Entergy

Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150
Tel 601 437 6408
Fax 601 437 2795

Joseph J. Hagan
Vice President
Operations
Grand Gulf Nuclear Station

February 6, 1997

U.S. Nuclear Regulatory Commission
Mail Station P1-37
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29
Grand Gulf Response to Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information

GNRO: 97/00010

Gentlemen:

By letter dated October 9, 1996, the Nuclear Regulatory Commission (NRC) requested information pursuant to 10CFR50.54(f) regarding the adequacy and availability of design bases information. The letter requested licensees to submit information which will provide the NRC added confidence and assurance that each licensee's plant maintains its design basis and is conducting operating, maintenance and testing activities within its design bases. Attached is the Grand Gulf response to the October 9, 1996 10CFR50.54(f) request for information.

Entergy Operations has closely followed the design and licensing bases issues identified over the last eighteen months within the nuclear industry. While the individual licensee findings are addressed based on their own merit, Entergy Operations reaffirms our long-standing belief that compliance with our design and licensing bases is not optional. Compliance is a necessary element of an effective regulatory framework and a key aspect in meeting our operating license. Additionally, Entergy Operations believes that an effective licensee assessment and corrective action program is essential for identifying and correcting adverse conditions that may exist at a facility.

A074

1/1

Prompted by the renewed focus on the design and licensing bases, FSAR assessments were conducted at each Entergy Operations facility in mid-1996. We shared the results of these assessments with you in meetings at NRR (November 14, 1996) and Region IV (December 17, 1996).

Upon receipt of the 10CFR50.54(f) letter, Grand Gulf and the other Entergy Operations plants jointly developed and implemented an assessment of configuration management processes and corrective action processes. This assessment reviewed the completeness and effectiveness of controls necessary to translate the design basis into current plant configuration and operating procedures. The assessment and its results are described in the attached response.

Based on the assessments and reviews conducted, we believe that reasonable assurance exists to conclude that the Grand Gulf design bases of systems, structures and components are adequately maintained and are appropriately reflected in the plant.

During our assessment, we identified various process and control improvements that will provide additional assurance of the effectiveness of our processes. These improvements are discussed in Section X and will be addressed as part of our ongoing program of improved performance.

The attached report covers a great deal of information in summary fashion. We encourage your questions and comments. Please feel free to contact Kenneth Hughey at 601-437-6470 or Sheri Mahoney at 601-437-6552 of my staff for clarifying information or additional detail. Pursuant to the requirements of 10CFR50.54(f), Grand Gulf is providing the attached response to the NRC's request under affirmation.

Yours truly,

JJH/SBM
attachment: 1. Response to Request for Information Regarding Adequacy and Availability of Design Bases Information
2. Grand Gulf's Design Basis Documentation Discussion
Affirmation
cc: (See Next Page)

cc: Ms. S. C. Black (w/a) (NRC/NRR)
Mr. A. Heymer (NEI)
Mr. R. B. McGehee (w/a)
Mr. N. S. Reynolds (w/a)
Mr. J. E. Tedrow (w/a)
Mr. H. L. Thomas (w/o)
Mr. J. W. Yelverton (w/a)

Mr. L. J. Callan (w/a)
Regional Administrator
U.S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

Mr. T. P. Gwynn
Director, Division of Reactor Safety
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

Mr. H. L. Thompson, Jr., Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop 17G21
Washington, D.C. 20555

Mr. J. N. Donohew, Project Manager (w/2)
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Mail Stop 13H3
Washington, D.C. 20555

BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

LICENSE NO. NPF-29

DOCKET NO. 50-416

IN THE MATTER OF

ENTERGY MISSISSIPPI

and

SYSTEM ENERGY RESOURCES, INC.

and

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

and

ENTERGY OPERATIONS, INC.

AFFIRMATION

I, J. J. Hagan, being duly sworn, state that I am Vice President, Operations GGNS of Entergy Operations, Inc.; that on behalf of Entergy Operations, Inc., System Energy Resources, Inc., and South Mississippi Electric Power Association I am authorized by Entergy Operations, Inc. to sign and file with the Nuclear Regulatory Commission, this application; that I signed this application as Vice President, Operations GGNS of Entergy Operations, Inc.; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information and belief.

J. J. Hagan

STATE OF MISSISSIPPI
COUNTY OF CLAIBORNE

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 6th day of February, 1997.

(SEAL)

Richard R. Moore III
Notary Public

My commission expires: MISSISSIPPI S.. EWIDE NOTARY PUBLIC
MY COMMISSION EXPIRES JUNE 5, 1998
BONDED THRU STEGALL NOTARY SERVICE

Grand Gulf

Response to Request for Information

Regarding

Adequacy and Availability of Design Bases Information

Table of Contents

Response to Request for Information Regarding
Adequacy and Availability of Design Bases Information

I. Introduction

The purpose of this letter is to provide added assurance that Entergy Operations, Incorporated (EOI) facilities are operated and maintained within their design bases with deviations reconciled in a timely manner as requested pursuant to 10CFR50.54(f) by NRC's Executive Director for Operations on October 9, 1996. This response covers Grand Gulf.

Although NRC's request focused on specific questions with respect to plant design control and configuration management, the request was made against a larger background of concern over licensees' ability to understand, maintain and operate their plants in accordance with a plant's licensing basis. Mindful of this broader perspective, EOI has taken steps not only to respond to the specific questions but to understand and address the wider messages:

- NRC's confidence in licensee control of their licensing and design bases has been shaken by events of the last year and a half,
- Likewise, public and Congressional confidence in the nuclear regulatory process has eroded as these events received publicity and scrutiny, and
- Compliance with licensing and design bases is not optional. Compliance is an expected and necessary element of an effective regulatory framework.

Consequently, we believe that the individual and collective responses to the 50.54(f) letters are an essential first step in restoring public and regulatory confidence in nuclear licensees.

Prior to issuance of the 50.54(f) letter, EOI developed and implemented licensing basis assessments at each of our facilities and developed a design basis evaluation that is presently ongoing. Upon receiving the 50.54(f) letter, we extended these concepts and built upon their insights to implement the critical review needed to respond in a pro-active manner to this letter.

Overall we have found these exercises valuable. In particular, we have identified a number of subtle means to change the configuration of a facility that may bypass traditional design and/or licensing basis controls. As a result, we have been able to implement, or are in the process of implementing, additional programmatic controls that provide added assurance that our plants' configuration and operation reflect the underlying design and licensing bases.

The assessments conducted to respond to the 50.54(f) letter, their results and the Grand Gulf initiatives are discussed in more detail below.

II. Background

Nuclear plants, processes, regulations and regulators change and evolve over time. EOI's first plant (ANO Unit 1) was licensed in 1974 and its last facility (Waterford 3) received its full power license in 1985. Over that time, the industry and the regulators experienced significant change ranging from the TMI accident to 10CFR50.71(e) requirements to update the FSAR. Since our facilities were licensed at differing times and subject to differing regulations (e.g., both ANO units operated for a number of years before 10CFR50.71(e) was enacted), it is not surprising that their internal process development differed.

Similarly, the industry and the regulators have undergone significant change since the last EOI facility was licensed. The period from 1985 to the present is probably best characterized as one of increased understanding of the factors important to nuclear safety. Enhanced understanding of, comfort with and use of probabilistic safety assessment techniques led to an increased capability to focus on safety significant elements of plant design regardless of their safety-related or non-safety-related designation. Performance-based approaches to plant operation and regulation started to be applied because they focused on safety results rather than prescriptive details of how a function was accomplished.

Evolving regulation and evolving understanding of elements important to safety, coupled with varying times of plant design, construction and licensing led to strikingly different historical development for EOI facilities. This is apparent in how each facility's control and conception of licensing and design basis management evolved.

For example, ANO Unit 1 (licensed in 1974) uses an FSAR format based on a predecessor to Regulatory Guide 1.70 and has custom technical specifications different from the standard format. The design bases requirements under 10CFR50.2 for ANO may be viewed as more limited than a plant licensed in the mid 1980s. Consequently, the design documentation expectations under 10CFR50, Appendix B at that time were less demanding and design documentation was in many cases not readily accessible. As a result, ANO has undertaken (or is undertaking) several initiatives to upgrade design and licensing basis documentation.

In contrast, Grand Gulf was licensed in 1982, but went through an extended low power testing period due to discrepancies between the as-built plant and the technical specifications. The large technical specification re-validation effort at that time, combined with its later plant vintage, better turnover from Architect-Engineers, and better maintenance of design bases, led to much reduced need for design basis documentation efforts for Grand Gulf as in comparison with ANO.

Each EOI facility has a unique background which resulted in varying levels of effort needed to develop, recapture or reconstitute their design basis. This historical development is reviewed in the responses to Questions (b) and (c), and in Attachment 2.

III. Regulatory Bases

The difference between the design and licensing bases can be confusing and is often not clearly documented. While the distinction may be unimportant in many controlling processes, it is relevant to our response to the 50.54(f) letter and to the various assessments EOI has conducted either in response to the letter or as a result of the broader issues which led to the letter.

In the 50.54(f) letter, the NRC has clearly couched their request in terms of the 10CFR50.2 definition of design bases. As such, the design basis is a subset of the licensing basis. And, although the licensing basis itself is undefined in 10CFR50, in general, EOI facilities view the licensing basis to be similar to the 10CFR54.3 definition of current licensing basis.

In practical terms (although not strictly correct), the industry tends to think of the licensing basis as primarily consisting of the FSAR and the 10CFR50.2 design basis as that portion of the FSAR that addresses safety functional characteristics as defined in 10CFR50.2. Consequently, much of the introductory discussion of the 50.54(f) letter which addresses various concerns with FSAR fidelity is concentrating on the licensing basis, while the information request itself [Questions (a) - (e)] is limited to that portion of the FSAR that constitutes the design basis.

Regardless of the distinctions, as discussed below, EOI has taken steps to address issues associated with both design and licensing basis fidelity.

Design Basis

The term "design basis" as defined in 10CFR50.2 differs from how we use that term in day-to-day activities. The "regulatory design basis" of 10CFR50.2 represents only the tip of the design basis iceberg. Underlying the regulatory design basis is a large amount of design basis information contained in documents such as design documents, calculations, analyses, drawings, tables, databases and the like, which is not part of the regulatory design basis. Notwithstanding its status outside of the regulatory design basis, management and control of this larger body of information is necessary to ensure that the regulatory design basis of 10CFR50.2 is accurate, and to maintain compliance with 10CFR50, Appendix B.

In responding to the 50.54(f) letter, EOI has chosen to expand our review beyond the narrow confines of the regulatory design basis to identify and examine processes which could affect the broader design basis and plant configuration. Although those processes [which are identified and reviewed in Section VI, Response to Question (a)] are extensive, we found our review valuable in identifying and refining controls on plant configuration.[1]

Licensing Basis

Last June, recognizing the importance of the licensing basis issues associated with recent industry events, EOI management directed that licensing basis assessments be developed and conducted for EOI facilities to determine if additional action was needed to maintain and control our plants' licensing basis.

These assessments, which were conducted in July and August, 1996 at each EOI plant, were successful in identifying a number of subtle ways in which the plant's operating basis could be changed while bypassing the traditional licensing basis change mechanisms.

While the FSAR assessments and their results are beyond the scope of the 50.54(f) request[2], their insights were utilized in developing the review approach to respond to the 50.54(f) letter. EOI has also shared our FSAR assessment approach and findings with the industry and the NRC. In particular, we met with NRR on November 14, 1996 and Region IV on December 17, 1996 to provide a detailed presentation on the FSAR assessments.

Overall, the FSAR assessments found that traditional licensing basis controls such as the 10CFR50.59 and 50.71(e) processes are effective in maintaining and updating the licensing basis. Process enhancements were identified in some cases to address non-traditional operating basis. At two of our facilities (ANO and River Bend) there were sufficient discrepancies in the original FSAR text to merit an FSAR upgrade effort. That effort, which was briefly described during the NRC presentations, is beginning at the two plants and is expected to complete in nominally two years.

---

[1] In addition to the review conducted to respond to the 50.54(f) request, EOI is conducting design basis team evaluations at each of our facilities. Similar to the FSAR assessments, the design basis evaluations are expected to yield further insight into useful areas to enhance the design basis documentation and control. These evaluations are scheduled to be complete in Spring, 1997.

[2] As noted in footnote 8 to the 50.54(f) letter, the Commission has adopted enforcement policy changes to encourage licensees to voluntarily undertake initiatives to identify and correct FSAR noncompliances. We believe the FSAR assessments and other initiatives qualify for such enforcement discretion. EOI will docket this position separately from this response.

IV. Response Development and Oversight

Planning for and preparation of the 50.54(f) response was coordinated by an EOI team of knowledgeable representatives from each EOI facility and the corporate office. As directed by management, the team developed a response approach (described in Section V, below) involving a critical review of site process completeness and effectiveness. The intent was to go beyond process description, and develop an approach capable of identifying new insight into the adequacy of design basis and configuration management processes.

Each site assembled a separate team to implement the resulting assessment. The site team was responsible for investigating site processes, evaluating the resultant information and identifying and documenting any deficiencies or process enhancements. The site team also compiled sufficient records of their review to substantiate the accuracy of the findings.

One advantage of a system-wide team approach is that throughout the response development period, site-specific findings and insights were shared amongst the EOI team. Common problems were addressed, and, where appropriate, consistency in evaluation and approach was facilitated.

Draft information was shared with nuclear facilities outside of EOI in order to benefit from external insights. Knowledgeable external and legal personnel also provided valuable feedback.

The response was reviewed by a broad range of site personnel including engineering, licensing and management personnel. In addition, the on-site safety review committee performed site-specific reviews.

V. Approach to Addressing Questions (a) - (d)

Before providing the detailed response to Questions (a) - (d), it is worthwhile to discuss how these questions interrelate and our understanding of NRC's intent in posing the questions.

Questions (a) and (d) request descriptive information concerning the design/configuration control processes and the corrective action processes. Questions (b) and (c) request our reasons for concluding that these processes are implemented such that actual plant configuration and activities accurately reflect the design basis. In constructing our review to be responsive to the spirit of these requests, EOI focused on addressing two key issues:

- Completeness [Questions (a) and (d)]
  - Have we identified the ways (processes) by which plant configuration can be changed?
  - Does the corrective action program contain the appropriate elements?
  - Do the identified processes contain the elements necessary for effective control?
- Effectiveness [Questions (b) and (c)]
  - Do we have previous assessments (e.g., audits, vertical slice inspections, etc.) that provide reasonable assurance of process effectiveness (i.e., that the design basis is reflected in plant configuration and procedures)?
  - Have we undertaken major process or other upgrade efforts (e.g., design basis reconstitution, improved technical specification implementation, etc.) that provide reasonable assurance of process effectiveness?

The concepts of completeness and effectiveness deserve further discussion in order to fully understand our response.

Completeness

In reality, engineering design, configuration control and corrective action processes are a complex set of intertwining proceduralized processes spanning multiple departments. For example, just in the area of design control there are many processes (and even more procedures) that address different control mechanisms such as design specifications, drawing updates, internal standards, vendor manual changes, software control, database control (e.g., cable, EQ, seismic, setpoints, etc.), and many other control activities.

The question of completeness becomes more complex when we move beyond the traditional design change and configuration management processes to evaluate other potential ways that plant configuration can be changed. As we found through the FSAR assessments mentioned above, there are a number of ways in which plant configuration can be changed that may bypass traditional configuration control processes.

In fact, there are numerous processes/procedures that can affect, in one way or another, plant configuration. Similarly, there are multiple processes that can affect corrective action. These processes are listed and discussed in the response to Questions (a) and (d), and in Appendix A and Appendix B.

In addition to identifying the processes by which plant configuration or corrective action can be affected, it is important to identify the elements which should be present in those processes in order for them to be effective. For configuration management, process effectiveness elements control a change from conception to implementation and closure of documentation including update of design files. For example, initial process effectiveness elements are a design review for compliance with appropriate codes and standards, and a 10CFR50.59 review for licensing basis impact. Post-implementation elements include periodic surveillance/testing to confirm function and, if the change is temporary, a provision to revisit the basis for the change or restore its initial condition. For corrective action, process effectiveness elements are also defined. Like the processes themselves, the process effectiveness elements are listed and discussed in the response to Questions (a) and (d), and in Appendix A (for configuration management elements) and Appendix B (for corrective action elements).

Based upon identification of processes and identification of process effectiveness elements, we can draw conclusions (with reasonable assurance) about the completeness of our programmatic controls for configuration management and corrective action. This is the focus of our response to Questions (a) and (d), and the detailed evaluations in Appendices A and B, respectively.

Effectiveness

The effectiveness of a process is a measure of how well it performs its intended function. For example, prior to a change being implemented in plant procedure or design, does the 10CFR50.59 process consistently ensure that the change has been appropriately evaluated for its effects on safety and the licensing basis? If so, the 10CFR50.59 process is considered effective.

Determining process effectiveness is largely a matter of inference based on a sampling of individual process products. For instance, an audit of the 10CFR50.59 process may sample 20 plant procedure and design changes and find that in each case, the change (prior to implementation) was evaluated in accordance with 10CFR50.59 and that the quality of the evaluation was high. Although all plant procedure and design changes

were not reviewed, the consistent nature of the sampling findings leads to the inference that the 10CFR50.59 process is effective.

In responding to the 50.54(f) request, EOI chose to identify and review the results of past assessment activities that in some way either reached conclusions about process effectiveness or developed information from which such conclusions could be inferred. There is a wide array of useful process effectiveness assessments. In the regulatory arena these include inspections by NRC personnel, SALP reports and safety evaluations. Under EOI's purview, we conduct quality assurance audits, self-assessments, vertical slice system inspections, and upgrades of particular process areas such as design basis documentation upgrades.

The combination of process effectiveness assessment results, over a period of time, provide a reasonable basis upon which to draw overall conclusions about process effectiveness. This is the focus of our response to Questions (b) and (c) in Section VII.

Finally, this assessment approach is necessarily qualitative rather than an exhaustive revalidation of the design basis. We have made judgments based on our assessments and a standard of "reasonable assurance ". By this we mean that we have drawn inferences from our assessments that we feel would be drawn by other objective and knowledgeable people, based on the same information.[3]

---

[3] It is important to note that this response is not based on a detailed, line-by-line review of a facility's design and licensing basis (which is not possible in the time allowed for this response). Our response should not be interpreted as a guarantee that discrepancies are not present somewhere in a design or licensing basis document or that there are no equipment discrepancies. Rather, it should be interpreted as a good faith effort to respond to global questions on a limited schedule.

VI. Response to Question (a)

Question (a) requests the following information:

> 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;

As previously discussed, there are two key aspects to addressing this question - identification of the processes which could affect plant configuration and identification of the elements necessary for process effectiveness.

Processes which could affect plant configuration are numerous and go well beyond those thought to traditionally constitute configuration management. Those we considered in responding to the 50.54(f) request are listed in Table 1.

These processes range from a narrow focus with a single controlling procedure (e.g., maintaining the setpoint list) to broad processes that span several procedures and departments (e.g., the design change process). However, regardless of scope, they share a common characteristic in their capacity to change some aspect of plant configuration. Collectively, they also represent our judgment of a reasonably complete set of ways to affect plant configuration. Each of these processes is described broadly for all EOI sites in Appendix A.

In order to effectively control plant configuration, there is a limited set of process elements which are expected to be in place[4]. The process elements were derived by the EOI team based on general considerations of configuration management including 10CFR50 Appendix B[5] and the primary licensing/design basis control requirements such as 10CFR50.59 and 10CFR50.71(e). These process effectiveness elements are listed in Table 2.

By their nature, the process effectiveness elements may have somewhat different meanings depending on the process to which they are applied. For instance, interface controls (#5) for a design change may be different than interface controls for an off-normal procedure change. In addition, many processes will not be sufficiently broad to encompass all process effectiveness elements. As examples, changing an internal civil engineering standard for non-category I structures will likely not have any provision for

---

[4] It is important to note that the critical process elements were selected with respect to their importance for design and configuration control as requested in Question (a). An individual process such as maintenance work orders may have a number of other elements important for the successful implementation of that unique process. However, for the sole purpose of maintaining configuration control while implementing maintenance work orders (or any other process) the applicable elements listed in Table 2 should be present.

[5] For instance, see applicable elements of ANSI N45.2.11.

restoration controls (#6), or a permanent design/procedure change will not need a provision to periodically revisit the change (#8).

The process effectiveness elements are described in more detail in Appendix A.

By assessing the processes which may affect configuration control (Table 1) against the critical elements necessary to control configuration (Table 2), we can make a judgment as to the completeness of our configuration control processes.[6] The detailed results of our site-specific reviews for completeness are included in Appendix A.

Summary of Response to Question (a)

In large measure, EOI facilities determined that those processes (Table 1) and process effectiveness elements (Table 2) necessary for effective configuration management and design control are present and implemented. In particular, Grand Gulf determined the following (the details of which can be found in Appendix A).

As a result of our review of our procedures that control each process listed in Table 1 against the key elements listed in Table 2, Grand Gulf concludes that, with two minor exceptions, these processes contain the proper control elements to ensure that the plant design bases are being properly maintained.

The two instances of missing process elements are:

- The Grand Gulf processes do not specifically require that plant procedures be reviewed and revised as necessary when engineering documents (for example, specifications) are revised. A deficiency document has been issued to resolve this concern.

- The Grand Gulf procedure does not include a specific requirement to apply the 10CFR50.59 process to software revisions. It is left up to the individual departments to determine the need. A procedure revision will be issued to ensure that appropriate plant software changes are reviewed in accordance with the 10CFR50.59 process.

During our review, we identified another potential concern of a general nature. In some cases, an engineering review may be prudent for certain plant procedure changes. Although general guidance specifying the types of cross-discipline reviews that are necessary is provided to the technical reviewer, we believe that the guidance could be enhanced to ensure that appropriate engineering reviews are obtained. We have issued a deficiency document to address the development of guidance for determining when engineering reviews are necessary for certain plant procedure changes.

---

[6] The effectiveness of the processes is included in the response to Questions (b) and (c).

Also, during our review, we identified several procedural enhancements, such as, better control of transmittal distribution, simplification of the licensing document change process, inclusion of non-safety-related snubbers in the applicable engineering standard and review expansion in several areas. These enhancements are not needed to correct any deficiencies but are being considered to add additional guidance and improve our procedures for the control of these processes. We are addressing these enhancements through our routine efforts for continuous improvement.

While our review shows that our processes are complete and effective in controlling plant configuration, further evaluation and improvement is a part of normal Grand Gulf business. As such, we will continue to assess our performance in maintaining the design basis and configuration control of our plant. The intent of these assessments is to find problems and areas for improvement; therefore, it is likely that we will identify other deficiencies and enhancements in the future. We will process these items appropriately as they are identified; however, we do not expect to find significant problems that would adversely impact the plant design basis and configuration control.

Therefore, Gran ' Gulf concludes that we have a comprehensive engineering design and configuration control program in place that provides reasonable assurance of the adequacy of our plant design basis activities.

Table 1
Processes Which May Affect Configuration Control

CONTROL OF CONFIGURATION DOCUMENTS

- DESIGN INPUT DOCUMENTS, e.g.,
  - DESIGN BASIS DOCUMENTS
  - SYSTEM DESIGN CRITERIA
  - ANALYSIS BASIS DOCUMENTS
  - UPPER LEVEL DOCUMENTS
  - TOPICALS
- DESIGN PROCESS DOCUMENTS
  - CALCULATIONS
  - ENGINEERING STANDARDS / GUIDES
  - SOFTWARE
- DESIGN OUTPUT DOCUMENTS
  - SPECIFICATIONS
  - DRAWINGS
  - VENDOR DOCUMENTS
  - DATABASES, e.g.,
    - CABLE AND CONDUIT LIST
    - STATION INFORMATION MANAGEMENT SYSTEM
    - EQUIPMENT QUALIFICATION
    - COMPONENT DATABASE
    - SEISMIC QUALIFICATION
    - SETPOINT LIST
    - INSTRUMENT LIST

PLANT CONFIGURATION CHANGE CONTROL

- DESIGN CHANGE
- REPAIR OR USE AS-IS
- PART EQUIVALENCY
- SETPOINT CHANGE
- TEMPORARY ALTERATION
- SOFTWARE CONTROL (PLANT PROCESS)
- RELOAD

MATERIALS / PROCUREMENT

- COMMERCIAL GRADE ITEM
- MATERIAL TECHNICAL EVALUATION
- STORAGE / INVENTORY CONTROLS
- END USE AUTHORIZATION

IMPLEMENTING DOCUMENTS

- PROCEDURES, e.g.,
  - ADMINISTRATIVE
  - IMPLEMENTING
- PROGRAM DOCUMENTATION / STANDARDS / GUIDES

CONTROL OF LICENSING DOCUMENTS

- FSAR UPDATE
- LICENSE CHANGE
  - TECHNICAL SPECIFICATIONS CHANGE
  - TECHNICAL REQUIREMENTS MANUAL CHANGE
- COMMITMENT MANAGEMENT

OPERATIONS

- NORMAL, OFF-NORMAL AND ALARM RESPONSE PROCEDURES
- EMERGENCY OPERATING PROCEDURES
- TAGOUTS / CAUTION TAGS
- TECHNICAL SPECIFICATIONS INTERPRETATIONS
- OPERATOR WORK-AROUNDS
- NIGHT ORDERS / STANDING ORDERS

MAINTENANCE

- MAINTENANCE WORK ORDERS
- PREVENTIVE MAINTENANCE
- CORRECTIVE MAINTENANCE
- REPAIR AND REPLACEMENT PROGRAM
- CALIBRATION PERFORMANCE

PERFORMANCE MONITORING*

- SURVEILLANCES
- INSERVICE TESTING
- SPECIAL TESTS
- RETESTS
- MOV / AOV / CHECK VALVE TESTING
- HEAT EXCHANGER TESTING
- SNUBBER TESTING
- INTEGRATED AND LOCAL LEAK RATE TESTING
- VENTILATION / FILTER TESTING
- PRESSURE TESTING
- FIRE PROTECTION TESTING

CONDITION MONITORING*

- INSERVICE INSPECTION
- CORROSION MONITORING
- NON-DESTRUCTIVE EXAMINATION
- WELDING PROGRAM
- SYSTEM / COMPONENT TRENDING
- STEAM GENERATOR INTEGRITY / EDDY CURRENT TESTING PROGRAM

* These processes were examined for their ability to confirm SSC performance is consistent with the design basis (Question (c))

Table 2
Design and Configuration Control
Process Effectiveness Elements

1. Design basis review
2. Licensing basis review
3. Review and approval process
4. Document update controls
5. Interface controls - processes, configuration documents, functional organizations
6. Restoration controls - post-maintenance and post-modification testing, restoration checks
7. Deficiency controls
8. If change is temporary, are there adequate provisions to revisit/restore?

VII. Response to Questions (b) and (c)

The basis for responding to Questions (b) and (c) relates to the effectiveness of various common or overlapping configuration management processes identified in Table 1. Therefore, we have combined the responses for both questions.

Question (b) requests the following information:

> Rationale for concluding that design bases requirements are translated into operating, maintenance, and testing procedures;

Question (c) requests the following information:

> Rationale for concluding that system, structure, and component configuration and performance are consistent with the design bases;

A portion of the rationale to respond to Questions (b) and (c) has to do with the completeness of the programmatic controls discussed in response to Question (a). The remainder of the rationale consists of numerous confirmatory historical and current activities such as assessments, audits, vertical slice inspections and the like which provide additional confidence that programmatic controls are effective in reflecting design bases requirements in day-to-day procedures and effective in maintaining plant configuration and performance consistent with the design bases.

In the remainder of this section, we review the historical development of Grand Gulf, focusing on activities and processes related to design basis development that provide additional assurance that operating, maintenance and testing procedures, as well as plant configuration and performance, accurately reflect the design basis. And, we provide our judgment as to the effectiveness of those activities and processes.

Baseline

The Grand Gulf application to operate a nuclear reactor facility was submitted in November 1972. Following plant construction, fuel loading was completed in August 1982. Grand Gulf underwent a two-year low power license period during which improvements were made to justify awarding of the full power license. Commercial operation was declared on July 1, 1985, and serves as the baseline for the 50.54(f) response.

Beyond the usual regulatory pre-licensing reviews and a comprehensive startup test program, there were several activities unique to Grand Gulf that provided additional confidence in the quality of the plant's design basis and configuration at that time. These were:

- License Condition (43) - Confirmatory Indepth Review Program
- Confirmation Of Action Activities

- Operations Enhancement Program
- Technical Specification Review Program

License Condition (43) - Confirmatory Indepth Review Program

The NRC stipulated a license condition to the operating license (License Condition 2.C.(43)) for an independent review and confirmation of Grand Gulf design and construction according to the application before operation above 5% power.

> 2.C.(43) Assurance of Proper Design and Construction (Section 17.5, SSER #2)
>
> Prior to exceeding 5 percent power, the independent consultant review of the mechanical and structural design of the Train A residual heat removal system shall verify that this system has been designed and constructed in accordance with all pertinent NRC requirements. This verification review shall consider design, installation, inspection, testing, and any other aspects necessary to ensure conformance with the design. Also, the independent consultant's evaluation of Bechtel-Gaithersburg QA program shall be completed and show that the program was functioning properly for the new loads design changes.

The intent of the license condition was to confirm the New Load Analysis Evaluation (NLAE) related changes. Therefore, in 1981 through 1982, Cygna Energy Services performed an independent design review of mechanical and structural design and plant construction at Grand Gulf, as well as the quality assurance controls and their implementation for the design area within the Grand Gulf organization and the Bechtel organization. The conclusions reached by Cygna indicated that the design and quality assurance programs were performed in accordance with the project commitments and standard practice. The independent design review identified some nonconformances, but these were determined by Cygna to be insignificant and without potential to affect the health and safety of the public.

In turn, the NRC concluded that the results of this review provided increased assurance that the plant design, construction, and the quality assurance program, as established and implemented by Grand Gulf and Bechtel Power Corporation, satisfied the applicable industry codes and standards and the staff's requirements for design and construction activities for Grand Gulf.

Confirmatory Action Activities

During the licensing process, several Confirmation of Action letters were issued to Grand Gulf. One of these letters contains information that merits further discussion.

The Confirmation of Action letter of October 20, 1982 discussed problems associated with the surveillance test requirements in the Technical Specifications. To address the technical adequacy of surveillance procedures, Grand Gulf organized a task force to review all surveillance procedures, identify and make necessary procedure revisions,

and identify required changes to the technical specifications. The initial review of surveillance procedures was performed to evaluate compliance with technical specification requirements, the conditions imposed by procedure performance, the use of drawings, vendor manuals, and other reference material in the preparation of surveillance procedures, the proper implementation of ASME Section XI and 10CFR50 Appendix J requirements, and the proper documentation of procedure performance. Numerous changes were made to 490 procedures to correct deficiencies related to the review.

Operations Enhancement Program

The Operations Enhancement Program, beginning in early 1983, was a concentrated effort to address outstanding issues in preparation for initial criticality. The program entailed a variety of efforts which spanned many aspects of plant operation and had the following objectives:

- Strengthen Surveillance Program
- Enhance Operator Training Program
- Improve Control of Plant Modifications
- Enhance Management Control and Effectiveness
- Enhance Procedure Awareness and Compliance
- Enhance Effectiveness of Operations Staff

Each of these objectives consisted of detailed activities which included both process improvements and technical aspects of plant operations. Some of the activities that contributed to ensuring that the procedures and programs met the design and/or licensing basis of the plant are listed below.

- Review of all surveillance procedures to ensure technical adequacy in meeting Technical Specifications and other regulatory requirements, and revision of any deficient procedures.
- Development and issuance of a procedure that cross-referenced Technical Specifications and the mode applicabilities to the implementing surveillances.
- Upgrade of both licensed and non-licensed operator training programs. Also, review and upgrade of the operator qualification card program.
- Improved tracking of plant modifications and program upgrades to ensure plant procedures are updated to reflect plant changes.
- Development and issuance of the Requirements Procedure Tracking System (RPTS) and the Licensed Commitment Tracking System (LCTS), and establishment of programs to coordinate tracking and timely resolution of regulatory related action items.
- Significant effort in procedure training for site personnel with emphasis on procedure adherence.
- Enhancement of the Operations staff by attracting and keeping qualified licensed personnel, reducing control room administrative burden, and providing operational experience feedback training.

Technical Specification Review Program (TSRP)

At the request of the NRC in early 1984, Grand Gulf initiated a rigorous and comprehensive review of the Grand Gulf Technical Specifications (TS) to ensure their consistency with the as-built plant, the Final Safety Analysis Report, and the NRC's SER. Grand Gulf implemented the TSRP to perform this review.

The TSRP had several key features:

- The TSRP was conducted and controlled in accordance with a definitive, approved program procedure.
- The review of each TS section, the review results, and the resolution of review findings were thoroughly documented.
- The reviews were conducted by Grand Gulf, Bechtel and General Electric (GE) personnel who had substantial experience in nuclear power plant design, construction, operations, testing and licensing.
- The Grand Gulf Quality Assurance organization audited the TSRP.
- Impell Corporation performed a third party assessment of the TSRP.
- GE and Bechtel performed a confirmatory review of the Grand Gulf unique features to ensure that all design features unique to the Grand Gulf Mark III, BWR-6 designs were appropriately included in the TS.
- GE and Bechtel performed a review comparing the Grand Gulf TS with Kuosheng TS to verify that the Grand Gulf TS contained all the key safety features of that prototype BWR-6/Mark III plant.
- GE performed an independent overview review of the Grand Gulf and Bechtel portions of the TSRP.

The actual TSRP objectives relative to the specific sections of the TS were:

- Safety Limits - verified to be complete and in accordance with the plant's design analyses.
- Limiting Conditions for Operation - determined to accurately reflect the necessary functional capability or performance level of equipment required for safe operation, based on design analyses.
- Action Statements - verified to be consistent with design analyses.
- Surveillance Requirements - test types and frequencies reviewed to ensure that they adequately address design requirements and allow conservative operation during testing.
- Bases - verified to be correct and in accordance with design analyses.
- Design Features - verified to be accurately described.
- Administrative Controls - verified to be consistent with relevant licensing commitments.

Inconsistencies between documents were documented, prioritized according to safety significance, and tracked to closure. Grand Gulf, Bechtel and General Electric dedicated approximately 7000 person-days to the extensive review. The TS were changed appropriately and re-issued as Amendment 13 to the low power license.

An evaluation was conducted to determine the significance of the inconsistencies between the FSAR and the TS and the implications regarding FSAR accuracy or conformance of the FSAR to the as-built plant. There were relatively few instances in which the FSAR inaccurately described the physical as-built plant. None of the differences was of significant safety concern. Additionally, Grand Gulf concluded that the TSRP provided additional confidence that Grand Gulf's formal program of design control and verification throughout the life of the Grand Gulf project effectively controlled the configuration of the plant and the content of the FSAR.

Post-Baseline Activities

ASSESSMENTS

There are a number of ways in which we have assessed and improved our performance in configuration control and design basis maintenance since initial licensing. These activities have served to raise our standards and to strengthen our performance in these areas. While the following discussions are not all inclusive of the assessments and improvements that have been performed, they are important as indicators of the methods by which we strive for excellence and of the activities that we undertake to ensure continued strong programs in configuration control.

The following assessment and improvement activities related to configuration control and design basis maintenance are discussed in further detail below:

- Safety System Functional Assessments and Safety System Functional Inspections
- Self Assessments
- Licensee Event Reports
- Inspection Reports
- Confirmatory Activities and Improvement Initiatives

Safety System Functional Assessments (SSFAs) and Safety System Functional Inspections (SSFIs)

To improve efficiency and quality, seven separate SSFAs and SSFIs have been performed at Grand Gulf since 1988. Assessments have been conducted on the Standby Liquid Control System (SLCS) in 1988, the Fuel Pool Cooling and Cleanup (FPCC) System in 1990, the High Pressure Core Spray (HPCS) System & the Division III Diesel Generator in 1991, the Reactor Core Isolation Cooling (RCIC) System & the Low Pressure Core Spray (LPCS) System in 1993, the Automatic Depressurization System (ADS) in 1996. Additionally, an Electrical Distribution Safety Functional Inspection (EDSFI) was performed in 1990 and an internal Service Water System Operational Performance Inspection (SWSOPI) was performed in accordance with an inspection module in 1994.

These assessments are normally performed on a specific plant system by conducting a vertical slice system review on one specific system. By conducting a detailed review of a sample system (deep vertical slice), conclusions can be drawn as to the overall plant design process, operations, and management. In addition, Grand Gulf has performed self-assessments that included a broad view of several systems while conducting a vertical slice type of review on a specific system.

The first SSFA was conducted on the SLCS in 1988 by an outside contractor. The team concluded that the Grand Gulf SLCS was generally operated, tested and maintained in an appropriate manner to assure the system will function as designed with operator initiation, but identified a number of potential improvements to the operational readiness of the system. These improvements resulted in 63 open items when the assessment report was issued. The open items included items such as control and retrievability of analyses and calculations, control of vendor manual revisions, and control of fuses; however, none of the findings called into question the ability of the SLCS to perform its safety function. A Technical Specification (TS) change enhancing heat tracing and sodium pentaborate solution concentration was approved by Amendment 79 of the Operating License in July, 1991. All of the open items were resolved and closed upon issuance of this TS change. Additionally, the SSFA identified a concern about fuse control which resulted in an audit of the fuse control program by Grand Gulf Quality Programs. The results of this audit did not identify any other nonconformances and, therefore, indicated that the fuse control program in place was adequate and effective and that the deficiency was an isolated case.

The NRC conducted an EDSFI in 1990. One Severity Level IV violation concerning inadequate engineering review of an electrical design modification and one non-cited violation were issued. Grand Gulf performed hardware modifications to correct the design deficiency and issued a memorandum to inform appropriate personnel of the importance to fully coordinate all breakers. The corrective action was considered adequate to preclude similar violations. It was also noted that the fuse control program identified only the fuse size and did not specify the types of fuses in use; therefore, Grand Gulf improved the fuse control program by formatting the program in a fuse tabulation, that included fuse size, type, location, rating, associated electrical schematic, etc. It was noted that the identified items would not have prevented the electrical distribution system from performing its designed function and the team did not identify any operability problems. The inspection team concluded that design and operating documentation was generally of very good quality and that Grand Gulf's ongoing program of reviewing and revising the original plant design calculations and documentation was proving to be very effective in assuring design integrity and a solid document baseline.

A self-assessment of the Fuel Pool Cooling and Cleanup System was conducted in the first quarter of 1990. This assessment was conducted by an outside contractor and generated 45 action items to be tracked to closure by Grand Gulf Quality Programs. Twenty-five items were found to be minor and the other twenty were found to have had potential significance. The observations were evaluated and tracked to closure. The

assessment resulted in the issuance of several deficiency documents and of an engineering calculation to resolve the concerns. Several strengths were identified in the accuracy and availability of mechanical calculations, correlation between the as-built electrical devices and the design calculations and drawings, the ease of retrieval of test data and procedures, and the accuracy of surveillance testing methods and procedures.

The HPCS System and the Division III Diesel Generator underwent an SSFA in June of 1991. The assessment team noted in their report that they had identified a general strength in the ease of retrievability of the design and analyses documentation and felt it was a strength that Grand Gulf took immediate actions to address concerns and correct problems during the assessment. The team indicated that there appeared to be a lack of attention to detail as indicated by the errors and inconsistencies identified in documents such as the FSAR, test procedures calculations and drawings. These errors were of an editorial nature and not safety significant and resulted in revisions to the affected documents.

In June of 1993, the RCIC System and the LPCS System underwent a SSFA. Inconsistencies were found that required changes to system design criteria, calculations, drawings and the FSAR; however, the team did not believe that any of the issues were of safety significance. This assessment indicated that Grand Gulf had a strong preventive maintenance program, comprehensive surveillance program and well defined and thorough Instrumentation and Control calculations.

An SWSOPI was conducted in late 1994. Grand Gulf was found to have implemented the 5 Actions of Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," except for one concerning the need to periodically reassess the large bore SSW System piping. Since then, this action has been completed. Programmatic strengths were found in the Maintenance and the Small Bore Pipe Examination and Replacement programs.

An SSFA was performed on the Automatic Depressurization System (ADS) in 1996. In addition to conducting a vertical slice review on ADS, four other systems, Residual Heat Removal, Plant Service Water, Reactor Core Isolation Cooling and Standby Gas Treatment were selected for a broad view. This SSFA was observed and evaluated by NRC. The SSFA team noted that Grand Gulf views the assessments as a tool to improve a standard of performance well above regulatory requirements. The assessment noted that a strong program existed for the control of design basis information for electrical raceways and their supports and that the pipe stress and pipe support calculations reviewed reflected the design basis requirements for the system. The NRC noted that the assessment covered all of the inspection requirements and considered it a strength that the self assessment team's scope was flexible and capable of expanding when conditions warranted. The NRC inspection indicated that they concurred with the assessment team's evaluation that Grand Gulf had implemented effective engineering and corrective action programs.

Self Assessments

Grand Gulf has been committed to self assessment to review program effectiveness for several years. Since self assessments focus on process improvements, we believe this is a useful tool for gaining insights for continuously improving our programs. We have reviewed a sampling of the numerous self assessments performed over the last five years to ascertain the overall health of the configuration control processes. Self assessments in the areas of design engineering, the design change process, procurement, operations, system engineering, and problem resolution are just a few examples of the self assessments reviewed.

Assessment teams make recommendations for strengthening programs. While not all recommendations are incorporated into the programs, we believe that the ones that have resulted in program changes have contributed to the overall strengthening of the assessed programs.

Actual deficiencies that are identified during the reviews are appropriately corrected through the corrective action program. Examples of such items are procedural deviations, drawing errors, and inaccurate calculations. The deficiencies were isolated cases, minor in nature and resulted in the issuance of deficiency documents that appropriately addressed the deficiency in a timely manner.

Licensee Event Reports (LERs)

We conducted a review of all LERs submitted since January, 1985 to identify all reported instances of design concerns with some degree of safety significance.

A total of seven significant LERs related to design concerns were submitted during this time span. The following conclusions were reached:

- Each reported event with one exception was treated in an indepth fashion with comprehensive corrective action including broader scope reviews in a timely manner.
- The corrective action program working in conjunction with the reporting program captured the significant events involving design bases concerns.
- The only exception (LER 86-029) is because it took several years and revisions to the LER to arrive at a comprehensive resolution to this issue

As a part of the corrective actions for these events, quite extensive design reviews were performed on the Standby Service Water System, the High Pressure Core Spray System, Heating, Ventilation, and Air Conditioning ductwork sections in the control and auxiliary buildings. In addition, the design bases for instrumentation consisting of some 23,000 components and the bypass leakage paths on secondary containment and control room boundary were reviewed.

Inspection Reports

Another subset of historical documents useful as an indicator of past performance by Grand Gulf is NRC inspection reports. A sampling of reports related to design basis control were reviewed to identify any regulatory concerns that had surfaced in the design bases maintenance area. As examples, reports in the areas of design control, design changes and modifications; maintenance; training and self assessment. In addition, recent violations were reviewed to determine if configuration control problems were prevalent at Grand Gulf.

Examples of effective programs included self assessment engineering programs and 10CFR50.59 training. Examples of deficiencies found were in root cause analysis and component trending. Corrective actions for these deficiencies included development of a computer program for calculating setpoints, a component trending program and a root cause analysis program within the corrective action program.

While there are numerous examples of both effective program implementation and deficiencies, the overall results of the reports are positive. When violations are identified, they are addressed effectively through corrective actions aimed to prevent recurrence.

The review of recent violations revealed that configuration control issues are present, but they are primarily isolated instances of inadequate procedural controls or personnel errors that are not safety significant. Further, they do not indicate widespread problems in the implementation of the overall programs. We fully expect that future instances of isolated problems will be identified that will prompt us to evaluate and improve our processes.

CONFIRMATORY ACTIVITIES AND IMPROVEMENT INITIATIVES

Grand Gulf has undertaken a number of improvement initiatives that provide additional assurance of ongoing design bases maintenance. Additionally, we have programs and activities that further confirm the adequacy of our configuration control. Examples of these activities are listed below.

Improved Technical Specifications

Grand Gulf has converted the plant Technical Specifications (TS) into Improved Technical Specifications (ITS) based on the Improved Standard Technical Specifications. Grand Gulf was the lead BWR-6 plant during the development of the Improved Standard Technical Specifications and invested years of manpower to ensure the development of the technical justification for the Bases, the surveillances and the conformance to design and licensing basis. The development of the ITS specifically for Grand Gulf was performed in 1993 through a dedicated project team including Operations, Maintenance, System Engineering, Training, Chemistry, Design

Engineering, Nuclear Safety & Regulatory Affairs and Plant Projects & Support. The ITS were implemented in March, 1995.

The conversion process included modifying the TS to more clearly reflect the design basis of the plant with a focus on reviewing the TS requirements against the design basis presented in the UFSAR. Also as part of the development effort, greatly expanded TS Bases were developed to help ensure that the design and licensing basis is understood as it relates to the TS. The expanded Bases also provides plant personnel with easier access to design basis information. This greatly aids personnel when performing various evaluations (e.g., operability evaluations, engineering evaluations, safety evaluations per 10CFR50.59).

Major items that were accomplished as part of the implementation included:

- Review and revision as needed of approximately 700 procedures to ensure proper implementation of the TS requirements.
- Upgrade of the Logic System Functional Testing (LSFT) implementing procedures. This review included a review of the method of performing all LSFT by comparing the procedures and the system logic drawings and ensuring that all of the logic required to be tested was tested.
- Development of the documentation of how procedures implemented the LSFT requirements.
- Extensive operator training on TS usage.
- Development of operator aids to assist in TS compliance.
- Review of the adequacy of procedural implementation of the TS.

Simulator Upgrade and Certification

The Grand Gulf simulator was certified in March, 1991 in accordance with 10CFR55.45 (GNRO-91/00051 dated March 18, 1991) and per the guidelines in ANS/ANSI 3.5 - 1985 and Regulatory Guide 1.149. Plant data was collected and dynamic comparisons of simulator response to the data were performed. Extensive simulator malfunction testing was completed to identify any additional simulator concerns. The retest program was enhanced to ensure future modifications made to the simulator are adequately tested.

Approved plant design changes are reviewed for simulator impact as they are issued for construction and completed by the plant. Simulator modifications are tested before training is conducted using the modified software/hardware. Annual testing is performed on the simulator. Control room walkdowns are performed to identify and correct any other fidelity issues important to training.

10CFR50.59 Program Improvements

Since initial licensing, the 10CFR50.59 program at Grand Gulf has been improved continuously. The current program implements the guidance in NSAC-125 and incorporates industry best practices.

The procedure now implements a three tiered approach for the evaluation of changes to the facility, procedures, tests and experiments. A "pre-screening" uses exclusion criteria, such as, editorial changes and NRC-approved changes, to determine if the 10CFR50.59 program applies. If the change does not meet one of these exclusion criteria, then a more thorough applicability review is required. The applicability review determines if a safety evaluation is required by answering the standard questions as recommended by NSAC-125. The safety evaluation determines if a Technical Specification change is required of if a USQ exists. Detailed instructions and the exclusion criteria are provided in the procedures and the 10CFR50.59 Safety Evaluation Guidelines. These documents are used by the 50.59 evaluator for determining whether a safety evaluation is required.

The latest revision of the 10CFR50.59 Safety Evaluation Guidelines provides additional discussion on how to determine what would constitute a change to tests and experiments not previously evaluated in the SAR. The Guidelines also recognize recent revisions to Part 9900, 10CFR Guidance in the NRC Inspection Manual. It recommends increased management awareness for a small increase in the probability of an accident previously evaluated in the SAR, for a small increase in the consequences of an accident previously evaluated and for a small reduction in the margin of safety.

Via procedural changes, management expectations exceeding the minimum requirements of 10CFR50.59 have been communicated. The Plant Safety Review Committee and the Safety Review Committee provide oversight of the process. Comprehensive training is required to qualify as a 50.59 evaluator and is provided by an independent consultant with broad industry knowledge in the area of 10CFR50.59. The electronic mail system is used to keep the qualified 50.59 evaluators abreast of 10CFR50.59 program changes and of the latest industry events. Periodic assessments of the pre-screenings and the applicability reviews are conducted to evaluate the adequacy of the screening process.

As-Built Drawing Upgrade

In the fall of 1986, Grand Gulf initiated an As-built Drawing Program Improvement Plan as a result of a Quality Assurance audit. Plant management ensured that actions were taken to enhance the as-built program at Grand Gulf. The corrective actions were completed in early 1988. The Plan rectified immediate as-built drawing problems and developed procedures to control the as-built configuration of the plant. Below is a discussion of some of the noteworthy corrective actions taken.

- Unreadable Control Room Drawings were corrected by replacing or revising all Control Room drawings. In addition, the number of drawings maintained within the Control Room was reduced to those drawings identified as Operations Critical or Operations Sensitive.

- A Drawing Revision Notice Program was developed to support incorporation of as-built information into drawings.

Procedure changes were implemented to clearly identify changes to parent drawings and to incorporate design change drawings into parent drawings in a timely manner.

The effectiveness of these corrective actions was verified by another quality audit in mid-1988. During this audit, walkdowns were performed and drawings were reviewed to determine if changes were accurately incorporated into the affected drawings. The audit concluded that the corrective actions had been effective.

In May 1996, a post modification configuration management audit was performed that confirms the continued effectiveness of the drawing control and update program. In addition, the audit concluded that the program provides timely updates of all operational priority drawings.

Emergency Operating Procedures (EOP) Upgrades

Inspection conducted on the EOPs has shown continued improvement over the past eight years. The current format of our EOPs has resulted in positive comments related to human factors and technical competency from inspection personnel.

In April 1988, the NRC conducted an inspection of the EOPs and found that shortcomings in most all areas of the EOPs existed. Grand Gulf responded to those findings with short term program and procedure improvements, and a long term commitment to implement Revision 4 of the BWR Owners Group Emergency Procedure Guidelines. Short term improvements were completed in 1988, and Revision 4 was implemented in 1989. A follow-up inspection during January 1991 noted significant improvement in the EOPs.

An INPO assist visit was performed during October 1993 and subsequent follow-up in April 1994 to address technical quality and human factors associated with the EOPs. These visits culminated a 17-month effort on procedure improvement.

Protective Tagging

During 1996, as part of a company initiative to standardize and improve equipment protective tagging, Grand Gulf implemented a new tagging program which greatly enhanced the use of electronic technology in the preparation and tracking of component tagging. This program improves the availability of component configuration

status for Operations personnel and provides other plant departments a means to access plant configuration status through the plant computer network.

A "tagging" group has also been formed to prepare and review tagouts for planned activities. This program provides the means to recreate previous tagging boundaries for repetitive types of maintenance and triggers the preparer when a potential conflict exists with a component already tagged.

Creation of a Configuration Control Review Team

In August 1996, a Configuration Control Review team was formed to address an increasing trend in configuration errors associated with valve positioning, system lineup verification, and system restoration, none of which posed any risk to plant safety. The team consists of representatives from Operations, Engineering, Maintenance and Chemistry. The team performed a review of 18 incidents to evaluate the effectiveness of identified corrective action and to provide additional insights into improving the approach for component configuration controls. The team also performed a review of many of the processes by which plant components are manipulated to identify weaknesses which could contribute to inappropriate plant configuration. The team has preliminarily identified specific enhancement areas and is currently working to establish a plan for implementation of improvements to address these areas.

Instrument Setpoint Calculations Enhancements

During 1990-91, Grand Gulf developed and issued confirmatory setpoint calculations for all safety related bistable devices and all devices performing explicit Technical Specification trip functions. Instrument uncertainty calculations were also developed and issued for all display instrumentation addressed as Category 1 or 2 under Regulatory Guide 1.97. In addition to addressing instrument uncertainty, these calculations also provided a rigorous documentation of the design basis for each instrument assumed in the safety analysis. These calculations are maintained as part of the design basis of the plant.

Piping Calculations Enhancements

The piping calculations are reviewed and revised in our day-to-day work. Any noted discrepancy is identified via the deficiency control process and corrected as required. For example, the nozzle loads on the Engineered Safety Feature coolers were found to be excessive and were brought to within the allowables.

In 1986-87, a broad small bore piping review was initiated to identify inadequate documentation for acceptance of deviations from the engineering standards (M-18). The deviation was rigorously evaluated and found acceptable. Also, we identified that tubing located inside containment had not been analyzed for accident temperatures and launched a comprehensive tubing reevaluation program during 1987-88 in which tubing systems were reanalyzed for acceptance and modifications were performed where

necessary. During efforts for snubber reduction and local stress evaluation of welded attachments in 1988-89, some minor discrepancies were identified and corrected.

Another enhancement to pipe support calculation methodologies was provided in a revision to an internal design specification (Design Specification GGNS-M-300.2) to incorporate additional attributes into the calculations. It should be noted that we have inspected numerous pipe supports under the Inservice Inspection program and have identified no significant discrepancies between the as-built and design configurations.

Electrical Calculations Enhancements

An in-depth review of major station electrical calculations was performed as part of the EDSFI conducted in 1990. Many calculations were subsequently updated to factor in as-built information and lessons learned during the EDSFI. Among these were the Auxiliary AC Power System, the Class IE DC system, and 120 VAC distribution system voltage regulation and fault analysis/coordination studies.

Mechanical Calculations Enhancements

The majority of the original A/E-performed safety-related mechanical calculations were assessed during the 1991-93 time frame to ensure that calculation techniques and assumptions were adequate and valid. Review checklists were developed and completed for those calculations. Checklist comments were reviewed for impact and significance. The findings of the review indicated that some calculations contained flaws; however, no calculation reviewed contained discrepancies that resulted in an immediate action to revise the calculation to resolve the identified concern. We intend to continue with this enhancement effort.

Safety Analyses Enhancements

Since the formation of the Grand Gulf Safety Analysis group in 1992, we have been continuously updating its analytical bases over the years. Our analyses are not only updated in association with plant modifications, they are continually refined as a result of advances in the state of knowledge or the availability of new analytical technology or tools.

New models and methods have recently been developed to evaluate a variety of issues such as Loss of Coolant Accident (LOCA) doses, updated meteorological diffusion factors (χ/Qs), and compartment analysis for postulated line breaks. For example, we have fitted NRC's dose transport code, TACT5, with a control room model to evaluate the Grand Gulf LOCA control room doses. In addition, we are currently working with NRC on re-baselining the entire spectrum of dose analyses using the evolutionary new source terms reported in NUREG-1465, "Accident Source Terms for Light-Water Nuclear Power Plants". We have also re-written NRC codes PAVAN and XOQDOQ to obtain updated values of our χ/Q values for input into the dose analyses. Other analyses (e.g., design basis environmental parameters, non-limiting dose events,

Station Blackout heatup analyses) have also been updated as needed based on our evolving technical understanding, industry initiatives, and plant configuration changes.

Input parameters to these analyses are controlled by the site design process. These values are generally system design performance specifications representing the minimum allowable performance characteristics, core performance data, and other miscellaneous inputs. In the event changes are developed that may affect parameters applied in the analytical bases, the interdisciplinary reviews required by the site design process ensure that the appropriate analyses are updated. The critical reload parameters also receive interdisciplinary review prior to the development of each cycle's reload analyses.

Instrument Q-List Enhancement

In 1987-88, a comprehensive review of approximately 25,000 instrumentation and control devices was performed that identified all design functions associated with each device and established the quality classification based on these design functions. The review identified approximately 300 devices that had carried a lower quality classification than dictated by its design function. These required upgrades were documented on a deficiency document and resolved by appropriate corrective action. Additionally, approximately 1100 devices were identified that could be downgraded and appropriate action was taken. The results of this process were issued as an engineering standard that has been maintained as part of the design basis of the plant. This engineering standard is being integrated into and controlled under the Component Database.

Equipment Environmental Qualification Improvements

In the 1987-88 timeframe, to aid in documenting and verifying the inclusion or exclusion of equipment for the 10CFR50.49 Equipment List, Grand Gulf developed Shutdown Logic Diagrams (SLD) and Safety Function Diagrams (SFD). These documents were developed to depict the systems required to shutdown the plant following an initiating event. The SLD explicitly modeled the system interactions and interfaces in an "and/or" logic fashion and the SFD used a graphical method to depict the actions of a plant safety system from its initiation to completion of its system safety function. All active essential system components and interfaces to other plant systems were shown. This provided explicit documentation and verification of the equipment list and aided in the determination of equipment categories for future plant modifications. In addition, Regulatory Guide 1.97 equipment and other selected items may appear on the EQ Master List.

Seismic Qualification Central File (SQCF) Enhancement

Originally, plant components which were seismically qualified were listed in Section 3.10 in the Final Safety Analysis Report (FSAR). The listing in the FSAR was not comprehensive and listed many components in generic groups. This information was

removed from the FSAR and the SQCF was developed during 1987-88. The SQCF Index was created which lists all of the plant components that require seismic qualification and provides a method to locate the Qualification Package summaries. The SQCF Index list has been enhanced since creation to include components that were not individually listed but were only included as part of a major plant component. The current listing includes over 10,000 components and is currently being converted from an individual database to part of the Component Database.

Component Database (CDB) Enhancement

Grand Gulf is currently combining the Environmental Qualification, Seismic Qualification and Instrument Q-List databases into the plant's CDB. The enhanced CDB has verification fields to indicate levels of verification for design data. Since the CDB is available and used by the majority of plant personnel, the design data becomes more readily accessible to those personnel. Design Engineering controls the process of revising the design data fields with the objective of having the highest level of verification for all CDB design data fields.

Instrument Loop and Logic Drawings

Due to the complex nature of the instrumentation at Grand Gulf and the difficulty experienced in reading the NSSS vendor drawings, a program was initiated to develop a set of drawings that were easier to use. Approximately 800 drawings were created for 30 priority, safety-significant systems during 1988-90. These drawings show sufficient detail to provide functional information for instrumentation and controls, especially for redundant channels and trip systems. These drawings have been maintained as engineering priority drawings with the same as-built cycle as Operations Critical and Operations Sensitive drawings.

Motor-Operated Valve (MOV) Program

The Grand Gulf MOV Program improved the documentation for the design bases by the generation of a series of calculations, addressing each MOV in the program. These calculations were generated to support the Generic Letter 89-10 MOV Program. The calculations generated to establish the design basis operating requirements for the MOVs in the GL 89-10 MOV Program included calculations which established maximum expected differential pressure conditions, worst case voltage available at the motor terminals and valve limiting components or weak links. In addition, a number of other documents were generated to document each valve's design basis safety function and operating requirements and capabilities.

Motor-Operated Valve Pressure Locking/Binding Evaluation

Generic Letter 95-07 requested that all power-operated safety-related gate valves be evaluated for pressure locking and thermal binding. Grand Gulf evaluated 82 power-operated safety-related gate valves with a safety function to open. The evaluation

encompassed all system modes of operation within the plant's design basis. The evaluations were conducted by reviewing our operating and emergency operating procedures, system design basis documents, piping and instrumentation drawings and surveillance testing procedures. Each valve was categorized under hydraulic locking or thermal binding as either not susceptible or susceptible. A total of 18 valves were identified as potentially susceptible to binding or locking. These valves have either been modified, are being modified or are being administratively controlled to avoid pressure locking and thermal binding.

Reactor Vessel Inspections Enhancement

A Vessel Internals Management Program was established in 1995. This continuing program was instituted to consolidate all the non-ASME Section XI inspection criteria for Reactor Pressure Vessel Internals into a single document. This program includes inspection requirements resulting from the industry experience documented in General Electric technical information, Institute of Nuclear Power Operations Significant Event Notices, NRC Information Notices, Bulletins, Generic Letters and BWR Vessel Internals Project recommendations. Inclusion of all these requirements into a single document assists in ensuring that a focused approach to the integrity of reactor internals is maintained.

Structural Beam Loading Enhancement

During the development of design changes, additional supports are sometimes required to be attached to structural beams. Determination of the beam's adequacy for the new loads requires an evaluation that includes the existing loads. Design Engineering developed and issued an engineering standard (GGNS-CS-019) in December 1993 to provide engineering guidance for the performance of these structural adequacy evaluations. The Standard is an ongoing structural beam adequacy program and was developed by reviewing the existing adequacy using a sampling of the heaviest loaded beams. A beam database that includes the known loads and a guidance document for use of the database and for evaluating beam stresses is under development.

Seismic II/I Evaluation Enhancement

An internal safety assessment after RF05 indicated that the lack of control of loose items in the plant could create a Seismic II/I hazard and potentially damage or prevent equipment from performing its intended function. Criteria was developed and issued in an engineering standard (GGNS-CS-017) in August of 1994 and is controlled in plant procedure 01-S-07-43 to identify and prevent the storage of loose items in the plant in a configuration that could create a Seismic II/I concern. Plant walkdowns were performed when the procedures were issued to determine existing plant conditions. The latest revision of the standard provides guidance in creating Safe Storage Areas in the plant which can be generically used for storage of loose items.

Material Procurement Engineering Evaluations

Grand Gulf established a procurement engineering group in 1990 to implement an Electric Power Research Institute based Procurement Engineering Evaluation program. This continuing program provides a systematic approach for establishing the technical and quality requirements of replacement items consistent with the original and ensures that plant design basis requirements are unaffected by the utilization of replacement items.

Fire Protection and Safe Shutdown Review Program

During the mid 1980's, a Fire Protection and Safe Shutdown Review Program was developed to ensure that design changes would comply with required fire protection and safe shutdown regulatory commitments. A team reviewed all design changes issued prior to the formation of the Fire Protection and Safe Shutdown Review Program that had not been canceled and had not undergone a fire protection or safe shutdown review. An administrative procedure was developed to evaluate design changes for impact on the control of the fire protection or safe shutdown design of Grand Gulf. All design changes are now reviewed to ensure control of the fire protection and safe shutdown configuration of the plant.

Thermo-Lag Resolution

Thermo-Lag materials are used at Grand Gulf to provide fire barriers for compliance with 10CFR50 Appendix R requirements. An extensive reevaluation of the use of this material has been completed. Plant modifications and corrective actions necessary to address all concerns associated with the use of Thermo-Lag fire barrier materials were completed during RF08 in the fall of 1996.

Detailed Control Room Design Review

NRC issued NUREG-0737 Supplement 1, "Requirements for Emergency Response Capabilities." This NUREG was issued to enhance the capability of control room operators to respond to accident events by the way the controls and instrumentation were arranged by color, location, size, orientation, etc.

Grand Gulf performed a detailed review of the control room, upper control room and remote shutdown room to identify areas that were not in compliance with the requirements of NUREG-0737. Several designs changes modified the control room design to enhance operator response to accidents. An engineering standard (ES-17, "Human Factors Design Criteria") was developed in 1987 to provide guidance on performing design changes within the control room that involve human interface. An administrative procedure was developed to evaluate designs and to determine if they impact the control of the control room configuration. All design changes are reviewed to ensure control of the control room configuration is maintained.

Concrete Masonry Unit (CMU) Block Walls Review

As s result of IE Bulletin 80-11, comprehensive field surveys of safety related items attached to or located in proximity to CMU block walls were performed. Upon completion of the surveys, walls which could affect safety related items were re-evaluated using a computer program developed by Bechtel. Any CMU block walls which did not conform with the applicable design criteria were modified. In most cases, the walls were re-evaluated considering additional (non-existing) loads as an allowance for future attachments. Subsequent evaluations have been performed largely as an engineering program which tracks additional loads against the loads included as an allowance. Additional effort has been expended over the last two years to develop a FORTRAN program duplicating the results from the original Bechtel computer runs.

ASME Section XI Inspections

For Grand Gulf, the stated design and construction Code for the majority of the safety-related pressure boundary including its supports is ASME Section III. Compliance with ASME Section III provided initial assurance that structural integrity for the pressure boundary would be assured for the conditions considered in the design bases.

Grand Gulf began commercial operation in July, 1985 and began implementation of its Inservice Inspection Program meeting the requirements of ASME Section XI, 1977 Edition including the Summer 1979 Addenda. During the first ten years of commercial operation, approximately 2217 inspections or examinations have been performed in conjunction with numerous system pressure tests. The inspections required by ASME Section XI are performed with the intent to monitor and ensure a continued structural integrity consistent with that provided by the original design codes.

The Section XI inspections, examinations, and pressure tests performed during the first ten years of operation indicate that the initial integrity has been maintained to the extent that is demonstrated by the areas examined and for the conditions detectable by the ASME inspection program.

Corrosion Monitoring

The material condition of plant piping is monitored for degradation due to Flow Accelerated Corrosion (FAC) and Microbiologically Induced Corrosion (MIC). Upgrading or replacement of degraded piping components has been performed under the FAC Program and MIC effort. We employ the CHECWORKS program for ranking and early prediction of pipe failures in various piping systems. The MIC effort requires a close coordination between various organizations (i.e. Design Engineering, Chemistry, Quality Programs, Operations, etc.) to identify all the susceptible systems and locations. A MIC self-assessment was conducted in August 1996, and resulted in plans to prepare an upper-tier document to better control the monitoring process. We intend to monitor the latest developments in the area of MIC control and to assess the

benefit of using newly-developed software to better evaluate the condition of plant piping.

Piping and Instrumentation Diagram Enhancement

Starting in RF01 and continuing through RF07, field inspections for critical plant systems via physical walkdowns were conducted by Design Engineering personnel to verify the accuracy and completeness of Piping & Instrumentation Diagrams (P&IDs). Thirty-eight (38) individual P&IDs encompassing 15 systems have been verified by this method. Examples of these system include Standby Service Water, Residual Heat Removal, High Pressure Core Spray, Instrument Air and Drywell Chilled Water. Any discrepancies found were resolved. The inspection criteria included:

- Installed piping is per the P&ID (i.e., line size, termination points, branches, drain hub connections).
- Valves (including instrument root valves) are numbered correctly, installed correctly and oriented properly for flow.
- Equipment connections, equipment tag numbers and equipment flushing, vent & drain connections are verified.
- Inline components are tagged with the correct equipment number and components are properly located.
- Local mounted controls and instruments are correct.
- Any P&ID notes that provide physical information capable of being verified are verified.

Individual Plant Examination for External Events (IPEEE) Walkdowns

Walkdowns and assessments of the plant were performed for the IPEEE in 1994. These walkdowns and evaluations were performed to identify any plant vulnerabilities to severe external accidents, including seismic events, tornadoes, flooding, rain, snow, transportation, etc. These evaluations were used to verify the adequacy of the actual plant systems, structures and components to be capable of safe shutdown of the plant, maintain the plant in safe shutdown condition, maintain pressure boundary integrity and prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10CFR100, for a severe external accident. The results of the evaluation concluded that the design basis of the plant was maintained.

Computer Aided Drafting (CAD) Requirements for Design Change Drawing

Current administrative procedures require that all design change drawings issued against Operations Critical or Operations Sensitive drawings and all new drawings be issued as full size and performed on the CAD system. We also encourage all other design change drawings be issued as CAD drawings. This change has increased legibility and reduced the time required for general issue of as-built drawings.

Development of Configuration Management Group

A Configuration Management Group was formed during the summer of 1988 to provide a focused group that had the responsibility of maintaining control of plant configuration documentation. This group is responsible for developing CAD design change drawings, maintaining the vendor manuals and engineering procedures, and incorporating design change drawings into the parent drawings. A recent post modification configuration management control audit was performed in May 1996. With the exception of a few minor deficiencies being addressed through the corrective action process, the audit concluded that configuration management as it applies to document and program controls following modification activities is being effectively implemented. It was also noted that several improvements had been made following an engineering self assessment in 1995.

Pipe Stress Engineering and Mechanical System Analysis Tools

An in-house computer hardware and piping system analysis software system has been in place at Grand Gulf since 1988. The mechanical systems analysis software were procured in 1988. This allows us the capability of performing pipe stress and support analyses, system steady state hydraulic analyses, liquid-to-liquid heat exchanger thermal analyses and air-to-water heat exchanger thermal analyses. This also expedites support of plant operations and design changes, reduces dependence on contractor's mainframes, and provides consistency and allows sharing resources among the Entergy sites. This system has improved the overall quality and depth of the engineering analysis and the ability to evaluate plant piping issues in more expeditious and cost effective manner.

An engineering standard has been issued to help users perform piping stress analysis in an accurate and consistent manner. The standard includes established guidelines which ensure that the analyses performed meet Grand Gulf's commitments and are consistent with currently accepted industry practices.

Design Review Committee

In the spring of 1995, Design Engineering issued a Design Review Committee Charter in an effort to improve the quality of design changes. The review of design changes occur after a proposed plant design change has been verified but prior to the design being issued for construction. A Design Review Committee is composed of senior level engineers from each of the engineering disciplines. Invitations are extended to other departments that are affected by the design, such as, Operations, Performance and System Engineering and Maintenance. The engineer responsible for the design change and his manager conduct the meeting with the intent of the participants providing a review focusing on:

- Safety significance
- Understanding and addressing common mode failures

- Potential adverse system interactions
- Operational/procedural Interface
- Testing
- Integrated design basis consideration
- Critical characteristics
- Risks associated with design change implementation

Design Change Kickoff Meetings

In June 1994, Design Engineering instituted a program to conduct design kickoff meetings and provided guidelines for conducting these meetings. These kickoff meetings are conducted to improve the quality of designs issued. Kickoff meeting announcements are issued to Plant Modifications & Construction, Performance & System Engineering, Operations, Maintenance, Materials, Daily Planning & Scheduling, Training, etc. Kickoff meetings provide an opportunity for all departments affected by proposed design changes to provide input during the initial stages of development of the design. These meetings also provide a method of communicating proposed design changes to all departments and to identify potential impact on other departments procedures, such as, System Operating Instructions, Preventative Maintenance Procedures, and Training Courses.

Design Engineering Personnel SRO Certification

In an effort to provide additional plant operational knowledge, engineers, supervisors and managers in the Design Engineering organization have attended a Grand Gulf Senior Reactor Operators Management Certification course. Presently, ten management personnel have attended the course or previously held a SRO license including the Director of Design Engineering. In addition, seven other engineers from the Design engineering organization have attended either this or a General Electric certification course. This has led to an increased understanding of plant operations within the Design Engineering organization.

Design Engineering Professional Engineers

Grand Gulf management actively encourages the personnel within the organization to obtain advanced degrees and professional registration in their area of expertise. Presently, there are 39 engineers and supervisory personnel within the Design Engineering organization that are registered as professional engineers.

Summary of Response to Questions (b) and (c)

To determine the effectiveness of Grand Gulf's processes to ensure that the design bases requirements have been translated into operating, maintenance and testing procedures and to ensure that the system, structure and component configuration and performance are consistent with the design bases, we reviewed a sampling of various audit, inspection and assessment results, as well as improvement initiatives. Our

review is not intended to include all assessment activities that have occurred at Grand Gulf over the last almost twelve years but rather is a method of assessing the general effectiveness of our plant processes to control the design bases.

The assessment and inspection activities have found, in general, strong programs effectively implemented. The numerous improvement initiatives at Grand Gulf described previously provide many examples of the use of design basis and supporting documentation in the design, operation and maintenance of the plant. No significant safety concerns in the plant configuration control were noted. Additionally, our review indicates that we are constantly evaluating and enhancing the control of the plant design bases and that observations made receive the appropriate attention.

Based on our review, we have reasonable assurance that the plant has been operated, tested and maintained in accordance with the design bases and that system, structure and component configuration and performance are consistent with the design bases.

VIII. Response to Question (d)

Question (d) requests the following information:

> Processes for identification of problems and implementation of corrective actions, including actions to determine the extent of problems, action to prevent recurrence, and reporting to NRC;

As in the response to Question (a), there are two key aspects to addressing this question - identification of the processes which could affect corrective action, and identification of the elements necessary for process effectiveness.

Unlike the processes examined in response to Question (a), there is only one corrective action program. Most critical is the link between the corrective action process and those processes which could affect configuration management. We confirm that link exists by explicitly including "deficiency identification and resolution" (i.e., corrective action) as one of the essential elements (Table 2) for configuration management.

It is difficult to overstate the importance of the corrective action process for effectively managing plant configuration (or any other process important to nuclear safety). It is the self-correcting mechanism that leads to the continuing health of whatever process to which it is applied.

It is essential, therefore, that the process effectiveness elements for corrective action be well-defined and understood. At EOI facilities, those elements (contained in Table 3 below) are largely common.

Each element is described in more detail in Appendix B.

The corrective action process at each EOI facility is regularly reviewed through vehicles such as quality assurance audits and self-assessments. While process deficiencies have been identified over the years, they have invariably resulted in programmatic enhancements.

Much of the evolution of corrective action processes at EOI facilities is due to the recognition of the unique importance of this process to plant safety and future performance. Each site has gone through one or several conscious efforts to lower the threshold on problem identification and increase the quality of various elements of the corrective action process, particularly root cause evaluation.

The Corrective Action process was identified by Entergy Operation executive staff as one of the company's key processes because of its significant impact on nuclear safety, cost and generation. The Corrective Action Key Process Team was chartered in March, 1993 to analyze the existing processes at each Entergy Operations facility and make recommendations for process improvements.

The team's short term goal was to identify and address any current program weaknesses and share process strengths. The short term enhancements included various process adjustments, but more importantly, the changes included the development of common terminology, threshold criteria and measurement plans to enhance the capability to measure, trend and compare performance at each facility.

The team's long term goal was to converge the various processes towards a "best" process including the development and implementation of some of the following process improvement examples:

- An integrated database for documenting adverse conditions
- Condition identification/resolution sharing between facilities
- A common approach to root cause analysis at each facility
- Common thresholds at each facility for identification, significance classifications and required root cause analysis
- Common performance measures and goals for each facility
- Identification and elimination of excessive processes and process steps

These ongoing initiatives have improved the corrective action process at each facility and are expected to lead to further process enhancements in the future.

Below, we review the recent history of the corrective action process at Grand Gulf, and draw conclusions as to the completeness and effectiveness of the process.

Grand Gulf recently implemented a paperless single deficiency document concept for Condition Report (CR) initiation. Through this improvement, condition reports can be initiated electronically through a computer program or via hard copy. Also, this process addresses material, programmatic, radiation practices and operating events under one document. Once a deficiency is identified, it is categorized into one of three priority levels. A Significant prioritization requires a formal root cause analysis and report that must be approved by a Corrective Action Review Board (CARB) consisting of a cross section of line managers and supervisors. A Station Level Impact prioritization requires a root cause evaluation (but no formal report) with corrective actions approved by a manager. A Department Level Impact prioritization requires an apparent cause determination and corrective actions to prevent recurrence.

Additionally, each new CR is reviewed by a cross section of line managers on a daily basis.

The Quality Programs department issues a "real" time trend report on a weekly basis. The report includes an analysis of those CRs issued within the previous week. During the initial screening process for each CR, correlations to past deficiencies are searched for via a computer tracking program according to corresponding Problem Codes, Key Words, Responsible Department and the type of CR. These correlations are reported in the trend report. Additionally, the "Top Ten Repetitive Quality Issues" are identified

and tracked from this trend report. The goal of this report is to identify recurring adverse trend indications before the problem becomes significant.

Follow-up evaluations of Significant CRs and High Impact Station Level CRs are conducted to determine the effectiveness of the corrective actions. These evaluations are documented as part of an audit or quality surveillance.

The corrective action process is evaluated biennially through the audit program to ensure compliance with Criterion XVI of 10CFR50 Appendix B and to evaluate the effectiveness of program implementation. Effectiveness is also measured through evaluations from organizations independent of Grand Gulf, such as, the annual Joint Utilities Management Audit and corporate staff audits. Grand Gulf also evaluates the effectiveness of the process through self assessments.

As shown in Appendix B, our process includes all the process effectiveness elements listed in Table 3 below with primary emphasis is on those issues and nonconformances determined to be significant.

Grand Gulf plans to enhance the corrective action process by modifying the program to more effectively integrate managers and supervisor involvement into the process, by completing the CR paperless concept for the CR resolution phase and by evaluating the CR threshold for generation to determine if adjustments are necessary.

Summary of Response to Question (d)

Our consistent emphasis on the importance of the corrective action process, coupled with our findings of process completeness and effectiveness, provide confidence in the ability of our corrective action process to identify and prevent recurrence of problems, while reporting appropriate events to the NRC.

Table 3
Corrective Action
Process Effectiveness Elements

1. Problem Identification
   - Defined problem-reporting threshold
   - Problem ID document provided
   - Problem processing
     - Operability determination
     - Reportability determination
       - 50.72
       - 50.73
       - Part 21
     - Significance determination
     - Generic application
     - Management review

2. Cause Determination
   - Apparent/Root Cause analysis
   - Evaluation review

3. Corrective Actions
   - Defined and documented
   - Corrects specific deficiency and apparent/root cause
   - Addresses
     - Generic implications
     - Timeliness of implementation
   - Action responsibilities assigned/accepted

4. Tracking
   - Periodic reporting through closure
   - Additional corrective actions identified (follow-up)

5. Closure
   - Documented completion of corrective actions
   - Review/verification of corrective action closure

6. Link to Problem Trending Process

7. Periodic Effectiveness Review of the Corrective Action Process

IX. Response to Question (e)

Question (e) requests the following information:

> The overall effectiveness of your current processes and programs in concluding that the configuration of your plant(s) is consistent with the design basis.

Grand Gulf has established a strong commitment to operating, maintaining, and testing our plant in accordance with the design basis. To support this conclusion, we have implemented a comprehensive engineering design, configuration control and corrective action programs that ensure that the design basis is maintained. Based on the evaluations documented in this response to verify the completeness and effectiveness of our processes, we have reasonable assurance that the configuration of our plant is consistent with the design basis.

In response to Question (a), we reviewed the set of processes that control the plant configuration. Based on this review, we concluded that, with two minor exceptions, that these processes contain the proper control elements to ensure that the plant design bases are being properly maintained. We identified one general area of concern that has not adversely impacted our plant that is being addressed through our corrective action program. During our review, we identified several procedural enhancements that are being addressed through our routine efforts for continuous improvement.

In response to Questions (b) and (c), we reviewed audit, inspection and assessment results, as well as improvement initiatives. Based on these activities, we concluded that our configuration control programs have been effectively implemented. In addition, the improvement initiatives at Grand Gulf provide many examples of the use of design basis and supporting documentation in the design, operation and maintenance of the plant. Our desire to show continuous improvement is illustrated by the constant evaluation, correction and enhancement of our current processes for controlling the plant configuration.

In response to Question (d), we found that our consistent emphasis on the importance of the corrective action process coupled with our findings of process completeness and effectiveness, provide confidence in the ability of our corrective action process to identify and prevent recurrence of problems, while reporting appropriate events to the NRC.

While our review shows that our processes are complete and effective in controlling plant configuration, further evaluation and improvement is a part of normal Grand Gulf business. As such, we will continue to assess our performance in maintaining the design basis and configuration control of our plant with the emphasis on finding problems and areas for improvement.

Based on the above, Grand Gulf has reasonable assurance that plant configuration control are effective at maintaining and applying the design basis of our plant.

X. Summary of Future Initiatives

The 50.54(f) letter has provided the opportunity to view as a whole our design basis implementation and initiatives. In the course of conducting an assessment to respond to the letter, Grand Gulf identified certain areas of improvement as well as compiled the ongoing initiatives related to design basis and configuration management.

The following initiatives are a mix of pre-existing activities that were ongoing or planned at the time of the 50.54(f) letter, and new initiatives based upon additional insight gained during our 50.54(f) assessment. We believe the combination will be effective in advancing the Grand Gulf design basis beyond the level discussed in response to Question (e), above.

In our efforts of reviewing the design basis and configuration control of our plant, the possibility exists for finding discrepancies between our design basis and plant configuration. Should this occur, discrepancies will be documented and resolved through the Corrective Action Program. We believe these initiatives and any such discrepancies would qualify for enforcement discretion under section VII.B.3 of the enforcement policy, "Violations Involving Old Design Issues," with no time limit.

Recognize that the following initiatives are not necessary for regulatory compliance but provide additional assurance that we effectively control the configuration of our plant. These improvement initiatives will improve our existing programs in these areas, but our efforts do not stop there. As previously noted, we will continue to challenge ourselves to find better ways in maintaining the design basis and the configuration control of our plant, such as, Safety System Functional Assessments. As such, we fully expect that, in this process of self-examination, additional beneficial initiatives will be undertaken in the future to correct deficiencies or to improve our processes.

1. As a result of the SAR assessments conducted in the summer of 1996, a deficiency document has been issued to address additional controls that will ensure that the subtle means by which our facility can be changed are appropriately controlled. As an enhancement, selected systems/sections of the FSAR will be reviewed for consistency with the supporting engineering documents. Licensing basis improvements will be developed as appropriate.

2. We will address the deficiencies identified in Section VI.

3. The Grand Gulf design basis team evaluation is scheduled to be complete in Spring, 1997. Additional design basis information enhancements will be developed, as appropriate.

4. Selected operations and maintenance procedures will be reviewed to ensure that the procedures are consistent with design basis information.

5. As an enhancement, a relational database will be developed to improve the links between key design and licensing basis documents, such as, calculations, plant procedures and the FSAR.

6. Grand Gulf will continue enhancements of supporting engineering documents in the following areas:

   - Development of additional Analysis Basis Documents
   - Review and update of critical mechanical system calculations
   - Reconfirmation of pressure-temperature information of critical mechanical systems
   - Review and update of System Flow Diagrams for critical systems
   - Completion of the structural beam program
   - Reconfirmation of key information in the Component Database.

Appendix A

Process Completeness Assessment

Configuration Control Processes and Process Effectiveness Elements

As discussed in Section VI (Response to Question (a)), in order to make a judgment about the completeness of the processes that could affect plant configuration, it is necessary to identify such processes and determine the configuration management elements that are necessary for effective configuration control. This Appendix provides the results of Grand Gulf's completeness review for processes which could affect plant configuration and design in response to Question (a).

Table 1 in Section VI identified the processes which may affect configuration control. Each process in the table is described below as requested by Question (a).

Table 2 in Section VI identified the key design and configuration control process elements necessary for effective configuration management processes. Each element in the table is also described below. As discussed in Section VI, every process element may not be applicable to each configuration control process. Those elements which are applicable to a process are part of the process description (although, for brevity, they are not repeated for each process).

In this Appendix, we combine the configuration control processes (Table 1) with their essential elements (Table 2). Below, we first summarize our findings and conclusions regarding the completeness of site processes necessary to change and maintain plant configuration control. We then review each process, note the procedure(s) that implement that process in whole or in part, and determine if applicable process elements are present in the procedures (should a process element be missing, we also note the plans to repair that omission.)

It is important to recognize that processes and procedures have developed separately and under different conditions at each of the EOI sites and, therefore, the mechanism for implementing each of the processes is typically going to be different. In some cases, implementation of a process element may be found in a secondary procedure and therefore, would not be contained in the specific procedure cited. In other cases, a single procedure may be adequate to completely control a process at one site where at another site, it may involve multiple procedures.

Conclusions[7]

Grand Gulf reviewed each process listed in Table 1 against the key elements listed in Table 2. Two of those processes do not apply to Grand Gulf and were not evaluated: Technical Specification Interpretations and Steam Generator Integrity/Eddy Current Testing Program.

The procedures listed are those main procedures that control each process; however, in some cases, every controlling procedure is not listed. For example, the corrective action program procedure is not listed for every process even though that process is used for reporting all deficiencies. There are also cases in which other processes that have been separately evaluated actually control key elements in the process being evaluated; in these cases, those procedures are not duplicated.

We identified two instances of missing process elements:

- The Grand Gulf processes do not specifically require that plant procedures be reviewed and revised as necessary when engineering documents (for example, specifications) are revised. A deficiency document has been issued to resolve this concern.

- The Grand Gulf procedure does not include a specific requirement to apply the 10CFR50.59 process to software revisions. It is left up to the individual departments to determine the need. A procedure revision will be issued to ensure that appropriate plant software changes are reviewed in accordance with the 10CFR50.59 process.

We identified another potential concern of a general nature. In some cases, an engineering review may be prudent for certain plant procedure changes. Although general guidance specifying the types of cross-discipline reviews that are necessary is provided to the technical reviewer, we believe that the guidance could be enhanced to ensure that appropriate engineering reviews are obtained. We have issued a deficiency document to address the development of guidance for determining when engineering reviews are necessary for certain plant procedure changes.

---

[7] This Appendix contains summary information. The detailed individual site review results and descriptions of site-specific processes are contained in the documentation files located at the individual sites.

Description of Design and Configuration Control Process Effectiveness Elements (Table 2)

Following are the descriptions of the process effectiveness elements listed in Table 2 for design and configuration control processes. These elements are considered integral parts of the process descriptions discussed in the following section, but, for brevity, are not repeated in the process descriptions.

Element #1 - Design Basis Review

This element sets the expectation that the proposed change will be reviewed to determine if there is an impact on the design basis (both the 10CFR50.2 design basis and the underlying design documents) and, if so, a judgment made as to the acceptability of the change with respect to the design basis. Inherent in this element is a review to determine that the change is compliant with required/committed design codes and standards (which are a subset of the design basis).

Element # 2 - Licensing Basis Review

This element, which begins with a 50.59 review, applies to any process which could change the facility or procedures as described in the SAR, and results in the determination as to whether a proposed change involves an unreviewed safety question.

The 50.59 programs for the four Entergy Operations sites have undergone significant improvement in the last six years and continue to incorporate new and improved means to understand, identify and document 50.59 reviews. The 50.59 programs at each of the Entergy Operations facilities are very similar, and primarily only differ in the documentation process. Each of the site 50.59 programs contain the following elements:

- Applicability Screening: A detailed screening (screening or pre-screening) is performed on facility changes, temporary changes, procedure changes, tests and experiments and SAR discrepancies against designated licensing basis documents including NRC SERs. These screenings include a review of SAR text, figures and tables that is documented on established 50.59 forms and retained in permanent records for retrievability. In general, documentation consists of identifying what documents were searched, the means of how the search was conducted, the computerized search criteria and a summary of findings (although there are some site-specific differences).

- Electronic Search Capability: The licensing basis documents are primarily searched using a comprehensive full text searchable computerized database. This database uses an indexing system that allows complete searching of the documents for potential impact by use of individual, multiple word strings or boolean searches. Searches can be performed typically in a matter of seconds.

This SAR search system provides a highly reliable tool in finding potential areas where the SAR can be impacted.

- Application of USQ criteria: With only a few exceptions, the criteria for determining an unreviewed safety question (USQ) are identical at each EOI site. In most cases, the guidance is similar to, or based on, that provided by NSAC-125. The evaluations for determining a USQ are documented and receive on-site safety committee review.

- 50.59 Reviewer Training: Each of the sites has a detailed two to three day 50.59 training program that involves both theory and direct application study. Each trainee is required to take an examination in order to become qualified to perform 50.59 applicability screenings and reviews.

- Periodic Review: The 50.59 process is periodically reviewed to determine process effectiveness and compliance to regulatory requirements. This review includes both the applicability screening and the application of USQ criteria.

EOI facilities also use the 50.59 review as a convenient way to trigger other licensing/design basis control processes. The initial 50.59 review (termed a 50.59 "screening" at EOI facilities) determines if the following additional process sub-elements (all of which are considered a part of Element #2) should be invoked:

- 10CFR50.90 - A license amendment request for prior NRC approval of a change will be generated if a Technical Specification change is necessary or should the proposed change constitute an unreviewed safety question.

- 10CFR50.54 - Acceptability of a proposed change to the QA Program, the Emergency Plan, the Security Plan or certain aspects of the Training Program will be evaluated under the appropriate requirements of 10CFR50.54 and may result in a request for NRC approval prior to implementation.

- 10CFR50.71(e) - Potential changes to the SAR due to the proposed change are identified in the course of determining if 10CFR50.59 applies to the change (i.e., does the proposed change change the facility or procedures as described in the SAR?). If there is an impact on the SAR, the SAR change process is invoked, resulting in an update to the SAR following implementation of the change (and on a schedule consistent with the requirements of 10CFR50.71(e)).

Element #3 - Review and Approval Process

This element provides review of a process product by person(s) other than the executors of the process to identify any deficiencies, inconsistencies, inaccuracies or other problems before the product is approved and issued. It applies to any process that could change the plant configuration. It offers additional assurance that no mistakes have been made during the execution of the process that could compromise the effectiveness of the product and also that the process has not adversely affected the design basis of the plant. This may include independent verification required for design control and peer, supervisor, management, plant safety committee review, etc. for process control changes.

Element #4 - Document Update Controls

This element requires that, when changes in the plant are made, whether physical or operational, the design basis is updated to reflect the changes in a timely manner. Applicable processes contain appropriate feedback mechanisms to ensure that the design authority is notified of changes to the design basis that have been implemented (i.e., installed in the plant, implemented in plant operational procedures, etc.). Applicable processes also contain controls to maintain the pedigree of design basis information affected by a change (i.e., identification, distribution, document update and record storage).

Element #5 - Interface Controls

This element ensures that the process contains instructions to notify or interface with all appropriate organizations/functions when the plant configuration is being changed. This may be either a specific reference for interface to a function/organization or a general consideration of the organization/function that could be impacted, and may include either distribution of information or direct contact. This element is essential to ensure that applicable organizations revise appropriate documentation in a timely and consistent manner to operate and maintain the plant and train personnel in accordance with the as-built configuration.

Element #6 - Restoration Controls

Applicable processes contain appropriate steps to verify that the product of the process meets the design basis expectations, and that controls exist, as needed, to ensure that plant changes undergo a confirmation test. This may include post-modification, post-maintenance or performance testing of plant systems, structures and components to verify that they will perform as expected, or other confirmation activities such as validating computer software (i.e. is there a means to ensure that the change meets the expectations for which it was designed?) Failure of the plant to function per the design could invalidate the design basis.

Element #7 - Deficiency Controls

As discussed in 10CFR50, Appendix B, Criterion XVI, deficiency controls are needed to ensure that conditions adverse to quality (e.g., failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances) are promptly identified and corrected. Each EOI facility has implemented a corrective action program to satisfy this criterion. The corrective action program itself consists of key elements listed in Table 3 (Section VIII) and described in detail in Appendix B.

As required by each facility's policy, the provisions of the corrective action program are applicable to any site activity potentially affecting nuclear safety. This element ensures that a process contains provisions for documenting, correcting and reporting products that do not conform to the acceptance criteria for the process. If the process does not require a condition report, is there a specific mechanism to address and correct the condition (i.e. drawing revisions, SAR errors, inaccuracies in design documents, procedure improvements, etc.)? Inherent in this element is the expectation that the process must have acceptance standards by which the product can be evaluated. It may also include acceptance standards that must be met during the process in order for the process to continue.

Element #8 - Revisiting Temporary Changes

By their nature, temporary changes (such as temporary alterations, tag-outs, etc.) typically receive a safety review (e.g., Element #1, Element #2) applicable only for a limited period of time. In order to ensure that the design and licensing basis review assumptions are maintained for temporary changes, as well as to confirm the continuing safety of the change, it is necessary to revisit such changes prior to expiration of the time period for which the review is applicable. This element is relevant only to those processes which can generate or control temporary changes.

Process Completeness Review

Each process identified in Table 1 is described, and examined against the applicable criteria of Table 2 to determine if the process is present and if the applicable process effectiveness elements are implemented. Where omissions are identified, they are so noted along with a brief description of plans to correct the deficiency. Procedures which implement the process are also noted.
The matrices below contain one of three potential values:

- "Y" - the configuration management process element should be, and is, contained in relevant site procedures.

- "N" - the configuration management process element should be, but is not, contained in relevant site procedures.

- "NA" - the configuration management process element is inapplicable to the subject process.

In general, the procedures listed below are those procedures that control each process. In some cases, however, every controlling procedure may not be listed. For example, the corrective action program procedure is not listed for every process even though that process is available for reporting all deficiencies. There are also cases in which other processes that have already been evaluated actually control the process. In this case, references are made to the other process. In other cases, details may not be present in the procedures but are understood to exist based on site training or expectations (e.g., issuing changes for SAR accuracy).

CONTROL OF CONFIGURATION DOCUMENTS

Design configuration documents are of various types and classes that define the design bases and criteria; translate those bases and criteria into the final design; and depict the final design that is installed, operated and maintained. A design configuration document may be used as input to any process or activity affecting plant configuration. Most design configuration documents are considered to be "living" documents in that they are maintained current with the physical plant.

Design documents fall into 3 broad categories[8]:

- Design Input - which document design criteria, parameters, bases, and other requirements upon which the detailed final design is based,
- Design Process - which document the design practices and activities that substantiate the final design, and
- Design Output - which depict final design, and define technical and configuration characteristics for systems, structures and components.

Design configuration documents constitute the "Why" and the "What" of the plant. These documents provide the technical bases for the various activities of design, installation, operation, maintenance, and testing, all of which affect plant configuration. The level of control required for any document is dependent on the extent to which its information is relied upon by any activity, and, the potential of that activity to adversely affect plant configuration as required by design and licensing bases.

---

[8] These categories are used only as a convenient framework to illustrate the design process. Design is an iterative process - as such, there will be times when process and output documents will be used as input documents.

Control of design configuration documents is required by 10CFR50 Appendix B and ANSI N45.2.11. Control of design documents covers activities that could affect the content of design documents and their use in plant activities. These activities include preparation, revision, review, approval, release, distribution, maintenance and retrieval.

Design Input Documents

Design input documents identify system design criteria. Sources of design criteria include regulatory documents, applicable industry codes and standards, and static ("non-living") documents such as closed Design Change Packages and correspondence. Design input information may be contained in such documents as Design Basis Documents, System Design Criteria, Analysis Basis Documents, Upper Level Documents and Topicals.

Configuration Management Process Elements - Design Input Documents							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	N/A	Y	N/A

Procedures: NPEAP-308, Engineering Reports, Rev. 3
NPEAP-318, Design Engineering Criteria, Rev. 5
NPEAP-330, Applicability Review Requirements, Rev. 12
NPEAP-316, 10CFR50.59 Safety Evaluations, Rev. 12
DEAM ES-P-001, Design Inputs, Rev. 0
NPEAP-344, Responses to Engineering Requests, Rev. 0
01-S-17-5, Engineering Request, Rev. 4
NPEAP-321, Standards, Rev. 6
NPEAP-322, Standard/Specification Change Notice, Rev. 7

Design Process Documents

Calculations

A calculation is a design analysis or documented engineering evaluation performed by a technically qualified individual, using the necessary design inputs, assumptions, and appropriate methodology to provide a conclusion. Calculations may include the formal documentation of test results, research, or other engineering work.

Configuration Management Process Elements - Calculations							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	NA

Procedures: 16-S-01-18, Receipt, Distribution & Maintenance of Calculations, Rev. 1
NPEAP-305, Engineering Calculations, Rev. 14

Engineering Standards / Guides

An Engineering standard is a document that establishes technical requirements for the accomplishment of various tasks. Standards are developed to provide uniformity in task performance. Standards are also used as source documents for engineering programs. (The standard described here is a document within the control of EOI as differentiated from an Industry Standard, which is not within EOI control. Industry Standards are part of the design input process.) An Engineering guide is a document that presents particular provisions which are considered good engineering practices.

Configuration Management Process Elements - Engineering Standards / Guides							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	NA

Procedures: NPEAP-321, Standards, Rev. 6
NPEAP-322, Standard/Specification Change Notice, Rev. 7

Software

Software consists of computer programs, procedures, rules, databases, macros, firmware, and data, guiding or controlling the operation of a computer system. Software is classified based on the application for which it is used. Each site has established controls for the classification, documentation, and maintenance of designated software that can impact the plant design basis.

Configuration Management Process Elements - Software							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: NPEAP-600, Quality Assurance for Design Engineering Software, Rev. 3

Design Output Documents

Specifications

A specification is an engineering document that defines technical or quality requirements to be satisfied by systems, structures, components, processes, or materials. Primarily used for procurement of items, specifications may also be used for design, installation, and testing. By establishing the basis for design and/or installation, a specification may document existing plant configuration or authorize alternatives to existing plant configuration.

Configuration Management Process Elements - Specifications							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	N	Y	Y	NA

Procedures: NPEAP-306, Specifications, Rev. 13
NPEAP-322, Standard/Specification Change Notice, Rev. 7
NPEAP-335, ASME Design Specifications, Rev. 2
01-S-05-3, Control & Use of Design Standards/Specifications, Rev. 11

Notes: The Grand Gulf processes do not specifically require that plant procedures be reviewed and revised as necessary when engineering documents (for example, specifications) are revised. A deficiency document has been issued to resolve this concern.

Drawings

A drawing is a document that provides technical or configuration details about systems, structures, or components, usually in a graphical format. Drawings are used for design, installation, procurement, operating, testing and maintenance activities. Drawings are categorized by the priority of their application in plant activities.

Configuration Management Process Elements - Drawings							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: 01-S-05-6, Receipt, Distribution & Maintenance of Plant Drawings, Rev. 29
NPEAP-307, Engineering Drawings, Rev. 16
NPEAP-310, Design Change Drawings, Rev. 9
NPEAP-320, Drawing Revision Notice, Rev. 8

Notes: Temporary changes to drawings can be accomplished through preliminary drawings and temporary alterations. Appropriate controls exist for these cases.

Vendor Documents

These constitute the various documents, drawings, manuals, correspondence, update bulletins and the like that originate from a vendor and are applicable to plant systems and components. These documents are used in various design, installation, testing and maintenance activities. Vendor documents are maintained in a Vendor Technical Manual program. Changes to vendor documents, on their own, cannot be used to make permanent configuration changes or authorize physical plant changes.

Configuration Management Process Elements - Vendor Documents							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	NA

Procedures: NPEAP-302, Review of Supplier Documents, Rev. 10

Databases

Plant technical data is often stored in computer databases, and used for various design, installation, operating, maintenance and testing activities. Controls on databases are established for their application. The primary databases used in configuration management may include the Component Database, the Station Information Management System (SIMS), the Cable and Conduit List, the EQ Database, the Setpoint Database and the Instrument List.

Configuration Management Process Elements - Databases							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	Y

Procedures: NPEAP-314, Control of the Seismic Qualification Central File, Rev. 9
NPEAP-340, Maintenance & Control of Engineering Design Data Using the PDMS, Rev. 3
NPEAP-342, Control of the GGNS Component Database, Rev. 0
NPEAP-502, Q-List Control, Rev. 11
NPEAP-504, Commercial Equipment List Control, Rev. 0
NPEAP-803, Environmental Qualification Design Review and Documentation Packages, Rev. 9
01-S-17-14, Control & Use of the GGNS Component Database, Rev. 3
GGNS-GES-08, Use of the GGNS Component Database, Rev. 0
07-S-01-227, Equipment Qualification Program, Rev. 5
01-S-17-11, Repetitive Task Program, Rev. 2
01-S-07-1, Control of Work On Plant Equipment and Facilities, Rev. 31

Notes: The Grand Gulf SIMS database is a computerized maintenance management tool to track work orders and does not implement plant changes; therefore, none of the process elements applies to this database, except #7 in which the condition reporting program is available for reporting any type of deficiency.

PLANT CONFIGURATION CHANGE CONTROL

Design Change

A design change is a change to those technical requirements which govern performance of a structure, system or component's design bases. Design bases is defined as information that identifies the specific functions to be performed by a structure, system or component of a facility and the specific values, or ranges of values, chosen for controlling parameters as reference bounds for design. Design change includes the entire process from initial conceptual design through installation, testing, close-out, and document updates.

Configuration Management Process Elements - Design Change							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: 01-S-07-1, Control of Work On Plant Equipment & Facilities, Rev. 31
01-S-16-1, Plant Change Implementation, Rev. 101
01-S-16-2, Modification Work Permit, Rev. 6
01-S-16-3, Design Change Notice, Rev. 100
15-S-01-101, Conduct of Modification Activities, Rev. 3
01-S-17-5, Engineering Request, Rev. 4
02-S-01-21, DCP/Temp Alt/Tech Specs/TSPS Review and Training, Rev. 4
NPEAP-303, Design Change Notice, Rev. 19
NPEAP-304, Design Change Package, Rev. 21
NPEAP-334, Minor Change Packages, Rev. 6
NPEAP-344, Responses to Engineering Requests, Rev. 0

Repair or Use-As-Is

Repair is the process of restoring a degraded or non-conforming condition such that the capability of an item to function reliably and safely is unimpaired, even though the item still may not conform to the original requirements. Use-As-Is is a material disposition which may be assigned to a deficient part, component or material when it can be established that the deficiency will result in no adverse conditions and that the item under consideration will continue to meet engineering functional requirements including performance, maintainability, fit and safety.

Configuration Management Process Elements - Repair or Use-As-Is							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: NPEAP-801, Processing of Material Nonconformance Reports, Rev. 16
01-S-03-10, GGNS Condition Report (CR), Rev. 0
01-S-17-5, Engineering Request, Rev. 4

Part Equivalency

Part equivalency is a technical evaluation performed to confirm that a replacement item, not identical to the original, will perform its intended function. An identical part is the same part, make and model, which exhibits the same technical and physical characteristics.

Configuration Management Process Elements - Part Equivalency							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: NPEAP-401, Procurement of Material, Equipment and Services, Rev. 6
GGNS-GES-02, Equivalency Evaluations, Rev. 3
GGNS-GES-04, Safety Classification of Systems, Components & Parts, Rev. 1
GGNS-GES-05, Technical, Quality & Documentation Requirements for Procurement, Rev. 2
GGNS-GES-07, Shelf Life of Limited Life Items, Rev. 2
GGNS-GES-09, Administrative Part Number Changes, Rev. 2
GGNS-GES-10, Establishing Acceptance Criteria & Acceptance Methods for Receipt of Replacement Items, Rev. 1
GGNS-GES-14, Commercial Grade Item Evaluations for Replacement Items, Rev. 0
01-S-17-5, Engineering Request, Rev. 4

Setpoint Change

Setpoints required for plant operations are documented and controlled at each site. Setpoint Changes are developed, approved, and implemented in accordance with the appropriate configuration change process. Setpoint Changes affecting design bases of a component and/or its interfaces are processed as design changes.

Configuration Management Process Elements - Setpoint Change							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: NPEAP-344, Responses to Engineering Requests, Rev. 0
01-S-17-5, Engineering Request, Rev. 4

Temporary Alteration

A temporary alteration is a change that inhibits or alters the intended operation of an SSC. Temporary alterations are intended to be returned to normal or converted to a permanent plant change at some later date.

Configuration Management Process Elements - Temporary Alteration							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: 01-S-06-3, Control of Temporary Alterations, Rev. 27
02-S-01-21, DCP/Temp Alt/Tech Specs/TSPS Review and Training, Rev. 4

Software Control (Plant Process)

Software is the code (executable, object and source), database information, command language structure, etc. used to satisfy a regulatory requirement or provides online information to plant operators. Examples are the Safety Parameter Display System (SPDS), Security, Emergency Response Data System (ERDS), Plant Monitoring and Fire Protection.

Configuration Management Process Elements - Software Control (Plant Process)							
#1	#2	#3	#4	#5	#6	#7	#8
Y	N	Y	Y	Y	Y	Y	NA

Procedures: 01-S-09-18, Software Quality Assurance

Notes: The Grand Gulf procedure does not include a specific requirement to apply the 10CFR50.59 process to software revisions. It is left up to the individual departments to determine the need. A procedure revision will be issued to ensure that appropriate plant software changes are reviewed in accordance with the 10CFR50.59 process.

Software that is involved in the control of the plant design basis is captured under the software description under Design Process Documents.

Reload

Reload design involves analysis to evaluate the changes to the fuel and reactor core design each fuel cycle. Cycle design objectives, including key plant operating parameters, are set early in the reload process. The key design inputs to the reload

process are re-evaluated for each cycle based on the expected plant design configuration and are transmitted to the fuel vendor. NRC-approved methodologies are employed in the reload licensing analyses. The results of each cycle's reload licensing analyses are reviewed to ensure conformance with the plant's Technical Specifications. The plant's licensing basis is updated to reflect the new reload design. Selected key core design parameters are verified during startup testing at the beginning of each cycle.

Configuration Management Process Elements - Reload							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: 01-S-15-10, Control of Licensing Documents, Rev. 100
01-S-06-24, Safety and Environmental Evaluation, Rev. 102
See Design Change procedures also

Notes: The Grand Gulf reload process is conducted in accordance with the procedures for a design change and for the subsequent licensing document changes. There are not separate procedures that dictate the reload process.

MATERIALS / PROCUREMENT

Commercial Grade Item

Commercial Grade Item (CGI) dedication is a process to evaluate the acceptability of a commercial grade item for a safety-related application and to prepare the documentation needed to demonstrate that the CGI is equivalent in its safety function performance to a similar item designed and manufactured under a 10CFR50 Appendix B program. CGI dedication may involve testing and/or analysis to verify the item's ability to perform its intended functions.

Configuration Management Process Elements - Commercial Grade Item							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: 01-S-09-1, Procurement of Materials, Rev. 35
01-S-09-2, Materials Receipt, Handling & Storage, Rev. 25
01-S-09-8, Packaging & Shipping, Rev. 12
MP-GG-QV-02, GGNS MP&C Condition Report, Rev. 0
MP-GG-RC-01, Receipt Inspection, Rev. 1

Notes: The licensing review is conducted as part of the design change or engineering review change process.

Material Technical Evaluation

This process focuses on evaluating and analyzing an item to be procured or transferred; determining its safety classification; identifying technical and quality assurance requirements; assigning receipt inspection attributes and evaluating material related discrepancies.

Configuration Management Process Elements - Material Technical Evaluation							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: See Commercial Grade Item

Notes: If restoration controls are required for the acceptability of materials being changed then the procurement process contains appropriate steps to ensure the material design adequacy. Procurement documents specify steps required for the material design acceptance (such as, a pre- or post-installation test or performance testing) to verify the integrity of the materials being changed. The installed materials are accepted after successful completion of the required testing.

Storage / Inventory Controls

The process of receiving, inspecting, and storing material in an environment that ensures its control and suitability for use in the plant. This process includes such activities as receipt inspection, storage, environmental controls and shelf life controls.

Configuration Management Process Elements - Storage / Inventory Controls							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: See Commercial Grade Item

Notes: The licensing review is conducted as part of the design change or engineering review change process.

End Use Authorization

This consists of the review of purchase order documentation of the item against the intended application of the item. This review determines if the documentation is technically accurate, complete and of sufficient quality to warrant approval of item for use.

Configuration Management Process Elements - End-Use Authorization							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: See Commercial Grade Item

Notes: The licensing review is conducted as part of the design change or engineering review change process.

IMPLEMENTING DOCUMENTS

Procedures

Administrative and implementing procedures are those written instructions or guidelines for performing various activities. Generally, these procedures specify the administrative and quality assurance policies and practices, assign responsibilities, address activities of interest to many plant departments and detail the performance of particular activities.

The issuance of these documents is controlled to ensure that the most recent revisions are used to perform plant activities. The documents are issued in a controlled manner to specified locations or individuals and inserted into the appropriate manuals in a timely manner.

Changes to the documents are controlled to ensure that the information contained in the document is accurate. Procedures dictate the requirements for changing a plant document. The revision process requires the appropriate technical, safety evaluation and interdepartmental reviews and approvals before the document is issued for use.

Configuration Management Process Elements - Procedures							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	Y

Procedures: NPEAP-101, Author's Guide for Administrative Procedure Preparation, Rev. 12
NPEAP-102, Administrative Procedures, Rev. 15
01-S-02-1, Description and Use of the GGNS Operations Manual, Rev. 21
01-S-02-2, Control and Distribution of the GGNS Operations Manual, Rev. 102
01-S-02-3, Author's Guide, Rev. 100

Program Documentation / Standards / Guides

A Standard is a document which establishes technical requirements for work to be accomplished. Standards may be required to establish the requirements for equipment, material, parts, components, processes, spare parts and services. They may also establish the requirements for a specific design change activity that is repetitive in nature.

A Guide is a document that presents particular provisions which are considered good practices, i.e., options or recommendations, but which are not mandatory. Adherence to a guide is expected, unless there exists a good reason not to comply.

A Program Plan is a non-design output document containing the details for a particular inspection, testing or other program including requirements for specific equipment/components or conditions. A Program Plan may include a compilation of various technical information upon which the requirements are based. In the case of ASME code related programs, justification for altered test frequency and/or requests for relief from testing are also included.

These documents are procedurally controlled for development and revision.

Configuration Management Process Elements - Program Documentation / Standards / Guides							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	NA

Procedures: NPEAP-315, Configuration Management of GGNS Design Documents, Rev. 13
NPEAP-343, Program Plans, Rev. 0

CONTROL OF LICENSING DOCUMENTS

FSAR Update

The FSAR is periodically updated in accordance with 10CFR50.71(e) to include the effects of changes to the facility or procedures as described in the FSAR, safety evaluations performed in support of requested license amendments, and analyses of new safety issues performed at the request of the Commission.

The primary mechanism for initiating identification of FSAR changes is the 10CFR50.59 process. As noted in the description of Process Element #2, the 50.59 process provides a convenient trigger point for FSAR updating since the initial step of the 50.59 process requires that a facility or procedure change be evaluated to determine its impact on the FSAR. Having identified an impact to the FSAR, the responsible individual identifies any other potential FSAR changes, documents the proposed

changes to the FSAR and transmits the proposed change(s) to the licensing organization.

Provided that no unreviewed safety question exists, the licensing organization makes an internal update to the FSAR following implementation of the proposed change. Periodically (on a nominal refueling cycle schedule, not to exceed 24 months), the accumulated internal changes to the FSAR are required to be transmitted to the NRC and other controlled document holders, and reflect facility changes up to a maximum of 6 months prior to the submittal date.

Configuration Management Process Elements - FSAR Update							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	NA

Procedures: 01-S-15-10, Control of Licensing Documents, Rev. 100
01-S-06-24, Safety & Environmental Evaluation (10CFR50.59), Rev. 102
NPEAP-316, 10CFR50.59 Safety Evaluations, Rev. 12
NPEAP-328, Changes to Licensing Documents, Rev. 1

License Change

Technical Specifications Change

Technical Specifications (and the broader category of the Operating License) are changed through application of the requirements of 10CFR50.90 and 10CFR50.91. A license amendment request is prepared by responsible personnel, describing the proposed change and addressing the standard "no significant hazards consideration" questions. Upon approval by the on-site and off-site safety review committees, the license amendment request is transmitted to the NRC for approval. Implementation of the proposed change is held pending NRC approval. This process also applies to any unreviewed safety questions identified during a 10CFR50.59 evaluation.

Configuration Management Process Elements - Technical Specifications Change							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: 01-S-15-10, Control of Licensing Documents, Rev. 100
NPEAP-316, 10CFR50.59 Safety Evaluations, Rev. 12
NPEAP-328, Changes to Licensing Documents, Rev. 1

Technical Requirements Manual Change

The Technical Requirements Manual (TRM) in general contains those requirements that have been relocated from the Technical Specifications or Operating License. Usually, relocation occurs due to implementation of a generic letter line item improvement or implementation of the improved technical specifications.

Initial relocation of a technical specification (and its consequent inclusion in the TRM) requires prior NRC approval under the provisions of 10CFR50.90 through a license amendment (as discussed above). Subsequent changes to material contained within the TRM are controlled through the 10CFR50.59 process (which the exception of a few unique TRM items that are changed through evaluation under 10CFR50.54(a)).

Configuration Management Process Elements - Technical Requirements Manual Change							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	NA

Procedures: 01-S-15-10, Control of Licensing Documents, Rev. 100
01-S-06-24, Safety & Environmental Evaluation (10CFR50.59), Rev. 102
NPEAP-316, 10CFR50.59 Safety Evaluations, Rev. 12
NPEAP-328, Changes to Licensing Documents, Rev. 1

Commitment Management

The commitment management process ensures the timely implementation of regulatory commitments and provides a point of control to ensure that, once implemented, commitments remain implemented. It is this latter characteristic of commitment management that is important to configuration control.

Commitments related to design control and configuration management may be made in response to notices of violation, reportable events, generic letters, and the like. Implementation of a commitment may be through procedure or design changes. Regardless of the vehicle for implementing a commitment, the commitment management process provides a means for ensuring that an implemented commitment cannot be reversed at a later time without proper evaluation. Evaluation of commitment changes is controlled by the site specific application of the NEI "Guidelines for Managing NRC Commitments."

Configuration Management Process Elements - Commitment Management							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	NA

Procedures: 01-S-15-8, Licensing Commitment Tracking System, Rev. 3
01-S-15-12, Regulatory Commitment Change Process, Rev. 0
01-S-06-24, Safety & Environmental Evaluation (10CFR50.59), Rev. 102
Entergy 10CFR50.59 Guidelines, GGNS, Rev. 5

OPERATIONS

Normal, Off-Normal, and Alarm Response Procedures

Throughout plant life, the plant experiences different types of conditions which require equipment operation to ensure safety and reliability. These conditions generally fall into the following categories:

- Normal operation
- Off-Normal (or abnormal) operation
- Response to degrading/changing system conditions (alarm response)

Procedures exist which instruct operations personnel regarding proper equipment manipulation to respond to the specific condition. These procedures, which are the primary means of altering plant configuration, are written and updated in accordance with plant design.

Configuration Management Process Elements - Normal, Off-Normal and Alarm Response Procedures							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: 01-S-02-3, Author's Guide, Rev. 100
01-S-06-2, Conduct of Operations, Rev. 102, TCN 36
02-S-01-2, Control and Use of Operations Section Directives, Rev. 28

Emergency Operating Procedures

During the life of a plant, there may be times when the plant is found to be in a condition outside the boundaries of normal operation, as defined by its design basis. During such times, emergency actions are taken by Operations personnel to ensure the plant is returned to a stable condition. These actions are governed by emergency operating procedures.

Configuration Management Process Elements - Emergency Operating Procedures							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: 01-S-06-37, Revision and Control of Emergency Procedures, Rev. 6
01-S-06-39, Control and Use of Plant Specific Technical Guidelines, Rev. 6
01-S-06-41, Verification and Validation of Emergency Procedures, Rev. 3

Tagouts / Caution Tags

A protective tagging system establishes an administrative control for equipment status to prevent operating components which may cause personnel injury or equipment damage. Through protective tagging, equipment normally operating or available for service may be removed from service to perform maintenance activities.

Configuration Management Process Elements - Tagouts / Caution Tags							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	NA	Y	Y	Y	Y

Procedures: 01-S-06-1, Protective Tagging System, Rev. 36
01-S-06-2, Conduct of Operations, Rev. 102, TCN 36

Technical Specifications Interpretations

A Technical Specifications (TS) Interpretation may be used to document a position clarifying the meaning of a TS which, because of vague or imprecise wording, may otherwise lead to inconsistent application. The TS Interpretation provides the consistency to ensure the TS requirement is properly met. The TS Interpretation process is not intended to circumvent the TS amendment process (10CFR50.90), nor may it be used to change a TS. [Note: EOI facilities that have implemented improved TS (i.e., Grand Gulf and River Bend) no longer use Interpretations; rather, such positions are incorporated into the applicable section of the TS Bases and evaluated in accordance with 10CFR50.59. Also, because of the vast improvement in format and wording clarity, the vagueness common with older TS no longer exists in improved TS.]

Configuration Management Process Elements - Technical Specifications Interpretations							
#1	#2	#3	#4	#5	#6	#7	#8
NA	NA	NA	NA	NA	NA	NA	NA

Notes: Since Improved Technical Specifications, Grand Gulf no longer uses technical specifications interpretations.

Operator Work-Arounds

An operator work-around is a condition resulting from degraded plant equipment or a shortcoming in plant design. Operator work-arounds are expected to be of limited scope and duration, while a corrective action plan is implemented to resolve the underlying problem.

Configuration Management Process Elements - Operator Work-Arounds							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	NA	Y	Y

Procedures: 01-S-07-1, Control of Work on Plant Equipment and Facilities, Rev. 31
01-S-06-3, Control of Temporary Alterations, Rev. 27
01-S-06-1, Protective Tagging System, Rev. 36
01-S-03-10, GGNS Condition Reports (CR), Rev. 0
A001, Principles of Operations

Night Orders / Standing Orders

Night orders are generated to notify the operating shifts of work schedule activities, industry events and departmental issues. Standing orders are typically generated to provide additional operational considerations until long term resolutions are obtained. Neither night or standing orders can contradict existing plant procedures.

Configuration Management Process Elements - Night Orders / Standing Orders							
#1	#2	#3	#4	#5	#6	#7	#8
NA	NA	NA	NA	NA	NA	Y	NA

Procedures: 01-S-06-2, Conduct of Operations, Rev. 102, TCN 36
02-S-01-12, Station Operating Orders, Rev. 100

MAINTENANCE

Maintenance Work Orders

The maintenance work order is the primary vehicle used to initiate and conduct preventive maintenance and corrective maintenance activities on plant systems, structures, and components (SSCs). The maintenance work order package is composed of drawings, instructions, procedures, forms, and other information necessary to perform the identified activity. Prior to beginning work, the maintenance work order package is assessed to determine impact on plant safety by Operations department personnel. Post-maintenance tests are performed as needed to ensure equipment performs its intended function.

Configuration Management Process Elements - Maintenance Work Orders							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: 01-S-07-1, Control of Work on Plant Equipment & Facilities, Rev. 31
01-S-07-2, Test & Retest Control, Rev. 100
07-S-01-205, Conduct of Maintenance Activities, Rev. 101

Preventive Maintenance

In order to ensure systems, structures, and components are available to perform their function(s), a Preventive Maintenance (PM) program has been established, covering three areas: predictive maintenance, periodic maintenance, and planned maintenance.

- Predictive Maintenance:

Predictive maintenance involves continuous or periodic monitoring and diagnosis of equipment and components in order to forecast equipment failure. Predictive maintenance results are used to trend and monitor equipment performance so that planned maintenance can be performed prior to equipment failure.

- Periodic Maintenance

Periodic maintenance involves activities accomplished on a routine basis, such as operating hours or calendar time, and include any combination of external inspections, alignments or calibrations, internal inspections, overhauls, and component or equipment replacements.

- Planned Maintenance

Planned maintenance involves activities performed prior to equipment failure. The activities can be initiated by predictive or periodic maintenance results, by vendor recommendations or by experience.

Configuration Management Process Elements - Preventive Maintenance							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: 01-S-07-1, Control of Work on Plant Equipment & Facilities, Rev. 31
01-S-07-2, Test & Retest Control, Rev. 100
01-S-17-11, Repetitive Task Program, Rev. 2

Corrective Maintenance

Corrective maintenance involves activities which repair or restore equipment or components which have failed or are malfunctioning and not performing their intended function(s).

Configuration Management Process Elements - Corrective Maintenance							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: 01-S-07-1, Control of Work on Plant Equipment & Facilities, Rev. 31
01-S-07-2, Test & Retest Control, Rev. 100
07-S-01-205, Conduct of Maintenance Activities, Rev. 101

Repair and Replacement Program

The Repair and Replacement Program specifies the ASME Code requirements during task planning, and ensures those requirements have been met and documented after task completion. The Repair and Replacement Program has controls to prevent unauthorized repairs and replacements of ASME Code systems, structures, and components. These controls also help ensure original design is maintained on ASME Section III systems, structures, and components. The Repair and Replacement Program is not a design change process. The program requires work to be performed, in accordance with applicable Code requirements.

Configuration Management Process Elements - Repair and Replacement Program							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: GGNS-M-489.0, Program Plan for ASME Section XI, Division 1 Repairs & Replacements, Rev. 1
SERI-M-489.3, Standard for ASME Section XI Replacement Materials, Rev. 1
NPEAP-343, Program Plans, Rev. 0
NPEAP-321, Standards, Rev. 6
01-S-07-1, Control of Work on Plant Equipment & Facilities, Rev. 31
01-S-07-28, ASME Section XI Repair & Replacement Program, Rev. 101
01-S-09-1, Procurement of Materials, Rev. 35
07-S-01-205, Conduct of Maintenance Activities, Rev. 101

Notes: Temporary changes are not allowed by the Grand Gulf program.

Calibration Performance

Plant instrumentation is periodically calibrated to ensure it properly performs its intended function(s) and meets the range and resolution assumptions of the design basis. Calibration includes activities which check and set instrument range, setpoints, alarm functions, trip and isolation functions, etc., as appropriate. The frequency intervals for calibration activities are determined via the plant design basis for the specific instrument and the function(s) performed.

Configuration Management Process Elements - Calibration Performance							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	NA

Procedures: 01-S-07-1, Control of Work on Plant Equipment & Facilities, Rev. 31
07-S-12-XX, Various Maintenance Procedures
07-S-14-XX, Various Maintenance Procedures
07-S-22-XX, Various Maintenance Procedures
07-S-23-XX, Various Maintenance Procedures
17-S-01-10, Instrument Scaling Program, Rev. 0, TCN 1

PERFORMANCE MONITORING

Performance monitoring is a set of processes that provide a feedback mechanism to ensure that the plant is performing in accordance with design basis and other assumptions. Performance monitoring processes are not utilized to introduce a permanent plant configuration change.
For this set of processes, our evaluation focus is on how the results of the monitoring activity are used to confirm that the plant performs consistent with the design basis. While we recognize that the reason for monitoring activities is founded upon the design and licensing bases, we have chosen to restrict our review to those process elements (Table 2) associated with the monitoring output:

4. Document update controls
5. Interface controls - for communicating the results of the monitoring,
6. Restoration controls - for restoring any plant configuration changes needed to perform the monitoring, and
7. Deficiency controls - for documenting and resolving any monitoring results which exceed acceptance criteria.

Surveillances

Operations, Maintenance, and Engineering have a variety of surveillance test procedures that ensure various components are capable of performing their intended function. The scheduling of surveillances is based on a Technical Specification or other requirement.

Configuration Management Process Elements - Surveillances			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 01-S-06-12, GGNS Surveillance Program, 100, TCNs 29-32
01-S-07-1, Control of Work on Plant Equipment & Facilities, Rev. 31
01-S-02-3, Author's Guide, Rev. 100
01-S-02-2, Control & Use of the GGNS Operations Manual, Rev. 102

Inservice Testing

Inservice Testing (IST) is an ASME Code driven testing program for ASME Section III Class 1, 2 and 3 and other selected safety-related pumps and valves. IST is a prescriptive program of routine tests designed to confirm the continued ability of these components to perform designated safety-related functions.

Configuration Management Process Elements - Inservice Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: GGNS-M-189.1, Pump & Valve Inservice Testing Program, Rev. 7
NPEAP-306, Specifications, Rev. 13
NPEAP-800, Nonconformance Reporting, Rev. 9
OQAM, GGNS Operational Quality Assurance Manual, Rev. 14A
01-S-07-39, Inservice Testing, Rev. 100

Special Tests

Special Tests are conducted when a system or component must be tested for conditions not addressed in current procedures. This may be the result of a design change, a question on the actual performance of the piece of equipment, or some other reason. To insure this test is properly performed and that no safety concerns are involved, a special test procedure is prepared.

Configuration Management Process Elements - Special Tests			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 01-S-07-1, Control of Work on Plant Equipment & Facilities, Rev. 31
07-S-01-205, Conduct of Maintenance Activities, Rev. 101
01-S-07-2, Test and Retest Control, Rev. 100
01-S-02-2, Control and Use of the GGNS Operations Manual, Rev. 102
01-S-17-36, Technical Special Test Instructions, Rev. 101

Retests

Whenever equipment or systems undergo maintenance or configuration change activities, a retest is conducted. The intent of the retest is to verify the component will meet the design basis parameters. The complexity of the retest depends on the complexity of the work performed or the extent that the normal configuration was changed.

Configuration Management Process Elements - Retests			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 01-S-07-2, Test and Retest Control, Rev. 100

MOV / AOV / Check Valve Testing

Motor operated valves receive testing to verify their operation in accordance with commitments to Generic Letter 89-10. Testing includes periodic static testing and limited selective dynamic testing. This test data is used to trend the valve performance and look for degradation in the valve operator.

A program for selected air operated valves is being developed and implemented similar to the MOV program at each site. Since this testing is relatively new, some baseline data is still being obtained.

Check valves that perform safety functions are tested to verify that they will perform their required design basis functions.

Configuration Management Process Elements - MOV / AOV / Check Valve Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: GGNS-MS-25.0, MOV Torque & Limit Switches, Rev. 10
NPEAP-321, Standards, Rev. 6
NPEAP-800, Nonconformance Reporting, Rev. 9
OQAM, GGNS Operational Quality Assurance Manual, Rev. 14A
01-S-17-43, Air Operated Valve Program, Rev. 0
07-S-14-381, Check Valve Maintenance & Trending Program, Rev. 4

01-S-17-19, Motor Actuator Thrust Test Program, 6, TCN 3
17-S-03-16, Safety Related MOV Program, 5, TCNs 7-9
17-S-03-26, MOV Torque Switch Setpoint Methodology, 9, TCNs 11-12

Heat Exchanger Testing

Testing for safety-related heat exchangers is performed in accordance with NRC Generic Letter 89-13. Initial and periodic testing of safety-related heat exchangers cooled by service water is accomplished to confirm their heat transfer capability meets its intended design function.

Configuration Management Process Elements - Heat Exchanger Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: GGNS-MS-39.0, Thermal Performance Testing of Safety Related Standby Service Water Heat Exchangers, Rev. 0
NPEAP-321, Standards, Rev. 6
NPEAP-800, Nonconformance Reporting, Rev. 9
OQAM, GGNS Operational Quality Assurance Manual, Rev. 14A
17-S-06-21, ESF SWGR Room Cooler and Control Room AC Flow Trending Program, Rev. 2
17-S-06-22, SSW "A" Performance, Rev. 4
17-S-06-23, SSW "B" Performance, Rev. 5
17-S-06-24, SSW "C" Performance, Rev. 1

Notes: The testing for safety-related heat exchangers are performed in accordance with the Grand Gulf response to NRC Generic Letter 89-13.

Snubber Testing

Snubbers are tested per requirements specified in the individual site Technical Specifications or the Technical Requirements Manual. The snubbers are tested for free motion and activation. Free motion tests verify that the snubber will allow for thermal growth. The activation tests verify that the snubber will restrain movement in a transient condition.

Configuration Management Process Elements - Snubber Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: GGNS-MS-31, Functional Testing Requirements for Snubbers, Rev. 3
01-S-07-37, Control of Work for Penetrations, Painting, Snubbers & Insulation, Rev. 101
06-ME-1000-R-0002, Snubber Functional Test, Rev. 100, TCN 3
06-ME-1000-V-0001, Snubber Visual Inspection, Rev. 100, TCN 9

07-S-14-326, Snubber Freedom-of-Motion Test, Rev. 101
07-S-14-390, Removal/Reinstallation of Snubbers, Rev. 2
17-S-05-12, Snubber Service Life Program, Rev. 100

Notes: Grand Gulf's snubber requirements are specified in the Technical Requirements Manual under licensee control.

At Grand Gulf, snubbers are visually inspected and functionally tested.

Integrated and Local Leak Rate Testing

In accordance with 10CFR50, Appendix J, integrated and local leak rate testing is conducted periodically for the containment as a whole (integrated testing) and individual containment penetrations (local testing).

Configuration Management Process Elements - Integrated and Local Leak Rate Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 06-OP-1M10-O-0001, Primary Containment & Drywell Structural Integrity Check, Rev. 100
06-OP-1M10-O-0002, Containment Integrated Leak Rate Test, Rev. 100
06-OP-1M10-O-0003, Drywell Bypass Leakage Rate, Rev. 100
17-S-05-1, Local Leak Rate Test Program, Rev. 102, TCN 9

Ventilation / Filter Testing

The engineered safety feature filters are tested to ensure that they will perform their function of removing radionuclides from air before it is exhausted to the atmosphere. This testing is per Regulatory Guide 1.52, Regulatory Guide 1.140 and ANSI 510.

Configuration Management Process Elements - Ventilation / Filter Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 17-S-06-10, HVAC Testing and Balancing, Rev. 0
17-S-06-T48-1, SBGTS Filter Train Bypass Leakage Test, Rev. 0
17-S-06-251-1, Control Room SBFAU Leakage Test, Rev. 0

Notes: Grand Gulf is not committed to perform testing in accordance with Regulatory Guide 1.140; therefore, this Regulatory Guide is not used.

Pressure Testing

In service pressure testing is performed on ASME Section III Class 1, 2, and 3 piping and components over a specified period. This testing consists of inspection of the piping while it is at nominal operating pressure.

Configuration Management Process Elements - Pressure Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 01-S-07-35, ASME Section XI System Pressure Test, Rev. 100
01-S-17-17, Periodic System Pressure Testing for the ISI Test Year Plan, Rev. 102
GGNS-M-489.4, Program Plan for ASME Section XI Division 1 System Pressure Testing, Rev. 1

Fire Protection Testing

The fire protection system consists of several sub-systems such as fire barriers, fire detection equipment, and fire prevention equipment. They each receive testing to ensure their performance is within the design requirements established for the system or component.

Configuration Management Process Elements - Fire Protection Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: NPEAP-317, Fire Protection Review of Design/Design Changes, Rev. 11

CONDITION MONITORING

As with performance monitoring, condition monitoring ensures design parameters have been maintained. Condition monitoring processes are not utilized to introduce a permanent plant configuration change.
For this set of processes, our evaluation focus is on how the results of the monitoring activity are used to confirm that the plant condition is maintained consistent with the design basis. While we recognize that the reason for monitoring activities is founded upon the design and licensing bases, we have chosen to restrict our review to those process control elements (Table 2) associated with the monitoring output:

4. Document update controls
5. Interface controls - for communicating the results of the monitoring,
6. Restoration controls - for restoring any plant configuration changes needed to perform the monitoring, and

7. Deficiency controls - for documenting and resolving any monitoring results which exceed acceptance criteria.

Inservice Inspection

The purpose of Inservice Inspection (ISI) is to ensure the continued structural integrity of the pressure-retaining boundary of ASME Section III Class 1, 2 and 3 mechanical systems. This is accomplished by performing regularly-scheduled non-destructive examinations (NDE). ISI activities are performed in accordance with requirements published in 10CFR50.55a(g) and ASME Section XI.

ISI Program activities include the development and submittal to the NRC of a 10-Year ISI Plan which details the scope of ISI examinations for each nuclear unit. These Plans include the selection of components for examination to comply with mandated requirements as well as relief requests whenever compliance with ASME Code requirements is not practical. Reports are filed periodically with the NRC to document completion of the examinations.

Configuration Management Process Elements - Inservice Inspection			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 01-S-07-10, Preservice & Inservice Inspection, Rev. 100
17-S-05-15, Inservice Inspection, Rev. 2
GGNS-M-489.1, Program Plan for the Ten-Year Inservice Inspection Plan, Rev. 9
GGNS-M-489.5, STD for the Performance of ASME Sect XI Preservice Examinations, Rev. 0
GGNS-M-489.7, Program Plan for the Vessel Internals Management Program, Rev. 1
GGNS-M-489.6, Standard for the Performance of Reactor Vessel Surveillance Material Testing, Rev. 0

Notes: At Grand Gulf, records are maintained to verify compliance with other requirements, such as proper selection of components, calibration of equipment and qualification of examination personnel.

Corrosion Monitoring

The purpose of corrosion monitoring is to routinely inspect systems that have some indication of susceptibility to one or more forms of corrosion such as Flow Accelerated Corrosion, Boric Acid Corrosion, and Microbiologically Influenced Corrosion. This information is regularly trended and evaluated to identify degrading conditions before they prevent the system from performing its intended function.

Configuration Management Process Elements - Corrosion Monitoring			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: GGNS-MS-41, Program Plan for Monitoring Internal Erosion/Corrosion of Piping Components, Rev. 4
GGNS-MS-46, Program Plan for Monitoring Erosion/Corrosion In Moderate Energy Piping Components, Rev. 2
QAP-9.90, Administration of MIC Tracking In SSW Systems, Rev. 2
NPEAP-903, Review of Design Documents Which Potentially Impact Piping Integrity Programs, Rev. 2

Notes: Grand Gulf is a BWR and does not monitor for boric acid corrosion.

Non-Destructive Examination

The Non-Destructive Examination (NDE) program consists of testing to detect internal or concealed defects in materials. This program uses non-intrusive techniques and is performed as a subset of other programs such as ISI, surveillances, retests, corrective action etc.

Configuration Management Process Elements - Non-Destructive Examination			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: QAP 9.10, Administrative of Non-Destructive Examinations, Rev. 8
GGNS-M-489.2, Program Plan for the Performance of ASME Section XI Examinations, Rev. 3
01-S-07-5, Control of Special Processes, Rev. 12

Welding Program

10CFR50, Appendix B, 10CFR50.55a, and ASME Sections III and IX and other codes form the basis for the EOI welding program. The EOI welding program consists of one administrative procedure (EP-P-001), various standards and numerous Welding Procedure Specifications (WPSs). Procedure qualification testing, performance qualification testing, production welding, heat treatment, nondestructive examinations (NDE) and NDE personnel qualifications and certifications are required to be performed in accordance with these documents.

Configuration Management Process Elements - Welding Program			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: GGNS-M-183.1, Control of Special Processes: Welding, Heat Treating & NDE, Rev. 19
NPEAP-901, Control of Special Processes, Rev. 6
01-S-07-5, Control of Special Processes, Rev. 12
07-S-07-15, Welder Qualifications & Instructions, Rev. 5
07-S-07-20, Welding Filler Material Control, Rev. 20
07-S-07-25, Subcontractor Welding Filler Material Control, Rev. 3
07-S-07-30, Welding Documentation Requirements, Rev. 4
07-S-07-40, Heat Treatment, Rev. 4

System / Component Trending

System engineers collect available operating data on the plant computer and on system instruments. The computerized operations log is reviewed by engineers for significant events and subtle operating changes. Engineers review the Inservice Testing data and predictive maintenance adverse trend information.

Configuration Management Process Elements - System / Component Trending			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: 17-S-01-12, Predictive Maintenance (PDM) Trending Program, Rev. 4
17-S-03-11, Incremental Heat Rate Testing, Rev. 0
17-S-03-13, Condense Performance Monitoring, Rev. 0
17-S-03-14, Plant Thermal Performance Monitoring, Rev. 2
17-S-03-15, Feedwater Heater Thermal Performance Monitoring, Rev. 0
17-S-03-19, Cooling Tower Performance Monitoring, Rev. 0
17-S-03-23, Moisture Separator/Reheaters Performance Monitoring, Rev. 0

Steam Generator Integrity / Eddy Current Testing Program

Steam Generator eddy current testing ensures that the structural integrity of this portion of the reactor coolant system will be maintained in accordance with USNRC Regulatory Guide 1.83, "Inservice Inspection of Pressurized Water Reactor Steam Generator Tubes, Rev. 1 July 1975."

Configuration Management Process Elements - Steam Generator Integrity / Eddy Current Testing Program							
#1	#2	#3	#4	#5	#6	#7	#8
NA	NA	NA	NA	NA	NA	NA	NA

Notes: Grand Gulf is a BWR and does not have steam generators; however, eddy current testing is performed on heat exchangers as part of the NDE process.

Appendix B

Corrective Action Process Effectiveness Elements

As discussed in Section VI [Response to Question (a)], in order to make a judgment about the completeness of the process(es) that could affect corrective action, it is necessary to identify such processes and determine the configuration management elements that are necessary for effective corrective action. Unlike configuration management, corrective action is a single process, therefore, (as noted in Section VIII, Response to Question (d)) it is only necessary to identify the process effectiveness elements in order to make a judgment about the completeness of the corrective action process.

Table 3 in Section VIII identified the corrective action process elements necessary for an effective corrective action process. Each element in the table is described below. (It is worthwhile to note that reportability, which is specifically addressed in Question (d), is discussed as a subset of Element #1, below.)

Element #1 - Problem Identification

Conditions adverse to quality (10CFR50 Appendix B, Criterion 16) must be formally identified and documented for processing within the corrective action program. The threshold for problem identification should be sufficiently low that if an individual is in doubt as to whether to document a condition, it will be documented.

The initial problem identification step triggers other related processes:

- Operability - A degraded or non-conforming condition should receive a prompt determination of operability (i.e., a judgment as to whether the affected structure, system or component can perform its safety function).

- Reportability - A condition adverse to quality should be evaluated to determine if the condition is reportable to the NRC in accordance with various regulations. The primary regulations governing reportability are 10CFR50.72 (1 and 4 hour verbal reports), 10CFR50.73 (Licensee Event Reports) and 10CFR21 (Basic Component Defects). Other regulations (e.g., 10CFR50.46) also contain reporting requirements which must be considered.

As part of the problem identification element, it should be determined if the condition constitutes a significant condition adverse to quality (within the meaning of 10CFR50, Appendix B, Criterion 16). This determination will be used in the next element to decide upon the depth of cause analysis necessary.

An important aspect of the problem identification element is a determination of generic applicability - i.e., is the deficiency unique or could it apply to related components or processes? If generic, the scope of subsequent corrective action must take this into account.

Element #2 - Cause Determination

Those deficiencies that are determined to be a significant condition adverse to quality receive a formal root cause evaluation. The technique chosen for the evaluation (e.g., barrier analysis, HPES, etc.) is a function of the type of deficiency to be addressed. The root cause evaluation (including problem statement, analysis and root cause(s)) is documented and distributed for management review.

Those deficiencies that are determined to not be a significant condition adverse to quality receive an apparent cause determination. Apparent cause is determined by the assigned individual and documented on the appropriate deficiency document.

Element #3 - Corrective Actions

Corrective actions are developed to address both the immediate deficiency and the root/apparent cause(s). With respect to cause, corrective actions are intended to prevent recurrence of the identified cause(s). Once developed, corrective actions are documented on the associated deficiency document.

Corrective actions should address generic implications (if any) through an expansion of activity beyond the immediate deficiency. Priority of corrective action implementation is addressed through development of an implementation schedule commensurate with the safety significance of the deficiency. Each action is assigned to a responsible individual and/or group, and acknowledged.

Element #4 - Tracking

Corrective actions, once identified and assigned, are tracked to completion. A tracking system exists that can be periodically updated concerning corrective action status, and can identify near-due and past-due corrective actions. Responsible individuals/groups are notified of past-due corrective actions and are expected to take early action to implement the corrective action or provide justification for extending the implementation schedule. Schedule extensions include confirmation that the new schedule remains consistent with the safety significance of the deficiency.

As corrective action implementation proceeds, additional corrective actions may be identified. Such corrective actions should be added to the deficiency document and treated as discussed under Element #3, above.

Element #5 - Closure

Closure of corrective action consists of documentation of completion of corrective action and confirmation that corrective action was implemented and effective. Documentation of completion of corrective action is generally supplied by the assigned individual/group. Confirmation of corrective action implementation is generally conducted by an independent group/individual.

Element #6 - Link to Trending

The corrective action problem statements and cause(s) are periodically entered into a trending process for the purpose of identifying adverse repetitive trends. The trending process, upon identifying a condition adverse to quality, documents the condition in accordance with Element #1, above.

Element #7 - Periodic Effectiveness Review

The corrective action process is periodically reviewed to determine the effectiveness of the process. Process deficiencies are documented and addressed through the corrective action process.

As was done in Appendix A for configuration management processes, the remainder of this Appendix notes the procedure(s) that implement the corrective action process elements and determines if applicable process elements are present in the procedures - should a process element be missing, we also note the plans to repair that omission.

Corrective Action Process Elements						
#1	#2	#3	#4	#5	#6	#7
Y	Y	Y	Y	Y	Y	Y

Procedures: 01-S-03-10, GGNS Condition Report (CR), Rev. 0

Attachment 2

Grand Gulf's Design Basis Documentation Discussion

Grand Gulf has had (as described previously) an aggressive program to manage design documentation. Design control was turned over to Design Engineering on June 1, 1982; prior to start of fuel loading in July. Subsequently, Grand Gulf received its low power operating license on June 16, 1982 and completed fuel load by the end of summer, 1982. Document turnover continued during the mid-1980's. During the summer of 1988, Design Engineering consolidated control efforts by forming Configuration Management to concentrate on improving understanding, documentation and synthesis of design basis information while filling in some missing documentation. This effort has resulted in effective maintenance of our configuration control program, as well as continuous improvement. These efforts are consistent with the graded approach of NUMARC 90-12 and the NRC's policy statement on design bases and supportive information.

Grand Gulf has focused on improving existing documentation and the ease of maintenance and accessibility of design documents.

The improvement of documentation has been directed in various functional areas over the past years, such as, instrument setpoint calculation, load flow/voltage drop calculations, piping and pipe support calculations, concrete masonry unit block wall review, seismic qualification central file development and equipment qualification improvements.

Also, engineering design criteria have been developed for Grand Gulf. The engineering design criteria provide requirements for the basis of the conceptual and detailed design. Design criteria are the basis for making design decisions, establishing design inputs, accomplishing design verification measures, and evaluating design changes. Engineering design criteria include:

- Design commitments in the Updated Final Safety Analysis Report (UFSAR) and other licensing documents.
- Design requirements of applicable industry standards and NRC requirements.

Engineering design criteria are categorized in three categories as follows:

System Design Criteria (SDC) - These are documents that provide information in sufficient depth to guide the design engineer in completing detailed design. These documents provide, in definitive statements, descriptions and design requirements of plant systems, structures or components; the environmental conditions under which the plant systems, structures or components must perform, applicable codes and regulatory requirements; the design parameters, redundancy requirements and physical arrangements required for various modes

of operation and design basis events. SDC may include functions to be performed by the structure, system or components.

Topical Design Criteria (TDC) - These are the encapsulation or summary of topical information that relates to design bases as defined by 10 CFR 50.2 and engineering design bases. These documents serve to delineate the design intent and either directly incorporate the related design documentation or are a directory to related design documentation. Examples of TDC are: Seismic Criteria, Tornado Missile Criteria, Electrical Separation Criteria, External Environmental Criteria, Internal and External Flooding Criteria, Fire Protection Criteria, and Environmental Qualification Criteria, etc.

Analysis Basis Document (ABD) - These are documents that provide a detailed description of the design and licensing input parameters, assumptions, methods, regulatory requirements and acceptance criteria used in the Grand Gulf Safety Analysis. These documents are of sufficient depth to aid the design engineer in the evaluation of plant changes which may impact the Grand Gulf Safety Analysis and in the determination of the analytical bases for design requirements.

SDCs were developed shortly after construction was complete, were initially maintained by the A/E, and have since been maintained by Grand Gulf. The program controls for the SDC have been updated using NUMARC 90-12 as a guideline.

In addition to the SDC documents, several other topical documents have been developed and additional topical documents are being developed. A General Design Criteria Manual has been issued to supersede the A/E plant design criteria manual but is considerably broader in scope than the A/E manual. The General Design Criteria Manual is formatted by topic and discipline. The sections cover all plant systems with a brief description of the criteria to which the system was built. Other topical criteria manuals have been developed in the areas of mechanical, civil, electrical and instrumentation & controls.

Additionally, several ABDs have been developed and we intend to continue development of additional ABDs.

In addition to the above effort, we strengthened our understanding and documentation of design basis in a number of areas. Below is a list of some these areas. Additional detail on these enhancements can be found in the main body of this letter.

Instrument Setpoint Calculations Enhancements
Piping Calculations Enhancements
Electrical Calculations Enhancements
Mechanical Calculations Enhancements
Safety Analyses Enhancements
Instrument Q-List Enhancement

Equipment Environmental Qualification Improvements
Seismic Qualification Central File Enhancement
Component Database Enhancement
Instrument Loop and Logic Drawings
Motor-Operated Valve Program
Motor-Operated Valve Pressure Locking/Binding Evaluation
Structural Beam Loading Enhancement
Seismic II/I Evaluation Enhancement
Material Procurement Engineering Evaluations
Fire Protection and Safe Shutdown Review Program
Thermo-Lag Resolution
Detailed Control Room Design Review
Concrete Masonry Unit Block Walls Review
Piping and Instrumentation Diagram Enhancement
Individual Plant Examination for External Events Walkdowns
Computer-Aided Drawing Requirements for Design Change Drawing
Development of Configuration Management Group