Maine Yankee

RELIABLE ELECTRICITY SINCE 1972

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February 7, 1997
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UNITED STATES NUCLEAR REGULATORY COMMISSION
Attention: Document Control Desk
Washington, DC 20555

References: (a) License No. DPR-36 (Docket No. 50-309).
(b) Letter, USNRC (J.M.Taylor) to Maine Yankee (C.D.Frizzle), "Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information", dated October 9, 1996.
(c) Letter, Maine Yankee (C.D.Frizzle) to USNRC (S.A.Jackson), "Independent Safety Assessment", MN-96-183, dated December 10, 1996.

Enclosure: Response to USNRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding the Adequacy and Availability of Design Bases Information

Subject: Request for Information Regarding Adequacy and Availability of Design Bases Information

Gentlemen:

Pursuant to Section 182(a) of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f), Maine Yankee's response to the USNRC request for information regarding the adequacy and availability of design bases information, Reference (b), is provided in detail as the Enclosure to this letter. This response is specific to the design bases information of the Maine Yankee plant, Reference (a).

Maine Yankee has performed extensive reviews and assessments of the plant design bases and configuration control related processes both to develop this response and as part of ongoing performance improvement efforts.

Two of the five specific requests of the USNRC in Reference (b) directly asked for Maine Yankee's rationale for determining the reliable use of certain design bases information. The first of these requests asked for our rationale for concluding that design bases requirements are translated into operation, maintenance, and testing procedures. The second requested the rationale for concluding that system, structure, and component configuration and performance are consistent with design bases.

In response, Maine Yankee has determined from the evidence and assessments that the linkage between the design bases and the appropriate procedures and the plant design is generally established. However, we also conclude that the implementation of this linkage has not been consistent across all procedure and design development and modification. The extent of these inconsistencies has been assessed and we continue to maintain that the observed translation of design bases requirements into plant procedures and design implementation supports an overall conclusion of reasonable assurance of continued safe operation of the plant and adequate protection of the public health and safety.

Although areas of fundamentally sound performance have been identified, there are also areas where it is obvious that performance must improve. We recognize that recent Maine Yankee and USNRC reviews have identified a number of specific design bases and configuration management related deficiencies which highlight the need for focused corrective actions. These actions have been, are being, or are planned to be taken to correct these identified deficiencies from both an individual and broad perspective. Our specific actions are outlined in our response to the USNRC Independent Safety Assessment, Reference (c), this 10 CFR 50.54(f) response provided as the Enclosure, and in contemporary communications.

As we continue to improve our programs and performance, we will continue to scrutinize the adequacy of, and our conformance to, the design bases. We have made significant improvements to our problem identification and solving capabilities through establishment of a newly revised corrective action process. These actions have improved our ability to conservatively address design bases-related issues in a preventative and proactive, rather than reactive, position. Moreover, we have embarked on a number of improvement initiatives, as summarized in Appendix A of the Enclosure, intended to improve performance in this area.

Maine Yankee agrees with the USNRC that it is the responsibility of the individual licensee to know and understand their licensing basis, to control appropriate documentation used to define and understand the plant design bases, and to have effective implementation processes for performing the necessary assessments of plant or procedure changes in accordance with the applicable USNRC regulations. To these ends, and in addition to the specific design bases improvements identified in the ISA response, this 10 CFR 50.54(f) response, and responses to contemporary issues, Maine Yankee has implemented a self-identified Configuration Management Improvement Initiative Program. Additionally, we are performing an assessment of the license bases consistent with the current Nuclear Energy Institute initiative NEI 96-05 (Guidelines for Assessing Programs for Maintaining the Licensing Basis).

It is our firm belief that the Maine Yankee plant can be and is being operated safely in accordance with the requirements of our operating license. With execution of the recognized and ongoing improvements to the design bases configuration processes, as summarized in the response to the USNRC Independent Safety Assessment, this 10 CFR 50.54(f) response, and contemporary

communications, we believe that the design bases will be implemented and maintained consistent with the plant configuration.

Maine Yankee welcomes the opportunity to brief the Commission and its staff on any of the information contained in this response. Further, the information presented herein can be expanded to provide additional clarification. Please contact us, as appropriate.

Very truly yours,

Charles D. Frizzle
President and Chief Executive Officer

Enclosure

STATE OF MAINE

Then personally appeared before me, Charles D. Frizzle, who being duly sworn did state that he is President and Chief Executive Officer of Maine Yankee, that he is duly authorized to execute and file the foregoing response in the name and on behalf of Maine Yankee, and that the statements therein are true to the best of his knowledge and belief.

Notary Public
Monica W. Fortier, Notary Public
State of Maine
My Commission Expires 5/2/98

c: Mr. Leonard J. Callan; Executive Director for Operations, USNRC
Mr. Samuel L. Collins; Director, USNRC Office of Nuclear Reactor Regulation
Mr. Hubert J. Miller; Administrator, USNRC Region I
Mr. Daniel H. Dorman; USNRC Project Manager
Mr. Jimi T. Yerokun; USNRC Senior Resident Inspector
Mr. Patrick J. Dostie; State of Maine Nuclear Safety Inspector
Mr. Uldis Vanags; State of Maine Nuclear Safety Advisor

Maine Yankee

Response
Pursuant To USNRC
10 CFR 50.54(f) Request

ADEQUACY AND AVAILABILITY OF DESIGN BASES INFORMATION

February 1997

Enclosure
MN-97-027

Response to

USNRC Request for Information

Pursuant to 10 CFR 50.54(f)

ADEQUACY AND AVAILABILITY

OF

DESIGN BASES INFORMATION

Maine Yankee Atomic Power Company

February 7, 1997

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EXECUTIVE SUMMARY

Pursuant to Section 182(a) of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f), this report constitutes Maine Yankee's response to the USNRC request for information regarding the adequacy and availability of design bases information. This response is specific to the design bases information of the Maine Yankee plant at this point in time.

In developing this response, Maine Yankee has reviewed and assessed the existing documentation and evidence related to the processes for assuring that plant modifications and configuration controls are effective in maintaining consistency with the design bases. We conclude that, for the reasons discussed below, the processes for maintaining consistency with the design bases provide reasonable assurance of adequate protection of the public health and safety.

The USNRC request, and the Maine Yankee response, is structured into six parts. In summary, these parts, and our responses, are:

1. **Description of engineering design and configuration control processes, including those that implement 10 CFR 50.59, 10 CFR 50.71(e), and Appendix B to 10 CFR 50.**

   In response, we have provided detailed descriptions of the engineering design and configuration control processes currently in place at Maine Yankee. Information is provided which confirms that processes have been adopted for appropriate design control in accordance with Appendix B of 10 CFR 50 and appropriate development of 10 CFR 50.59 safety evaluations. These processes also provide for the proper control of changes to the UFSAR in accordance with 10 CFR 50.71(e). Additional discussions are provided regarding the development and use of configuration control processes, personnel training associated with the implementation of these processes, reflection of design modifications in documentation, and the retrievability of design information.

2. **Translation of Design Bases Requirements into Operating, Maintenance, and Testing Procedures.**

   In response, we have assessed the evidence related to the processes utilized in the development, maintenance, and documentation of the operating, maintenance, and testing procedures as related to the inclusion of and adherence to design bases requirements. In order to thoroughly assess the available information, we have examined the linkage to the design bases provided by the implementation of Quality Assurance procedural controls, procedure review process, Emergency Operating Procedure basis documentation, and use of the plant simulator. We have performed specific assessments and evaluations on the translation of design bases information into procedures. Additionally, we have examined the implementation of this linkage through evidence that is provided in Maine Yankee self-assessments and external assessments.

We have determined from this evidence and these assessments that the linkage between the design bases and the operating, maintenance and testing procedures has been established. However, we additionally find that the implementation of this linkage is not consistent across all aspects of procedure development and modification. We conclude, however, that the observed range of variation is consistent with the finding that the translation of design bases requirements into operating, maintenance, and testing procedures supports an overall conclusion of reasonable assurance of adequate protection of public health and safety.

3. **System, Structure, and Component Configuration and Performance Consistency with Design Bases.**

   In response, we have examined the relevant conclusions and results from implementation of the Operational Quality Assurance Program, design bases initiatives and upgrade programs, operating experience feedback (including plant performance data and safety system availability data), and the results and usage of the Design Basis Recovery/Reconstitution Program. Additionally, we have reviewed evidence from prior system functional inspections, plant walkdowns, in-service testing and inspection programs, Design Deficiency Evaluations, Licensee Event Reports, and root cause evaluations as well as a special audit performed in response to this 10 CFR 50.54(f) request. Confirmation of the conclusions reached by Maine Yankee are consistent with those of the USNRC assessments such as the recent Independent Safety Assessment.

   Not withstanding existing contemporary design and configuration management issues, consideration of these items as a whole, including the improvements and corrective actions that have been taken, leads Maine Yankee to conclude that the level of consistency between configuration of the plant systems, structures, and components and the design bases support an overall conclusion of reasonable assurance of adequate protection of public health and safety.

4. **Processes for identification of problems and implementation of corrective actions, including actions to determine the extent of problems, actions to prevent recurrence, and reporting to NRC.**

   In response, we have identified and summarized the key Maine Yankee problem identification processes such as those associated with the corrective action processes (Learning Process), internally generated self-assessments, Quality Assurance programmatic oversight, and external organizational oversight. Root cause analysis, performance monitoring, use of the periodic assessment of performance by functional area, and operability assessments and risk evaluations define those processes used in determining the extent of problems. Actions undertaken to prevent problem recurrence are identified and discussed. Additionally, we provide descriptions of the processes used to evaluate and report problems to the USNRC.

With this information, we have determined that adequate processes exist and are being implemented for the identification of problems and implementation of corrective actions, including actions to determine the extent of problems, to prevent problem recurrence, and to enable timely reporting to the USNRC.

5. **The overall effectiveness of Maine Yankee's current processes and programs in concluding that the configuration of the Maine Yankee plant is consistent with the design bases.**

   In response, we have provided information assessing the overall effectiveness of Maine Yankee's current processes and programs relating the configuration of the plant to the design bases. This information discusses observations from programmatic reviews; results from inspections, assessments, and audits; program improvements and corrective actions; and future initiatives. Evaluations and assessments of the observations resulting from the development of this work are presented.

   We conclude that, overall, Maine Yankee's existing processes and programs are sufficiently effective in establishing consistency between the plant configuration and its design bases to the degree necessary in providing reasonable assurance of adequate protection of the public health and safety.

6. **Design Bases Recovery/Reconstitution Program summary**

   Additionally, per the USNRC request, we have provided an overview description and assessment as to the status, content, use, and future actions of the current Design Basis Recovery/Reconstitution Program. This Program is designed to consolidate and codify the design information related to the risk significant systems at Maine Yankee.

   We conclude from assessments of the existing Program that, while the existing resultant Design Basis Summary Documents are generally adequate, there have been sufficient weaknesses noted to warrant a detailed improvement program. This program will focus on the capture of design bases information for the risk significant systems. Maine Yankee has initiated steps to correct these weaknesses.

From an overall perspective based on the aforementioned assessments and reviews, Maine Yankee concludes that it has reasonable assurance that design bases and configuration controls have been maintained adequately to protect the health and safety of the public. This does not mean that Maine Yankee is free of deficiencies regarding consistency within its design basis activities. As we identify areas where performance can improve, corrective actions have been, are presently, or are planned to be taken to correct these identified deficiencies from both an individual and broad perspective. Our actions for correction of the currently known specific design bases and configuration management problems are outlined in our response to the NRC Independent Safety Assessment (Reference 2), this 10 CFR 50.54(f) response, and contemporary communications with

the USNRC. The combination of these actions and existing programs has improved our ability to conservatively and proactively address design bases-related issues in the emergent stages of problem identification.

We additionally conclude that the Maine Yankee plant can be and is being operated safely. This 10 CFR 50.54(f) response reaffirms that, using the existing programs, processes, and procedures with the identified improvements, Maine Yankee's plant configuration and operation in the future will be maintained and implemented consistent with the established design bases.

SECTION 1

INTRODUCTION

Pursuant to Section 182(a) of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f), this report constitutes Maine Yankee's response to the USNRC request for information regarding the adequacy and availability of design bases information (Reference 1). This response is specific to the design bases information of the Maine Yankee plant at this point in time.

Sections 2 and 3 of this report, respectively, describe the processes used to develop the Maine Yankee 10 CFR 50.54(f) response and provide a brief summary of background information on the Maine Yankee plant and its operation. Sections 4 through 8 provide the Maine Yankee responses to portions (a) through (e) of the USNRC's request (Reference 1). Section 9 provides a summary of the Maine Yankee Design Basis Recovery/Reconstitution Program. References are listed in Section 10. Appendix A provides a composite of the design bases related commitments and improvements that are planned or currently under implementation as a result of Maine Yankee's reviews and assessments associated with the USNRC Independent Safety Assessment (ISA) report (Reference 2) and the 10 CFR 50.54(f) request.

From an overall perspective, and based on these assessments and reviews, we conclude that the Maine Yankee plant can be and is being operated safely. We further conclude that Maine Yankee is operated with reasonable assurance of adequate protection of the public health and safety and that reasonable assurance exists that design bases and configuration controls have been maintained in this regard. The reviews associated with the development of this response have found that the integrity of and conformance with the design bases, in large measure, have been historically maintained at acceptable levels in our construction, engineering, and operational activities.

Finally, this 10 CFR 50.54(f) response reaffirms that, using the existing programs, processes, and procedures with the identified improvements, Maine Yankee's plant configuration and operation in the future will continue to be maintained and implemented consistent with the design bases.

Included within those identified improvements are Maine Yankee's commitments identified in the response to the USNRC Independent Safety Assessment, and additional enhancements as identified in this response. Maine Yankee is currently pursuing these improvement opportunities. The more significant efforts include, for example, a revised and updated Design Basis Recovery/Reconstitution Program, additional Safety System Functional Inspections and Assessments, development and implementation of a Testing Improvement Program, development of a new Systems Engineering Group, an independent review of the Updated Final Safety Analysis Report, and responses to the recently assessed areas of cable separation and the USNRC's Generic Letter 96-01, "Testing of Safety-Related Logic Circuits". A complete listing of the specific design bases related improvement commitments and initiatives are identified in Appendix A to this report.

Maine Yankee agrees with the USNRC that it is the responsibility of the individual licensee to know and understand their licensing basis, to control appropriate documentation used to define and understand the plant design bases, and to have effective implementation processes for performing the necessary assessments of plant or procedure changes in accordance with the applicable USNRC regulations. To these ends, and in addition to the specific design bases improvements identified in the ISA response, this 10 CFR 50.54(f) response, and responses to contemporary issues, Maine Yankee has implemented a self-identified Configuration Management Improvement Initiative Program. Additionally, we are performing an assessment of the license bases consistent with the current Nuclear Energy Institute initiative NEI 96-05 (Guidelines for Assessing Programs for Maintaining the Licensing Basis).

SECTION 2

RESPONSE DEVELOPMENT PROCESS

In response to the USNRC's request for information pursuant to 10 CFR 50.54(f) and to identify design bases configuration and implementation improvements, Maine Yankee assembled a working level team of personnel from Maine Yankee, Yankee Atomic Electric Company (YAEC), and the original NSSS designer (ABB-CE). The charter of this team was to both develop comprehensive responses to specific USNRC requests (Reference 1) and to provide supplemental information and recommendations to Maine Yankee management related to the adequacy and availability of design bases policies, programs, and procedures.

A 10 CFR 50.54(f) response Steering Committee composed of the YAEC Director of Engineering Services and three independent nuclear industry consultants provided definition of the initial response scope and continuing review and oversight functions throughout the response preparation effort. Legal consultation and support to the Steering Committee was provided by the firm of Winston & Strawn of Washington D.C. The members of the Steering Committee simultaneously provided the same type and level of review and oversight to some fourteen other plants responding to the USNRC 10 CFR 50.54(f) request.

Review of the response by Maine Yankee's Board of Directors was coordinated through the Nuclear Committee and included members of the Maine Yankee Nuclear Oversight Committee.

Overall, in excess of 5000 person-hours were expended in the preparation of this 10 CFR 50.54(f) response.

In order to address the USNRC request most effectively, Maine Yankee utilized the existing policies, programs, procedures and other documentation to serve as the basis for description of the engineering design and configuration control processes. Pertinent documents are referenced in the response to ensure accuracy, completeness, and traceability. The basis for defining the rationale requested in the USNRC request is founded within such sources as: existing Maine Yankee internal assessments (including "deep slice" audits, QA audits and surveillances, and reviews), third party independent external assessments of Maine Yankee, Design Basis Summary Documents, USNRC inspections and certifications, USNRC SALP assessments, and the recent USNRC Independent Safety Assessment (ISA). With respect to the use of the ISA (Reference 3), however, it is important to note that while the entire 10 CFR 50.54(f) response team was well informed about the ISA report and the design bases improvement initiatives contained in the ISA response (Reference 2), the response team's activities and subsequent recommendations for improvements were not restricted by either the USNRC findings or Maine Yankee's response.

Maine Yankee recognizes that not all actions that would be desired for the most complete response to the USNRC's request could be completed by the February 10, 1997, submittal deadline. These actions, along with identified improvements to the design bases configuration control and implementation thereof , are currently being assessed as inputs to the existing Maine Yankee corrective action process.

Those significant improvements to the design bases configuration control, implementation, and management that are not complete as of the response submittal date are identified as future Maine Yankee commitments in Appendix A of this report.

SECTION 3

BACKGROUND

3.1 PLANT DESCRIPTION

The Maine Yankee plant is located on the tidewater Back River at Bailey Point in Wiscasset, Maine, on an 740-acre site that is owned by the Maine Yankee Atomic Power Company and is adequate for the plant and associated facilities, including the associated switchyard facilities which are owned in part and operated by Central Maine Power.

Maine Yankee is a pressurized-water nuclear reactor, fueled with slightly enriched uranium oxide. The nuclear steam supply system and certain other equipment were designed and fabricated by Combustion Engineering, Inc. The original turbine generator was supplied by Westinghouse Electric Corporation. Stone & Webster Engineering Corporation, as engineer and constructor, designed and constructed the plant. Construction of the plant, which began in 1968, was completed in 1972 with the advent of commercial operation.

From the time the plant first commenced operation, Maine Yankee has sought to improve plant safety and reliability, while increasing its output, through periodic upgrading and continual review and assessment of equipment and facilities, along with regular training programs for personnel. As evidence of this degree of commitment, the original construction cost of the plant at the time first licensed by the USNRC in 1972 was approximately $231 million; through December 31, 1996, additional expenditures of approximately $222 million in capital improvements and upgrades had been made.

3.2 LICENSE HISTORY

Maine Yankee Atomic Power Co. (MYAPC) was incorporated under the laws of the state of Maine on January 3, 1966. MYAPC submitted an application for a Construction Permit and a Class 104 facility operating license on September 26, 1967. This application included the Preliminary Safety Analysis Report. Amendment Nos. 1-14 to the License Application were submitted to supply additional information, including design bases information, to the United States Atomic Energy Commission (USAEC). Construction Permit No. CPPR-55 authorizing construction of the facility was issued to Maine Yankee Atomic Power Co. on October 21, 1968.

On August 27, 1970, Maine Yankee Atomic Power Co. submitted an amendment to the License Application which included the Final Safety Analysis Report. This amendment was developed and submitted prior to the development and issuance of the USNRC Regulatory Guide 1.70. Amendment Nos. 15-36 to the License Application were subsequently submitted to supply additional information, including design bases information, to the United States Atomic Energy Commission. The USAEC issued its Safety Evaluation on February 25, 1972 and issued Facility

Operating License No. DPR-36 on September 15, 1972, authorizing fuel loading, low power testing and operations up to 75% of rated power.

Amendment No. 1 to the Facility Operating License was issued by the USAEC on June 29, 1973 authorizing operations at reactor core power levels not in excess of 2440 MWt. Amendment No. 38 to the Facility Operating License, dated May 10, 1978, increased the license power level from 2440 to 2630 MWt and Amendment 113, dated July 10, 1989, increased the licensed power level to 2700 MWt.

On January 3, 1996, as the result of an anonymous, undated, allegation letter, the USNRC issued to Maine Yankee a "Confirmatory Order Suspending Authority For And Limiting Power Operation And Containment Pressure (Effective Immediately) And Demand For Information" (Order). The Order limited the thermal power output of the Maine Yankee plant to approximately 90 percent of its rated maximum power at that time until the USNRC had reviewed and approved a plant-specific accident analysis and additionally ordered that certain other operational parameters be limited until the USNRC had conducted additional reviews. The Order further contained requests for the submittal of additional information prior to restart.

On January 10, 1996, Maine Yankee filed with the USNRC information specified in the Order in support of operation of the plant at up to 90 percent of the plant's rated capability. The plant began normal operation at a 90-percent rated power level on January 24, 1996.

3.3 FINAL SAFETY ANALYSIS REPORT (FSAR) HISTORY

Following the issuance of the Facility Operating License in 1972, Maine Yankee was authorized to make changes to the facility as described in the Final Safety Analysis Report pursuant to 10 CFR 50.59 without prior USNRC review and approval. While a description of these changes was required to be submitted annually, no update of the FSAR was required by regulation until July 22, 1982 under 10 CFR 50.71(e). However, Maine Yankee submitted two FSAR updates during the time period from issuance of the Operating License to July 22, 1982. These updates were submitted as Amendment No. 37 to the License Application dated March 5, 1976 and Amendment No. 38 to the License Application dated June 29, 1976.

In July, 1982, Maine Yankee submitted Revision 0 of the FSAR update pursuant to the requirements of 10 CFR 50.71(e). Since then Maine Yankee has submitted twelve additional revisions to the FSAR including the most recent update dated April 12, 1996. With the first revision of the FSAR, and continuing to the present, Maine Yankee has also submitted a separate fourth volume entitled, "Maine Yankee Final Safety Analysis Report - Appendix D". This volume is updated with each operating cycle and contains the Core Performance Analysis Report (CPAR) as applicable to the use of the specific fuel design in any given cycle. The CPAR documents the fuel and plant design and safety analysis results pertinent to the operation during the cycle. Cycle specific portions of the FSAR refer to Appendix D for the latest cycle specific design bases information.

3.4 DESIGN BASES HISTORY

The design bases for Maine Yankee Atomic Power Station was established in September 1972 at the time of the issuance of the Facility Operating License. Since that time Maine Yankee Atomic Power Company has controlled and modified the design bases in accordance with NRC Rules and Regulations, including 10 CFR 50.59 and the applicable time frame of Appendix B to 10 CFR 50.

In the late 1980s, Maine Yankee initiated a program to recover/reconstitute the design bases and to verify plant configuration conformance. At present, Design Basis Summary Documents have been assembled for multiple systems including: Emergency Feedwater/Auxiliary Feedwater, Containment Spray, High Pressure Safety Injection, Component Cooling Water/Service Water, Instrument Air, Low Pressure Safety Injection, Radiation Monitoring, and Control Room Ventilation. Corresponding Topical Reports and other controlled design documentation for selected issues or programs (e.g.: Equipment Qualification, Inservice Inspections, Appendix J testing, etc.) have also been generated as a normal course of business. Design Basis Summary Documents covering the systems of Safeguard Areas Heating, Ventilation, and Air Conditioning Systems and Fire Protection Systems have been initiated. Development efforts for nine additional Design Basis Summary Documents, as ranked according to risk, are ongoing.

In addition, during the summer of 1996, the USNRC conducted an "Independent Safety Assessment" (ISA) of the Maine Yankee plant at the request of, and in conjunction with the State of Maine. One of the key objectives of the ISA was to provide an independent assessment of conformance to the design and licensing bases of the plant. The USNRC ISA team concluded that "the quality and availability of design-basis information was good overall. Despite uncorrected and previously undiscovered design problems, the design basis and compensatory measures adequately supported plant operation" at the currently limited power level.

SECTION 4

DESCRIPTION OF ENGINEERING DESIGN AND CONFIGURATION CONTROL PROCESSES, INCLUDING THOSE THAT IMPLEMENT 10 CFR 50.59, 10 CFR 50.71(e), AND APPENDIX B TO 10 CFR PART 50

4.1 INTRODUCTION

Pursuant to Item (a) of the USNRC's 10 CFR 50.54(f) request (Reference 1), this section provides a description of the engineering design and configuration control processes currently in place at Maine Yankee, including those that implement 10 CFR 50.59, 10 CFR 50.71(e), and Appendix B to 10 CFR Part 50. These processes provide a structure for developing, reviewing, approving, installing, testing, implementing, and controlling design and procedure changes and other plant modifications in accordance with the requirements of Appendix B to 10 CFR Part 50. The processes also provide a means for screening and evaluating design and procedure changes in accordance with the requirements of 10 CFR 50.59, and for updating and maintaining the UFSAR in accordance with the requirements of 10 CFR 50.71(e). In addition, the processes provide a framework for maintaining consistency between the physical plant configuration, plant procedures and programs, and plant design documents.

Sections 4.2 and 4.3 describe the processes for design control and configuration control, respectively. The processes described in these sections are embodied in and implemented through Maine Yankee procedures. These procedures define the way that work (e.g., engineering design, operations, maintenance) is to be performed, and establish the controls that are to be applied in the performance of the work. A summary is provided in Section 4.4, including reference to process improvements identified in Appendix A.

4.2 DESIGN CONTROL

In accordance with Section III of Appendix B to 10 CFR Part 50, Maine Yankee has established measures to control the design of and changes to structures, systems, and components (SSCs) that affect safety. This section describes the processes and procedures for control of both permanent and temporary plant modifications. A modification is defined asa physical or functional change in a SSC as described in the current plant documents which define the technical requirements of that SSC. A design change is defined as a change to those technical requirements that govern the performance of a SSC's design basis. This section also discusses the interface between Maine Yankee and the Yankee Atomic Electric Company (YAEC) with respect to design control.

4.2.1 Historical Overview of the Design Control Process

A design control process for the Maine Yankee plant has been in place since the start of commercial operation. Maine Yankee has maintained an approved quality assurance program meeting the intent of Appendix B to 10 CFR Part 50 since original plant licensing.

Design changes were performed by both Maine Yankee and YAEC in accordance with approved procedures. The design control process at Maine Yankee was controlled by their approved quality assurance program. Engineering design changes were performed by YAEC using implementing procedures for design control in accordance with their approved quality assurance program.

In the 1980s, the Engineering Division at Maine Yankee incorporated implementing procedures to improve their design control process. In order to maintain consistency, these implementing procedures were developed based on the principles of the YAEC implementing procedures. Separate Project Procedures were developed to manage the Maine Yankee/YAEC interface.

Further, Maine Yankee also introduced Procedure 17-203 (Engineering Assessments) to perform evaluations to assess the effectiveness of Engineering Division activities. These evaluations, which cover areas such as process assessments, project assessment, technical assessments, and lessons learned, have been and are conducted to measure the effectiveness of the design control process, and to identify opportunities for improvement.

4.2.2 Current Design Control Process

The design control process is structured to provide control of modifications to the plant such that the configuration and performance of SSCs remain consistent with the plant design bases. Plant modifications can be categorized as either permanent or temporary. Flow charts outlining the design control process for these two classes of plant modifications are provided in Figures 4-1 through 4-5. A description of the controlling procedures and the various process elements is provided below.

Permanent Plant Modifications

The process for permanent plant modifications is shown in Figure 4-1. Procedure 0-03-1 (Control of Activities Affecting Permanent Design Changes) states the administrative controls and responsibilities for design control activities for permanent plant modifications, and provides an overview of the regulatory and quality assurance requirements for design control activities. The design control process is intended to provide a means for ensuring that applicable technical and quality assurance programmatic and administrative requirements are considered in the design, fabrication, and/or procurement of SSCs and other items requiring quality assurance. Procedure 0-03-1 also defines the programmatic responsibilities of the various organizations involved in the design control process.

The elements of the design control process are outlined in Procedure 17-21-1 (Permanent Plant Modifications). The process is divided into separate, dependent phases which together form the progression to a completed modification. Procedure 17-21-1 identifies the controlling procedures for each of the elements in the design control process, as well as the responsibilities of the modification team members. Use of this process enables the logical development of a design

solution that maintains the integrity of the plant physical and functional characteristics important to safety. Permanent plant modifications include the following elements:

- Modification Initiation
- Modification Development
- Design Verification
- Procurement
- Modification Implementation
- Modification Closure

Modification Initiation

The permanent plant modification process is initiated by the cognizant Engineering Department. Procedure 17-313 (Project Initiation/Preliminary Engineering) describes project initiation and preliminary engineering activities associated with the permanent plant modification process. The project initiation phase involves determination of the safety significance of the proposed modification, establishment of the scope of the modification, determination of project priority, and assignment of resources. Preliminary engineering activities include team assignments, financial authorization, root cause analysis (as required), conceptual project assessment to determine the effect on plant operation (as required), and a radiation exposure assessment (if applicable) to determine the difficulty of installation.

Preliminary engineering activities may also include initiation of procurement activities for projects requiring materials with long lead time deliveries. The procurement process is shown separately in Figure 4-2. Its linkage to the modification process is shown in Figure 4-1.

Modification Development

Permanent plant modifications may or may not impact the design basis of the plant. Permanent modifications that impact the design basis of the plant (i.e., design changes) are required to be developed using Procedure 17-21-2 (Engineering Design Change Request (EDCR) - Maine Yankee). Permanent plant modifications that do not impact the design basis of the plant (i.e., facilities modifications, component substitutions) can be developed using either Procedure 17-21-2 or Procedure 17-226 (Technical Evaluations). Technical Evaluations are described later in this section.

Procedure 17-21-2 requires that the design bases of SSCs that may be affected by a proposed plant modification be identified prior to evaluating the potential impact of the modification on those SSCs. All EDCRs require screening/evaluation for unreviewed safety questions in accordance with Procedure 0-06-4 (10 CFR 50.59 Determination). EDCRs also require review by the Plant Operation Review Committee (PORC). The purpose of the PORC review is to perform an impact assessment of the EDCR relative to the following:

- Nuclear safety
- Personnel safety
- Plant operation
- Maintainability of plant equipment and systems
- Personnel training needs
- As-low-as-reasonably-achievable (ALARA) personnel exposure considerations
- Adequacy of functional testing
- Plant configuration documents, as appropriate

Permanent modifications classified as design changes are required to be developed using the EDCR process. Procedure 17-312 (Design Inputs) identifies the licensing requirements, design basis documents, configuration documents, and other design input considerations that should be used in developing the modification and in determining the applicable design bases. These design inputs are intended to provide a basis for technical reviews, safety reviews, and 10 CFR 50.59 screening/evaluation associated with the modification. Calculations and/or analyses supporting the modification are required to be performed in accordance with Procedure 17-21-5 (Engineering Calculations/Analyses). Procedure 17-22-1 (Design Document Revision) provides a means by which drawings affected by the modification are revised. Implementation of this procedure also initiates changes to other design documents affected by the modification. EDCRs are required to be independently reviewed to verify the modification in accordance with Procedure 17-21-6 (Design Verification).

Design Verification

The design verification process (Procedure 17-21-6) is intended to address the technical adequacy and safety aspects of changes to the current plant configuration, and the effects of those changes on the overall plant design. The process described in Procedure 17-21-6 satisfies the independent design review criteria identified in Regulatory Guide 1.64 (Quality Assurance Requirements for the Design of Nuclear Power Plants), and ANSI N45.2.11 (Quality Assurance Requirements for the Design of Nuclear Power Plants).

The design verification process should include a review of the relevant design documents by the reviewer and a field walkdown of the affected area, if possible, to enable the reviewer to become familiar with the purpose and scope of the design. The reviewer is then required to perform a design verification using any one, or a combination of, acceptable verification methods (design reviews, alternate calculations, qualification testing). For design reviews, the reviewer is required to request supplementary reviews by other disciplines for those aspects of the review that are outside the discipline of the reviewer. Alternate calculations must be performed in accordance with Procedure 17-21-5 (Engineering Calculations/Analyses). Qualification tests, when required, must be performed in accordance with ANSI N45.2.11, Section 6.3.3. Completion of the design verification process requires review of the considerations contained in Procedure 17-312 (Design Inputs) to determine that applicable design input considerations were identified and properly incorporated.

Procurement

The procurement process, shown in Figure 4-2, consists of the control of procurement documents and purchased material, equipment, and services. Requisitions for material, equipment, and services are required to be developed in accordance with Procedure 0-04-1 (Requisitioning Material, Equipment, and Services). Procedure 0-04-1 specifies the requirements for the preparation, processing, and approval of requisitions for safety class, augmented quality, and non-nuclear safety material, equipment, and services. New purchase specifications are required to be generated in accordance with Procedure 0-04-2 (Maine Yankee Purchase Specification), which establishes measures to provide assurance that applicable regulatory requirements, design bases, and other requirements necessary to ensure quality are appropriately included or referenced in the specifications.

The process for requesting vendor audits, commercial surveys, and/or surveillances that may occur during the procurement process is described in Procedure 0-04-3 (Requests for Vendor Surveillance, Vendor Audits, and Commercial Grade Surveys). These activities may be required to provide assurance that purchased material, equipment, or services have been produced in conformance with requirements specified in the procurement specifications.

Receipt of purchased material, equipment, or services is addressed through Procedure 0-07-1 (Receipt of Material, Equipment, and Service), which identifies the requirements for the receipt inspection of safety class, augmented quality, and non-nuclear safety material, equipment, and services. Implementation of the receipt inspection process is intended to verify conformance to procurement documents, and to provide assurance that handling and control of material, equipment, and services are in conformance with Maine Yankee programs and procedures. Procedure 0-08-1 (Material Identification and Control) establishes the process for identification and control of material from initial receipt through storage, installation, and service lifetime.

Modification Implementation

Implementation of permanent plant modifications classified as design changes includes preparation of installation and functional testing documents, installation, functional testing, and placement in service. Activities associated with installation and testing preparation include preparation of work orders (Procedure 0-16-3, Work Order Process), preparation of design change installation instructions (Procedure 17-23-1, Design Change Installation Instructions), and preparation of design change functional test instructions (Procedure 17-23-4, Design Change Functional Test Instructions). Installation and functional testing activities associated with design changes are controlled by Procedure 17-23-2 (Job Order Instructions). Installation of the modification includes approved work orders, job order instructions, field change notices, engineering change notices, and white tagging to isolate equipment that is being modified or maintained. Functional testing of the modification includes approved work orders, job order instructions, design change functional test instructions, and functional testing using the functional test system, and requires 10 CFR 50.59

screening/evaluation to ensure that the testing does not involve an unreviewed safety question or a change to the Technical Specifications. Functional testing is required to ensure that SSCs affected by design changes operate in accordance with design basis requirements as required by Procedure 0-11-1 (Preoperational and Operational Tests and Experiments).

The procedures governing these activities are shown in Figure 4-1. Placement in service is performed in accordance with Procedure 17-23-2. When work activities associated with an approved EDCR have been completed, initiation of a Project Completion Notice (Accounting Procedure 27-300-303, Project Authorization Request for Cost Control and Budgeting) is required. This notice must be received in the Accounting Department within 30 days after completion of the last associated functional test acceptance.

Procedure 17-23-2 also provides the mechanism by which modifications classified as design changes are reflected in Operations Department procedures. In accordance with Procedure 17-23-2, Operations Department procedure changes related to the modification that are necessary to ensure safe and reliable plant operation are required to be completed before the modification is placed in service to ensure that changes in design basis requirements are translated into the procedures. The process for procedure changes is governed by Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes), which establishes administrative controls and requirements for the preparation, review, approval, distribution, and cancellation of procedures. Procedure 0-06-2 provides controls for Maine Yankee procedures that are used by multiple departments, including both those that affect safety-class systems (Class A) and those that do not affect safety-class systems (Class B). Procedure 0-06-2 also provides controls for YAEC procedures and vendor procedures applied at Maine Yankee, as well as some controls for departmental procedures that affect, or do not affect, safety-class systems (Classes C and D).

Procedure 1-200-13 (Operations Department Interface with Design Change Activities) provides the means for updating Operations Department procedures affected by modifications classified as design changes. This includes instructions for operation of the modified system to the applicable personnel. Procedure 1-200-9 (Operations Department Procedure Implementation, Compliance, and Review) provides additional guidance to the Operations Department regarding procedure changes. Changes to Emergency Operating Procedures (EOPs) are required to be performed in accordance with Procedure 0-06-6 (Emergency Operating Procedure Maintenance Program).

Modification Closure

Closure of modifications classified as design changes is governed by Procedure 17-23-3 (Final Processing of a Completed Design Change), which defines the responsibilities for and control of the collection, verification and submittal of completed design packages for permanent storage in accordance with the quality assurance Records Management System. Final processing activities includes the following:

- Completion of Engineering-controlled document, drawing, database, and procedure revisions
- Closure of project purchase orders
- Initiation of updating of vendor manual files (if applicable)
- Notification to other departments to update documents (e.g., UFSAR, DBSDs, procedures) affected by the configuration change
- Project assessment
- Project closure
- Storage and maintenance of design change packages

Notifications to other departments to update documents must be sent directly to the cognizant departments or processed in accordance with Procedure 0-06-8 (Configuration Management Program)

The modification closure process, including the procedures governing the various activities, is outlined in Figure 4-3.

Technical Evaluations

As noted previously, Procedure 17-226 (Technical Evaluations) is used to develop permanent plant modifications that do not impact the design basis of the plant (i.e., facilities modifications, component substitutions). Technical Evaluations can also be used to resolve plant issues that could affect plant SSCs, plant operations, and/or plant procedures.

Procedure 17-226 provides guidance for conducting and documenting Technical Evaluations that assess the technical suitability of plant issues which may affect SSCs, plant operations, and plant procedures. The design input considerations for Technical Evaluations are identified in Procedure 17-312 (Design Inputs). Technical Evaluations require both an independent technical review and a management review by the cognizant Engineering Department Supervisor. Technical Evaluations also require screening/evaluation for unreviewed safety questions (i.e.,10 CFR 50.59 determinations), and PORC review, if applicable.

Technical Evaluations can result in document changes (e.g., procedures, programs, design basis documents, drawings) or physical plant changes. Procedure 17-226 requires document updating to reflect the existing plant configuration if the Technical Evaluation addresses an issue which identifies a change to the configuration of the plant or a discrepancy in current configuration documents. If the Technical Evaluation involves a configuration or document change, then departments that have configuration documents under their control that may be affected by the change must be notified, and configuration documents that may require revision must be identified (when known). Drawings, component data bases, and Engineering-controlled procedures and programs must be updated, as appropriate, in accordance with Procedure 0-06-3 (Drawing Control), Procedure 17-225 (Controlled Component Data Base Maintenance and Control), and Procedure 0-

06-2 (Administrative Control for Procedures and Procedure Changes), respectively. Notifications for installed configuration changes which may impact controlled documents other than Engineering-controlled documents (e.g., Operations and Maintenance Department procedures) must be sent directly to the identified departments or processed in accordance with Procedure 0-06-8 (Configuration Management Program). The Technical Evaluation process flow chart is shown in Figure 4-4.

Temporary Plant Modifications

Temporary plant modifications are controlled separately from permanent plant modifications using Procedure 0-14-2 (Temporary Modification Control). This procedure provides the management controls necessary for notification, authorization, installation, documentation, testing, and restoration/retesting of temporary mechanical and electrical modifications. The procedure provides for processes that satisfy the equipment control provision of ANSI Standard N18.7-1976 Section 5.2.6, and establishes the review process required by PORC to control modifications or alterations to plant systems or equipment that affect nuclear safety per Technical Specification 5.5.A.7.d. The procedure is required to control temporary plant modifications to both safety-related and non-safety-related systems.

The purposes of temporary modifications are troubling-shooting, evaluating changes to existing systems, evaluating proposed systems, operational necessity and/or flexibility, or special tests. Therefore, a rigorous analysis of the effects of the temporary modification on safety is required.

Similar to the permanent plant modification process, the temporary plant modification process requires screening/evaluation for unreviewed safety questions (i.e., 10 CFR 50.59 determinations). Evaluations of the temporary modification with respect to its design requirements, potential failure modes, and the creation of system changes are also required. These evaluations can be supplemented by Technical Evaluations (Procedure 17-226) when appropriate.

The method used for temporary modifications must be controlled in accordance with Procedure 0-16-3 (Work Order Process). Temporary plant modifications also require yellow tagging to identify equipment affected by the modification. In addition, the process requires evaluation of the combined effect of temporary modifications on a system, or the plant in general, to ensure compliance with the Technical Specifications. Temporary modifications must be reviewed and approved by the Plant Shift Superintendent and, when appropriate, by PORC. Level 1 (e.g., safety class) work orders to implement temporary modifications must be reviewed and approved by the cognizant Engineering Department(s). For temporary modifications installed for a period greater than twenty-four hours, the affected drawings must be marked up to reflect the temporary modification, and must be retained in the plant control room. For these temporary modifications, consideration should be given to determining which procedures may be affected by the change, and temporary procedure changes incorporated, as appropriate, in accordance with Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes).

Removal of temporary modifications requires review to ensure that the removal does not place the plant in a condition not covered by the original evaluation. The removal of each modification must be independently verified and the new configuration must be re-tested to ensure system integrity and functional restoration. Removal of temporary modifications must be approved by the Plant Shift Superintendent.

Active temporary plant modifications are required to be reviewed by PORC every six months for possible permanent status consideration. Based on the results of the review, each active temporary plant modification either remains in place, is removed, or is incorporated as a permanent change to the plant. In the latter case, the procedure for permanent plant modifications (Procedure 17-21-2, Permanent Plant Modifications) becomes controlling. A flow chart outlining the design control process for temporary plant modifications is provided in Figure 4-5.

Modification Interactions

Maine Yankee employs several methods to evaluate potential conflicts or interactions between modifications that are planned or in progress. These methods include the following:

- On-Line Maintenance Risk Management Program
- Plant Inter-Disciplinary and PORC Meetings
- Outage Planning and Integration Team
- Guidelines for Removing/Restoring Equipment To/From Service
- Tagging Rules and Procedures

On-Line Maintenance Risk Management Program

The primary tool used by Maine Yankee to evaluate potential conflicts or interactions between modifications that are planned or in progress is its On-Line Maintenance Risk Management Program. This program is used to manage both the instantaneous and cumulative risk levels associated with planned on-line maintenance activities by evaluating and scheduling the activities to minimize the impact on plant safety so as to maintain the risk levels below acceptable pre-established limits. The program assesses plant on-line safety based on existing and/or anticipated plant conditions using a computer model based on input from Maine Yankee's Probabilistic Risk Assessment (PRA). It considers Maintenance Rule identified risk significant systems that could reasonably be impacted by on-line maintenance, as well as significant external events, and calculates the relative margin of safety for individual key safety functions as well as for the overall plant. The assessment model is used as a tool to assist in the development of schedules that minimize the risk associated with on-line maintenance, and to assess the impact of equipment failures or other unscheduled activities on plant safety. Additional discussion of the On-Line Maintenance Risk Management Program is provided in Section 7.4.4.

Plant Inter-Disciplinary and PORC Meetings

Maine Yankee conducts frequent plant inter-disciplinary meetings. The daily morning meeting, attended by plant management personnel representing all departments involved in plant operation, coordinates daily work tasks, identifies and resolves potential conflicts, and allows for extensive interaction between departments. In addition, afternoon plant planning meeting are held frequently. These meetings, attended by Operations Department and Maintenance Department supervisors, and representatives from the Engineering, Safety, Security, Quality Programs, and Radiation Controls Departments, plan daily detailed interactions between key areas.

Meetings of the Plant Operation Review Committee (PORC) are required to be held at least once per calendar month, although weekly meetings are the norm. The purpose of PORC is to advise the Plant Manager on matters related to nuclear safety. PORC includes plant management personnel representing departments involved in plant operation. Among other responsibilities, PORC is required to review proposed changes or modifications to plant systems or equipment that affect nuclear safety. PORC constituency, responsibilities, and authority are defined in Technical Specification 5.5. Taken together, the frequent plant inter-disciplinary and PORC meetings provide another means to evaluate potential conflicts or interactions between modifications that are planned or in progress.

Outage Planning and Integration Team

The Outage Planning and Integration Team (OPIT) plans and produces schedules for plant shutdowns and planned plant outages. OPIT uses the Outage Risk Management Program for guidance in planning and scheduling work during these shutdowns and outages. OPIT processes result in an integrated schedule reflecting the critical path, near-critical path, and float for outage work, and provide another means of evaluating potential conflicts or interactions between modifications or maintenance work planned or in progress.

Guidelines For Removing/Restoring Equipment To/From Service

Procedure 1-200-15 (Guidelines for Removing/Restoring Equipment To/From Service) provides guidelines to be considered by the Operations Department when a piece of equipment or a system is to be removed from or returned to service. These guidelines provide a method for the Operations Department to consider the impact of removing equipment from, or restoring it to, service based on existing plant conditions, thus providing another means of evaluating potential conflicts or interactions between modifications that are planned or in progress.

Tagging Rules and Procedures

Tagging rules and procedures for modifications to plant equipment are provided in Procedure 0-14-1 (White Tagging Procedure) and Procedure 0-14-2 (Temporary Modification Control). These procedures establish methods to control the status of plant equipment for safe operation of the plant

during both permanent and temporary plant modifications. White tags are used, as required, to isolate plant equipment that is being modified or maintained. Yellow tags are used to identify plant equipment that has been temporarily modified. These tagging rules and procedures assist in evaluating potential conflicts or interactions between modifications that are planned or in progress.

4.2.3 YAEC Interface

The Yankee Nuclear Services Division (YNSD) of YAEC performs safety analyses and can initiate plant modifications for Maine Yankee. This section discusses the interface between Maine Yankee and YNSD in the performance of these activities.

Safety Analyses

In general, YNSD performs UFSAR Chapter 14 safety analyses for the Maine Yankee plant. These analyses are performed in accordance with YNSD Procedure WE-103 (Engineering Calculations and Analysis) and YNSD departmental procedures. Key parameters important to safety and operator-controlled parameters that are assumed in the safety analyses are contained in the Input and Assumptions Source Document (IASD). The IASD is in the process of being replaced by the more comprehensive Safety Analysis Input Document (SAID), which will include other safety-related parameters required in design basis calculations and plant procedures, provide a means for directly comparing plant operations and equipment performance to safety analysis assumptions, and serve as a common reference source for operating procedure review and development, safety analysis inputs and assumptions, and engineering design changes. Completion and implementation of the SAID is included in the summary listing of design basis related commitments provided in Appendix A.

Plant Modifications

Maine Yankee is responsible for modifications to the plant. However, plant modifications may be performed by either Maine Yankee or YNSD, so long as they are developed and implemented in accordance with Maine Yankee procedures. EDCRs and Technical Evaluations must be performed in accordance with Maine Yankee procedures.

Procedure 17-21-2 (Engineering Design Change Request - Maine Yankee) requires that EDCRs must receive technical and management review by Maine Yankee, and review by PORC. In addition, safety-related EDCRs must be technically reviewed by YNSD prior to PORC review. Non-safety-related EDCRs must be technically reviewed by YNSD (per Maine Yankee Project Procedure 6) for potential impact on safety-related aspects of the plant.

Procedure 17-226 (Technical Evaluations) requires that Technical Evaluations must be reviewed by the organization initiating the evaluation. In addition, Technical Evaluations initiated by YNSD require management review and approval by Maine Yankee. Technical Evaluations initiated by

Maine Yankee that affect YNSD controlled programs (e.g, recognized changes to technical inputs and assumptions to calculations performed by YNSD) must be transmitted to YNSD.

4.2.4 Vendor Interfaces

Maine Yankee interfaces with vendors through vendor instruction manuals for SSCs, responses to requests for technical and quality information, and operating experience. These three interface categories are described below.

Vendor technical support information for SSCs is provided to Maine Yankee through vendor instruction manuals. Procedure 0-06-7 (Control of Vendor Instruction Manuals) provides the administrative controls and responsibilities for ordering, receipt, review, approval, and distribution of vendor instruction manuals. This procedure also includes provisions for tracking other vendor information.

For procurement of new components, Technical Evaluations and engineering review of procurement requisitions may require interfacing with the Architect Engineer (AE), the Nuclear Steam Supply System (NSSS) vendor, or the Original Equipment Manufacturer/Original Equipment Supplier (OEM/OES) to determine technical and quality requirements. Procedure 17-229 (Engineering Review of Purchase Requisitions) provides a means to ensure that applicable technical and quality requirements are incorporated into procurement documents. The procedure includes a list of questions to the AE, NSSS vendor, or OEM/OES which may be useful in identifying the necessary requirements.

A broad spectrum of other vendor information and industry experience is captured through the Learning Process (see Section 7.2.1) in accordance with Procedure 66-1 (Learning Process Implementation Procedure for External Issues), which describes the process for collecting, assessing, and disseminating external issues. Examples of potential sources of input to the Learning Process for external issues include (but are not limited to) the following:

- USNRC 10 CFR Part 21 Notices
- USNRC Information Releases (e.g., Notices, Bulletins, Generic Letters)
- INPO Significant Operating Experience Reports
- INPO Significant Event Reports
- INPO Significant Event Notifications
- NSSS Vendor Notices
- Nuclear Energy Institute
- Electric Power Research Institute

Procedure 66-1 requires that incoming external issues be reviewed for potential applicability to Maine Yankee, and, if applicable, be entered into the Learning Process.

4.2.5 Quality Assurance Elements

The Operational Quality Assurance Program (OQAP) includes procedures used to measure the effectiveness of processes, procedures, and programs. This section provides a brief description of some of those procedures, which are discussed further elsewhere in this report.

Quality Assurance Audits, Surveillance, and Inspections

The OQAP includes procedures for quality assurance (QA) audits, QA and quality control (QC) surveillance, and QC inspections. QA audits are required to be conducted in conformance with Procedure 21-203 (In-Plant Audit Program Implementing Process), which is in conformance with Procedure 0-18-1 (In-Plant Audit Program). The primary purpose of audits is to verify that applicable elements of the QA program have been developed, documented, complied with, and effectively implemented in accordance with specified requirements. Surveillance is required to be conducted in conformance with Procedure 21-205 (QA/QC Surveillance Program Implementing Process), which is in conformance with Procedure 0-18-2 (QA/QC Surveillance Program). The primary purpose of surveillance is to determine the adequacy of implementation of programs, procedures, policies, and good practices. QC inspections, conducted in accordance with Procedure 0-10-1 (Inspection Program), are intended to provide added confidence that plant configuration modifications are in conformance with applicable instructions, procedures, specifications, and drawings. Additional discussions on QA audits, QA/QC surveillance, and QC inspections are provided in Section 7.

Quality Assurance Trending and Functional Area Assessments

Quality Assurance (QA) trending is a tool that can be used by the QA Program in the execution of functional area assessments, and can assist in the identification of trends or patterns which might not be evident in the evaluation of a specific assessment. Functional area assessments evaluate performance and overall achievement of quality by functional area, and are required to be conducted in accordance with Procedure 21-216 (Periodic Assessment of Performance by Functional Area and Trend Analysis Program). Additional discussions on QA trending and functional area assessments are provided in Section 7.

Quality Assurance Procurement Program

The OQAP establishes the general requirements and responsibilities for procurement quality assurance. The Quality Assurance Department (QPD) has overall responsibility for the Quality Assurance Procurement Program, with support provided by the Quality Assurance Department (QAD) at YNSD. The Quality Assurance Procurement Program consists of the control of procurement documents and purchased material, equipment, and services. The procurement process for plant modifications is described in Section 4.2.2.

4.2.6 Training

This section provides an overview of training elements related to design and configuration control. These elements include the General Plant Training Program, Engineering Division Training, Operations Department Training, and Maintenance Department Training. Training programs are required to be accredited by the National Academy for Nuclear Training.

General Plant Training Program

Training programs are provided to train personnel to perform their assigned functions and to give them a proper understanding of plant operation and plant equipment so as to enable implementation of the requirements of Appendix B to 10 CFR Part 50. Procedure 0-02-2 (General Plant Training Program) includes the following provisions:

- Establishment of administrative controls to assure that Maine Yankee personnel receive the training necessary and possess the appropriate qualifications to perform their assigned duties safely, effectively and efficiently.

- Establishment of training and qualification criteria for access to the Maine Yankee plant, as well as responsibilities for planning, developing, maintaining, and implementing training and development courses, and establishing and maintaining position qualification requirements.

- Assurance of compliance with Maine Yankee commitments to regulatory and industry personnel qualification and training standards.

Procedure 0-02-2 identifies the training requirements for Maine Yankee personnel, as well as non-Maine Yankee personnel, working on-site. One element of the General Plant Training Program is General Employee Training (GET), which includes training in the processes and procedures related to design and configuration control. Procedure 0-17-6 (Training Documentation System) prescribes the required training documentation, and assigns responsibility for creation, processing, and retention of training documents.

Engineering Division Training

Training of engineering support personnel (Engineering Support Training Program) is intended to develop an understanding of the processes and procedures necessary to perform their respective functions within the various Engineering Departments. The program has three distinct parts: Indoctrination, Position Specific Qualification, and Continuing. The program requirements are described in Engineering Procedures 17-200-1 (Training-Engineering Division), 17-200-2 (Indoctrination of Engineering Personnel), and 17-200-4 (Training of Engineering Department Contracted Craft Personnel). The Indoctrination phase covers plant systems and operations, and

engineering processes and procedures. The Position Specific Qualification phase consists of a set of tasks that the individual is expected to perform, together with qualification standards that must be achieved prior to independent performance of the tasks. The Continuing phase consists of two parts: a position specific portion that is unique to each group of engineers, and quarterly training on topics that are appropriate for engineering groups. For the Continuing phase, the topics chosen are based on need, and are determined by curriculum committees comprised of the Engineering Manager, engineers, and training personnel. Engineering Division personnel are required to be enrolled in the Engineering Support Training Program.

Operations Department Training

The initial and continuing training programs for the Operations Department staff must meet the requirements and recommendations of Section 5.5 of ANSI N18.1-1971 and the applicable portions of 10 CFR Parts 50 and 55, in accordance with Technical Specification 5.4. As required by these documents, the Maine Yankee training programs must be derived from a "Systems Approach to Training" as defined in 10 CFR 55.4.

Licensed Operator initial and continuing training programs must be in conformance with the requirements of 10 CFR 55.41, 10 CFR 55.43 and 10 CFR 55.59. Procedure 1-200-18 (Selection, Training, and Qualification of Operations Department Personnel) describes the process for selecting, training, and qualifying Operations Department personnel, and establishes the criteria for Operation Department personnel qualification.

As part of their training, applicable Operations Department personnel are required to receive training or have been provided instructions adequate to enable safe and reliable operation of modified plant systems and equipment prior to placement in service.

Maintenance Department Training

The Maintenance Department training program includes both initial and continuing training requirements for personnel involved in maintaining plant equipment. This program addresses the three disciplines of maintenance (Mechanical, Electrical, and Instrumentation and Control). The program requirements are described in Maintenance Procedure 67-200-13 (Maintenance Department Training).

4.3 CONFIGURATION CONTROL

In accordance with 10 CFR 50.59, 10 CFR 50.71(e), and Appendix B to 10 CFR Part 50, Maine Yankee has established processes for screening and evaluating design and procedure changes for unreviewed safety questions, and for incorporating these changes in the Updated Final Safety Analysis Report (UFSAR) and other design documents. This section focuses on the process for screening design and procedure changes, and outlines the 10 CFR 50.59 process for safety

evaluations. This section also describes the Maine Yankee configuration control process, and the process by which approved and implemented design and procedure changes are incorporated in the UFSAR, the plant Technical Specifications, the Input and Assumptions Source Document, Design Basis Summary Documents, Operations and Maintenance Department procedures, drawings, vendor instruction manuals, and other documents that could be affected by design or procedure changes. In addition, this section also explains the interactions with the preparation of work packages.

4.3.1 Screening of Design and Procedure Changes

Screening of design changes and procedure changes for unreviewed safety questions and the necessity for a license amendment application is accomplished through Procedure 0-06-4 (10 CFR 50.59 Determination). Procedure implementation consists of two parts. The first part is a screening process; the second part (if required) is an evaluation process. Details of the two-part process are described in Section 4.3.2.

In addition to the above, Maine Yankee has implemented a process to provide a method for initially determining the safety significance and making a judgement on the licensing and design basis conformance of potential safety concerns identified during engineering reviews of industry operating experience, in-plant monitoring and assessments, and design/licensing basis recovery. Procedure 17-230 (Engineering Design Discrepancy Evaluation) provides guidance on the evaluation and resolution of potential safety issues arising from engineering and licensing activities.

4.3.2 10 CFR 50.59 Process

Procedure 0-06-4 (10 CFR 50.59 Determination) is the procedure for implementing the requirements of 10 CFR 50.59 (Changes, Tests and Experiments). Procedure 0-06-4 provides guidance for determining if a 10 CFR 50.59 evaluation is needed and, if required, guidance for performing the evaluation. NSAC 125 (Guidelines for 10 CFR 50.59 Safety Evaluations, June 1989) was used as a source document in the revision of this procedure.

As noted above, the 10 CFR 50.59 process described in Procedure 0-06-4 is a two-part process. The first part is a screening process to determine if (1) the proposed change violates or negates any Technical Specification, or (2) requires an unreviewed safety question evaluation. If the proposed change violates or negates any Technical Specification, then prior USNRC approval is required to implement the proposed change. If the proposed change requires an unreviewed safety question evaluation, then the second part of the process, which is an evaluation to determine if an unreviewed safety question exists, must be implemented.

If it is determined that an unreviewed safety question exists, then prior USNRC approval is required to implement the proposed change. In that case, Maine Yankee has the option of either submitting an application for a license amendment, or canceling or modifying the proposed change. This option is also available for Technical Specification changes resulting from design changes.

Procedure 0-06-4 describes in detail the steps involved in completing the 10 CFR 50.59 process. The procedure also identifies categories for which 10 CFR 50.59 screening and evaluation are and are not required, and includes a list of documents useful in preparing a 10 CFR 50.59 determ[illegible]n, and a list of safety function concerns suggested for consideration. Figure 4-6 pr[illegible]vides a flow [illegible]art for the 10 CFR 50.59 process described in Procedure 0-06-4.

10 CFR 50.59 evaluations require review by the assigned Nuclear Safety Engineer (NSE) or Shift Technical Advisor (STA) to verify that steps in the 10 CFR 50.59 evaluation process were completed (as needed), and that the information included or referenced is adequate to support the conclusions reached. NSEs and STAs are required to have 10 CFR 50.59 training in order to perform the review. In addition, 10 CFR 50.59 evaluations performed during the consideration of proposed permanent or temporary modifications must receive independent technical review and PORC review through either the ECCR, Technical Evaluation, or Temporary Plant Modification processes. 10 CFR 50.59 evaluations performed during the consideration of proposed procedure changes must receive independent technical review and PORC review in accordance with Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes).

For proposed changes, Procedure 0-06-4 requires that a determination must be made if any UFSAR and/or Input and Assumptions Source Document (IASD) information is made incorrect or obsolete by the change. If, as a result of a proposed change, UFSAR and/or IASD revisions are required, the revisions must be identified, and notification must be sent to the Licensing and Engineering Support (L&ES) Department. If a proposed change is implemented, identified revisions to the UFSAR and/or IASD must be made as described in Sections 4.3.5 and 4.3.6, respectively.

4.3.3 Configuration Control Process

The configuration control process at Maine Yankee is an integrated process for maintaining consistency between the physical plant configuration, plant procedures and programs, and plant design documents. The process is controlled by Procedure 0-06-8 (Configuration Management Program). The objective of this program is to ensure that accurate information is available for making safe, knowledgeable, and timely decisions related to changes in plant configuration. Documents covered by the Configuration Management Program include Engineering Reference documents and plant documents. Procedure 0-06-8 identifies the documents included in the Configuration Management Program, and the respective responsible departments. Examples of these documents include (but are not limited to) the following:

Engineering Reference Documents

- Drawings
- Calculations and Analyses
- Design Basis Summary Documents
- Updated Final Safety Analysis Report (UFSAR)

- Input and Assumptions Source Document (IASD)
- Technical Specifications
- Vendor Instruction Manuals

Plant Documents

- Plant Operating Procedures
- Maintenance Procedures
- Preventative Maintenance Program
- Training/Simulator Programs
- Technical Specification Surveillance Master List

The Configuration Management Program uses a systematic approach for ensuring a current and consistent set of Engineering Reference documents for the plant, and ensuring that plant documents are maintained consistent with the Engineering Reference documents.

Procedure 0-06-8 also defines the responsibilities of the various department managers for maintaining their configuration documents consistent with design and procedure changes, and for notifying other departments of the potential impact a change may have on configuration documents under their control. Notification to other departments that are, or may be, affected by the change must be made using either the Learning Bank and Procedure 0-16-1 (Learning Process Implementation Procedure) or Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes). The Learning Process also provides a mechanism to track document changes to completion.

Maine Yankee is in the process of reassessing its Configuration Management Program to ensure that it is current with industry standards. The Configuration Management Improvement Initiatives Plan is described in Section 4.3 of the Maine Yankee ISA response (Reference 2).

4.3.4 Walkdowns

Walkdowns are required, or may be performed, during various stages of the plant modification process. Whenever possible, a walkdown inspection is recommended (during normal plant operations, if accessible) as part of conceptual project assessment (Procedure 17-301, Conceptual Project Assessment) to visualize the proposed change, identify possible interference problems, and evaluate economical installation and technical concerns. Walkdown(s) are required during installation preparation (Procedure 17-23-1, Design Change Installation Instructions) and functional testing preparation (Procedure 17-23-4, Design Change Functional Test Instructions) to confirm constructability and testability of the proposed design change. During this walkdown, the preparer of the proposed design change package is required to verify that the existing plant "as-built" conditions are accurately represented by the EDCR drawings and sketches. A walkdown or review, as appropriate, is also required following completion of installation of the modification to verify that

work instruction requirements have been satisfied. During the design verification process (Procedure 17-21-6, Design Verification), a walkdown of the affected area by the independent reviewer of the plant modification is recommended (if possible) to enable him to become familiar with physical restrictions that might affect the proposed change. Each of these walkdowns provides a means for verifying that the plant configuration is consistent with the design basis documents.

4.3.5 Updated Final Safety Analysis Report (UFSAR) Process

As noted in Section 4.3.2, Procedure 0-06-4 (10 CFR 50.59 Determinations) is the process by which revisions to the Maine Yankee Updated Final Safety Analysis Report (UFSAR) to include the effects of changes made to the plant configuration, plant procedures, and plant design bases are identified. This procedure is included as part of the EDCR, Technical Evaluation, Temporary Plant Modification, and procedure change processes. Therefore, the process requires that plant modifications and procedure changes be screened for their potential impact on the UFSAR. Procedure 26-314 (Preparation of FSAR Revisions) provides the process by which identified UFSAR changes are implemented.

Changes to the UFSAR may also result from identified Design Discrepancy Evaluations (DDEs). Guidance regarding the evaluation and resolution of DDEs is provided in Procedure 17-230 (Engineering Design Discrepancy Evaluation). Changes to the UFSAR that result from DDEs must be made in accordance with Procedure 26-314, and should be done in conjunction with an approved 10 CFR 50.59 determination (Procedure 0-06-4). The screening criteria to determine the applicability of the 10 CFR 50.59 process are included in Procedure 26-314.

The process for updating the UFSAR in accordance with the requirements of 10 CFR 50.71(e) includes the following provisions:

- 10 CFR 50.59 changes and identified design discrepancies are reviewed to determine if a UFSAR update is needed.
- The effects of safety analyses are incorporated in UFSAR updates.
- Identified UFSAR changes are controlled and accessible to plant personnel between docketed UFSAR updates.

Procedure 26-314 provides a detailed process for incorporating necessary changes resulting from approved and implemented changes to the plant configuration, procedures, and design basis in the UFSAR. The process includes the following major elements:

- Identification of proposed UFSAR changes
- Preparation of proposed UFSAR Change Notices, including supporting 10 CFR 50.59 evaluations

- Engineering review and approval of UFSAR Change Notices
- Licensing review and approval of UFSAR Change Notices
- Preparation of an amendment to the docketed UFSAR
- Management review and approval of the amendment to the docketed UFSAR
- Preparation of 10 CFR 50.59 annual or periodic evaluation report

Procedure 26-314 also identifies responsibility for ensuring that Maine Yankee departments and YNSD are aware of the requirements to maintain the UFSAR current, ensuring that UFSAR updates are prepared and submitted to the USNRC to comply with the requirements of 10 CFR 50.71(e), and assuring that requirements of 10 CFR 50.59(b)(2) are satisfied. In order to assist in the preparation of UFSAR changes, the procedure identifies the Maine Yankee departments and/or department sections that have primary responsibility for each of the sections of the UFSAR, and includes a list of Maine Yankee procedures controlling activities which may require a UFSAR revision.

4.3.6 Design Document Changes

The Maine Yankee procedures provide processes which enable approved and implemented design and procedure changes to be incorporated, as appropriate, into design documents. These documents include the plant Technical Specifications, the Input and Assumptions Source Document, Design Basis Summary Documents, Operations and Maintenance Department procedures, drawings, vendor instruction manuals, and other documents that could be affected by design or procedure changes. The key processes for updating documents are described below.

Technical Specifications

As noted in Section 4.3.2, Procedure 0-06-4 (10 CFR 50.59 Determinations) is the process by which changes to Technical Specifications as a result of proposed design and procedure changes are identified. If a proposed change would result in a Technical Specification violation or the need for a Technical Specification wording change, then the Technical Specification change must be approved by the USNRC through a licensing amendment in accordance with 10 CFR 50.90. Also, if the proposed change could reduce the margin of safety defined in the basis for any Technical Specification, then an unreviewed safety question exists, and USNRC approval is required prior to implementation of the change. If USNRC approval is granted, then the Technical Specifications must be revised in accordance with Procedure 26-331 (License/Technical Specification Amendments) prior to implementation of the change.

Input and Assumptions Source Document

Procedures 0-06-4 (10 CFR 50.59 Determinations) and 0-06-2 (Administrative Controls for Procedures and Procedure Changes) provide the mechanisms by which changes to the Input and Assumptions Source Document (IASD) as a result of design and procedure changes are identified. If an IASD change is required, then a technical justification for the change must be prepared, and

the Licensing and Engineering Support Department must be notified. Changes must be implemented in accordance with Procedure 0-06-8 (Configuration Management Program).

Design Basis Summary Documents

Design Basis Summary Documents (DBSDs) provide a summary of the design basis for the specified plant system, and include source references for each requirement or limitation. Each DBSD describes the system and component design bases, including specific system and component functional requirements and testing requirements, interfaces, accident analysis assumptions, setpoints, and component design conditions. The DBSDs provide background on existing system designs, and contain information that may be used to help make decisions on proposed plant modifications. DBSDs are prepared in accordance with YAEC Procedure MY-DBD-1 (Procedure for Developing Design Summary Basis Documents), and are controlled and maintained by Procedure 0-06-8 (Configuration Management Program). Procedure 0-06-8 also controls the process by which changes to DBSDs resulting from design and procedure changes are implemented.

Maine Yankee has an ongoing program to prepare and update DBSDs and to verify consistency with the plant configuration. DBSDs are discussed in more detail in Section 9.

Operations and Maintenance Department Procedures

The linkage between permanent plant modifications that impact the design basis of the plant (i.e., modifications classified as design changes) and resulting changes to Operations Department procedures is established in Procedure 17-23-2 (Job Order Instructions). As noted in Section 4.2.2, Procedure 17-23-2 requires that revisions to Operations Department procedures necessary to ensure safe and reliable plant operation be completed prior to placement of the modification in service. Procedure 1-200-13 (Operations Department Interface with Design Change Activities) provides the means for updating Operations Department procedures affected by modifications classified as design changes. This includes instructions for operation of the modified system to the applicable personnel. Procedure 1-200-9 (Operations Department Procedure Implementation, Compliance, and Review) provides additional guidance to the Operations Department regarding procedure changes. Changes to Emergency Operating Procedures (EOPs) are required to be performed in accordance with Procedure 0-06-6 (Emergency Operating Procedure Maintenance Program).

The linkage between permanent plant modifications that impact the design basis of the plant and resulting changes to Maintenance Department procedures is established in Procedure 17-23-3 (Final Processing of a Completed Design Change), which requires notifications be sent to the cognizant groups for installed configuration changes that may impact controlled documents not classified as Engineering-controlled documents. Notifications must be sent directly to the Maintenance Department or processed in accordance with Procedure 0-06-8 (Configuration Management Program).

The linkage between permanent plant modifications that do not impact the design basis of the plant and resulting changes to Operations and Maintenance Department procedures is established in Procedure 17-226 (Technical Evaluations). As noted in Section 4.2.2, this procedure requires document updating to reflect the existing plant configuration if the Technical Evaluation addresses an issue which identifies a change to the configuration of the plant or a discrepancy in current configuration documents. Notifications for installed configuration changes which may impact Operations and Maintenance Department procedures must be sent directly to the cognizant departments or processed in accordance with Procedure 0-06-8 (Configuration Management Program).

Changes to Operations and Maintenance Department procedures must be implemented in accordance with Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes), which establishes the administrative control and requirements for the preparation, review, approval, distribution, revision and cancellation of procedures. Procedure 0-05-2 (Procedure Writer's Guide) provides technical guidance and administrative controls for procedure preparation. Procedure 0-05-1 (Procedure Use and Adherence) provides requirements for procedure use and adherence. Procedure changes require 10 CFR 50.59 screening/evaluation, and must be independently reviewed using a Procedure Verification Checklist, and reviewed and approved by the responsible department manager. Procedures that involve multiple departments require cross-disciplinary review. Procedures affecting safety require PORC review and approval. The Learning Process provides a mechanism to track document changes to completion.

Temporary changes to Operations and Maintenance Department procedures also must be implemented in accordance with Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes). Temporary Procedure Changes (TPCs) are intended for one-time use, a period of time specified by PORC due to a temporary plant condition, when a problem is discovered while performing a procedure, and/or an immediate procedure change is necessary. TPCs require review and approval by PORC and Plant Management in accordance with Technical Specifications 5.5.A.7.a and 5.8.

Drawings, Vendor Instruction Manuals, and Other Design Documents

The linkage between permanent modifications that impact the design basis of the plant and resulting changes to drawings, vendor instruction manuals, and other design documents is established in Procedure 17-23-3 (Final Processing of a Completed Design Change). Changes to drawings must be completed prior to closeout of the design change package in accordance with Procedure 17-22-1 (Design Document Revision). Updating of vendor instruction manuals must be performed in accordance with Procedure 0-06-7 (Control of Vendor Instruction Manuals). Changes to other design documents must be made in accordance with Procedure 0-06-8 (Configuration Management Program). The Learning Process provides a mechanism to track document changes to completion.

The linkage between permanent modifications that do not impact the design basis of the plant and resulting changes to drawings, vendor instruction manuals, and other design documents is established in Procedure 17-226 (Technical Evaluations). Document updating must be performed as described in Section 4.2.2.

4.3.7 Retrievability and Availability of Design Documents

In an effort to improve access to licensing and selected plant design documents, Maine Yankee has developed an on-line, integrated document search and retrieval system called the Electronic Filing System (EFS). The EFS was designed as a repository for design basis and licensing basis information to improve the management, control and accessibility of that information. The information base for the EFS includes the Maine Yankee Operating License, UFSAR, Technical Specifications, generic and plant-specific correspondence between Maine Yankee and the USNRC since the start of commercial plant operation, 10 CFR documents, Quality Assurance Program description, Emergency Plan description, plant procedures, material safety data sheets, Design Basis Summary Documents, and other design documents. The EFS provides Maine Yankee personnel with easy access to design and licensing information for use when developing and implementing design and procedures changes, and researching regulatory commitments. The EFS contains an updated, "living" version of the UFSAR that contains changes that have been approved but have not yet been incorporated into the docketed UFSAR. In addition, Maine Yankee maintains a central resource room, readily accessible to users, containing hard copy of licensing documents.

4.3.8 The Learning Process

The Learning Process (Procedure 0-16-1, Learning Process Implementation) provides a means for tracking commitments to changes in documents due to design and/or procedure changes. The Learning Process is a computer-based system, supported by an electronic information database (the Learning Bank), available for problem identification, problem evaluation, corrective action planning, and task tracking. Relative to task tracking, the Learning Process provides significant improvements in centralization, user accessibility, and information retrievability compared to the system previously used. The Learning Process is described in more detail in Section 7.2.1.

4.3.9 Interaction of Work Packages with Plant Operations

Work packages for plant modifications consist of job orders, work orders, and other documentation necessary to support installation of the modification. Work orders are processed through the Maintenance, Inventory, Purchasing, and Payables Systems (MIPPS) in accordance with the MIPPS Maintenance Control Reference Manual. In accordance with Procedure 0-16-3 (Work Order Process), the work order must be reviewed and approved by a Plant Shift Superintendent (PSS) or Shift Operating Supervisor (SOS) prior to releasing the equipment for work. The review includes, among other issues, adequate functional test instructions, Operations Department concerns, and ensuring the inclusion of the equipment on the daily on-line maintenance schedule and the

associated risk assessment. Functional testing is controlled by Procedure 17-23-4 (Design Change Functional Test Instructions) and Procedure 0-11-3 (Functional Test System). Changes to Operations Department procedures resulting from the modification are required to be made as described in Section 4.3.6, and must be completed prior to placement of the modification in service.

4.4 SUMMARY

Sections 4.2 and 4.3 provide detailed descriptions of the engineering design and configuration control processes currently in place and under implementation at Maine Yankee. These processes provide a structure for developing, reviewing, approving, installing, testing, implementing, and controlling design and procedure changes and other plant modifications in accordance with the requirements of Appendix B to 10 CFR Part 50. The processes also provide a means for screening and evaluating design and procedure changes in accordance with the requirements of 10 CFR 50.59, and for updating and maintaining the UFSAR in accordance with the requirements of 10 CFR 50.71(e). In addition, the processes provide a framework for maintaining consistency between the physical plant configuration, plant procedures and programs, and plant design documents. Corrective actions to address areas for improvement in these processes are identified in the summary listing of design basis related commitments provided in Appendix A.

FIGURE 4-1 (1 OF 3)
FLOW CHART FOR MAINE YANKEE ENG. DESIGN & CONFIG. CONTROL
PERMANENT PLANT MODIFICATION PROCESS

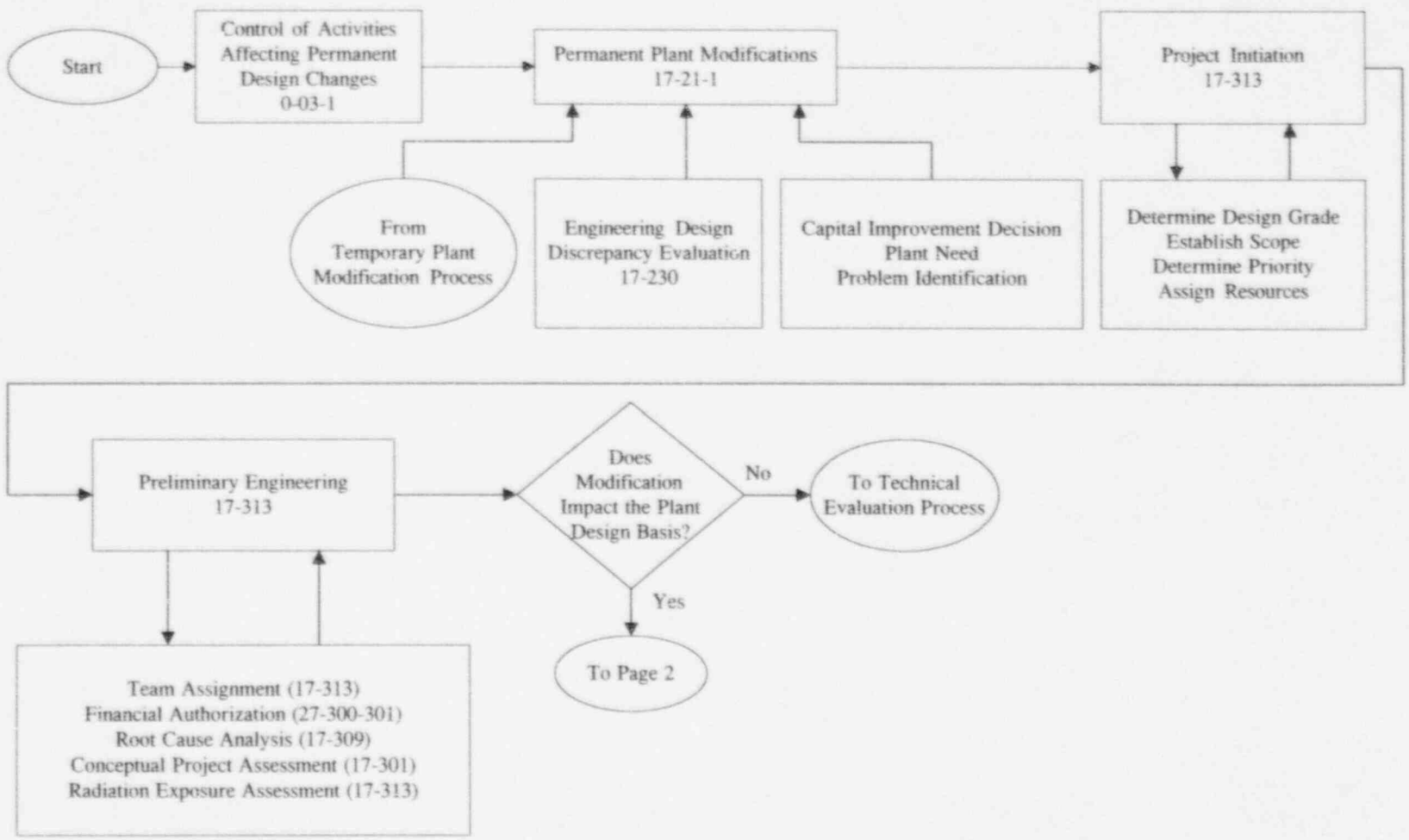

FIG4-1.VSD

FIGURE 4-1 (2 OF 3)
FLOW CHART FOR MAINE YANKEE ENG. DESIGN & CONFIG. CONTROL
PERMANENT PLANT MODIFICATION PROCESS

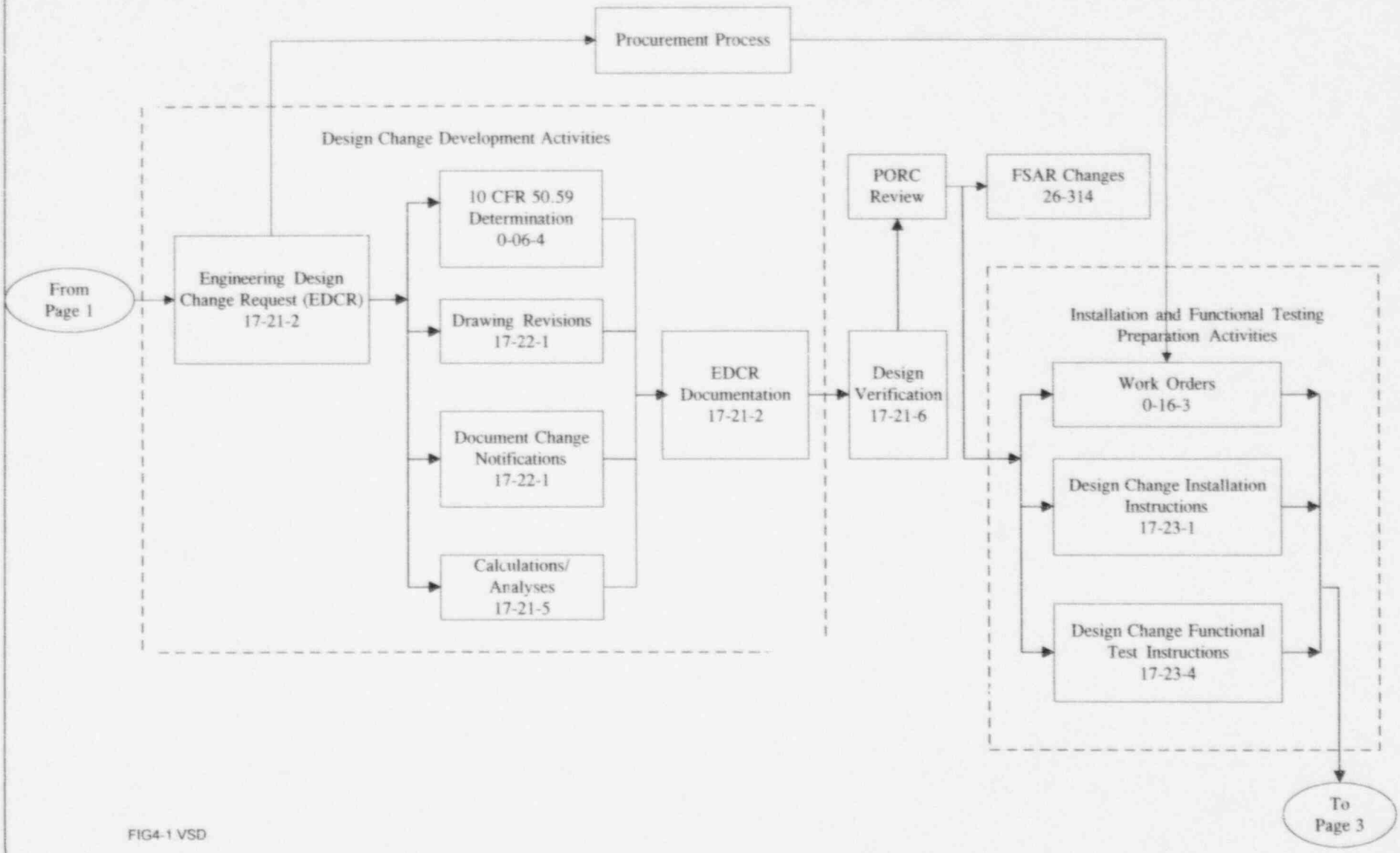

FIG4-1 VSD

FIGURE 4-1 (3 OF 3)
FLOW CHART FOR MAINE YANKEE ENG. DESIGN & CONFIG. CONTROL
PERMANENT PLANT MODIFICATION PROCESS

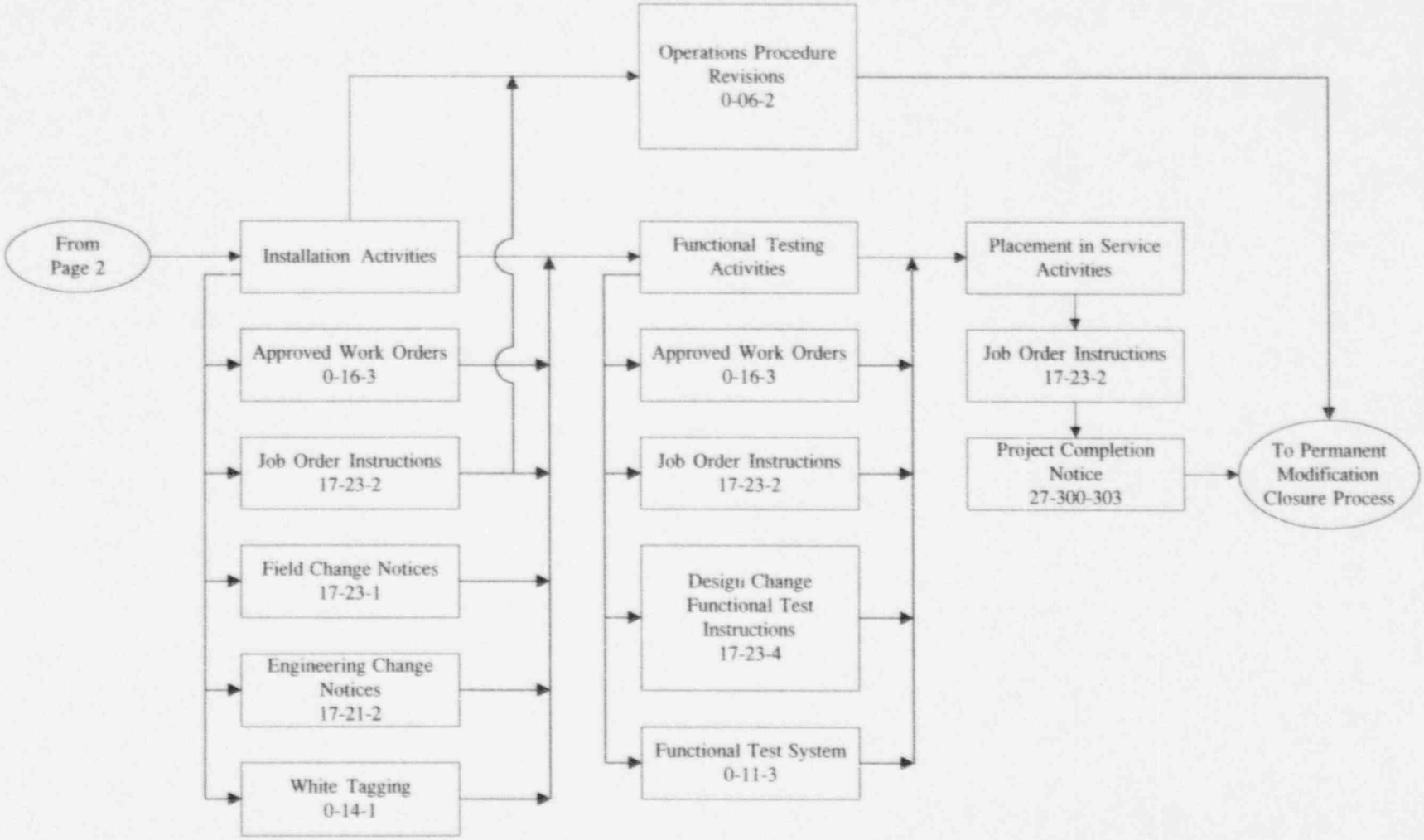

FIG4-1.VSD

FIGURE 4-2 (1 OF 1)
FLOW CHART FOR MAINE YANKEE ENG. DESIGN & CONFIG. CONTROL PROCUREMENT PROCESS

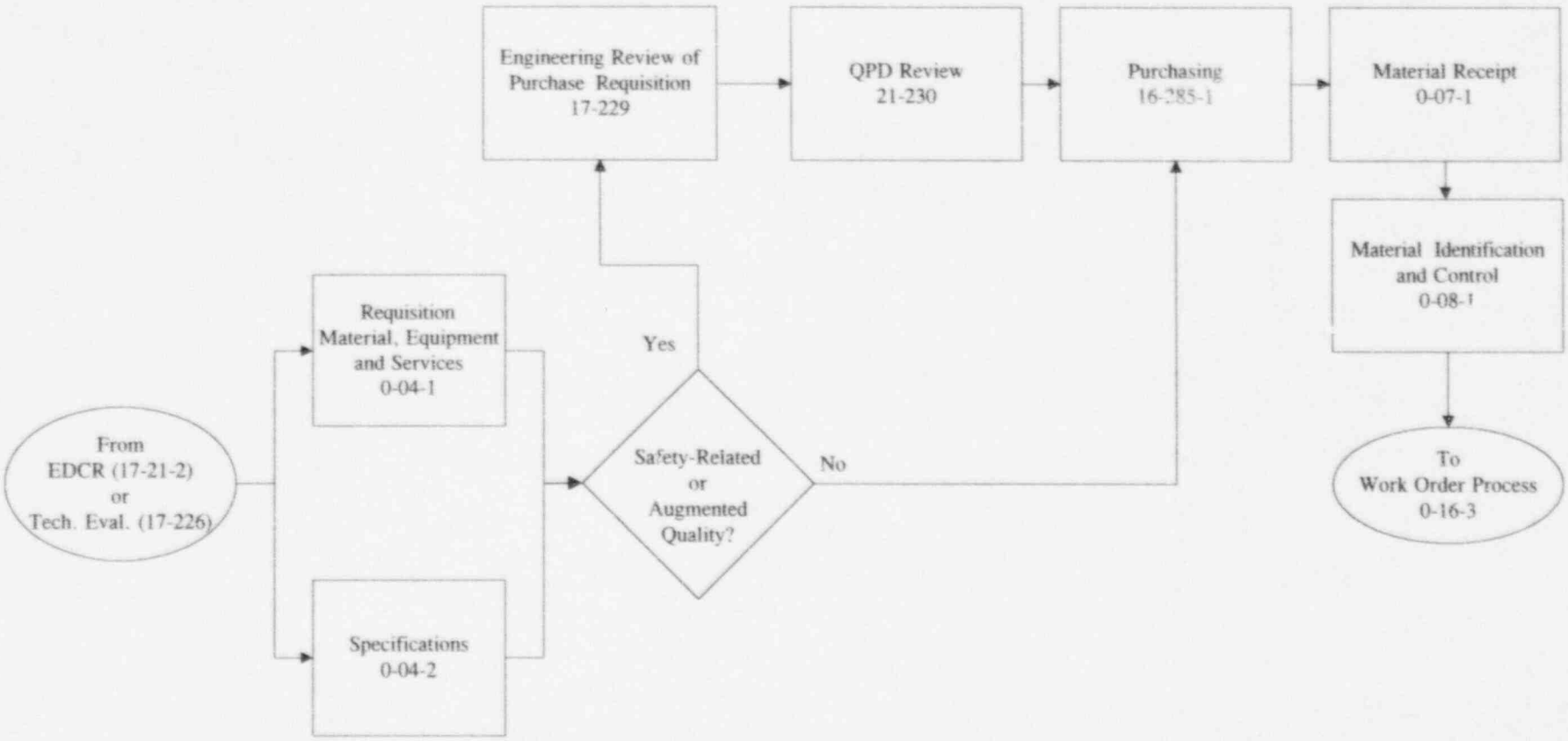

FIG4-2 VSD

FIGURE 4-3 (1 OF 1)
FLOW CHART FOR MAINE YANKEE ENG. DESIGN & CONFIG. CONTROL
PERMANENT PLANT MODIFICATION CLOSURE PROCESS

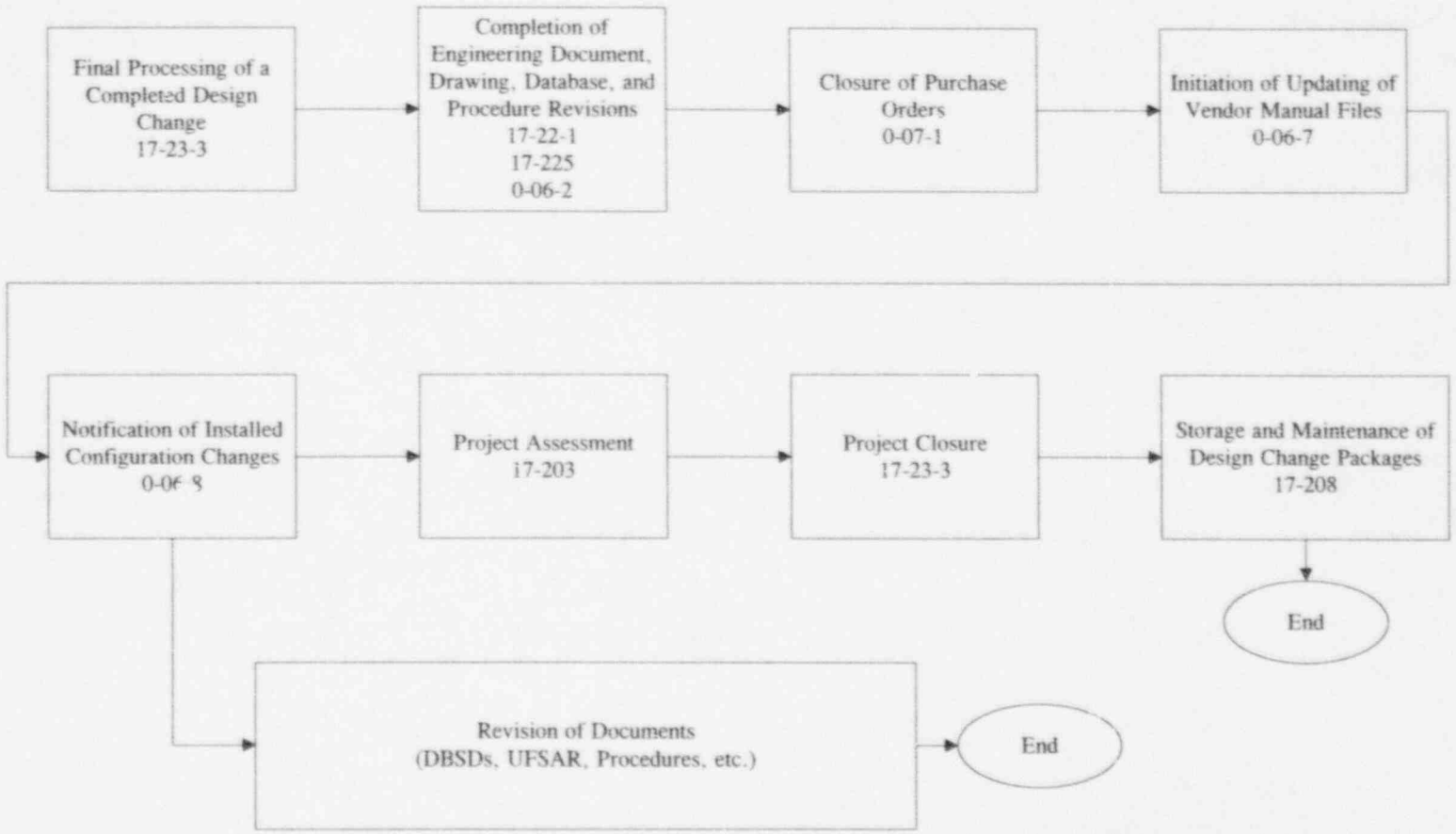

FIG4-3.VSD

FIGURE 4-4 (1 OF 1)
FLOW CHART FOR MAINE YANKEE ENG. DESIGN AND CONFIG. CONTROL TECHNICAL EVALUATION PROCESS

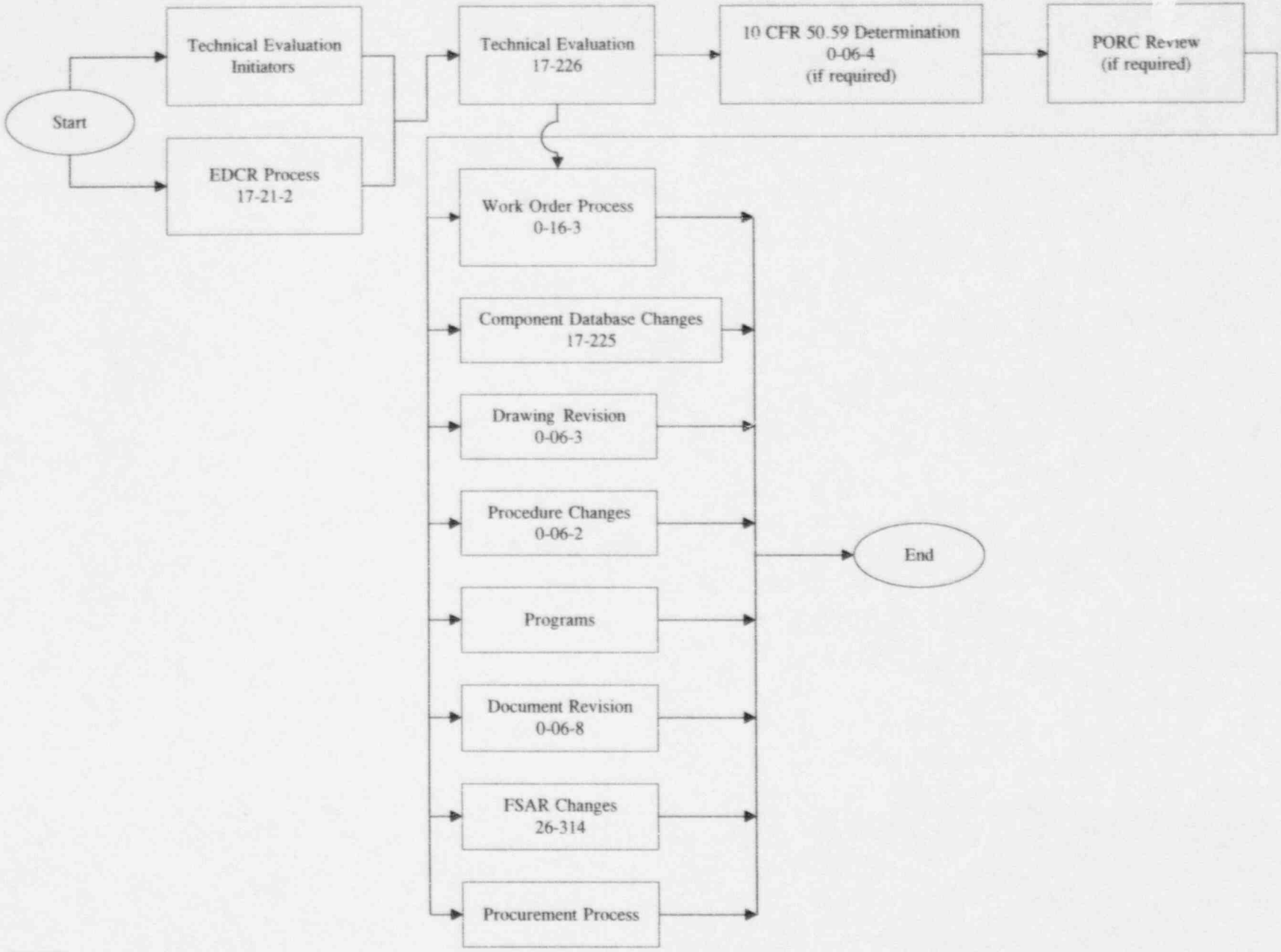

FIG4-4.VSD

FIGURE 4-5 (1 OF 1)
FLOW CHART FOR MAINE YANKEE ENG. DESIGN & CONFIG. CONTROL
TEMPORARY PLANT MODIFICATION PROCESS

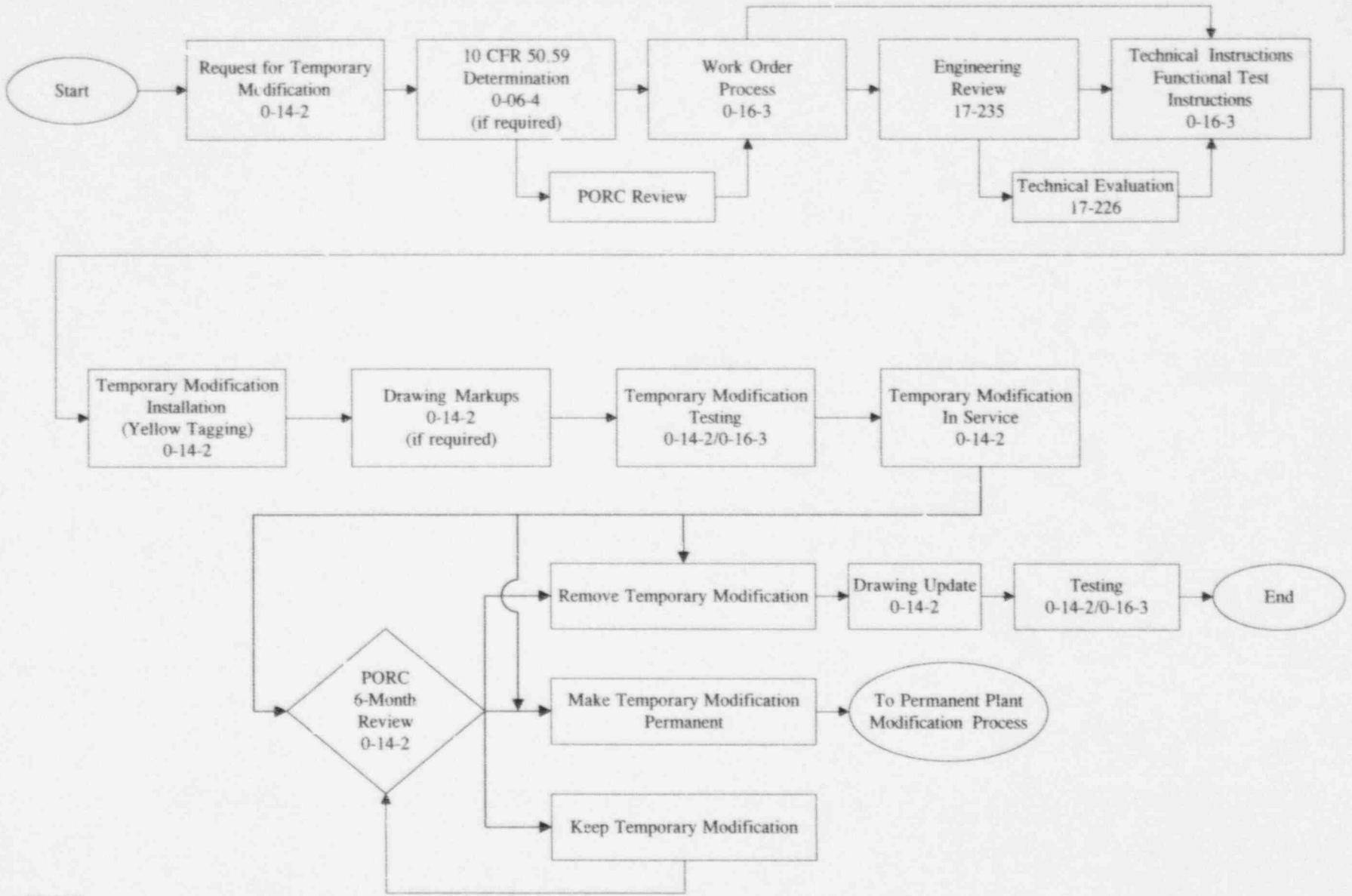

FIG4-5.VSD

FIGURE 4-6 (1 OF 1)
FLOW CHART FOR MAINE YANKEE 10 CFR 50.59 PROCESS

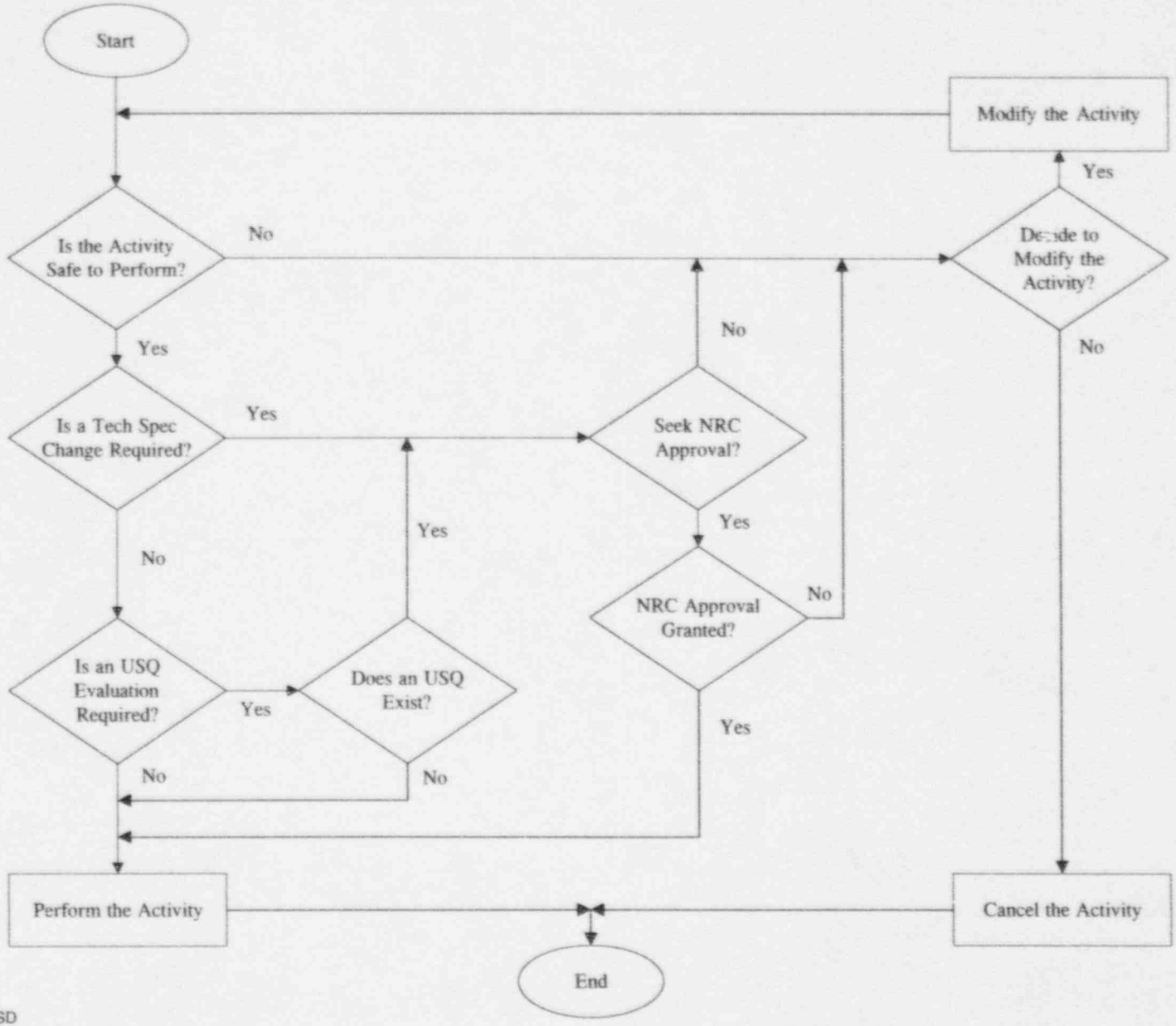

FIG4-6.VSD

SECTION 5

TRANSLATION OF DESIGN BASES REQUIREMENTS INTO OPERATING, MAINTENANCE, AND TESTING PROCEDURES

5.1 INTRODUCTION

Pursuant to item (b) of the USNRC's 10 CFR 50.54(f) request (Reference 1), this section provides the Maine Yankee assessment regarding the adequacy of the translation of design bases requirements into operating, maintenance, and testing procedures. The process controls used to translate design basis requirements into appropriate procedures are summarized in Section 5.2. Information, including Maine Yankee activities and external reviews, related to the translation of design bases requirements into these procedures, is provided in Section 5.3. Section 5.4 summarizes the results of the relevant audits performed by the 10 CFR 50.54(f) Response Team. The conclusions from this assessment are detailed in Section 5.5.

The activities summarized below address either a specific aspect of the translation of plant design bases into procedures or the application of that translation to plant operations from a wider perspective. Maine Yankee has developed its conclusion to this section by considering the sum total of all evidence as well as consideration of each specific activity.

It has been determined from the evidence and assessments of this section that the linkage between the design bases and the operating, maintenance and testing procedures is established. However, we additionally find that the implementation of this linkage is not consistent for all aspects of procedure development and modification. We conclude that the observed range of this variation is consistent with the finding that translation of design bases requirements into appropriate procedures supports an overall conclusion of reasonable assurance of adequate protection of public health and safety.

5.2 SUMMARY OF PROCESS CONTROL LINKAGE BETWEEN DESIGN BASES AND PROCEDURES

The set of plant procedures was initially established at the time of plant licensing in 1972. Subsequently, this set of living procedures has been subject to periodic review, revision, and augmentation incorporating improvements gained from many years of plant operation and industry experience. The revisions to existing procedures and development of new procedures have followed established processes. In this way, the linkage of these procedures to the design bases requirements has been preserved throughout regulatory, procedural, equipment, and other improvement related changes. The following discussions provide a summary of the process controls related to this linkage.

5.2.1 Summary of Procedure Change Process

Section 5.8 (Programs and Procedures) of the Technical Specifications and Section V of the Operational Quality Assurance Program require that written process controls be established and maintained to govern certain activities relating to safety and quality. Maine Yankee provides approved process controls and requires their use and adherence via Procedure 0-05-1 (Procedure Use and Adherence).

The Maine Yankee specific guidance necessary to organize and write procedures is provided in Procedure 0-05-2 (Procedure Writer's Guide). Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes) establishes the requirements for administrative control, preparation, review, approval, distribution, revision, and cancellation of procedures. Procedure 0-06-2 also requires independent review, cross-disciplinary review, and for procedures affecting safety, review by the PORC, the PORC Procedure Subcommittee, and Plant Management, in assessing the technical effectiveness of the procedure being updated or developed. Procedures 0-05-2 and 0-06-2, therefore, provides the basic process controls by which design bases requirements are translated into plant configuration and into the corresponding appropriate procedures.

Changes to Operating, Maintenance, and Testing Procedures

The processes for controlling plant modifications are described in Section 4.2 and the corresponding revisions to plant procedures are discussed in Section 4.3. These processes are summarized below, as they relate to changes to operating, maintenance and testing procedures.

Permanent plant modifications that impact the design basis of the plant are developed through the Engineering Design Change Request (EDCR) process (Procedure 17-21-1). The Technical Evaluation (TE) process, Procedure 17-226 (Technical Evaluations), may be used to provide assurance that issues do not degrade the design bases of the plant. The EDCR and TE process discussions are provided in more detail within Section 4.2. These processes include basic controls for the plant modifications, including the translation of design bases information into the appropriate procedures.

Identification of a potential modification initiates the process for translating new or revised design basis information into procedures. The normal sequence for this process requires that changes to the operating and testing procedures, with PORC and Plant Management review and approval, be completed prior to the modification being placed in service.

Within the Operations Department, procedure changes are also required to incorporate:

- Changes in plant design, analysis, or regulatory requirements.
- Results of periodic procedure reviews.
- Feedback from normal usage such as plant operations or training.

The procedure review process internal to the Operations Department requires cross-disciplinary review involving affected disciplines in order to support the intent that departmental procedures remain technically accurate, consistent and usable. Operations Department cross-disciplinary reviews are performed in accordance with Procedure 1-200-9 (Operations Department Procedure Implementation, Compliance and Review) and Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes).

Maintenance procedure revisions that are associated with design changes originate with the Engineering Department and follow from the EDCR or TE processes described in Section 4. The Maintenance Department procedures are also revised as the result of changes in vendor instruction manuals, or other pertinent vendor information, or as part of the required periodic review of procedures.

Procedure 0-06-8 (Configuration Management Program) provides controls so that modifications to the plant configuration are reflected in changes to the plant operating and maintenance procedures. This procedure identifies the configuration management documents and associated procedures assigned to each department, including the Operations Department and the Maintenance Department, and also identifies the requirements to review and modify these documents when notification is received of a change to the plant configuration.

Temporary Procedure Changes (TPC) may be implemented to meet short-term needs, as specified by Procedure 0-06-2, which is in accordance with Technical Specification 5.8.4. Prior to implementation, the TPC is required to be reviewed by two members of Plant Management staff, one of whom holds an active SRO license holder from the Operations Department, and the other from the department responsible for the procedure. PORC and Plant Manager approval of the TPC is also required.

Procedure 0-06-2 requires that procedure changes be independently reviewed to validate the change, including, as appropriate, plant or system walk-throughs, mock-ups and/or simulator runs. For Class A (affecting nuclear safety) and Class B (affecting non-nuclear safety) procedures, review and approval by the PORC and Plant Management is also required.

The existence and implementation of the procedure change processes discussed above are used to contribute to the finding of reasonable assurance that design bases are properly translated into plant operation, maintenance, and testing procedures.

Changes to Emergency Operating Procedures and Function Restoration Procedures

Emergency Operating Procedure (EOP) and Function Restoration Procedure (FRP) changes are required to be performed in accordance with Procedure 0-06-6 (Emergency Operating Procedure Maintenance Program), in addition to those process controls described above for normal procedures. One of the principal intents of Procedure 0-06-6 is to establish appropriate standards of technical accuracy and compositional consistency required by the EOP/FRP set. When changing an

EOP/FRP, the following design bases information and configuration control are required to be considered:

- Emergency Operating Procedure Writer's Guide
- EOP Technical Guidelines
- Technical Specifications
- Updated Final Safety Analysis Report
- Applicable EOP and FRP Background Documents

The EOP and FRP documentation includes such design bases related information such as:

- A detailed description of the purpose and the technical bases for each step of the procedures (i.e., EOP and FRP background documents).

- The EOP Safety Evaluation library database, including various memoranda documenting EOP review questions raised in the EOP validation and the responses to these questions by the EOP Coordinator. Additionally, the database contains the technical bases of the required 10 CFR 50.59 reviews, the assumptions used in the EOPs, and analysis results when there is a discrepancy between assumptions and the actual plant parameters.
- The Emergency Operating Procedures Generation Package documenting the verification of the EOPs, including the verification computer code description, events analyzed, assumptions, results, and the conclusions.

Use of these background documents, in conjunction with the use of the Technical Specifications and UFSAR, contribute to reasonable assurance that the appropriate design bases are properly translated into EOPs and FRPs.

Procedure Review Schedule

Periodic review of procedures has been required since the issuance of the Operating License. Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes) requires periodic, comprehensive reviews of plant procedures with the following maximum intervals, or at shorter intervals as determined by the cognizant department manager:

- Emergency Operating Procedures - 2 years
- Abnormal Operating Procedures - 2 years
- Emergency Plan Implementing Procedures - 2 years
- Class A Procedures (plant-wide, affecting nuclear safety) - 10 years
- Class B Procedures (plant-wide, affecting non-nuclear safety) -10 years
- Class C Procedures (departmental, affecting safety-class systems) - as needed
- Class D Procedures (departmental, not affecting safety-class systems) - as needed

A principal function of the periodic reviews at the intervals specified above is to perform a full and complete integrated review of procedures covering plant operational aspects that have remained

unchanged during that period. Additionally, the 10 CFR 50.59 determination associated with the procedure must be re-verified at the time of review. It is noted that, during the earlier years of plant operation, the maximum intervals were shorter, reflecting the learning curve in plant operating experience.

The schedule for procedure reviews is tracked both at the departmental level and with a plant management procedure tracking data base. Notifications, through the PORC Procedure Subcommittee, are provided to departments so that the periodic review schedule of procedures is maintained.

The use of periodic procedure review cycles, coupled with the processes controlling procedure development, modification, and PORC/Plant Management review contributes to the finding of reasonable assurance of the translation of design basis information into the appropriate procedures.

5.2.2 Conclusions as to the Adequacy of Process Controls

The basis for concluding that Maine Yankee has adequate processes and controls in place for translating the design bases requirements into appropriate procedures may be summarized as follows:

- Development procedures and procedure changes have followed established processes. In this way, the linkage of these procedures to the design bases requirements has been preserved throughout regulatory, procedural, equipment, and other improvement related changes.

- Modification to the existing design bases through the EDCR and TE controlling procedures mandate consideration of the design bases information before changes are made to the plant configuration or to the appropriate procedures.

- Procedure change process controls contribute to ensuring inclusion of applicable design bases information by requiring application of standards regarding procedure content, procedure development and modification, cross-disciplinary review, and management oversight. The use of tracking systems for the scheduling of procedure periodic reviews assists in maintaining design bases information within procedures.

- Use of the EOP/FRP background documents, in conjunction with the use of the Technical Specifications and UFSAR, contribute to ensuring that the appropriate design bases are properly translated into EOPs and FRPs.

While it is important to show that the processes and controls, described above, are adequate to translate the design bases requirements into the appropriate procedures, it is equally important to confirm that they have been applied as intended. This consideration is addressed in the following section.

5.3 TRANSLATION OF DESIGN BASES REQUIREMENTS INTO OPERATING, MAINTENANCE, AND TESTING PROCEDURES

The activities which provide confidence that process controls are being followed such that the plant design bases are translated into operating, maintenance and testing procedures fall into one of the following two groups: internal reviews and evaluations, and external assessments. These activities are summarized in the following subsections.

5.3.1 Operational Quality Assurance Program

As summarized in Section 6.3, reviews for adherence to and effectiveness of process controls are performed in accordance with the Operational Quality Assurance Program. The quality assurance audits, surveillances, and assessments provide confidence that the processes, described in Section 5.2, are being followed.

Consistent with Procedure 21-203 (In-Plant Audit Program Implementation Process) and Technical Specification 5.5.B.9, audits of the Engineering, Operations, and Maintenance Departments are performed annually. These audits conclude that the departmental and administrative procedures, which include process controls for revising operating, maintenance and testing procedures, are generally adhered to and are considered effective.

The results of these audits provide confidence that the processes identified in Section 5.2 are being implemented in accordance with the directives of the Operational Quality Assurance Program.

5.3.2 Plant Simulator Verification of Procedures

The Maine Yankee simulator meets the certification requirements defined by the USNRC, specifically, the requirements of 10 CFR 55, ANSI Standard 3.5-1985 (with defined exceptions), and Regulatory Guide 1.149. Subsequent to the original certification (August 1987), Maine Yankee has met the requirements for re-certification every four years. Design bases information defining the simulated plant response must be accurately modeled in the simulator to satisfy certification requirements.

The agreement between the configuration of the plant and that modeled by the simulator is the foundation for its use in assisting with the verification of planned procedure modifications. These verifications are discussed for EOP/FRP validations in Procedure 1-200-17 (EOP Verification and validation), Procedure 0-06-6 (Emergency Operating Procedure Maintenance Program), and for other procedures in Procedure 0-06-2 (Administrative Controls for Procedures and Procedure Changes) which references Procedure 1-200-9 (Operations Department Procedure Implementation, Compliance and Review).

The ability to validate procedures using the simulator is addressed through the implementation of Procedure 18-243-1 (Simulator Operability Test) which requires that the simulator be tested for plant responses to normal and abnormal operating conditions. In this manner, the key portions of the design basis requirements, simulator response, and operating procedures are maintained mutually consistent. Additionally, Maine Yankee maintains living documents, the Final Design Specification (FDS) and the Simulator Configuration Management System, that capture modifications made to the simulator. These documents provide the current status and historical perspective of simulator with regard to the key plant design bases parameters. EDCRs are required to be reviewed to assess the need to modify the simulator because of changes in the plant configuration. Moreover, operator training provides the opportunity for detecting discrepancies in the performance of the simulator relative to the actual plant. Noted discrepancies between the operation and/or design characteristics of the simulator and those of the plant are identified and processed in accordance with Procedure 18-340-1 (Maine Yankee Simulator Work Orders). During the past year, changes to about one-half dozen operating procedures were verified using the simulator.

Additionally, implementation of Procedure 1-200-17 (EOP Verification and Validation), simulator validation is required when there is a deviation from the Emergency Response Guidelines basic strategy, a significant procedural change, a large (greater than ten percent) change in setpoint value, or a change in more than two setpoints. Maine Yankee requires that the simulator be utilized in instances where planned changes meet the criteria identified in the EOP Validation Method Selection flowchart, shown in Procedure 1-200-17.

Changes to the EOPs as a result of the 1995 steam generator tube cracking issue illustrate Maine Yankee's use of the simulator to evaluate procedure changes. In this instance, Maine Yankee recognized the need to revise two procedures associated with the potential for tube rupture. Additionally, due to the scope and content of these changes, Maine Yankee decided to revise most of the EOPs at the same time. During a period of approximately eight months, over 600 individual EOP and FRP procedure steps were revised, several of which required simulator validation.

Maine Yankee concludes that use of the plant simulator to verify selected procedures, given the mutual consistency of the simulator with the plant configuration, contributes to the finding of reasonable assurance that design bases are properly translated into plant operation, maintenance, and testing procedures.

5.3.3 Procedure Reviews and Revisions

As a result of the scheduled periodic review of procedures and the procedure reviews performed in accordance with the plant design modification process, Maine Yankee has updated design bases information in the procedures when differences have been identified. The procedures are revised in accordance with the processes summarized in Section 5.2. Several examples demonstrating that the process controls are effectively implemented are summarized below.

Use of Safety Issue Concerns (SICs)

Safety Issue Concerns (SICs), defined as nuclear safety issues for situations where the operability of components or equipment that effect nuclear safety becomes uncertain and cannot be resolved immediately, are evaluations performed in accordance with Procedure 0-16-6 (Resolution of Nuclear Safety Issue Concerns). This process is used to document and resolve safety issues that involve Technical Specifications, Updated Final Safety Analysis Reports, licensing commitment concerns or design bases / plant configuration discrepancies.

SICs initiated since 1990 have been reviewed to assess the implementation of design bases information into procedures and to evaluate the extent of problems or issues relating such information to the procedures. The SICs reviewed were found to have been properly processed and dispositioned in accordance with Procedure 0-16-6.

Of the 85 SICs issued since 1990, 25 identified as being potentially related to the plant design bases configuration or implementation were reviewed. These SICs involved the following issues:

- Vendor notification regarding 10 CFR Part 21 concerns
- Reviews of operating experiences from other nuclear plants
- Unusual Occurrence Reports identifying the potential of plant operation outside of the design bases
- Engineering evaluations, including Design Discrepancy Evaluations
- Maintenance surveillance tests and/or procedure reviews
- Emergency Operating Procedures (EOPs)

Eighteen of the 25 SICs which were reviewed resulted in subsequent changes to procedures. Although not all procedural changes were the result of design bases information changes, about one-half required modification to reflect design basis information.

Maine Yankee concludes that the SIC process has been demonstrated to effectively address safety concerns related to design bases requirements and the consistency between plant configuration and applicable procedures.

Use of Emergency Operating Procedure Reviews

As discussed previously, the Emergency Operating Procedures (EOP) are required to be reviewed and revised as described in Section 5.2. A review of the record of revision of five randomly selected EOPs was conducted. It was concluded, based on this selected sample, that the review/revision of the EOPs has been conducted in accordance with the appropriate procedures and the required revision cycles. Therefore, with implementation of Procedure 0-06-6 (Emergency Operating Procedure Maintenance Program), evidence exists that the applicable design bases information has been successfully incorporated into these procedures.

Use of Management Oversight for Procedure Compliance

Part of normal management responsibility includes the assessment and correction of a department's performance, including compliance with established procedures. Management may become aware of such issues through their own observations, internal or employee input, or external inspections or audits. Procedure compliance is also monitored by the Quality Programs Department. Monthly inspections are also conducted by management personnel in specific areas of the plant, in accordance with Procedure 22-100-01 (Management Area Inspection). Section 7.2 provides additional discussion of these inspections.

Inter-departmental oversight is provided by PORC, which holds both regularly scheduled and as-needed meetings. As required by the Maine Yankee Technical Specifications, PORC reviews proposed changes or modifications to Class A and B procedures required by the Technical Specifications to assess the impact on nuclear safety, including plant operations, maintenance and testing, and the application of 10 CFR 50.59 determinations. In addition, the Nuclear Safety Audit and Review Committee (NSARC) provides an independent oversight board on station issues. Additional discussion of PORC and NSARC responsibilities is presented in Section 7.

Two recent examples show that management oversight regarding procedural compliance is being exercised in a proactive and effective manner. First, in April, 1996, management of the Maintenance Department issued a stop-work order for the department after it was learned that personnel were not performing their work functions in compliance with existing procedures. To identify and correct this problem, four days of meetings, with complete work stoppages, for all members of the department were held to reinforce management expectations, obtain worker feedback, improve knowledge of, and provide training for, key Maintenance Department procedures.

The second recent example is related to the management response regarding issues that were identified during logic circuit testing performed in response to USNRC Generic Letter 96-01. Upon discovering the initial surveillance procedural inadequacy problems through logic testing of the circuitry controlling the High Pressure Safety Injection System and Recirculation Actuation System, Maine Yankee management initiated a complete procedure adequacy review for logic testing, additional logic testing to assess design implementation, and a Plant Root Cause Evaluation.

It is concluded from these examples and the above discussions that the management oversight regarding procedural compliance and adequacy contributes to the finding of reasonable assurance that the implementation of the procedures, and thus of design bases information, is occurring properly.

5.3.4 Design Basis Upgrade Programs

A number of programs have been established and/or completed in response to outside industry issues/experiences and USNRC requests. These programs provide evaluations of, and improvements

to, the plant design bases and procedures. In addition, the corresponding design process controls include references to these programs so as to ensure consideration for future changes to the plant design bases, plant configuration, and/or plant operating, maintenance and testing procedures. Programs that involve plant procedure improvements are listed below:

- Design Basis Recovery / Reconstitution Program
- Seismic Margins Program
- Instrument Setpoints Program
- Post-Accident Monitoring Instrumentation Program
- Maintenance Rule Program
- Safety Analysis Information Document

Implementation of these programs, and inclusion of references to them from within the appropriate procedures adds support to the finding that the translation of design bases requirements into appropriate procedures is being conducted.

5.3.5 USNRC Reviews

Although the USNRC reviews, assessments, and inspections of Maine Yankee have been conducted on an ongoing basis since prior to the start of commercial operation, this information was not used to support the conclusion of this section. It is noted, however, that USNRC findings are generally consistent with Maine Yankee's own reviews.

USNRC Site Inspections

More than 40 USNRC Resident Inspector reports, covering the period from January, 1991, through September, 1996, were reviewed as part of the assessments in response to the 10 CFR 50.54(f) request. The perspective of these reports was generally positive with regard to the procedural content and adherence in the areas of operations, maintenance, and surveillance testing. Maine Yankee believes that this review indicates that the implemented procedures are being utilized in the manner intended.

USNRC Independent Safety Assessment (ISA)

The ISA report (Reference 3) found the overall performance in the area of operations to be very good and the effectiveness of the maintenance programs, to be good overall.

Testing, however, was identified as having weaknesses in several areas. Maine Yankee's response to these weaknesses includes commitments to significantly improve the overall scope, technical adequacy and methodology of its testing program (Reference 2 and Appendix A). Testing procedures are intended to be assessed as part of these commitments in verifying the safety function of systems, structures, and components.

The findings of the ISA additionally provide support that the content and effectiveness of the Operation Department and Maintenance Department procedures are as intended. The noted weakness in testing procedures has been addressed in the Maine Yankee response to the ISA (Reference 2). The corrective actions addressing these weaknesses are provided in Appendix A.

5.3.6 Conclusion on Process Implementation

The activities summarized above, namely quality assurance reviews, plant simulator verification of procedures, and procedure review and correction, provide reasonable assurance that process controls have been effectively used to translate design bases requirements into appropriate plant procedures.

USNRC reviews, assessments, and inspections of Maine Yankee confirm the overall perspective of the findings of this section.

5.4 AUDITS BY THE 10 CFR 50.54(f) RESPONSE TEAM

A four-member audit team was assigned to evaluate the effectiveness of Maine Yankee's processes for maintaining plant configuration and procedure conformance to the design bases. The team approached this assessment by focusing on six systems and the Motor-Operated Valve program. The basis for selecting systems for review and a more detailed summary of results are presented in Section 6.4.

One of the products of this evaluation was an assessment of whether the design bases were being properly reflected in the operations, maintenance and test procedures. In order to assess the process controlling the translation of design basis changes into interfacing functional areas affected by the change, the team examined design change documents, such as Engineering Design Change Requests (EDCRs) and Technical Evaluations (TEs). In total, more than fifteen EDCRs and over sixty TEs related to the selected systems and components were assessed. Using these documents, assessments were made to determine if the appropriate procedures were properly evaluated and revised.

Approximately forty operations procedures, twenty surveillance testing procedures, and ten maintenance procedures were examined.

In several instances, potential changes were tracked to the relevant procedures and it was concluded that appropriate changes had been made to the procedures.

However, an improvement opportunity in the implementation of the current system was observed. Specifically, at the conclusion of the TE development, the evaluator is required to list the drawings and documents that are impacted by the TE, but there is no requirement for feedback to assure that this is properly accomplished. The corrective actions addressing this shortcoming are identified in Appendix A.

In the aggregate, this evaluation supports Maine Yankee's belief that there is generally uniform implementation of the process controls in ensuring the translation of design bases changes to operations, maintenance and testing procedures.

5.5 CONCLUSIONS

The activities summarized above include different types of process controls, inspections, and reviews related to the translation of design bases requirements to the procedures. This review has shown that adequate process controls exist and that there is reasonable assurance that those controls are being properly followed.

It has been determined from the evidence and assessments of this section that the linkage between the design bases and the operating, maintenance and testing procedures is established. However, we additionally find that the implementation of this linkage is not consistent across all procedure development and modification. We conclude that the observed range of variation is consistent with the finding that the translation of design bases requirements into appropriate procedures supports an overall conclusion of reasonable assurance of adequate protection of public health and safety.

SECTION 6

SYSTEM, STRUCTURE, AND COMPONENT CONFIGURATION AND PERFORMANCE CONSISTENCY WITH THE DESIGN BASES

6.1 INTRODUCTION

Pursuant to Item (c) of the USNRC's 10 CFR 50.54(f) request (Reference 1), this section provides the rationale for concluding that Maine Yankee's system, structure, and component configuration and performance are consistent with the design bases as defined in Reference 1. The rationale provided herein includes evidence that design control processes have been in place, that they have been used, and that they have been effective in maintaining consistency between plant configuration and performance and the design bases.

The existence and use of the design control process at Maine Yankee is summarized in Section 6.2. Activities performed over the plant lifetime to improve design bases control, to update the design bases, and to bring the plant configuration and performance into compliance with those bases are summarized in Section 6.3. However, current plant issues such as cable separation and fire penetration seals are addressed in 8.4. The audits performed as part of this response are identified and summarized in Section 6.4 and the conclusion is presented in Section 6.5.

Consideration of the following programs and activities as a whole, including the corrective actions that have been taken, leads Maine Yankee to conclude that, except for the issues described in Section 8.4, there is (1) reasonable assurance that system, structure, and component configuration and performance are consistent with the design bases and (2) a level of consistency between the configuration of plant systems, structures, and components and the design bases sufficient to support an overall conclusion of reasonable assurance of adequate protection of the public health and safety.

6.2 HISTORICAL USE OF THE DESIGN CONTROL PROCESS

Maine Yankee's design control process provides a framework by which the plant design bases can be updated when required and plant system, structure, and component configuration and performance can be maintained consistent with the design bases. A historical overview of the development of the design control process and a description of the current process, including a flow chart, are presented in Section 4.

Design control and quality assurance processes, developed to be in compliance with Appendix B to 10 CFR Part 50, have been in place throughout the plant lifetime. Since plant operation began in 1972, approximately 800 engineering design changes and approximately 3,000 technical evaluations have been processed, yielding the current plant configuration. Quality assurance audits, surveillances, assessments, and inspections have been performed throughout the plant lifetime and

their general conclusions were that procedures have been followed and have been effective. Maine Yankee concludes, therefore, that programs and actions intended to maintain consistency between plant configuration and design bases have existed and have been used throughout the plant lifetime.

6.3 EVIDENCE THAT PLANT CONFIGURATION AND PERFORMANCE ARE CONSISTENT WITH THE DESIGN BASES

There are several types of activities which provide confidence that control processes are reasonably effective in assuring that the plant configuration and performance are maintained consistent with the design bases. While some of the activities summarized below address only a specific aspect of the design bases or plant configuration (e.g., seismic margin assessment, service water system inspection), other activities address the plant from a wider perspective. Also, as described below, many of the activities have resulted in improvements implemented over past years. Maine Yankee developed its conclusion by considering all evidence together as well as by considering each item individually. This evidence is summarized in the following sections.

6.3.1 Operational Quality Assurance Program (OQAP)

The processes described in Sections 4.2 (Design Control) and 4.3 (Configuration Control) provide the structure under which plant configuration and performance can be maintained consistent with the design bases. Included in those processes are OQAP audits, surveillances, assessments, and inspections which contribute to reasonable assurance that the design control processes are being followed and that they are effective.

Recent reports documenting Maine Yankee's Quality Assurance (QA) audits of the control processes were reviewed. For example, Report MY-94-07 concluded that the design and work activities performed by the Engineering Department were adequate and effective and Report MY-95-07 concluded that they were very good. Five recent QA reports on audits of operations, two reports on maintenance, and one on Inservice-Inspection were reviewed; they show generally favorable results, although with a number of non-conformances were identified. Twenty-five QA/QC surveillance reports from the period 1994 to 1996 were reviewed. These reports indicate that, in the operations area, procedures have been adhered to and that the design control process had been properly implemented. In the maintenance area the actions performed were considered to be generally satisfactory or adequate. Three functional area assessments performed in the period from 1993 to 1996 concluded that, with a few exceptions, the engineering function was adequate. With respect to QC inspections, confidence in the use of and adherence to procedures was gained by witnessing four inspections and interviewing three inspectors. It was observed that inspectors were familiar with the inspection process and that administrative procedures were followed.

Weaknesses identified by audits, surveillances, assessments or inspections are entered into the Learning Bank in accordance with Procedure 0-16-1 (Learning Process Implementation Procedure). The Learning Process (LP) also tracks implementation of the identified corrective actions and trends problems for repeat occurrences. Prior to implementation of the LP, weaknesses were entered into

a tracking system controlled by Procedures 0-15-1 (Nonconformance Reports, Stop Work Process, and QC Hold Tags) and Procedure 0-16-2 (Corrective Action Request and Open Item Processes).

The USNRC's ISA report (Reference 3, Section 4.1) indicated that the Quality Assurance Program had a generally successful record of assessing the overall quality of station activities and identifying specific areas of vulnerability before performance degraded or the vulnerabilities became the subjects of regulatory enforcement, even though some improvements were identified. The ISA report also indicated that the Quality Control Program was effective in identifying problems and maintaining the standards of quality for required activities at Maine Yankee.

The Joint Utility Management Audit (JUMA) program has established a uniform practice of cooperative audits which assess the effectiveness of each member utility's Quality Assurance Organizational responsibilities as applied to the operation of nuclear power plants licenced by the NRC. Two JUMA audits of the Maine Yankee QA program (JUMA reports 94-01 and 96-01) found the QA program to be effective in providing reasonable assurance of adherence to processes and procedures. These reviews contribute to confidence in the adequacy of Maine Yankee's OQAP.

The existence and use of audit, surveillance, assessment, and inspection procedures and the performance reviews by Maine Yankee, JUMA, and the USNRC contribute to reasonable assurance that design control processes are effective in maintaining the plant configuration and performance consistent with the design bases.

6.3.2 Design Basis Recovery / Reconstitution Program

Maine Yankee has a design basis recovery / reconstitution program for the most safety-significant plant systems (see Section 9). A Design Basis Summary Document (DBSD) has been or will be produced for each system in this program. DBSDs include a summary of the design bases for the particular system along with the references to supporting documents that contain requirements and limitations. DBSDs also describe the system and component design bases in detail, including specific system and component requirements, interfaces, and accident analysis requirements.

After a DBSD is completed, a safeguards system review plan is used to perform a functional inspection and walkdown of that system to verify the corresponding plant configuration. Discrepancies identified are resolved in accordance with Maine Yankee's control processes, which include an improved commitment tracking system (the "Learning Process", Section 7). Nineteen systems for which DBSDs have been developed, or are scheduled, are identified in Section 9. In addition to the DBSDs, topical reports covering plant-wide operations and licensing issues are developed. Maine Yankee has scheduled completion of DBSDs, their supporting documents, and the corresponding functional inspections and walkdowns in accordance with Appendix A.

The DBSDs and supporting documents completed to date have been used by engineering personnel as background information on existing system design parameters and system operations in making decisions on plant modifications (both permanent and temporary) and in assisting in 10 CFR 50.59

determinations. DBSDs are referenced in Procedures 01-06-4 (10 CFR 50.59 Determinations), 17-229 (Engineering Review of Purchase Requisitions), 17-235 (Engineering Work Order Processing), 17-312 (Design Inputs), 26-330 (Preparation of Technical Specification Changes), and 67-200-12 (Maintenance Work Order Processing) so that they can be considered during plant modification evaluations in the future.

The development and use of the existing DBSDs has resulted in improvements in plant design, operation, and documentation. For example, the following plant configuration and design bases improvements have occurred:

- Controlled-drawing corrections
- UFSAR corrections and updates
- IASD corrections and updates
- Discovery and correction of a potential leak path to atmosphere during control room isolation
- Improvements in the configuration/train alignment of the service water system
- Design bases testing of emergency feedwater system pumps and valves
- Improvements in the testing of the HPSI, LPSI, and containment spray pumps
- Revisions to RWST level setpoints

All DBSDs and supporting documents have not been completed (see Section 9); however, those which have been completed have been used to revise documentation and the corresponding plant configuration. This indicates that the DBSD program is effective in helping maintain plant configuration and performance consistent with the design bases.

6.3.3 Design Basis Upgrade Programs

A number of programs have been established and/or completed over the years in response to industry experience and USNRC requests. Maine Yankee's design control procedures adequately identify these programs so that they can be considered in future plant modifications. These programs have provided improvements to the design bases, plant configuration, and related documentation. Therefore, they have contributed to confidence in the consistency between the plant configuration and performance and the design bases.

Seismic Margin Program

Since originally constructed, the Maine Yankee plant has undergone reviews and upgrades to assess and verify its seismic design adequacy. In 1979, Maine Yankee and other plants were required to demonstrate that the piping systems designed using a Stone & Webster Engineering Corporation computer code were seismically adequate. This effort expanded to include the entire nuclear industry with the issuance of a number of seismically-related USNRC Inspection and Enforcement Bulletins (IEBs 79-02, 79-07, 79-14 and 80-11). Maine Yankee responded by undertaking a major verification and re-analysis program.

The Maine Yankee Seismic Design Margin review was completed and the results were documented in "Seismic Design Margin Review of the Maine Yankee Atomic Power Station"(NUREG/CR-4826). As a result of this review, and the installation of identified beneficial plant upgrades, it was concluded that the upgraded plant had a "high-confidence-of-a-low-probability-of-failure" capacity in the range of 0.27g, which was well above the earthquake event defined by the 50% spectrum of NUREG/CR-0098 anchored to a peak acceleration of 0.18g. The USNRC issued a safety evaluation which concluded that the issues associated with the design bases for Maine Yankee were considered resolved.

Maine Yankee subsequently installed new seismic instrumentation and software which permits rapid calculation of the cumulative-absolute-velocity factor that can be used to assess Operating Basis Earthquake exceedance. This capability was enhanced by the creation of a post-seismic engineering evaluation procedure (MYPTP-12), to permit quick and efficient assessment of the effects of an earthquake by a walkdown and inspection.

The Maine Yankee Guideline for Seismic Systems (MYMEG-G01) is identified in Procedure 17-312 (Design Inputs) and in Procedure 0-06-8 (Configuration Management Program) so that seismic issues can be considered when developing plant modification or procedure changes.

Instrument Setpoint Program

The Maine Yankee Instrument Setpoint Program was established to identify, develop, and maintain instrument setpoints that are essential to safe plant operation. A USNRC Safety System Functional Inspection (SSFI) was conducted in early 1989 and, subsequently the Maine Yankee setpoint development program was initiated. This program addresses design basis documentation, setpoint margins, equipment setpoint control process, and instrument calibration.

In 1989, Maine Yankee began an effort to develop uncertainty calculations to meet the requirements for equipment qualification (i.e., Regulatory Guide 1.97) and Emergency Operating Procedures. The setpoint program is conducted in accordance with the quality assurance requirements of 10 CFR 50, Appendix B. Maine Yankee's Setpoint Document Control Manual (SDCM) thus provides a systematic method by which setpoints are determined, evaluated, and documented.

The Setpoint Document Control Manual is identified in Procedure 17-312 (Design Inputs) and in Procedure 0-06-8 (Configuration Management Program) so that the above setpoint issues can be considered when developing plant modification or procedure changes.

Post-Accident Monitoring Instrumentation Program

As a result of the Three Mile Island incident, the USNRC issued Regulatory Guide 1.97 (Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Environs Conditions During and Following an Accident, Revision 2) and Generic Letter 82-33 (Supplement 1 to NUREG-0737) to ensure that adequate instrumentation is available to the operator to bring the plant

to a safe condition following an accident. Maine Yankee responded via submittals from 1983 to 1985. Subsequent to 1985, additional commitments and plant modifications were made to assure conformance with Regulatory Guide 1.97.

The Design Source Document, "Design and Qualification for Post Accident Monitoring (PAM) Instrumentation," was issued to capture design requirements, demonstrate environmental adequacy, and provide a basis for PAM instruments installed at Maine Yankee. The intent of this document was to develop a single source of data for use in the design change process and to comply with the requirements of Regulatory Guide 1.97, Revision 3. This document also reflects the current status of Maine Yankee's PAM instrumentation with a cross-reference to documents generated and utilized in support of Maine Yankee's licensing commitments and implementation.

Procedure 17-312 (Design Inputs) identifies the Regulatory Guide 1.97 Source Document so that it can be considered when developing plant modification or procedure changes.

Plant Equipment Database Program

In past years equipment databases existed to store and retrieve plant component information. Maine Yankee's intent was to facilitate coordination of plant configuration and supporting documentation. To more efficiently achieve this objective, Maine Yankee replaced these databases with an integrated Maintenance, Inventory, Purchasing, and Payables System (MIPPS) in 1991. One of the benefits of MIPPS is that it facilitates confirmation of system-level and component-level data used in work and procurement activities. MIPPS can also be used for trending and failure analysis by part, component, system, or manufacturer. MIPPS is considered to be a controlled document and updates may be initiated as a result of design changes, Technical Evaluations, requisitions, updates to other controlled documents, and walkdowns (see Procedure 17-225).

MIPPS provides a central source of structure, system, and component design basis data for material inventory control, procurement activities, and work order processing and tracking. MIPPS is used as an input to the design change process per Procedure 17-312 (Design Inputs). Moreover, MIPPS data updates resulting from Engineering Design Change Requests and Technical Evaluations are implemented through Procedure 17-225 (Controlled Component Database Maintenance and Control), Procedure 17-23-3 (Final Processing of a Completed Deign Change), and Procedure 17-226 (Technical Evaluations).

Maintenance Rule Program

Maine Yankee has implemented a program to address the Maintenance Rule (10 CFR 50.65). This program is performance-based, requiring maintenance activities to be assessed on a continual basis such that key structures, systems and components (SSCs) are capable of performing their intended functions. The scope of the program extends beyond safety-related SSCs to include non-safety SSCs which are used in EOPs or which could cause a plant trip. The development of this program included three major activities: (1) identifying the SSCs that are within the scope of this program,

(2) establishing the risk significance of the in-scope SSCs, and (3) evaluating the SSCs against their performance criteria.

Maine Yankee determined which SSCs were within the scope of this program by applying a screening criterion in accordance with the Maintenance Rule requirements and the NUMARC Report 93-01 guidelines. Some systems, not specifically required to be included in this program, but which are required for full-power operation, were also included in the monitoring program. Additionally, the risk-significance of the SSCs and the evaluation against their performance criteria was completed. Using the MIPPS process described above, as well as other computer-based equipment-out-of-service logs, SSCs are monitored for unavailability, reliability, and maintenance-preventable functional failures. Corrective actions are taken as needed to comply with performance criteria.

The future execution of this program is expected to be enhanced by development of the Systems Engineering Group described in Maine Yankee's ISA response (Reference 2). This contributes to reasonable assurance that the plant configuration and performance will be maintained consistent with the plant design bases.

Safety Analysis Information Document

The Maine Yankee Input Assumptions Source Document (IASD) was implemented in 1986 in response to a 1982 USNRC Confirmatory Action Letter. The IASD contains key parameters (important to safety and operator controlled) that are assumed in safety analyses. Maine Yankee is in the process of replacing the IASD with a more comprehensive document called the Safety Analysis Information Document (SAID), which is scheduled to be completed by December 1997 (Appendix A). The SAID is designed to provide, in a single document, (1) a means for comparing plant operations and equipment performance with safety analysis assumptions, (2) a means for evaluation of operational margin, and (3) a common reference source for operating procedure review and development, safety analysis inputs and assumptions, and engineering design changes.

The IASD is identified in Procedure 17-312 (Design Inputs) and in Procedure 0-06-8 (Configuration Management Program) as a document to be considered when developing plant modification or procedure changes. Similar identification of the SAID in these procedures is anticipated upon its completion.

6.3.4 Inspections of Plant Configuration vs. Design Bases

Inspections and walkdowns of plant systems provide "deep slice" reviews of specific systems to determine the extent to which they are properly maintained and operated and to which their configuration and performance are consistent with the design bases. These inspections and walkdowns identify needed improvements, but they also confirm the adequacy of structures, systems, and components for which improvements are not needed. Major one-time inspections as well as routine walkdowns are summarized below.

Electrical Distribution System Functional Inspection (EDSFI)

Over the past years, the USNRC staff observed that the functionality of safety-related systems had been compromised by design modifications affecting the Electrical Distribution Systems (EDSs) at some operating plants. As a result, an EDSFI for Maine Yankee was performed by the USNRC to determine whether the safety-related EDS was capable of performing its safety function in accordance with the design bases. Included in the program was a selective examination of EDS design calculations, relevant procedures and representative records, a walkdown verification of installed equipment, and interviews with Maine Yankee and YAEC personnel.

Based on the sample of design drawings, studies, and calculations reviewed and equipment inspected, the USNRC team concluded that the electrical distribution system at Maine Yankee was capable of performing its intended functions. Although the team did not identify any operability issues, the team did observe weaknesses and a violation. In addition, the team concluded that the engineering and technical support, both at Maine Yankee and YAEC, were adequate to support the safe operation of the plant.

The conclusions of this EDSFI indicate that the EDS configuration and performance are generally consistent with the design bases.

125 Volt-DC Electrical Safety System Functional Inspection

In 1992, the USNRC conducted an SSFI to assess the condition of, and configuration control for, the 125 V-DC electrical distribution system (USNRC Inspection Report 50-309/92-80). This SSFI was performed as a result of questions raised during the larger electrical distribution SSFI (EDSFI) performed in 1991 to review the electrical distribution system (EDS). The Maine Yankee DC power supply system includes a safety-related Class 1E system and a non-safety-related system. The scope of this SSFI encompassed the four independent safety-related buses and the non-safety-related system that supplies power to the turbine-generator auxiliaries, emergency lighting, and other non-safety loads. The conclusions reached by the USNRC SSFI were based on an evaluation of the UFSAR, Technical Specifications, calculations, battery operation, and maintenance and testing procedures.

Deficiencies were found. These included failure of engineering personnel to raise issues to the appropriate level of management for resolution and weakness in ensuring that corrective action processes are clearly structured and understood by site personnel. However, the USNRC team found significant improvement in quality assurance and safety verification, including very effective and innovative use of audits and surveillances. The team considered engineering and configuration control activities adequate, communication mechanisms effective, and engineering self-assessments effective. In addition, a walkdown of the station was conducted to assure that the procedures were being followed and equipment was maintained according to procedures. Overall, the USNRC team found safe and conservative operation and maintenance of the 125 V-DC EDS.

Based on the broad scope of the inspection and the overall positive conclusion, including the effectiveness of engineering self-assessment, this inspection indicates that the 125 V-DC EDS configuration and performance are generally consistent with the design bases.

Service Water Operational Performance Inspection (SWOPI)

Operating experience and various studies led the USNRC staff to perform an industry-wide investigation of the condition of the Service Water System. This program was based on USNRC Bulletin 89-13, which described excessive bio-fouling that resulted in a substantial reduction in cooling capacity. The reduction in capacity could have placed system performance outside of its design basis.

In 1994, the USNRC inspected Maine Yankee's SWOPI (USNRC Service Water Self-Assessment Inspection 94-20). This was a complete audit of the Service Water and Component Cooling Water Systems. It was determined that the performance of these systems remained within the design bases. Moreover, while corrective actions resulted from the inspections, there was no deficiency which compromised normal operation or which would have prevented completion of required safety functions. These determinations were based on the quality of thermal-hydraulic analyses, on comprehensive single failure analyses, on the IST program record, on a strong operations-engineering interface, and on a low corrective maintenance backlog.

The results of this SWOPI indicate that the configuration and performance of the Service Water and Component Cooling Water Systems are generally consistent with the design bases. Moreover, considering that no identified deficiencies compromised normal operation or would have prevented completion of required safety functions and that Maine Yankee has implemented the "Learning Process" to promptly identify and resolve any future concerns, Maine Yankee concludes that there is reasonable assurance that the configuration and performance of the Service Water and Component Cooling Water Systems will remain consistent with the design bases in the future.

Component Cooling Water Safety System Functional Inspection (SSFI)

In 1989, the USNRC conducted an SSFI to assess the ability of the Maine Yankee Component Cooling Water (CCW) and supporting systems to meet their safety functions. Another objective of this SSFI was to assess the operational readiness of these systems. This SSFI was a broad-based inspection providing an evaluation that encompassed the areas of engineering design, design change control, operational occurrences, surveillance, maintenance and quality programs.

These SSFI results indicate that the operation and maintenance controls were generally effective. This SSFI also confirmed the value of the Design Bases Recovery / Reconstitution Program. USNRC inspectors provided a detailed review of the CCW system analyses and identified areas where inconsistencies and non-conservative assumptions were used. Maine Yankee resolved the majority of issues through explanations, calculations, procedure changes, or minor plant modifications.

Upon receipt of Maine Yankee's response, the USNRC conducted a second SSFI in 1990 to verify Maine Yankee's corrective actions and conclusions. Although some inconsistencies and/or non-conservative assumptions had been used in various analyses, Maine Yankee concludes that the overall effect of these inconsistencies was not significant. Maine Yankee believes that the USNRC's audit confirms that the design of the CCW met the required design bases and that the system was operated and maintained to fulfill the safety functions. This review indicates that the CCW configuration and performance are generally consistent with the design bases.

Plant Walkdowns

The most frequent walkdowns are performed daily by Operations Department personnel. Operations Department walkdowns are specified in Procedure 1-200-10 (Conduct of Operations). Routine scheduled assignments, as listed in Procedure 1-200-4 (Operations Department Routine Schedule) are performed during the walkdowns. These walkdowns include verifying system alignments per approved procedures and verifying that system parameters are within specifications and equipment performance limits. Attention is given to activities which could have an impact on plant operations or regulatory compliance. Also included is monitoring of industrial safety, fire hazards, plant housekeeping, material condition, and watch standing practices. Logs document the walkdowns and corrective actions resulting from these tours, other than minor maintenance actions, are implemented through the Work Order process. These daily tours contribute to reasonable assurance that plant configuration and performance are maintained consistent with the design bases.

Other walkdowns are performed monthly. Procedure 22-100-01 (Management Area Inspections) provides the requirement to conduct regular walkdowns to verify, for example, material condition, industrial safety, security, housekeeping, fire protection, radiological control practices, and work in progress. This procedure was developed in response to issues raised by INPO and prepared in accordance with INPO-023 (Plant Inspection Program).

Additional walkdowns are performed in response to USNRC or industry initiatives or as part of the plant modification process. USNRC or industry walkdowns are generally one-time walkdowns intended to audit whether a specific part of the plant is maintained in accordance with the design bases. Included in this category are walkdowns for initiatives such as the Seismic Margin Program, Design Basis Recovery / Reconstitution Program, EDSFI, SWOPI, and the ISA described elsewhere in this response. Walkdowns performed as part of the plant modification process, as described in Section 4.3.4, provide the opportunity for independent verification that plant configuration is consistent with design bases documents.

Technical Specification Surveillances

Procedure 0-11-2 (Surveillance Tests and Records) includes a list of over 250 individual surveillances, their required intervals, and the cognizant department. Under the provisions of this procedure, each cognizant department develops procedures and schedules necessary to accomplish the assigned surveillance activities. These surveillance procedures are written and approved in

accordance with the requirements of the Technical Specifications and ANSI Standard N18.7. Additionally, cognizant departments are responsible for documenting their surveillances.

Over 3000 Technical Specification surveillances have been performed from the beginning of 1994 to June 30, 1996. Four were not completed on schedule and were, therefore, identified and addressed through either a Licensee Event Report or an Unusual Occurrence Report. A failed surveillance is reported and resolution is tracked (e.g., through the Learning Process).

Although the USNRC ISA report (Reference 3, Section 3.2.4) identified significant weaknesses in the testing program, Maine Yankee still believes that the surveillances and resulting corrective actions help maintain consistency between plant configuration and performance and the design bases.

6.3.5 In-Service Testing Program

The In-service Testing (IST) program provides for in-service testing of designated pumps, valves and snubbers to increase the probability of detecting service-related failures. An additional benefit resulting from this program is the inherent verification of the operational readiness for each component tested. The IST program is performed in accordance with applicable requirements of 10 CFR 50.55a and ASME Section XI, 1986 Edition, and parts of OM-6 and OM-10, 1987, and OM, 1988 addenda. The current program is for the third 10-year inspection interval and it consists of four subprograms: the IST Pump Program, IST Valve Program, IST Relief Valve Program and IST Snubber Program.

The USNRC's ISA report identified several weaknesses (Reference 3, Section 3.2.4), but it also noted that the results of testing and equipment performance for pumps and valves tested in the IST program was very good/excellent (Reference 3, Sections 3.2.1 and 3.2.1.2). Maine Yankee's design control processes require pre-operational and operational functional tests upon the completion of each corrective maintenance action or plant modification (see Section 4.2.2). These tests, which are required to meet specified performance criteria before the SSC can be returned to service, confirm that the particular plant change is consistent with the design bases performance requirements.

The MOV program responds to USNRC Generic Letter 89-10. The MOV program consists of calculations, procedures, and tests that are necessary for the proper design, operation, and maintenance of MOVs. The MOV program is a living program, meeting the requirements for periodic verification and making required improvements - some of which result from USNRC inspections. Maine Yankee has performed comprehensive static and dynamic testing of MOVs; for example, 72% of the valves in the Generic Letter 89-10 program have been dynamically tested. USNRC has noted, however, that design basis documentation has not been kept up to date (NRC Inspection 50-309/96-05).

The MOV program, along with improvements and corrections that have been made in past years, contributes to reasonable assurance that the configuration and performance of tested systems and

components are maintained consistent with the design bases. Moreover, validated maintenance procedures, material and configuration management support, and training are expected to contribute to reasonable assurance that the configuration and performance of components in the MOV program will be maintained consistent with the design bases in the future.

6.3.6 In-Service Inspection Program

The Technical Specifications for Maine Yankee state that the In-Service Inspection (ISI) of ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI and 10 CFR 50.55a. The Maine Yankee ISI program includes components (e.g., piping, pumps, valves, vessels) and their supports subject to Section XI examination and testing requirements. As required by 10 CFR 50.55a, Maine Yankee's ISI program is periodically revised to incorporate changes necessitated by modifications, repairs, and/or replacements to systems, components, and/or welds. As allowed by 10 CFR 50.55a(g)(4), the updated ISI program is in compliance to the extent practical within the governing ASME Code rules.

Maine Yankee's first ISI program was developed in 1972. Maine Yankee is currently in its third inspection interval (which started December 28, 1992). This third-interval program is governed by the 1986 version of Section XI of the ASME Code (without addenda) and was accepted by the USNRC (USNRC letter, dated August 9, 1995).

Maine Yankee believes that implementation of the ISI program helps maintain the configuration and performance of inspected components consistent with the design bases.

6.3.7 Station Welding Program

High-quality welding helps ensure that plant modifications are implemented consistent with design bases specifications. Since welding activities at Maine Yankee are performed by multiple departments, a cross-functional committee was established to address welding issues, improve the consistency of the welding program among departments, and improve the performance of the welding personnel. Improvements are demonstrated by the reduction in the percentage of rejected welds from four percent to two percent. The key elements to success included the following:

- An improved program document which clarified responsibilities for maintenance, purchasing, quality, training, corporate and plant engineering, and contractor personnel,
- Qualification, requalification and documentation of qualifications,
- Applicable welding procedures and technical instructions, consolidated and referenced in the program document, and
- Assembly of weld equipment maintenance and welder proficiency and training for easy access.

Maine Yankee concludes that the welding program contributes to reasonable assurance that design changes and equipment repairs are properly implemented. This, in turn, contributes to reasonable assurance that plant configuration and performance are and will be maintained consistent with the design bases.

6.3.8 Plant Simulator

Use of the Maine Yankee simulator is summarized in Section 5.3.2. The simulator design is maintained consistent with the plant configuration and is used to confirm plant operating procedures. Any noted discrepancies between the operation and/or design characteristics of the simulator and those of the plant are resolved through a Work Order. These resolutions can involve changes to the simulator, plant configuration, or procedures.

Maine Yankee concludes, therefore, that use of the simulator contributes to reasonable assurance that plant configuration and performance are maintained consistent with the design bases.

6.3.9 Operating Experience Feedback

Since its initial operation in 1972, the Maine Yankee plant has generally performed as expected. Except for the 1995 outage for sleeving of the steam generator tubes, Maine Yankee's capacity factors, equivalent availability factors, and forced outage rates have been generally equivalent to, or better than, the industry averages. A sample of these data is presented in Table 6-1 below.

Table 6-1 Maine Yankee Plant Performance Data

Year	Capacity Factor (%)		Equivalent Availability Factor (%)		Forced Outage Rate (%)	
	M.Y.	Industry Average	M.Y.	Industry Median	M.Y.	Industry Average/ Median*
1986	87.97	59.6	85.4	60.3	1.97	17.7
1987	56.98	60.8	55.7	61.8	19.97	17.7
1988	70.52	64.7	68.6	64.9	6.39	14.7
1989	96.83	62.8	91.3	65.2	5.87	12.0
1990	66.84	67.0	64.5	68.4	10.83	8.8
1991	85.13	70.4	81.5	75.7	14.7	5.0*
1992	70.93	71.2	69.0	76.5	8.29	4.5*

Year	Capacity Factor (%)		Equivalent Availability Factor (%)		Forced Outage Rate (%)	
	M.Y.	Industry Average	M.Y.	Industry Median	M.Y.	Industry Average/ Median*
1993	76.19	75.3	74.5	75.6	1.92	2.6*
1994	88.03	80.9	86.1	80.3	11.64	2.6*

In addition to the plant-wide data shown in Table 6-1, information specific to safety system unavailability is also documented. Table 6-2 shows a sample of the unavailability data for three safety systems. From these data, it can be observed that the unavailability of the three safety systems has generally been lower for the Maine Yankee plant than for the industry average plant.

Table 6-2 Maine Yankee Safety System Unavailability

Year	HP Safety Injection System (%)		Aux. Feedwater System (%)		Emergency AC Power (%)	
	M.Y.	Industry Average	M.Y.	Industry Average	M.Y.	Industry Average
1989	0.6	1.4	0.3	2.1	1.0	2.3
1990	0.5	0.9	0.6	1.6	1.0	1.8
1991	0.3	0.9	0.4	1.0	2.3	1.9
1992	0.7	0.6	0.2	1.4	1.2	1.6
1993	0.08	0.35	0.5	0.54	3.4	0.8
1994	0.4	0.73	0.4	0.9	2.1	1.17

While caution must be used in drawing specific conclusions from data such as those presented above, Maine Yankee believes that the data do contribute to reasonable assurance that the configuration and performance of these systems have been consistent with the design bases.

6.3.10 Design Discrepancy Evaluations (DDEs)

Maine Yankee undertook an initiative in 1992 to address a concern that processes needed to be in place for resolution of engineering issues in a timely manner. To resolve this concern, the Design Basis Screens program was developed; it was revised in 1996 to more clearly describe the identification and resolution of issues. Procedure 17-230 (Engineering Design Discrepancy Evaluations) defines a screening method to initially determine the safety significance of an issue and then evaluate its impact with respect to design bases conformance. Potential deficiencies can originate with (1) reviews of industry operating experience, (2) in-plant monitoring and assessments, or (3) design basis recovery actions. As a result of this screening process, a Learning Process issue may be identified and/or a Licensee Event Report may be issued.

To date, Maine Yankee has processed over 130 Design Basis Screens and DDEs. This indicates that the process for identification, evaluation, and resolution of problems is being utilized and that, when merited, revisions are made to improve the consistency of design bases with documentation, plant configuration, and/or procedures.

6.3.11 Safety Issue Concerns

The Safety Issue Concerns program documents and tracks the resolution of safety issue concerns and has been used as described in Section 5.3.3. Where judged appropriate, resolution of safety issue concerns may include revisions to documentation, plant configuration, and/or plant procedures. This indicates that the process for identification, evaluation, and resolution of problems is being utilized and that, when merited, revisions are identified to improve the consistency of design bases with documentation, plant configuration, and/or procedures.

6.3.12 Licensee Event Reports

Procedure 20-200 (Licensee Event Report Process) addresses the need for and generation of reports required for compliance with 10 CFR 50.73, NUREG-1022, and Supplements 1 and 2 thereto. As part of the LER completion process, the LER Index and associated History Files are reviewed to determine if any previous LERs addressed the same or similar occurrences. Such past occurrences are then identified in the LER being written and an analysis of why previous corrective actions did not prevent recurrence is included. Procedure 0-16-1 (Learning Process Implementation Procedure) provides the framework for tracking corrective actions, if needed, via the "Learning Bank" which is part of the Learning Process (Section 7.2).

Of the LERs generated since 1987 (more than 150), twenty-four that were potentially related to Maine Yankee's ability to maintain the plant configuration in conformance with the design basis were reviewed. This review indicated that the LER process is functioning and that resolutions may involve revisions to improve the consistency of design bases with documentation, plant configuration, and/or procedures.

6.3.13 Plant Root Cause Evaluations

A root cause is the most basic reason for an event that can be identified. It is expected that removal of the root cause(s) would prevent a recurrence of that event and others of a similar nature. The root cause assessment process is summarized in Section 7.4. Plant Root Cause Evaluations (PRCEs, also known as Unusual Operations Reports and Plant Information Reports) are performed for the most significant category of root cause assessments.

Since 1972, there have been over 200 PRCEs. Six of these that are related to plant configuration were reviewed. This review indicated that the PRCE process is being implemented, including identification of revisions, when merited, to improve the consistency of design bases with documentation, plant configuration, and/or procedures.

6.3.14 Independent Industry Reviews

Reports by an independent industry organization, performed in August 1991, June 1994 and March 1996 were reviewed. The results generally indicate that, with respect to plant operations: (1) there is good management oversight to ensure safe and reliable plant operation, including emergency operating conditions, (2) operators are provided with adequate training to perform their duties; and (3) implementation of the Restart Readiness Review Program has resulted in fewer plant startup and operational problems. With respect to plant maintenance, results generally indicate that (1) an effective work scheduling process is implemented to plan and execute maintenance activities and (2) maintenance personnel requested and received additional training relating to daily maintenance activities resulting in improvement in the quality of maintenance work.

The above observations contribute to reasonable assurance that system, structure, and component configuration and performance are maintained consistent with the design bases.

6.3.15 Independent Safety Assessment (ISA) Findings

The USNRC's ISA report (Reference 3) identified deficiencies in the areas of maintenance and engineering, as well as weaknesses in the overall approach to testing and the corrective action program. Root causes were related to economic pressure and lack of a questioning attitude. Maine Yankee has taken the ISA report very seriously and has planned and/or implemented improvements and corrective actions to address the root causes as well as the specific issues (Reference 2).

The improvements and corrections involved an evaluation of the particular structure, system, or component (SSC) configuration and/or an assessment of consistency with the design bases. Notwithstanding the unacceptableness of the inconsistencies that were found, Maine Yankee notes that each of these evaluations also has a positive side in that SSCs were reviewed and, except for the particular deficiencies, confidence was gained in the consistency of the SSC configuration with the design bases.

The full context and the backup information for each of the positive findings can be found in the ISA report. For conciseness in this report, however, a limited list is provided below along with an indication of the source in the ISA report.

- The use of analytic codes for safety analyses was very good (ISA Executive Summary).
- The quality and availability of design basis information was good overall (ISA Executive Summary and Section 3.3.3).
- Performance in the area of operations was very good, ... (ISA Executive Summary and Section 3.1).
- Performance in the area of maintenance was good overall (ISA Executive Summary and Section 3.2).
- The quality of engineering work was mixed but considered good overall (ISA Executive Summary and Section 3.3).
- The team found that the capability of the electrical system and instrument and control equipment to be generally robust and capable of performing their design function (ISA Section 2.3).

In summary, the USNRC's ISA team concluded that overall performance at the Maine Yankee plant was adequate for operation, but weaknesses and deficiencies were identified. When developing and implementing the corrective actions, Maine Yankee confirmed the consistency of related portions of the SSCs with the design bases. Furthermore, Maine Yankee concludes that organizational and programmatic improvements described in the ISA response contribute to reasonable assurance that plant configuration and performance will be maintained consistent with the design bases in the future.

6.4 AUDITS BY THE 10 CFR 50.54(f) RESPONSE TEAM

As part of Maine Yankee's 10 CFR 50.54(f) response effort, a four-member team ("the team") performed audits of six systems and the Motor-Operated Valve (MOV) program to determine whether documentation controlling the plant configuration and procedures has been maintained consistent with the design bases.

The Emergency Feedwater / Auxiliary Feedwater System (EFW/AFW) and the Emergency Diesel Generators (EDGs) were selected considering their risk significance, as determined by analysis related to the Maintenance Rule program. The Service Water System was chosen because of its importance as the ultimate heat sink and the number of design changes made during the life of the plant. The Control Room Ventilation System (CRVS) was picked versus that for the higher-risk

switchgear room because a design basis summary document existed for the former. The Spent Fuel Pool Cooling System (SFPCS) was chosen because the spent fuel pool has been the object of recent industry attention related to routine full-core off loads. The Primary Inventory Trend System (PITS) was selected because it had undergone significant design modifications. The MOV program was picked due to the importance of MOV operability and the importance of Generic Letter 89-10.

The team searched for design bases requirements in documents such as the Updated Final Safety Analysis Report (UFSAR), Technical Specifications, Design Basis Summary Documents (DBSDs), Input and Assumptions Source Document, and the USNRC Safety Evaluation Report and amendments. Also, personnel from the Engineering, Operations and Maintenance Departments were interviewed with respect to their use of design bases documentation .

The team attempted to assess, for each system reviewed, whether the documentation and procedures have been maintained consistent with the design bases. This began with a review of the administrative procedures governing design changes, configuration control, and 10 CFR 50.59 evaluations to identify required document interfaces. To focus the review on the selected system or component, the team conducted searches of the Electronic File System (EFS) and other data sources to identify pertinent Technical Evaluations, Engineering Design Change Requests, Design Basis Screening forms, 10 CFR Parts 21 and 50.59 reports, and other documents which could include design basis changes. These formed the input for further investigation for both determining whether the design bases are being accurately and consistently used and whether the appropriate interfaces are considered when a design basis change occurs. Results of these investigations are summarized below.

Emergency Feedwater/Auxiliary Feedwater (EFW/AFW) System

The various inspections and assessments conducted since issuance of the operating license, including the USNRC's Independent Safety Assessment, have concluded that the design basis of the EFW/AFW System has been maintained and is consistent with the plant configuration. The first version of the corresponding DBSD was completed in 1987. For this DBSD, a considerable effort was required to reconstitute the design bases information, including collecting documentation and performing a functional assessment and walkdown.

This audit team confirmed that the changes described in documents such as EDCRs and Technical Evaluations were communicated to the Operations and Maintenance Departments who, in turn, updated their respective procedures. This included affected surveillance procedures. The revised procedures had been reviewed by engineering. The translation of design bases requirements into procedures was effective, although difficult to trace. No examples of missed changes were found in the samples reviewed.

This review indicates that the configuration management process was reasonably effective in maintaining consistency between the design bases and the plant configuration documents and procedures for the EFW/AFW System.

Service Water System (SWS)

The SWS is described in the UFSAR and in a DBSD. The Technical Specifications require both SWS trains to be operable and provide requirements for surveillance testing. Permanent plant modifications and Technical Evaluations were reviewed. The review looked at the technical aspects of the changes, the formulation of the concept, design inputs, discipline coordination and reviews, design evolution, design verification, implementation, and closure notifications. Some of the design changes affected operating procedures and the changes were verified. The SWS had been evaluated extensively by Maine Yankee and the USNRC.

The results of these reviews indicate that plant configuration documents and procedures have been maintained reasonably consistent with the design bases.

Emergency Diesel Generators (EDGs)

The principal design basis of the EDG is to provide emergency bus power in the event of a loss of offsite power. The UFSAR, Technical Specifications and IASD each have sections addressing some of the design basis parameters associated with the EDG, but the level of detail is not extensive. There is currently no Design Bases Summary Document and the USNRC's Safety Evaluation Report does not speak definitively on this topic.

The EDGs have not been subjected to substantive design changes. However, there have been a number of issues addressed by Technical Evaluations which have exhibited strengths and shortcomings.

In the opinion of the audit team, there were a few instances where the technical evaluator missed issues of some significance. These were mostly in the conduct of functional testing following the modification. In general, however, the quality of the evaluations was good and they consistently identified the relevant design bases and documents which would be impacted. In each instance where the modification was tracked through to the operating, maintenance, or testing procedure, it was observed that appropriate changes had been made. In total, the team concluded that the EDG design bases have been reasonably maintained and are reflected in the appropriate plant configuration documents and procedures.

Spent Fuel Pool Cooling System (SFPCS)

The design bases requirements for the spent fuel were established through the review of the following documentation: Updated Final Safety Analysis Report (UFSAR) Section 9.8, Technical Specification-Section 3.13, Technical Specification Change No. 177 (Spent Fuel Pool Reracking), Input and Assumptions Source Document, and the NRC Safety Evaluation Report (SER) Amendment 144. This design bases review examined the thermal capacity of the spent fuel pool

cooling system because there were two plant changes that might be expected to impact the system design requirements. These were the re-racking of the spent fuel pool and the plant power upgrade to 2700 MWT.

The team concluded that design bases documents were substantially consistent with regard to the approved licensing bases in SER Amendment 144. A review of Technical Evaluation logs was made to identify actions taken with regard to the SFPCS. These evaluations deal with the interface of cooling water systems with the SFP heat exchanger. Both evaluations reflect an understanding of the system design bases.

Procedures 1-17-1 (Fuel Pool Make-up, Cooling, and Purification), 10-1 (Core Reloading), 2-52 (Loss of Fuel Pool Cooling and/or Level) and 1-1 (Plant Heatup) were reviewed and found to have the appropriate steps to allow for consideration of design bases and component requirements as defined in Technical Evaluation 031-93. Calculation MYC-1755 (End of Cycle 14 Allowable Fuel Removal Rate) was reviewed for content to evaluate whether the design bases of the spent fuel pool cooling system as approved in SER Amendment 144 was reflected in more recent calculations.

This review indicates that the SFPCS design bases are reasonably understood, maintained, and used appropriately. For the issues reviewed, design documents and operating procedures adequately reflect the design bases.

Control Room Ventilation System

Documents reviewed included the UFSAR, Technical Specifications, Design Basis Summary Document (DBSD), Inputs and Assumptions Summary Document (IASD), Operating Procedures, Maintenance Procedures, and Surveillance Procedures. It was determined that, except for some minor disparities, these documents were consistent, reinforcing the conclusion that the system design basis documentation and plant procedures have been maintained consistent with the design bases. Overall, the quality of these documents was good. Although the DBSD was consistent with the content of the other design basis documents, it lacked references to numerous issued Technical Evaluations (TEs). Selected TEs were reviewed; the content and conclusions drawn from them were consistent with the system design basis.

The Surveillance Test Procedures were consistent with Technical Specification requirements. Surveillance Test Procedure 3-17-5 was recently changed to specify an upper charcoal filter flow limit to assure that a minimum residence time is met thereby assuring compliance with General Design Criteria 19 (Control Room) of 10 CFR 50 Appendix A. The calculations were reviewed to verify that correct and justifiable inputs and assumptions were used and that the calculation outputs and conclusions were adequately documented. In this regard, the calculations were judged to be acceptable. There were only three EDCR modification packages generated for this system. The most recent one, performed in 1989 (EDCR 88-36, Control Room Air Conditioning Cooling Water Train Separation), was reviewed and found to be non-comprehensive; however, output documents

(drawings and installation instructions) were judged to be adequate. A review was made of a later ventilation modification (EDCR 96-28, EFW Pump Room Ventilation Upgrade). This modification showed a marked improvement in quality, especially the contents of the 10 CFR 50.59 Safety Evaluation.

This review indicates that the design bases are reasonably understood, maintained, and used appropriately. For the issues reviewed, design documents adequately reflect the design bases.

Motor Operated Valves (MOVs)

The Maine Yankee MOV Program documentation consists of various documents and historical correspondence. Integral parts of the program such as MOV Program Responsibilities & Organization, Process Flow Charts, Valves-in-Program List, MOV Calculation MYC-780, Weak-Link Calculations, and Target Thrust/Torque Calculations are found in the Program Binders. MOV Calculation MYC-780 is the thermal hydraulic design basis for MOVs in the Maine Yankee MOV Program. This calculation determines and/or documents the maximum differential pressure for each MOV, the system flow rate, and the valve temperature range. This document was developed based on input (limiting design conditions) from Technical Specifications and normal, abnormal, and emergency operating procedures. Consideration was given to such input items as tank levels, instrument tolerances, elevation of the valve in the plant, pump curve characteristics, and relief valve setpoints. A review of these parameters for several valves confirmed compliance with the design bases.

There are 43 valves covered by the MOV Program and there is a Technical Evaluation (TE) for each. The TEs cover Switch Setting and Design Basis, Assessment Of Acceptable Bonnet Pressure (Gate Valves), and Weak-Link Evaluations. Static and Dynamic Test Reports are also contained in the file. The TEs were found to be detailed, comprehensive, and generally of high quality, however, the team felt that a number of them could have been consolidated, thereby rendering them more easily controllable and retrievable. Input assumptions used in the evaluations were found to be verifiable and consistent with recognized industry documents (e.g., Limitorque Guidelines, EPRI Reports).

This review indicates that the design bases are reasonably understood, maintained, and used appropriately. For the valves and information reviewed, design documents adequately reflect the design bases.

Primary Inventory Trend System (PITS)

The PITS is safety-related and is part of the Inadequate Core Cooling Instrumentation (ICCI). The most recent major modification made the system a two-channel system. PITS is part of the ICCI system which received USNRC staff approval in 1991. Sources reviewed for design basis information included the UFSAR and docketed letters between Maine Yankee and the USNRC.

The design reports and reviews of PITS in the period of 1988 through 1991 represent a re-statement of the system design bases. EDCR 88-26-1 implements this design referencing some of the hardware and documentation from earlier versions of the system. No changes have been identified since the USNRC approval in 1991. The use of PITS in Emergency Operating Procedures and Function Restoration Procedures was consistent with EDCR 88-26-1.

Amendment No. 112 modifies the Technical Specifications to add PITS operability and surveillance requirements. The surveillance procedure for this technical specification (Procedure 3-6.2.1.43) was reviewed to see if it contained the most current requirements for PITS, as stated in EDCR 88-26-1 [updates to this surveillance procedure to address test equipment standards are in progress]. It was confirmed that the PITS requirements were accurately translated into the surveillance procedure.

The above observations indicate that the design bases for PITS have been reasonably translated into operating and surveillance procedures and are adequately reflected in design documentation.

Summary

The above audits contribute to reasonable assurance of the overall effectiveness of Maine Yankee's processes for translating design bases requirements into plant procedures and for maintaining plant configuration documentation consistent with the design bases. However, the audit team observed that a more centralized source of design bases technical information and additional training on the treatment of design bases in Technical Evaluations would decrease the potential for inadvertently changing the design bases. The team acknowledges that the potential for such inadvertent changes appears to be confined to parameters of small safety significance but, nonetheless, improvements are being pursued.

6.5 CONCLUSIONS

The activities summarized above cover different types of inspections, reviews, and improvements related to consistency of plant system, structure, and component (SSC) configuration and performance with the design bases. These activities contribute to reasonable assurance that the control processes are reasonably effective. In addition to the audits and inspections described in Section 6.3, independent audits were performed by Maine Yankee's 10 CFR 50.54(f) response team, as described in Section 6.4. Consideration of these activities as a whole, including the improvements and corrective actions that have been taken, leads Maine Yankee to conclude that the level of consistency between configuration of plant systems, structures, and components and the design bases support an overall conclusion of reasonable assurance of adequate protection of the public health and safety.

Moreover, the improvements resulting from the above activities, the control processes for future inspections and reviews, and the cultural changes and other improvements described in the Maine Yankee ISA response (Reference 2) provide confidence that, in the future, the plant configuration and performance will be maintained consistent with the design bases.

SECTION 7

PROCESSES FOR IDENTIFICATION OF PROBLEMS AND IMPLEMENTATION OF CORRECTIVE ACTIONS, INCLUDING ACTIONS TO DETERMINE THE EXTENT OF PROBLEMS, ACTIONS TO PREVENT RECURRENCE, AND REPORTING TO NRC

7.1 INTRODUCTION

Pursuant to item (d) of the USNRC's request (Reference 1), this portion of the Maine Yankee 10 CFR 50.54(f) response provides the description of processes utilized at Maine Yankee for the identification of problems (Section 7.2), description of the implementation of corrective actions (Section 7.3), description of the actions taken to determine the extent of problems (Section 7.4), description of actions to prevent recurrence (Section 7.5), and description of the Maine Yankee USNRC reporting processes (Section 7.6).

Consideration of the information in this summary, and in light of past performance, reviews and assessments, leads Maine Yankee to conclude that adequate processes exist for the identification of problems and issues, implementation of corrective actions, actions taken to prevent recurrence, and reportability to the USNRC. A more detailed summary of this conclusion is presented in Section 7.7.

7.2 PROBLEM/ISSUE IDENTIFICATION PROCESSES

Maine Yankee management is responsible for, and believes it has established, an environment that encourages identification, reporting, and resolution of problems at all levels of the organization. Self-assessment and corrective action processes place no restrictions or conditions on the individual, or the individual's position, with respect to identifying problems. This environment was noted by the USNRC in the ISA report (Reference 3) as: "Management encouraged all levels of the plant organization to identify performance problems. There was no evidence of a general reluctance to raise perceived safety concerns to station management. Interviews consistently indicated that the workers often highlighted problems.... and did not fear reprisals from supervisors or management."

There are numerous different processes in use at Maine Yankee for the identification of problems or issues. Within this section, descriptions and discussion of the Learning Process, Self-Assessments and QA Programmatic Oversight, and External Oversight are provided.

7.2.1 Learning Process

The Maine Yankee Learning Process, implemented by Maine Yankee in January 1997 to meet the requirements of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Action) is a re-engineered replacement for the variety of corrective action processes. This process is defined through

Procedure 0-16-1 (Learning Process Implementation). The Learning Process was designed to improve the previous corrective action processes in the areas of multiple task tracking, enhanced evaluation quality, timely issue closures, reduction of duplicate issues and tasks, identification of trends from a broad perspective, and implementation of an integrated priority system.

Training sessions are available and encouraged for Maine Yankee and contractor employees for use of the Learning Process. Personnel are expected to understand and use it for issue (problem) identification, issue evaluation, corrective action planning, and task tracking. With this recently introduced process, "issue owners" are responsible for the coordination, oversight, review and approval of activities associated with the resolution of an issue within the planned schedule. Additionally, the Learning Process is intended to trend and disseminate information regarding similar experiences so as to expand the bases through which Maine Yankee employees and contractors resolve issues.

Problem Recognition and Process Scope

The Learning Process has essentially no lower threshold for problem identification and acceptance. Internally generated problems, issues, concerns, or adverse conditions can be entered into the Learning Process. Issues that originate external to Maine Yankee, such as USNRC Generic Letters or INPO Significant Operating Experience Reports, are also addressed using the Learning Process.

The Learning Process is, however, not designed to include all problem/corrective action activities at Maine Yankee. Equipment repairs and maintenance continue to be controlled within the Maine Yankee Work Order Process. In addition, drawing discrepancies, employee suggestions, security safeguards information, Fitness for Duty testing, and worker concerns continue to be processed using their respective processes.

Process Description

The Learning Process provides a formal process for evaluating significant issues to identify causal factors associated with the issue, existing and/or emerging trends, generic implications, self-assessment deficiencies, and document recommended corrective actions developed in response to an issue.

The Learning Process also establishes risk levels for issues entered into the system. These levels are arranged in a descending order of risk. Issues identified as Level 1 issues present the greatest risk, whereas Level 4 issues present the least risk. As a result of their risk significance, Level 1 and Level 2 issues require documented causal factor determinations. Level 3 issues, which represent less risk to the organization, require documented apparent cause determinations. Level 4 issues do not require these type of documented evaluations.

Internally generated issues arise from either an individual discovering a deficient condition or from the results of an inspection activity such as an audit, surveillance, self-assessment, INPO assessment or USNRC inspection. Resolution of internally generated problems utilizing the Learning Process includes the following attributes:

- Identification and implementation of interim actions
- Correction of the specific problem
- Assignment of risk and priority levels
- Identification of the root cause(s) for risk levels 1 and 2
- Identification of generic applications
- Actions to prevent recurrence for risk levels 1, 2, and 3
- Tracking of the issue to completion
- Appropriate management notification
- Retrievable documentation

External issues cover events or problems originating from external nuclear industry sources and are processed similarly to internal issues except that they are first screened for applicability to Maine Yankee and root cause determinations are not performed.

The discoverer of an internal issue, problem, adverse condition or concern is responsible for assuring that an Learning Process Issue Report is initiated. Responsibility then shifts to the Plant Shift Superintendent (PSS) if the problem is urgent, or to the Learning Process Team for non-urgent issues. The Learning Process Team is a dedicated full time team responsible for assessing problem significance and the redistribution of problems to management for evaluation and resolution.

Upon notification of an urgent issue, the PSS is responsible to initiate additional appropriate and immediate or interim compensatory corrective actions. The PSS is also responsible for determining the operability of affected equipment, components, or structures, and for assessing whether the issue is reportable to regulatory authorities.

For both the urgent and non-urgent issues, the Learning Process Team members are expected to investigate each issue to the extent necessary to understand its significance, eliminate duplicate issues, refer those items better suited for the Work Order Process, recommend and notify an "issue owner", recommend interim compensatory actions, and notify Plant Management of significant issues. The Learning Process Team is also responsible to review the recommended disposition of issues made by individual Learning Team members, and to assure quality, consistency and systematic consideration. The recommendations of the Learning Process Team are reviewed at the daily Morning Management meeting.

"Issue owners" are responsible for the coordination, oversight, review and approval of activities associated with resolution of an issue within the planned schedule. An issue may involve multiple functional areas thereby requiring coordination of the inter-departmental activities. The "issue owner" is expected to maintain a complete perspective of the issue throughout the resolution

process. Issue management activities may include (but are not limited to): interim compensatory actions, identification of lessons learned, evaluation charter development, root cause determination, development of recommended corrective actions (tasks), task planning, task completion, issue closure, documentation, and effectiveness assessment.

Performance Monitoring and Trending

The Learning Process also allows for the categorization and trending of issues and causal factors to assist in the identification of problems. This information could include individual, organization, and process performance data. In addition, individual organizations and process managers are able to extract trending data to assist in monitoring and trending their organizational and process performance.

7.2.2 Self-Assessments and QA Programmatic Oversight

An additional set of processes used by Maine Yankee which are designed to capture a wide spectrum of issues and problems are the self-assessments performed by individuals, departmental sections, and departments. These self-assessments provide a layer of assurance that the pertinent issues are identified and appropriate corrective actions are taken. The use of self-assessments at Maine Yankee is prevalent through the day-to-day activities from the individual employee level through the section and departmental level to the periodic interdisciplinary group assessments of the PORC and the assessments of the Nuclear Safety Audit and Review Committee (NSARC) and continuing to the overview perspective of the Nuclear Oversight Committee and the Board of Directors. Descriptions of the key self-assessment processes are provided below.

Self-Assessment Programs

At the individual employee level, and on a continuous basis, the Stop Think Act Review (STAR) program encourages employees to pause, think about the actions being undertaken and evaluate the associated consequences, take the action, if appropriate, and finally, review the results of actions taken to assure that expectations are met. This self-assessment program is intended to identify, at the earliest possible moment, when results are not as expected and thus assist in the process of issue identification.

The individual employee is also provided an opportunity to provide self-assessment input to management via the Employee Suggestion Program (ESP) and the Worker Concerns Program which are described in Sections 700.11 and 700.20 of both the Salaried Employee Handbook and Hourly Employee Handbook. The ESP objective is to take advantage of the working knowledge and creativity of employees and contractors for the purpose of developing and implementing improvement ideas. The ESP has been recently temporarily suspended pending assessment of personnel resources. The Worker Concerns Program encourages workers to, anonymously if desired, bring concerns, safety-related or otherwise, to specific Maine Yankee management, the Board of Directors Nuclear Oversight Committee, or the USNRC.

At the department and section level, self-assessments are implemented through the Performance Assessment Program (PAP). In this program, each department/section is required to develop and maintain effective self-assessment activities in accordance with essential characteristics per Administrative Procedure D.65 (Self-Assessment). In addition to identifying strengths and improving weaknesses, it is believed that these self-assessment programs are an additional source of issue identification.

In addition to employee and department/section assessments, managerial oversight and assessment assistance is provided in the identification of issues. The daily Morning Meeting for plant management reflects an on-line perspective as to the identification of both emergent and working issues. An additional self-assessment method in which Maine Yankee management gathers information for its oversight role is through implementation of Procedure 22-100-01 (Management Area Inspection). This program requires monthly inspections by management personnel in specific areas of the plant on a rotating basis in order to proactively identify issues (as summarized in Section 6.3). Inspection findings and problems are documented and assigned for resolution. Management identification of issues also includes consideration of reviews and audits which are performed by committees which report directly to management. Examples of such committees are the PORC and the NSARC which provide independent review and audit of key aspects of nuclear plant safety.

In addition to the above defined self-assessments, Maine Yankee has also previously chartered a number of special issue or focused self-assessments directed towards issue identification. As an example, the recent set of self-assessments resulting from the USNRC issuance of the Confirmatory Order in early January, 1996, included both independent technical assessments of the approach used in the problem resolution (Independent Review Team) and assessments of the commitment tracking systems and the interrelationship between Maine Yankee and YAEC (RELAP5YA Self Assessment Report). These types of special self-assessments have been found to be effective in identifying and defining issues and problems.

QA Programmatic Oversight

Another layer of the Maine Yankee self-assessment process used in identifying issues is the independent internal oversight function performed by the Quality Assurance (QA) program through the Quality Programs Department (QPD). There are several processes defined in the QA program which are used to identify issues or problems within different programs and processes within Maine Yankee. The major processes are in-plant QA audits, QC inspections, QA/QC surveillances, and functional area assessments. These processes are also discussed in Section 4.2 of this report.

The objective of the in-plant QA audit program is to verify compliance with the Operational Quality Assurance Program (OQAP) and to assess the effectiveness of the program through a comprehensive system of planned and periodic audits. These audits are addressed in Procedures 0-18-1 (In-Plant Audit Program) and 21-203 (In-Plant Audit Implementation Process).

The relevant QA/QC surveillance procedures are Procedure 21-205 (QA/QC Surveillance Program Implementing Process) and Procedure 0-18-2 (QA/QC Surveillance Program). The implementing process is a formal and documented activity independently performed to determine the adequacy of implementation of complete programs, portions of programs, procedures, policies, good practices, and specific work activities.

QC inspections are conducted in conformance with Procedure 0-10-1 (Inspection Program). This program is for inspection of activities affecting the quality of safety-related, augmented quality, and selected non-nuclear safety systems, structures or components to verify conformance with applicable instructions, procedures, specifications, and drawings. The inspection program is implemented by ANSI N45.2.6, SNT-TC-1A, and ASME Section XI qualified individuals other than those who performed or supervised the activity which is being inspected.

Semiannual functional area assessments are conducted by Quality Programs Department (QPD) personnel in conformance with Procedure 21-216 (Periodic Assessment of Performance by Functional Area and Trend Analysis Program). This procedure establishes a program for periodically assessing performance and overall achievement of quality by functional area. One of the semiannual assessments which incorporates analysis of trends is based on review and consideration of the following sources of information covered during the previous twelve months:

- USNRC Inspection Reports
- INPO Assessments
- Trend Data Results
- In-Plant Audit Results
- QA/QC Surveillance Reports
- QPD Discussions Regarding Weekly Plant Assessments
- Functional Area Initiative Feedback Sheets
- Self-assessments

The second semiannual functional area assessment is intended to be an overview presentation directed towards analysis of the significant QA/QC surveillances and in-plant audits which have taken place over the previous six months.

7.2.3 External Oversight

Still another means used by Maine Yankee for identification of issues is through third party external assessment and oversight functions. There are several external assessment and oversight processes which have different perspectives regarding issue identification within Maine Yankee. The principal external assessment and oversight entities are the Nuclear Safety Audit and Review Committee, Joint Utility Management Audit (JUMA) program, Institute of Nuclear Power Operations (INPO), the Nuclear Oversight Committee (NOC), the Nuclear Committee of the Board of Directors, and the USNRC.

The Nuclear Safety Audit and Review Committee (NSARC) functions to provide independent review and audit of key aspects of plant nuclear safety. The adequacy of these functions is assured through the interdisciplinary background of the members of the committee representing the areas of plant operations, nuclear engineering, chemistry, mechanical engineering, electrical engineering, radiological safety, instrumentation and controls, metallurgy, and quality assurance. NSARC is, in accordance with the Maine Yankee Technical Specifications, responsible to review:

- Safety Evaluations for changes to systems or equipment and tests/experiments completed under the provisions of 10 CFR 50.59
- Proposed changes to procedures, equipment, or systems involving an unreviewed safety question as defined in 10 CFR 50.59
- Proposed tests or experiments involving an unreviewed safety question as defined in 10 CFR 50.59
- Proposed changes to the Technical Specifications or Operating License
- Violations of codes, regulations, orders, Technical Specifications, license requirements, internal procedures or instructions having nuclear safety significance
- Significant operating abnormalities or deviations from normal and expected performance of plant equipment that affect nuclear safety
- Reports and meeting minutes of PORC
- Significant accidental, unplanned, or uncontrolled radioactive releases

Additionally, NSARC provides the following audit functions:

- Conformance of the facility operation to provisions of the Technical Specifications
- Performance, training, and qualifications of the Maine Yankee staff who have a direct relationship to the operation, maintenance, or technical aspects of the plant
- Actions taken to correct deficiencies in facility equipment, structures, systems, or methods of operation
- Performance of activities required by the Operational Quality Assurance Program meeting the criteria of Appendix B of 10 CFR Part 50
- The Fire Protection Program and implementing procedures
- The Offsite Dose Calculation Manual and implementing procedures
- The Process Control Program and implementing procedures

The NSARC reports directly to the President of Maine Yankee and advises the Vice President (YNSD) of those areas of NSARC review and audit responsibilities listed above.

The JUMA program has established a uniform practice in performing a program of cooperative audits which assess the effectiveness of each member utility's Quality Assurance organizational responsibilities as applied to the operation of nuclear power plants licenced by the USNRC.

The INPO evaluations of site activities are designed to assess overall plant safety, to evaluate management systems and controls, and to identify areas needing improvement. The INPO evaluation teams examine plant organization and administration, operations, maintenance, engineering support, training and qualification, radiological protection, chemistry, and operating experience reviews. Evaluations are made in light of the experience of team members, INPO's observations, and good practices within the industry.

The Maine Yankee Board of Directors has established the Nuclear Committee in order to provide an independent basis for overseeing plant safety and effectiveness of the nuclear program. The Nuclear Committee provides special attention to (1) ... rsight of all management attention to nuclear safety, (2) progress in resolving open issues with the USNRC, INPO, and other independent evaluators of nuclear operations, (3) progress in resolving employee concerns, and (4) other areas of needed improvement in nuclear operations.

The Nuclear Oversight Committee (NOC) was reorganized as one of the corrective actions discussed in the ISA response (Reference 2) and is tasked with the performance of independent assessments for the Nuclear Committee of the Board of Directors of Maine Yankee. The NOC is additionally tasked with assessing Maine Yankee capabilities in all areas of management, including corrective actions, work back-log management, strategic planning, employee concerns, and succession planning.

USNRC inspections are a potential source of issue identification. These inspections include the categories of special inspections (e.g., ISA, Seismic Margins Review), team inspections (e.g., Electrical Distribution System Functional Inspection), and regular periodic inspections via the on-site Resident Inspector or by technically qualified individuals and contractors from the USNRC Regional Office(s) or Headquarters.

External organizations and expert individuals are also used in the performance of assessments and definition of problem areas. Maine Yankee's use of outside organizations to characterize and objectively assess specific areas was identified as being effective in the ISA report (Reference 3). The USNRC noted that Maine Yankee "...has commissioned at least nineteen external assessments over the last three years that had often revealed aspects of the problem areas that eluded internal assessments. Recent examples of the successful use of outside assessment in areas which were first highlighted by QPD include audits of the Radiological Protection organization by Westinghouse (1990), Coves' Edge, Inc. (1995) and Millennium Engineering (1996). The Cultural Assessment Team (CAT) assessment in 1996 was another example of the effective and timely use of outside experts to evaluate and characterize problems."

7.3 IMPLEMENTATION OF CORRECTIVE ACTIONS

With the identification of an unresolved problem or issue, Maine Yankee personnel are required to implement the processes associated with the Learning Process. These actions are briefly described in Section 7.2.

In addition to the implementation of the Learning Process, for those issues involving scheduled maintenance, unexpected equipment failures, and unscheduled maintenance, Maine Yankee personnel also initiate assessments of the system or equipment operability and the associated risk.

The findings of the ISA (Reference 3) identified existing weaknesses in the areas of problem identification and resolution as attributed to a lack of a questioning culture which contributed to the failure to identify and/or promptly correct problems in areas perceived by management to be of low safety significance. Several of these findings confirmed weaknesses previously detected through Maine Yankee's self-assessments and for which process improvements had been initiated at the time of the ISA. Maine Yankee recognizes that without attentive action, these weaknesses could potentially infiltrate and affect safety-related design bases activities. Therefore, Maine Yankee is currently addressing the root causes for weaknesses in problem solving and corrective action by improving personnel performance and organizational and programmatic effectiveness in identifying and resolving problems. These actions are discussed in more detail in the Maine Yankee response (Reference 2) to the ISA report.

7.4 ACTIONS TAKEN TO DETERMINE THE EXTENT OF PROBLEMS

In defining the actions that are taken to assess the extent of an identified problem or issue, Maine Yankee utilizes four principal techniques: root cause determinations to determine the extent and scope of the issue, analysis of the results from trending of issues and their resolution, periodic assessments of performance by functional area, and operability assessments and risk evaluations. These processes and their respective actions are discussed in this section.

7.4.1 Root Cause Determinations

The root cause of an issue or problem is the most basic reason for an event to have occurred that can be identified. Removal or correction of the root causes of an event is expected to prevent a recurrence of that event. Root cause determinations at Maine Yankee are performed for a variety of reasons, the most fundamental of which is the recognition that the recurrence of the initiating event is not acceptable. Maine Yankee has four specific root cause determination processes.

Procedures 20-308 (Root Cause Determination), 17-309 (Root Cause Analysis [Engineering]), 20-100-1 (Plant Root Cause Determination), and 66-201 (Evaluation of Learning Process Issues) provide guidance to be used in performing root cause determinations as part of the corrective action and investigative processes.

Root Cause Determinations, via Procedure 20-308, are initiated for initiators such as personnel injury, radiological releases, equipment damage, and plant trips. This type of Root Cause Determination may also be conducted for those minor events that are recognized as having potentially more severe consequences. The level of expertise required and effort expended on this

type of determination is intended to be commensurate with the significance of the event under consideration. Root Cause Determinations of events with major impacts are normally performed by selected and trained individuals or groups.

Various procedures provide for the initiation of a Root Cause Determination. They may also be conducted, even when not required, if the potential recurrence of the event is unacceptable, or if the event has the potential for resulting in personnel injury, regulation violation, radiological release, degradation of nuclear safety, plant trip, or substantial equipment damage.

Key procedures which reference root cause determinations include the following:

Procedure	Title	Use
0-16-1	Learning Process Implementation	Corrective action process
0-16-6	Resolution of Nuclear Safety Concerns	Corrective action process
1-2-1	Investigation and Recovery from an Unscheduled Reactor Trip	Root cause determination required
1-200-10	Conduct of Operations	Root cause determination required
9-301-6	Radiological Incident Report	Corrective action process
9-309-6	Hot Spot Reduction Program	Root cause determination required
17-309	Root Cause Analysis (Engineering)	Corrective action process
20-306	Human Performance Evaluation System	Corrective action process
17-231	Monitoring Diesel Reliability	Root cause determination required

The sequence of steps performed in these types of root cause determinations and evaluations are summarized below:

- Data collection
- Event reconstruction
- Analysis
- Validation
- Root cause classification
- Corrective action recommendations

A similar process, specific to the Engineering Department, is used in Procedure 17-309 (Root Cause Analysis [Engineering]).

The third process used in the investigation of root cause determinations is detailed in Procedure 20-100-1 (Plant Root Cause Determinations). The Plant Root Cause Evaluations (PRCEs) are a formal process for the evaluation of significant events (e.g. personnel fatality, significant personal injury/illness, significant near miss incident, property damage at Maine Yankee, or other events

The third process used in the investigation of root cause determinations is detailed in Procedure 20-100-1 (Plant Root Cause Determinations). The Plant Root Cause Evaluations (PRCEs) are a formal process for the evaluation of significant events (e.g.: personnel fatality, significant personal injury/illness, significant near miss incident, property damage at Maine Yankee, or other events which in the opinion of senior management warrant a PRCE). These evaluations are also used to identify existing and emergent trends in events/causal factors, identify generic implications, document corrective actions taken in response to the event, and distribute information in a manner useful to the company. As such, they are initiated only at the request of senior management, who is required to designate a Chartering Authority for the PRCE at the Officer or Manager level.

The event investigation portion of the PRCE is conducted using standard systematic event investigation techniques such as: Management Oversight and Risk Tree analysis, Change Analysis, Events and Causal Factors Analysis, and Human Performance Evaluation System analysis. Reportability of the PRCE findings and conclusions is through the Chartering Authority with plant wide review and distribution established by PORC.

The fourth process newly developed at Maine Yankee requires determination of the causal factors of issues identified through the Learning Process with risk levels 1, 2, or 3. This process is detailed within Procedure 66-201 (Evaluation of Learning Process Issues). It is intended that this process will replace the other root cause determination procedures.

7.4.2 Performance Monitoring and Trending

Performance monitoring and trending is used at Maine Yankee in four principal areas: QA trending, equipment condition trending, Maintenance Rule Performance Monitoring, and administrative performance trending. The results from each area are available for use in the overall evaluation of the extent of problems or issues.

QA performance trending utilized to date is accomplished for identified deficiencies, nonconformances, Level 1 QA Observations, Licensee Event Reports (LERs), Plant Root Cause Evaluations (PRCEs), USNRC violations and findings, INPO findings, Unusual Occurrence Reports (UORs), Radiation Controls Poor Work Practice Observations, Radiological Incident Reports (RIRs), and Safety Issue Concerns (SICs). Flawed events from other sources, such as Poor Work Practices Observations (PWPOs), may be trended when appropriate. Periodic reviews and evaluations of the trend data are performed to determine if trend problem areas have developed and to outline the status of performance throughout the organization. Performance trending, in context of the Learning Process system, is discussed in Section 7.2.

In addition to the QA trending of problems, Maine Yankee utilizes an Engineering Department Comprehensive Equipment Performance (CEP) program as a method of monitoring, assessing, and

- License Enforced Surveillance (including the ISI/IST, Technical Specification surveillances, and Maintenance Rule implementation)
- Supplemental Equipment Reliability Program
- Preventative Maintenance Program
- Predictive Maintenance Program

These six subprograms are component or equipment condition monitoring programs that monitor various parameters to identify components in need of maintenance before they degrade or deviate from required specifications.

As part of this program, the Engineering Department personnel assess performance and reliability activities for critical components and evaluate the adequacy of these activities to attain optimal plant reliability. The key portions of these assessments consist of determination of failure modes and consequences of failures, reviews of maintenance histories to detect reliability problems, evaluation of the Preventative Maintenance Program and comparison to vendor recommendations, evaluation of other surveillance programs, performance of walkdowns to evaluate the need for physical protection of sensitive instruments or potential damage to equipment, and monitoring system overall performance in accordance with the Maintenance Rule guidance.

The Engineering Department also implements similar programs with the same intent of improving plant performance and/or reliability, such as Containment Weight of Air, Emergency Diesel Generator and Fire Pump reliability, and electrical load growth.

The Maintenance Rule (10 CFR 50.65) performance monitoring requirements (established consistent with the guidance of NEI 93-01) are implemented in the Maintenance Program Description Manual, Section V. Monitoring requirements for Performance Criteria, System/Train/Component Monitoring and Structures Monitoring have been established. Performance criteria for evaluating risk significant systems, structures, and components (SSCs) are defined to identify the standard against which performance is to be measured. Criteria have been established to provide a basis for determining satisfactory performance. The performance of in-scope Maintenance Rule SSCs is monitored against the specific function that caused the SSC to be initially included within the scope of the Maintenance Rule. Periodic trending and performance tracking of (A)(1) and (A)(2) SSCs is performed in order to reveal whether the system goals and/or performance criteria have been met or not. Where performance monitoring indicates poor or potential poor performance, cause determinations and corrective actions, as appropriate are initiated to restore acceptable SSC performance.

At the administrative level, defined departmental and section performance indicators are developed, graphed, and distributed company wide through a monthly trending report. These graphs are used to compare the department or section progress to predefined company goals, and thereby identify and assess developing issues prior to the development of significant problems.

7.4.3 Periodic Assessment of Performance by Functional Area

Procedure 21-216 (Periodic Assessment of Performance by Functional Area and Trend Analysis Program) establishes both a program for periodically assessing performance and overall achievement of quality by functional area, and the process for collecting and analyzing trend data.

A periodic assessment of functional area performance and overall achievement of quality is performed by QPD through consideration of numerous sources of quality verification data including analysis of trend program data. The primary customers of the resulting Periodic Assessment of Performance by Functional Area report are the department managers. The procedure implementation is discussed in Section 7.2.

7.4.4 Operability Assessments and Risk Evaluations

Part of the actions taken to determine the extent of problems or issues (either actual or anticipated) of an immediate concern are rooted in the performance of operability assessments and/or risk evaluations. These assessments and evaluations are used to assist in complying with the plant design bases, preserve the validity of the safety analyses, corroborate that on-line maintenance is scheduled in such a manner so as to minimize impact on plant safety, assess plant safety based on existing or anticipated conditions, and to manage outage risk. Maine Yankee uses three such processes for these functions: Operations Department Procedure 1-200-2 (Equipment Operability Assessment), the Maine Yankee On-Line Maintenance Risk Management Program, and the Outage Risk Management Program.

Operations Department Procedure 1-200-2 is intended to be provide for operability determinations for systems, structures, and components which are required to be operable by the Technical Specifications or other Operating License commitments. This procedure is implemented with the intent that Maine Yankee preserves the validity of, and is operated within, its design bases and safety analyses. The pertinent actions taken through implementation of this procedure are directed towards the initial assessment of the problem or issue, assessments of reportability to the USNRC, documentation of the issue and findings, and initiation of corrective actions.
The On-line Safety Assessment portion of the On-Line Maintenance Risk Management Program is an ongoing program used daily in the evaluation of activities before a problem or issue occurs and is based on the use of key safety functions, Probabilistic Risk Assessment significance, external events, as well as engineering and operational judgement. The implementation of this program allows the determination, calculation, and control of accumulated risk during power operations. One of the key features of this program is the identification of potential problems or issues before they are created. In accordance with this program, On-Line Safety Assessments are performed:

- On scheduled activities identified during daily maintenance planning meetings

- When equipment fails which may alter the results of the assessment performed at the daily maintenance planning meeting
- Before authorizing unscheduled maintenance activities which may alter the results of the assessment performed at the daily maintenance planning meeting

Similar in intent to the On-Line Maintenance Risk Management Program is the Outage Risk Management Program. The principal objective of this program is the management of risk incurred during the period that the plant is shut down by minimizing the number of protective barriers that are inoperable at any single time. This management function is performed by assessing the plant condition and equipment status in accordance with the outage schedule and emergent activities to determine the qualitatively defined risk. Identification of potential issues and their respective impact on this risk determination are performed and assessed by plant management.

7.5 ACTIONS TAKEN TO PREVENT PROBLEM RECURRENCE

Actions undertaken to prevent problem recurrence fall into four categories:

- Correction or elimination of the root causes associated with the problem
- Use of trend information to identify characteristics relevant to problem recurrence
- Use of information from the Learning Process to avoid ineffectual future corrective actions
- Use of employee training to develop the knowledge as necessary to prevent recurrence

Each category is briefly discussed below.

Use of Root Cause Conclusions to Prevent Problem Recurrence

One of the principal uses of Procedures 20-308 (Root Cause Determination), 17-309 (Root Cause Analysis [Engineering]), 20-100-1 (Plant Root Cause Evaluation), and 66-201 (Evaluation of Learning Process Issues) is to define the corrective actions that will eliminate the root cause of the issue or problem. Additional discussion on the development and use of root cause determinations at Maine Yankee is provided in Section 7.4. Each of these procedures specify the development of corrective actions and recommendations for each root cause identified. These corrective actions, and the implementation of the Learning Process as defined in Section 7.2, are designed to eliminate the root cause of the problem, and thus prevent subsequent recurrences.

Use of Trending Information to Prevent Problem Recurrence

Procedure 21-216 (Periodic Assessment of Performance by Functional Area and Trend Analysis Program) establishes both a program for periodically assessing performance and overall

Use of Trending Information to Prevent Problem Recurrence

Procedure 21-216 (Periodic Assessment of Performance by Functional Area and Trend Analysis Program) establishes both a program for periodically assessing performance and overall achievement of quality by functional area, and the process for collecting and analyzing trended data. This program is discussed in Section 7.4. One of the purposes of this trended data is to evaluate and follow the characteristics of those areas of plant operations and maintenance that are relevant to problem recurrence. The use of this information assists in the prevention of problem recurrence.

Use of Learning Process Information to Prevent Problem Recurrence

The Learning Process includes provisions to avoid problem or issue recurrence. These provisions include qualification requirements for root cause evaluators, single issue owner responsibility for integrated problem solution, risk level determination and task priorities set by prior experience, post implementation effectiveness evaluations for high risk issues, and a searchable database that may be used in the preparation of future work packages or procedures. Additionally, the Learning Process is intended to provide trending information on corrected and in-process problems to assess the likelihood of problem recurrence.

Use of Employee Training to Prevent Problem Recurrence

The existing training program and training material updating process at Maine Yankee incorporates the lessons learned from significant and recurring problems in order to ensure the capture and proper dissemination of those solutions leading to the prevention of problem recurrence. The process incorporates the identification of a potential lack of training in specific areas, evaluation of the training requirements, identification of personnel to benefit from the training, and inclusion of training material. Typical of this process are the "Current and Industry Events" training topics as required on a quarterly basis by most plant personnel. Specific problem recurrence issues may also be individualized to the departmental level training.

The procedures associated with the "lessons learned" type of modification to the training curriculum include: 18-380-9 (Job Analysis), 18-380-5 (Designing and Developing Training Materials), 18-380-1 (Responding to Identified Training Needs), 18-380-12 (Incorporating Plant and Industry Events into Training Programs), and 18-280-13 (Request for Training Needs).

7.6 REPORTABILITY EVALUATION PROCESS

USNRC reportability determinations at Maine Yankee are conducted in accordance with Procedure 1-200-21 (Reportability Determination). This procedure establishes the process for evaluating the reportability of specific information or specific conditions so that reporting requirements are

Per Procedure 1-200-21, potentially reportable information includes, but is not limited to:

- Safety Analysis Inadequacies
- Safety Issue Concerns
- Design Discrepancy Evaluations (DDEs)
- Material Deficiencies
- Equipment Failures
- Technical Specification Violations
- Operational Occurrences or Conditions Affecting Nuclear Safety
- Excessive Radioactive Releases
- Radiation Overexposure

The on-shift Plant Shift Superintendent (PSS) and Shift Technical Advisor (STA) are advised of potentially reportable information or condition by anyone who may make such a discovery. Reportability evaluations and determinations are subsequently made by the PSS and STA.

7.6.1 10 CFR Section 50.72 Reportability

10 CFR Section 50.72 describes immediate notification requirements for operating nuclear power reactors. Procedure 1-26-1 [Operational Event Reporting (Short Term)] provides the mechanism for fulfilling these requirements. Specifically, it provides the direction for determining when an occurrence requires rapid reporting and also describes the administrative actions to be taken in the event of an occurrence that meets the criteria for immediate reporting. The evaluation to determine if an Emergency Action Level has been reached is performed in accordance with Procedure 2-50-0 (Emergency Classification).

7.6.2 10 CFR Section 50.73 Reportability

Procedure 20-200 (Licensee Event Report Process) provides guidance in the preparation of Licensee Event Reports (LERs) as required by 10 CFR 50.73. Guidance is provided such that LERs are prepared in accordance with the criteria set forth in 10 CFR 50.73 and the guidance contained in NUREG 1022, including Supplements 1 and 2. In general, the Operations Department prepares LERs for operations related incidents and Quality Programs Department prepares LERs for design bases related issues. Once prepared, the LER is reviewed by either the Assistance Manager, Operations Support or the Nuclear Safety Engineering Group supervisor, the Manager(s) of the Department(s) involved or affected, and subsequently by the PORC. Once completed, the LER is provided with a corporate review coordinated by the Licensing and Engineering Support Department, entered into the Nuclear Plant Reliability Data System, and screened for potential maintenance preventable functional failures.

Additionally, as part of the LER completion process, the LER Index and associated history files are reviewed to determine if previous LERs address similar occurrences. Such occurrences are identified in the LER and an analysis of why the corrective actions taken in response to the prior events did not prevent recurrence is included.

7.6.3 10 CFR Part 21 Reportability

Procedure 0-16-8 (Evaluation of Component or Equipment Failure or Deviation for 10 CFR Part 21 Reportability), establishes reportability criteria, and assists in ensuring that appropriate notifications are made, in accordance with the requirements of 10 CFR Part 21, Reporting of Defects and Noncompliance. 10 CFR Part 21 evaluations are applicable to safety-related fabrications, erections, installations, modifications, inspections, testing, and consulting services provided to Maine Yankee. When a component or consulting service fails or deviates from a technical requirement, it is brought to the attention of plant management and evaluated for detrimental effects to nuclear safety. If the failure or deviation is due to a defect and the piece of equipment is important to nuclear safety, a 10 CFR Part 21 evaluation is required to be performed within 60 days.

Procedure 0-16-8 further identifies the general reportability requirements for installed equipment and the governing procedures when a 10 CFR Part 21 notification is received from an outside source.

7.7 SUMMARY

Consideration of the information in this section, and in light of past performance, reviews and assessments, leads Maine Yankee to conclude that adequate processes exist and are being implemented for the identification of problems and issues, implementation of corrective actions, actions taken to prevent recurrence, and reportability to the USNRC.

Based upon the discussions and information in this Section, there exists reasonable evidence that processes are defined and implemented for the identification of problems or issues. This evidence applies to problems or issues either internally generated or originating from external sources. The use of the Learning Process, self-assessments, QA programmatic and implementation oversight, and external reviews and assessments are shown to contribute to problem or issue identification. Implementation of appropriate corrective actions is through the Learning Process system. The key processes used to assess and determine the extent of problems are founded in root cause analysis, performance monitoring and trending, periodic assessments of functional areas, and operability assessments and risk evaluations. The correction or elimination of the root causes associated with the problem or issue, use of trending information to assess and follow problem areas, use of information from the Learning Process to avoid ineffectual future corrective actions, and use of employee training to develop the knowledge as necessary to prevent recurrence are used as key

actions taken to prevent recurrence of known or related problems or issues. Finally, information is presented to define the process for reportability to the USNRC, as required, under 10 CFR Section 50.72, 10 CFR Section 50.73, and 10 CFR Part 21.

Further, we believe that the development and implementation of the process initiatives discussed herein, and as identified in Appendix A, demonstrate that corrective actions and defined improvement initiatives to weaknesses identified by both external and self-assessments will enhance Maine Yankee's existing capability of identifying, tracking, resolving, trending, and preventing problems in future operations.

SECTION 8

EFFECTIVENESS OF CURRENT PROCESSES AND PROGRAMS IN MAINTAINING THE CONFIGURATION OF THE PLANT CONSISTENT WITH THE DESIGN BASES

8.1 INTRODUCTION

Pursuant to Item (e) of the USNRC's 10 CFR 50.54(f) request (Reference 1), this section provides evaluation results and conclusions regarding the overall effectiveness of Maine Yankee's current processes and programs in maintaining the configuration of the Maine Yankee plant consistent with the design bases, as defined in 10 CFR 50.2. The conclusions are based on the determination that there are adequate processes in place for engineering design, configuration control, problem identification, and implementation of corrective actions; on the determination that, with some exceptions, design basis requirements have been translated into operating, maintenance, and testing procedures; and on the evidence that the plant physical configuration and operation have been collectively consistent with the design bases. Maine Yankee recognizes that several significant design-related issues have recently been identified and are in various stages of evaluation and corrective action. The overall conclusion presented in this section is based on the best information available at the time of this submittal and is contingent on completion of actions relating to current issues as committed to in Confirmatory Action Letter No. 1-96-015, including Supplement No. 1.

Considering the extent of issues known to date, coupled with corrective actions that have been or will be taken, Maine Yankee has confidence that the overall effectiveness of existing processes and programs, although deficient in some respects, support a conclusion that the configuration of the Maine Yankee plant is consistent with the design bases to the degree necessary to provide reasonable assurance of adequate protection of the public health and safety.

The following sections provide a summary of management goals and expectations (Section 8.2), the supporting evidence upon which the conclusion of this section is founded (Section 8.3), and a summary of current design bases open issues (Section 8.4). The conclusion regarding the overall effectiveness of current processes and programs in maintaining the configuration of the Maine Yankee plant consistent with the design bases is summarized in Section 8.5.

8.2 MANAGEMENT GOALS AND EXPECTATIONS

Maine Yankee recognizes that effective plant operation is a management responsibility. Further, management is committed to being an industry leader in safety, design integrity, and equipment performance, with safety always being the first and ultimate priority. A significant aspect of this commitment is ensuring that the current operating plant configuration and procedures are consistent

with the plant design and licensing bases. Additionally, company management recognizes that effective design and configuration control processes are essential in operation to ensure that this condition is maintained in the future.

Maine Yankee's commitment to excellence is highlighted by recent fundamental changes in its approach to conducting business. The cornerstone for this transformation is a plan which aims to restore excellence in five areas: resource allocation, organizational improvements, Board of Director oversight and involvement, program enhancements, and cultural initiatives to enhance effectiveness of employees. The actions associated with each of these areas are expected to have a positive affect on maintaining and enhancing the effectiveness of configuration control processes and programs. Detailed discussions on each of these primary elements are provided in the response to the Independent Safety Assessment (ISA) Report (Reference 2).

8.3 SUPPORTING EVIDENCE

Maine Yankee recognizes that an effective response to an issue, or request for information, consists of several key elements. These include an effective evaluation and assessment process, to include information gathering; well defined observations and conclusions; and documented evidence supporting those conclusions. Contained within this section are summary descriptions of, or reference to, these elements related to assessing the consistency of plant configuration and operation with the design bases.

The process, findings, and supportive evidence described in this section provide Maine Yankee with confidence that the conclusions developed within this report are fundamentally sound.

8.3.1 Response Evaluation and Assessment Process

In order to fully respond to the USNRC's request for information pursuant to 10 CFR 50.54(f), and to identify potential design basis configuration improvements, Maine Yankee assembled a response team tasked, in part, to (1) describe the engineering design and configuration control processes, (2) review and evaluate the effectiveness of translating design bases requirements into operating, maintenance, and testing procedures, (3) assess the consistency of procedures and structure, system, and component (SSC) configuration and performance with the design bases, and (4) describe the processes for identification of problems and implementation of corrective actions, including actions to determine the extent of problems and prevent recurrence, and the processes for reporting to the USNRC. Review of existing documentation and electronic files was used extensively in developing descriptions of the engineering design and configuration control processes, and the processes for problem identification, implementation of corrective actions, and reporting to the USNRC. Evaluations of audit, inspection, and third party review results were contributing factors in assessing the effectiveness of translating design bases requirements into procedures, and the consistency of configuration and/or performance with the design bases. These elements of the response are discussed in detail in Sections 4 through 7 and the descriptions, assessments, and

conclusions contained therein provide the bases for the integrated assessment and conclusion provided in this section.

8.3.2 Effectiveness of Current Processes and Programs

Various means were used to evaluate and assess the overall effectiveness of the Maine Yankee design and configuration control processes. These included programmatic review and evaluation, to include program descriptions, and implementing procedures; demonstrated compliance with requirements and procedures, as indicated by the results of reviews, inspections, and audits; and evidence of implementation of process improvements that address identified weaknesses or deficiencies and help preclude recurrence of unfavorable situations and/or results. The brief summaries provided below are selected observations from (1) document, procedure, and program review, (2) results of inspections, assessments, and audits, and (3) implemented program improvements, all of which help to demonstrate the overall effectiveness of Maine Yankee's design and configuration control processes.

Observations from Programmatic Reviews and Evaluations

Selected observations from review and evaluation of documents, procedures, and programs which are considered characteristic of processes adequate for effective design and configuration control, and for effective problem identification and implementation of corrective actions include the following:

- Management believes it has established an environment that encourages identification, reporting, and resolution of problems at all levels of the organization (Section 7.2).

- Design control and quality assurance processes, developed to be in compliance with Appendix B to 10 CFR Part 50, have been in place throughout the plant lifetime (Sections 4.2.1 and 6.2).

- Periodic review of procedures has been required since the issuance of the Operating License (Section 5.2.1).

- The plant simulator is maintained consistent with the plant configuration and is used to assist in verification of planned procedure modifications (Sections 5.3.2 and 6.3.8).

- Training programs are provided to train personnel to perform their assigned functions so as to enable implementation of the requirements of Appendix B to 10 CFR Part 50 (Section 4.2.6).

- Training programs and training materials are updated to incorporate lessons learned from significant and recurring problems in order to ensure the capture and proper dissemination of those solutions leading to the prevention of problem recurrence (Section 7.5).

- Procedures require that the design basis of structures, systems, and components (SSCs) that may be affected by a plant modification be identified prior to evaluating the potential impact of the design change on those SSCs (Section 4.2.2).

- Walkdowns of the plant are performed daily to verify system alignments per approved procedures and to verify that system parameters are within specifications and equipment performance limits. Additional walkdowns performed as part of the plant modification process or in response to specific initiatives provide the opportunity for, or are intended to, verify consistency of the plant configuration with the design bases (Sections 4.3.4 and 6.3.4).

- Use of outside organizations to characterize, and objectively assess specific problem areas is effective (Section 7.2.3).

Reviews and evaluations also resulted in self-identified areas for improvement that provide the opportunity for enhancing existing processes. Appendix A lists programmatic improvement commitments associated with design bases configuration that emanated from this 10 CFR 50.54(f) response, in addition to those that had previously been identified in the Reference 2 response to the Independent Safety Assessment (ISA). Process weaknesses on which the ISA commitments are focused were confirmed by the reviews and evaluations performed in preparing this 10 CFR 50.54(f) response.

Results of Inspections, Assessments, and Audits

Examples of results from previous surveillance, audit, inspection, and assessment reports which are indicative of effective design and configuration control processes include the following:

- Audits of the Engineering, Operations, and Maintenance Departments, performed in accordance with the Operational Quality Assurance Program, conclude that departmental and administrative procedures which address control of design documentation, plant configuration and performance, and revision of operating, maintenance, and testing procedures are adhered to and are effective (Section 5.3.1 and 6.3.1).

- Daily walkdowns by Operations Department personnel address plant system alignments and performance parameters. Also included is the monitoring of industrial safety, fire hazards, plant housekeeping, material condition, and watch

standing practices. Logs document the walkdowns and corrective actions are implemented (Section 6.3.4).

- The In-Service Testing program, Motor-Operated Valve program, and pre-operational testing which is performed upon completion of maintenance or plant modification actions contribute to confidence that plant performance is consistent with the design bases (Section 6.3.5).

- The In-Service Inspection program helps maintain the configuration and performance of inspected components consistent with the design bases (Section 6.3.6).

- Recent Joint Utility Management Audits (JUMA) of the Maine Yankee Quality Assurance (QA) program found the program to be effective in providing reasonable assurance of adherence to processes and procedures (Section 6.3.1).

- Functional inspections performed for the Station Service Water and Component Cooling Water Systems in 1989, 1990, and 1994 indicate that the configuration and performance of these systems are generally consistent with the design bases (Section 6.3.4).

- Safety System Functional Inspections (SSFIs) performed for the Electrical Distribution System (EDS) in 1991 and 1992 indicate that the configuration and performance are generally consistent with the design bases (Section 6.3.4).

- Although weaknesses have been identified in the performance of Technical Specification surveillances, these surveillances, and the corrective actions taken, help maintain consistency of plant configuration and performance with the design bases (Section 6.3.4).

As confirmation of the applicability of the aforementioned examples;

- The ISA team found "the quality and availability of design-basis information was good overall" (Section 6.3.15).

Previous audits, inspections, and third party reviews have identified weaknesses in certain areas, but results relative to plant configuration have generally concluded that structures, systems, and components were consistent with their design bases. Collectively, these results provide evidence to support the assessment that current processes have been effective in maintaining the plant configuration consistent with the design bases.

Program Improvements

Programs and processes for engineering design and configuration control and for problem identification and corrective action implementation have been improved to correct previously identified weaknesses and deficiencies and/or enhance current operations. Examples of these program and process improvements are noted below. Section 8.3.3 identifies a selected number of current and future initiatives aimed at improving design basis documentation, engineering design and configuration control processes and procedures, and/or implementation programs. A more complete list of commitments is provided in Appendix A.

- The Maine Yankee Learning Process, which is a re-engineered replacement for a variety of previously used corrective action processes, has been implemented (Section 7.2.1).

- Existing equipment databases used to store and retrieve plant component information were replaced in 1991 to facilitate coordination of plant configuration with supporting documentation. This integrated Maintenance Inventory, Purchasing, and Payables System (MIPPS) provides a central source of structure, system, and component design basis data for material inventory control, procurement activities, and work order processing and tracking (Section 6.3.3).

- The Design Basis Screens program, developed in 1992 and subsequently revised in 1996 to the Design Discrepancy Evaluation program provides a screening method to initially determine the safety significance of an issue in a timely manner and then to evaluate its impact with respect to design bases conformance (Section 6.3.10).

- The Input Assumptions Source Document (IASD), containing key parameters that are assumed in safety analyses, was implemented in 1986. The IASD is being replaced by a more comprehensive Safety Analysis Information Document (SAID) designed to provide, in a single document, a means for comparing plant operations and equipment performance with safety analysis assumptions, a means for evaluation of operating margin, and a common reference source for operating procedure review and development, safety analysis inputs and assumptions, and engineering design changes (Section 6.3.3).

Programs, processes, and procedures have been modified and improved, as appropriate, to correct identified weaknesses and deficiencies, to reduce the potential for recurrence of unacceptable results, and/or to enhance effectiveness in response to increased expectations. Maine Yankee believes that these improvements have elevated the effectiveness of processes and programs in their ability to maintain the configuration of the plant consistent with the design bases.

8.3.3 Current and Future Actions

Numerous initiatives which are aimed at improving design bases documentation, plant configuration and procedures, and/or control processes either are currently in progress or have been committed to by Maine Yankee. Among other contributing factors, these initiatives are designed to address findings, recor mendations, and/or deficiencies identified either by Maine Yankee in self-assessments or by audits and reviews by outside agencies, such as the recently completed Independent Safety Assessment (ISA) conducted by the USNRC. A number of key initiatives related to maintaining the design bases consistent with plant configuration and operation are summarized below. A more complete list of initiatives/commitments is identified in Appendix A.

Configuration Management Process

A comprehensive re-assessment of Maine Yankee's configuration management program has been initiated to make it current with industry standards. This Configuration Management Improvement Initiatives Plan will re-establish the licensing and design bases documents and enhance administrative controls to maintain plant configuration current with these documents. Improvements to the configuration management processes which will enhance the management of commitments have been initiated through a series of steps to re-identify commitments and assure continued conformance to them. Currently docketed license and SER communications and correspondence from the onset of commercial operation through the present either have been, or are currently being, reviewed so that commitments to the USNRC are addressed either by procedure or other active control mechanisms. This review will also reassess compliance with USNRC commitments for major licensing basis programs such as fire protection, Reg. Guide 1.97, the Equipment Qualification (EQ) program, and High Energy Line Breaks (HELB). A commitment change process based on NEI guidelines endorsed by the USNRC has been developed to control changes to commitments.

Updated Final Safety Analysis Report (UFSAR)

The UFSAR is being upgraded to reflect current plant configuration, licensing bases, and design bases. Reviews are being performed to identify potential changes which are being either resolved or incorporated. In addition to current activities, Maine Yankee is committing to performing an integrated review of the UFSAR for consistency with design and licensing bases.

In addition to upgrading the UFSAR, initiatives have been implemented to maintain the UFSAR current through continued reviews of proposed changes and maintenance of the UFSAR in an electronic filing system to facilitate electronic searching and network distribution. Administrative controls and procedures have been revised to require safety evaluations to be submitted with all proposed changes and that operability/reportability is assessed as changes are submitted. Guidelines have been established to assist personnel in UFSAR reviews to assure consistency and completeness.

Completion of these UFSAR upgrade and maintenance initiatives is expected to significantly enhance Maine Yankee's capability to maintain the consistency between the plant configuration and its design bases

Design Basis Recovery/Reconstitution Program

Maine Yankee is committed to the completion of an ongoing design basis recovery/reconstitution program. A detailed summary of this program is presented in Section 9.

Margin Improvement Program

A Margin Improvement Program will be developed and implemented to identify and quantify existing design and operating margins of those systems and components with a corresponding high risk significance. Where margin improvements are determined to be warranted, appropriate plant upgrades will be provided

Testing Improvement Program

Maine Yankee is planning to develop and implement a Testing Improvement Program designed to significantly expand and improve the scope, technical adequacy, and methodology of the testing of systems, structures, and components important to safety. Specific focus will be on ensuring timely review and resolution of test data, full evaluation of test results on component, system, and plant operations, and appropriate trending evaluations.

Control Processes Review

An independent integrated review and assessment of the design and configuration control processes is planned to be performed. Deficiencies will be evaluated and modifications will be implemented, as appropriate, to provide enhanced process effectiveness and efficiency.

System Engineering Group

Maine Yankee is establishing a System Engineering Group to increase ownership and accountability of systems with a corresponding high risk significance. Organizational development will rely, in part, on guidance provided by industry organizations and on experience from nuclear power plants with similar programs that are recognized as exceptionally effective.

8.4 OPEN ISSUES

The previous section summarized the results of a large number of observations and evaluations which support the contention that the configuration control processes and programs, although deficient in some respects, are fundamentally sound and that the configuration and operation of the

Maine Yankee plant is, and has been, collectively consistent with the design bases. However, Maine Yankee also recognizes that recent reviews and assessments by both Maine Yankee and the USNRC have identified a number of specific design bases and configuration management related problems that required immediate attention. Significant design bases inconsistency issues, including those identified in Confirmatory Action Letter No. 1-96-015, including Supplement No. 1, are currently under evaluation and resolution. These issues include fire barrier penetration seals, logic circuit testing, cable separation, equipment qualification (submergence), and 115 kV offsite power sources. Provided below are summary descriptions and corrective actions for these problems.

8.4.1 Fire Barrier Penetration Seals

The ongoing penetration seal project is one part of Maine Yankee's Fire Protection Improvement Plan (FPIP) instituted in 1995. This project was initiated as a result of a plant root cause evaluation recommendation for fire protection improvements. Included in the project are the identification of tested configurations in fire test and other reports that bound the as-installed penetration seal assemblies at Maine Yankee, and the inspection of as-installed configurations for conformance with test documentation, and identification of deficiencies which require resolution.

Penetration seal inspection activities were initiated in July 1996 and it was quickly identified that seal assemblies were installed in walls with damming on only one side of the penetration. Although this was in conformance with plant installation procedures, the fire test report identified that damming was required on both sides of wall penetrations. Compensatory actions were implemented plant-wide in accordance with the Fire Protection Plan.

Actions were quickly taken to correct the plant installation procedure to require damming on both sides of wall penetrations. The seal penetration inspection effort is nearing completion and the repair effort has begun. To the extent possible, repairs have been prioritized in accordance with risk from a 10 CFR 50, Appendix R perspective. Exceptions have been made to work around constraints, and also to take advantage of available work windows relating to plant operating/shutdown conditions.

8.4.2 Logic Circuit Testing

Maine Yankee initiated a program in August 1995 to assess the adequacy of surveillance procedures with respect to system logic circuit testing. This action was in response to previously issued USNRC information notices and was subsequently made mandatory by USNRC Generic Letter (GL) 96-01.

During the Independent Safety Assessment (ISA), questions were raised regarding the test procedures for certain safety circuits that had not yet been reviewed by the GL 96-01 project. In response to the ISA team questions concerning the adequacy of logic testing, Maine Yankee expedited portions of its implementation plan to identify and correct other potential testing discrepancies. Equipment deficiencies that were identified were corrected prior to plant startup.

Reviews performed in response to both the ISA team queries and GL 96-01 concluded that surveillance procedures are inadequate in that they do not fully test the safety functions of the questioned circuits. A Plant Root Cause Evaluation (PRCE) to investigate the surveillance testing program in general, with emphasis on logic testing procedures, will result in recommended corrective actions. Additionally, Maine Yankee plans to re-evaluate the adequacy of logic system testing and resolve any outstanding issues.

8.4.3 Cable Separation

On December 5, 1996, Maine Yankee identified that the control wiring associated with the redundant trains of reactor manual trip pushbuttons was not adequately separated. This problem was discovered during the conduct of reviews associated with Generic Letter 96-01, Testing of Safety-Related Logic Circuits. Technical approaches were subsequently developed and implemented to determine the extent of this problem. When additional cable separation problems were identified on December 13, 1996 this approach was reevaluated and significantly revised to include extensive cable separation walkdown inspections.

All significant cable separation problems identified will be appropriately dispositioned or resolved pursuant to licensing and design bases. A plant root cause investigation of cable separation deficiencies performed by a seven member multi-disciplinary team, assisted by four project experts, will result in recommended corrective actions.

8.4.4 Equipment Qualification (Submergence)

A walkdown of the reactor containment on July 24, 1996 revealed 30 components outside of the design bases associated with Equipment Qualification. As reported to the USNRC, these components were installed below the potential flood level inside containment and were not environmentally qualified for the installed locations. Maine Yankee relocated twelve of the components above the defined containment flood level and, for the remaining items, provided justification for continued operation.

Subsequent to the actions described above, a post-accident reanalysis has resulted in a change in the containment flood level that affects additional components, several of which may need to be relocated to remain operable during post-accident conditions. Among these are components that provide parameter inputs to Post Accident Monitoring instrumentation functions. This development is being assessed in terms of its overall impact on safe plant operation.

Root cause evaluations have been and are being performed and corrective actions are being developed to help prevent recurrence.

8.4.5 115 kV Offsite Power Sources

As a result of a 1995 study of the 115kV offsite power system conducted by Central Maine Power (CMP), Maine Yankee concluded that one of the two 115kV lines would not recover voltage quickly enough after a fast transfer with a safety injection actuation signal and subsequent motor-driven feedwater pump auto-start. This would result in disconnection of the offsite reserve power and automatic start and loading of the station emergency diesel generators. Administrative controls were established to address this potential event sequence. In addition, Maine Yankee believed that availability of the primary 115 kV line and the 345 kV offsite system being back-fed through station transformers sufficiently satisfied design and licensing bases.

The Independent Safety Assessment (ISA) team questioned the adequacy of conformance of the offsite power system with the licensing and design bases (Reference 3). The USNRC staff review of these concerns and those from a November 9,1996 complete loss of offsite power event has been completed and the staff has determined that the existing offsite power capability does not meet the design criterion specified in the Updated Final Safety Analysis Report (UFSAR). As a result of this determination, Maine Yankee will submit an amendment request to the Technical Specifications to require that, when the reactor is critical, both 115 kV incoming lines shall be operable and allow continued operation for 72 hours with one line inoperable and 24 hours with both lines inoperable.

8.5 CONCLUSION

Elements of information considered essential to reach a conclusion that the current processes and programs are effective in maintaining the plant configuration consistent with the design bases include (1) existence of adequate design and configuration control processes and procedures, (2) evidence of implementation and execution, (3) existence of effective problem identification processes, and (4) evidence of timely corrective actions including plans for future improvements to enhance current processes. Significant determinations based, in part, on the summary information presented in Section 8.3 but, in total, on the more descriptive process and program descriptions; evaluations and assessments; and conclusions, including supporting evidence, presented in Sections 4 through 7 include:

- Procedures exist to provide adequate design control in accordance with Appendix B to 10 CFR Part 50.
- Configuration control procedures exist to provide confidence that design changes comply with the design bases, and are reviewed, approved, installed, tested, and implemented in a controlled manner.
- Procedures exist to implement the requirements of 10 CFR 50.59 for performing safety evaluations.

- Procedures exist to implement the requirements of 10 CFR 50.71(e) regarding changes to the Updated Final Safety Analysis Report (UFSAR).

- Adequate processes exist for problem/issue identification and implementation of appropriate corrective actions.

Programs and procedures are established for self assessment, root cause evaluation, performance monitoring, and trending to effectively determine the cause and extent of problems and take actions to prevent recurrence.

- Adequate processes and procedures exist and are being implemented for evaluating the reportability of specific information or specific conditions so that reporting requirements are considered, to include those defined by 10 CFR 50.72, 10 CFR 50.73, and 10 CFR Part 21.

- Responsible personnel are trained in applicable processes and procedures.

- Existing process controls, together with procedure review and revision, quality assurance reviews, plant simulator verification of procedures, activities associated with design bases upgrades, and results of reviews by external organizations, provide evidence for concluding that design basis requirements are translated into plant operating, maintenance, and testing procedures.

- Activities performed over the plant lifetime and relevant results of reviews, audits, assessments, and inspections provide evidence that operating, maintenance, and testing procedures are being executed and for concluding that, with the exception of current open issues, system, structure, and component configuration and performance are consistent with the design bases.

- Current and planned initiatives are effectively addressing weaknesses and deficiencies identified either through self assessment or external reviews, audits, or assessments.

The summation of determinations provided above does not mean that Maine Yankee is free of deficiencies regarding design bases activities. The specific design bases and configuration management related deficiencies identified in previous self-assessments and USNRC reviews were considered in this evaluation, as were additional weaknesses identified in developing this response to the USNRC's request for information pursuant to 10 CFR 50.54(f). Also considered were the focused corrective actions that have been, are being, or are planned to be taken to correct and preclude recurrence of these deficiencies, and the recent fundamental changes in management's approach to conducting business. The improvements resulting from these actions provide

confidence that, in the future, the effectiveness of current processes and programs will be further enhanced and that the plant configuration and performance will be maintained consistent with the design bases.

In summary, Maine Yankee concludes that existing processes and programs are sufficiently effective in establishing consistency between the plant configuration and the design bases to the degree necessary to provide reasonable assurance of adequate protection of the public health and safety.

SECTION 9

DESIGN BASIS RECOVERY / RECONSTITUTION PROGRAM SUMMARY

9.1 INTRODUCTION

Pursuant to the additional request of the USNRC (Reference 1) regarding information describing design bases review or reconstitution program undertaken, this portion of the Maine Yankee 10 CFR 50.54(f) response provides an overview of the Design Basis Recovery / Reconstitution program. Incorporated within this section are the historical perspectives of the design bases recovery efforts at Maine Yankee (Section 9.2), discussion of the development of the process leading to the existing Design Basis Summary Documents (Section 9.3), a summary of the Design Basis Summary Document usage (Section 9.4), and the Design Basis Summary Document assessment and identification of future actions (Section 9.5).

9.2 BACKGROUND / HISTORICAL PERSPECTIVE

In the late 1980s, Maine Yankee instituted a program of design bases recovery for selected important plant systems in response to an internally recognized need to recover and document consistently the relevant plant design bases information. At that time, the Maine Yankee design bases recovery program was initiated with a concentration of the development efforts on those systems identified as "safety class" and "important to safety". Characteristic of the type of design bases recovery work for these systems at that time was the following:

- Recovery/review of design bases documents for critical systems.
- Regeneration of critical unrecoverable or deficient design bases documents. Note that the effort associated with the regeneration of documents is more properly classified as part of a design bases reconstitution and, therefore, goes beyond the defined scope of a design bases recovery program.
- Vertical audit functional inspections modeled after guidance in NSAC-121, "Guidelines for Performing Safety System Functional Inspections", November 1988.
- System walkdowns to verify plant and document configuration conformance.
- Identification and correction of deficiencies in system configuration or operation as identified during the vertical audit or system walkdown.

The systems that were originally selected for inclusion in the design bases recovery program were based on engineering judgement of the individual system's safety significance. This evaluation was conducted using senior level personnel at Maine Yankee and YAEC. At the time of initial system selection, the Maine Yankee Probabilistic Risk Assessment (PRA) did not exist and, therefore, was not available for reference in defining the list of systems. The original list of systems chosen for inclusion in the design bases recovery program did, however, capture a number of the most risk

significant systems when compared to the results of the current PRA. However, in light of present day knowledge, the original list can not be considered complete. Recent re-evaluations of the system selection process and results, in light of the most recent PRA results and the application of the Maintenance Rule, have led to an updated and expanded list covering the highest risk significant systems. Additionally, Maine Yankee has identified an updated list of Topical Reports to address specific issues pertinent to the plant design bases.

In order of decreasing risk significance, the Design Basis Summary Documents (DBSDs) which were identified in the past and have been completed to date represent the following systems:

- Emergency Feedwater and Auxiliary Feedwater Systems
- High Pressure Safety Injection System
- Low Pressure Safety Injection System
- Containment Spray System
- Component Cooling Water and Service Water Systems
- Instrument Air System
- Control Room Ventilation System, and
- Radiation Monitoring System.

DBSDs currently under development as an extension of this program include documents for the Safeguard Areas Heating, Ventilation, and Air Conditioning Systems and the Fire Protection System.

Each DBSD provides a summary of the design bases for that system including source references for key design requirements or limitations. Additionally, each DBSD describes the system and component design bases in detail, including specific requirements, interfaces, and safety analysis requirements. Companion documents to the DBSDs incorporate the key references used in the generation of the summary document.

In addition to the above listing of system DBSDs, Topical Reports associated with the specific issues of Station Blackout, Appendix R, Flooding, Heavy Loads, Masonry Walls, and response to the USNRC Regulatory Guide 1.97 were constructed for use by personnel for assisting in the definition of the relevant design bases configuration.

Within the intended domain of DBSDs and Topical Reports, numerous additional documents have been issued, or are planned, covering significant plant-wide topical subjects in support of engineering activities. Such documents have been developed and issued on the following subjects:

- Equipment Qualification
- Maintenance Rule Summary
- Inservice Inspection Program
- Inservice Test Program
- Individual Plant Evaluation (IPE)

- Individual Plant Evaluation for External Events (IPEEE)
- Electrical Systems Manual (Calculations)
- Fire Hazards Survey
- Fire Protection Program Plan
- YAEC Mechanical Engineering Design Guides:
  - Seismic Systems, Structures and Components
  - Pipe Stress
  - Structural Steel and Pipe Supports
  - Reinforced Concrete and Masonry Walls

The following documents of this nature are also intended for completion:

- Severe Accident Management
- High Energy Line Break
- Seismic Design
- Tornado Design

9.3 DEVELOPMENT OF THE MAINE YANKEE DBSDs

As with other design bases recovery / reconstitution programs, a "writer's guide" procedure for providing guidance in the development of the DBSDs was created specifying the methodology used in design bases recovery and defining the scope of the DBSDs. The YAEC procedure, MY-DBD-1 (Procedure for Developing Design Basis Summary Documents) was developed and followed for this purpose. This procedure was last revised in 1989. In reviewing the DBSD documentation, Maine Yankee believes that this revision incorporates the intent of the proposed NUMARC 90-12 (Design Basis Program Guidelines).

In accordance with the Procedure MY-DBD-1, each DBSD includes the following elements:

- General System Arrangements
- Normal Plant Operation
- Accident Mitigation Functions
- Bounding System Parameters
- Reliability
- External Events Considered in the Design Bases for the System
- Historical Narrative of Modifications and Analysis
- Synopsis of System and Component Testing
- Piping Seismic Analysis
- System Setpoint Summary
- Calculations Associated with System Parameters
- Component Summary of Design Conditions
- Reference Listing

Additionally, the pertinent design bases information associated with the system is gathered and supplied as hard copy reference materials.

In accordance with the Procedure MY-DBD-1, and prior to approval and issuance, draft DBSDs are required to undergo a detailed technical review at YAEC by the Maine Yankee Project Manager, Project Engineering Manager, each project discipline (Mechanical, Electrical, Systems, and I & C), and other appropriate departments selected by the Maine Yankee Project Engineering Manager. The DBSD is also required to receive a technical review performed by Maine Yankee personnel. Following this review and approval cycle, the DBSD is issued and controlled through the Maine Yankee Project at YAEC and maintained in the Maine Yankee Configuration Management System.

Concurrent with the completion of key DBSDs, a safeguards system review plan was utilized to perform the required vertical audit functional inspections and system walkdowns. Per industry guidance, the intent of this effort is to identify and assess discrepancies between the plant configuration and the design bases documentation. The review plan utilized for the Maine Yankee DBSDs is modeled after the guidance provided in NSAC-121 and is augmented with previous lessons learned from USNRC Safety System Functional Inspections. Discrepancies identified during vertical audit inspections are resolved in accordance with normal plant processes associated with corrective actions.

9.4 DESIGN BASIS SUMMARY DOCUMENT USAGE

The Maine Yankee DBSDs and Topical Reports have been used on a frequent basis by both plant and corporate personnel in providing input to making decisions on plant modifications (both permanent and temporary), to provide background on existing system design parameters and system operations, and to provide information assisting in the performance of 10 CFR 50.59 determinations. DBSDs are referenced as inputs to the performance of Procedures 0-06-4 (10 CFR 50.59 Determinations), 17-229 (Engineering Review of Purchase Requisitions), 17-235 (Engineering Work Order Processing), 17-312 (Design Inputs), 26-330 (Preparation of Technical Specification Changes), and 67-200-12 (Maintenance Work Order Processing).

The completion of the existing DBSDs, and their subsequent usage, has resulted in improvements in plant design, operation, and documentation. For example, as a result of the DBSD development and vertical audit efforts, the following plant and design bases configuration control improvements have occurred:

- Controlled drawing corrections.
- UFSAR and IASD corrections and updates.
- Discovery and correction of a potential leak path to atmosphere during control room isolation.
- Improvements in the configuration/train alignment of the service water system.

- Design bases testing of emergency feedwater system pumps and valves.
- Improvements in the testing of the HPSI, LPSI, and containment spray pumps.
- Revisions to RWST level setpoints.

The existing DBSDs are considered to be "used and useful" as part of the design bases configuration control process.

9.5 DESIGN BASIS SUMMARY DOCUMENT ASSESSMENT AND IDENTIFICATION OF FUTURE ACTIONS

Although the content and demonstrated usage of the DBSDs is observed to be useful, progress in the rate of completion of DBSDs and Topical Reports has not been satisfactory. To date, there have been eight of the fourteen previously defined DBSDs completed. With the inclusion of risk significant systems, as defined in the Maintenance Rule implementation program, the total number of DBSDs to be developed has expanded to nineteen. Additionally, in reviewing the DBSD development procedure, weaknesses have been noted in the areas of quantification of design and operating margins, definition of interfacing systems impacts, and origination of design bases requirements.

In order to address these self-identified weaknesses, Maine Yankee has initiated relevant corrective actions to ensure timely completion of the design bases recovery / reconstitution program. The commitments associated with these efforts are defined in Appendix A. In summary, the detailed corrective actions identified to address these weaknesses are:

- Upgrade the DBSD developmental procedure and proceduralize the functional inspections and system walkdown efforts. The intent of these actions is to ensure the procedural inclusion of corrective actions for the above weaknesses represents current day industry standards and practices.

- Develop and implement DBSDs for the remaining nine risk significant systems:
  - Electrical Distribution (AC and DC) System
  - Emergency Diesel Generator System
  - 115 KV Offsite Power System
  - Residual Heat Removal System
  - Safety Actuation Signal Systems
  - Alternate Shutdown System / EFCV Air System
  - Reactor Protection System
  - Condensate and Feedwater Systems
  - Containment Isolation Systems

- Complete the updating process of the existing DBSDs to ensure that they reflect the standards of the revised developmental procedure.

The completion of these three efforts is designed to ensure that the Design Basis Recovery / Reconstitution Program is complete and encompasses those principal risk signif[illegible]tems at Maine Yankee.

9.6 SUMMARY

The definition of risk significant systems at Maine Yankee through implementation of the Maintenance Rule work has resulted in the clear identification of those systems requiring Design Basis Summary Documents. The design bases recovery / reconstitution efforts performed to date at Maine Yankee have resulted in a series of documents and references that are considered both "used and useable" as evidenced by the integration of the DBSDs across interdisciplinary procedural boundaries and the incorporation of DBSD information as reference material for 10 CFR 50.59 determinations. The existing DBSD documents provide one of the foundations of the design bases configuration management information at Maine Yankee.

It is recognized, however, that the development of these documents needs to be accelerated in order to ensure the timely capture of the remaining design bases information of the risk significant systems. Additionally, it is recognized that the DBSD developmental procedure and procedures covering the functional inspections and system walkdowns needs to be codified. Maine Yankee has begun implementation of these efforts.

SECTION 10

REFERENCES

1. Letter, USNRC (J.M.Taylor) to Maine Yankee (C.D.Frizzle), "Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information", dated October 9, 1996.

2. Letter, Maine Yankee (C.D.Frizzle) to USNRC (S.A.Jackson), "Independent Safety Assessment", MN-96-183, dated December 10, 1996.

3. Letter, USNRC (S.A.Jackson) to Maine Yankee (C.D.Frizzle), Independent Safety Assessment report transmittal, dated October 7, 1996.

APPENDIX A

SUMMARY LISTING

OF THE

MAINE YANKEE

DESIGN BASES RELATED COMMITMENTS

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SUMMARY LISTING OF MAINE YANKEE DESIGN BASES RELATED COMMITMENTS

Appendix A to this 10 CFR 50.54(f) response accomplishes four tasks, defined below, thereby summarizing Maine Yankee's commitments regarding the identified improvements to the design bases configuration management:

- Initially, this Appendix is intended to serve as the identification of the corrective action commitments identified within the Maine Yankee 10 CFR 50.54(f) response. Use of this Appendix assists in ensuring that such commitments are defined, listed, and cross referenced to the source document in a single location.

- Additionally, this Appendix lists those self-identified initiatives for improvement as defined by the 10 CFR 50.54(f) team.

- Third, this Appendix repeats the key Maine Yankee commitments associated with the design bases related configuration issues as developed from the response to the Independent Safety Assessment (Reference 2).

- Fourth, the development of this Appendix intends to satisfy the Independent Safety Assessment characterization of the 10 CFR 50.54(f) submittal as including an "action plan" for ensuring design basis adequacy.

In order to satisfy these intents, the following tables are provided:

- Table A-1 Maine Yankee 10 CFR 50.54(f) Commitments as Associated with Design Bases Configuration

- Table A-2 Maine Yankee 10 CFR 50.54(f) Self-Identified Areas for Improvement as Associated with Design Bases Configuration

- Table A-3 Independent Safety Assessment Programmatic Commitments Associated with Design Bases Configuration

- Table A-4 Independent Safety Assessment Detailed Commitments Associated with Design Bases Configuration

Table A-1: Maine Yankee 10 CFR 50.54(f) Commitments as Associated with Design Bases Configuration (Page 1 of 1)			
Reference (from this report)	**Commitment Description**	**Scheduled Completion**	**Comments**
6.3.5	Develop and document the design bases for each component which falls within the Inservice Testing Program	6/98	
Section 4.2.2 Section 4.3.3	Perform an independent integrated review and assessment of the design and configuration control processes.	12/97	
Section 4.3.5	Perform an independent, integrated review of the UFSAR, Technical Specification, and Technical Specification Bases to establish consistency with the plant configuration, licensing bases, and design bases.	8/97	Active
Section 9.5	Develop and implement DBSDs for the remaining nine risk significant systems as defined in the Maintenance Rule.	10/98	Active
Section 9.5	Complete the updating process of the existing eight DBSDs and the two DBSDs under development to the standards of the revised developmentai procedure.	10/98	Active

Table A-2: Maine Yankee 10 CFR 50.54(f) Self-Identified Areas for Improvement as Associated with Design Bases Configuration			
Reference	**Improvement Description**	**Scheduled Completion**	**Comments**
Section 4.2.2	Incorporate within the EDCR and Technical Evaluation processes controls for the completion of the design bases documentation updating prior to allowance of the closure of the Configuration Management documentation.	8/97	
Section 4.2.3	Development of a correspondence tracking system for documents from Maine Yankee to YAEC.	6/97	
Section 4.3.2	Require documentation of a technical review of the supporting documentation prior to completion of the 10 CFR 50.59 Determination Unreviewed Safety Question Evaluation.	6/97	
Section 4.3.2	Develop and implement a system of controlling, tracking, and recording 10 CFR 50.59 determinations	N/A	Complete
Section 4.3.3	Establish a single point ownership for configuration management.	6/97	
Section 4.3.5	Develop and implement a "living" copy of the UFSAR on the EFS to ensure timely incorporation of changes to the design bases information.	4/97	Active
Section 4.3.5	Elevate the importance of the UFSAR updating procedure (Procedure 26-314) from a departmental level procedure to a 0-series procedure.	6/97	Active
Section 6.4	Development of a clear and concise definition of the design bases for those systems requiring DBSDs. Develop and train engineering personnel on the treatment of design basis source material in implementing design basis modifications.	8/98	
Section 9.5	Upgrade the Design Basis Summary Document creation procedure and proceduralize the functional inspections and system walk-downs.	2/97	Active

Table A-3: Independent Safety Assessment Programmatic Commitments Associated with Design Bases Configuration (Page 1 of 1)

Reference (from ISA Response Letter)	Commitment Description	Scheduled Completion	Comments
Cover Letter Section 2	Implementation of the reengineered problem identification, task tracking, and corrective action process. Additional commitment for third party assessment of this process during the second quarter of 1997.	N/A Third party assessment scheduled before 6/97.	The development phase process was completed and subsequently implemented in 1/97.
Cover Letter Section 2 Section 4	Development and implementation of a Margin Improvement Program	12/97	
Cover Letter Section 4	Development and implementation of a Testing Improvement Program	By 12/97 with selected components implemented concurrent with the SAID	
Cover Letter Section 4	Development and implementation of the Configuration Management Improvement Initiative	6/96 through 12/98	
Cover Letter Section 4	Reduce Engineering and maintenance backlogs to minimal levels	Program definition by 4/97. Reduction of backlog within two operating cycles	
Section 3 Section 4	Completion of an assessment of the Equipment Qualification Program using recognized industry experts.	N/A	Complete
Section 3	Development of a calibration program for temperature controls in heated enclosures containing safety related instrumentation.	6/97	
Section 3	Performance of an integrated evaluation of the existing heat exchanger testing program and associated instrumentation	5/97	
Section 4	Develop and implement a program for the design information and pilot testing of Air Operated Valves	To be completed by the 1997 refueling outage	
Section 4	Establishment and implementation of a predictive maintenance program	By 12/97	
Section 4	Develop and implement an enhanced flow accelerated corrosion program.	In place by the 1997 refueling outage	
Section 4	Develop and implement a "calculation standards document" governing the use of approved calculations.	7/97	
Section 4	Implementation of the Safety Analysis Oversight Improvement Program	12/97	

Table A-4: Independent Safety Assessment Detailed Commitments Associated with Design Bases Configuration (Page 1 of 2)			
Reference (from ISA Response Letter)	**Commitment Description**	**Scheduled Completion**	**Comments**
Cover Letter Section 4	Establishment of a Systems Engineering Group within the Plant Engineering Department.	12/97	
Section 4	Completion and implementation of the Safety Analysis Information Document	12/97	
Section 3	Correction of the Material Condition Items identified in the ISA response	As noted in Section 3 of the ISA response	
Section 3	Correction of Equipment Performance Items identified in the ISA response	As noted in Section 3 of the ISA response.	
Section 3	Completion of the Ventilation Design Basis Summary Document and vertical audit.	12/96 (audit) 8/97 (document)	Vertical audit is complete
Section 3	Completion of the root cause evaluation and re-evaluation of logic system testing in conjunction with Generic Letter 96-01.	1/97 (root cause) Prior to startup (re-evaluation)	Root cause evaluation complete Re-evaluation active
Section 3	Relocation of twelve components above containment flood level. Evaluation and correction of other components as necessary.	Relocation is complete. Evaluation to be completed by 1997 refueling.	
Section 3	Relocation of containment spray pump impeller to increase NPSH margin.	Prior to seeking approval for return to 100% power.	
Section 3	Resolution of follow up actions resulting from the SWOPI	By 12/97	
Section 3	Completion of root cause evaluation and corrective actions associated with the control room positive pressure testing.	Prior to the next test (expected 1997).	

Table A-4: Independent Safety Assessment Detailed Commitments Associated with Design Bases Configuration (Page 2 of 2)			
Reference (from ISA Response Letter)	**Commitment Description**	**Scheduled Completion**	**Comments**
Section 3	Completion of the four specific initiatives associated with improving and verifying system margins of the service water and component cooling water system.	By 12/97	
Section 3	Completion of ventilation system modifications to the turbine building	By 12/97	
Section 4	Revalidate the Master Equipment List to include Equipment Qualification information	12/98	
Section 4	Designate an Equipment Qualification Program Manager	By 12/97	A highly experienced contract engineer has been hired to perform this function.
Section 4	Develop and implement a Methods Overview Manual as a reference source for analysts performing cyclic assessments of the safety analysis.	Start of Cycle 16	

END OF DOCUMENT