4.2, provides engineering services for plant design and licensing of Fermi 3 on the Detroit Edison site. These engineering services for Fermi 3 include site-specific engineering and design necessary to support preconstruction and construction activities associated with the nuclear steam supply system (NSSS), i.e. the certified portion of the design.

#### 1.2.5.3 Architect/Engineer (A/E)

The A/E Firm, identified in FSAR Subsection 1.4.2.1, provides engineering services for the remaining plant design and licensing of Fermi 3 on the Detroit Edison Site. These engineering services include site specific support of the reactor technology vendor, design of other support facilities not provided by the reactor technology vendor, site planning and associated activities, preconstruction planning, and construction support for Fermi 3.

### 1.2.6 Authority to Stop Work

Quality assurance and inspection personnel have the authority, and the responsibility, to stop work in progress which is not being performed in accordance with approved procedures or where safety or SSC integrity may be jeopardized. This extends to off-site work performed by suppliers that furnish safety-related materials and services to Fermi 3.

### 1.2.7 Quality Assurance Organizational Independence

For the Design and Construction phase, independence shall be maintained between the organization or organizations performing the checking (quality assurance and control) functions and the organizations performing the functions. This provision is not applicable to design review/verification.

### 1.2.8 NQA-1-1994 Commitment

In establishing its organizational structure, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 1 and Supplement 1S-1.

### 1.2.9 Transition from Design and Construction to Operations

**[START COM FSAR-17AA-002]** No later than six months prior to fuel load of the unit, those positions which are identified for Operations (QAPD Section 1.3) will be staffed and have the appropriate authority required to perform operations activities. **[END COM FSAR-17AA-002]** It is anticipated that even after fuel load, construction activities will be ongoing. Those positions required to support these activities will retain their applicable construction / preoperational responsibilities until it is deemed that they are no longer necessary. As the construction of systems (or portions thereof) are completed, control and authority (including oversight, configuration and operations) is transferred from the EPC contractor to the applicable Fermi 3 departments having cognizance in the operations phase. During the transition, responsibilities

will be clearly defined in instructions and procedures to ensure appropriate authority is maintained for each structure, system, and component.

The CEO position described in QAPD Sections 1.1.1, 1.2.1, and 1.3.1 transitions throughout each project phase and maintains overall responsibility for Fermi 3.

The Sr. VP / CNO position described in QAPD Sections 1.1.3.1, 1.2.3.1, and 1.3.2.1 transitions through each project phase and maintains responsibility for Detroit Edison nuclear facilities.

The MEP Organization, including Sr. VP MEP (Section 1.2.2.1), Director Nuclear Development (Section 1.2.2.2.1), Director Nuclear Licensing and Engineering (Section 1.2.2.2.2.1), COLA Contractor (1.2.2.2.2.2), and Director MEP Program Office (Section 1.2.2.3.1) are not maintained in the Operations phase. The position responsibilities defined in the D&C phase will diminish as the D&C activities are completed. Operational functions will be in place as discussed above and in the Operations phase of the organizational description.

The Director, Quality Management position described in QAPD Sections 1.1.3.2.1, 1.2.3.2.1, and 1.3.2.2.1 transitions through each project phase and maintains responsibility for the Fermi 3 QA program as described. Upon completion of D&C activities, the Fermi 3 Quality Assurance Project Manager position described in Section 1.2.3.2.1.1 is eliminated and the responsibilities related to Fermi 3 Operations are transferred to the Fermi 3 Quality Assurance Manager as described in Section 1.3.2.2.1.1.

The Director, Corporate Services position described in QAPD Sections 1.1.4.1, 1.2.4.1, and 1.3.4.1 transition through each project phase and maintains responsibilities for corporate services as described.

Upon completion of D&C activities, the EPC Contractor, Section 1.2.5, EPC Executive, Section 1.2.5.1, Reactor Technology Vendor, Section 1.2.5.2, and Architect / Engineer (A/E), Section 1.2.5.3, transfer control and authority to the Operational organization, QAPD Section 1.3, under the Sr. VP / CNO, Section 1.3.2.1.

## 1.3 Fermi 3 Operational Organization

This section describes the organizational structure for the operational activities of Fermi 3 and the Fermi 3 Site organizational structure is shown in Figure II.1-3.

The Operations organizational structure applies to the Operational phase of the Fermi 3 plant. The Operations phase activities are initiated upon the completion of systems construction (or portions thereof) and continues throughout the life of the Fermi 3 plant. The Operations phase may overlap temporally with the Design and Construction phase. Transition activities to operations are described in QAPD Section 1.2.9.

### 1.3.1 CEO

The CEO is responsible for all aspects of design, construction and operation of Detroit Edison's nuclear plants as described in Section 1.1.1.

### 1.3.2 Nuclear Operations

Nuclear Operations is responsible for Detroit Edison's nuclear units: Fermi 1, Fermi 2 and Fermi 3.

#### 1.3.2.1 Senior Vice President / CNO

The Senior Vice President/CNO ultimately reports to the CEO and is responsible for the overall administration of Detroit Edison nuclear plants. The CNO is the ultimate management authority for establishing QA policy and responsibility for the QA function.

The CNO assumes responsibility of Fermi 3 from the Sr. VP MEP after construction of the plant. The CNO becomes responsible for overall plant nuclear safety and takes the measures needed to provide acceptable performance of the staff in operating, maintaining, and providing technical support to the plant. The CNO delegates authority and responsibility for the operation and support of the site through the site executive, see FSAR Subsection 13.1.2.1.1. It is the responsibility of the CNO to provide guidance and direction such that safety-related activities, including engineering, construction, operations, operations support, maintenance, and planning are performed following the guidelines of the QA program. The CNO has no ancillary responsibilities that might detract attention from nuclear safety. The CNO is responsible for appointing an Independent Review Body (IRB) chair and assuring the IRB functions as described in Part V.

Reporting to the CNO are the Director Quality Management and the Fermi 3 Site Executive.

#### 1.3.2.2 Quality Assurance

The Fermi 3 Quality Assurance Organization is responsible for independently planning and performing activities to verify the development and effective implementation of the Fermi 3 QAPD including but not limited to engineering, licensing, document control, corrective action program and procurement that support Fermi 3 operations.

The QA organization's function includes:

- Coordinating the development of audit schedules,
- Auditing, performing surveillances, and evaluating suppliers of quality services,
- Supporting general QA indoctrination and training for Detroit Edison personnel performing activities covered by the QAPD, and
- Quality Control.

Personnel resources of the QA organization are shared between units. The Fermi 3 Quality Assurance Manager oversees the QA group for the Fermi 3 site.

#### 1.3.2.2.1 Director, Quality Management

The DQM reports to the CNO for the operations activities and is responsible for developing and maintaining the Fermi 3 QAPD, evaluating compliance to the programs and managing the QA organization resources. The DQM is responsible to size the Quality Assurance organization commensurate with the duties and responsibilities assigned during operations.

##### 1.3.2.2.1.1 Fermi 3 Quality Assurance Manager

The Fermi 3 Quality Assurance Manager (QAM) reports to the DQM and is responsible for the development and verification of implementation of the QAPD described in this document. The QAM is responsible for assuring compliance with regulatory requirements and procedures through audits and technical reviews; administering the Auditor and Lead Auditor Certification process; monitoring organization processes to ensure conformance to commitments and licensing document requirements; performing QA technical reviews of procurement documents, acceptance of contractor QA programs, and oversight of contractor QA program implementation; and ensuring that vendors providing quality services, parts and materials to Fermi 3 are meeting the requirements of 10 CFR 50, Appendix B through Nuclear Procurement Issues Committee (NUPIC) or Detroit Edison vendor audits. The QAM has sufficient independence from other Fermi 3 priorities to bring forward issues affecting safety and quality and makes judgments regarding quality in all areas necessary regarding Fermi 3 activities. The QAM may make recommendations to Fermi 3 management regarding improving the quality of work processes. If the QAM disagrees with any actions taken by the Fermi 3 organization and is unable to obtain resolution, the QAM shall inform the DQM who will bring the matter to the attention of the CNO to determine the final disposition.

### 1.3.3 Fermi 3 Site Organization

The Fermi 3 operating organization (see FSAR Subsection 13.1.2), led by the site executive (see FSAR Subsection 13.1.2.1.1) and supported by the technical support organization (see FSAR Subsection 13.1.1), executes all activities for operations, maintenance, security, training, modification, outage management, procurement, engineering, emergency planning, etc. of the Fermi 3 plant site. The Fermi 3 Operating Organization, detailed in FSAR Subsection 13.1.2, is responsible for operations quality inspection activities of operations on-site work, as well as controlling interfaces between the Nuclear Development organization (for future or continuing capital projects), operating units, and any preconstruction or construction activities.

### 1.3.4 Corporate Services

The Corporate Services organization is responsible for supporting the operating organization (see FSAR Subsection 13.1.2) and technical support organization (see FSAR Subsection 13.1.1) through executing activities related to procurement, contract management and business

performance. Corporate Services also supports the site organization providing records management, logistics, etc.

#### 1.3.4.1 Director, Corporate Services

The Director, Corporate Services reports to the DTE Energy Executive Vice President and Chief Financial Officer and is responsible for overall management of the Corporate Services organization, including Supply Chain Management, Financial and Operational Performance, and materials and logistic support to the operating organization (see FSAR Subsection 13.1.2) through the technical support organization (see FSAR Subsection 13.1.1) .

### 1.3.5 Authority to Stop Work

Quality assurance and inspection personnel have the authority, and the responsibility, to stop work in progress which is not being performed in accordance with approved procedures or where safety or SSC integrity may be jeopardized. This extends to off-site work performed by suppliers that furnish safety-related materials and services to Fermi 3.

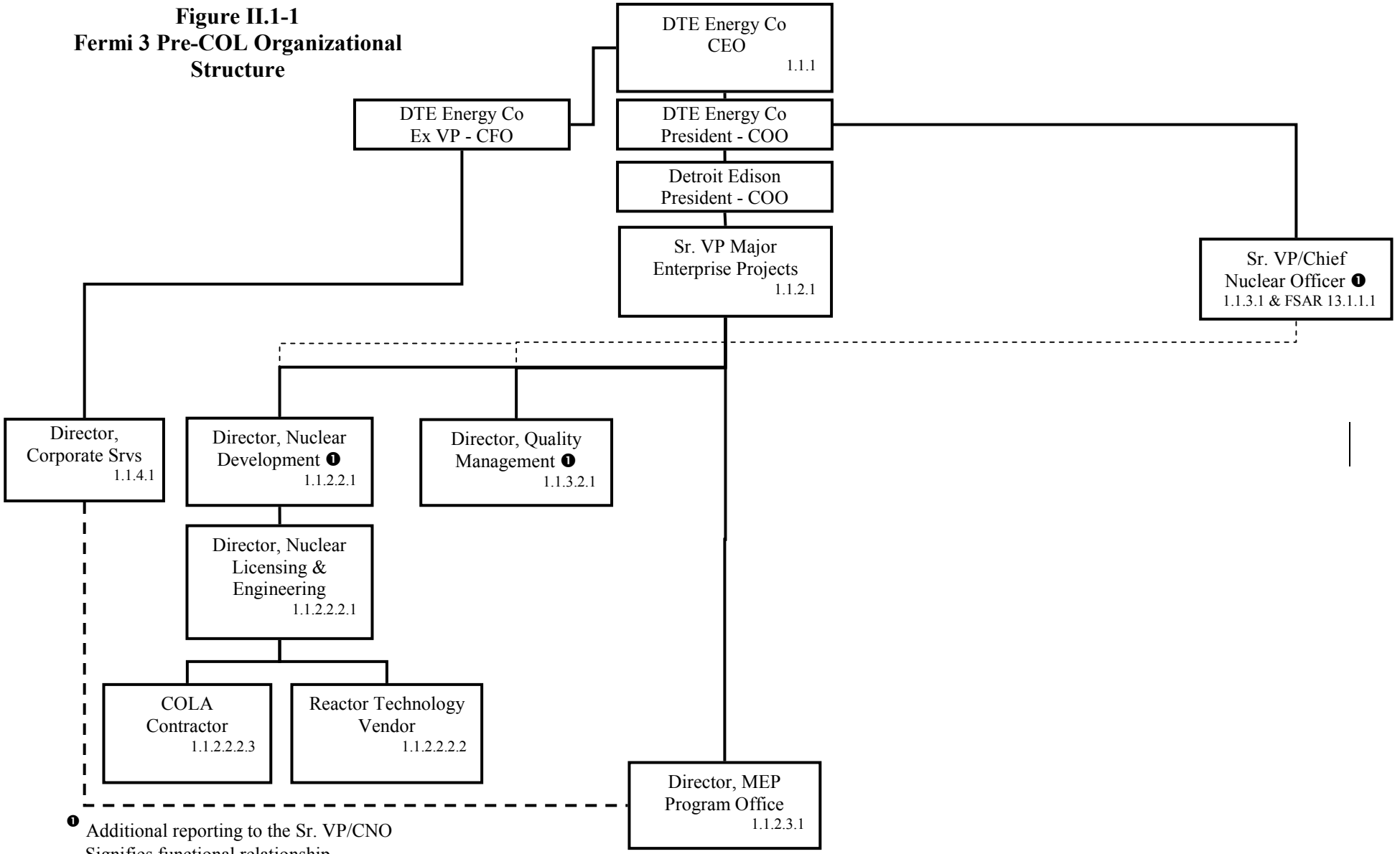
### 1.3.6 Quality Assurance Organizational Independence

Independence shall be maintained between the organization or organizations performing the checking (quality assurance and control) functions and the organizations performing the functions. This provision is not applicable to design review/verification.

### 1.3.7 NQA-1-1994 Commitment

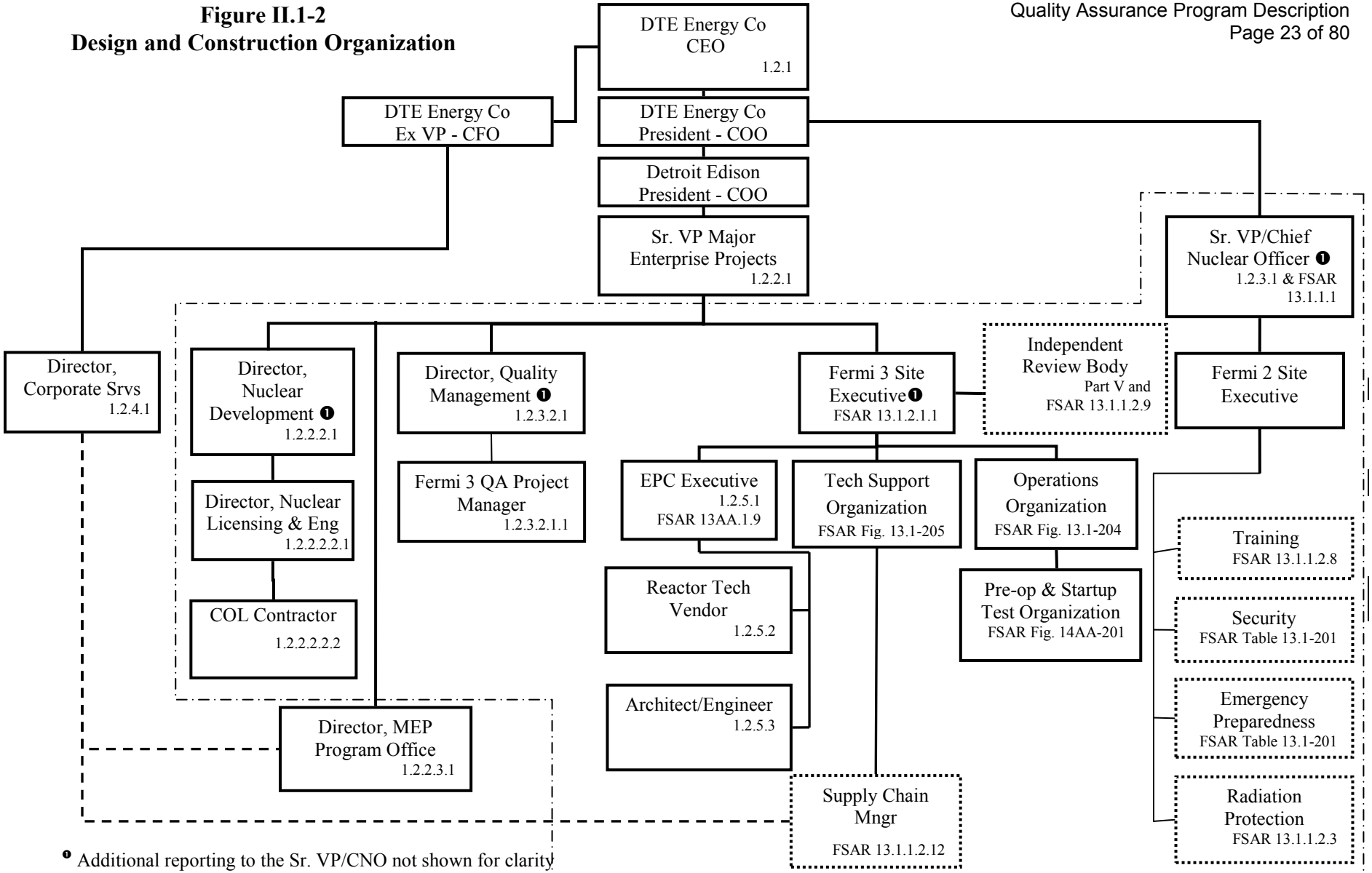
In establishing its organizational structure, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 1 and Supplement 1S-1.

**Figure II.1-1**
**Fermi 3 Pre-COL Organizational Structure**




❶ Additional reporting to the Sr. VP/CNO
– – – Signifies functional relationship
Applicable QAPD section numbers are cross referenced above for additional detail. "FSAR" prefix represents FSAR indicated cross reference to Chapter 13 section or figure

**Figure II.1-2**
**Design and Construction Organization**




❶ Additional reporting to the Sr. VP/CNO not shown for clarity

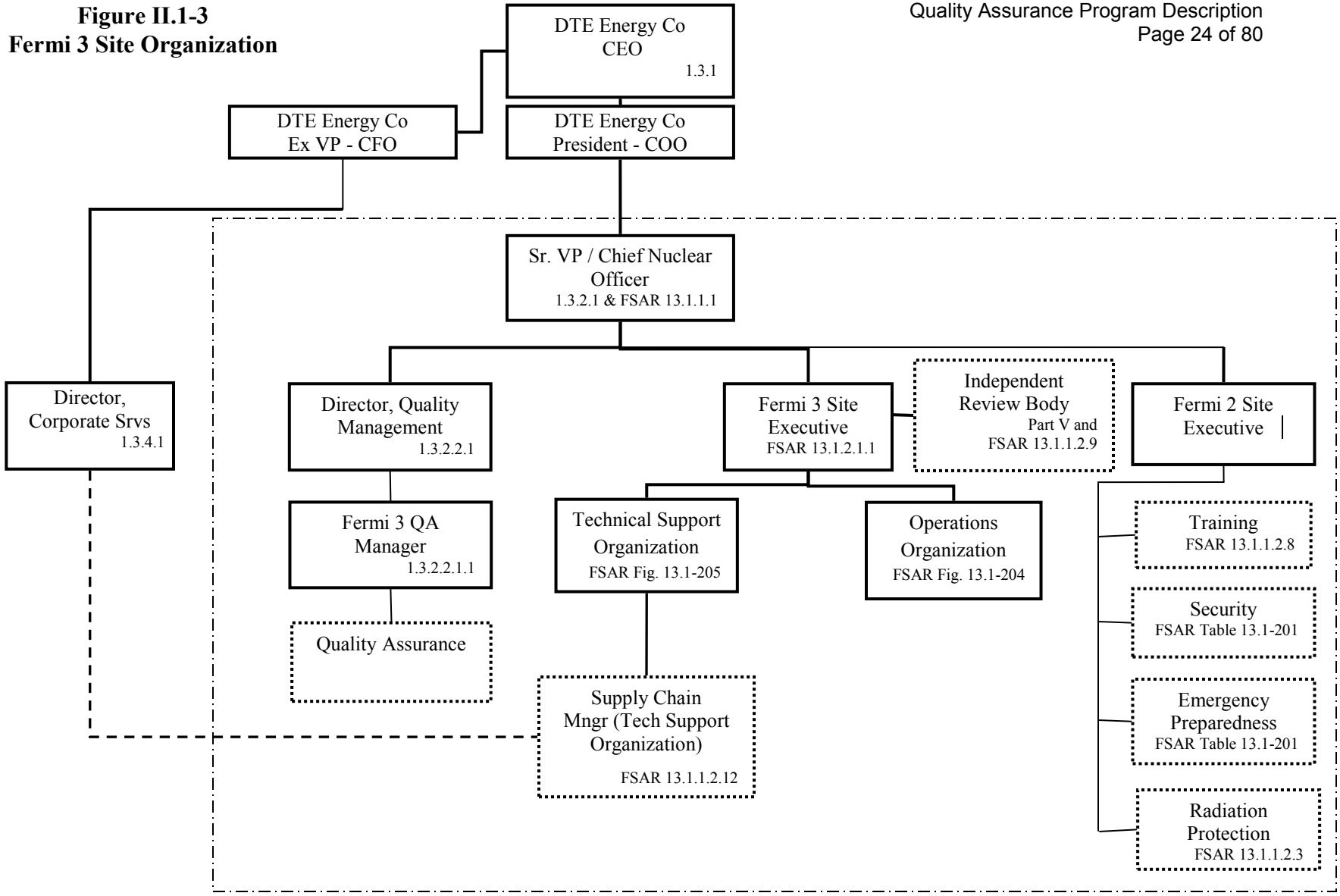
Indicates organizations that, although separate, share resources with Fermi 2 but a single management organization provides oversight for Fermi 3

Signifies functional relationship

Applicable QAPD section numbers are cross referenced above for additional detail. "FSAR" prefix represents FSAR indicated cross reference to Chapter 13 section or figure

Indicates onsite positions. Position locations outside of this border are not defined onsite.

**Figure II.1-3**
**Fermi 3 Site Organization**




Indicates organizations that, although separate, share resources with Fermi 2 but a single management organization provides oversight for Fermi 3

Signifies functional relationship

Applicable QAPD section numbers are cross referenced above for additional detail. "FSAR" prefix represents FSAR indicated cross reference to Chapter 13 section or figure

Indicates onsite positions. Position locations outside this border are not defined onsite.

## SECTION 2 QUALITY ASSURANCE PROGRAM

Fermi 3 has established the necessary measures and governing procedures to implement the QAP as described in the QAPD. Fermi 3 is committed to implementing the Quality Assurance Program in all aspects of work that are important to the safety of the nuclear plant as described and to the extent delineated in this QAPD. Further, Fermi 3 ensures through the systematic process described herein that its suppliers of safety-related equipment or services meet the applicable requirements of 10 CFR 50, Appendix B. This QAPD also applies to certain nonsafety-related structures, systems, components and activities to a degree consistent with their importance to safety. Senior management is regularly apprised of the adequacy of implementation of the QAP through the audit functions described in the Audit Section of this QAPD.

The objective of the QAP is to assure that the Fermi 3 nuclear generating plant is designed constructed and operated in accordance with governing regulations and license requirements. The program is based on the requirements of ASME NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," as further described in this document. The QAP applies to those quality-related activities that involve the functions of safety-related structures, systems, and components (SSCs) associated with the design, licensing, fabrication, construction, testing and operation of new nuclear power plants as described in the COL Final Safety Analysis Report. Examples of COL safety-related activities include, but are not limited to, site specific engineering related to safety-related SSCs, site geotechnical investigations, site engineering analysis, seismic analysis, and meteorological analysis. A list or system identifying SSCs and activities to which this program applies is maintained at the appropriate facility. The Design Certification Document is used as the basis for this list. Cost and scheduling functions do not prevent proper implementation of the QAP.

As described in Part III of the QAPD, specific program controls are applied to non-safety related SSCs, for which 10CFR50, Appendix B is not applicable, that are significant contributors to plant safety. The specific program controls consistent with applicable sections of the QAPD are applied to those items in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety.

Delegated responsibilities may be performed under a supplier's or principal contractor's QAP, provided that the supplier or principal contractor has been approved as a supplier in accordance with the QAPD. Periodic audits and assessments of supplier QA programs are performed to assure compliance with the supplier's or principal contractor's QAPD and implementing procedures. In addition, routine interfaces with the supplier's personnel provide added assurance that quality expectations are met.

For the COL application, this QAPD applies to those Fermi 3 activities that can affect either directly or indirectly the safety-related site characteristics or analysis of those characteristics. In addition, this QAPD applies to engineering activities that are used to characterize the site or analyze that characterization.

New nuclear plant construction will be the responsibility of Detroit Edison's Fermi 3 organization. Detailed engineering specifications and construction procedures will be developed to implement the QAPD and supplier QA programs prior to commencement of construction (COL) activities. Examples of Limited Work Authorization (LWA) activities that could impact safety-related SSCs include impacts of construction to existing facilities and for construction of new plants, the interface between nonsafety-related and safety-related SSCs and the placement of seismically-designed backfill.

In general, the program requirements specified herein are detailed in implementing procedures that are either Detroit Edison/Fermi 3 implementing procedures, or supplier implementing procedures governed by a supplier quality program.

A grace period of 90 days may be applied to provisions that are required to be performed on a periodic basis, unless otherwise noted. Annual evaluations and audits that must be performed on a triennial basis are examples where the 90 day grace period could be applied. The grace period does not allow the "clock" for a particular activity to be reset forward. The "clock" for an activity is reset backwards by performing the activity early. Audit schedules are based on the month in which the audit starts.

## 2.1 Responsibilities

Personnel who work directly or indirectly for Fermi 3 are responsible for achieving acceptable quality in the work covered by this QAPD. This includes the activities delineated in Part I, Section 1.1 of this QAPD. Fermi 3 personnel performing verification activities are responsible for verifying the achievement of acceptable quality. Activities governed by the QAPD are performed as directed by documented instructions, procedures and drawings that are of a detail appropriate for the activity's complexity and effect on safety. Instructions, procedures and drawings specify quantitative or qualitative acceptance criteria as applicable or appropriate for the activity, and verification is against these criteria. Provisions are established to designate or identify the proper documents to be used in an activity, and to ascertain that such documents are being used. The QA organization is responsible to verify that processes and procedures comply with QAPD and other applicable requirements, that such processes or procedures are implemented, and that management appropriately ensures compliance.

## 2.2 Delegation of Work

Fermi 3 retains and exercises the responsibility for the scope and implementation of an effective QAP. Positions identified in Part II, Section 1, of this QAPD may delegate all or part of the

activities of planning, establishing, and implementing the program for which they are responsible to others, but retain the responsibility for the program's effectiveness. Decisions affecting safety are made at the level appropriate for its nature and effect, and with any necessary technical advice or review.

### 2.3 Site Specific Safety-Related Design Basis Activities

Site-specific safety-related design basis activities are defined as those activities, including sampling, testing, data collection, and supporting engineering calculations and reports, that will be used to determine the bounding physical parameters of the site. Appropriate quality assurance measures are applied.

### 2.4 Periodic Review of the Quality Assurance Program

Management of those organizations implementing the QA program or portions thereof, assess the adequacy of that part of the program for which they are responsible and assure its effective implementation at least once each year or at least once during the life of the activity, whichever is shorter. However, the period for assessing QA programs during the operations phase may be extended to once every two years.

### 2.5 Issuance and Revision to Quality Assurance Program

Administrative control of the QAPD will be in accordance with 10 CFR 50.55(f) and 10 CFR 50.54(a), as appropriate. Changes to the QAPD are evaluated by the QA organization to ensure that such changes do not degrade previously approved quality assurance controls specified in the QAPD. This document shall be revised as appropriate to incorporate additional QA commitments that may be established during the COL application development process. New revisions to the document will be reviewed, at a minimum, by the Director, Quality Management and approved by the executive in charge of the MEP organization.

Regulations require that the Final Safety Analysis Report (FSAR) include, among other things, the managerial and administrative controls to be used to assure safe operation, including a discussion of how the applicable requirements of Appendix B will be satisfied. In order to comply with this requirement, the FSAR references the QAPD and, as a result, the requirements of 10 CFR 50.54(a) are satisfied by and apply to the QAPD.

### 2.6 Personnel Qualifications

Personnel assigned to implement elements of the QAPD shall be capable of performing their assigned tasks. To this end Fermi 3 establishes and maintains formal indoctrination and training programs for personnel performing, verifying, or managing activities within the scope of the QAPD to assure that suitable proficiency is achieved and maintained. Plant and support staff minimum qualification requirements are as delineated in the Technical Specifications. Other qualification requirements may be established but will not reduce those required by Technical

Specifications. Sufficient managerial depth is provided to cover absences of incumbents. When required by code, regulation, or standard, specific qualification and selection of personnel is conducted in accordance with those requirements as established in the applicable Fermi 3 procedures. Indoctrination includes the administrative and technical objectives, requirements of the applicable codes and standards, and the QAPD elements to be employed. Training for positions identified in 10 CFR 50.120 is accomplished according to programs accredited by the National Nuclear Accrediting Board of the National Academy of Nuclear Training that implement a systematic approach to training. Records of personnel training and qualification are maintained.

The minimum qualifications of the Director, Quality Management, and functional QA manager are that each holds an engineering or related science degree and a minimum of four years of related experience including two years of nuclear power plant experience, one year of supervisory or management experience, and one year of the experience is in performing quality verification activities. Special requirements shall include management and supervisory skills and experience or training in leadership, interpersonal communication, management responsibilities, motivation of personnel, problem analysis and decision making, and administrative policies and procedures. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

The minimum qualifications of the individuals responsible for planning, implementing and maintaining the programs for the QAPD are that each has a high school diploma or equivalent and has a minimum of one year of related experience. Individuals who do not possess these formal education and minimum experience requirements should not be eliminated automatically when other factors provide sufficient demonstration of their abilities. These other factors are evaluated on a case-by-case basis and approved and documented by senior management.

## 2.7 NQA-1-1994 Commitment / Exceptions

In establishing qualification and training programs, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 2 and Supplements 2S-1, 2S-2, 2S-3 and 2S-4, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 2S-1
  - Supplement 2S-1 will include use of the guidance provided in Appendix 2A-1 the same as if it were part of the Supplement. Either or both of the following two alternatives may be applied to the implementation of this Supplement and Appendix:

(1) In lieu of being certified as Level I, II, or III in accordance with NQA-1-1994, personnel performing independent quality verification inspections, examinations, measurements, or tests of material, products, or activities will be required to possess qualifications equal to or better than those required for performing the task being verified; and the verification is within the skills of these personnel and/or is addressed by procedures. These individuals will not be responsible for the planning of quality verification inspections and tests (i.e., establishing hold points and acceptance criteria in procedures, and determining who will be responsible for performing the inspections), evaluating inspection training programs, nor certifying inspection personnel.

(2) A qualified engineer may be used to plan inspections, evaluate the capabilities of an inspector, or evaluate the training program for inspectors. For the purpose of these functions, a qualified engineer is one who has a baccalaureate in engineering in a discipline related to the inspection activity (such as electrical, mechanical, civil) and has a minimum of five years engineering work experience with at least two years of this experience related to nuclear facilities.

- NQA-1-1994, Supplement 2S-2

  - In lieu of Supplement 2S-2, for qualification of nondestructive examination personnel, Fermi 3 will follow the applicable standard cited in the version(s) of Section III and Section XI of the ASME Boiler and Pressure Vessel Code approved by the NRC for use at Fermi 3.

- NQA-1-1994, Supplement 2S-3

  - The requirement that prospective Lead Auditors have participated in a minimum of five (5) audits in the previous three (3) years is replaced by the following, “The prospective lead auditor shall demonstrate his/her ability to properly implement the audit process, as implemented by Fermi 3, to effectively lead an audit team, and to effectively organize and report results, including participation in at least one nuclear audit within the year preceding the date of qualification.”

## SECTION 3 DESIGN CONTROL

Fermi 3 has established and implements a process to control the design, design changes and temporary modifications (e.g. temporary bypass lines, electrical jumpers and lifted wires, and temporary setpoints) of items that are subject to the provisions of this QAPD. The design process includes provisions to control design inputs, outputs, changes, interfaces, records and organizational interfaces within Fermi 3 and with suppliers. These provisions assure that design inputs (such as design bases and the performance, regulatory, quality, and quality verification requirements) are correctly translated into design outputs (such as analyses, specifications, drawings, procedures, and instructions) so that the final design output can be related to the design input in sufficient detail to permit verification. Design change processes and the division of responsibilities for design-related activities are detailed in Fermi 3 and supplier procedures. The design control program includes interface controls necessary to control the development, verification, approval, release, status, distribution and revision of design inputs and outputs. Design changes and disposition of nonconforming items as “use as is” or “repair” are reviewed and approved by the Fermi 3 design organization or by other organizations so authorized by Fermi 3.

Design documents are reviewed by individuals knowledgeable in QA to ensure the documents contain the necessary QA requirements.

### 3.1 Design Verification

Fermi 3 design processes provide for design verification to ensure that items and activities subject to the provisions of this QAPD are suitable for their intended application, consistent with their effect on safety. Design changes are subjected to these controls, which include verification measures commensurate with those applied to original plant design.

Design verifications are performed by competent individuals or groups other than those who performed the original design but who may be from the same organization. The verifier shall not have taken part in the selection of design inputs, the selection of design considerations, or the selection of a singular design approach, as applicable. This verification may be performed by the originator’s supervisor provided the supervisor did not specify a singular design approach, rule out certain design considerations, and did not establish the design inputs used in the design, or if the supervisor is the only individual in the organization competent to perform the verification. If the verification is performed by the originator’s supervisor, the justification of the need is documented and approved in advance by management.

The extent of the design verification required is a function of the importance to safety of the item under consideration, the complexity of the design, the degree of standardization, the state-of-the-art, and the similarity with previously proven designs. This includes design inputs, design outputs and design changes. Design verification procedures are established and implemented

to assure that an appropriate verification method is used, the appropriate design parameters to be verified are chosen, the acceptance criteria are identified, and the verification is satisfactorily accomplished and documented. Verification methods may include, but are not limited to, design reviews, alternative calculations and qualification testing. Testing used to verify the acceptability of a specific design feature demonstrates acceptable performance under conditions that simulate the most adverse design conditions expected for the item's intended use.

Fermi 3 normally completes design verification activities before the design outputs are used by other organizations for design work, and before they are used to support other activities such as procurement, manufacture or construction. When such timing cannot be achieved, the design verification is completed before relying on the item to perform its intended design or safety function.

### 3.2 Design Records

Fermi 3 maintains records sufficient to provide evidence that the design was properly accomplished. These records include the final design output and any revisions thereto, as well as record of the important design steps (e.g., calculations, analyses and computer programs) and the sources of input that support the final output.

Plant design drawings reflect the properly reviewed and approved configuration of the plant.

### 3.3 Computer Application and Digital Equipment Software

The QAPD shall govern the development, procurement, testing, maintenance, and use of computer application and digital equipment software when used in safety-related applications and designated nonsafety-related applications. Fermi 3 and suppliers shall be responsible for developing, approving, and issuing procedures, as necessary, to control the use of such computer application and digital equipment software. The procedures shall require that the application software be assigned a proper quality classification and that the associated quality requirements be consistent with this classification. Each application software and revision thereto is documented and approved by authorized personnel. This QAPD is also applicable to the administrative functions associated with the maintenance and security of computer hardware where such functions are considered essential in order to comply with other QAPD requirements such as QA records.

### 3.4 Setpoint Control

Instrument and equipment setpoints that could affect nuclear safety shall be controlled in accordance with written instructions. As a minimum, these written instructions shall:

(1) Identify responsibilities and processes for reviewing, approving, and revising setpoints and setpoint changes originally supplied by the NSSS supplier, the A/E, and the plant's technical staff.

(2) Ensure that setpoints and setpoint changes are consistent with design and accident analysis requirements and assumptions.

(3) Provide for documentation of setpoints, including those determined operationally.

(4) Provide for access to necessary setpoint information for personnel who write or revise plant procedures, operate or maintain plant equipment, develop or revise design documents, or develop or revise accident analyses.

### 3.5 NQA-1-1994 Commitment

In establishing its program for design control and verification, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 3, and Supplement 3S-1, the subsurface investigations requirements contained in Subpart 2.20 and the standards for computer software contained in Subpart 2.7.

## SECTION 4 PROCUREMENT DOCUMENT CONTROL

Fermi 3 has established the necessary measures and governing procedures to assure that purchased items and services are subject to appropriate quality and technical requirements. Procurement document changes shall be subject to the same degree of control as utilized in the preparation of the original documents. These controls include provisions such that:

- Where original technical or quality assurance requirements cannot be determined, an engineering evaluation is conducted and documented by qualified staff to establish appropriate requirements and controls to assure that interfaces, interchangeability, safety, fit and function, as applicable, are not adversely affected or contrary to applicable regulatory requirements.
- Applicable technical, regulatory, administrative, quality and reporting requirements (such as specifications, codes, standards, tests, inspections, special processes, and 10 CFR 21) are invoked for procurement of items and services. 10 CFR 21 requirements for posting, evaluating and reporting will be followed and imposed on suppliers when applicable. Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. To the extent necessary, procurement documents shall require suppliers to have a documented QA program that is determined to meet the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of procurements (or the supplier may work under Fermi 3's approved QA program).

Reviews of procurement documents shall be performed by personnel who have access to pertinent information and who have an adequate understanding of the requirements and intent of the procurement documents.

### 4.1 NQA-1-1994 Commitment

In establishing controls for procurement, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 4 and Supplement 4S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 4S-1
  - Section 2.3 of this Supplement 4S-1 includes a requirement that procurement documents require suppliers to have a documented QAP that implements NQA-1-1994, Part 1. In lieu of this requirement, Fermi 3 may require suppliers to have a documented supplier QAP that is determined to meet the applicable requirements of 10 CFR 50, Appendix B, as appropriate to the circumstances of the procurement.

- With regard to service performed by a supplier, Fermi 3 procurement documents may allow the supplier to work under the Fermi 3 QAP, including implementing procedures, in lieu of the supplier having its own QAP.
- Section 3 of this supplement 4S-1 requires procurement documents to be reviewed prior to bid or award of contract. The quality assurance review of procurement documents is satisfied through review of the applicable procurement specification, including the technical and quality procurement requirements, prior to bid or award of contract. Procurement document changes (e.g., scope, technical or quality requirements) will also receive the quality assurance review.
- Procurement documents for Commercial Grade Items that will be procured by Fermi 3 for use as safety-related items shall contain technical and quality requirements such that the procured item can be appropriately dedicated.

## SECTION 5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Fermi 3 has established the necessary measures and governing procedures to ensure that activities affecting quality are prescribed by and performed in accordance with instructions, procedures or drawings of a type appropriate to the circumstances and which, where applicable, include quantitative or qualitative acceptance criteria to implement the QAP as described in the QAPD. Such documents are prepared and controlled according to Part II, SECTION 6 of this QAPD. In addition, means are provided for dissemination to the staff instructions of both general and continuing applicability, as well as those of short-term applicability. Provisions are included for reviewing, updating, and canceling such procedures.

### 5.1 Procedure Adherence

The Fermi 3 policy is that procedures are followed, and the requirements for use of procedures have been established in administrative procedures. Where procedures cannot be followed as written, provisions are established for making changes in accordance with Part II, SECTION 6 of this QAPD. Requirements are established to identify the manner in which procedures are to be implemented, including identification of those tasks that require (1) the written procedure to be present and followed step-by-step while the task is being performed, (2) the user to have committed the procedure steps to memory, (3) verification of completion of significant steps, by initials or signatures or use of check-off lists. Procedures that are required to be present and referred to directly are those developed for extensive or complex jobs where reliance on memory cannot be trusted, tasks that are infrequently performed, and tasks where steps must be performed in a specified sequence.

In cases of emergency, personnel are authorized to depart from approved procedures when necessary to prevent injury to personnel or damage to the plant. Such departures are recorded describing the prevailing conditions and reasons for the action taken.

### 5.2 Procedure Content

The established measures address the applicable content of procedures as described in the introduction to Part II of NQA-1-1994. In addition, procedures governing tests, inspections, operational activities and maintenance will include as applicable, initial conditions and prerequisites for the performance of the activity.

### 5.3 NQA-1-1994 Commitment

In establishing procedural controls, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 5.

## SECTION 6 DOCUMENT CONTROL

Fermi 3 has established the necessary measures and governing procedures to control the preparation of, issuance of, and changes to documents that specify quality requirements or prescribe how activities affecting quality, including organizational interfaces, are controlled to assure that correct documents are being employed. The control system (including electronic systems used to make documents available) shall be documented and shall provide for the following:

(a) identification of documents to be controlled and their specified distribution;

(b) a method to identify the correct document (including revision) to be used and control of superseded documents;

(c) identification of assignment of responsibility for preparing, reviewing, approving, and issuing documents;

(d) review of documents for adequacy, completeness, and correctness prior to approval and issuance;

(e) a method for providing feedback from users to continually improve procedures and work instructions; and

(f) coordinating and controlling interface documents and procedures.

The types of documents to be controlled include:

(a) drawings such as design, construction, installation, and as-built drawings;

(b) engineering calculations;

(c) design specifications;

(d) purchase orders and related documents;

(e) vendor-supplied documents;

(f) audit, surveillance, and quality verification/inspection procedures;

(g) inspection and test reports;

(h) instructions and procedures for activities covered by this QAPD including design, construction, installation, operating (including normal and emergency operations), maintenance, calibration, and routine testing;

(i) technical specifications; and

(j) nonconformance reports and corrective action reports.

During the operational phase, where temporary procedures are used, they shall include a designation of the period of time during which it is acceptable to use them.

### 6.1 Review and Approval of Documents

Documents shall be reviewed for adequacy by qualified persons other than the preparer. During the construction phase, procedures for design, construction, and installation shall also be reviewed by the QA organization to ensure quality assurance measures have been appropriately applied. The documented review signifies concurrence.

During the operations phase, documents affecting the configuration or operation of the station as described in the FSAR shall be screened to identify those that require review by the IRB prior to implementation as described in Part V, Section 2.2.

To ensure effective and accurate procedures during the operational phase, applicable procedures shall be reviewed, and updated as necessary, based on the following conditions:

(a) following any modification to a system;

(b) following an unusual incident, such as an accident, significant operator error, or equipment malfunction;

(c) when procedure discrepancies are found;

(d) prior to use if not used in the previous two years; or

(e) results of QA audits conducted in accordance with Part II, Sections 18.1.

Prior to issuance or use, documents including revisions thereto, shall be approved by the designated authority. A listing of all controlled documents identifying the current approved revision, or date, is maintained so personnel can readily determine the appropriate document for use.

### 6.2 Changes to Documents

Changes to documents, other than those defined in implementing procedures as minor changes, shall be reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organization shall have access to pertinent background data or information upon which to base their approval. Where temporary procedure changes are necessary during the operations phase, changes that clearly do not change the intent of the approved procedure may be implemented provided they are approved by two members of the staff knowledgeable in the areas affected by the procedures. Minor changes to documents, such as inconsequential editorial corrections, do not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type

of minor changes that do not require such a review and approval and the persons who can authorize such a classification shall be clearly delineated in implementing procedures.

### 6.3 NQA-1-1994 Commitment

In establishing provisions for document control, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 6 and Supplement 6S-1.

## SECTION 7 CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

Fermi 3 has established the necessary measures and governing procedures to control the procurement of items and services to assure conformance with specified requirements. Such control shall provide for the following as appropriate: source evaluation and selection, evaluation of objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services.

### 7.1 Acceptance of Item or Service

Fermi 3 establishes and implements measures to assess the quality of purchased items and services, whether purchased directly or through contractors, at intervals and to a depth consistent with the item's or service's importance to safety, complexity, quantity and the frequency of procurement. Verification actions include testing, as appropriate, during design, fabrication, construction, and operation activities. Verifications occur at the appropriate phases of the procurement process, including, as necessary, verification of activities of suppliers below the first tier.

Measures to assure the quality of purchased items and services include the following, as applicable:

- Items are inspected, identified, and stored to protect against damage, deterioration, or misuse.
- Prospective suppliers of safety-related items and services are evaluated to assure that only qualified suppliers are used. Qualified suppliers are audited on a triennial basis. In addition, if a subsequent contract or a contract modification significantly enlarges the scope of, or changes the methods or controls for, activities performed by the same supplier, an audit of the modified requirements is conducted, thus starting a new triennial period. Fermi 3 may utilize audits conducted by outside organizations for supplier qualification provided that the scope and adequacy of the audits meet Fermi 3 requirements. Documented annual evaluations are performed for qualified suppliers to assure they continue to provide acceptable products and services. Industry programs, such as those applied by ASME, Nuclear Procurement Issues Committee (NUPIC), or other established utility groups, are used as input or the basis for supplier qualification whenever appropriate. The results of the reviews are promptly considered for effect on a supplier's continued qualification and adjustments made as necessary (including corrective actions, adjustments of supplier audit plans, and input to third party auditing entities, as warranted). In addition, results are reviewed periodically to determine if, as a whole, they constitute a significant condition adverse to quality requiring additional action.

- Provisions are made for accepting purchased items and services, such as source verification, receipt inspection, pre- and post-installation tests, certificates of conformance, and document reviews (including Certified Material Test Report/Certificate). Acceptance actions/documents should be established by the Purchaser with appropriate input from the Supplier and be completed to ensure that procurement, inspection, and test requirements, as applicable, have been satisfied before relying on the item to perform its intended safety function.
- Controls are imposed for the selection, determination of suitability for intended use (critical characteristics), evaluation, receipt and acceptance of commercial-grade services or items to assure they will perform satisfactorily in service in safety-related applications.
- If there is insufficient evidence of implementation of a QA program, the initial evaluation is of the existence of a QA program addressing the scope of services to be provided. The initial audit is performed after the supplier has completed sufficient work to demonstrate that its organization is implementing a QA program.

### 7.2 NQA-1-1994 Commitment

In establishing procurement verification controls, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 7 and Supplement 7S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 7S-1
  - Fermi 3 considers that other 10 CFR 50 licensees, Authorized Nuclear Inspection Agencies, National Institute of Standards and Technology, or other State and Federal agencies which may provide items or services to the Fermi 3 plant are not required to be evaluated or audited.
  - When purchasing commercial grade calibration services from a calibration laboratory, procurement source evaluation and selection measures need not be performed provided each of the following conditions are met:
    (1) The purchase documents impose any additional technical and administrative requirements, as necessary, to comply with the Fermi 3 QA program and technical provisions. At a minimum, the purchase document shall require that the calibration certificate/report include identification of the laboratory equipment/standard used.
    (2) The purchase documents require reporting as-found calibration data when calibrated items are found to be out-of-tolerance.
    (3) A documented review of the supplier's accreditation shall be performed and shall include a verification of each of the following:

- The calibration laboratory holds a domestic (United States) accreditation by any one of the following accrediting bodies, which are recognized by the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA):
  - National Voluntary Laboratory Accreditation Program (NVLAP), administered by the National Institute of Standards & Technology;
  - American Association for Laboratory Accreditation (A2LA);
  - ACLASS Accreditation Services (ACLASS);
  - International Accreditation Service (IAS);
  - Laboratory Accreditation Bureau (L-A-B);
  - Other NRC-approved laboratory accrediting body.
- The accreditation encompasses ANS/ISO/IEC 17025, "General Requirements for the Competence of Testing and Calibration Laboratories."
- The published scope of accreditation for the calibration laboratory covers the necessary measurement parameters, ranges, and uncertainties.

- For Section 8.1, Fermi 3 considers documents that may be stored in approved electronic media under Fermi 3 or vendor control and not physically located on the plant site, but which are accessible from the respective nuclear facility site as meeting the NQA-1 requirement for documents to be available at the site. Following completion of the construction period, sufficient as-built documentation will be turned over to Fermi 3 to support operations. The Fermi 3 records management system will provide for timely retrieval of necessary records.
- In lieu of the requirements of Section 10, Commercial Grade Items, controls for commercial grade items and services are established in Fermi 3 documents using 10 CFR 21 and the guidance of EPRI NP-5652 as discussed in Generic Letter 89-02 and Generic Letter 91-05.
- For commercial grade items, special quality verification requirements are established and described in Fermi 3 documents to provide the necessary assurance an item will perform satisfactorily in service. The Fermi 3 documents address determining the critical characteristics that ensure an item is suitable for its

intended use, technical evaluation of the item, receipt requirements, and quality evaluation of the item.

- Fermi 3 will also use other appropriate approved regulatory means and controls to support Fermi 3 commercial grade dedication activities. Fermi 3 will assume 10 CFR 21 reporting responsibility for all items that Fermi 3 dedicates as safety-related.

# SECTION 8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Fermi 3 has established the necessary measures and governing procedures to identify and control items to prevent the use of incorrect or defective items. This includes controls for consumable materials and items with limited shelf life. The identification of items is maintained throughout fabrication, erection, installation and use so that the item can be traced to its documentation, consistent with the item's effect on safety. Identification locations and methods are selected so as not to affect the function or quality of the item.

## 8.1 NQA-1-1994 Commitment

In establishing provisions for identification and control of items, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 8 and Supplement 8S-1.

## SECTION 9 CONTROL OF SPECIAL PROCESSES

Fermi 3 has established the necessary measures and governing procedures to assure that special processes that require interim process controls to assure quality, such as welding, heat treating, and nondestructive examination, are controlled. These provisions include assuring that special processes are accomplished by qualified personnel using qualified procedures and equipment. Personnel are qualified and special processes are performed in accordance with applicable codes, standards, specifications, criteria or other specially established requirements. Special processes are those where the results are highly dependent on the control of the process or the skill of the operator, or both, and for which the specified quality cannot be fully and readily determined by inspection or test of the final product.

### 9.1 NQA-1-1994 Commitment

In establishing measures for the control of special processes, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 9 and Supplement 9S-1.

## SECTION 10 INSPECTION

Fermi 3 has established the necessary measures and governing procedures to implement inspections that assure items, services and activities affecting safety meet established requirements and conform to applicable documented specifications, instructions, procedures, and design documents. Inspection may also be applied to items, services and activities affecting plant reliability and integrity. Types of inspections may include those verifications related to procurement, such as source, in-process, final, and receipt inspection, as well as construction, installation, maintenance, modification, inservice, and operations activities. Inspections are carried out by properly qualified persons independent of those who performed or directly supervised the work. Inspection results shall be documented.

### 10.1 Inspection Program

The inspection program establishes inspections (including surveillance of processes), as necessary to verify quality: (1) at the source of supplied items or services, (2) in-process during fabrication at a supplier's facility or at a company facility, (3) for final acceptance of fabricated and/or installed items during construction, (4) upon receipt of items for a facility, as well as (5) during maintenance, modification, inservice, and operating activities.

The inspection program establishes requirements for planning inspections, such as the group or discipline responsible for performing the inspection, where inspection hold points are to be applied, determining applicable acceptance criteria, the frequency of inspection to be applied, and identification of special tools needed to perform the inspection. Inspection planning is performed by personnel qualified in the discipline related to the inspection and include qualified inspectors or engineers. Inspection plans are based on, as a minimum, the importance of the item to the safety of the facility, the complexity of the item, technical requirements to be met, and design specifications. Where significant changes in inspection activities for the facilities are to occur, management responsible for the inspection programs evaluate the resource and planning requirements to ensure effective implementation of the inspection program.

Inspection program documents establish requirements for performing the planned inspections, and documenting required inspection information such as: rejection, acceptance, and reinspection results; and the person(s) performing the inspection.

Inspection results are documented by the inspector, reviewed by authorized personnel qualified to evaluate the technical adequacy of the inspection results, and controlled by instructions, procedures, and drawings.

### 10.2 Inspector Qualification

Fermi 3 has established qualification programs for personnel performing quality inspections. The qualification program requirements are described in Part II, Section 2 of this QAPD. These

qualification programs are applied to individuals performing quality inspections regardless of the functional group where they are assigned.

### 10.3 NQA-1-1994 Commitment / Exceptions

In establishing inspection requirements, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 10, Supplement 10S-1 and Subpart 2.4, with the clarification that follows below. In addition, Fermi 3 commits to compliance with the requirements of Subparts 2.5 and 2.8 for establishing appropriate inspection requirements.

- Subpart 2.4 commits Fermi 3 to IEEE 336-1985. IEEE 336-1985 refers to IEEE 498-1985. Both IEEE 336 -1985 and IEEE 498-1985 use the definition of “Safety Systems” from IEEE 603-1980. Fermi 3 commits to the definition of Safety Systems in IEEE 603-1980, but does not commit to the balance of that standard. This definition is only applicable to equipment in the context of Subpart 2.4.
- An additional exception to Subpart 2.4 is contained in Part II, Section 12 of this QAPD.
- Where inspections at the operating facility are performed by persons within the same organization (e.g. Maintenance group), Fermi 3 takes exception to the requirements of NQA-1-1994, Supplement 10S-1, Section 3.1, the inspectors report to the QA organization while performing those inspections.

## SECTION 11 TEST CONTROL

Fermi 3 has established the necessary measures and governing procedures to demonstrate that items subject to the provisions of this QAPD will perform satisfactorily in service, that the plant can be operated safely and as designed, and that the coordinated operation of the plant as a whole is satisfactory. These programs include criteria for determining when testing is required, such as proof tests before installation, pre-operational tests, post-maintenance tests, post-modification tests, in-service tests, and operational tests (such as surveillance tests required by Technical Specifications), to demonstrate that performance of plant systems is in accordance with design. Programs also include provisions for establishing and adjusting test schedules and maintaining status for periodic or recurring tests. Tests are performed according to applicable procedures that include, consistent with the effect on safety, (1) instructions and prerequisites to perform the test, (2) use of proper test equipment, (3) acceptance criteria, and (4) mandatory verification points as necessary to confirm satisfactory test completion. Test results are documented and evaluated by the organization performing the test and reviewed by a responsible authority to assure that the test requirements have been satisfied. If acceptance criteria are not met, re-testing is performed as needed to confirm acceptability following correction of the system or equipment deficiencies that caused the failure.

The initial start-up test program is planned and scheduled to permit safe fuel loading and start-up; to increase power in safe increments; and to perform major testing at specified power levels. If tests require the variation of operating parameters outside of their normal range, the limits within which such variation is permitted will be prescribed. The scope of the testing demonstrates, insofar as practicable, that the plant is capable of withstanding the design transients and accidents. For new facility construction, the suitability of facility operating procedures is checked to the maximum extent possible during the preoperational and initial start-up test programs.

The tests are performed and results documented in accordance with applicable technical and regulatory requirements including those described in the Technical Specifications and FSAR. The test programs ensure appropriate retention of test data in accordance with the records requirements of this QAPD. The personnel performing or evaluating tests are qualified in accordance with the requirements established in Part II, Section 2, of this QAPD.

### 11.1 NQA-1-1994 Commitment

In establishing provisions for testing, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 11 and Supplement 11S-1.

## 11.2 NQA-1-1994 Commitment for Computer Program Testing

Fermi 3 establishes and implements provisions to assure that computer software used in applications affecting safety is prepared, documented, verified and tested, and used such that the expected output is obtained and configuration control maintained. To this end, Fermi 3 commits to compliance with the requirements of NQA-1-1994, Supplement 11S-2 and Subpart 2.7 to establish the appropriate provisions.

## SECTION 12 CONTROL OF MEASURING AND TEST EQUIPMENT

Fermi 3 has established the necessary measures and governing procedures to control the calibration, maintenance, and use of measuring and test equipment (M&TE) that provides information important to safe plant operation. The provisions of such procedures cover equipment such as indicating and actuating instruments and gages, tools, reference and transfer standards, and nondestructive examination equipment. The suppliers of commercial-grade calibration services shall be controlled as described in Part II, Section 7, of this QAPD.

### 12.1 Installed Instrument and Control Devices

For the operations phase of the facilities, Fermi 3 has established and implements procedures for the calibration and adjustment of instrument and control devices installed in the facility. The calibration and adjustment of these devices is accomplished through the facility maintenance programs to ensure the facility is operated within design and technical requirements. Appropriate documentation will be maintained for these devices to indicate the control status, when the next calibration is due, and identify any limitations on use of the device.

### 12.2 NQA-1-1994 Commitment / Exceptions

In establishing provisions for control of measuring and test equipment, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 12 and Supplement 12S-1 with the following clarification and exception:

- The out of calibration conditions described in paragraph 3.2 of Supplement 12S-1 refers to when the M&TE is found out of the required accuracy limits (i.e. out of tolerance) during calibration.
- Measuring and test equipment are not required to be marked with the calibration status where it is impossible or impractical due to equipment size or configuration (such as the label will interfere with operation of the device) provided the required information is maintained in suitable documentation traceable to the device. This exception also applies to the calibration labeling requirement stated in NQA-1-1994, Subpart 2.4, Section 7.2.1 (ANSI/IEEE Std. 336-1985).

## SECTION 13 HANDLING, STORAGE, AND SHIPPING

Fermi 3 has established the necessary measures and governing procedures to control the handling, storage, packaging, shipping, cleaning, and preservation of items to prevent inadvertent damage or loss, and to minimize deterioration. These provisions include specific procedures, when required to maintain acceptable quality of the items important to the safe operations of the plant. Items are appropriately marked and labeled during packaging, shipping, handling and storage to identify, maintain, and preserve the item's integrity and indicate the need for special controls. Special controls (such as containers, shock absorbers, accelerometers, inert gas atmospheres, specific moisture content levels and temperature levels) are provided when required to maintain acceptable quality.

Special or additional handling, storage, shipping, cleaning and preservation requirements are identified and implemented as specified in procurement documents and applicable procedures. Where special requirements are specified, the items and containers (where used) are suitably marked.

Special handling tools and equipment shall be used and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment shall be inspected and tested at specified time intervals and in accordance with procedures to verify that the tools and equipment are adequately maintained.

Operators of special handling and lifting equipment shall be experienced or trained in the use of the equipment. During the operational phase, Fermi 3 establishes and implements controls over hoisting, rigging and transport activities to the extent necessary to protect the integrity of the items involved, as well as potentially affected nearby structures and components. Where required, Fermi 3 complies with applicable hoisting, rigging and transportation regulations and codes.

### 13.1 Housekeeping

Housekeeping practices are established to account for conditions or environments that could affect the quality of structures, systems and components within the plant. This includes control of cleanness of facilities and materials, fire prevention and protection, disposal of combustible material and debris, control of access to work areas, protection of equipment, radioactive contamination control and storage of solid radioactive waste. Housekeeping practices help assure that only proper materials, equipment, processes and procedures are used and that the quality of items is not degraded. Necessary procedures or work instructions, such as for electrical bus and control center cleaning, cleaning of control consoles, and radioactive decontamination are developed and used.

## 13.2 NQA-1-1994 Commitment / Exceptions

In establishing provisions for handling, storage and shipping, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 13 and Supplement 13S-1. Fermi 3 also commits, during the construction and operational phase of the plant, to compliance with the requirements of NQA-1- 1994, Subpart 2.1, Subpart 2.2, Subpart 2.3, and Subpart 3.2, Appendix 2.1, with the following clarifications and exceptions:

NQA-1-1994, Subpart 2.1

- Subpart 2.1, Section 3.1 and 3.2 establish criteria for classifying items into cleanness classes and requirements for each class. Instead of using the cleanness level system of Subpart 2.1, Fermi 3 may establish cleanness requirements on a case-by-case basis, consistent with the other provisions of Subpart 2.1. Fermi 3 establishes appropriate cleanliness controls for work on safety-related equipment to minimize introduction of foreign material and maintain system/component cleanliness throughout maintenance or modification activities, including documented verification of absence of foreign material prior to system closure.

NQA-1-1994, Subpart 2.2

- Subpart 2.2, Section 2.2 establishes criteria for classifying items into protection levels. Instead of classifying items into protection levels during the operational phase, Fermi 3 may establish controls for the packaging, shipping, handling, and storage of such items on a case-by-case basis with due regard for the item’s complexity, use, and sensitivity to damage. Prior to installation or use, the items are inspected and serviced as necessary to assure that no damage or deterioration exists which could affect their function.

- Subpart 2.2, Section 6.6, "Storage Records:" This section requires written records be prepared containing information on personnel access. As an alternative to this requirement, Fermi 3 documents establish controls for storage areas that describe those authorized to access areas and the requirements for recording access of personnel. However, these records of access are not considered quality records and will be retained in accordance with the administrative controls of the plant.

- Subpart 2.2, Section 7.1 refers to Subpart 2.15 for requirements related to handling of items. The scope of Subpart 2.15 includes hoisting, rigging and transporting of items for the nuclear power plant during construction.

NQA-1-1994, Subpart 2.3

- Subpart 2.3, Section 2.3 requires the establishment of five zone designations for housekeeping cleanliness controls. Instead of the five-level zone designation, Fermi 3 bases its control over housekeeping activities on a consideration of what is necessary and appropriate for the activity involved. The controls are implemented through procedures or instructions which, in the case of maintenance or modification work, are developed on a case-by-case basis. Factors considered in developing the procedures and instructions include cleanliness control, personnel safety, fire prevention and protection, radiation control and security. The procedures and instructions make use of standard janitorial and work practices to the extent possible.

NQA-1-1994, Subpart 3.2

- Subpart 3.2, Appendix 2.1: Only Section 3 precautions are being committed to in accordance with RG 1.37. In addition, a suitable chloride stress-cracking inhibitor should be added to the fresh water used to flush systems containing austenitic stainless steels.

## SECTION 14 INSPECTION, TEST, AND OPERATING STATUS

Fermi 3 has established the necessary measures and governing procedures to identify the inspection, test, and operating status of items and components subject to the provisions of this QAPD in order to maintain personnel and reactor safety and avoid inadvertent operation of equipment. Where necessary to preclude inadvertent bypassing of inspections or tests, or to preclude inadvertent operation, these measures require the inspection, test or operating status be verified before release, fabrication, receipt, installation, test or use. These measures also establish the necessary authorities and controls for the application and removal of status indicators or labels.

In addition, temporary design changes (temporary modifications), such as temporary bypass lines, electrical jumpers and lifted wires, and temporary trip-point settings, are controlled by procedures that include requirements for appropriate installation and removal, independent/concurrent verifications and status tracking.

The administrative procedures also describe the measures taken to control altering the sequence of required tests, inspections, and other operations. The review and approval for these actions is subject to the same control as taken during the original review and approval of tests, inspections, and other operations.

### 14.1 NQA-1-1994 Commitment

In establishing measures for control of inspection, test and operating status, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 14.

## SECTION 15 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

Fermi 3 has established the necessary measures and governing procedures to control items, including services, which do not conform to specified requirements to prevent inadvertent installation or use. Instructions require that the individual discovering a nonconformance identify, describe, and document the nonconformance in accordance with the requirements of Part II, Section 16. Controls provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations. Controls are provided to address conditional release of nonconforming items for use on an at risk basis prior to resolution and disposition of the nonconformance, including maintaining identification of the item and documenting the basis for such release. Conditional release of nonconforming items for installation requires the approval of the designated management. Nonconformances are corrected or resolved prior to depending on the item to perform its intended safety function. Nonconformances are evaluated for impact on operability of quality structures, systems, and components to assure that the final condition does not adversely affect safety, operation, or maintenance of the item or service. Nonconformances to design requirements dispositioned repair or use-as-is, shall be subject to design control measures commensurate with those applied to the original design. Nonconformance dispositions are reviewed for adequacy, analysis of quality trends, and reports provided to the designated management. Significant trends are reported to management in accordance with Fermi 3 procedures, regulatory requirements, and industry standards.

### 15.1 Interface with the Reporting Program

Fermi 3 has appropriate interfaces between the QAP for identification and control of nonconforming materials, parts, or components and the non-QA Reporting Program to satisfy the requirements of 10 CFR 52, 10 CFR 50.55 and/or 10 CFR 21 during COL design and construction and 10 CFR 21 during operations.

### 15.2 NQA-1-1994 Commitment

In establishing measures for nonconforming materials, parts, or components, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 15, and Supplement 15S-1.

## SECTION 16 CORRECTIVE ACTION

Fermi 3 has established the necessary measures and governing procedures to promptly identify, control, document, classify and correct conditions adverse to quality. Fermi 3 procedures assure that corrective actions are documented and initiated following the determination of conditions adverse to quality in accordance with regulatory requirements and applicable quality standards. Fermi 3 procedures require personnel to identify known conditions adverse to quality. When complex issues arise where it cannot be readily determined if a condition adverse to quality exists, Fermi 3 documents establish the requirements for documentation and timely evaluation of the issue. Reports of conditions adverse to quality are analyzed to identify trends. Significant conditions adverse to quality and significant adverse trends are documented and reported to responsible management. In the case of a significant condition adverse to quality, the cause is determined and actions to preclude recurrence are taken.

In the case of suppliers working on safety-related activities, or other similar situations, Fermi 3 may delegate specific responsibilities for corrective actions but Fermi 3 maintains responsibility for the effectiveness of corrective action measures.

### 16.1 Interface with the Reporting Program

Fermi 3 has appropriate interfaces between the QAP for corrective actions and the non-QA Reporting Program to satisfy the requirements of 10 CFR 52, 10 CFR 50.55 and/or 10 CFR Part 21 during COL design and construction, and 10 CFR 21 during operations.

### 16.2 NQA-1-1994 Commitment

In establishing provisions for corrective action, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 16.

## SECTION 17 QUALITY ASSURANCE RECORDS

Fermi 3 has the necessary measures and governing procedures to ensure that sufficient records of items and activities affecting quality are developed, reviewed, approved, issued, used, and revised to reflect completed work. The provisions of such procedures establish the scope of the records retention program for Fermi 3 and include requirements for records administration, including receipt, preservation, retention, storage, safekeeping, retrieval, access controls, user privileges, and final disposition.

### 17.1 Record Retention

Measures are established that ensure that sufficient records of completed items and activities affecting quality are appropriately stored. Records of activities for design, engineering, procurement, manufacturing, construction, inspection and test, installation, pre-operation, startup, operations, maintenance, modification, decommissioning, and audits and their retention times are defined in appropriate procedures. The records and retention times are based on Regulatory Position C.2 and Table 1, of Regulatory Guide 1.28, Revision 3 for design, construction, and initial start-up. Retention times for operations phase records are based on construction records that are similar in nature. In all cases where state, local, or other agencies have more restrictive requirements for record retention, those requirements will be met.

### 17.2 Electronic Records

When using optical disks for electronic records storage and retrieval systems, Fermi 3 complies with the NRC guidance in Generic Letter 88-18, “Plant Record Storage on Optical Disks.” Fermi 3 will manage the storage of QA Records in electronic media consistent with the intent of RIS 2000-18 and associated NIRMA Guidelines TG 11-1998, TG15-1998, TG16-1998, and TG21-1998.

### 17.3 NQA-1-1994 Commitment / Exceptions

In establishing provisions for records, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 17 and Supplement 17S-1, with the following clarifications and exceptions:

- NQA-1-1994, Supplement 17S-1
  - Supplement 17S-1, section 4.2(b) requires records to be firmly attached in binders or placed in folders or envelopes for storage in steel file cabinets or on shelving in containers. For hard-copy records maintained by Fermi 3, the records are suitably stored in steel file cabinets or on shelving in containers, except that methods other than binders, folders or envelopes may be used to organize the records for storage.

## SECTION 18 AUDITS

Fermi 3 has established the necessary measures and governing procedures to implement audits to verify that activities covered by this QAPD are performed in conformance with the requirements established. The audit programs are themselves reviewed for effectiveness as a part of the overall audit process.

### 18.1 Performance of Audits

Internal audits of selected aspects of licensing, design, construction phase and operating activities are performed with a frequency commensurate with safety significance and in a manner which assures that audits of safety-related activities are completed. During the early portions of Fermi 3 COL activities, audits will focus on areas including, but not limited to, site investigation, procurement, and corrective action. Functional areas of an organization's QA program for auditing include, at a minimum, verification of compliance and effectiveness of implementation of internal rules, procedures (e.g., operating, design, procurement, maintenance, modification, refueling, surveillance, test, security, radiation control procedures, and the emergency plan), Technical Specifications, regulations and license conditions, programs for training, retraining, qualification and performance of operating staff, corrective actions, and observation of performance of operating, refueling, maintenance and modification activities, including associated record keeping.

The audits are scheduled on a formal preplanned audit schedule. The audit system is reviewed periodically and revised as necessary to assure coverage commensurate with current and planned activities. Additional audits may be performed as deemed necessary by management. The scope of the audit is determined by the quality status and safety importance of the activities being performed. These audits are conducted by trained personnel not having direct responsibilities in the area being audited and in accordance with preplanned and approved audit plans or checklists, under the direction of a qualified lead auditor and the cognizance of the Director Quality Management or functional QA manager as applicable.

Fermi 3 is responsible for conducting periodic internal and external audits. Internal audits are conducted to determine the adequacy of programs and procedures (by representative sampling), and to determine if they are meaningful and comply with the overall QAPD. External audits determine the adequacy of supplier and contractor quality assurance program.

The results of each audit are reported in writing to the responsible executive, or designee, as appropriate. Additional internal distribution is made to other concerned management levels in accordance with approved procedures.

Management responds to all audit findings and initiates corrective action where indicated. Where corrective action measures are indicated, documented follow-up of applicable areas

through inspections, review, re-audits, or other appropriate means is conducted to verify implementation of assigned corrective action.

Audits of suppliers of safety-related components and/or services are conducted as described in Section 7.1.

### 18.2 Internal Audits

Internal audits of organization and facility activities, conducted prior to placing the facility in operation, should be performed in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area at least once each year or at least once during the life of the activity, whichever is shorter.

Internal audits of activities, conducted after placing the facility in operation, should be performed in such a manner as to assure that an audit of all applicable QA program elements is completed for each functional area within a period of two years.

Internal audit frequencies of well established activities, conducted after placing the facility in operation, may be extended one year at a time beyond the above two-year interval based on the results of an annual evaluation of the applicable functional area and objective evidence that the functional area activities are being satisfactorily accomplished. The evaluation should include a detailed performance analysis of the functional area based upon applicable internal and external source data and due consideration of the impact of any functional area changes in responsibility, resources or management. However, the internal audit frequency interval should not exceed a maximum of four years. If an adverse trend is identified in the applicable functional area, the extension of the internal audit frequency interval should be rescinded and an audit scheduled as soon as practicable.

During the operations phase audits are performed at a frequency commensurate with the safety significance of the activities and in such a manner to assure audits of all applicable QA program elements are completed within a period of two years. These audits will include, as a minimum, activities in the following areas:

(1) The conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions including administrative controls

(2) The performance, training, and qualifications of the facility staff

(3) The performance of activities required by the QAPD to meet the criteria of 10 CFR 50, Appendix B

(4) The Fire Protection Program and implementing procedures. A fire protection equipment and program implementation inspection and audit utilizing either a qualified offsite licensed fire protection engineer or an outside qualified fire protection consultant.

(5) Other activities and documents considered appropriate by the CNO

Audits may also be used to meet the periodic review requirements of the code for the Security, Emergency Preparedness, and Radiological Protection programs within the provisions of the applicable code.

Internal audits include verification of compliance and effectiveness of the administrative controls established for implementing the requirements of this QAPD; regulations and license provisions; provisions for training, retraining, qualification, and performance of personnel performing activities covered by this QAPD; corrective actions taken following abnormal occurrences; and, observation of the performance of construction, fabrication, operating, refueling, maintenance and modification activities including associated record keeping.

### 18.3 NQA-1-1994 Commitment

In establishing the independent audit program, Fermi 3 commits to compliance with NQA-1-1994, Basic Requirement 18 and Supplement 18S-1.

# PART III. NONSAFETY-RELATED SSC QUALITY CONTROL

## SECTION 1 NONSAFETY RELATED SSCs - SIGNIFICANT CONTRIBUTORS TO PLANT SAFETY

Specific program controls are applied to non-safety related SSCs, for which 10 CFR 50, Appendix B is not applicable, that are significant contributors to plant safety. The specific program controls consistent with applicable sections of the QAPD are applied to those items in a selected manner, targeted at those characteristics or critical attributes that render the SSC a significant contributor to plant safety.

The following clarify the applicability of the QA Program to the nonsafety-related SSCs and related activities, including the identification of exceptions to the QA Program described in Part II, Sections 1 through 18 taken for nonsafety-related SSCs.

### 1.1 Organization

The verification activities described in this part may be performed by the Fermi 3 line organization, the QA organization described in Part II is not required to perform these functions.

### 1.2 QA Program

Fermi 3 QA requirements for nonsafety-related SSCs are contained in this QAPD and appropriate procedures. Suppliers of these SSCs or related services describe the quality controls applied in appropriate procedures. A new or separate QA program is not required.

### 1.3 Design Control

Fermi 3 shall establish design control measures to ensure that the contractually established design requirements are included in the design. These measures ensure that applicable design inputs are included or correctly translated into the design documents, and deviations from those requirements are controlled. Design verification is provided through the normal supervisory review of the designer's work.

### 1.4 Procurement Document Control

Procurement documents for items and services obtained by or for Fermi 3 shall include or reference documents describing applicable design bases, design requirements, and other requirements necessary to ensure component performance. The procurement documents are controlled to address deviations from the specified requirements.

### 1.5 Instructions, Procedures, and Drawings

Fermi 3 shall provide documents such as, but not limited to, written instructions, plant procedures, drawings, vendor technical manuals, and special instructions in work orders, to

direct the performance of activities affecting quality. The method of instruction employed shall provide an appropriate degree of guidance to the personnel performing the activity to achieve acceptable functional performance of the SSC.

### 1.6 Document Control

Fermi 3 shall establish controls for the issuance and change of documents that specify quality requirements or prescribe activities affecting quality to ensure that correct documents are used. These controls include review and approval of documents, identification of the appropriate revision for use, and measures to preclude the use of superseded or obsolete documents.

### 1.7 Control of Purchased Items and Services

Fermi 3 shall establish measures, such as inspection of items or documents upon receipt or acceptance testing, to ensure that all purchased items and services conform to appropriate procurement documents.

### 1.8 Identification and Control of Purchased Items

Fermi 3 shall establish measures where necessary, to identify purchased items and preserve their functional performance capability. Storage controls take into account appropriate environmental, maintenance, or shelf life restrictions for the items.

### 1.9 Control of Special Processes

Fermi 3 shall establish process and procedure controls for special processes, including welding, heat treating, and nondestructive testing. These controls are based on applicable codes, standards, specifications, criteria, or other special requirements for the special process.

### 1.10 Inspection

Fermi 3 shall establish documented instructions to ensure necessary inspections are performed to verify conformance of an item or activity to specified requirements or to verify that activities are satisfactorily accomplished. These inspections may be performed by knowledgeable personnel in the line organization. Knowledgeable personnel are from the same discipline and have experience related to the work being inspected.

### 1.11 Test Control

Fermi 3 shall establish measures to identify required testing that demonstrates that equipment conforms to design requirements. These tests are performed in accordance with test instructions or procedures. The test results are recorded, and authorized individuals evaluate the results to ensure that test requirements are met.

### 1.12 Control of Measuring and Test Equipment (M&TE)

Fermi 3 shall establish measures to control M&TE use, and calibration and adjustment at specific intervals or prior to use

### 1.13 Handling, Storage, and Shipping

Fermi 3 shall establish measures to control the handling, storage, cleaning, packaging, shipping, and preservation of items to prevent damage or loss and to minimize deterioration. These measures include appropriate marking or labels, and identification of any special storage or handling requirements.

### 1.14 Inspection, Test, and Operating Status

Fermi 3 shall establish measures to identify items that have satisfactorily passed required tests and inspections and to indicate the status of inspection, test, and operability as appropriate.

### 1.15 Control of Nonconforming Items

Fermi 3 shall establish measures to identify and control items that do not conform to specified requirements to prevent their inadvertent installation or use.

### 1.16 Corrective Action

Fermi 3 shall establish measures to ensure that failures, malfunctions, deficiencies, deviations, defective components, and nonconformances are properly identified, reported, and corrected.

### 1.17 Records

Fermi 3 shall establish measures to ensure records are prepared and maintained to furnish evidence that the above requirements for design, procurement, document control, inspection, and test activities have been met.

### 1.18 Audits

Fermi 3 shall establish measures for line management to periodically review and document the adequacy of the process and take any necessary corrective action. Audits independent of line management are not required. Line management is responsible for determining whether reviews conducted by line management or audits conducted by any organization independent of line management are appropriate. If performed, audits are conducted and documented to verify compliance with design and procurement documents, instructions, procedures, drawings, and inspection and test activities. Where the measures of this part (Part III) are implemented by the same programs, processes, or procedures as the comparable activities of Part II, the audits performed under the provisions of Part II may be used to satisfy the review requirements of this Section (Part III, Section 1.18).

## SECTION 2 NONSAFETY-RELATED SSCS CREDITED FOR REGULATORY EVENTS

The following criteria applies to fire protection (10 CFR 50.48), anticipated transients without scram (ATWS) (10 CFR 50.62), and the station blackout (SBO) (10 CFR 50.63) SSCs that are not safety related.

Fermi 3 shall implement quality requirements to the fire protection system in accordance with Regulatory Position 1.7, “Quality Assurance,” in Regulatory Guide 1.189, “Fire Protection for Operating Nuclear Power Plants” As identified in FSAR Chapter 1.

Fermi 3 shall implement the quality requirements to ATWS equipment in accordance with Part III Section 1.

Fermi 3 shall implement quality requirements to SBO equipment in accordance with Part III Section 1.

# PART IV. REGULATORY COMMITMENTS

**NRC Regulatory Guides and Quality Assurance Standards**

This section identifies the NRC Regulatory Guides (RG) and the other quality assurance standards which have been selected to supplement and support the Fermi 3 QAPD. Fermi 3 complies with these standards to the extent described or referenced. Commitment to a particular Regulatory Guide or other QA standard does not constitute a commitment to the Regulatory Guides or QA standards that may be referenced therein.

**Regulatory Guides**:

**Regulatory Guide 1.8,** Rev. 3, May 2000, *Qualification and Training of Personnel for Nuclear Power Plants*

Regulatory Guide 1.8 provides guidance that is acceptable to the NRC staff regarding qualifications and training for nuclear power plant personnel.

Fermi 3 conforms to the applicable regulatory position guidance provided in this regulatory guide as described below:

- This regulatory guide endorses ANSI/ANS-3.1-1993, “Selection, Qualification, and Training of Personnel for Nuclear Power Plants,” with certain additions and exceptions that are listed in the Regulatory Position of this guide. Some of the exceptions are endorsements of certain sections of two other standards, ANSI N18.7-1976 (ANS-3.2), “Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants,” and ANSI/ASME NQA-1-1983, “Quality Assurance Program Requirements for Nuclear Power Plants.” Rather than to commit to those Standards in the QAPD, appropriate requirements have been directly incorporated into the text if not found in NQA-1-1994. These requirements are consistent with the identified acceptance criteria in SRP Section 17.5. NEI 06-13A as incorporated in FSAR Chapter 13 provides acceptable alternatives for cold licensed operators selection, training and qualification requirements.
- Regulatory positions C.1.1 through C.1.4 and conformance with ANSI/ANS-3.1-1993 are addressed in Chapter 13 of the FSAR.
- Regulatory position C.2.1 addresses alternatives and substitutions for education and experience for quality assurance personnel. Those alternatives and substitutions are reflected in Part II, Section 2.6 of the QAPD.
- Regulatory Positions C.2.2 through C.2.10 are addressed in Chapter 13 of the FSAR.
- Regulatory Position C.2.11 addresses ANSI/ANS-3.1-1993 Section 4.5.5, Quality Control. The QAPD identifies an alternative for this regulatory position in Part II,

Section 2.7. As documented in SER ML070510300, the qualification criteria in the QAPD is acceptable and consistent with SRP Section 17.5, paragraph II.T.

- Regulatory Position C.2.12 addresses ANSI/ANS-3.1-1993 Section 4.5.6, Quality Assurance. The QAPD identifies an alternative for this regulatory position in Part II, Section 2.7. As documented in SER ML070510300, the qualification criteria in the QAPD is acceptable and consistent with SRP Section 17.5, paragraph II.S.
- Regulatory Position C.2.13 is addressed in Chapter 13 of the FSAR.
- Regulatory Positions C.2.14 and C.2.15 address ANSI/ANS-3.1-1993 Sections 4.7.1 and 4.7.2 relative to Independent Review qualifications. The QAPD identifies an alternative for this regulatory position in Part V, Section 2.2. As documented in SER ML070510300, the QAPD follows SRP Section 17.5, paragraph II.W for establishing an independent review program for activities occurring during the operational phase.

**Regulatory Guide 1.26,** Revision 4, March 2007, *Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants*

Regulatory Guide 1.26 defines classification of systems and components.

Fermi 3 conforms for site specific SSCs which are not classified by the ESBWR.

**Regulatory Guide 1.28,** Revision 3, August 1985, *Quality Assurance Program Requirements (Design and Construction)*

Regulatory Guide 1.28 describes a method acceptable to the NRC staff for complying with the provisions of Appendix B with regard to establishing and implementing the requisite quality assurance program for the design and construction of nuclear power plants.

Fermi 3 conforms to the applicable regulatory position guidance provided in this regulatory guide as described below:

- This regulatory guide endorses the basic and supplementary requirements in ANSI/ASME NQA-1-1983, "Quality Assurance Program Requirements for Nuclear Power Plants" and the ANSI/ ASME NQA-1 a-1983 Addenda along with the regulatory positions discussed below for the establishment and execution of quality assurance programs during the design and construction phases of nuclear power plants. The QAPD provides adequate guidance for establishing a quality assurance program that complies with Appendix B to 10 CFR Part 50 by using ASME NQA standard NQA-1-1994, as supplemented by additional regulatory guidance and industry guidance. Reference approval for Exelon submittal to use NQA-1-1994 as documented in ADAMS Accession number ML023440300.

- Regulatory Position C.1 addresses the qualification of inspection and test personnel. The QAPD identifies an alternative for this regulatory position in Part II, Section 2.7. As documented in SER ML070510300, the qualification criteria in the QAPD is acceptable and consistent with SRP Section 17.5, paragraph II.T. Note that SRP Section 17.5 paragraph II.T.5 and 6 represent alternatives to this regulatory position that were approved in SER ML050700416.
- Regulatory Position C.2 is addressed through Part II, Section 17.1 of the QAPD.
- Regulatory Position C.3 addresses scheduling of audits. In establishing the independent audit program, Fermi 3 commits to comply with the quality standards described in NQA-1-1994, Basic Requirement 18 and Supplement 18S-1. It follows SRP Section 17.5, paragraph II.R, for establishing the necessary measures to implement audits to verify that activities covered by the QAPD are performed in conformance with the requirements established. The scheduling of Internal Audits is addressed in QAPD Part II Section 18.2 and is consistent with position C.3.1 for the phase prior to placing the facility into operation. External Audits are addressed in QAPD Part II Section 7.1. The requirements are consistent with SRP paragraph II.R.11 and II.R. 12. These requirements address regulatory position C.3.2.

**Regulatory Guide 1.29,** Revision 4, March 2007, *Seismic Design Classification*

Regulatory Guide 1.29 defines systems required to withstand a safe shutdown earthquake (SSE).

Fermi 3 conforms for site specific SSCs which are not classified by the ESBWR.

Regulatory Position C.4 addresses the application of the QA requirements of Appendix B to 10 CFR Part 50 to all activities affecting the safety-related functions of those portions of the SSCs that are covered by Regulatory Positions 2 and 3. Those in Regulatory Position 1 are considered safety-related. This QAPD addresses the QA program requirements applied to safety-related activities.

**Regulatory Guide 1.33,** Revision 2, February 1978, *Quality Assurance Program Requirements (Operations)*

Regulatory Guide 1.33 describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to overall quality assurance program requirements for the operation phase of nuclear power plants. Instead of conforming to RG 1.33, Fermi 3 has confirmed that the administrative elements are satisfied within the QAPD.

**Regulatory Guide 1.37**, Revision 1, March 2007 -*Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants*

Regulatory Guide 1.37 provides guidance on specifying water quality and precautions related to the use of alkaline cleaning solutions and chelating agents.

Fermi 3 conforms to the applicable regulatory position guidance provided in this regulatory guide as described below:

- This Regulatory Guide finds that the provisions and recommendations included in ASME NQA-1-1994, Part II, Subpart 2.1 are generally acceptable for onsite cleaning of materials and components, cleanness control, and preoperational cleaning and layup of water-cooled nuclear power plant fluid systems with three regulatory positions. QAPD Part II, Section 13.2 addresses the commitment to NQA-1-1994, Part II, Subpart 2.1
- Regulatory Position C. 1 identifies that the applicability and acceptability of any of the codes, standards, and specifications referenced in the text are or will be addressed through other regulations or NRC guidance. Chapter 1 of the FSAR addresses the codes, standards, and other documents that are used in the COL and any exceptions or alternatives to those documents.
- Regulatory Positions C.2 requires that "the water quality for final flushes of fluid systems and associated components should be at least equivalent to the quality of the operating system water". QAPD Part II Section 13.2 addresses this commitment.
- Regulatory Position C.3 recommends following Sections 8.2.2 and 8.2.3 of ASME NQA-1-1994, Part II, Subpart 2.1 precautions related to the use of alkaline cleaning solutions and chelating agents, respectively, by the use of the guidance in nonmandatory Appendix 2.1 to ASME NQA-l-1994, Part III, Subpart 3.2. In addition, this position recommends that a suitable chloride stress-cracking inhibitor be added to the fresh water used to flush systems containing austenitic stainless steels. QAPD Part II, Section 13.2 addresses the commitment to NQA-l-1994, Part II, Subpart 3.2.

**Regulatory Guide 1.54**, Revision 1, July 2000 – *Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants*

Regulatory Guide 1.54 provides guidance for the application of protective coatings within nuclear power plants to protect surfaces from corrosion, contamination from radionuclides, and for wear protection.

Fermi 3 conforms with Regulatory Guide 1.54, Revision 1.

**Standards:**

**ASME NQA-1-1994 Edition** -*Quality Assurance Requirements for Nuclear Facility Applications*

Fermi 3 commits to NQA-1-1994, Parts I, II, and III, as described in Parts II and V of this document.

**Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guides (TGs)**

Fermi 3 commits to NIRMA TGs as described in Part II, Section 17 of this document.

# PART V. ADDITIONAL QUALITY ASSURANCE AND ADMINISTRATIVE CONTROLS FOR FERMI 3 OPERATIONAL PHASE

Fermi 3 includes the requirements of Part V that follow when establishing the necessary measures and governing procedures for the operations phase of the plant.

## SECTION 1 DEFINITIONS

Fermi 3 uses the definitions of terms as provided in Section 4 of the Introduction of NQA-1-1994 in interpreting the requirements of NQA-1-1994 and the other standards to which the QAPD commits. In addition, definitions are provided for the following terms not covered in NQA-1-1994:

**administrative controls:** rules, orders, instructions, procedures, policies, practices and designations of authority and responsibility

**experiments:** performance of plant operations carried out under controlled conditions in order to establish characteristics or values not previously known

**independent review:** review completed by personnel not having direct responsibility for the work function under review regardless of whether they operate as a part of an organizational unit or as individual staff members (see review)

**nuclear power plant:** any plant using a nuclear reactor to produce electric power, process steam or space heating

**on-site operating organization:** on-site personnel concerned with the operation, maintenance and certain technical services

**operating activities:** work functions associated with normal operation and maintenance of the plant, and technical services routinely assigned to the on-site operating organization

**operational phase:** that period of time during which the principal activity is associated with normal operation of the plant. This phase of plant life is considered to begin formally with commencement of initial fuel loading, and ends with plant decommissioning

**review:** a deliberately critical examination, including observation of plant operation, evaluation of assessment results, procedures, certain contemplated actions, and after-the-fact investigations of abnormal conditions

**supervision:** direction of personnel activities or monitoring of plant functions by an individual responsible and accountable for the activities they direct or monitor

**surveillance testing:** periodic testing to verify that safety related structures, systems, and components continue to function or are in a state of readiness to perform their functions

**system:** an integral part of nuclear power plant comprising components which may be operated or used as a separate entity to perform a specific function

## SECTION 2 REVIEW OF ACTIVITIES AFFECTING SAFE PLANT OPERATION

### 2.1 Onsite Operating Organization Review

The Fermi 3 onsite organization employs reviews, both periodic and as situations demand, to evaluate plant operations and plan future activities. The important elements of the reviews are documented and subjects of potential concern for the independent review described below are brought to the attention of the Plant Manager. The reviews are part of the normal duties of plant supervisory personnel in order to provide timely and continuing monitoring of operating activities in order to assist the Plant Manager in keeping abreast of general plant conditions and to verify that day-to-day operations are conducted safely in accordance with the established administrative controls. The Plant Manager ensures the timely referral of the applicable matters discussed in the reviews to appropriate management and independent reviewers.

### 2.2 Independent Review

Activities occurring during the operational phase shall be independently reviewed on a periodic basis. **[START COM FSAR-17AA-001]** The independent review program shall be functional prior to initial core loading. **[END COM FSAR-17AA-001]** The independent review function performs the following:

a. Reviews proposed changes to the facility as described in the safety analysis report (SAR). The Independent Review Body (IRB) also verifies that changes do not adversely affect safety and if a technical specification change or NRC review is required.

b. Reviews proposed tests and experiments not described in the SAR prior to implementation. Verifies the determination of whether changes to proposed tests and experiments not described in the SAR require a technical specification change or license amendment.

c. Reviews proposed technical specification changes and license amendments relating to nuclear safety prior to NRC submittal and implementation, except in those cases where the change is identical to a previously approved change.

d. Reviews violations, deviations, and events that are required to be reported to the NRC. This review includes the results of investigations and recommendations resulting from such investigations to prevent or reduce the probability of recurrence of the event.

e. Reviews any matter related to nuclear safety that is requested by the Fermi 3 management or any IRB member.

f. Reviews corrective actions for significant conditions adverse to quality.

g. Reviews internal audit reports.

h. Reviews the adequacy of the internal audit program every 24 months.

Independent Review Body

A group may function as an Independent Review Body (IRB). In discharging its review responsibilities, the IRB keeps safety considerations paramount when opposed to cost or schedule considerations. One or more organizational units may collectively perform this function.

1. IRB reviews are supplemented as follows:

   a. A qualified person, independent of the preparer, reviews proposed changes in the procedures as described in the FSAR prior to implementation of the change to determine if a technical specification change or NRC approval is required.

   b. Audits of selected changes in the procedures described in the FSAR are performed to verify that procedure reviews and revision controls are effectively implemented.

   c. Competent individual(s) or group(s) other than those who performed the original design but who may be from the same organization verify that changes to the facility do not result in a loss of adequate design or safety margins.

2. The results of IRB reviews of matters involving the safe operation of the facility are periodically independently reviewed. This review is intended to support management in identifying and resolving issues potentially affecting safe plant operation. This review supplements the existing corrective action programs and audits.

   a. The review is performed by a team consisting of personnel with experience and competence in the activities being reviewed, but independent from cost and schedule considerations and from the organizations responsible for those activities.

      The IRB supervisor or chairman has a minimum six (6) years combined managerial and technical support experience. The members of the IRB should have a minimum of five years of experience in their own area of responsibility as applicable to the activities being reviewed (i.e., a minimum of five years of experience in one of the twelve areas listed below:

      (1) Nuclear power plant operations

      (2) Nuclear engineering

(3) Chemistry and radiochemistry

(4) Metallurgy

(5) Nondestructive testing

(6) Instrumentation and control

(7) Radiological safety

(8) Mechanical engineering

(9) Electrical engineering

(10) Administrative control and quality assurance practices

(11) Training

(12) Emergency plans and related procedures and equipment).

b. The review is supplemented by outside consultants or organizations as necessary to ensure the team has the requisite expertise and competence.

c. Results of the review are documented and reported to responsible management.

d. Management periodically consider issues that they determine warrant special attention, such as deficient plant programs, declining performance trends, employee concerns, or other issues related to safe plant operations and determine what issues warrant the review.

e. Management determines the scheduling and scope of review and the composition of the team performing the review.

## SECTION 3 OPERATIONAL PHASE PROCEDURES

The following is a description of the various types of procedures used by Fermi 3 to govern the design, operation, and maintenance of its nuclear generating plant. Fermi 3 follows the guidance of Appendix A to Regulatory Guide 1.33 in identifying the types of activities that should have procedures or instructions to control the activity. Each procedure shall be sufficiently detailed for a qualified individual to perform the required function without direct supervision, but need not provide a complete description of the system or plant process.

### 3.1 Format and Content

Procedure format and content may vary from one location to the other. However, procedures include the following elements as appropriate to the purpose or task to be described.

- **Title/Status**

  Each procedure is given a title descriptive of the work or subject it addresses, and includes a revision number and/or date and an approval status.

  - **Purpose/Statement of Applicability/Scope**

    The purpose for which the procedure is intended is clearly stated (if not clear from the title). The systems, structures, components, processes or conditions to which the procedure applies are also clearly described.

  - **References**

    Applicable references, including reference to appropriate Technical Specifications, are required. References are included within the body of the procedure when the sequence of steps requires other tasks to be performed (according to the reference) prior to or concurrent with a particular step.

  - **Prerequisites/Initial Conditions**

    Prerequisites/initial conditions identify those independent actions or procedures that must be accomplished and plant conditions which must exist prior to performing the procedure. A prerequisite applicable to only a specific portion of a procedure is so identified.

  - **Precautions**

    Precautions alert the user to those important measures to be used to protect equipment and personnel, including the public, or to avoid an abnormal or emergency situation during performance of the procedure. Cautionary notes applicable to specific steps are included in the main body of the procedure and are identified as such.

  - **Limitations and actions**

    Limitations on the parameters being controlled and appropriate corrective measures to return the parameter to the normal control band are specified.

  - **Main body**

    The main body of the procedure contains the step-by-step instructions in the degree of detail necessary for performing the required function or task.

  - **Acceptance criteria**

    The acceptance criteria provide the quantitative or qualitative criteria against which the success or failure (as of a test-type activity) of the step or action would be judged.

- **Checklists**

  Complex procedures utilize checklists which may be included as part of the procedure or appended to it.

## 3.2 Procedure Types

**Administrative Control Procedures**

These include administrative procedures, directives, policies, standards, and similar documents that control the programmatic aspects of facility activities. These administrative documents ensure that the requirements of regulatory and license commitments are implemented. Several levels of administrative controls are applied ranging from those affecting the entire Company to those prepared at the implementing group level. These documents establish responsibilities, interfaces, and standard methods (rules of practice) for implementing programs. In addition to the administrative controls described throughout this QAPD, instructions governing the following activities are provided:

- **Operating Orders/Procedures**

  Instructions of general and continuing applicability to the conduct of business to the plant staff are provided. Examples where these are applied include, but are not limited to, job turnover and relief, designation of confines of control room, definition of duties of operators and others, transmittal of operating data to management, filing of charts, limitations on access to certain areas and equipment, shipping and receiving instructions. Provisions are made for periodic review and updating of these documents, where appropriate.

- **Special Orders**

  Management instructions, which have short-term applicability and require dissemination, are issued to encompass special operations, housekeeping, data taking, publications and their distribution, plotting process parameters, personnel actions, or other similar matters. Provisions are made for periodic review, updating, and cancellation of these documents, where appropriate.

- **Plant Security and Visitor Control**

  Procedures or instructions are developed to supplement features and physical barriers designed to control access to the plant and, as appropriate, to vital areas within the plant. Information concerning specific design features and administrative provisions of the plant security program is confidential and thus accorded limited distribution. The security and visitor control procedures consider, for example, physical provisions, such as: fences and lighting; lock controls for doors, gates and compartments containing sensitive equipment; and provisions for traffic and access control. Administrative provisions, such as: visitor sign-in and sign-out procedures; escorts and badges for

visitors; emphasis on inspection, observation and challenging of strangers by operating crews; and a program of pre-employment screening for potential employees are also considered.

- **Temporary Procedures**

  Temporary procedures may be used to direct operations during testing, refueling, maintenance, and modifications to provide guidance in unusual situations not within the scope of the normal procedures. These procedures ensure orderly and uniform operations for short periods when the plant, a system, or a component of a system is performing in a manner not covered by existing detailed procedures or has been modified or extended in such a manner that portions of existing procedures do not apply. Temporary Procedures include designation of the period of time during which they may be used and are subject to the procedure review process as applicable.

**Engineering Procedures**

These documents provide instructions for the preparation of engineering documents, engineering analysis, and implementation of engineering programs. This includes activities such as designs; calculations; fabrication, equipment, construction, and installation specifications; drawings; analysis and topical reports; and testing plans or procedures. They include appropriate references to industry codes and standards, design inputs, and technical requirements.

**Installation Procedures**

These documents provide instructions for the installation of components generally related to new construction and certain modification activities. They include appropriate reference to industry standards, installation specifications, design drawings, and supplier and technical manuals for the performance of activities. These documents include provisions, such as hold or witness points, for conducting and recording results of required inspections or tests. These documents may include applicable inspection and test instructions subject to the requirements for test and inspection procedures below.

**System Procedures**

These documents contain instructions for energizing, filling, venting, draining, starting up, shutting down, changing modes of operation, and other instructions appropriate for operations of systems related to the safety of the plant. Actions to correct off-normal conditions are invoked following an operator observation or an annunciator alarm indicating a condition which, if not corrected, could degenerate into a condition requiring action under an emergency procedure. Separate procedures may be developed for correcting off-normal conditions for those events where system complexity may lead to operator uncertainty. Appropriate procedures will also be developed for the fire protection program.

**Start-up Procedures**

These documents contain instructions for starting the reactor from cold or hot conditions and establishing power operation. This includes documented determination that prerequisites have been met, including confirmation that necessary instruments are operable and properly set; valves are properly aligned, necessary system procedures, tests and calibrations have been completed; and required approvals have been obtained.

**Shutdown Procedures**

These documents contain guidance for operations during controlled shutdown and following reactor trips, including instructions for establishing or maintaining hot shutdown/standby or cold shutdown conditions, as applicable. The major steps involved in shutting down the plant are specified, including instructions for such actions as monitoring and controlling reactivity, load reduction and cool-down rates, sequence for activating or deactivating equipment, requirements for prompt analysis for causes of reactor trips or abnormal conditions requiring unplanned controlled shutdowns, and provisions for decay heat removal.

**Power Operation and Load Changing Procedures**

These documents contain instructions for steady-state power operation and load changing. These type documents include, as examples, provisions for use of control rods, chemical shim, coolant flow control, or any other system available for short-term or long-term control of reactivity, making deliberate load changes, responding to unanticipated load changes, and adjusting operating parameters.

**Process Monitoring Procedures**

These documents contain instructions for monitoring performance of plant systems to assure that core thermal margins and coolant quality are maintained in acceptable status at all times, that integrity of fission product barriers is maintained, and that engineered safety features and emergency equipment are in a state of readiness to keep the plant in a safe condition if needed. Maximum and minimum limits for process parameters are appropriately identified. Operating procedures address the appropriate nature and frequency of this monitoring.

**Fuel Handling Procedures**

These documents contain instructions for core alterations, accountability of fuel and partial or complete refueling operations that include, for example, continuous monitoring of neutron flux throughout core loading, periodic data recording, audible annunciation of abnormal flux increases, and evaluation of core neutron multiplication to verify safety of loading increments. Procedures are also provided for receipt and inspection of new fuel, and for fuel movements in the spent fuel storage areas. Fuel handling procedures include prerequisites to verify the status of systems required for fuel handling and movement; inspection of replacement fuel and control rods; designation of proper tools, proper conditions for spent fuel movement, proper conditions

for fuel cask loading and movement; and status of interlocks, reactor trip circuits and mode switches. These procedures provide requirements for refueling, including proper sequence, orientation and seating of fuel and components, rules for minimum operable instrumentation, actions for response to fuel damage, verification of shutdown margin, communications between the control room and the fuel handling station, independent verification of fuel and component locations, criteria for stopping fuel movements, and documentation of final fuel and component serial numbers (or other unique identifiers) and locations.

**Maintenance Procedures**

These documents contain instructions in sufficient detail to permit maintenance work to be performed correctly and safely, and include provisions, such as hold or witness points, for conducting and recording results of required inspections or tests. These documents may include applicable inspection or test instructions subject to the requirements for test and inspection procedures below. Appropriate referencing to other procedures, standards, specifications, or supplier manuals is provided. When not provided through other documents, instructions for equipment removal and return to service, and applicable radiation protection measures (such as protective clothing and radiation monitoring) will be included. Additional maintenance procedure requirements are addressed in NQA-1-1994, Subpart 2.18, Section 2.2, Procedures.

**Radiation Control Procedures**

These documents contain instructions for implementation of the radiation control program requirements necessary to meet regulatory commitments, including acquisition of data and use of equipment to perform necessary radiation surveys, measurements and evaluations for the assessment and control of radiation hazards. These procedures provide requirements for monitoring both external and internal exposures of employees, utilizing accepted techniques; routine radiation surveys of work areas; effluent and environmental monitoring in the vicinity of the plant; radiation monitoring of maintenance and special work activities, and for maintaining records demonstrating the adequacy of measures taken to control radiation exposures to employees and others.

**Calibration and Test Procedures**

These documents contain instructions for periodic calibration and testing of instrumentation and control systems, and for periodic calibration of measuring and test equipment used in activities affecting the quality of these systems. These documents provide for meeting surveillance requirements and for assuring measurement accuracy adequate to keep safety-related parameters within operational and safety limits.

**Chemical and Radiochemical Control Procedures**

These documents contain instructions for chemical and radiochemical control activities and include: the nature and frequency of sampling and analyses; instructions for maintaining coolant quality within prescribed limits; and limitations on concentrations of agents that could cause

corrosive attack, foul heat transfer surfaces, or become sources of radiation hazards due to activation. These documents also provide for the control, treatment and management of radioactive wastes, and control of radioactive calibration sources.

**Emergency Operating Procedures**

These documents contain instructions for response to potential emergencies so that a trained operator will know in advance the expected course of events that will identify an emergency and the immediate actions that are taken in response. Format and content of emergency procedures are based on NUREG and Owner's Group(s) guidance that identify potential emergency conditions and require such procedures to include, as appropriate, a title, symptoms to aid in identification of the nature of the emergency, automatic actions to be expected from protective systems, immediate operator actions for operation of controls or confirmation of automatic actions, and subsequent operator actions to return the reactor to a normal condition or provide for a safe extended shutdown period under abnormal or emergency conditions.

**Emergency Plan Implementing Procedures**

These documents contain instructions for activating the Emergency Response Organization and facilities, protective action levels, organizing emergency response actions, establishing necessary communications with local, state and federal agencies, and for periodically testing the procedures, communications and alarm systems to assure they function properly. Format and content of such procedures are such that requirements of each facility's NRC approved Emergency Plan are met.

**Test and Inspection Procedures**

These documents provide the necessary measures to assure quality is achieved and maintained for the nuclear facilities. The instructions for tests and inspections may be included within other procedures, such as installation and maintenance procedures, but will contain the objectives, acceptance criteria, prerequisites for performing the test or inspection, limiting conditions, and appropriate instructions for performing the test or inspection, as applicable. These procedures also specify any special equipment or calibrations required to conduct the test or inspection and provide for appropriate documentation and evaluation by responsible authority to assure test or inspection requirements have been satisfied. Where necessary, hold or witness points are identified within the procedures and require appropriate approval for the work to continue beyond the designated point. These procedures provide for recording the date, identification of those performing the test or inspection, as-found condition, corrective actions performed (if any), and as-left condition, as appropriate for the subject test or inspection.

## SECTION 4 CONTROL OF SYSTEMS AND EQUIPMENT IN THE OPERATIONAL PHASE

Permission to release systems and equipment for maintenance or modification is controlled by designated operating personnel and documented. Measures, such as installation of tags or locks and releasing stored energy, are used to ensure personnel and equipment safety. When entry into a closed system is required, Fermi 3 has established control measures to prevent entry of extraneous material and to assure that foreign material is removed before the system is reclosed.

Administrative procedures require the designated operating personnel to verify that the system or equipment can be released and determine the length of time it may be out of service. In making this determination, attention is given to the potentially degraded degree of protection where one subsystem of a redundant safety system is not available for service. Conditions to be considered in preparing equipment for maintenance include, for example: shutdown margin; method of emergency core cooling; establishment of a path for decay heat removal; temperature and pressure of the system; valves between work and hazardous material; venting, draining and flushing; entry into closed vessels; hazardous atmospheres; handling hazardous materials; and electrical hazards.

When systems or equipment are ready to be returned to service, designated operating personnel control placing the items in service and document its functional acceptability. Attention is given to restoration of normal conditions, such as removal of jumpers or signals used in maintenance or testing, or actions such as returning valves, breakers or switches to proper start-up or operating positions from "test" or "manual" positions. Where necessary, the equipment placed into service receives additional surveillance during the run-in period.

Independent verifications, where appropriate, are used to ensure that the necessary measures have been implemented correctly. The minimum requirements and standards for using independent verification are established in company documents.

## SECTION 5 PLANT MAINTENANCE

Fermi 3 establishes controls for the maintenance or modification of items and equipment subject to this QAPD to ensure quality at least equivalent to that specified in original design bases and requirements, such that safety-related structures, systems and components are maintained in a manner that assures their ability to perform their intended safety function(s). Maintenance activities (both corrective and preventive) are scheduled and planned so as not to unnecessarily compromise the safety of the plant.

In establishing controls for plant maintenance, Fermi 3 commits to compliance with NQA-1-1994, Subpart 2.18, with the following clarifications:

- Where Subpart 2.18 refers to the requirements of ANS-3.2, it shall be interpreted to mean the applicable standards and requirements established within the Fermi 3 QAPD
- Section 2.3 requires cleanliness during maintenance to be in accordance with Subpart 2.1. The commitment to Subpart 2.1 is described in the Fermi 3 QAPD, Part II, Section 13.2.