

March 04, 2001

5928-01-20060

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Dear Sir or Madam:

**SUBJECT: THREE MILE ISLAND UNIT 1 (TMI-1)
OPERATING LICENSE NO. DPR-50
DOCKET NO. 50-289
SUBMITTAL OF REVISION 20 OF THE OPERATIONAL QUALITY ASSURANCE PLAN**

In accordance with 10 CFR 50.54(a)(3), enclosed is Revision 20 of the TMI-1 Operational Quality Assurance Plan (OQA Plan). The previous submittal was revision 11, which was transmitted via GPU Nuclear letter dated September 16, 1999. Revisions 12 through and including 20 have been evaluated according to the requirements of 10 CFR 50.54(a)(3) and have been determined to not reduce the commitments contained in the OQA Plan. The "Document History" contained on pages 8.0 and 9.0 provide a description of the changes.

Should you have any questions or require additional information, please contact Adam Miller of TMI Regulatory Assurance at (717) 948-8128.

Sincerely,



George H. Gellrich
Plant Manager

GHG/awm

cc: Administrator, Region I
TMI-1 Project Manager
TMI Senior Resident Inspector
File 01029

Q004

AmerGen

Operational Quality Assurance Plan

Number

1000-PLN-7200.01

Title

Operational Quality Assurance Plan

Revision No.

20

Applicability/Scope

Usage Level

Effective Date

This Plan Applies to TMI - Unit 1

3

2/28/01

This document is within QA plan scope
Safety Reviews Required☒

Yes

☐ No☒

Yes

☐ No

List of Effective Pages

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1.0	20	21.0	20	41.0	20	61.0	20	81.0	20
2.0	20	22.0	20	42.0	20	62.0	20	82.0	20
3.0	20	23.0	20	43.0	20	63.0	20	83.0	20
4.0	20	24.0	20	44.0	20	64.0	20	84.0	20
5.0	20	25.0	20	45.0	20	65.0	20	85.0	20
6.0	20	26.0	20	46.0	20	66.0	20	86.0	20
7.0	20	27.0	20	47.0	20	67.0	20		
8.0	20	28.0	20	48.0	20	68.0	20		
9.0	20	29.0	20	49.0	20	69.0	20		
10.0	20	30.0	20	50.0	20	70.0	20		
11.0	20	31.0	20	51.0	20	71.0	20		
12.0	20	32.0	20	52.0	20	72.0	20		
13.0	20	33.0	20	53.0	20	73.0	20		
14.0	20	34.0	20	54.0	20	74.0	20		
15.0	20	35.0	20	55.0	20	75.0	20		
16.0	20	36.0	20	56.0	20	76.0	20		
17.0	20	37.0	20	57.0	20	77.0	20		
18.0	20	38.0	20	58.0	20	78.0	20		
19.0	20	39.0	20	59.0	20	79.0	20		
20.0	20	40.0	20	60.0	20	80.0	20		

	Signature		Date
Procedure Owner	<i>D. L. Hosking for P. G. Chabot</i>	Director, Mid-Atlantic Regional Operating Group Nuclear Oversight	2/16/01
Approver	<i>E. Anthony Broccolo for O. D. Kingsley</i>	Chief Nuclear Officer	2/21/01

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REVISION	EFFECTIVE DATE	DESCRIPTION OF CHANGE	PREPARED BY: REVIEWED BY: APPROVED BY:
4	07/18/90	Section 1.0 was revised as a result of Corporate and QA Department reorganizations and; to reduce the level of organizational detail; the activities of "Access Authorization" and "fitness-for-duty" were identified as activities within the scope of the Plan in Section 2.2.2; Sections 6.5, 6.5.2.1, 6.5.2.3, and 6.11.2 were changed to clarify the post-maintenance and installation testing responsibilities of the Site Services Division; editorial changes were made to Sections 6.6 and 7.2.1; Section 6.11.2.1(a) has been revised to indicate that the Oyster Creek and TMI Divisions are responsible for the technical as well as the administrative procedures associated with maintenance; the commitment to Regulatory Guide 1.8 has been modified to establish experience requirements needed for eligibility for the NRC licensed reactor and senior reactor operator positions; all affected sections have been revised to incorporate the revised Divisional titles to be consistent with Section 1.0; from Section 7.0 text was advanced one page due to changes in Section 6.0.	R. S. Markowski J. P. Heil P. R. Clark
5	01/21/91	The purpose of this revision was to further clarify the text associated with Reg. Guide 1.8 that was inserted by Rev. 4 (i.e. item 2 in Appendix C, Part 2). The commitment relies on the text of 10CFR55.	M. Heller J. P. Heil P. R. Clark
6		The option of GPU Nuclear to design, fabricate, assemble, test and modify the packaging used for the transport of radioactive waste which exceeds the limits specified by 10CFR71.10 was deleted (Section 7.2.1.f and g). The phrase "radioactive waste" and term "radwaste" were replaced with the phrase "radioactive waste or material", where it makes editorial sense to do so, throughout the text of 7.0 – 7.1.3, 7.2.1.h, 7.2.3 and 7.3.1.a were editorially changed to be consistent with the new phrase. The phrase ". of packaging to be utilized to ship.." has been inserted in 7.1.2.	R. S. Markowski G. Boyle P. R. Clark
7	4/30/94	The purpose of this revision is to reflect the changes of a GPU Nuclear reorganization of Assessment/Oversight functions. Some editorial changes of wording and correction of typographical errors were also included. The major organizational changes consist of combining QA Audits and Monitoring with Independent Safety Review to create a new Nuclear Safety Assessment organization. Procurement QA is combined with the Procurement Engineering	J. L. Sullivan J. P. Heil P. R. Clark

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8	10/16/95	<p>function and is part of the Engineering organizations. Quality Control is being renamed Quality Verification and reassigned to the Maintenance organizations. NDE/ISI Services is being reassigned to the Engineering organization.</p> <p>Appendix B "Nuclear Safety Assessment Department Document Review Requirements" was changed to clarify the wording and more accurately describe the document review program implemented.</p> <p>This revision was processed as a reduction in commitment per 10CFR50.54(a). The purpose of this revision is to relocate the frequencies of audits from OC and TMI Technical Specification Section 6 to the OQA Plan. In addition, the interval between audits is being lengthened for audits whose frequency is not specified by regulation. For audits whose frequencies are specified by 10CFR, the applicable reference replaces an explicit audit frequency. A Tech Spec change request has been submitted and will be approved prior to this revision taking effect.</p>	
9	01/31/97	<p>The purposes of this revision are to reflect organizational changes, make clarifications, consolidate responsibilities and correct minor editorial errors. This revision is being processed as not a Reduction in Commitment per 10CFR50.54(a). Specific changes include:</p> <ul style="list-style-type: none"> * Reference to 10CFR72 Subpart G was added to scope for the interim fuel storage facility at Oyster Creek. * Current organizational structure and titles have been introduced. Refer to safety evaluations SE 945100-088 and SE 945100-89. Technical Functions Division was named Engineering Division. Services Division's functions have been distributed between Human and Administrative Services Division and Nuclear Safety and Technical Services Division. Corporate Counsel and Secretary's position was deleted and its administrative functions were transferred to GPU Service Corporation. However, its QA Plan related duties of records management have been transferred to Human and Administrative Services Division. Plant Engineering Departments were deleted as organizational units. Most of their 	<p>J. J. Curry S. N. Tiwari T. G. Broughton</p>

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		<p>functions were assigned to the newly named Engineering Division. Their receipt inspection function was assigned to the Financial and Planning Services Division.</p> <ul style="list-style-type: none"> * Format of the document was changed. In the previous revision, the responsibilities were included in specific sections. In this revision, the responsibilities have been relocated to Section 1, consolidated to avoid redundant verblage and streamlined to represent the current organization. Responsibilities were deleted from the remainder of the document. * Section 9 – Control of Training has been deleted and is addressed in Section 6.13 to improve the description of work processes at GPU Nuclear. * Section 10 has been renumbered to be Section 9 and has broader use of the term assessment that includes audits, monitoring, survey, document review, and special assessments. * Description of how "self assessment" activities may be included in the QA Program was added. (Section 2). * Provides for use of additional approved corrective action mechanisms for audits (Section 9). * Some rewording of text throughout the document have been done to remove redundancy and to improve the description of work processes at GPU Nuclear. 	
10	7/31/97	<p>The purpose of this revision is to reflect changes in the Nuclear Safety Assurance Process which impact the plan organizationally. The changes combine Licensing and Regulatory Affairs with Nuclear Safety Assessment. Signatures for concurrence and approval obtained from those directly affected only.</p>	<p>R. E. Tilton C. Faust T. G. Broughton</p>

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11	3/6/98	The purpose of this revision is to reflect organizational changes being implemented by GPUN. The Organizational change results in the Director of NSA reporting to the President versus the Director of Nuclear Safety and Technical Services.	R. E. Tilton D. P. Kelly T. G. Broughton
12	12/20/99	Administrative changes made to reflect the change in owner/operator from GPU Nuclear to AmerGen, and to incorporate organizational changes necessitated by the change in ownership, and the replacement of GPU Nuclear with PECO Nuclear in providing certain corporate support functions. Deleted references to GPU Nuclear, added references to AmerGen; deleted references to TMI Unit 2, Oyster Creek Nuclear Generating Station (OCNGS), and the OCNGS Independent Spent Fuel Storage Facility.	J. J. McElwain R. F. Munz G. R. Rainey
13	1/11/00	Deleted position of Director- Operations and Maintenance. Plant Manager and Director-Work Management will now report directly to the Vice President TMI - Unit 1. An additional responsibility is added to the Vice President - TMI. The Vice President - TMI may, at any time, delegate his responsibilities in writing to the Plant Manager, and shall delegate the succession of his responsibilities in writing during his absence. A clarification is added to more clearly document the reporting and management relationship between the Vice President - Station Support, and the Director - Licensing. Repagination errors that occurred in Revision 12 of the QQAP are corrected in Revision 13. Added line of text omitted from Section 1.2 in Revision 12 as documented in TMI CAP T1999-1271. Text column alignment in Appendix C, Part 1 and E were corrected. Administrative changes were made throughout the QQAP. The majority of the changes are grammatical in nature. Also inserted effective date for Rev.10 on Document History page..	D. H. Weimer R. F. Munz G. R. Rainey
14	2/16/00	Added position of Senior Vice President - Nuclear Operations to Section 1.2, and made appropriate reporting relationship changes.	D. H. Weimer R. F. Munz G. R. Rainey
15	3/31/00	Transfers the responsibility for staffing and directing the Shift Technical Advisors from the Director Site Engineering to the Plant Manager.	D. H. Weimer R. F. Munz G.R. Rainey

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REVISION	EFFECTIVE DATE	DESCRIPTION OF CHANGE	PREPARED BY: REVIEWED BY: APPROVED BY:
16	10/20/00	<i>Added positions of Chief Executive Officer (CEO), Senior Vice President Nuclear Services, Vice President Nuclear Oversight, and Senior Vice President Nuclear Technical Support. Revised the following position titles and/or reporting relationships: ROG Senior Vice President, Director Mid-Atlantic Regional Operating Group Nuclear Oversight. Changed reference from PECO Energy to Exelon Corporation. Changed Nuclear Safety Assessment to Nuclear Oversight. Moved Vendor Audits / Services overview and NDE responsibilities to Nuclear Services. Under Director-Services expanded to include environmental agencies. Removed reference to 1000-ADM-1291.01 and changed the Ombudsman Program to the Employee Concerns Program. Deleted requirement for drawings to list safety classifications. Added usage level 3 to cover page and implementation guidance note after introduction.</i>	D. H. Weimer R. F. Munz J. M. Heffley
17	11/6/00	Added position of Director Maintenance.	D. H. Weimer W. F. Weston J. M. Heffley
18	12/8/00	Revised organization to reflect "Exelon Standard Single Unit Site Organization".	R. P. Warren R. F. Munz J. M. Heffley
19	1/30/01	Changed responsibility for the Procurement Engineering function from Site Engineering to Work Management.	R. P. Warren R. F. Munz T. Broccolo
20	2/28/01	<i>Changed the following terms currently used in the GMS-2 database to new terms used by PIMS: Supplier Quality Classification List (SQCL) to Evaluated Vendor List (EVL); Quality Classification List (QCL) to Component Record List (CRL); Nuclear Safety Related to Safety Related (Q); Regulatory Required to Augmented Quality (A)</i>	R. P. Warren R. F. Munz T. Broccolo

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INTRODUCTION

AmerGen Energy Company, LLC is responsible for the operation and maintenance of Three Mile Island Nuclear Generating Station TMI - Unit 1. The TMI - Unit 1 Operational Quality Assurance Plan contained herein describes the formal and comprehensive plan which has been established to ensure compliance with 10CFR20; 10CFR50, Appendix B; 10CFR71, Subpart H; and applicable Regulatory Guides during the operation of TMI - Unit 1.

This Operational Quality Assurance Plan is formatted in such a manner as to provide all users with a functionally useable document. It describes how this Plan is to be functionally implemented with due regard to the safety and health of the public and the personnel on site. This Plan identifies organizations responsible for the implementation of the Quality Assurance Program (Section 1.0) and an overall description of the Program (Section 2.0). The remaining sections are structured in a functional manner. The requirements for administrative controls are generic and apply to all subsequent sections. Sections 8.0, and 9.0 again apply to all activities within the scope of this Plan.

Appendices A through E provide additional information to aid in implementation of the Quality Assurance Program.

NOTE

This procedure contains administrative type steps, which are not required to be performed in listed sequence to obtain the desired result. Because of the nature of the activity, some steps/actions described by this procedure may not be applicable to the specific activity being performed. Subsequently, those steps need not be performed.

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1.0 **ORGANIZATION & RESPONSIBILITIES**

The TMI - Unit 1 Organization Plan (1000-PLN-1000.01) is the highest tiered document that assigns major functional responsibilities. Implementing documents assign more specific responsibilities and tasks and define the organizational interfaces involved in conducting activities and tasks within the scope of this Plan. The requirements of this Operational Quality Assurance Plan apply to those organizations and positions which manage and perform activities within the scope of this Plan. This section provides a summary of the organizational units and functions which perform activities within the scope of this Plan.

The TMI - Unit 1 organization is structured on the basis that the attainment of the objectives of this Plan relies on those who manage, perform, and support the performance of activities within the scope of this Plan; and, assurance of this attainment relies on those who have no direct responsibility for managing or performing the activity.

The organizations responsible for the conduct, support and assurance of operation, maintenance, modification, repair, in-service inspection and refueling of the nuclear generating station are illustrated in the following controlled documents: the TMI - Unit 1 Organization Plan (1000-PLN-1000.01) and the TMI - Unit 1 Technical Specifications. The TMI - Unit 1 Organization Plan sets forth specific responsibilities with regard to the requirements of this Plan and implementing procedures.

1.1 **Chief Nuclear Officer**

The Chief Nuclear Officer (CNO) has the overall responsibility for the establishment, implementation and evaluation of the effectiveness of the Quality Assurance Program applicable to TMI - Unit 1. This responsibility is administered through the CEO Regional Operating Group (ROG) Senior Vice President, Vice President - TMI - Unit 1, the Senior Vice President - Nuclear Services and the Senior Vice President - Nuclear Technical Support, Vice President - Nuclear Oversight, the Director - Mid-Atlantic ROG Nuclear Oversight, and the Chairman, Nuclear Safety Review Board. The ROG Senior Vice President, Senior Vice President - Nuclear Services, the Senior Vice President - Operations Support, the Vice President - Nuclear Oversight, the Director - Mid-Atlantic ROG Nuclear Oversight and the Chairman, Nuclear Safety Review Board serve under management contract with Exelon Corporation.

The management staff of these organizations give their full support to the requirements set forth in this Plan ensuring full compliance by their respective staffs.

The CNO is responsible to periodically assess the scope, status, adequacy and compliance of the Quality Assurance Program to the requirements of 10CFR50, Appendix B, 10CFR20, and 10CFR71, Subpart H. This assessment shall be the combined result of:

- a. Review of audit reports, periodic status reports, etc. on the effectiveness and implementation of the Quality Assurance Program.
- b. Performance at least once a year of an independent assessment of the effectiveness of the Quality Assurance Program as specified in Section 2.6.

1.2 **Chief Executive Officer**

The AmerGen Chief Executive Officer (CEO) has overall responsibility for the safe and efficient operation of TMI Unit 1, and reports directly to the CNO. The CEO is responsible for planning, organizing, directing, and controlling the operations, maintenance, and improvement of TMI Unit 1. The CEO prescribes

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operational programs and standards to be implemented at TMI Unit 1, and provides management oversight of execution of those programs.

1.3 ROG Senior Vice President

The ROG Senior Vice President reports to the Chief Executive Officer. This position is responsible for the overall leadership of the operations portion of TMI activities. This position provides for an additional level of executive management oversight regarding the operation of TMI. This position is also responsible for supplying selected administrative and technical support to TMI.

1.4 Vice President - TMI - Unit 1

The Vice President - TMI reports to the ROG Senior Vice President. This position is responsible to operate, maintain, and refuel the generating station in a safe, reliable and efficient manner in accordance with corporate policies and all applicable laws, regulations, licenses and technical requirements. The Vice President - TMI - Unit 1 also has a direct reporting relationship to the AmerGen CEO for the purpose of AmerGen Company policy and business. The Vice President - TMI shall be responsible for TMI-1 operations and may, at any time, delegate his responsibilities in writing to the Plant Manager. He shall delegate the succession of his responsibilities in writing during his absence. The Vice President - TMI - Unit 1 is the senior AmerGen representative at the site, and as such, assures consistent implementation of policies and procedures at the plant and off-site facilities. The Operational Quality Assurance Plan responsibilities of the Vice President - TMI - Unit 1 consist of establishing, maintaining and delivering training and education programs sufficient to assure safe, reliable and efficient operation; establishing, implementing and maintaining radiological controls, radiological environmental monitoring, and emergency preparedness.

1.5 Senior Vice - President Nuclear Services

The Senior Vice - President Nuclear Services reports to the Chief Nuclear Officer. The Senior Vice - President Nuclear Services is responsible for nuclear fuels programs, Non-destructive examination, supply, information systems, project management, engineering, and laboratory services. The Senior Vice - President Nuclear Services, is also responsible for Contractor and Vendor Quality Assurance Program evaluation (as specified in Section 5 of this plan), and maintain a *Evaluated Vendors List (EVL)*.

1.6 Senior Vice President – Operations Support

The Senior Vice President – Operations Support ensures that effective technical support is provided to TMI Unit 1, and reports to the CEO. The Senior Vice President – Operations Support develops and directs offsite Nuclear Technical Support functions and programs including outage services, Generation Support, Maintenance and Work Control, Training, Security; and Licensing and Regulatory Affairs. The Operations Support organization serves as the technical authority in all assigned functional areas. The Senior Vice President – Operations Support defines, provides technical oversight, and supports the implementation of standards, programs, processes and best practices within assigned functional areas for TMI Unit 1.

1.7 Vice President – Nuclear Oversight

The Vice President - Nuclear Oversight reports directly the Chief Nuclear Officer. The Vice President - Nuclear Oversight is responsible for the overall development and implementation of the AmerGen quality assurance program, and employee concern program. The Vice President - Nuclear Oversight also has

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the responsibility to keep management informed of conditions concerning quality. The Vice President Nuclear Oversight may delegate "Stop Work" authority to the Senior Vice President Nuclear Services for vendor related deficiencies. The Senior Vice President Nuclear Services has unencumbered access to the Vice President Nuclear Oversight for vendor/supplier corrective action escalation.

1.8 Director – Mid-Atlantic ROG Nuclear Oversight

The Director - Mid-Atlantic ROG Nuclear Oversight reports to the Vice President – Nuclear Oversight. The Director - Mid-Atlantic ROG Nuclear Oversight has the functional authority, independence and responsibility to assure the effective implementation of and compliance to the Quality Assurance Program. Consistent with this responsibility is the authority to render interpretations in writing on those activities to which this Plan applies and the extent to which the Plan applies to those activities.

Additional responsibilities include providing recommendations or solutions to quality problems, and performing monitoring, assessments, audits, inspections, and independent oversight for all areas.

For on-site independent review issues, the Nuclear Oversight Manager and the Independent Onsite Safety Review Group (IOSRG) have the authority to directly report to and communicate with the Chief Nuclear Officer and the Vice President - TMI - Unit 1.

The Director - Mid-Atlantic ROG Nuclear Oversight reports directly to the Vice President - Nuclear Oversight and has unencumbered access to Chief Nuclear Officer on all TMI - Unit 1 quality matters and has direct unencumbered access to the Vice President - TMI - Unit 1 with regard to activities affecting quality. This reporting relationship has been established to provide sufficient independence from the influence of costs and schedules to be able to effectively assure conformance to Quality Assurance Program requirements.

The Director - Mid-Atlantic ROG Nuclear Oversight has no duties or responsibilities unrelated to the responsibilities contained in this document that would prevent the required attention to quality assurance matters. The Director - Mid-Atlantic ROG Nuclear Oversight has the authority and responsibility to:

- a. Develop and administer the maintenance of the TMI -Unit 1 Operational Quality Assurance Plan and Nuclear Oversight procedures required to assure that all TMI - Unit 1 activities provide the required high degree of safety and reliability.
- b. Assess, audit, monitor and inspection of TMI - Unit 1 activities to assure that they provide the required high degree of safety and reliability and are carried out consistent with all applicable laws, regulations, regulatory commitments, licenses, corporate policies and other requirements. Assessment schedules are developed and implemented to ensure all required areas are assessed.
- c. Establish and conduct nuclear safety review and assessment activities which include those of the IOSRG and the Nuclear Safety Review Board (NSRB).
- d. Identify and report nonconformances as they may exist. Initiate, recommend or provide solutions through designated channels. Verify implementation of resolutions as required.
- e. Initiate stop work or unit shutdown recommendations when warranted by a safety concern and obtain unit shutdown with appropriate upper-management concurrence.

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- f. Provide for a review of selected documents which prescribe methods for activities and quality requirements for items within the scope of this Plan. Refer to Appendix B of this Plan.
- g. Direct and manage Nuclear Oversight.
- h. Provide a working interface and line of communication with other organizational elements and other appropriate Industry groups for all program matters.
- i. Provide indoctrination, certification, and/or training programs for Nuclear Oversight.
- j. Assure Quality Assurance program indoctrination of appropriate personnel outside of Nuclear Oversight is provided.
- k. Immediately notify the CNO, CEO, Senior Vice President MA ROG, Vice President - Nuclear Oversight, and the Vice President - TMI - Unit 1, and appropriate organizational elements directors and managers of any significant quality related problem or deficiency.
- l. Perform assessments on a planned and periodic basis to comprehensively determine the effectiveness of the Quality Assurance Program and its implementation; and, detect adverse trends that may be present.
- m. Issue periodic reports to the CNO, CEO, Senior Vice President MA ROG, Vice President - Nuclear Oversight, and the Vice President - TMI - Unit 1, and organizational elements directors and managers on the effectiveness of implementation of activities within the scope of this Plan.
- n. Provide oversight of self-assessment activities to determine effectiveness of the program.
- o. Review and concur with all procedures for reporting and controlling of non-conformance's for compliance with the requirements of this Plan.
- p. Review, verify and concur with close-out of non-conformance's, when required.
- q. Provide interpretations as necessary of this Plan to ensure proper implementation.
- r. Provide and implement an inspection program (excluding Receipt Inspection and NDE) to ensure maintenance and modification activities are carried out consistent with this plan.

1.9 MA ROG Director - Licensing

The MA ROG Director – Licensing reports through the Senior Vice President – Nuclear Technical Support management. The MA ROG Director - Licensing has the functional authority, independence and responsibility to assure the effective implementation of all applicable non-environmental laws, regulations, and licenses associated with the safe and reliable operation of the generating station. Consistent with this responsibility is the authority to render interpretations in writing on those licensing and regulatory activities to which this Plan applies and the extent to which the Plan applies to those activities.

The MA ROG Director - Licensing has the authority and responsibility to:

- a. Provide in coordination with the TMI - Unit 1 Regulatory Assurance organization principal interface and control with all non-financial, regulatory agencies for AmerGen including NRC, appropriate

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state agencies, and supporting legal services. In addition, ensure preparation and coordination of responses to regulatory agencies, including NRC inspections and enforcement bulletins, circulars, notices and generic letters, and activities associated with INPO and NEI.

- b. Provide for maintenance of the operating license for the Nuclear Plant.
- c. Direct and manage the Licensing organizational element.
- d. Provide a working interface and line of communication with other organizational elements and other appropriate industry and regulatory groups for all licensing and regulatory matters.

1.10 Director - Site Engineering

The Director - Site Engineering reports directly to the Vice President - TMI - Unit 1. The Director's Quality Assurance Plan responsibilities consist of providing the requisite engineering and technical support to: maintain the design basis of the nuclear plants; maintain the configuration control documents including development and maintenance of the *Component Record List (CRL)*; conduct operating experience assessment; provide nuclear fuel management; provide core performance monitoring; monitor and analyze the technical performance and reliability of systems and components; provide selective review of plant operations and testing procedures, and associated training; provide technical control and coordination of plant modifications as required by Section 6.10 of this Plan; coordinate and implement In-Service Inspection services; and provide a weld program and a repair program, provide management direction and accountability for information technology.

Additional specific responsibilities associated with the above are:

- a. Ensuring programs are established and maintained for the special processes of welding, heat treating, and nondestructive examination. (Section 6.3)
- b. Performing a startup and test function to assure new or substantially modified plants, facilities and systems are tested in compliance with this Plan. (Section 6.4)
- c. Establishing, implementing and maintaining document distribution and record retention programs and facilities.
- d. Ensuring that nonconformances are reported and corrected for all activities within the scope of this Plan. Items such as failures, malfunctions and deficiencies are handled in a manner consistent with their importance to nuclear safety and reviewed in accordance with appropriate procedures and the applicable Technical Specification. (Section 6.7 & 8)

1.11 Director - Training

The Director - Training reports directly to the Vice President - TMI - Unit 1. The Director's Quality Assurance Plan responsibilities consist of establishing and delivering training and education programs sufficient to assure safe, reliable and efficient operation.

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1.12 Plant Manager

The Plant Manager reports directly to the Vice President -TMI - Unit 1. The Plant Manager's Quality Assurance Plan responsibilities consist of operating TMI - Unit 1 in a safe, environmentally sound, reliable and efficient manner in accordance with company policies and all applicable laws, regulations licenses, technical requirements and procedures; providing and maintaining a qualified staff; fitness-for-duty testing plans and procedures; staff and direct shift technical advisors; provide management accountability and direction for the following functions; plant operations, radwaste, plant chemistry, radiation protection, site security and industrial safety.

The responsibilities of the Plant Manager include the authority to order the shutdown of the unit whenever the health and safety of the public are endangered or when, in his judgement, a shutdown is warranted.

Additional specific responsibilities associated with the above are:

- a. Ensuring that programs are established and maintained for identification and control of equipment to avoid unauthorized use and to assure that operational equipment is in a ready status. These requirements shall include independent verifications to ensure proper implementation. (Section 6.9)
- b. Ensuring that the appropriate requirements for controlling the inspection, test and operating status, including independent verification, are incorporated in the procedures used on all test and operation activities performed. (Section 6.7)
- c. Ensuring that programs are established and maintained for minimizing the generation of radioactive waste and materials, the processing of radioactive waste and movement of radioactive materials. (Section 7)
- d. Establishing, implementing and maintaining radiological controls, radiological environmental monitoring
- e. Coordinate administration of the policy and procedure system.
- f. Establish, maintain and implement plans and procedures for nuclear plant security, access authorization, safeguard contingencies and plant security force training and qualification consistent with corporate policies and all applicable laws
- g. Providing management direction and accountability for emergency preparedness.

1.13 Director - Maintenance

The Director - Maintenance reports directly to the Vice President - TMI - Unit 1. The Director's Quality Assurance Plan responsibilities consist of maintaining TMI - Unit 1 in a safe, environmentally sound, reliable and efficient manner in accordance with company policies and all applicable laws, regulations licenses, technical requirements and procedures; providing and maintaining a qualified staff; responsibility for implementing modification, maintenance, and inspection activities (excluding, Quality Verification, Receipt Inspection and NDE) (Section 6.10) Provide management direction and accountability for the following functions; execution of maintenance; planning and the TMI Unit-2 PDMS contract implementation.

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Additional specific responsibilities with the above are:

- a. Operate assigned shops, calibration assets, tool rooms, and other facilities and equipment to support the site.
- b. Ensuring that testing (e.g. Post Maintenance, Surveillance and IST) and calibration are performed in accordance with the requirements of this Plan. (Sections 6.4, 6.5 and 6.11)
- c. Providing and implementing an inspection program (excluding Quality Verification Receipt Inspection and NDE) to assure maintenance and modification activities are carried out consistent with all applicable laws, regulations, regulatory commitments, licenses, corporate policies, and other requirements.
- d. Ensure that the appropriate requirements controlling the inspection, test and operating status, including independent verification, are incorporated into the procedures used on all fabrication, installation and test activities performed. (Section 6.7)

1.14 Director – Work Management

The Director Work Management reports directly to the Vice President – TMI Unit 1. The director's Quality Assurance Plan responsibilities consist of maintaining TMI Unit 1 in a safe environmentally sound, reliable and efficient manner in accordance with company policies and all applicable laws, regulations, licenses, technical requirements and procedures using sound work management tools. Provide management direction and accountability for the following functions: outage management, modifications and maintenance scheduling, management of major projects and management of facilities maintenance; establishing, maintaining and implementing procurement, receipt inspection, procurement engineering, material identification and warehousing plans and/or procedures. Section 5.0 of this plan contains specific requirements related to procurement and receipt inspection.

- a. Control work in the plant during both operating and outage periods.
- b. Ensuring that programs are established and maintained for housekeeping and cleanliness control of all work activities in accordance with the requirements of this Plan. (Section 6.8)
- c. Establish and maintain a program of receipt inspection, to assure that items, within the scope of the Plan comply with contract requirements and supplier record packages are reviewed for concurrence as required. (Section 5)
- d. Ensuring that the programs for the handling and storage of materials, parts and components are acceptable and appropriate personnel are adequately trained in the performance of their duties and that they implement the procedures properly. (Section 5 and 6.6)
- e. Ensuring that the handling, cleaning, storage and shipping activities associated with the warehouse storage of materials at TMI - Unit 1 are performed in accordance with the requirements of this Plan. (Section 6.6)
- f. Review of procurement documents to assure that quality requirements are correctly stated, inspectable and controllable; that there are adequate acceptance/rejection criteria; that source verification or receipt inspection is specified; that minimum documentation to be supplied is

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specified; and that the procurement documents have been processed in accordance with established requirements. (Section 5)

- g. Performing periodic evaluation of the quality of procurement documents produced. This evaluation may include a sampling review of previously approved documents or in-line reviews of selected purchase requisitions or orders prior to placement by individuals independent from the production of the documents selected. (Section 5)

1.15 Manager, Business Operations

The Manager, Business Operations reports directly to the Vice President -TMI - Unit 1. The Manager's Quality Assurance Plan responsibilities consist of supporting TMI - Unit 1 in a safe, environmentally sound, reliable and efficient manner in accordance with company policies and all applicable laws, regulations licenses, technical requirements and procedures; providing and maintaining a qualified staff; providing management direction and accountability for the following functions; budget and finance and general administrative coordination.

Additional specific responsibilities with the above are:

- a. Ensuring that the programs are established and maintained to evaluate bids for conformance to technical and quality requirements by the requisitioners and that the contractual, legal and commercial requirements are incorporated into the procurement documents in a manner which will enforce the technical and quality requirements. (Section 5)

1.16 Manager, Human Resources

The Manager Human Resources reports directly to the Vice President -TMI - Unit 1. The Manager's Quality Assurance Plan responsibilities consist of establishing, implementing and maintaining ; medical examination plans and procedures.

1.17 Manager, Nuclear Safety & Plant Review Group

The Manager, Nuclear Safety & Plant Review Group reports directly to the Vice President - TMI - Unit 1. The Manager's Quality Assurance Plan responsibilities consist of process owner and coordinator for the safety review process; managing a Plant Review Group that meets all regulatory and company requirements including development and implementation of standards and process procedures, common curriculum for training personnel, certification of RTR/ISR personnel, and periodic assessment of performance and ensuring corrective actions are taken.

1.18 Manager, Regulatory Assurance

The Manager, Regulatory Assurance reports to the Vice President – TMI - Unit 1. The Manager's Quality Assurance Plan responsibilities consist of supporting TMI-Unit 1 in a safe, environmentally sound, reliable and efficient manner in accordance with company policies and all applicable laws, regulations, licenses, technical requirements and procedures; providing and maintaining a qualified staff, providing management direction and accountability for the following functions: regulatory activities coordination and oversight, industry operating experience, the TMI I- Unit 1 corrective action process (CAP), provide in coordination with the Director Licensing principal interface and control with all non-financial, regulatory agencies for TMI - Unit 1; ensure interpretation of Technical Specifications, codes and regulations.

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Additional specific responsibilities with the above are:

- a. Serve as owner for the "Issues Management" process by establishing and maintaining standards that provide for a graded approach to resolving issues based on complexity and risk.
- b. Manage and coordinate LER preparation and submittal.
- c. Assist in the development of a comprehensive self-assessment program.

1.19 AmerGen Management

Management personnel in each organizational element are responsible for the implementation of the Quality Assurance Program by their organizational element or group, including the development and implementation of approved documents; performing activities in accordance with expectations and requirements; use of qualified personnel and equipment; and the training and indoctrination of their personnel associated with those of their activities within the scope of this Plan.

Management personnel in each organizational element are responsible for the conduct of the technical and independent safety reviews within their division, organizational element or group. This includes the identification and qualification of personnel as Responsible Technical Reviewers and Independent Safety Reviewers; the review and approval of documents within their functional area of responsibility as assigned by the Review and Approval Matrix contained in Administrative Procedures; and other activity as may be required to implement Technical Specifications Appendix A, Section 6.5, requirements.

Management personnel in each organizational element are responsible to provide sufficient support to the assessment process and to take positive action to evaluate and correct nonconformances identified in the conduct of their activities within the scope of the Plan. This responsibility includes correcting adverse trends as may be identified.

The Director or Manager of each organizational element performing activities within the scope of this Plan is responsible for the preparation, approval and implementation of documents which prescribe activities and/or tasks necessary to effectively implement this Plan. This responsibility includes ensuring that provisions are made for interface controls for internal and external lines of communications among participating organizations and technical disciplines.

Each organizational element Director or Manager is responsible for ensuring that procurement documents contain appropriate requirements for the identification and control of materials, parts, or components and that only materials, parts or components which have been properly accepted are used. Each organizational element Director or Manager is responsible for maintaining records as required by this Plan until turnover to an approved record storage facility.

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1.20 External Organizations

Suppliers who provide Items and/or services which are within the scope of this Plan shall have a Quality Assurance Plan and implementing procedures appropriate for the Items, consumables, and/or services. The suppliers Quality Assurance Program may be supplemented or replaced by this Plan. The supplier's Quality Assurance Program shall be subject to review for concurrence by Senior Vice President - Nuclear Services or his designee. The extent to which the supplier's Quality Assurance Program will be applied will be specified by procurement documents.

1.21 Minimum Qualifications of Assessment and Inspection Personnel

The Director - Mid-Atlantic ROG Nuclear Oversight shall have, as a minimum, a baccalaureate degree in engineering or science, with at least fifteen (15) years of technical experience including ten years of managerial/supervisory experience in operational, technical support and/or quality assurance activities associated with nuclear power plants. At least one year of this experience shall be in a nuclear assessment oversight organization or a special training program approved by the CNO and will be completed within six months of assuming the position. Additionally, the Director - Mid-Atlantic ROG Nuclear Oversight must be knowledgeable in operating license conditions, other regulatory requirements and commitments, plans, procedures and quality and technical standards.

The Nuclear Oversight Manager who reports to the Director - Mid-Atlantic ROG Nuclear Oversight shall have an academic degree in engineering or a physical science and 10 years of professional level experience in nuclear power or related technical fields. Managers must have at least 3 years experience in a position responsible for supervision of operational, technical and/or oversight activities. The degree requirements may be waived for personnel with demonstrated exceptional capability and a minimum of 15 years of appropriate experience.

Each IOSRG Engineer shall have an academic degree in engineering or a physical science field and 3 years of professional level experience in the nuclear power field including technical supporting functions or 8 years of appropriate experience. Credit toward experience will be given for advanced degrees on a one-to-one basis up to a maximum of two years.

For personnel performing inspection, examination, and special processes, the qualification criteria shall be delineated to the techniques of inspection or items being inspected and the technical abilities of the person being certified will be consistent with the assigned tasks (e.g., electrical inspection, mechanical inspection.)

The qualification requirements and experience levels for other Nuclear Oversight personnel are such as to assure competence commensurate with the responsibilities of and the Regulatory Guides associated with the activities performed by the position.

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2.0 QUALITY ASSURANCE PROGRAM

2.1 General

This Operational Quality Assurance Plan is the highest tiered TMI - Unit 1 document which provides the generic (and some specific) requirements and methods to control activities. The term "Program" as used herein includes this Plan and the approved documents which are used to implement this Plan. This Plan is implemented through such approved documents.

The TMI - Unit 1 Quality Assurance Program has been established to control the activities performed by TMI - Unit 1 within the scope of this Plan. This control is exerted primarily through the provision of and compliance with implementing documents and assurance that such documents are adequate and consistently used.

Adherence to the requirements of this Plan is mandatory for all TMI - Unit 1 organizations and for all external organizations providing "Items" or conducting "Activities" which are within the scope of this Plan.

The purpose and intent of this Plan is to establish the principles which, when implemented, will provide the level of management control and assurance which is appropriate for each Item or Activity within the scope of this Plan. It is recognized that the extent of management control and assurance to be applied varies with different Items and Activities, and the extent of applicability of this Plan will differ from Item to Item and Activity to Activity.

The Director - Mid-Atlantic ROG Nuclear Oversight is authorized and responsible for determining if and to what degree this Plan applies to a given activity and/or task. In those situations where interpretation of the Plan is required to provide clarity or resolve disagreements, such interpretations shall be documented and approved by the Director - Mid-Atlantic ROG Nuclear Oversight.

2.2 Scope

The scope of the TMI - Unit 1 Operational Quality Assurance Plan includes but is not limited to Items and Activities related to safe nuclear plant operation, protection of personnel and protection of the public. To ensure consistency in identifying those Items and Activities within the scope of this Plan, a classification process has been developed and documented. This process relies on the use of the terms "Safety Related (Q)," "Augmented Quality (A)," and "QA Plan Scope."

2.2.1 Items within the scope of this Plan are designated as "Safety Related" or "Augmented Quality." The definitions of these terms are provided in Appendix D of this Plan. A quality classification process for Items has been developed. This classification process produces a *Component Record List* which identifies the permanent plant structures, systems, and components that are within the scope of this Plan and their specific classification. New Items to which this Plan applies shall be added to the *Component Record List* subsequent to their installation.

The classification of Items and consumable Items (such as chemicals, radwaste liners, diesel fuel, etc.) and the technical and quality requirements will be specified, documented and approved as part of the procurement process.

This Plan may be applied to items, other than those designated as "Safety Related" or "Augmented Quality" as specified by TMI - Unit 1 management.

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- 2.2.2 Activities within the scope of this Plan are designated as within "QA Plan Scope." Activities that are within the scope of this Plan are those directly related to nuclear and radiological safety and protection of the public and are delineated below.

Support activities within the scope of this Plan are quality classification, operating experience assessment, design, maintenance of environmental and fire protection qualification, nuclear fuel management, procurement, fabrication, handling, shipping, storage, cleaning, erecting, installing, testing, repairing, training, welding, in-service inspection, heat treatment, document control, records management, access authorization and fitness-for-duty.

Operational activities within the scope of this Plan are normal, abnormal and emergency operation, chemistry control, core performance monitoring, shift technical advice, equipment control, surveillance testing, in-service testing, maintenance, housekeeping, fire protection, security, radiological controls, radiological environmental monitoring, radwaste preparation for shipment, radwaste shipment, fuel handling/refueling, technical specification compliance, and emergency preparedness.

Assurance activities within the scope of this Plan are assessment (audit, document review, monitoring, survey, and surveillance), inspection, non-destructive examination, and safety review. Assurance activities are performed by individuals who are not directly responsible for managing or performing the work or activity. Nuclear Oversight personnel perform periodic assessments of the "assurance" activities performed by other organizational elements (e.g. NDE/ISI) to assure effectiveness and adequacy.

The term document review as used in this document pertains to reviews conducted by Nuclear Oversight as detailed in Appendix B of this Plan.

The above activities are controlled through the use of approved documents which are, as a minimum, consistent with the requirements of this Plan, the unit Operating License, specific Regulatory Guides to the extent listed and committed to in Appendix C of this Plan, the Final Safety Analysis Report, and other regulatory requirements and commitments. Those approved documents which specifically prescribe the methods to implement this Plan will be identified as prescribed by 3.2.2.2 of this Plan.

A specific task associated with the above activities will be classified as within scope of this Plan depending upon:

- a. Statements within the text and the Regulatory Guides identified in Appendix C of this Plan;
- b. The relationship of the task to the safe operation of the nuclear plant;
- c. The relationship of the task to the protection of personnel from the effects of radiation;
- d. The relationship of the task to protection of the health and safety of the public;
- e. The relationship of the task to regulatory requirements and commitments; and
- f. Other factors as may be specified by AmerGen management.

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2.3 Graded Approach

The extent to which the requirements of this Plan and its implementing documents are applied to an item will be based upon the effect of a malfunction or failure of the item on nuclear safety or safe plant operations.

The need for special controls, and surveillance or maintaining of processes, equipment, and of operational activities will be applied consistent with:

- a. The design and fabrication complexity or uniqueness of the item.
- b. The degree to which functionality can be demonstrated by inspection or test.
- c. The quality history and degree of standardization of the item.

The quality requirements for items within the scope of this Plan shall be established using approved procedures based on the "General Logic Considerations" listed in the Appendix to ANSI N45.2.13-1976. Quality requirements will be established by the responsible organizational element and subject to assessment by Nuclear Oversight.

The extent to which the requirements of this Plan apply to Activities will be based, as a minimum, Operating License conditions and other plans previously submitted to the NRC for approval, other regulatory commitments as may have been made associated with activities, the text of this Plan, the unit's Technical Specifications, and Appendix C of this Plan. Such other plans or regulatory commitments include, but are not limited to, those associated with emergency planning, physical plant security, safeguard contingency planning, radiological controls, radiological environmental controls, fire protection, in-service inspection, in-service testing, licensed operator qualification and re-qualification, process control, off-site dose calculation, Shift Technical Advisor training, environmental qualification of electrical equipment, security guard training and qualification, etc.

2.4 Levels of Quality Assurance

AmerGen is committed to a comprehensive quality assurance process consisting of a three level approach to assure satisfactory, consistent and complete implementation of this Plan. Additionally, a self-assessment program is implemented to further evaluate and enhance performance.

2.4.1 Level I - Activities at this level include inspections, checks, or tests performed for the purpose of establishing acceptance and/or verification of Items and Activities within the scope of this Plan. Level I Activities are performed by Quality Verification, Operations, Maintenance, Materials and Services, Radiological Controls, Engineering, and contractor personnel. Examples of Level I activities include:

- Operations, Maintenance, and Radiological Controls personnel performing tests, calibration of instruments, radiation surveys, analyses of samples, and valve line-ups.
- Maintenance personnel performing checks, inspections and/or tests of modification, replacement, repair and/or overhaul activities.
- Quality Verification personnel performing inspections of modifications and maintenance activities.

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- Materials and Contracts personnel conducting receipt inspections of incoming materials/items.
- Contractors performing inspections as applicable to their scope of work.
- Engineering personnel periodically performing walk-downs, observations, measurements, etc. to revalidate the physical or functional configuration or condition of plant systems or components.
- Performance of NDE on components after repairs or modifications.

In all cases, the inspection, check and testing activities are performed by individuals who are knowledgeable of the activity being performed and are qualified to perform the work (refer to Section 6.2 and Appendix C). Checklists, weld history records, travelers, reports, etc., are typically used for documenting the results of the activity and for providing a record of the performance of the activity.

- 2.4.2 Level II - The activities at this level are primarily those of survey, surveillance, monitoring, and document review and are performed as deemed necessary by Nuclear Oversight and/or Nuclear Services. The level of surveillance or monitoring applied is consistent with the importance of the item to safety and the extent of administrative controls utilized for the Level I activity.

At this level, procedures and instructions are established and surveillance and/or monitoring records will be completed and maintained. Such surveillance/monitoring normally includes observation of tests and inspections, observation of selected operations, review of records, verifications of test reports, and direct inspection on a spot-check basis. The organizations performing this activity have the levels of authority, the lines of internal and external communication for management direction, and properly trained personnel for implementation of these activities.

- 2.4.3 Level III - The purpose of this level of activity is to assure, through a comprehensive program of review, assessment and audit, that all organizations conducting activities and/or tasks within the scope of this Plan are properly satisfying all the requirements of the Quality Assurance Program.

At this level, procedures and instructions are established, including the use of comprehensive checklists or detailed reports for documentation of the third-level activity.

For audits, the program requirements of ANSI N45.2.12 shall be satisfied. Lead auditors shall be utilized who are qualified to the requirements of ANSI N45.2.23. Additional technical support personnel, from areas with administrative reporting outside the function that is being audited, will be utilized as Audit Program Management deems necessary. The organization performing this audit activity has sufficient authority, independence and lines of internal and external communications to obtain the necessary access to management to conduct the review and audit, resolve any issues which may arise from the review and audit and secure additional technical support for the performance of audits as may be required.

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2.5 Operational Quality Assurance Plan Control

This Plan is authorized by the CNO and requires that the appropriate levels of management, as designated herein, implement the Quality Assurance Program. This Plan is controlled to ensure that only the latest approved revision is implemented. This Plan is implemented through approved documents (refer to Section 3.0).

Appendix A provides a correlation of the sections of this Plan with the requirements of 10CFR50 Appendix B; 10CFR71, Subpart H; ANSI N45.2; and ANSI N18.7.

2.5.1 Approval

This Plan shall be originated by the Director - Mid-Atlantic ROG Nuclear Oversight and be approved by the CNO with concurrence by the following:

Vice President - TMI - Unit 1
Responsible Technical Reviewer
Vice President - Nuclear Oversight

2.5.2 Revisions

The Director - Mid-Atlantic ROG Nuclear Oversight is responsible for ensuring this Plan is modified and updated as needed. Proposed revisions to this Plan may be suggested by AmerGen personnel by submitting a written request to the Director - Mid-Atlantic ROG Nuclear Oversight.

The Director - Mid-Atlantic ROG Nuclear Oversight shall, for each revision to this Plan, determine whether the changes reduce the commitments in this Plan previously accepted by the NRC.

Revisions to this Plan that do not reduce commitments to the NRC shall be originated by the Director - Mid-Atlantic ROG Nuclear Oversight and approved by the CNO with the concurrence of the Vice President - TMI - Unit 1, Vice President - Nuclear Oversight and the Required Technical Reviewer. The Cover Page containing the approval and concurrence signatures of the CNO, the Vice President - TMI - Unit 1, Vice President - Nuclear Oversight and the Required Technical Reviewer shall be retained. Revisions of this type do not require approval by the NRC prior to implementation, but must be submitted to the NRC at least annually. The Document History page will be utilized to identify such changes.

Revisions of this Plan that reduce the commitments previously accepted by the NRC shall be submitted to the NRC. Such revisions shall be regarded as approved by the NRC upon receipt of a letter to this effect from the appropriate reviewing office or 60 days after submittal to the NRC, whichever comes first. The submittal of the revision to this Plan must include all pages affected by that change and must be accompanied by a transmittal letter identifying the change, the reason for the change, and the basis for concluding that the revision continues to satisfy 10CFR50, Appendix B and provides a suitable level of control. The letter need not provide the basis for changes that correct spelling, punctuation, or editorial items. A copy of this letter must be maintained as a facility record for three years. Revisions of this type shall be originated by the Director - Mid-Atlantic ROG Nuclear Oversight, approved by the CNO with the concurrence of the Vice President - TMI - Unit 1, Vice President - Nuclear Oversight and the Required Technical Reviewer as indicated by their signatures on a revised Cover Page.

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2.5.3 Distribution

Copies of the Operational Quality Assurance Plan may be distributed as "Controlled" or "Uncontrolled" in accordance with the requirements established in Section 3.

2.5.4 Effective Date of Implementation

Changes to this Plan shall be incorporated in the implementing documents within 60 days of the issuance date of the Plan unless an interim action plan is defined and approved by the Director - Mid-Atlantic ROG Nuclear Oversight. Implementing documents which do not require a substantive revision may be combined with a revision at a future date or at the next periodic review of the document. Examples of a non-substantive revision as used in this context include organizational titles, requirements which exceed the revised Plan requirements, or changes in reporting relationships not specified by Technical Specifications.

2.6 Quality Assurance Program Review

The effectiveness of the Quality Assurance Program and its implementation is periodically reviewed by various organizations at various levels and the results of these reviews are documented in reports to senior management for evaluation and corrective action as required. The effectiveness of the Quality Assurance Program is evaluated and reported by Nuclear Oversight through the monitoring, auditing and inspection functions. Other organizational elements provide additional information/ evaluations as requested.

In addition to the reviews and evaluation performed by Nuclear Oversight, the CNO shall, at least once per year, have an independent assessment of the Quality Assurance Program implementation performed to ensure that the Program is effective in ensuring that regulatory requirements and commitments; and AmerGen policies are met. This assessment may be performed utilizing a safety review group, an Independent consultant, representatives of other utilities and/or his own staff. Any corrective action which may be deemed necessary as a result of these assessments shall be formally identified and tracked through resolution.

2.7 Indoctrination and Training

Formal indoctrination and training programs for personnel performing or verifying activities within the scope of this Plan are required to be established and maintained. A Training organizational element is established and staffed and is responsible for planning, scheduling, developing and providing training to AmerGen personnel. The indoctrination and training programs are established by on-site and by off-site organizational units responsible for the performance or verification of activities within the scope of this Plan.

The proficiency of personnel shall be evaluated, and measures to maintain proficiency shall be implemented, either through retraining, reexamination and/or re-certification.

When certification is required, the certificate shall delineate the specific functions the individual is certified to be able to perform and the criteria used to certify the individual for those functions.

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2.8 Classification Process

Activities that are within the scope of this Plan and general criteria for further classification of tasks associated with these activities are identified in Subsection 2.2.2 of this Plan. Subsection 2.3 provides further basis for grading the extent of application of the requirements of this Plan to activities. Documents that prescribe methods for implementing the requirements of this Plan shall be marked as specified by 3.2.2.2.b of this Plan.

Items within the scope of this Plan shall be classified and identified as "*Safety Related (Q)*" or "*Augmented Quality (A)*." A procedure shall be prepared to establish, implement and maintain a classification process for items. This procedure, and changes thereto, shall be reviewed for concurrence by the Director – Mid-Atlantic ROG Nuclear Oversight, or designee, prior to issuance.

Structures, systems and components shall be identified on a *Component Record List (CRL)*. A CRL shall be established and maintained by Site Engineering. The classification of structures, systems and components shall be subject to independent design review as part of the classification process.

Spare or replacement parts and materials are not necessarily classified the same as the component of which they are a part. Such parts and materials that perform or contribute to the performance of a *Safety Related (Q)* or *Augmented Quality (A)* function are within the scope of this Plan and classified similar to the component of which it is a part. For procurement of spare or replacement parts which are of a different classification, the classification will be determined by Procurement Engineering. The determinations will be documented, retained, and subject to review and assessment by Nuclear Oversight. Refer to Section 5.0 for additional requirements.

2.9 Regulatory Commitments

Records of Nuclear Oversight regulatory requirements are maintained by Nuclear Oversight. Appendix C herein lists those Regulatory Guides which contain specific quality assurance requirements with the stated AmerGen position, exceptions and/or clarifications provided. These must be complied with in conjunction with this Plan. Appendix C will be revised, as necessary, to reflect any change in the AmerGen commitment to the Regulatory Guides. Nuclear Oversight provides documented AmerGen positions and interpretations on all Nuclear Oversight Regulatory Guides contained in Appendix C of this Plan as required. Records of all other regulatory requirements and commitments are maintained by the site Regulatory Engineering department in conjunction with the Director - Licensing. Those departments will provide documented interpretations of these commitments as required.

2.10 Resolution of Disputes and Escalations

All personnel, including those performing assurance activities who are not part of Nuclear Oversight, have access to the Director - Mid-Atlantic ROG Nuclear Oversight to raise quality or safety concerns. Disputes involving quality or safety arising from a difference of opinion shall, if possible, be resolved at the level at which such disputes occur. If this is not possible, the difference of opinion shall be escalated through supervisory/management levels until resolution is achieved.

The Director - Mid-Atlantic ROG Nuclear Oversight shall make the decision on matters related to if and to what degree this Plan applies to activities, quality requirements, and verification and acceptance to established requirements.

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The Director - Site Engineering shall make the decision on matters related to classification of items, and technical requirements or design changes.

The responsibility of the Director - Mid-Atlantic ROG Nuclear Oversight for Quality Assurance Plan implementation takes precedence over his other duties. The Nuclear Oversight Manager has authority to report directly to the CNO.

The Director - Mid-Atlantic (ROG) Nuclear Oversight shall be responsible for evaluating deficiencies generated by Nuclear Oversight, as specified in 8.2.8 of this Plan. Escalation of significant deficiencies to higher management levels shall be evaluated in accordance with written procedures when inadequate or untimely responses occur.

2.11 Safety Review Program

The Safety Review Program consists of technical review and, as necessary, an independent safety review.

The technical review is a thorough review conducted by someone other than the individual who prepared the work. This review is performed by a qualified Responsible Technical Reviewer on documents, and substantive revisions to documents, as specified by the Review and Approval Matrix contained in Administrative Procedures.

The independent safety review is an independent review of documents, and substantive revisions to documents, as specified by the Review and Approval Matrix. It includes a review of safety evaluations. This review is performed by a qualified Independent Safety Reviewer (ISR) for safety evaluations associated with documents, and substantive revisions to documents, as specified by the Review and Approval Matrix. The ISR shall not have direct responsibility for the activity reviewed.

2.12 Independent Safety Oversight

The first element of oversight of safety is the IOSRG. The IOSRG has no line responsibilities or line functions and is devoted solely to safety matters. It is independent of the plant staff and reports to the Nuclear Oversight Manager who reports to the Director - Mid-Atlantic ROG Nuclear Oversight. The IOSRG will consist of a minimum of a manager and three full time engineers / technical staff.

The IOSRG shall have access to the unit and unit records as necessary to perform its evaluations and assessments. Based on its reviews, the IOSRG shall provide recommendations to the management positions responsible for the areas reviewed. IOSRG reports of evaluations and assessments shall be transmitted to the Director - Mid-Atlantic ROG Nuclear Oversight and the management positions responsible for the areas reviewed.

The second element of oversight of safety is the Nuclear Oversight staff, who audit, monitor, assess and perform quality verification inspection aspects of AmerGen activities within the scope of this Plan or relating to safety. This provides for an overview of activities affecting or potentially affecting safety.

The third element of oversight of safety is the Nuclear Safety Review Board. This is a group of senior level individuals with diverse backgrounds and extensive nuclear experience. The Board reports to the Chairman Nuclear Safety Review Board and takes general direction from the CEO/CNO but has direct access to the AmerGen Management Committee. Its charter is broadly defined to encompass all matters potentially affecting nuclear safety (including management related aspects) so as to foresee potentially

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significant nuclear safety and radiation problems. Licensing provides staff support to the Nuclear Safety Review Board.

2.13 Self Assessment

Organizations responsible for performance of activities within the scope of this Plan may perform evaluations to assess their performance, seek opportunities for improvement or address known problems. Nuclear Oversight will typically review self-assessment activities conducted by other organizational elements as part of its independent assessments. Nuclear Oversight will not eliminate assessments required by this Plan as a result of organizational self-assessment activities but may alter scope when self-assessment activities sufficiently address subject areas.

2.14 Employee Concerns Program

An Employee Concerns Program is provided by Nuclear Oversight. The responsible individual is accessible on a confidential basis, if desired, to anyone in the company having a nuclear or radiation safety concern that he or she considers is not being adequately addressed. This individual is empowered to investigate such matters, identify any needed action and seek its resolution. The individual who raised the concern will be contacted with the result of the investigation.

3.0 CONTROL OF DOCUMENTS AND RECORDS

3.1 Plans, Procedures, Instructions, Drawings, Specifications

3.1.1 General

Activities which are within the scope of this Plan shall be prescribed by approved documents of a type appropriate to the circumstances. These documents shall be complied with in the performance of the activity or changed prior to proceeding with the activity. These documents typically include but are not limited to those termed plans, procedures, instructions, directives, drawings and specifications. All personnel shall be indoctrinated in the use or content of such documents prior to commencement of the activity.

3.1.2 Requirements

Documents which prescribe the methods for the performance of activities and/or tasks within the scope of this Plan shall be consistent with the requirements of this Plan. These Plan requirements include compliance with the text of this Plan and the Regulatory Guides and ANSI standards to the extent delineated in Appendix C. To accomplish this, these documents shall:

- a. Define the responsibilities and authorities of personnel performing the activity.
- b. Describe interfaces between AmerGen organizational elements and/or external organizations that participate in or are affected by the conduct of the activity.
- c. Prescribe actions to be taken or the results to be achieved which are consistent with the requirements of this Plan.

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- d. Include quantitative (such as dimensions, tolerances, and operating limits) and/or qualitative (such as workmanship) acceptance criteria sufficient for determining that such activities have been satisfactorily accomplished.
- e. Identify and specify the content of records to be generated in conducting the activity.
- f. Include references as needed to implement the activity. When such references are utilized, the specific requirements of the references which are applicable shall be identified or incorporated into the document.
- g. Be approved and concurred with by responsible personnel prior to the initiation of the activity.
- h. Be distributed in a controlled manner to preclude the use of obsolete documents and with sufficient number of copies to assure availability to responsible personnel.

Reviews of such documents shall be conducted by Nuclear Oversight. The timing and scope of document reviews shall be as detailed in Appendix B. These reviews are conducted to independently verify appropriateness of the document. These reviews assure, as a minimum, that the reviewed document is consistent with the pertinent Operational Quality Assurance Plan requirements.

Organizations (such as Quality Verification) shall review selected documents for the opportunity to include inspection points and proper inclusion of QA requirements.

Documents which prescribe methods for implementing this Plan shall be followed as written or changed. The requirements for use of such documents and how to proceed if such documents cannot be complied with as written shall be prescribed by procedure(s).

Plans, procedures, and instructions shall be revised as needed to ensure that such documents can be implemented as written. Appropriate documents shall be thoroughly reviewed following plant transients, incidents, and/or events and revised as needed. Such documents shall be reviewed by an individual knowledgeable in the area affected by the document(s) no less frequently than every two years to determine if changes are necessary or desirable. A revision of the document(s) may constitute the above review provided the results of the review are documented.

Those activities within the scope of this Plan which are performed by an external organization shall be prescribed by approved documents. The extent and type of such approved documents to be utilized by the external organization shall be prescribed within approved procurement documents. Compliance shall be verified through the audit, source surveillance, source inspection, monitoring and inspection programs.

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3.2 Document Control

3.2.1 General

Document control procedures shall be established to control and coordinate the classification, review, approval, issuance, revision, and change of approved documents which prescribe methods or provide the technical and/or quality requirements for activities and items within the scope of this Plan. These document control procedures shall ensure that such documents are reviewed for adequacy, approved for release and use, and distributed to the location where the activity is performed.

3.2.2 Requirements

3.2.2.1 Written document control procedures shall be established to provide for the control of the following types of approved documents:

- a. Operational Quality Assurance Plan, AmerGen Organization Plan, Review and Approval Matrix, *Component Record List (CRL)*, Environmental Qualification Master List, and *Evaluated Vendors List (EVL)*.
- b. Plans, procedures, directives, and/or instructions as required to implement the provisions of this Plan and the Regulatory Guides to the extent delineated in Appendix C.
- c. Nuclear Oversight Plans, Procedures, and Standards.
- d. Operating, Surveillance Testing, Refueling and Equipment Control Procedures and Instructions.
- e. Maintenance Work Authorizing Documents, Procedures, Instructions, Vendor Manuals and Vendor Information.
- f. Engineering Configuration Control documents which include safety analysis, safety evaluations, calculations, standards, specifications, system/modification design descriptions, design reviews and/or verifications, drawings and lists.
- g. Computer codes utilized for calculation tasks associated with activities within the scope of this Plan.
- h. Engineering, Manufacturing, Construction, Modification, Installation, Welding, Test, Inspection and Nondestructive Examination Procedures, Instructions, Standards, and Specifications.
- i. Procurement Documents, Specifications, and Contracts.
- j. Final Safety Analysis Report, Fire Protection Plan, Fire Hazards Analysis Report, Emergency Plan, Security Plan, Safeguards Contingency Plan, Guard Force Training and Qualification Plan and Off-site Dose Calculation Manual.
- k. Nonconformance, Deficiency and Deviation Reports or Requests.

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- l. Operating and Special Orders.
- m. Procurement and Material Control Procedures and Instructions.
- n. Radiological Control, Process Control, Radiological Environmental Monitoring, Radwaste Shipping and Chemistry Control Plans, Procedures, Instructions, Standards, and Specifications.

3.2.2.2 Procedures established for document control shall prescribe the following requirements:

- a. Design descriptions and specifications for items, parts, and materials designated as *safety related* shall be marked as such.
- b. Documents which prescribe how to perform activities within the scope of this Plan shall be marked as within "QA Plan Scope". These documents typically will be those termed plans, procedures, instructions, and directives.
- c. Review and approval requirements for documents and their revisions shall be specified to ensure that adequate technical and quality requirements are incorporated prior to issue. Issuance requirements shall be specified to ensure adequate dissemination for use.
- d. The organizations or positions responsible for reviewing, approving and issuing documents and their revision shall be specified.
- e. Revisions shall be documented, approved, and issued prior to being implemented. Temporary changes shall be reviewed and approved consistent with Technical Specification requirements.
- f. Revisions and changes shall be reviewed and approved by the same organizations that performed the original review and approval; or by organizations designated by the originating organizations, except for documents originated by organizations outside AmerGen. In this case, AmerGen may designate the review and approval organizations. Approved changes shall be promptly transmitted for incorporation into documents and obsolete or superseded documents shall be eliminated from use.
- g. Document distribution shall be sufficient to assure that the documents are readily available to responsible personnel prior to commencement of work.
- h. The user of approved documents is responsible for assuring that the latest issue of the document is being used to perform work, thus assuring that voided, superseded or obsolete documents are not used. Master lists or indices which identify current revision status of approved documents will be maintained to assist users. In addition to master lists or indices, documents may be stamped "Controlled Copy". Holders of controlled documents or master lists are responsible for maintaining their assigned copies in a current status. Documents distributed and stamped as information only will not be considered to be current,

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and, as such, will not be used in performing an activity within the scope of this Plan.

- i. In the special case of documents containing information pertaining to plant security, provisions shall be made to prohibit unauthorized disclosure of certain safeguards information. These provisions shall include identification of the documents, restrictions on their distribution, and storage in locked security storage containers.

3.3 Records

3.3.1 General

Records related to Items and Activities within the scope of this Plan shall be identified, reviewed, retained, and retrievable. These requirements are imposed on all organizations performing Activities within the scope of this Plan. Records shall be described and controlled by approved written procedures or instructions. As a minimum, these procedures or instructions shall prescribe the method(s) for the identification, generation, collection, storage, maintenance, retention, and retrieval of such records.

3.3.2 Requirements

Approved documents shall be established for the identification, generation, collection, storage, maintenance, retention and retrieval of records and shall provide for the following minimum requirements:

- a. Design specifications, procurement documents, and/or AmerGen procedures shall specify the records to be generated, supplied and maintained by or for AmerGen, including retention times. Typical records to be specified include operating logs, maintenance and modification procedures and related inspection results, reportable occurrences, inspection and verification procedures (excluding completed checklists when results are documented in a separate report), results of reviews, inspections, tests, audits, and material analysis; qualification of personnel, procedures, and equipment; other documentation such as calculations, computer codes, design verifications, drawings, specifications, procurement documents, calibration procedures and reports; nonconformance reports; corrective action reports; and other records required by Technical Specifications.
- b. Sufficient records and documentation shall be maintained to provide evidence of the acceptability of Items or Activities within the scope of this Plan. Inspection and test records shall contain the following where applicable:
 1. Identification of the type of observation.
 2. The date and results of the inspection or test.
 3. Identification of any conditions adverse to quality.
 4. Inspector or data recorder identification.
 5. Evidence as to the acceptability of the results.

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6. Action taken to resolve any discrepancies noted.

- c. Record storage facilities shall be established and utilized to prevent destruction of quality records by fire, flooding, theft and deterioration by environmental conditions such as temperature or humidity in compliance with the standards, codes and regulatory guides endorsed in Appendix C of this Plan.
- d. Interim storage provisions shall be established to properly maintain and protect records until they are permanently transferred to record storage facilities for retention.
- e. All records shall be legible in original or reproduced form.
- f. Provisions shall be provided to restore, reconstruct or replace records that are lost or destroyed.

Records generated by suppliers shall be controlled according to the supplier's or AmerGen procedures until such time as they are turned over to AmerGen for review, acceptance, and transmittal to the permanent records file. Purchased equipment records shall be retained by the supplier until the equipment is released for shipment at which time the records required by procurement documents are to be submitted to AmerGen.

When required by the procurement documents, suppliers shall establish procedures for the identification, generation, collection, storage, maintenance, retrieval and/or transmittal of records. Implementation of these procedures shall be assured by performance of source surveillance, source inspection, monitoring and audits performed by Nuclear Oversight and or Nuclear Services.

Records to be submitted with the shipment or retained by the supplier shall be specifically identified in procurement documents. If records are to be retained by the external organization for AmerGen, then the storage condition and retention period shall be specified in the procurement documents. These records will be reviewed by Nuclear Services to provide the required degree of confidence in the adequacy of compliance of the supplier with the requirements of this section.

4.0 DESIGN CONTROL

4.1 General

Measures shall be established and documented to assure that the applicable specified design requirements, such as design basis, regulatory requirements, codes and standards are correctly translated into specifications, drawings, procedures or instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included or referenced in design documents for design of systems and structures.

4.2 Requirements

Design control measures require that:

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The organizational structure be defined, and authority and responsibility of personnel involved in preparing, reviewing, approving and verifying design documents be delineated. Site Engineering shall control and coordinate the activities of all contractors with design responsibility.

The design basis, safety analysis, regulations, codes and standards, and plant Technical Specifications, including all effective amendments, shall be utilized in, reviewed for revision, and revised, as necessary, during the design process.

The items and processes selected by design shall be reviewed to assure that they are suitable for the intended application, including compatibility of materials, accessibility for in-service inspection, maintenance and repair, ALARA considerations, personnel safety, fire hazards analysis, and quality standards. The review shall also evaluate suitability with regard to human factors which may affect safe operation, and the suitability of commercial grade materials, parts and equipment to the application. Quality Verification shall review selected design and engineering documents for inclusion of appropriate inspection points and quality requirements.

Internal and external design interface controls, procedures, and lines of communication among participating design organizations and across technical disciplines shall be established and described for the preparation, review, approval, release, distribution, and revision of documents involving design interfaces.

Errors and deficiencies in approved design documents, including design methods (such as computer codes) that could adversely affect items and activities within the scope of this Plan shall be documented, and action shall be taken to assure that these errors or deficiencies are corrected. In addition, any errors or deficiencies resulting from the application or use of the design documents shall be identified and corrected.

Deviations in specified quality standards shall be identified and procedures shall be established to assure their resolution and control.

Review of commercial grade items for suitability of use in structures, systems or components within the scope of this Plan shall be conducted prior to such use.

Design verification methods (design review, alternate calculations or qualification testing) shall be established and completed prior to turnover for operation.

Design verification procedures shall be established which assure the following:

- a. The verifier is qualified and is not directly responsible for the design.
- b. Verification, including approved field changes, is complete prior to turnover of the component or system to Operations.
- c. The responsibilities of the verifier, the areas and features to be verified, and the extent of documentation of the verification is specified.

When verifications are to be accomplished solely by test, the prototype, component, or feature testing shall be performed prior to installation of the equipment, or prior to the point when the installation would become irreversible. Verification by test shall be performed under conditions that simulate the most adverse design conditions as determined by analysis.

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Procedures shall be established to assure that computer codes, and changes thereto, are verified, certified and controlled to prevent unauthorized changes.

Changes to approved engineering documents, including field changes, shall be subject to design control measures. Design changes shall be reviewed and approved by the organization responsible for the original design or by another organization, with comparable expertise, designated to review and approve changes. Deviations from engineering requirements shall not be authorized, except as specifically approved by Site Engineering in advance. Quality Verification review shall also be required in advance if the deviation affects inspection and/or welding requirements.

Design documents subject to procedural control include, but are not limited to, specifications, calculations, computer programs, design descriptions, and drawings (including flow diagrams, piping and instrument diagrams, system diagrams, facility drawings showing equipment locations, and site arrangements).

Measures, which include procedure changes, shall be provided to assure that responsible plant personnel are made aware of design changes and/or modifications which may affect the performance of their duties.

5.0 PROCUREMENT AND MATERIAL CONTROL

5.1 Control of Procurement

5.1.1 General

Procurement of items and services which are within the scope of this Plan shall be performed in accordance with approved documents which establish methods for preparation, review, approval, and control of procurement documents. These methods shall ensure that technical, quality, and regulatory requirements, and regulatory commitments applicable to the procurement are met, as a minimum. These methods shall ensure that procurement sources are evaluated and confirm that the activities of consultants, vendors and contractors, and purchased items conform to procurement document requirements. The programs of all participants shall be in accordance and/or compatible with the applicable requirements of this Plan.

The general and specific requirements for the Quality Assurance Program of all suppliers, including their sub-supplier's, supplying items and services within the scope of this Plan shall be prescribed by procurement documents. These quality program requirements shall be consistent with Section 2.3 of this Plan.

Requirements of this Plan shall be applied with a graded approach to the procurement of new and spare parts, replacement parts, commercial grade items and consumables. Procurement of spare or replacement parts for structures, systems and components shall be subject to current Quality Assurance Program controls and to codes, standards, technical and quality requirements equal to, or better than, original, as may have been superseded or upgraded by regulatory requirements or commitments. As a minimum, when documented quality and technical requirements are not available, then the procurement of spare parts, replacement parts, and consumables within the scope of this Plan shall be in accordance with an approved specification or the use justified by a documented engineering determination. The use of commercial grade items in safety related applications shall be controlled as specified by Section 5.1.2.4 of this Plan.

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5.1.2 Requirements

5.1.2.1 Procurement Documents

The requirements for the preparation, review, approval and control of procurement documents shall be prescribed in detailed procedures. These procedures shall prescribe requirements to ensure that procurement documents:

- a. Specify the technical and quality assurance requirements commensurate with regulatory requirements and commitments, and this Plan.
- b. Require applicable quality assurance requirements to be imposed on sub-vendors and subcontractors.
- c. Specify or reference design basis technical requirements, including applicable regulatory requirements and commitments, material and component identification requirements, drawings, specifications, codes and standards, test, calibration, and inspection requirements, handling, storage and shipping requirements, and special process instructions.
- d. Identify the documentation to be prepared, maintained, and submitted for review, approval and retained, as applicable.
- e. Identify those items and activities within the scope of this Plan.
- f. Identify those records which vendors or contractors shall retain, maintain, and control; and those which vendors or contractors shall deliver prior to use or installation of the item.
- g. Include right of access to vendors or contractors and sub-tier vendor and contractor facilities and records when required for source inspection and/or audit.
- h. Contain technical requirements for spare or replacement parts which are at least equivalent to those used for the original procurement.
- i. Include the provision that suppliers shall refrain from implementing procedures which require owner approval prior to obtaining such approval.
- j. Require external design organizations performing design activities for AmerGen to have and implement quality programs which include design control provisions equivalent to those provided in this Plan.
- k. Identify the programs, procedures, activities or conditions that require AmerGen approval and/or release.

Measures shall be established for the review, approval, and release of procurement documents and subsequent revisions. The reviews shall assure the inclusion of the applicable technical, quality, regulatory, and administrative requirements in procurement documents prior to their use. Review of procurement documents shall be documented to provide objective evidence of their approval prior to release.

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In the case of "commercial grade items," the procurement process shall be controlled so that the dedication process described in 5.1.2.4 is met.

5.1.2.2 Qualification and Selection of External Organizations

Evaluations of prospective suppliers shall be conducted and documented to demonstrate qualifications based upon one or more of the following criteria:

- a. Review of performance histories which provide records of the supplier's previous capability to provide similar products or services.
- b. Review of the external organization's capability to comply with the TMI- Unit1 Quality Assurance Program, as applicable to the Items or services to be supplied.
- c. A pre-award survey of the external organization's facilities and Quality Assurance Program to determine the prospective supplier's capability to meet the technical and quality requirements of the procurement document(s).

Procedures shall be established to prescribe the evaluation and selection of external organizations. Contracts or purchase orders for Items or services within the scope of this Plan shall be awarded to external organizations whose Quality Assurance Program has been reviewed and accepted by AmerGen as being commensurate with the design requirements for the equipment or services to be provided. Otherwise the external organization will be required, by procurement documents, to work under the direct control of the TMI-1 Quality Assurance Program. In these instances, the supplier will not be required to have a separate quality assurance program.

When AmerGen acceptance of an external organization's Quality Assurance Program is required, it shall be reviewed for concurrence by AmerGen prior to initiation of the activity affected by their program.

5.1.2.3 Manufacturing Assurance

Measures shall be established to provide control of manufacturing activities of suppliers. These methods shall be described in detailed written procedures.

The attributes of the manufacturing assurance program shall include:

- a. Provisions for the review for concurrence of the supplier's drawings, quality assurance manual, manufacturing and quality procedures prior to fabrication. When specified in approved procurement documents, suppliers may not implement procedures until written notice of AmerGen acceptance is received.
- b. Established supplier inspection plans that delineate, as required, the hold and/or witness points in the manufacturing process for specified review, inspection, verification and test.
- c. Methods for identifying, reporting, and resolving nonconformances where the supplier's suggested disposition is "Use-as-is" or "Repair." Such methods shall

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require the approval of the supplier disposition of nonconformances by the responsible engineer and Nuclear Services. Nuclear Services shall also verify that repairs are accomplished in accordance with the approved disposition.

- d. Notification of Receipt Inspection of outstanding non-conformances and/or incomplete pre-shipment inspection prior to item shipment from the supplier.
- e. Planned and systematic audit, source inspection and/or source surveillance of supplier activities or products. Scope of coverage and frequency shall be determined by the criticality of the furnished items or services and the evaluated results of supplier qualifications, including pre-award surveys and document reviews. Revisions to source verification plans shall be made as warranted by supplier performance. Typically, audits will be conducted on suppliers of services; and, source inspection, source surveillance's, and/or receipt inspection will be conducted on suppliers of hardware.
- f. Control of supplier document packages, including review for completeness and acceptability. Inadequate records which render the quality status of items furnished as "indeterminate" shall be sufficient cause for rejection of the items.
- g. Assessments of supplier control of quality shall be made at a frequency and depth commensurate with the importance, complexity and quantity of the items furnished. These assessments shall utilize the qualitative and quantitative information provided by supplier noncompliance documents; surveillance, inspection and audit reports; and receiving inspection and test records.
- h. Material acceptance procedures that assure:
 1. The material, component, or equipment is clearly identified and that the identification and quantity correspond to the information on the shipping documents and quality records.
 2. The item's handling and shipping requirements have been met by the supplier and maintained by the carrier.
 3. The item's record package or compliance certificate is complete and adequate.
 4. The material, component or equipment meets the technical requirements specified in the procurement documents, inspection plans, checklists or other special engineering documents.
 5. Items delivered which are not in compliance with requirements are documented in accordance with the nonconformance procedure, tagged (As item configuration or storage conditions permit. Additional administrative controls shall be used if tagging is not possible.), segregated (if possible), and prevented from being inadvertently issued for installation or use.

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

5.1.2.4 Commercial Grade Dedication for Safety Related Applications

The process of acceptance of commercial grade items intended for use in *safety related* applications shall be controlled and implemented through an approved procedure(s) which includes the following:

- a. An engineering evaluation to determine if the commercial grade item performs a safety function or if its failure could compromise a safety function.
- b. A determination that the definition of commercial grade item as provided in 10CFR21 is met.
- c. A determination of the critical characteristics for acceptance which are essential for the performance of its safety function.
- d. The definition of functional tests and/or inspections, including acceptance limits, to be performed to verify critical characteristics.
- e. Verification that critical characteristics have been met by one of the following:
 1. Performance of functional tests and/or inspections after receipt by AmerGen;
 2. Witnessing of functional tests and/or inspections at the supplier's facility.
 3. Assuring through audit or surveillance that the supplier has a quality program which adequately controls the critical characteristics; performs tests and/or inspections which verify that critical characteristics have been met;
 4. Establishing the commercial grade part performance history concurrent with performing one of e(1), e(2) or e(3) above; or,
 5. Any combination of e(1) through e(4) above.

This dedication process shall result in the documented basis for the appropriateness of the use of the commercial grade item in the specific *safety related* application.

5.2 Identification and Control of Materials, Parts and Components

5.2.1 General

Measures shall be established to provide for the identification and control of Items within the scope of this Plan. These measures shall ensure that incorrect or non-conforming items are

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identified and controlled in order to prevent their inadvertent installation or use. Where required by design documents, the system established shall provide traceability of components from the receipt of material through fabrication, installation and testing. Verification shall include review of objective evidence of inspections and tests which demonstrate that product identification and control is maintained at various stages of manufacture, installation, or erection. Identification requirements shall be specified in the applicable design and procurement documents.

5.2.2 Requirements

Identification and traceability requirements shall be included in specifications and drawings.

Items, including partially fabricated subassemblies and subdivided materials, shall be identified to preclude the use of incorrect or defective items.

Items within the scope of this Plan shall be identified so that they can be traced to appropriate documentation, which provides objective evidence that the technical and quality requirements have been met; such documents include but are not limited to:

- a. Specifications
- b. Drawings (including as-builts)
- c. Procurement Documents
- d. Physical and Chemical Test Reports
- e. Nonconformance Reports
- f. Inspection Reports and Checklists
- g. Storage Maintenance Instructions
- h. Nondestructive Examination Reports
- i. Vendor Certificates of Compliance

The identification and/or end use of items shall be specified in procurement documents and work authorizing documents to provide this traceability.

Traceability to heat and/or lot number shall be provided when required by code(s). Traceability is provided for parts of items within the scope of this Plan. However, if the parts do not provide or contribute to the performance of a *safety related* function, traceability will not be provided unless required by code(s) or regulation(s).

The location and method of identification shall be specified so as not to affect the form, fit, function or quality of the item being identified.

Correct identification of items shall be verified prior to release for fabrication, shipping, installation, and testing.

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Where physical identification is either impractical or insufficient, physical separation, procedural control, or other approved means may be employed.

A receipt inspection, when specified by procurement documents, shall be performed at the site to verify that identification for received items is complete and accompanied by specified documentation. In the case of commercial grade items, receipt inspections shall be conducted consistent with 5.1.2.4 of this Plan.

6.0 CONTROL OF STATION ACTIVITIES

6.1 General

This section provides general requirements which are applicable to the operational, support, and assurance activities which are directly related to the safe operation, maintenance and modification of the nuclear station.

6.2 Control of Inspections Requirements

6.2.1 A program for performance of inspections of activities within the scope of this Plan shall be established and executed by, or for, the organization performing the activity to verify conformance to the documented instructions, procedures, specifications and drawings for accomplishing the activity. Design specifications, drawings, procedures, or instructions shall include the necessary requirements for performance of inspections. These requirements include acceptance criteria and reference to codes, standards, and regulatory requirements and commitments. These requirements shall be further translated into procedures, instructions, or checklists which shall contain, as required, the following:

- a. Identification of characteristics and activities to be inspected.
- b. Methods to be used, including necessary measuring and test equipment and the accuracy requirements.
- c. Identification of organization responsible for performing the inspection.
- d. Acceptance and rejection criteria.
- e. Identification of required procedures, drawings and specifications, including the applicable revisions.
- f. Documentation of inspection results, including identification of the individual performing the inspection.

6.2.2 Inspectors (including NDE personnel) shall be qualified in accordance with applicable codes, standards and/or AmerGen accepted qualification programs and their qualification and certification shall be kept current and documented.

6.2.3 Individuals performing inspections and/or examinations shall be other than those who perform or directly supervise the activity being inspected and shall not report directly to the immediate supervisors who are responsible for the work activity being inspected. If the individuals

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performing the inspections and/or examinations are not part of the responsible Quality Verification, NDE or ISI organizations, the procedures and personnel qualification criteria shall be reviewed and concurred with by Quality Verification, NDE or ISI as appropriate prior to the initiation of the activity. When inspections and/or examinations associated with normal operation of the plant (such as routine maintenance, surveillance and tests) are performed by individuals other than those who performed or directly supervised the work, but are within the same production discipline (e.g. electrical, mechanical), the following controls shall be met:

- a. The quality of the work will be demonstrated through a functional test when the activity involves breaching a pressure retaining item.
 - b. The qualification criteria for the personnel are reviewed and found acceptable prior to initiating the inspection/examination by NDE, ISI or Quality Verification as appropriate.
- 6.2.4 Inspections (excluding NDE) of maintenance activities may be conducted by individuals who directly report to a supervisor immediately responsible for the maintenance being inspected. However in such cases the following shall be met:
- a. The qualification of individuals shall be reviewed for concurrence by Quality Verification.
 - b. Deficiencies identified shall be handled consistent with the requirements of Section 8.0 of this Plan.
 - c. Independent inspections and/or review of such cases of maintenance and inspection shall be conducted by Quality Verification. The frequency and scope of such independent verifications shall be based on the observed quality of the inspections.
- 6.2.5 Quality Verification shall establish documented methods to review work activities prior to implementation to determine the need for inspection. Additionally, Quality Verification shall take appropriate action when warranted to control and prevent the use of non-conforming materials. This action will include as necessary stopping work, further processing, delivery, or installation.
- 6.2.6 When Inspection Points have been established, either contractually, by procurement, or internally by plant procedures, work may not proceed beyond the Inspection Point until either the inspection is performed or it is waived by Quality Verification. Organizations performing work within the scope of this plan shall make available to Quality Verification documents or copies of documents required to complete required inspections.
- 6.2.7 Inspections of modifications, repairs, and replacements shall be by the same method and to the same criteria as the original, or by a documented alternative approved by Quality Verification. Where verification of inspection is being performed on previously accepted lots, sampling inspection shall be representative and only to the extent necessary to assure adequacy of control. The sampling plan shall be determined by Quality Verification. Inspection personnel shall be provided with suitable equipment and tools, which are calibrated as necessary, and controlled to assure that accuracy requirements are satisfied and that inspections are complete.
- 6.2.8 Inspection data and results shall be evaluated by designated personnel to assure that the objectives have been met and that items requiring action or follow-up have been identified and documented.

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6.2.9 Records shall be kept in sufficient detail to provide adequate confirmation of an inspection program.

6.3 Control of Special Processes Requirements

Special processes are those processes that require interim in-process controls in addition to final inspection to assure quality. Such processes include, but are not limited to, welding, heat treating, chemical cleaning, nondestructive examination, plant chemistry control, and the processing and preparation for shipment of radioactive wastes.

Measures shall be established and documented to assure that special processes are accomplished under controlled conditions in accordance with applicable codes, standards, applications criteria, regulatory requirements and commitments, and other special requirements including the use of qualified personnel and procedures.

Procedures for special processes shall be established to meet the requirements of applicable codes, standards, and regulatory requirements and commitments, or to meet the requirements of special process specifications which may be produced by or for AmerGen. These procedures shall provide for recording evidence of acceptable completion of special processes. Procedures and instructions for the control of special processes shall be reviewed and approved by qualified personnel. Procedures, equipment, and personnel performing special processes shall be qualified in accordance with applicable codes, standards, and specifications. Organizational responsibilities shall be delineated for the qualification of special processes, equipment and personnel. Qualification records of personnel, equipment, and procedures associated with special processes shall be established, prepared and kept current. For special processes not covered by the existing codes or standards, or when the quality requirements of an item exceed the requirements of established codes or standards, the necessary qualifications of personnel, procedures and equipment shall be defined in the procedure.

6.4 Test Control Requirements

6.4.1 A documented test program shall be established to assure that all testing required to demonstrate that the structures, systems or components within the scope of this Plan will perform satisfactorily in service. The tests shall be performed in accordance with written, approved, and controlled test procedures or instructions which incorporate or reference the requirements and acceptance standards contained in the applicable design documents. The extent of testing shall be based on the complexity of the modification, replacement, or repair. Testing, including proof tests prior to installation, hydro testing, in-service testing (IST) and pre-operational tests, necessary to demonstrate that the installed or modified structures, systems and components will perform satisfactorily in service, shall be accomplished in accordance with written approved procedures or instructions. These procedures shall be consistent with, or incorporate the technical and quality requirements and acceptance limits specified by applicable design and procurement documents. These test procedures or instructions shall provide for the following as required:

- a. A description of the test objective.
- b. Instructions for performing the test, including caution or safety notes in sufficient detail to avoid operator misinterpretation.
- c. Test prerequisites such as calibrated instrumentation, adequate test equipment and instrumentation (including accuracy requirements), completeness of item to be tested,

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suitable and controlled environmental conditions, and personnel to be provided to conduct testing under the direction of a qualified test supervisor or test engineer.

- d. Provisions for data collection and storage.
- e. Acceptance and rejection criteria as specified in design and procurement documents.
- f. Methods of documenting or recording test data and results, in sufficient detail to prevent misinterpretation.
- g. Mandatory hold or inspection points by AmerGen and/or other designated personnel.
- h. Provisions for control of jumpers, lifted leads, and jurisdictional or safety tags.
- i. Provisions for returning a system to normal configuration upon completion of the test, including verification.
- j. Provisions for assuring test prerequisites have been met.

6.4.2 Test results shall be documented, evaluated, and their acceptability determined by a responsible individual or group. Non-conforming test results shall be addressed, resolved, and reported as required by the Operating License and Technical Specifications of the unit.

6.4.3 The test program shall cover all required tests including:

- a. Pre-operational tests of components or systems to demonstrate that performance is in accordance with the design intent.
- b. Tests during initial operation to demonstrate system performance (that could not be tested prior to operation) to confirm compliance to design criteria.
- c. Tests during the operational phase to provide assurance that failure or substandard performance does not remain undetected and that the required reliability of systems within the scope of this Plan is maintained.
- d. Tests during activities associated with plant maintenance during the operational phase to demonstrate satisfactory performance following plant maintenance or procedural changes.

6.4.4 Tests performed following plant repairs or replacements (post maintenance tests) shall be conducted in accordance with the original design and testing requirements or approved, documented alternatives. Testing shall be sufficient to confirm that the changes reasonably produce expected results and that the change does not reduce safety of operations. Testing shall be documented and results accepted prior to operation.

6.5 Control of Measuring and Test Equipment (M&TE) Requirements

6.5.1 Measures shall be established to control installed and portable equipment used to conduct measurements or tests related to determining the functionality or quality of structures, systems and components within the scope of this Plan. Such measuring and test equipment typically

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includes tools, gauges, meters and other devices. Such measurements and tests include, as a minimum, those associated with the activities of operation, maintenance, modification, chemistry, radiological and environmental controls, nondestructive examination, and inspection. Such measures shall ensure that measuring and test equipment is properly identified and calibrated or adjusted at specified periods to maintain accuracy within specified limits. Measures shall also be established to ensure that range, type, accuracy and use of the equipment conforms to specified requirements.

6.5.2 Requirements for each control program shall include inspection and verification of accuracy upon receipt of equipment, identification of all gauges and instruments, calibration and scheduled recall for calibration and traceability to an accepted Standard. These activities shall be subject to Nuclear Oversight monitoring and auditing. Procedures shall be established to implement the following requirements:

- a. Establish the calibration technique and frequency requirements, maintenance requirements, and controls for all M&TE which are used in the measurement, inspection, and monitoring of components, systems, and structures within the scope of this Plan (e.g. instruments, tools, gauges, fixtures, reference and transfer standards, and nondestructive examination equipment).
- b. The identification of M&TE traceable to the calibration test data.
- c. M&TE requiring calibration shall be identified and controlled in accordance with written, approved procedures to assure that approved calibration intervals are not exceeded. M&TE shall be clearly labeled to indicate the date on which the current calibration expires. M&TE that has exceeded the approved calibration interval shall not be used for measurements or tests until its calibration has been re-established.
- d. Establish calibration frequency for M&TE based on required accuracy, purpose, degree of usage, stability characteristics, and/or any other condition which may affect the measurement. A calibration recall system shall be implemented to assure re-calibration within the required period for each piece of M&TE covered under the scope of this program.
- e. Establish methods for determining the validity of previous inspections performed when the M&TE is found to be out of calibration. Inspections or tests shall be repeated on items determined to be suspect. Such determination shall be documented in suitable form. If any calibration, testing or measuring device is consistently found to be out of calibration, it shall be repaired or replaced.
- f. M&TE used to calibrate instruments and gages (e.g. flow meters, transmitters, sensors, pressure gauges, level indicators.) shall have been calibrated against working standards with accuracy's at least four times greater than that of the equipment being calibrated. The instrument or gage calibration accuracy in reference to the M&TE shall be at least 1:1.

In cases where the instrument or gage is calibrated directly against working standards, the working standard shall have an accuracy of at least 1:1 and the secondary standards used to calibrate the working standards shall have an accuracy of four times greater than that of the working standards.

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When the above requirements cannot be met, the standards used to calibrate the M&TE shall have a precision and repeatability that assures that the equipment being calibrated will be within the required tolerance. The basis of acceptance shall be documented and authorized by the supervisor of the calibrating organization.

Some M&TE, because of their construction (such as mechanical dial indicators) or because they are not adjustable (such as rulers), need not be periodically calibrated. However, their physical condition and, where applicable, accuracy shall be routinely checked prior to use.

- g. The calibration status of M&TE which is used for determining the functionality or quality of structures, systems and components within the scope of this Plan shall be maintained.
- h. Utilization of reference and transfer standards traceable to nationally recognized standards. Where national standards do not exist, provisions shall be established to document the basis for the calibration.
- i. NDE equipment shall be controlled and calibrated in accordance with the industry code governing its use.

6.6 Handling, Storage and Shipping Requirements

- 6.6.1 Measures shall be established and documented to control handling, storage, and shipping, including cleaning, packaging, and preservation of items within the scope of this Plan in accordance with established instructions, procedures, and drawings to prevent damage, deterioration or loss. The requirements for handling, storage, packaging and shipping of radioactive wastes are contained in Section 7.0 of this Plan.
- 6.6.2 Procedures shall be established to control the cleaning, handling, storage, packaging, and shipping of materials, components, systems in accordance with design and procurement requirements to preclude damage loss or deterioration by environmental conditions such as temperature or humidity. These procedures shall be implemented by suitably trained individuals. The procedures shall include but not be limited to, the following:
 - a. Packaging and preservation procedures to provide assurance of adequate protection against corrosion, contamination, physical damage or any effect which would lower the quality of the items or cause deterioration during shipping, handling or storage. Special protective environments, special coverings, inert gas atmospheres, moisture contents, and temperature controls shall be specified as required and their existence verified and documented.
 - b. Cleaning methods to provide assurance that necessary cleaning operations are carried out prior to packaging, storage or installation. The level of cleanliness required, and verification and documentation requirements shall be specified.
 - c. Detailed handling methods for all items that require special handling. Special handling tools and equipment shall be provided and controlled to ensure safe and adequate handling. These tools and equipment shall be maintained, inspected and tested in

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accordance with written procedures at established intervals to ensure their reliability and availability for use.

- d. Storage practices to provide for methods of storage and the control of items in storage which will minimize the possibility of damage or deterioration during storage. Periodic inspections of storage areas shall be performed and documented to verify compliance with storage procedures. Release of items for installation shall also be procedurally controlled.
- e. Provisions to assure that proper marking and labeling of items and containers is accomplished to provide identification and necessary instructions during packaging, shipment and storage.
- f. Provisions for documenting and reporting nonconformance to handling, and shipping requirements.
- g. Provisions for the storage of chemicals, reagents, lubricants and other consumable materials which will be used in conjunction with systems which are within the scope of this Plan.
- h. Provisions for "Limited Life" requirements (including "Shelf Life" and "Service Life" for applicable materials).

6.7 Inspection, Test, and Operating Status Requirements

- 6.7.1 Measures shall be established and documented to ensure that the required inspections and tests are performed and that the acceptability of items with regard to inspection and tests performed is known throughout manufacturing, installation, and operation. Status of items covered by the scope of this Plan shall be controlled in accordance with approved procedures. These procedures shall include the use of appropriate tags, markings, lists, logs, diagrams, electrical and mechanical jumpers, or other suitable means, to assure that required inspections and tests are satisfactorily completed to prevent inadvertent bypassing of required inspections and tests and to prevent inadvertent operation.
- 6.7.2 The requirements for an acceptable inspection, test and operating status program for structures, systems, and components throughout fabrication, installation, test and operation include:
 - a. Design and quality documents which address the requirements for the identification of inspection, test, and operating status of structures, systems and components.
 - b. Procedures which include controls for the application and removal of inspection and welding stamps, and other status indicators such as tags, jumpers, markings, labels, and stamps.
 - c. Procedures for controlling the bypassing or altering of the sequence of required inspections, tests or other critical operations are procedurally controlled with concurrence by Nuclear Oversight. The procedures shall provide for the identification of items which have satisfactorily passed such inspections and tests, where necessary to preclude inadvertent bypassing of required inspection and tests.

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- d. In cases where documentary evidence is not available to confirm that an item has passed required inspections and tests, that item shall be considered non-conforming until such evidence becomes available. Affected systems shall also be considered to be inoperable and reliance shall not be placed on such systems to fulfill their intended safety functions.
- e. Procedures requiring identification of the operating status of systems, components, controls, or support equipment in order to prevent inadvertent or unauthorized operation. These procedures shall require control measures such as locking or tagging to secure and identify equipment in a controlled status. Independent verification shall be required, where appropriate, to ensure that necessary measures, such as tagging equipment, have been implemented correctly.
- f. Methods which ensure temporary modifications/variations shall be controlled by approved procedures which include a requirement for independent verification. A log of the current status of such temporary modifications/variations shall be maintained.
- g. Methods which ensure that non-conforming services and inoperative or malfunctioning structures, systems, components or materials shall be identified in accordance with the requirements of this Plan.

6.8 Housekeeping and Cleanliness Requirements

- 6.8.1 Good housekeeping practices shall be utilized at all times to maintain the facilities in a neat and clean condition and to assure the control of radioactive contamination areas and the control of work activities, conditions and environments that can affect the quality of parts of the nuclear plant within the scope of this Plan.
- 6.8.2 Housekeeping encompasses all activities related to the control of cleanliness of facilities, materials and equipment; fire prevention and protection, including disposal of combustible material and debris; control of access to areas; protection of equipment; radioactive contamination control; and storage of solid radioactive waste.
- 6.8.3 Housekeeping practices shall assure that only proper materials, equipment, processes, and procedures are utilized and that the quality of the item is not degraded as a result of housekeeping practices or techniques. During maintenance activities, certain portions of safety-related systems or components may be subject to potential contamination with foreign materials. To prevent such contamination, control measures, including measures for access control, and tool accountability shall be established. Additionally, immediately prior to closure of systems or components, an inspection shall be conducted and documented to ensure cleanliness. Special housekeeping considerations shall be made for maintenance of radioactivity contaminated systems and components.

6.9 Equipment Control Requirements

- 6.9.1 Authorization to remove plant installed operational equipment or systems from service, for maintenance or modification, shall be granted by the on-duty shift supervision.
- 6.9.2 Procedures shall be provided for control of equipment, as necessary, to maintain personnel and reactor safety, to avoid unauthorized operation of equipment, and to assure that operational equipment is in a ready status. Work on equipment and systems critical to the safe operation of

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the plant shall not be performed while the plant is operating without specific advanced approval by the designated Operations management personnel in each instance. The procedures for controlling the removal from service and the return to service of equipment shall require:

- a. Control measures, such as locking or tagging, to secure and identify equipment in a controlled status.
- b. Independent verifications, when necessary, to ensure that measures, such as tagging equipment, have been implemented correctly.
- c. Temporary modifications/variations, such as temporary bypass lines, blank flanges or similar mechanical inserts, electrical jumpers, lifted electrical leads, and temporary trip point settings shall be controlled by approved procedures which shall include a requirement for independent verification by either a second person or by functional test which conclusively proves the proper installation and subsequent removal of the temporary modification. A log or equivalent documented evidence of the current status of such temporary modifications which are installed shall be maintained
- d. Control of inspection and test status on individual items by the use of markings such as stamps, tags, labels, routing cards or other suitable means.
- e. When equipment is ready to be returned to service, operating personnel shall place the equipment in operation and verify and document its functional acceptability.
- f. The equipment shall be adequately identified on the documentation to assure traceability.

6.10 Control of Construction, Maintenance (Preventive/Corrective) and Modifications Requirements

- 6.10.1 Construction, maintenance or modifications which have the potential to affect the functioning of structures, systems or components within the scope of this Plan shall be performed in a manner to ensure quality at least equivalent to that specified in the original design basis and requirements, materials specifications, and inspection requirements. A suitable level of confidence in structures, systems or components on which maintenance or modifications have been performed shall be attained by appropriate inspection and performance testing. Construction, maintenance or modification of equipment shall be pre-planned and performed in accordance with written procedures, instructions or drawings appropriate to the circumstances which conform to applicable codes, standards, specifications, and criteria. In this regard, modification type work in areas and systems of the plant critical to the safe operation of the plant shall not be performed while the plant is operating without specific advance approval by the Vice President - TMI - Unit 1 or designee.
- 6.10.2 Detailed step by step procedures are not required for all maintenance and modification work. The supervisor planning the job must consider the skills required to ensure proper completion of the work and identify the procedural requirements accordingly. Work such as replacing chart or drive speed gears, replacing fuses or tightening valve packing may not require written procedures.

Whereas, work involving inter-departmental coordination or risk of nuclear or personnel safety requires a higher level of administrative control, such as approved procedures and sign offs to properly coordinate, direct and document the activity.

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- 6.10.3 Skills normally possessed by qualified maintenance personnel may not require detailed step-by-step delineations in a written procedure, but are subject to general administrative procedural controls that govern or define the following areas:
- Methods for obtaining permission and clearance from Operations personnel to work, and for logging such work.
 - Factors to be taken into account, including the necessity of maintaining occupational radiation exposure as low as reasonably achievable (ALARA).
 - Method for identification of what procedural coverage is necessary for the maintenance, construction or modification activity.
 - Considerations for system/equipment cleanliness control.
 - Method for identification of post maintenance, construction or modification testing, including system/equipment functional capability to meet operational requirements in all respects.
 - Method for ensuring that maintenance, construction or modification activities, performed either on-site or off-site, are properly reviewed.
 - Considerations for other activities already taking place in the general area.
- 6.10.4 Means (for example, inspections, measurements, tests, welding, heat treatment, cleaning, nondestructive examination and worker qualifications in accordance with applicable codes and standards) for assuring quality of maintenance, modifications or construction activities, and measures to document the performance thereof, shall be established. Measures shall be established and documented to identify the inspection and test status of items to be used in maintenance, modification, or construction activities. Quality Verification shall review selected maintenance and installation documents for inclusion of quality requirements and inspection points.
- 6.10.5 A corrective maintenance program shall be developed to maintain structures, systems and components within the scope of this Plan at the quality required for them to perform their intended functions. Corrective maintenance shall be performed in a timely manner and documented to ensure that items within the scope of this Plan are adequately maintained in the original, as designed, functional status.
- 6.10.6 A preventive maintenance program, including procedures, as appropriate, for structures, systems, and components within the scope of this Plan shall be established which prescribes the frequency and type of maintenance to be performed. In all cases, maintenance shall be scheduled and planned so as not to compromise the safety of the plant. Planning shall consider the possible safety consequences of concurrent or sequential maintenance, testing or operating activities. Preventive maintenance shall be performed in a timely manner and documented to ensure that items within the scope of this Plan are adequately maintained in the original, as designed, functional status.
- 6.10.7 Proposed modifications shall be reviewed, approved and controlled in accordance with the applicable requirements of the Operating License and Technical Specifications, and procedures

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governing the design, procurement, construction, testing and inspection. Modifications to structures, systems and components within the scope of this Plan shall be reviewed and accepted in accordance with the requirements of Section 2.8 of this Plan.

- 6.10.8 Design, procurement, construction, testing and inspection of all modifications shall be performed in accordance with the applicable portions of this Plan.
- 6.10.9 Upon completion of the design phase of a modification, Site Engineering turns the project over to Maintenance for installation of the modification with an engineering document package. Procurement of the required items is initiated.

The Manager Planning prepares the necessary installation procedures or instructions, consistent with engineering requirements. Maintenance completes the installation and construction testing and compiles the records which it generated for retention. Engineering problems identified during installation shall be identified to Site Engineering for resolution using the appropriate documentation as identified in the implementing procedures. Maintenance shall notify Quality Verification and, where applicable, the Authorized Inspection Agency, of all identified inspection points in sufficient time for performance of the inspection.

6.11 Control of Surveillance Testing and Inspection Requirements

- 6.11.1 A surveillance testing and inspection program shall be established and implemented in accordance with Operating License and Technical Specification requirements to ensure that structures, systems, and components within the scope of this Plan will continue to operate and maintain parameters within normal bounds, and will function to place the plant in a safe condition if parameters exceed normal bounds.
- 6.11.2 Provisions shall be made for performing required surveillance testing and inspections, including in-service inspections. Such provisions shall include the establishment of a Technical Specifications surveillance testing schedule reflecting the status of all planned in-plant surveillance tests and inspections. Frequency of surveillance tests and inspections may be related to the results of reliability analyses, the frequency and type of service, or age of the item or system, as appropriate.
- 6.11.3 Additional control procedures shall be instituted, as necessary, to assure timely conduct of surveillance tests and inspections, and appropriate documentation, reporting, and evaluation of the results. Procedures shall be established to assure proper review of surveillance test data and the return of systems to an operable status following the completion of testing. These procedures shall include provisions for the documentation of authority, conduct, responsibility, and verification involved in returning the system to an operable status. Such provisions shall include the use of procedures, checklists, and independent verification as appropriate, considering the degree that system status was altered during the performance of the test.

6.12 Radiological Control Requirements

- 6.12.1 A radiological controls program shall be established and implemented to:
 - a. Control radiation hazards
 - b. Avoid accidental radiation exposures

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- c. Maintain exposures to workers and the general population as low as reasonably achievable (ALARA), and within regulatory requirements.
- d. Provide guidance and specify appropriate methods or techniques to ensure that the performance of activities is in accordance with sound radiological control principles and in compliance with applicable regulatory requirements.
- 6.12.2 The radiological controls program shall be fully integrated into the applicable activities of each and every phase of operations at the nuclear generating station. Each organizational element shall ensure that the requirements of the Radiological Controls Program, as applicable to their activities, are adequately included in procedures and implemented properly.
- 6.12.3 Procedures shall be provided for the implementation of the radiological controls program. These procedures shall contain the requirements for implementation of the program by Radiological Controls and the requirements for inclusion of radiological controls in the plant operation, maintenance and testing procedures.
- 6.12.4 The radiological controls program includes the acquisition of data and provision of equipment to perform necessary radiation surveys, measurements and evaluations for assessment and control of radiation conditions.

6.13 Control of Training Requirements

- 6.13.1 AmerGen is committed to the safe operation of the nuclear generating station and the protection of the public health and safety. This commitment is accomplished, in part, by developing or maintaining the knowledge and skills necessary to manage, supervise, perform and verify activities within the scope of this Plan.

AmerGen considers training to be an important means of effectively developing and maintaining proficiency and solving or avoiding performance problems. Therefore, training shall be provided, as determined to be necessary, which develops, maintains and supplements the skills and knowledge necessary to perform activities within the scope of this Plan.

Training shall be based on training need assessment. The extent to which prior education, training and experience is sufficient to provide for the requisite job proficiency will be considered in deciding whether and what training will be provided for an individual. The content of the training provided shall be consistent with regulatory requirements and commitments.

- 6.13.2 Programs accredited by INPO shall be developed and maintained in accordance with a Training System Development (TSD) process. Such a process provides a systematic approach to the design, development, and delivery of effective training programs. TSD is based upon behavioral learning objectives which are linked directly to job performance requirements.
- 6.13.3 The training programs associated with Radiation Worker, Respiratory Protection, Emergency Preparedness, Fire Protection, and Security Force Training shall be implemented and conducted by training plans and procedures comparable with the AmerGen TSD process. The depth to which the process is applied may vary from program to program, but the implementation and conduct of training shall be based upon behavioral learning objectives which are linked to job performance requirements.

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- 6.13.4 The documents associated with the training programs accredited by INPO and the Radiation Worker, Respiratory Protection, Emergency Preparedness, Fire Brigade, and Security Force Training Programs shall be reviewed, concurred with, and approved in accordance with the Training Management Control Documentation System procedure to assure that related regulatory, management, technical, and functional requirements and commitments are incorporated.
- 6.13.5 A technical content review and interface process shall be established between the user organizational element and the Training organizational element to assure programs accredited by INPO and the Radiation Worker, Respiratory Protection, Emergency Preparedness, Fire Brigade, and Security Force Training Programs are updated to reflect job performance, plant modifications, procedure changes, regulation changes, and job scope changes.
- 6.13.6 The review and approval of specific training program documents developed and/or implemented by organizations, including contractors and/or vendors, other than the Training organizational element shall be delineated in procedures or plans. The extent of Training organizational element review of such training shall be as defined by procedures or plans.
- 6.13.7 Procedures shall be established for the qualification and certification of instructors for programs accredited by INPO and the Radiation Worker, Respiratory Protection, Emergency Preparedness, Fire Brigade, and Security Force Training Programs.
- 6.13.8 To assure the integrity of qualification processes which utilize examinations, procedures for the control of examinations shall be used to address examination security.
- 6.13.9 A program and course evaluation process shall be used to evaluate the effectiveness of training programs and courses in meeting training objectives and in improving job performance. Such a process, and the extent of its usage, shall be delineated in the appropriate procedures or plans.
- 6.13.10 Procedures shall be established to assure that all required records associated with training provided within the scope of this Plan shall be identified, generated, maintained, and retrievable. These training records shall be sufficient to provide evidence of the content and objective of the training provided, attendees, and date of attendance.

7.0 CONTROL OF RADIOACTIVE WASTES OR MATERIALS

7.1 General

- 7.1.1 Measures shall be established and documented to assure that the requirements of the Code of Federal Regulations, Title 10, Part 71, Title 10, Part 20, and Title 49, Parts 100 through 199, applicable to the packaging and transporting of radioactive wastes or materials are satisfied.
- 7.1.2 Subpart H to 10CFR71 identifies the quality assurance criteria applicable to the control of packaging to be utilized to ship radioactive wastes or materials. The portions of this Plan that relate to the criteria in Subpart H to 10CFR71 describe, to a large extent, the administrative controls and quality requirements to be applied in the control, packaging, and transportation of radioactive waste or material. A comparison of the requirements of 10CFR71, Subpart H and the applicable sections of this Plan are listed in Appendix A. These sections of this Plan will be implemented to satisfy the requirements of Subpart H to 10CFR71.

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7.1.3 It is the policy of AmerGen to minimize the generation of radioactive waste, consistent with the ALARA concept to minimize personnel exposures and environmental contamination.

7.1.4 Title 10, Part 20, requires that a quality control program be implemented to verify compliance with Title 10, Part 61.55 (Waste Classification) and Title 10, Part 61.56 (Waste Characteristics). This Plan shall be implemented to the extent necessary to assure compliance with those Parts of Title 10, using a graded approach.

7.2 Requirements

7.2.1 Procedures and administrative controls shall be developed and implemented to cover the following:

- a. Processing of radioactive wastes, including the collection, handling and preparation for shipment of radioactive liquids and solids. These procedures shall be consistent with the ALARA program and shall clearly identify the administrative controls and organizational responsibilities.
- b. Training and qualification of personnel operating radioactive waste processing equipment, health physics monitoring, packaging and shipping (which includes Waste Classification and establishment of Waste Characteristics) and other operations deemed appropriate by management.
- c. The activities associated with the packaging of radioactive wastes or materials shall include the proper selection of the receptacles to be used for containing the waste materials, the selection of the shipping containers (structures used to contain and support the receptacle and its contents), establishment of Waste Characteristics, radiological control inspections of the packaging prior to release, proper markings on the outside of the package, and the preparation of shipping papers and certificates. The activities shall be in accordance with 10CFR20, 10CFR61, 10CFR71, and 49CFR.
- d. Movement of radioactive wastes or materials within and outside the protected area to assure personnel protection at all times.
- e. The shipment of radioactive wastes or materials from the Station shall be in accordance with the regulations of the U.S. Department of Transportation for the transportation of hazardous materials (49CFR) and of the NRC (10CFR71 and 10CFR20).
- f. Design, fabrication, assembly, testing, and modification of packaging used for transportation of radioactive waste or material which exceed the limits specified by 10CFR71.10 shall not be performed by AmerGen. Such packaging shall be purchased from an outside supplier and shall comply with 10CFR71 and 49CFR. AmerGen shall review and accept designs of packaging purchased from an outside supplier.
- g. The packaging used for transporting of radioactive waste or material which does not exceed the limits specified in 10CFR71.10, whether purchased from an outside supplier or designed by AmerGen, shall meet 49CFR.

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- h. Minimization of the generation of radioactive wastes through training programs, prudent scheduling and use of equipment and personnel, and good housekeeping practices.

- 7.2.2 The carriers to be used for transporting of radioactive waste or material shall be selected on the basis of their experience, knowledge of DOT regulations, control and maintenance of their equipment and the selection and control of their drivers. The carrier is required to have or shall be supplied documented procedures covering acceptance of radioactive waste or material from a shipper, certification requirements, placarding, storage control, reporting of incidents and security. AmerGen shall review and accept carrier procedures specified by procurement documents covering the acceptance of radioactive waste or material for shipment.
- 7.2.3 Operations involving radioactive waste processing or radioactive material shall be controlled to minimize personnel exposures or environmental contamination, consistent with ALARA.
- 7.2.4 Operations procedures relating to radioactive waste or material shipping and packaging shall be reviewed by Quality Verification to establish any necessary inspection points.

8.0 CONTROL OF CORRECTIVE ACTIONS AND NONCONFORMANCES

8.1 General

- 8.1.1 Non-conforming Items or Activities within the scope of this Plan shall be identified and controlled to prevent their inadvertent utilization. Measures shall be established which ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. The cause of significant conditions adverse to quality shall be determined and appropriate action taken to prevent recurrence. The identification, cause, and actions taken to correct significant conditions adverse to quality shall be documented and reported to the appropriate levels of management.
- 8.1.2 Significant conditions within the intent of 10CFR21 shall be reported to appropriate management levels within the affected organization for review and evaluation.
- 8.1.3 Some deficiencies can be promptly corrected without initiating defined deficiency and/or nonconformance reports. Such deficiencies are typically those which are isolated to singular occurrences, not repetitive in nature, and/or are such that appropriate action to prevent recurrence can be initiated at the time the deficiency is identified and do not require any action other than reporting the occurrence. Such deficiencies, when discovered during verification activities, shall be documented in the report of the verification activity. Such deficiencies shall be analyzed as specified by Subsection 8.2.8.

8.2 Requirements

- 8.2.1 Nonconformances include both hardware problems involving Items which do not comply with established requirements and non-hardware problems, such as failure to comply with the Operating License and Technical Specifications, procedures, regulations and/or other established requirements.
- 8.2.2 It is the responsibility of all organizations and individuals involved with TMI - Unit 1 to identify and report all nonconformances that affect Items or Activities within the scope of this Plan. These

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nonconformances may be of a minor nature as a result of work activities, inspections, monitoring or reviews; or of a major nature such as those reportable directly to the NRC under 10 CFR Parts 21, 50 and 71 or the station's Operating License and Technical Specifications.

- 8.2.3 Activities, such as examinations or checks performed to assess the condition of equipment or its operation, are not considered to be nonconformances until it has been determined that established acceptance criteria have not been met. These activities shall, however, be documented on an appropriate form to control the activity. Once it has been determined that a nonconformance exists, the condition shall be reported as a nonconformance and the item controlled to prevent inadvertent use prior to correction.
- 8.2.4 Procedures shall be established which detail and implement the following corrective action system measures:
- a. Conditions adverse to quality shall be evaluated to determine the need for corrective action.
 - b. Corrective action documentation of significant deficiencies shall include identification, cause, and actions taken to correct the deficiency and to preclude recurrence. Nuclear Oversight concurrence is required for corrective action disposition for all Nuclear Oversight identified nonconformances.
 - c. Follow-up activities shall be conducted to verify implementation of corrective actions and to close out corrective actions in a timely manner.
 - d. Significant deficiencies, nonconformances and defects which are potentially reportable to the NRC shall be identified to appropriate management levels for evaluation and reporting to the NRC, as appropriate.
- 8.2.5 Procedures shall be established which detail and implement the requirements for identification and control of non-conforming items and activities, and for the identification of the cause of the conditions and the actions to be taken to correct the conditions, and to prevent recurrence. Nuclear Oversight shall review and concur with procedures for reporting and controlling of nonconformances. These procedures shall include requirements for the following:
- a. Identification of the form to be used for reporting the nonconformance.
 - b. Description of the non-conforming item or activity and date of identification.
 - c. Identification of the initiator of the nonconformance report.
 - d. Description of the nonconformance, including identification of the requirement violated.
 - e. Identification of non-conforming items by appropriate means (tags, labels, etc.) and segregation, if practical, until disposition of the non-conforming item has been determined.
 - f. Disposition of nonconformance. The disposition shall be determined by the organization responsible for the nonconformance. Rework and scrap dispositions are made by the material user without engineering review; use-as-is and repair dispositions require concurrence and justification of cognizant engineering organizations. Quality Verification

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shall concur with all dispositions except those originated during receipt inspection. Receipt inspection hardware nonconformance dispositions shall be concurred with by Materials & Contracts.

<p>Note: The individual providing the disposition shall not sign for concurrence or verification of the disposition.</p>

- g. Notification to the affected organizations of the nonconformance.
- h. Verification method, verification, and close out.
- i. Record retention.
- j. Required approval signatures on the disposition and the verification.
- k. Evidence of review for Reportability to the NRC.

8.2.6 Reworked, repaired, and replacement items shall be inspected and tested in accordance with the original inspection and test requirements or acceptable alternatives as determined by Site Engineering and Quality Verification. (Note: Quality Verification is not required for hardware nonconformances found during receipt inspection.) All inspection, testing, rework, and repairs shall be controlled by approved procedures and the results documented.

8.2.7 Prior to the initiation of a preoperational test on a safety related item, all nonconformances shall be evaluated for significance or impact on further testing or operation and shall be dispositioned as appropriate. The evaluation/disposition shall be documented.

8.2.8 Nonconformance reports and those deficiencies addressed in 8.1.3 shall be periodically analyzed to detect adverse trends as may be present. Such analysis shall be based upon severity, number, frequency of nonconformances, the causes of the nonconformances and the timeliness of the reporting and resolution of nonconformances. The results of analyses shall be periodically reported to management for review and assessment. When significant conditions are identified, or when actions are required by upper management to correct problems, such as a generic problem identified by the trend analysis or repetitive failure to disposition nonconformances, these problems shall be elevated to upper levels of management for resolution.

9.0 Assessment

9.1 General

A program of assessment shall be conducted by Nuclear Oversight (internal) and Nuclear Services (external). The assessment program shall combine elements of survey, surveillance, monitoring, document review, and audit to assess the adequacy of performance for activities within the scope of this Plan. Attributes such as accomplishment of objectives; ability to meet management expectations; and compliance to procedures, policies and plans shall be considered when planning and performing assessment activities. Nuclear Oversight personnel shall not have any direct responsibility for managing or performing activities being assessed. Nuclear Oversight personnel shall meet applicable qualification standards when required.

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Assurance activities performed by other organizations (e.g. Receipt Inspection) shall be periodically evaluated to assure compliance to this Plan and applicable procedures. Assessed organizations shall provide sufficient support to assure the accuracy of assessment results, timely review and response to nonconformances, and effective evaluation of root cause and actions to prevent recurrence of significant conditions adverse to quality.

A comprehensive and documented audit system shall be established, implemented and maintained to ensure that:

- a. Plans, procedures and instructions define sufficient organizational responsibilities, prescribe methods and provide results consistent with Operating License requirements, other regulatory requirements and commitments, technical requirements, contractual requirements, and this Plan.
- b. Plans, procedures and instructions are effectively implemented.
- c. Corrective action systems and management reviews provide for timely completion of requisite action for identified deficiencies/nonconformances/occurrences/events.
- d. Corrective action systems and management reviews provide effective identification and prevention of recurrent and/or significant program nonconformances.
- e. Data is provided for AmerGen management to optimize the efficiency of methods utilized to ensure regulatory compliance.
- f. Data is provided for the continuing assessment of the effectiveness of all elements of this Plan and implementing documents.

9.2 Audit Requirements

9.2.1 A comprehensive system of audits shall be established and conducted for both internal and external activities which are within the scope of this Plan.

9.2.2 Planned and scheduled audits shall verify compliance with the following:

- a. Operating License conditions, Technical Specification requirements, other regulatory requirements and commitments, and the requirements of this Plan.
- b. Regulatory Guides, ANSI Standards, and other codes and standards as endorsed by Appendix C of this Plan, or other regulatory requirements or commitments.
- c. Documents which prescribe methods and provide the technical requirements for activities or items within the scope of this Plan.
- d. Contractual requirements associated with external organizations providing nuclear fuel, in-core components and selected technical support and engineering services within the scope of this Plan.

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9.2.3 The audit system shall include:

- a. Delineation of the authority, responsibility, and organizational independence of those responsible for the management and conduct of the audit program.
- b. Procedure(s) for the qualification and certification of lead auditors.
- c. Procedure(s) for the scheduling, preparation, performance, reporting of the results of audits, and distribution to appropriate levels of management.
- d. Periodic analysis of audit results and the reporting of such results to appropriate levels of management.
- e. Follow-up action to be taken based upon individual and collective audit results.

9.2.4 The areas to be audited are listed in the Technical Specifications. The frequencies of internal audits are listed in Appendix E of this Plan.

9.2.5 The frequency of conducting external audits of selected suppliers of technical support, environmental monitoring, radwaste shipping, computer, radio-analytical, and engineering services shall be scheduled once within the life of the activity or every three years depending on the duration of the contractual relationship.

9.2.6 Each audit shall be led by a lead auditor certified in accordance with ANSI N45.2.23. Audit team members shall be utilized as required and will be classified as either auditors or technical specialists, depending on their function on the audit team and shall not have responsibility for the activity audited.

9.2.7 Audits shall be performed in accordance with pre-established written procedures or checklists.

9.2.8 Conditions adverse to quality noted during audits shall be identified in a timely manner. Conditions adverse to quality shall be processed and closed out in accordance with documented corrective action procedures. Conditions adverse to quality noted during audits shall typically not be closed until effective implementation of corrective action is verified.

9.2.9 Sufficient records shall be generated and maintained to provide documentation of audit system scope of coverage, individual audit coverage (i.e., audit plans, checklists, or equivalent), audit reports, lead auditor certifications, follow-up and verification and results of periodic analysis of audit results.

9.3 Monitoring, Survey, Surveillance, and Document Review Requirements

9.3.1 Monitoring, survey, surveillance, and document review is used to establish adequate confidence levels that activities within the scope of this Plan are being performed in accordance with the Quality Assurance Program requirements and plant administrative controls. Monitoring, survey, surveillance, and document review will be performed on a graded approach based typically upon considerations such as the status and safety importance of activities, extent of previous experience, thoroughness of overall coverage, uniqueness of Activities or Items, and trending data.

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- 9.3.2 Monitoring, survey, surveillance, and document review reports shall contain as a minimum the following:
- a. Identification of activity being assessed including specific reference to the program or procedural requirements governing the activity.
 - b. Indication of compliance.
 - c. Identification of Assessor
 - d. Appropriate distribution to supervisory or managerial personnel that have responsibility for the performance of the activity.
 - e. Identification of each nonconformance document initiated as a result of the monitoring survey, surveillance, and document review.
- 9.3.3 Records shall be kept in sufficient detail to provide adequate documentation of a monitoring, survey, surveillance, and document review program.

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APPENDICES

- APPENDIX A Comparison Chart of Operational Quality Assurance Plan Requirements with those of various parts of the Code of Federal Regulations and Nuclear Industry Standards
- APPENDIX B Nuclear Oversight Document Review Requirements
- APPENDIX C NRC Regulatory Guide Commitments and Exceptions
- APPENDIX D Terms and Definitions
- APPENDIX E Audit Frequencies

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APPENDIX A

COMPARISON CHART OF OPERATIONAL QUALITY ASSURANCE PLAN REQUIREMENTS WITH THOSE OF VARIOUS PARTS OF THE CODE OF FEDERAL REGULATIONS AND NUCLEAR INDUSTRY STANDARDS

<u>10 CFR 50, App. B</u>		<u>ANSI N45.2</u>		<u>10 CFR 71, Subpart H</u>		<u>ANSI N18.7 - 1976</u>	
<u>Criterion</u>	<u>QA Plan</u>	<u>Paragraph</u>	<u>QA Plan</u>	<u>Criterion</u>	<u>QA Plan</u>	<u>Paragraph</u>	<u>QA Plan</u>
I	1.0	3.0	2.0;6.10	71.103	1.0	3.1	1.0
II	2.0;6.10	2.0	1.0	71.105	2.0;9.0	3.2	1.0
III	4.0	4.0	4.0	71.107	4.0	3.3	1.0;9.0
IV	5.1	5.0	5.1	71.109	5.1	3.4	1.0
V	3.1	6.0	3.1	71.111	3.1		Supplements
VI	3.2	7.0	3.2	71.113	3.2	4.0	1.0;2.4;2.8;
VII	5.1	8.0	5.1	71.115	5.1		10.0
VIII	5.2	9.0	5.2	71.117	5.2	5.1	2.0;9.0
IX	6.3;6.11	10.0	6.3;6.11	71.119	6.4;6.11	5.2.1	1.4
X	6.2	11.0	6.2		7.0		Supplements
XI	6.4	12.0	6.4	71.121	6.2	5.2.2	3.1
XII	6.5	13.0	6.5		7.0	5.2.3	3.1
XIII	6.6	14.0	6.6	71.123	6.5	5.2.4	3.1
XIV	6.2;6.4;6.7,6.10	15.0	6.2,6.4,6.7,6.10		7.0	5.2.5	3.1
XV	8.0	16.0	8.0	71.125	6.6	5.2.6	6.8;6.10
XVI	8.0	17.0	8.0		7.0	5.2.7	6.11
XVII	3.3	18.0	3.3	71.127	6.7	5.2.8	6.12
XVIII	9.0	19.0	9.0		7.0	5.2.9	-
				71.129	6.8;6.10	5.2.10	6.9
					7.0	5.2.11	8.0
				71.131	8.0	5.2.12	3.3
				71.133	8.0	5.2.13	5.0
				71.135	3.3	5.2.14	8.0
				71.137	9.0	5.2.15	3.0
						5.2.16	6.6
						5.2.17	6.2
						5.2.18	6.4
						5.2.19	6.5
						5.3.1	3.1
						5.3.2	3.1
						5.3.3	3.1
						5.3.4	3.1
						5.3.5	6.11
						5.3.6	6.13
						5.3.7	6.6
						5.3.8	6.13
						5.3.9	3.1
						5.3.10	6.5;6.8

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APPENDIX B

Nuclear Oversight Document Review Requirements

Nuclear Oversight shall selectively review documents which prescribe methods to implement activities within the scope of this Plan or provide the quality and/or technical requirements for items and activities that are within the scope of this Plan. The purpose of such reviews is to verify that such documents are consistent with the requirements of this Plan.

Refer to Section 3.2.2.1 for specific types of documents which will periodically be verified by Nuclear Oversight review.

Nuclear Oversight review of documents within the scope of this Plan may be conducted before or after the documents have been approved for use. Furthermore, Nuclear Oversight will review a sample of specific types of documents within the scope of this Plan. Typically, reviews of documents are conducted during the course of audits of functional areas. When appropriate, document reviews will also be conducted during other assessment activities.

Nuclear Oversight Procedures will be written and implemented:

- To define the typical scope of document reviews.
- To provide for the periodic analysis of document review results. As a minimum, comment types and rates resulting from document reviews will be recorded to provide for a measurement of adequacy. The appropriate corrective action mechanism will be initiated to obtain the desired level of performance when adverse trends are detected.

Some plans, procedures and/or instructions are required by this Plan to be "reviewed for concurrence" by the Director - Mid-Atlantic ROG Nuclear Oversight. These documents and changes thereto shall be identified on the Review and Approval Matrix and shall be reviewed by Nuclear Oversight prior to implementing approval. At the discretion of the Director - Mid-Atlantic ROG Nuclear Oversight, other plans, procedures, and/or instructions and changes thereto may be reviewed for concurrence by Nuclear Oversight. Section 3.1.2 also contains specific requirements related to the assurance of procedure quality.

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APPENDIX C

QUALITY ASSURANCE PROGRAM NRC REGULATORY GUIDE COMMITMENTS AND EXCEPTIONS

This Appendix identifies those Regulatory Guides which contain Quality Assurance Program requirements and identifies the AmerGen positions relative to compliance. Part I of the Appendix is a tabulation of the Regulatory Guides, the corresponding ANSI (or other) Standard, and Remarks. Alternatives or clarifications are detailed in Part 2 of the Appendix.

Compliance with these Regulatory Guides will apply to modifications, additions, and activities performed after issue of this Plan and does not imply backfitting and/or retroactive compliance. It is also to be recognized that existing plant conditions, may prevent or preclude the satisfaction of all requirements of a specific Regulatory Guide. These conditions will be documented and, along with the justification, will be approved by the Director - Mid-Atlantic ROG Nuclear Oversight.

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<u>REG. GUIDE</u>			<u>ANSI STD.</u>		<u>DEGREE OF COMPLIANCE</u>	<u>REMARKS</u>
1.8	5/77, Rev. 1-R	Personnel Selection and Training	N18.1	1971	Modified	See attached comments.
1.26	2/76, Rev. 3	QA Classifications and Standards for Water Stream and Radioactive Waste Containing Components of Nuclear Power Plants			Modified	See attached comments.
1.28	2/79, Rev. 2	Quality Assurance Program Requirements (Design and Construction)	N45.2	1977	Full	Comply with Regulatory Position.
1.29	9/78, Rev. 3	Seismic Design Classification			Modified	Same comment as for Reg. Guide 1.26
1.30	8/11/72	QA Requirements for the Installation, Inspection and Testing of Instrumentation and Electrical Equipment	N45.2.4	1972	Modified	See attached comments.
1.31	4/78, Rev. 3	Control of Ferrite Content in Stainless Steel Weld Metal			Full	Comply with Regulatory Position
1.33	2/78, Rev. 2	Quality Assurance Program Requirements (Operation)	N18.7	1976	Modified	See attached comments.
1.37	3/16/73	QA Requirements for Cleaning of Fluid Systems and Associated Components of Water Cooled Nuclear Power Plants	N45.2.1	1973	Modified	See attached comments.
1.38	6/77, Rev. 2	QA Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water Cooled Nuclear Power Plants	N45.2.2	1972	Modified	See attached comments.
1.39	9/77, Rev. 2	Housekeeping Requirements for Water Cooled Nuclear Power Plants	N45.2.3	1973	Modified	See attached comments.
1.54	6/73	QA Requirements for Protective Coatings Applied to Water Cooled Nuclear Power Plants	101.4	1972	Modified	See attached comments.
1.58	9/80, Rev. 1	Qualifications of Nuclear Power Plant Inspection, Examination and Testing Personnel	N45.2.6	1978	Modified	See attached comments
1.64	6/76, Rev. 2	Quality Assurance Requirements for the Design of Nuclear Power Plants	N45.2.11	1974	Modified	See attached comments
1.74	2/74	Quality Assurance Terms and Definitions	N45.2.10	1973	Full	Comply with Regulatory Position
1.88	10/76, Rev. 2	Collection Storage and Maintenance of Nuclear Power Plant Quality	N45.2.9	1974	Modified	See attached comments

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		Assurance Records				
1.94	4/76, Rev. 1	QA Requirements for Installation, Inspection and Testing of Structural Concrete & Steel during Nuclear Power Plant Construction	N45.2.5	1974	Modified	See attached comments
1.116	5/77, Rev. O-R	QA Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems	N45.2.8	1975	Modified	See attached comments
1.123	7/77, Rev. 1	QA Requirements for Control of Procurement of Items and Services for Nuclear Power Plants	N45.2.13	1976	Modified	See attached comments
1.142	10/81, Rev. 1	Safety-Related Concrete Structures for Nuclear Power Plants (Other than Reactor Vessels and Containments)	N45.2.5 ANS6.4 ACI318	1974 1977 1977	Modified	See attached comments
1.143	10/79, Rev. 1	Design Guidance for Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants			Modified	See attached comments
1.144	1/79	Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants	N45.2.12	1977	Modified	See attached comments
1.146	8/80	Qualification of Quality Assurance Program Auditors Position for Nuclear Power Plants	N45.2.23	1978	Full	Comply with Regulatory Position

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NRC Regulatory Guide 1.8, Rev. 1-R, May 1977

Personnel Selection and Training

1. Guidelines have long been established in the company with respect to awarding jobs to plant maintenance, operations, and other bargaining unit personnel who may be involved in testing, examination and inspection activities. Personnel are qualified in accordance with the Job Description Manual. AmerGen believes that the requirements specified in the Job Description Manual meet the intent, and in many cases, exceed the requirements of ANSI N18.1. It is envisioned that there may be certain specific cases where an individual will be considered qualified because the individual has been evaluated as being capable of performing a job, even though the individual does not meet the detailed guidance contained in ANSI N18.1 with respect to length of experience and formal training.

The unit staff and the corporate organizations have been upgraded to meet ANSI/ANS 3.1-1978 except as otherwise noted in the Technical Specifications.

2. For the NRC licensed positions of Reactor Operator (RO) and Senior Reactor Operator (SRO), the experience requirements of ANSI 3.1 - 1981 will be utilized to determine if candidates meet NRC licensing eligibility requirements, until the simulator has been certified in accordance with 10CFR50.45.(b). In accordance with NUREG 1262, Questions 100 and 111, candidates who do not meet the detailed guidance contained in ANSI 3.1 - 1981 may be accepted into the RO and SRO training programs, if the candidate is evaluated as being capable of performing the job, and if those programs utilize a simulator certified in accordance with 10CFR50.45.(b).

NRC Regulatory Guide 1.26, Rev. 3, February 1976

Quality Group Classification and Standard for Water, Steam and Radioactive Waste Containing Components of Nuclear Power Plants

Since TMI - Unit 1 was originally designed and constructed to different classification criteria than those contained in this Guide, AmerGen will comply with the Regulatory Position of this Guide with the following clarifications:

1. For modifications to existing plant systems, items will be classified by Site Engineering according to the original design basis, or this Guide. This classification will not degrade the safety of the system being modified.
2. Additions to existing plant systems will be designed and constructed to the same codes, standards, and technical requirements which were originally applied to the system to which the addition is to be made, or more recent versions of these codes, standards, and technical requirements. The addition will not degrade the safety of the system being added to.
3. For new construction, the latest applicable codes will be utilized, unless such utilization would result in hardship or unusual difficulty without providing an equivalent level of safety.

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NRC Regulatory Guide 1.30, August 1972

Quality Assurance Requirements for the Installation, Inspection and Testing of Instrumentation and Electric Equipment

AmerGen shall comply with the Regulatory Position established in this Regulatory Guide in that QA programmatic/administrative requirements included therein shall apply to maintenance and modification activities even though such requirements were not in effect originally. Technical requirements associated with maintenance and modifications shall be the original technical requirements or better (e.g., code requirements, material properties, design margins, manufacturing processes, and inspection requirements).

Sections 5.2 and 6.2 of ANSI N45.2.4 list tests which are to be conducted during the construction phase. In lieu of this, AmerGen utilizes its Engineering and/or Maintenance organizations to establish the need for specific tests or test procedures during the operational phase.

NRC Regulatory Guide 1.33, Rev. 2, February 1978

Quality Assurance Program Requirements (Operation)

The TMI - Unit 1 Quality Assurance Program complies with the Regulatory Position of this Guide with the following clarifications:

1. Regulatory Position C.4 of the Regulatory Guide

The frequency of performance and the minimum topical coverage of internal audits will be consistent with Appendix E of this Plan.

2. Paragraph 5.1 of ANSI N18.7-1976, titled "Program Description"

This paragraph refers to the compilation of a "summary document" to identify the sources, index the source documents to the requirements of this standard, and to provide a consolidated base for the description of the program. For the purpose of clarity, this "Operational Quality Assurance Plan" is the "summary document" required. Appendix A correlates the sections of this Plan to ANSI 18.7-1976. Section 2.0 provides the "consolidated" base for the description of the program. Implementing documents are identified in Section 3.0, are required to be consistent with this Plan and Appendix C to this Plan, and are marked as stated in Section 3.0.

3. Paragraph 5.2.2 of ANSI N18.7-1976, titled "Procedure Adherence"

In accordance with Section 6.8.3 of the TMI-1 Technical Specifications, temporary changes shall be approved by two members of the AmerGen management staff qualified as Responsible Technical Reviewers and knowledgeable in the area affected by the procedure. For changes which may affect the operational status of facility systems or equipment, at least one of these individuals shall be a member of facility management or supervision holding a Senior Reactor Operator's License on the facility.

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4. Paragraph 5.2.8 of ANSI N18.7 - 1976, titled "Surveillance Testing and Inspection"

In lieu of a "master surveillance" schedule, a Technical Specification surveillance testing schedule reflecting the status of all in-plant surveillance tests and inspections required by Technical Specification shall be established.

5. Paragraph 5.2.15 of ANSI N18.7 - 1976, titled "Review, Approval and Control of Procedures"

The third sentence of the third paragraph is interpreted to mean that applicable procedures shall be reviewed following a reportable incident such as an accident, an unexpected transient, significant operator error, or equipment malfunction.

6. Paragraph 5.2.17 of ANSI N18.7 - 1976, titled "Inspections"

All inspections will not necessarily require a separate inspection report. Inspection requirements may be integrated into appropriate procedures or other documents with the procedures or documents serving as the record; however, records of inspections will be identified and retrievable.

NRC Regulatory Guide 1.37, March 16, 1973

Quality Assurance Requirements for Cleaning Fluids Systems and Associated Components of Water Cooled Nuclear Power Plants

The TMI - Unit 1 Quality Assurance Program complies with the Regulatory Position of this Guide with the following clarifications:

1. The second sentence of paragraph C.3 should be amended to read:

"The water quality for final flushes of fluid systems and associated components shall be at least equivalent to the quality required for normal operation. This requirement does not apply to dissolved oxygen or nitrogen limits, nor does it infer that chromates or other additives normally in the system water will be added to the flush water."

2. Paragraph C.4 should be amended to add:

"Material such as inks, temperature indicating crayons, labels, wrapping materials (other than polyethylene), water soluble materials, lubricants, NDT penetrant materials and couplants, which contact stainless steel or nickel alloy material surfaces shall contain no more than trace elements of lead, zinc, copper, mercury, or other low melting alloys or compounds. Maximum allowable levels of water reachable chloride ions, total halogens, and sulfur compounds shall be defined and imposed on the aforementioned materials."

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3. Section 2.1 of ANSI N45.2.1-1973 states that required planning is frequently performed on a generic basis for application to many installations on one or more projects. This results in standard procedures or plans for installation and inspection and testing which meet the requirements of the Standard. Individual plans for each item or system are not normally prepared unless the work operations are unique. However, standard procedures or plans will be reviewed for applicability in each case. Installation plans or procedures are also limited in scope to those actions or activities which are essential to maintain or achieve the required quality. This is consistent with Section 11, Paragraphs 2 and 3, of ANSI N45.2-1977, which provides for examination, measurement, or testing to assure quality or indirect control by monitoring of processing methods. However, final cleaning or flushing activities will be performed in accordance with procedures specific to the system.
4. AmerGen intends to conform to the cleanliness requirements of Section 3.1 of ANSI N45.2.1-1973, with the exception of permissible particle sizes for cleanliness Classes B and D. In these cases, AmerGen will conform to the requirements of ANSI N45.2.1-1980, Section 3.2.2.1(b), which states, "There shall be no particles larger than 1/32 in. by 1/16 in. long (0.8 mm by 1.6 mm)" for cleanliness Class B", and Section 3.2.4.4, which states, "Particles no larger than 1/16 in. by 1/8 in. long (1.6 mm by 3.2 mm) on a 14-mesh (1.4 mm, ASTM E-11, Specification for Wire Cloth Sieves for Testing Purposes) or finer filter, or the equivalent." for cleanliness Class D.
5. Section 3.1.2.1 of ANSI N45.2.1-1973 states that surfaces shall be examined without magnification under a lighting level (background plus supplementary lighting) of at least 100 foot candles. AmerGen intends to permit the use of neutral 18% gray card with a 1/32" black line for determining acceptability of illumination in lieu of the 100 foot candles.
6. Section 4.0 of ANSI N45.2.1-1973 states that items are not to be delivered to the point of installation sooner than necessary unless the installation location is considered a better storage area. The strategy for the storage of items is based on many factors, one of which is to not adversely affect the item's acceptability while in storage. If other factors make it desirable to store an item at the installation site, and the location is acceptable from a quality standpoint, it is not intended to eliminate that site as a potential storage area. As an alternate to this requirement, items may be delivered to the installation site sooner than absolutely necessary when determined to be advantageous for other considerations. Example - reduced handling or easier access, thereby reducing susceptibility to handling damage. In all such cases, equipment stored in place will be protected in accordance with Section 5 of ANSI N45.2.1-1973.
7. Section 6.0 of ANSI N45.2.1-1973 states that where environmental contamination causes degradation of quality, seals are installed and the item is tagged with identifications and instructions for seal removal. AmerGen utilizes procedural controls which specify the authorization requirements for seal removal. "Tags" are not normally utilized.
8. Section 7.2 of ANSI N45.2.1-1973 allows piping systems to be flushed only with water. A water flush of piping systems using other fluids can lead to contamination and/or other problems which would affect the reliability of these systems. ANSI N45.2.1-1980 provides requirements and recommendations for flushes using fluids other than water. For flushing of hydraulic instrument, control, lubrication and other non-

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water systems, AmerGen intends to conform to Sections 3.4.2, 3.4.3, 3.4.4, and the guidance of Table 3.3 from ANSI N45.2.1-1980. Specifications and procedures for flushes utilizing this exception must specify, as applicable: particulate contaminant levels; water content; water soluble contaminant levels; organic contaminant levels, flush time, flush pressure/flow/amount; type of fluid to be used; and, the restrictions identified in Sections 3.4.2, 3.4.3, and 3.4.4.

NRC Regulatory Guide 1.38, Rev. 2, May 1977

Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water Cooled Nuclear Power Plants

The TMI - Unit 1 Quality Assurance Program complies with the Regulatory Position of this Guide with the following modifications or clarifications to ANSI N45.2.2-1972:

1. Section 2.4, Personnel Qualifications. As a point of clarification, personnel who perform the audit(s) described in Section 2.4. will not be qualified in accordance with ANSI N45.2.6. Such personnel are qualified in accordance with Regulatory Guide 1.146, dated 8/80.
2. Section 2.7, Classification of Items. The four-level classification system for storage of items will be followed, however, the designated classification level may not be explicitly identified on the item. The classification level will, however, be traceable through the procurement documents. Classification differing from Section 2.7 will be considered acceptable provided no degradation is assured; for example, electric motors designed for outside service may be stored in a level C area rather than a level B.
3. Section 3.2, Levels of Packaging. The four level classification system for packaging of items may not be explicitly used. Standard commercial grade packaging requirements may be specified for commercial grade items.
4. Section 3.6 concerns prevention of halogenated materials from contacting stainless steel or nickel alloy materials. The clarifications applicable to Regulatory Guide 1.37, identified previously, also apply to this section of ANSI N45.2.2.
5. Section 3.7.1 Cleated, sheathed boxes will be used up to 1000 lbs. rather than 500 lbs. as specified. This type of box is safe for, and has been tested for, loads up to 1000 lbs. Other material standards (i.e., FED Spec. PPP-8-601) allow this. Special qualification testing shall be required for loads in excess of 1000 lbs.
6. Section 5.5, Correction of Nonconformances. This section provides for "rework" and "use as is" dispositions for non-conforming items. As an alternate, the "repair" disposition (as defined in ANSI N45.2.10-1973) will also be used.
7. Section 6.2.1, For storage of level D items, access will be controlled and limited by posting. Other positive controls, such as fencing or posting of guards, will be provided for higher storage levels.

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8. Section 7.4 states that a system should be established to indicate acceptability of all equipment and rigging after each inspection, specify control of non-conforming lifting equipment, and supplement periodic inspections with special visual and nondestructive examinations and dynamic load tests. In lieu of this, AmerGen does perform dynamic load tests on new equipment, preventive maintenance on cranes, nondestructive examination of lifting hooks annually, and a visual inspection of lifting equipment prior to use.
9. Appendix A.3.4.1 The last sentence of A.3.4.1(4) and (5) should be corrected as follows:
 - (4) "However, preservatives for inaccessible inside surfaces of pumps, valves and pipe systems containing, reactor coolant water shall be the water flushable type."
 - (5) "The name of the preservative used shall be indicated to facilitate touch up."
10. Appendix A 3.4.2, Inert Gas Blankets. There may be cases involving large or complex shapes for which an inert or dry air purge flow is provided rather than static gas blanket in order to provide adequate protection due to difficulty of providing a leak proof barrier. In these cases a positive pressure purge flow may be utilized as an alternate to a leak proof barrier.
11. Appendix A.3.5.2, Tapes will meet a sulfur limit of 0.30% by weight instead of 0.10% as specified in A.3.5.2(1)(a).

This limit is reasonable based upon the chemical content of commercially available tapes. Tapes will be of a contrasting color rather than "Brightly Colored" as required by A.3.5.1(3).
12. Appendix A.3.7.1, In lieu of A.3.7.1(3) and (4), the following will be imposed: Fiberboard boxes shall be securely closed with either a water resistant adhesive applied to the entire area of contact between the flaps, or all seams and joints sealed with not less than 2-inch wide, water resistant tape.

NRC Regulatory Guide 1.39, Rev. 2, September 1977

Housekeeping Requirements for Water Cooled Nuclear Power Plants Endorses ANSI N45.2.3 - 1973

The TMI - Unit 1 Quality Assurance Program complies with this Guide with the following clarification to ANSI N45.2.3-1973.

1. Sections 2.1 and 3.2, TMI - Unit 1 will not utilize the five level zone designation system referenced in ANSI N45.2.3, but will utilize standard janitorial and work practices to maintain a level of cleanliness commensurate with company policy in the areas of housekeeping, plant and personnel safety, and fire protection.

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Cleanliness will be maintained consistent with the work being performed, so as to prevent the entry of foreign material into systems within the scope of this Plan. This will include, as a minimum, documented cleanliness inspections performed immediately prior to system closure. Control of personnel, tools, equipment, and supplies will be established when major portions of the reactor system are opened for inspection, maintenance or repair.

Additional housekeeping requirements will be implemented as required for control of radioactive contamination.

2. Section 3.2.3 discusses fire protection. Except for the quality assurance aspects of fire protection, no specific commitments are made in this Plan. As part of other activities, AmerGen has established positions or commitments relating to fire safety or protection.

NRC Regulatory Guide 1.54, June 1973

Quality Assurance Requirements for Protective Coatings Applied to Water Cooled Nuclear Power Plants

The TMI - Unit 1 Quality Assurance Program complies with this Guide with the following clarification:

1. AmerGen will comply with the Regulatory Position established in this Regulatory Guide in that programmatic/administrative quality assurance requirements included therein shall apply to maintenance and modification activities, even though such requirements were not in effect originally. Technical requirements associated with maintenance and modifications (e.g., code requirements, material properties, design margins, manufacturing processes, and inspection requirements) shall be the original requirements or better.
2. The quality assurance program for protective coatings includes the planned and systematic actions necessary to provide adequate confidence that shop or field coating work for nuclear facilities will perform satisfactorily in service.

All protective coatings applied to surfaces within containment, except those noted in 3 below, are tested to demonstrate that they can withstand LOCA conditions. These tests are performed in accordance with Section 4 of ANSI N101.2, "Protective Coatings (Paints) for Light Water Nuclear Reactor Containment Facilities," under LOCA conditions, which equal or exceed those described in the FSAR.

The quality assurance program is applied to protective coatings consistent with the nature and scope of work specified in the Technical Specifications. The following elements are included:

- (a) Preparation of coatings specifications and procedures for generic coating materials/systems.
- (b) Review and evaluation of coating manufacturers' demonstration test data and quality assurance measures for control of manufacture, identification, and performance verification of applied coating systems.
- (c) Review and evaluation of supplier quality assurance measures to control storage and handling, surface preparation, application, touch-up, repair, curing and inspection of the coating systems.

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- (d) Training and qualification of inspection personnel in coatings inspection requirements.
- (e) Supplier surveillance inspection.

The coatings qualification program and the associated quality assurance requirements are necessary only for coatings whose failure or failure mechanism would have a significant effect on safety.

3. Regulatory Guide 1.54 is not imposed for:

- (a) Surfaces to be insulated.
- (b) Surfaces "contained" within a cabinet or enclosure (for example, the interior surfaces of ducts).
- (c) Field repair on any Q-class coated item of less than 30 square inches surface area, such as:
 - Cut ends or otherwise damaged galvanizing.
 - Bolt heads, nuts, and miscellaneous fasteners.
 - Damage resulting from spot, tack, or stud welding.

Field touch-up and repair of larger areas shall be in accordance with item (1).

- (d) Small "production line" items such as small motors, handwheels, electrical cabinets, control panels, loudspeakers, etc., where special painting requirements would be impracticable.
- (e) Stainless steel or galvanized surfaces.
- (f) Coating used for the banding of piping.
- (g) Strippable coatings used for cleanup.

4. Quality assurance documentation may not be similar to records and documents listed in Sections 7.4 through 7.8 of ANSI N101.4, but will be evaluated to assure that they provide at least the same degree of documentation as required by this standard.

NRC Regulatory Guide 1.58, Rev. 1, September 1980

Qualifications of Nuclear Power Plant Inspection, Examination, and Testing Personnel

The TMI - Unit 1 Quality Assurance Program complies with this Guide with the following clarification:

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1. The guidance of Regulatory Guide 1.58 shall be followed as it pertains to the qualifications of inspection personnel who verify conformance of work activities to quality requirements. The qualification of other AmerGen personnel shall be in accordance with AmerGen established requirements. The qualifications of plant operation personnel concerned with day-to-day operation, maintenance, and certain technical services shall conform to Regulatory Guide 1.8.

The qualification of nondestructive testing personnel shall be in accordance with the requirements and recommendations of ASNT Recommended Practice No. SNT-TC-1A, 1980 Edition. In addition, SNT-TC-1A shall be used in conjunction with the additional provisions of the applicable ASME Boiler and Pressure Vessel Code. Later editions of SNT-TC-1A may be utilized as referenced in Section XI of the Code provided that the edition of the Code has been incorporated by reference into Title 10 of the Code of Federal Regulations, Part 50.55a.

Recertification of NDE Level III personnel shall be at an interval of 5 years as noted by ASME Code Case N-341 and N-356, rather than the 3 year interval recommended by SNT-TC-1A, 1980.

Qualification and subsequent re-qualification of personnel conducting visual examination activities within the scope of the applicable ASME Section XI edition shall be performed consistent with that applicable ASME Section XI edition, as further permitted and accepted by ASME Section XI Code Cases associated with qualification in visual examination endorsed by the current revision of Regulatory Guide 1.147.

2. Plant operation personnel may be utilized to perform the visual leakage examinations required by the edition of ASME Section XI and related codes currently committed to for the conduct of in-service inspections. Such personnel shall be qualified consistent with these ASME Code requirements. The selection and qualification of such personnel shall be prescribed by a procedure(s) which is reviewed and concurred with by Quality Verification.
3. Not all personnel who:
 - (a) Review and approve inspection and testing procedures,
 - (b) Evaluate the adequacy of activities to accomplish the inspection and test objectives,
 - (c) Evaluate the adequacy of specific programs used to train and test inspection and test personnel, or
 - (d) Certify Level III individuals in specific categories or classes,

will be certified as meeting the Level III capability requirements of ANSI N45.2.6-1978. Rather, these personnel will be determined by management to be fully qualified and competent to perform these functions through, evaluation of their education, experience and training. The basis for the determination will be documented.

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NRC Regulatory Guide 1.64, Rev. 2, June 1976

Quality Assurance Requirements for the Design of Nuclear Power Plants

AmerGen will comply with the Regulatory Position established in this Regulatory Guide in that programmatic/administrative quality assurance requirements included therein shall apply to maintenance and modification activities, even though such requirements were not in effect originally. Technical requirements (e.g., code requirements, material properties, design margins, manufacturing processes, and inspection requirements) associated with maintenance and modifications shall be the original requirements or better.

The Quality Assurance Program complies with this Guide with the following clarifications:

1. Regulatory Position C.2(l) of the Regulatory Guide:

If the designer's immediate supervisor is the only technically qualified individual available, this review can be conducted by the supervisor, provided that: (a) the other provisions of this Regulatory Guide are satisfied, (b) the justification is individually documented and approved in advance by the supervisor's management, and (c) audits cover the frequency and effectiveness of the use of supervisors as design verifiers to guard against abuse.

2. Sections 6.2, 7.2 and 8.0 of ANSI N45.2.11-1974

Each of the above sections reiterate the need to apply design control provisions equivalent to original or previously verified designs. Design control provisions include revision, review, and approval of the design document(s) affected, and design verification.

The last sentence of Paragraph 6.2 could be read to imply that two separate reviews are required for "field changes" to previously approved designs: (1) the review of field changes for the effect on overall design and (2) design verification. As a point of clarification with regard to "field changes," the effect of field changes will be independently evaluated and the need for design verification of any specific field change will be determined. If the review determines that the field change has no effect on the previously approved design, then that review constitutes a design verification of that field change. If the review determines that the field change does have an effect on the previously approved design, then a design verification of the resolution of that specific field change will be conducted.

Also, field changes that are "minor," as described in paragraph 7.2 of the standard, will not be design verified. Procedural requirements shall be provided to identify when such field changes are "minor" in the context of paragraph 7.2 of the standard.

NRC Regulatory Guide 1.88, Rev. 2, October, 1976

Collection, Storage, and Maintenance of Nuclear Power Plant Availability Assurance Records

AmerGen will comply with the intent of this Regulatory Guide by compliance with the requirements of ANSI/ASME NQA-1-1979, Supplement 17S-1 and Appendix 17A-1, including Appendix 17-I, NQA-1A-1981.

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NRC Regulatory Guide 1.94, Rev. 1, April 1976

Quality Assurance Requirements for Installation, Inspection and Testing of Structural Concrete and Structural Steel during the Construction Phase of Nuclear Power Plants

The TMI - Unit 1 Quality Assurance Program complies with this Guide with the following clarifications:

1. Programmatic/administrative quality assurance requirements included in the Regulatory Guide shall apply to maintenance and modification activities even though such requirements were not in effect originally. Technical requirements associated with maintenance and modifications shall be the original requirements or better (e.g., code requirements, material properties, design margins, manufacturing processes, and inspection requirements).
2. Section 5.4 of ANSI N45.2.5-1974 specifies the frequency and method of calibration of automatic cut-off impact wrenches used to make up and inspect high strength bolted connections; and the frequency of calibration of hand held torque wrenches used to inspect high strength bolted connections. Section 5.2.6 of ANSI 18.7 as well as Section 6.6 of this Plan also specify controls for measuring and test equipment. Sections 5.2.16 of ANSI 18.7-1976, in conjunction with Section 6.6 of this Plan, shall be used in lieu of Section 5.4 of ANSI N45.2.5 to control the frequency of calibration of automatic cut-off impact wrenches and hand held torque wrenches used to make up and/or inspect high strength bolted connections. The method of calibration will be consistent with the manufacturer's recommendation(s).

NRC Regulatory Guide 1.116, Rev. O-R, May 1977

Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems

The TMI - Unit 1 Quality Assurance Program complies with this Guide with the following clarification:

Programmatic/administrative quality assurance requirements included in the Regulatory Guide shall apply to maintenance and modification activities, even though such requirements were not in effect originally. Technical requirements associated with maintenance and modifications shall be the original requirements or better (e.g., code requirements, material properties, design margins, manufacturing processes, and inspection requirements).

Much of N45.2.8 applies to construction and pre-operational testing. As a result, many of the listed tests are not appropriate in an operational plant. In lieu of this, AmerGen utilizes its Engineering and/or Maintenance organizations to establish the need for specific tests or test procedures during the operational phase.

NRC Regulatory Guide 1.123, Rev. 1, July 1977

Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants

The TMI - Unit 1 Quality Assurance Program complies with this Guide with the following clarification:

1. Section C.3. A corrective action system may, depending upon complexity and/or importance to safety of the item or service provided, be imposed upon the supplier. When a corrective action is imposed on a supplier, the applicable elements of Section 9.0 of the standard will be included and its implementation will be verified.

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2. Section C.4. Applicable information concerning the method(s) of acceptance of an item or service will be made available to receiving inspection personnel.
3. Section 4.2.a of ANSI N45.2.13-1976. When evaluation of a supplier is based solely on historical supplier data, these data will primarily include records that have been accumulated in connection with previous procurement actions. Data that includes experience of users of identical or similar products of the prospective supplier and product operating experience will be used if available.
4. Section 4.2 of ANSI N45.2.13-1976. In the special case of "commercial grade items" the supplier does not have to be evaluated by one of the methods identified; however, the procurement documents shall contain requirements specific to the item being procured.
5. Section 7.5. As a point of clarification, personnel who perform the audits as described in Section 9.0 of this Plan will not be qualified in accordance with ANSI N45.2.6. Such personnel will be qualified in accordance with Regulatory Guide 1.146, dated 8/80.
6. Section 10.2.d of ANSI N45.2.13-1976. The requirements of this section are interpreted as follows: The person attesting to a certificate shall be an authorized and responsible employee of the supplier, and shall be identified by the supplier.
7. Section 10.2.1, Verification of the Validity of Supplier Certificates and the Effectiveness of the Certification System, is as follows: The verification of the validity of supplier certificates and the effectiveness of the certification system are accomplished as an integral part of the total supplier control and product acceptance program, and no separate AmerGen system exists that addresses itself solely to such verification. The degree of verification required will depend upon the type of item or service and their safety importance. The means of verification may include source witness/hold points, source audits, and document reviews; independent inspections at the time of material receipt; user tests on selected commodities, such as concrete components; and tests on selected components and systems after installation. All of these means verify whether or not a supplier has fulfilled procurement document requirements and whether or not a certification system is effective.

NRC Regulatory Guide 1.142, October 1981

Safety-Related Concrete Structures for Nuclear Power Plants (Other Than Reactor Vessels and Containments)

AmerGen shall comply with the Regulatory Position established in this Regulatory Guide as augmented by ANSI N45.2.5, ANSI/ANS 6.4-1977, and ANSI/ACI 318-77 for the design and construction of new *Safety Related* or *Augmented Quality* structures, and additions to existing *Safety Related* or *Augmented Quality* structures. Inspectors will be qualified according to either ANSI N45.2.6 or Appendix VII of Section III, Division 2, of the ASME Boiler and Pressure Vessel Code.

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NRC Regulatory Guide 1.143, October 1979

Design Guidance for Radioactive Waste Management Systems, Structures and Components Installed in Light-Water-Cooled Nuclear Power Plants

Since TMI Unit-1 was originally designed and constructed to different classification criteria than those contained in this Guide; AmerGen will comply with the Regulatory Position of this Guide with the following clarifications:

1. For modifications to existing plant systems, items will be classified by Site Engineering according to the original design basis, or this Guide. This classification will not degrade the safety of the system being modified.
2. Additions to existing plant systems will be designed and constructed to the same codes, standards, and technical requirements which were originally applied to the system to which the addition is to be made, or more recent versions of these codes, standards, and technical requirements. The addition will not degrade the safety of the system being added to.
3. For new construction, the latest applicable codes will be utilized, unless such utilization would result in hardship or unusual difficulty without providing an equivalent level of safety.
4. Hose may be used in lieu of pipe where the connections are temporary. The anticipated applications of hose would normally be (1) connections to contractor owned skid mounted radioactive waste processing equipment, (2) connections to a non-mounted, frequently-changed component such as a burial liner/HIC, or (3) connections to non-mounted pieces of radioactive waste processing or collection equipment which must be readily removable (e.g., items placed on equipment hatches). The pressure rating of such hoses and connections shall equal or exceed those of the systems or components to which they are connected.

Prior to use, the hoses shall be hydro-tested to the appropriate pressure for the system or component to which they will be connected. After installation, they will receive regular hydro-testing or in-service inspections.

A safety evaluation is required to justify the use of such hose connections.

NRC Regulatory Guide 1.144, January 1979

Auditing of Quality Assurance Programs for Nuclear Power Plants

AmerGen is in basic agreement with the Regulatory Position set forth in the Regulatory Guide, subject to the following comments:

1. Sections C.3.a(1) and C.3.a(2)

The frequency of performance and minimal topical coverage of internal audits will be consistent with Appendix E to this Plan.

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2. Section C.3.b(1).

Source surveillance will be utilized in lieu of, or in addition to, receipt inspection. As permitted, external audits of such procurement actions will typically not be scheduled.

3. Section C.3.b(2)

External audits of selected suppliers of services which are within the scope of this Plan will be scheduled and conducted at least once within the life of the activity or every three years. Refer also to Section 9.2.5 of this Plan.

An annual evaluation of suppliers of items and services will be conducted. These evaluations will be conducted utilizing the results of source surveillance's, source inspections, receipt inspections, audits, and other factors. These evaluations will determine the need to conduct audits of suppliers of items, parts or materials; or increase the frequency of conducting audits of suppliers of services.

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APPENDIX D

Terms and Definitions

This Appendix contains certain terms and their definitions that are important to a uniform understanding of the requirements of the TMI - Unit 1 Operational Quality Assurance Program. ANSI N45.2.10-1973, as endorsed by Regulatory Guide 1.74, and NQA-1a-1981 contain terms and definitions applicable to the nuclear industry. The terms and definitions found in these documents are applicable to the TMI - Unit 1 Operational Quality Assurance Program and, for convenience, are included, in part, herein. Those terms and definitions which are the same as listed in ANSI N45.2.10-1973 or NQA-1a-1981 are identified by footnote (1). Certain exceptions to the terms and definitions found in ANSI N45.2.10-1973 and NQA-1a-1981 have also been taken. These exceptions are identified by footnote (2).

ACCEPTANCE (as used in relation to acceptance of a document): Generally approved, believed or recognized. Does not require signature of person accepting.

ACCEPTANCE CRITERIA: Specified limits placed on characteristics of an item, process, or service defined in codes, standards, or other documents. (1)

ACTIVITY: Actions and tasks associated with the operation and support of a nuclear power plant.

ADMINISTRATIVE CONTROLS: Rules, orders, instructions, procedures, policies, practices and designations of authority and responsibility.

ALARA: (Acronym for As Low As Reasonably Achievable) - a method of analysis of the performance of activities in radiological areas to determine specific methods for reducing man-rem exposure.

APPROVAL: An act of endorsing and adding positive authorization (signature) to a document by the person(s) responsible for the document. (2)

ARCHITECT/ENGINEERING (A/E): A firm under contract to provide engineering or design services.

AS-BUILT DATA: Documented data that describes the condition actually achieved in a product. (1)

AUDIT: A formal, independent activity conducted with the intent to verify conformance with established requirements. This activity is performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that documents and activities within the scope of this Plan are consistent with requirements, are being effectively implemented, and provide results which are consistent with technical requirements. The terms "source surveillance," "source inspection," "inspection," "surveillance/monitoring" and "survey" are neither synonymous with, nor equivalent to, the term, "audit." (2)

AUGMENTED QUALITY (A) (formerly classified as "Regulatory Required"): Those items which are not safety related but which must meet NRC regulatory requirements or commitments. Sources of regulatory requirements and commitments, as a minimum, consist of those associated with expressed conditions of the unit operating license, FSAR, fire protection (Appendix R and BTP Appendix A), security, environmental qualification of electrical equipment, seismic response capabilities, licensed shipping containers to the extent committed by AmerGen, generic letters, IE Bulletins, 10CFR50.54(f) correspondence, certain NUREG documents, etc.

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BASELINE ENGINEERING DOCUMENTS: Includes, but is not limited to, safety evaluations, design criteria documents, flow charts, System Design Descriptions, general arrangement drawings, single-line diagrams, and logic diagrams which show or define basic plant parameters. For example, Control Panel, Layout and Control Room arrangement drawings are baseline documents.

BASIC COMPONENT: As defined in 10CFR21.

CALIBRATION: Comparison of two instruments or measuring devices, one of which is a standard of known accuracy traceable to national standards, to detect, correlate, report, or eliminate by adjustment, any discrepancy in accuracy of the instrument or measuring device being compared with the standard.

COMMERCIAL GRADE ITEM: As defined in 10CFR21.

COMPONENT RECORD LIST (CRL) (formerly classified as Quality Classification List): The approved and controlled document used to record the identification of structures, systems and components that are within the scope of this Plan.

CONCURRENCE: Written agreement that the provisions in a document for which review has been requested are acceptable for implementation within, or from the standpoint of, the reviewer's area of responsibility.

CONDITION ADVERSE TO QUALITY: An all inclusive term used in reference to any of the following: failures, malfunctions, deficiencies, defective items, and nonconformances. A significant condition adverse to quality is one which, if uncorrected, could have a serious effect on safety or operability.

CONTRACTOR: Any organization under contract for furnishing items or services. It includes the term Vendor, Supplier, Subcontractor, Fabricator and subcontractor levels, where appropriate. (1)

CONTROLLED DOCUMENT: A document which is assigned and distributed to an individual, organization or location and requires that individual or organization to be accountable for the document. The distributing agent is responsible for providing the recipients with current revisions to the document.

CORRECTIVE ACTION: Measures taken to rectify conditions adverse to quality and, where necessary, to preclude repetition. (1)

DEDICATION: The process by which a commercial grade item is designated for use in a nuclear safety-related application(s). It includes a point in time, typically after receipt, when the party designating the item assumes deficiency reporting responsibility associated with such use.

DESIGN BASES: That documented information which identifies the specific functions to be performed by a structure, system, or component of a facility and the specific values or ranges of values chosen for controlling parameters as reference bounds for design.

DETAILED DESIGN DOCUMENTS: Engineering design documents derived from the Baseline Engineering Documents that provide the detail of design sufficient to fabricate, install and test a modification or system. This includes, but is not limited to, Procurement, Material, and/or Test Specifications, Installation Specifications, Fire Hazard Analyses, construction drawings, fabrication drawings, Bill of Materials, etc.

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DOCUMENT: Any written, pictorial, graphical or other reproducible media information describing, defining, prescribing, specifying, reporting, or certifying activities, requirements, procedures or results. A document is not considered to be a record until it is completed and contains the required signatures. (2)

ENGINEERING (Engineer): This term refers to the technical responsibilities of Engineering or A/E's.

EVALUATED VENDORS LIST (EVL): A approved and controlled list of Suppliers who have been evaluated by AmerGen for their capabilities to produce or provide items or services or both within the scope of this Plan.

EXTERNAL ORGANIZATIONS: Any organization participating in the project which is not a part of AmerGen. This term includes vendors, A/E's and contractors. This term is synonymous with the term supplier.

ITEM: Any structure, system, or component of a nuclear power plant including nuclear fuel and radwaste systems. This item also includes licensed radwaste shipping containers. Mechanical items shall include valves, equipment and specialty items. Electrical and instrumentation items shall include electrical, distribution, instrument and control panels, cabinets, switchgear, motor control centers, non-panel mounted instruments, transformers and motors.

LEAD AUDITOR: An individual qualified to organize and direct an audit, report audit results, and evaluate corrective actions. This term is not equivalent to the term "auditor." The term "audit team leader" is equivalent to the term "lead auditor."

MONITORING/SURVEILLANCE: An act of assuring compliance of activities to program requirements by direct observation or record review. Generally, monitoring is performed on site and surveillance is performed at a vendor's facility.

PROCUREMENT DOCUMENT: Purchase requisitions, purchase orders, drawings, contracts, specifications or instructions used to define the quality and technical requirements for purchase. (1)

QA PLAN SCOPE: This term is a designator used on the coversheet of approved documents which prescribe the method of performance of activities or tasks identified in Section 2.2.2 of this Plan.

QUALIFICATION (Personnel): The characteristics or abilities gained through education, training or experience, as measured against established requirements, such as standards, or tests, that qualify an individual to perform a required function.(1)

QUALIFICATION (Procedures): An approved procedure that has been demonstrated to meet the specified requirements for its intended purpose. (1)

QUALITY CLASSIFICATION: A process for identifying the technical and quality requirements of structures, systems, and components based upon regulatory requirements and commitments, safety function and/or reliability consideration.

RECORD: A completed document which has been authenticated which furnishes evidence of the acceptability of an item, items, or activity, etc. within the scope of this Plan.

REVIEW FOR CONCURRENCE: A review of a document conducted prior to that document being approved for use. A review conducted by someone other than the individuals who prepared; or, will approve the document for use.

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SAFETY RELATED (Q) (Formerly classified as Nuclear Safety Related): Structures, systems and components designed to remain functional for all design basis conditions necessary to assure the following safety functions:

- 1) The integrity of the Reactor Coolant Pressure Boundary.
- 2) The capability to shutdown the reactor and maintain it in a safe (hot) shutdown condition; or
- 3) The capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposures comparable to the guideline exposures of 10CFR100.

SPECIAL PROCESS: A process, the results of which are highly dependent on the control of the process or the skill of the operators, or both, and in which the specified quality cannot be readily determined by inspection or test of the product. (1)

SUPPLIER: A firm which provides items or services from an off-site facility and operates under the requirements of their own QA program.

TRACEABILITY: The ability to trace the history, application, or location of an item and like items or activities by means of recorded information. (1)

TREND ANALYSIS: A quantitative method of collecting and analyzing nonconformance/deviation events with the goal of systematically determining programmatic/procedural weaknesses.

VENDOR: A firm which manufactures items at an off-site facility and operates under the requirements of their own quality assurance program.

VERIFICATION: An act of confirming, substantiating and assuring that an activity or condition has been implemented in conformance with the specified requirements. (1)

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APPENDIX E

Audit Frequencies

<u>TMI Ref.</u>	<u>Description</u>	<u>Maximum Frequency</u>
6.5.3.1 (A)	The conformance of unit operations to provisions contained within the Technical Specifications and applicable license conditions.	24 Months
6.5.3.1 (B)	The performance, training and qualifications of the entire unit staff.	24 Months
6.5.3.1 (C)	The verification of the nonconformances and corrective actions program to be properly implemented and documented as related to action taken to correct deficiencies occurring in unit equipment, structures, systems or methods of operation that affect nuclear safety.	24 Months (See Note 1)
6.5.3.1 (D)	The performance of activities required by the Operational Quality Assurance Plan to meet the criteria of Appendix "B", 10CFR50.	24 Months
6.5.3.1 (E)	The Emergency Plan and implementing procedures.	As defined by 10 CFR 50.54(t)
6.5.3.1 (F)	The Security Plan and implementing procedures.	As defined by 10 CFR 50.54(p)(3)
6.5.3.1 (G)	The Fire Protection Program and implementing procedures.	24 Months
6.5.3.1 (H)	The Offsite Dose Calculation Manual and implementing procedures.	24 Months
6.5.3.1 (I)	The Process Control Program and Implementing procedures for solidification of radioactive wastes.	24 Months
6.5.3.1 (J)	The performance of activities required by the Quality Assurance Program to meet criteria of Regulatory Guide 4.15, December, 1977.	24 Months
6.5.3.1 (K)	Any other area of unit operation considered appropriate by the IOSRG or the CNO.	As Requested
6.5.3.2 (A)	An independent fire protection and loss prevention program inspection and audit shall be performed utilizing either qualified licensee personnel or an outside fire protection firm.	12 Months
6.5.3.2 (B)	An inspection and audit of the fire protection and loss prevention program, by an outside qualified fire consultant.	36 Months

Note 1: Corrective action will be a standard audit scope item for all individual audits.
