Entergy Operations

Entergy Operations, Inc.
P.O. Box B
Killona, LA 70066
Tel 504-739-6650

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February 6, 1997

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Response To NRC Request Under 10CFR50.54(f)
Regarding Adequacy and Availability of Design Basis
Information

Ladies and Gentlemen:

By letter dated October 9, 1996, the Nuclear Regulatory Commission (NRC) requested licensees to submit information which will provide the NRC added confidence and assurance that each licensee's plant(s) retain their design basis and are conducting operating, maintenance and testing activities within its design bases. Enclosed is the Waterford 3 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 must be vigorously pursued and is not optional. Compliance is a mandatory element of an effective regulatory framework and a key aspect in operating in accordance with our operating license. Further, Entergy Operations believes an effective licensee assessment and corrective action program is essential and in place for identifying and correcting adverse conditions that may exist at Waterford 3. Prompted by the renewed focus on the design and licensing bases, UFSAR assessments were conducted at each Entergy Operations facility in mid-

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1996. We shared the results of these assessments with NRC staff in meetings at NRR (November 14, 1996) and Region IV (December 17, 1996).

Upon receipt of the 10CFR50.54(f) letter, Waterford 3 and the other Entergy Operations plants jointly developed and implemented an assessment to review the completeness and effectiveness of our current processes and programs which ensure the plant configuration is consistent with the design basis. This assessment and its results are summarized in the attachment.

We determined that based on our reviews and upgrade and improvement efforts overall there is reasonable assurance the plant configuration is consistent with the design basis, even though we identified the need for improvement in some processes and programs. We have identified the initiatives discussed in Section X of the attached response to strengthen our processes and program in some areas. We will keep the NRC apprised of the development and implementation of these initiatives as part of our on-going communications with the NRC.

Recognizing the attachment contains a large amount of information, we encourage your questions and comments. Please contact T.J. Gaudet at (504) 739-6666 for clarifying any information contained herein. Pursuant to the requirements of 10CFR50.54(f), Entergy Operations, Waterford 3, is providing the attached response under oath of affirmation.

Very truly yours,

C.M. Dugger
Vice President, Operations
Waterford 3

CMD/RJM/tmm
Enclosures

cc: L.J. Callan, NRC Region IV
C.P. Patel, NRC-NRR
R.B. McGehee
N.S. Reynolds
NRC Resident Inspectors Office

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the matter of	)	
	)	
Entergy Operations, Incorporated	)	Docket No. 50-382
Waterford 3 Steam Electric Station	)	

AFFIDAVIT

Charles Marshall Dugger, being duly sworn, hereby deposes and says that he is Vice President Operations - Waterford 3 of Entergy Operations, Incorporated; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached letter in Response To NRC Request Under 10CFR50.54(f) Regarding Adequacy and Availability of Design Basis Information; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

Charles Marshall Dugger

Charles Marshall Dugger
Vice President Operations - Waterford 3

STATE OF LOUISIANA	)	
	) ss	
PARISH OF ST. CHARLES	)	

Subscribed and sworn to before me, a Notary Public in and for the Parish and State above named this 6TH day of FEBRUARY, 1997.

Steve B. Fel

Notary Public

My Commission expires WITH LIFE.

Entergy Waterford 3

Response to NRC 50.54(f) Request

Dated

October 9, 1996

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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 Waterford 3.

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 mandatory 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 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 Waterford 3 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 UFSAR. 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 UFSAR 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, led to much reduced design basis documentation efforts for Grand Gulf 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).

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. 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 UFSAR and the 10CFR50.2 design basis as that portion of the UFSAR 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 UFSAR fidelity is concentrating on the licensing basis, while the information request itself [questions (a) - (e)] is limited to that portion of the UFSAR 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.

<u>Design Basis</u>

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 UFSAR 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 UFSAR 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 UFSAR assessments.

Overall, the UFSAR 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 UFSAR text to merit an UFSAR upgrade effort. That effort, which was briefly

[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 UFSAR assessments described below, 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. The design basis team evaluation for Waterford 3 has been completed, and the results are included in Section VII.

[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 UFSAR noncompliances. We believe the UFSAR assessments and other initiatives qualify for such enforcement discretion, and is being docketed separately from this response.

described during the NRC presentations, is beginning at the two plants and is expected to complete in nominally two years.

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 a site-specific review.

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 procedure)?
  - 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.

<u>Completeness</u>

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 UFSAR 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 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.

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 question (a), and the detailed evaluations in Appendix A.

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 approximately 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 evaluation. 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]

VI. RESPONSE TO QUESTION (a)

Question (a) requests the following information:

> Description of engineering design and configuration control processes, including those that implement 10CFR50.59, 10CFR50.71(e), and Appendix B to 10CFR50;

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 on page 13.

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[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 license 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.

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 are 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 on page 14.

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 1 structures will likely not have any provision for 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 on page 13) against the critical elements necessary to control configuration (Table 2 on page 14), 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.

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[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 large 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 on page 14 should be present.

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

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

Summary of Response to Question (a)

In large measure, EOI facilities determined that those processes (Table 1 on page 13) and process effectiveness elements (Table 2 on page 14) necessary for effective configuration management and design control are present and implemented. In particular, Waterford 3 determined the following (the details of which can be found in Appendix A).

The review of procedures determined the processes are adequately defined and well documented in the various Waterford 3 procedures. The review also determined the effectiveness elements are defined and well documented in procedures, with some isolated examples existing where there is a need indicated for improvement. These weaknesses were not isolated to a particular group of processes, effectiveness elements, or procedures. Rather, the weaknesses related to different issues and different processes, effectiveness elements, and procedures. The following is a summary of the type of weaknesses which were identified:

- A need to better document requirements which ensure that changes to the design and configuration consider UFSAR changes which have not been incorporated in the UFSAR.

- A need to complete implementation of the ER Process which will provide a vehicle to ensure that the design documents are timely updated whenever there are configuration changes.

- A need to improve the interface controls, communications, and review requirements between certain organizations on certain processes.

- A need to better control the Commitment Management System passive commitment data base.

- A need to validate system configuration and design basis parameters after maintenance, for example, do test to verify appropriate design basis parameters after maintenance, and do independent verification of as-left valve position after LLRT testing.

Waterford 3 plans to take aggressive actions to correct these weaknesses as noted in the initiatives documented in Section X. These actions include, for example, changes to procedures, enhancement of the processes, or review and evaluation to determine the optimum corrective action.

TABLE 1
Processes Which May Affect Configuration Control

CONTROL OF CONFIGURATION DOCUMENTS

- DESIGN INPUT, e.g.:
    - DESIGN BASES DOCUMENTS
    - SYSTEM DESIGN CRITERIA
    - ANALYSIS BASIS DOCUMENTS
    - UPPER LEVEL DOCUMENTS
    - TOPICALS
- DESIGN PROCESS:
    - CALCULATIONS
    - STANDARDS/GUIDES
    - SOFTWARE
- DESIGN OUTPUT:
    - 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
- TEMPORARY ALTERATIONS
- REPAIR OR USE AS-IS
- PART EQUIVALENCY
- SETPOINT CHANGES
- SOFTWARE CONTROL (PLANT PROCESS)
- RELOAD

MATERIALS/PROCUREMENT

- COMMERCIAL GRADE ITEMS
- MATERIAL TECHNICAL EVALUATIONS
- STORAGE/INVENTORY CONTROLS
- END USE AUTHORIZATION

IMPLEMENTING DOCUMENTS

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

CONTROL OF LICENSE DOCUMENTS

- FSAR UPDATE (50.59/50.71(e))
- LICENSE CHANGE (50.54/50.59/50.90)
    - TECHNICAL SPECIFICATIONS
    - TECHNICAL REQUIREMENTS MANUAL
- COMMITMENT MANAGEMENT

OPERATIONS

- NORMAL, OFF-NORMAL AND ALARM RESPONSE PROCEDURES
- EMERGENCY OPERATION PROCEDURES
- TAGOUTS/CAUTION TAGS
- TECH. SPEC. 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
- IN-SERVICE TESTING
- SPECIAL TESTS
- RETESTS
- MOV/AOV/CHECK VALVE TESTING
- HEAT EXCHANGER TESTING
- SNUBBER TESTING
- INTEGRATED AND LOCAL LEAK RATE TESTING
- FAN/FILTER TESTING
- PRESSURE TESTING
- FIRE PROTECTION

CONDITION MONITORING*

- IN-SERVICE INSPECTION
- CORROSION MONITORING
- NON-DESTRUCTIVE EXAMINATION
- WELDING PROGRAM
- SYSTEM/COMPONENT TRENDING
- STEAM GENERATOR INTEGRITY 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 on page 13. 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 Waterford 3, 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. We provide our judgment as to the effectiveness of those activities and processes.

BASELINE

The construction verification process, the start-up program, and the pre-licensing regulatory review process provided confirmation of Waterford 3 readiness for commercial operation. The commercial operation date of September 24, 1985 serves as the baseline for the 10CFR50.54(f) letter. There were several major activities unique to Waterford 3 that provided confirmation that the original design bases were properly translated into procedures and that system, structure, and component configuration and performance are consistent with the design basis. These activities included, but were not limited to an independent design review of the Emergency Feedwater System, a Construction

Appraisal Team inspection, and the satisfactory resolution of allegations linked to design and construction practices, known as the 23 Issues.

Independent Design Review (Emergency Feedwater)

Torrey Pines Technology (TPT) was contracted to perform an independent technical design review of the Emergency Feedwater System. Their evaluations included a review of the design procedures, design procedure implementation, technical adequacy of the design, a physical verification (walkdown) of the design, the processing of potential findings, and corrective action plans. Although several findings and observations were identified, TPT concluded the controlling QA procedures and specific design control procedures in place during the design process were adequate and effectively implemented. Furthermore, TPT concluded the Emergency Feedwater System was constructed in compliance with the requirements of the applicable design documents. Waterford 3 developed and implemented corrective action plans for the findings and observations identified by TPT. The last of the findings were closed out by the NRC in early 1985.[7]

Construction Appraisal Team Inspection

The NRC Construction Appraisal Team (CAT) Inspection[8] was performed at Waterford 3 in 1984. Hardware and documentation for piping, concrete, instrumentation, structural steel, welding and nondestructive examination, mechanical equipment, and heating, ventilation and air conditioning (HVAC) ducting were, with some exceptions, found to be in accordance with requirements and commitments. The exceptions included various deficiencies resulting from difficulties in implementing an effective in-process Quality Assurance Program. Extensive corrective actions were performed by Waterford 3 and the architect/engineer (A/E) to respond to the programmatic issues as well as the documentation and hardware related issues. These corrective actions included engineering walkdowns of over 3100 HVAC/Electrical seismic supports, review of over 400 Category 1 piping stress analysis calculations, walkdowns of piping, and equipment and component separation criteria walkdowns. These efforts satisfactorily resolved the identified deficiencies.

23 Pre-Licensing Issues

As a result of allegations sent to the NRC by late 1983, a special NRC team investigation was performed at Waterford 3 which produced a list of findings issued in 1984. These findings became known as the 23 issues. The issues related primarily to allegations claiming documentation deficiencies, hardware

[7] NRC IR 50-382/84-36 dated January 25, 1985

[8] NRC IR 50-382/84-07 dated May 14, 1984

problems, personnel qualification shortcomings, and harassment. The resolution of these NRC findings resulted in walkdowns, interviews, and reviews of documentation to determine the programmatic implications. Resolution of the 23 Issues resulted in the following conclusions:

- The ability of Waterford 3 structures, systems, and components to perform satisfactorily in service was confirmed.

- The ability of Waterford 3 operations organization and support staff to maintain acceptable quality levels during plant operations was confirmed.

- Waterford 3 implemented an enhanced program for identifying quality and safety concerns through personnel exit interviews. This program improved Waterford 3 management's ability to assure awareness of the quality concerns of employees.

- Development of the responses led to improvement in the filing and retrievability of Waterford 3 Quality Assurance (QA) documentation and caused Waterford 3 to perform a diagnostic re-evaluation of the Records Management System.

- There was a significantly higher degree of confidence in the adequacy of the construction processes as a result of these additional engineering walkdowns, evaluations, and corrective actions.

POST-BASELINE ACTIVITIES

Introduction

Since commercial operation, Waterford 3 has initiated a number of activities which provide added confidence that plant design and operation is reflective of the design basis. These initiatives are reviewed under "Historical Design Basis Initiatives".

More recently, internal and external scrutiny has caused us to question certain aspects of the design basis. Through external inspections, internal assessments and other vehicles, we have re-visited a significant part of the design basis and its controlling procedures over the last year, resulting in identification of weaknesses and implementation of corrective action. These activities are summarized under "Recent Design Basis Assessments" below.

Finally, under "Conclusions" we provide our judgment as to the effect of the historical strengths and weaknesses on plant operability, and our confidence in the plant design basis.

HISTORICAL DESIGN BASIS INITIATIVES

Waterford 3 has undertaken various efforts since commercial operation which provide further assurance that design basis are translated into procedures and that system, structure, and component configuration and performance are consistent with the design basis. The following is a discussion of selected major efforts which include: design basis documentation, procedure upgrades and validations, plant configuration in accordance with design drawings, upgrade or reconstitution of calculations, pipe stress engineering and mechanical system analysis tools, Design Review Committee, maintenance rule program implementation, and self assessments.

Design basis documentation

In 1988, Waterford 3 took action to strengthen the documentation for the design basis. This effort included a Design Basis Documentation (DBD) program, the development of Safety Analysis Design Basis Documents, and other DBD initiatives.

The DBD program included the development of 29 DBDs (see Table 6 on page 46 for a list of DBDs) as well as the turnover of the original A/E's design basis calculations (approximately 39,000) and other documentation. The source documents referenced in the DBDs are: drawings, licensing correspondence, correspondence between Entergy, A/E, and vendors including the NSSS vendor, vendor manuals, calculations, analyses, construction QA records, Pre-Operational and Startup test results and internal correspondence (Entergy, A/E, NSSS vendor). The DBDs meet the intent of NUMARC 90-12.

The DBDs received an independent verification of the accuracy of the design basis statements, completeness of the design basis information, and interpretation of the cited references. Open items were identified, tracked, and resolved. Potential plant operability issues were evaluated for impact under the site procedure for determination of operability.

The DBDs are maintained as controlled documents and are required to be updated by Design Engineering Procedure "Preparation, Review, and Approval of Design Basis Documents" NOECP-323. This is accomplished through the use of a Document Revision Notice (DRN). A writer's guide was used to ensure consistency of the DBDs. Additionally, numerous SSFI type self assessments (see Table 4 on page 44) have been performed, and these SSFIs have been used as a means identifying problems with DBDs and in general validating the accuracy of DBDs and the plant systems.

Another significant accomplishment of the design basis documentation effort was the development of selected Safety Analysis Design Basis Documents (SADBD).

The SADBDs document the UFSAR Chapter 15 accident analysis assumptions in detail adequate for use by the Safety Analysis Engineers. The SADBDs are controlled through procedure "Preparation, Review And Approval Of Safety Analysis Design Basis Document" NOECP-701.

Waterford 3 has also completed other design basis documentation initiatives of which the following are examples:

The original Cable and Conduit List (CCL) and the Plant Data Management System Database (PDMSD) developed by the A/E were computerized. In developing the database, errors in the original list such as equipment identification numbers and non-unique conduit numbers were identified. Necessary walkdowns were conducted and documentation corrections were made. The fire seals and fire wrap are identified in the CCL and PDMSD system, ensuring the correct seal or wrap is identified if a configuration change is required.

A Seismic Qualification Review Team (SQRT) file update was begun in November 1991 to upgrade the seismic qualification (SQ) files. Approximately 613 SQ files were assembled, reviewed, and submitted to Document Control as controlled documents. These SQ files cover approximately 18,000 individual components. An additional 192 SQRT files were updated. As a part of the update effort over 2900 components were related to specific SQRT files, and approximately 6800 component SQ file numbers were added to the Station Information Management System as a reference for these components.

The Equipment Qualification (EQ) files underwent various documentation enhancements. The initial Waterford 3 EQ files were developed by the A/E. An EQ file enhancement was initiated after commercial operation to perform evaluations consistent with lessons learned from the industry. Waterford 3 personnel initiated an additional file enhancement effort in mid-1989 to further upgrade the content of the evaluations and to incorporate equipment configuration changes that had occurred since commercial operation. The type of configuration changes included, for example, detailed similarity analysis between the tested equipment and the equipment installed in the plant, qualification test report summaries, and a NUREG-0588 qualification parameter evaluation summary form. This effort was completed in September, 1993 on over 73 electrical EQ assessments.

In order to strengthen the Waterford 3 design basis and configuration control several new basis documents are being developed. These include for example, an Containment Isolation DBD, Tornado Design Criteria Document and Inservice Testing (IST) Basis Document.

- The Tornado Design Criteria Document is being developed to reconstitute the basis for wind speed, atmospheric pressure change, and tornado generated missiles for Waterford 3. This effort consists of a comprehensive review of the design and licensing basis including the UFSAR, Safety Evaluation Reports, calculations, drawings, and other key documents.

- The Containment Isolation DBD is being developed to provide a summary of documents and information regarding each of the 74 mechanical containment penetrations. The DBD will describe the valves used in the isolation function and the applicable General Design Criteria. The DBD will serve as the basis for the information documented in the UFSAR on containment isolation.

- The IST testing basis reconstitution effort is underway to completely review and validate the testing basis for ASME Class 1, 2, and 3 components. This will document the basis for their incorporation or exclusion in the IST plan and reconstitute the testing basis for components as necessary. As part of this effort applicable IST licensing commitments have been reviewed. This document is controlled under "Control of the Waterford 3 Pump and Valve Inservice Test Plan" NOECP-0258 procedure.

These efforts have strengthened procedures, the design basis, configuration control, and operation within the design basis by better documenting design requirements, interlocks, interfaces, documented margins, accident analysis assumptions, and drawings. Further, these efforts have improved the capability of Waterford 3 in various areas, for example, making decisions on plant modifications, making technical specification changes, performing operability and 10CFR50.59 evaluations, and changing or developing procedures.

Procedure Upgrades And Validations

Waterford 3 has initiated various efforts resulting in the upgrade and validation of plant procedures. In general, these efforts have resulted in strengthening procedures by reviewing and upgrading the technical content of procedures, reviewing and comparing procedures against design basis documents, benchmarking procedure effectiveness based on system and component operation, and strengthening the engineering review of procedures. The following is a brief overview of three examples.

- In 1988, Waterford 3 began a major effort to upgrade operations and maintenance procedures. The technical content of the procedures was reviewed and upgraded. Each procedure was reviewed by a subject matter expert for technical content, such as system operation, system

alignment, and sequence of events. Also, field verifications or walkdowns were performed where possible to confirm configuration, such as valve line-ups, proper installation, and equipment integrity. The field verifications and walkdowns included a comparison to design and licensing documents, such as flow diagrams, electrical drawings, and the UFSAR. This effort lasted over three years and resulted in almost every operations and maintenance procedure being upgraded.

- The emergency operating procedures started receiving extensive reviews and upgrades in 1996. These procedures were compared to generic and plant specific technical guidelines, checked against the technical specifications, and checked against the UFSAR. The verification and validation included a table top review wherein each step of the procedure was discussed among a group of qualified operators. Further, a control room walkdown was performed with a step by step enactment including touching, but not operation, of switches. The final step in the verification and validation was to use the procedure in a simulator exercise so the steps could be validated in real time and implementation constraints could be identified and resolved.

- One area where we have strengthened the engineering review of procedures is System Engineering. Currently, many plant procedure revisions are reviewed by System Engineering. The system engineers apply their knowledge of the UFSAR, system function, codes and standards, and design parameters to ensure that plant configuration and the design basis is maintained. System engineers have access to design basis information, such as design basis documents, calculations, and drawings, and in fact, work closely with Design Engineering personnel to take a proactive approach to design and configuration control issues. The revision of a procedure is forwarded to Design Engineering should the system engineer identify an issue or concern relating to configuration control or the design basis. Further, Design Engineering identifies plant procedures impacted when design changes are performed.

These types of procedure upgrade and validation efforts provide additional assurance that design basis are translated into procedures and that system, structure, and component configuration and performance are consistent with the design basis.

<u>Plant Configuration In Accordance With Design Drawings</u>

The Waterford 3 plant configuration has been maintained in accordance with design drawings, with isolated exceptions. This judgment is confirmed by numerous Entergy and Waterford 3 SSFI type assessments and various

Entergy/Waterford 3 and NRC inspections and walkdowns. The following is a brief overview of some examples.

Condition Report (CR) 94-0761 identified that of approximately 1200 CRs generated in 1994 there were approximately 130 related to plant configuration, suggesting an adverse trend. Upon investigation, the root causes of these discrepancies were: (1) original plant drawing errors or omissions in flow diagrams, motor control center and panel wiring concerns, and (2) incorrect fuse applications found as a result of our fuse control program. Consequently, the following conclusions were reached or actions were taken:

- Four systems were walked down for flow diagram adequacy. The identified discrepancies were determined to be minor, mostly editorial in nature, and the flow diagrams were determined to be generally good.

- Numerous original construction Design Change Notices and Field Change Notices were reviewed, and there were no operability or significant issues identified.

- Electrical Control Wiring Diagrams (CWDs) are accurate. Maintenance was notified that selected electrical panels point to point wiring diagrams, which are a more detailed wiring diagram than the CWD, may have discrepancies. However, system operations is not affected, but maintenance is made more difficult. These selected panels will need point to point validation when maintenance is performed.

- There were no operability concerns associated with the identified discrepancies.

- Over 3000 fuse applications in the plant were examined as part of the fuse control program implemented in 1991. Fourteen fuse discrepancies were identified and corrected as part of completion of the actuation fuse review phase. The fuse control program provides the additional confidence that discrepancies do not occur in the future for actuation fuses.

The following is another example which confirms that plant configuration has been maintained in accordance with design drawings:

- There were no wiring problems found while performing approximately 300 terminations as a result of the extensive corrective actions for the switchgear fire in 1995.

In summary, overall plant configuration has been confirmed to be maintained in accordance with design drawings sufficient to provide additional assurance that plant component configuration is consistent with the design basis.

Upgrade or Reconstitution Of Calculations

Waterford 3 has also over the years implemented initiatives to upgrade or reconstitute design basis calculations. These efforts have resulted in better definition of inputs and data, improvement in the definition of assumptions, enhancement of calculational methodologies, better definition of limitations and constraints, and improvement in documentation. As discussed briefly below, some areas where selected calculations have been upgraded or reconstituted include: station blackout, safety related electrical system, MOV Generic Letter (GL) 89-10 calculations, setpoint calculations, and pipe stress calculations.

Waterford 3 performed various evaluations and calculations as part of compliance with the Station Blackout Rule. These calculations included, for example, decay heat removal calculation, reactor coolant inventory calculation, condensate inventory calculation, battery calculation, valve accumulator calculation, loss of ventilation calculations, containment pressure analysis, and containment isolation evaluation. Various procedures were reviewed and changed to ensure conformance with the station blackout design basis. Further, plant configuration and data, such as valve configuration and equipment power consumption was reviewed to ensure consistency with the station blackout design basis analysis.

A major effort to reconstitute safety related electrical calculations was initiated in 1990. The initial upgrade effort expended approximately 12,000 man-hours, and the analysis was consolidated in approximately 44 electrical calculations. The upgrade effort included calculations associated with voltage profiles, short circuit calculations, battery calculations, battery charger calculations, Power Distribution Panel loading calculations, and emergency diesel loading and fuel oil requirements. The upgrade of these calculations included a review and evaluation of plant configuration and data. The new calculations also use upgraded software for improved accuracy and to support quick turnaround.

As part of Waterford 3's Motor Operated Valve (MOV) program, the design bases for the operation of 56 safety related MOVs (including MOV functions, thermal hydraulic service conditions, and required electrical power service conditions) were reviewed, calculated, and documented. The calculations prepared earlier in response to IE Bulletin 85-03 were redone to ensure compliance with the GL 89-10 guidance. The design basis scenario, associated service conditions, maximum expected differential pressure, maximum line pressure, process flow and temperature, and ambient temperature were documented in the design basis review calculations. Electrical calculations were also performed to address the determination of the design basis

available motor terminal voltage, the evaluation of the MOV control circuitry, cable and thermal overload sizing adequacy, circuit breaker coordination, and voltage regulation including elevated ambient temperature effects.

Performance validation was used to verify the analytical methods used to assess MOV functionality in the calculations. This validation involved the review and analysis of the static baseline and dynamic pressure test results for key operating parameters such as MOV running load, required seating or unseating load, differential pressure load, etc. and a comparison to the same loads estimated through the component level design basis review calculations. The test results were used to refine the analytical models and confirm MOV operability at full design basis conditions, such as degraded voltage, that may not have been achieved during baseline or pressure testing.

Calculations were also performed for an additional 67 safety and non safety related Category 2 MOVs which were beyond the scope of GL 89-10. These calculations included a design basis review and functionality assessment.

Another major effort initiated in the fall of 1990 was the development and upgrade of instrument loop uncertainty and setpoint calculations. A standard reference manual, Design Guide DEIC-I-502, was developed for the preparation and the documentation of the design basis of instrument loop uncertainty and setpoint calculations. Approximately 175 new instrument uncertainty setpoint calculations were generated, and approximately 25 existing calculations for the Reactor Protection System, the Engineered Safety Features Actuation System, the Core Operating Limit Supervisory System, and the Core Protection Calculator loops were revised and upgraded over a four year period. As a result of this effort, approximately 30 setpoint changes were made, four transmitters and two indicators were replaced, and the transfer of technology from the A/E and NSSS vendor was enhanced through the large scale data retrieval and documentation effort.

Waterford 3, as part of the initiatives taken in response to the Electrical Distribution System Functional Inspection (EDSFI) conducted in 1991, committed to review original A/E calculations when an analysis was performed which impacted a given original A/E calculation. Approximately 450 calculations were reviewed of which it was determined that over 80 safety related pipe stress calculations had analytical deficiencies. These deficiencies were minor and resolved without any effect on plant components or configuration.

<u>Pipe Stress Engineering And Mechanical System Analysis Tools</u>

Waterford 3 has employed pipe stress engineering and mechanical system analysis tools which have allowed us to improve the quality and depth of engineering analysis. One such tool was the timeshare computer piping system analysis software system which was in place at Waterford 3 between 1985 and

1992 until in house mechanical systems analysis hardware and software was procured. We have used these tools to perform pipe stress and support analyses. Recently, we have expanded the software capability to include system steady state hydraulic analyses, liquid-to-liquid heat exchanger thermal analyses, and liquid-to-air heat exchanger thermal analyses. The achievement in using these tools is that we are able to expedite support of plant operations and design changes, reduce dependence on contractor's mainframes, and ensure consistency and sharing of analyses among the Entergy sites.

Engineering guides have 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 Waterford 3 commitments and are consistent with currently accepted industry practices.

The pipe stress engineering and mechanical system analysis tools, coupled with the engineering guides, have given us the experience and capability to perform in-depth, quality, and analytical evaluations to support the resolution of design basis and configuration issues.

Design Review Committee

In the spring of 1995, a Design Review Committee was formed, and the committee has been functioning since that time frame. The Design Review Committee has improved the strength and quality of engineering review for design changes. The Design Review Committee is composed of senior level engineers from each of the engineering disciplines, and the committee is chaired by an engineering manager. The committee members provide a critical review of design changes by focusing on the following review perspectives:

- Safety significance
- Understanding and addressing common mode failures
- Potential adverse system interactions
- Operational and procedural interface
- Testing
- Integrated design basis consideration
- Critical characteristics
- Risks associated with design change implementation

Overall, the Design Review Committee provides added assurance that configuration control and design basis issues are identified and evaluated by virtue of the critical reviews achieved.

Maintenance Rule Program

There are many programs that indirectly support the documentation and evaluation of procedures, the design basis, configuration control, and operation within the design basis. One such program which has received significant resources in its development and implementation is the Waterford 3 Maintenance Rule Program.

In general, the Waterford 3 Maintenance Rule Program requires performance monitoring of selected Structures, Systems, and Components (SSC) to provide reasonable assurance that they will perform their intended functions. System engineers, through reviewing and assessing functional failures, monitoring performance, and developing recovery plans for equipment and systems, are able to evaluate the adequacy of procedures, and the design basis, evaluate configuration control issues, and assess SSC performance within the design basis.

The recent NRC Maintenance Rule Baseline Inspection confirms that the program is doing this function and identified cases where system improvements have been made and recommendations for other improvements.

Self Assessments

Since receiving the operating license, Waterford 3 has had numerous assessments and inspections. These have included third party assessments, contractor and EOI Safety System Functional Inspections (SSFI), as well as internal system assessments and NRC team inspections. While these assessments have identified and corrected weaknesses, they are an excellent tool to provide additional assurance that design bases are translated into procedures and that system, structure, and component configuration and performance are consistent with the design basis.

In 1988, the Waterford 3 engineering organization took action to confirm the effectiveness of the design basis and the modification processes. A program was developed to use SSFI type inspections to ensure the present plant configuration, modes of operations, and maintenance practices were consistent with the plant's design and licensing bases. This program has been a keystone in the overall plant configuration management program.

The SSFI type assessments have helped us to assure the following:

- The functionality and conformance of the as-built system configuration with the design basis.

- The accuracy and consistency of design documents including the Design Basis Documents.

- The incorporation of regulatory requirements, licensing commitments, and design bases in the design, as specified in the UFSAR and associated correspondence.

A summary of the major SSFI and other system type of assessments is shown in Tables 4 and 5, pages 44 and 45. Deficiencies identified by these assessments were documented, prioritized, and are being resolved through the Waterford 3 Corrective Action Program.

RECENT DESIGN BASIS ASSESSMENTS

Over roughly the last 18 months, Waterford 3 has renewed its focus on design and licensing basis integrity. This has been the result of self identified concerns as well as NRC identified deficiencies. Although this period of intense scrutiny has not identified problems that led to adverse safety impact due to the robustness of the original plant design, they were sufficient to prompt a series of critical self-assessments and external review. The following is a discussion of recent design basis assessments which include Technical Specifications, UFSAR evaluations, Design Basis Evaluation, other assessments and NRC Inspections.

Technical Specifications

Recent evaluations have identified weaknesses related to underlying design basis information associated with the Technical Specifications (TS). Several examples were identified where lack of sufficient detail in the original design basis calculations led to TS implementation problems. For instance, original calculations that support the condensate storage pool minimum TS volume did not appear to consider vortexing, resulting in the specified TS value being non-conservative. These problems (which were limited in number) shared a common characteristic -- some original design basis calculations lacked sufficient detail to clearly determine which assumptions were included in the calculation.

These deficiencies have been thoroughly evaluated, and the necessary corrective actions have been taken to ensure compliance. In general, these deficiencies exposed limited problems with the clarity and completeness of original design basis calculations and assumptions. While design basis calculational problems were present, none of the identified deficiencies led to adverse safety impact.

UFSAR Evaluations

Waterford 3 has recently undertaken a number of efforts to assess and improve the accuracy of the information in the UFSAR. These include: (1) Root Cause Analysis (RCA) CR 96-0471, "10CFR50.59 Applicability Reviews," (2) Entergy UFSAR Assessment, and (3) 10CFR50.59 Refresher Training. An overview of each initiative is provided below.

- RCA CR 96-0471, "10CFR50.59 Applicability Reviews"

  In March 1996, a search of the Condition Report (CR) database identified approximately fifteen condition reports documenting problems with 10CFR50.59 applicability reviews. Based on the frequency of recurrence, this condition was identified to be an adverse trend. A corrective action document, CR 96-0471, was promptly initiated on April 1, 1996.

  A multidiscipline team was formed to conduct thorough reviews of the sixteen condition reports and to determine why 10CFR50.59 applicability reviews were not being accomplished in accordance with administrative requirements. For example, contrary to Site Directive W2.302, "10CFR50.59 Safety and Environmental Impact Evaluations," credit was taken for an existing screening that completely bounded the change under consideration. The team performed a limited scope assessment to verify the integrity of the UFSAR and to confirm that there were no unreviewed safety questions that had not been identified. The assessment results revealed there were no unreviewed safety questions associated with the sixteen condition reports, rather, the UFSAR contained inaccuracies. The team initiated immediate and interim corrective actions as documented in CR 96-0619 to address the UFSAR inaccuracies. Key corrective actions included procedural revisions to improve human factors, training and qualification of personnel to strengthen knowledge and awareness, management oversight actions to communicate expectations and responsibilities, and actions to measure the effectiveness of the corrective actions. Additional corrective actions were established and have or will be implemented to address recurrence.

- Entergy UFSAR Assessment

  A special assessment of the UFSAR was performed August 12-15, 1996 at the direction of Entergy Operations management. The purpose of the assessment was to determine the susceptibility of Entergy Operations facilities to Millstone-type licensing basis issues. The assessment was conducted using a three-tiered sampling plan developed by a multi-site review team and approved by executive management. The first tier involved in-process sampling for the programmatic elements intended to

effect a change in the licensing basis. The next two sampling tiers involved (1) a search for discrepancies by sampling for potential operational changes that could be made without procedure changes, and (2) sampling backwards by comparing selected UFSAR statements from four systems with operational practices. The systems selected included two safety systems (Main Steam and Chemical Volume Control System) and two non-safety systems with risk significance (Instrument Air and DC Distribution).

Results of the UFSAR sampling revealed that the majority of UFSAR statements reviewed were correct. Of the UFSAR inconsistencies identified, none involved plant operability concerns nor raised safety issues. While licensing basis maintenance processes were largely sound, the assessment did identify some areas where process control should be enhanced. For instance, about half of the inconsistencies were associated with a partially completed design change, DC-3402. Although the design change process results in UFSAR changes being identified, the UFSAR may not be updated in a timely manner if the design change is implemented in stages over more than one cycle. All deficiencies have been entered in the corrective action program and have been, or will shortly be, resolved. As stated previously, the UFSAR assessment approach and findings for each EOI facility were presented to NRC/NRR on November 14, 1996 and NRC Region IV on December 17, 1996.

- 10CFR50.59 Refresher Training

  As part of the corrective action plan for RCA CR 96-0471, the General Manager Plant Operations issued a letter to management personnel: (1) to reaffirm the importance that reactor operations conform to the licensing basis, and (2) to ensure individuals who wish to remain qualified for 10CFR50.59 evaluations successfully complete a refresher training course on performing 10CFR50.59 Safety and Environmental Impact Evaluations.

  Conduct of mandatory 10CFR50.59 Refresher Training was a significant event in 1996. Not only did the training accentuate recent program changes brought about by RCA CR 96-0471, but it also stressed the importance of following the 10CFR50.59 process while preserving the UFSAR and the Technical Specifications.

Collectively, these UFSAR evaluations and corrective actions have served to heighten awareness of Waterford 3 personnel about the importance of licensing and design bases compliance, and reaffirmed the necessity for plant configuration and procedures to reflect the design and licensing bases.

Design Basis Evaluation

In conjunction with the UFSAR assessment described above, Entergy Operations management also directed (prior to the 50.54(f) letter) that design basis evaluations be conducted at each facility. This evaluations was conducted at Waterford 3 in December 1996, by a multi-disciplined team including systemwide EOI personnel augmented by contractors under the direction of the Vice President, Engineering, and under the coordination of the manager, Engineering Programs.

The evaluation was performed by conducting interviews of Waterford 3 personnel from various functional areas which included Design Engineering, System Engineering, Maintenance, Licensing, Operations, and others. Additionally, various plant records and design basis information were evaluated, for example, engineering self assessments, condition reports, industry operating experience responses, and procedures. Each design basis functional area was assessed by evaluating the functional area against the following criteria: accountability, ownership, and knowledge; adequacy of design basis documentation; adequacy of interfaces to plant programs and procedures; and adequacy of interfaces to UFSAR. The evaluation reviewed eleven design basis functional areas which included:

- AC Onsite and Offsite Power
- Accident Analysis
- BOP Instrumentation and Controls
- Building Structural Design and Analysis
- DC Power and Batteries
- Equipment Qualification
- Fire Protection Systems
- Mechanical System Design
- NSSS Instrumentation and Controls
- Piping Design
- Site Parameters

In general, the evaluation team concluded that the design basis of plant structures, systems and components is consistent with NRC requirements, and that adequate design margins are available. No system or equipment inoperability was identified.

The team found that in some areas reviewed, inputs and assumptions for the design are not well defined or maintained, and the team recommended actions to improve the definition and documentation of the design basis. The team also recommended actions to improve the interfaces between engineering disciplines and to strengthen the linkage between the design basis and the UFSAR, and between the design basis and plant programs and procedures.

In particular, gaps and weaknesses were identified in the areas of Mechanical Systems Design, Safety Analysis and Building Structural Analysis. The recommendations in these areas generally involve the review or reverification of key calculations and documents, and interface reviews of other affected documents, procedures and programs.

Minor gaps were identified in the areas of Equipment Qualification, Fire Protection, and Site Parameters. Typical recommendations include minor updates of UFSAR information, establishing better ownership and interfaces for portions of the design basis, updating of certain calculations, and improvement of design basis documents.

The functional areas of AC Onsite and Offsite Power, BOP Instrumentation and Controls, DC Power and Batteries, Piping Design, and NSSS Instrumentation and Controls were generally acceptable, although the team did identify some opportunities for enhancements in some of these areas.

Team recommendations are currently under evaluation, and many are reflected in Section X, Summary of Future Initiatives.

Other Assessments

During 1996, Waterford 3 also conducted a number of other assessments, including vertical slice assessments. These are listed in Tables 4 and 5, pages 44 and 45. For instance, vertical slice inspections were implemented for The High Pressure Safety Injection System (June, 1996) and the Control Room HVAC System (November, 1996). Assessments of the in-service testing program (May and September, 1996) and maintenance rule implementation (August, 1996) were also conducted.

As with the assessments discussed above, each of these assessments were useful in both identifying process problems and confirming various aspects of the design basis. Identified deficiencies were documented, prioritized, and are being resolved through the corrective action program. Potential operability issues were evaluated and confirmed to not result in equipment inoperability.

NRC Inspections

Over the past year, a number of NRC inspections touched upon various aspects of the plant design basis and its implementation, and are summarized in the SALP report issued on January 6, 1997. Most comprehensive of these inspections was the engineering inspection conducted over a three week period in September-October, 1996.[9]

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[9] Inspection Report 50-382/96-202, dated December 13, 1996

NRC inspections and the SALP report confirmed many of our assessment findings discussed above. For instance, the engineering inspection noted, and the SALP report also reflected, deficiencies in the implementation of design control programs and procedures, and some weak technical evaluations in support of plant operations. In some cases, the actual design values were inconsistent with those stated in the UFSAR. As importantly, the engineering inspection agreed with our judgment as to the effect of weaknesses on plant configuration, concluding that none of these issues resulted in system inoperability.

Summary of Recent Design Basis Assessments

Overall, the recent Waterford 3 assessments and NRC inspections portray a picture of weaknesses in the implementation of certain aspects of design basis processes and configuration management, and identified limited instances where the original design basis calculations were lacking in appropriate assumptions. They also confirm that the design basis, in large measure, is reflected in plant procedures and configuration.

These assessments resulted in one aspect or another of the Waterford 3 design basis being under nearly continuous scrutiny during 1996. The assessments also confirmed a shift in performance, reversing the pre-1996 downtrend. As noted by Waterford 3 assessments and reflected in NRC inspections, recent self-assessments of the corrective action process and of engineering and technical support were good. And control and implementation of processes that could affect plant configuration were improving.

CONCLUSION

Since receipt of the operating license, Waterford 3 has completed a number of initiatives which served to enhance the understanding of, and compliance with, the plant design basis - i.e., design basis information was captured from the A/E, vendors, design basis documents were developed, and numerous limited scope evaluations and plant walkdowns were conducted that confirmed or reinforced the tie between the design basis and the plant. Each activity provided additional confirmation and confidence that the plant as configured and operated was consistent with its design basis.

Prior to 1996, Waterford 3 went through a period of declining performance. We did not, in some cases, continue to make improvements to adequately resolve weaknesses in the design basis or for processes which control or affect the design basis. Further, we did not set the appropriate culture and expectations to ensure the processes themselves and their underlying design basis continued to evolve and strengthen commensurate with the improving standards of the

industry. This situation resulted in valid questions concerning the degree to which plant configuration and operation reflected the design basis.

Through most of 1996, the Waterford 3 design basis (in one form or another) was under nearly continuous scrutiny by internal and external assessment teams. This scrutiny confirmed the previous performance decline, identified the problem areas that needed to be addressed and, by the end of the year, confirmed that performance was improving. Through this prompt attention to declining performance, the deficiencies associated with design basis processes were not allowed to proceed to the point where they impacted plant operability.

Because ongoing improvements (see Section X) include significant design basis review or upgrade work, Waterford 3 may determine in the course of that work that some previously unknown portions of the design basis are inconsistent with plant configuration or procedure. Should this occur, discrepancies will be documented and resolved through the corrective action program.

Nonetheless, with a number of initiatives completed to identify and address design basis problems, and a number in progress, we believe the scope of Waterford 3 design basis issues is defined and on the road to resolution. In this light, Waterford 3 has reasonable confidence that the design basis, as it is understood today, is translated into plant procedures 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 on page 14) 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 on page 35) are largely common.

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

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 Operations 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 Waterford 3, and draw conclusions as to the completeness and effectiveness of the process.

The review of the procedure "Corrective Action", Site Directive W2.501, determined the Corrective Action processes are adequately defined and well documented. The review also determined the effectiveness elements are defined and well documented in Site Directive W2.501. There were no processes or effectiveness elements identified which were missing.

The Waterford 3 Corrective Action Program has evolved from separate corrective action and problem resolution processes to a single Corrective Action document process. This evolution and consolidation of the Corrective Action Program has resulted in a more effective program.

Waterford 3 management has taken aggressive and proactive actions to ensure employees identify and document potential problems and that such problems are documented at a low identification threshold. This message has been continuously stressed at Waterford 3. The results are evident. There has been sustained growth in the CR initiation rate since inception. Waterford 3 employees, Entergy and contractors alike, are sensitive to the need to identify and satisfactorily resolve problems.

More recent program improvements have been implemented to ensure the appropriate level of resources continues to be focused on areas of safety significance. These recent program improvements have included new grading process, new trending program which monitors effectiveness and communicates priorities, new human performance investigation process, more detailed and thorough root cause analysis, and more senior management involvement.

Waterford 3 believes these changes to the Corrective Action Program have been effective in enhancing problem identification and ensuring proper focus in problem resolution. We also believe that the NRC and third parties have recognized these achievements and are encouraged by our progress.
Our consistent emphasis on the importance of the Corrective Action process coupled with our findings of process completeness and the implementation of recent program improvements, provide confidence in the ability of our corrective action process to identify and prevent recurrence of problems, while reporting appropriate events to the NRC.

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.

An Entergy site wide approach was taken in planning for and preparing the 50.54(f) response. The approach taken was to comprehensively address each specific question of the 50.54(f) letter as well as to take into account the broader perspectives underlying the important and wider messages of the 50.54(f) letter.

The assessment was performed by an EOI team under the direction of Entergy senior management and the Director, Corporate Licensing. A dedicated team at each site was established to implement the resultant assessment. Site specific findings and insights were shared amongst the EOI team. Knowledgeable external nuclear regulatory and legal personnel also provided valuable insight.

The assessment entailed an evaluation of the completeness of processes and their effectiveness elements as related to configuration control, design basis, and corrective action and reporting. The assessment also entailed an evaluation of historical upgrades; improvements; and Entergy, Waterford 3, NRC, and third party assessments and inspections. The extensive assessments and judgments are based on the standard of reasonable assurance.

In response to question (a), the review of procedures determined the processes are adequately defined and well documented in the various Waterford 3 procedures. The review also determined the effectiveness elements are defined and well documented in procedures, with some isolated examples existing where there is a need indicated for improvement. This part of the assessment provided reasonable assurance of the completeness of the Waterford 3 processes and their effectiveness elements for design and configuration control processes, including those that implement 10CFR50.59, 10CFR50.71(e), and Appendix B to 10CFR50.

The following perspective and conclusion for questions (b)and (c) of the 50.54(f) letter is provided. Since receipt of the operating license, Waterford 3 has completed a number of initiatives which served to enhance the understanding of, and compliance with, the plant design basis -- i.e., design basis information was captured from the A/E, vendors, design basis documents were developed, and numerous limited scope evaluations and plant walkdowns were conducted that confirmed or reinforced the tie between the design basis and the plant. Each activity provided additional confirmation and confidence that the plant as configured and operated was consistent with its design basis.

Waterford 3, prior to 1996, went through a period of declining performance. We did not, in some cases, continue to make improvements to adequately resolve weaknesses in the design basis or for processes which control or affect the design basis. Further, we did not set the appropriate culture and expectations to ensure the processes themselves and their underlying design basis continued to evolve and strengthen commensurate with the improving standards of the

industry. This situation resulted in valid questions concerning the degree to which plant configuration and operation reflected the design basis.

Through most of 1996, the Waterford 3 design basis (in one form or another) was under nearly continuous scrutiny by internal and external assessment teams. This scrutiny confirmed the previous performance decline, identified the problem areas that needed to be addressed and, by the end of the year, confirmed that performance was improving. Through this prompt attention to declining performance, the deficiencies associated with design basis processes were not allowed to proceed to the point where they impacted plant operability.

Because ongoing improvements (see Section X) include significant design basis review or upgrade work, Waterford 3 may determine in the course of that work that some previously unknown portions of the design basis are inconsistent with plant configuration or procedure. Should this occur, discrepancies will be documented and resolved through the Corrective Action Program.

Nonetheless, with a number of initiatives completed to identify and address design basis problems, and a number in progress, we believe the scope of Waterford 3 design basis issues is defined and on the road to resolution. In this light, Waterford 3 has reasonable assurance that the design basis as it is understood today is translated into plant procedures and that system, structure and component configuration and performance are consistent with the design.

Regarding question (d) of the 50.54(f) letter, the review of the procedure "Corrective Action", Site Directive W2.501, determined the Corrective Action processes are adequately defined and well documented. The review also determined the effectiveness elements are defined and well documented in Site Directive W2.501. There were no processes or effectiveness elements identified which were missing.

From an effectiveness standpoint, the Waterford 3 Corrective Action Program has evolved into a consolidated and effective program. Management has taken aggressive action, and personnel awareness has been achieved to ensure problems are identified at a low threshold. Significant improvements have been recently made to the program which improve the prioritization of problems, trending, the investigation process, root cause analysis, and management involvement. These changes have allowed Waterford 3 to better focus on and more efficiently use resources on the more important issues. Our consistent emphasis on the importance of the corrective action process coupled with our findings of process completeness and the implementation of recent program improvements, provide confidence in the ability of our corrective action process to identify and prevent recurrence of problems, while reporting appropriate events to the NRC.

Collectively, based on the information herein provided, there is reasonable assurance of the overall effectiveness of the current processes and programs in concluding that the configuration of Waterford 3 is consistent with the design basis.

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, Waterford 3 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 will be evaluating on an on-going basis the detailed nature of and schedule for the implementaiton of new inititiatives, based on experience and effectiveness results, and we will keep the NRC apprised of the status as part of our on-going communications with the NRC. Further, other detailed actions are documented in Appendix A which in part implement these broad initiatives, and they are noted by footnotes. We believe the combination of pre-existing activities and new initiatives will be effective in advancing the Waterford 3 design basis beyond the level discussed in response to question (e), above.

These initiatives include many of the principal recommendations identi ed from the design basis evaluation. A final determination regarding the merit of the other recommendations from the design basis evaluation for Waterford 3 will be made based on the results of the evaluations at the other sites in order to capture Entergy wide perspectives and best practices.

The design basis initiatives represent significant upgrade or rework of the original design basis. As discussed in Section IX, Waterford 3 may determine in the course of that work that some previously unknown portions of the original design basis are inconsistent with plant configuration or procedure. 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 VII.B.3 of the enforcement policy, "Violations Involving Old Design Issues," with no time limit.

Operations And Maintenance Initiatives

Operations and Maintenance personnel will receive training to enhance awareness and understanding of the design basis and configuration control.[10]

Certain Operations and Maintenance procedures will be reviewed and modified as necessary to ensure they incorporate the necessary design basis information and configuration controls to reflect design basis review or upgrade efforts.[11]

The processes for procedure review, plant review of design changes, and valve lineup for local leak rate testing will be enhanced.[12]

Engineering Initiatives

Waterford 3 will continue to perform SSFI assessments for critical safety systems.[13]

The basis for design and testing will be reviewed or upgraded in the following areas:[14]

- Containment Isolation Design Basis
- Ultimate Heat Sink Design Basis
- Tornado Missile Design Criteria
- Inservice Testing Basis Reconstitution
- Emergency Feedwater Flow Design Basis
- Technical Specification LCO Instrument Uncertainty Evaluation Project

The Engineering Request Process will be completed and implemented.[15]

A program will be implemented to upgrade selected DBDs and mechanical calculations for safety significant systems to ensure the assumptions and methodologies are valid.[16]

A process and relational data base will be developed to support the identification of the necessary links between design and licensing basis documents, such as calculations, the UFSAR, and plant procedures. This effort will be an evolving tool with the calculation reference being developed first. Other appropriate

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[10] New Initiative
[11] New Initiative
[12] New Initiative
[13] On-going activity
[14] On-going activity
[15] On-going activity
[16] New Initiative

cross reference information will be captured and inputted into the data base as part of the normal document update process.[17]

Training will be given to engineers to enhance knowledge and awareness of the design basis and configuration control and to provide guidance on the collection and use of design basis data.[18]

<u>Other initiatives</u>

Some procedures will be revised to strengthen interface, communications, and review requirements.[19]

A review of certain sections of the UFSAR for accuracy will be performed. This review will be integrated with design basis review or upgrade efforts.[20][21]

The UFSAR will be maintained as a living document, incorporating approved LDCRs, with the capability to search information electronically.[22]

A full conversion to the new CE-STS (NUREG-1432) will be performed. This improvement will involve a reconstitution of the TS design and license bases. Thus, specified parameters, values and assumptions will be validated.[23]

A review of applicable Technical Specification procedures will be performed, and the necessary enhancements will be made to ensure the elements of a Technical Specification Bases Control Program and a Technical Specification Safety Function Determination Program as specified in the Standard Technical Specifications, Combustion Engineering Plants, Sections 5.5.14 and 5.5.15 are clearly documented.[24]

The CMS process for passive commitments will be evaluated, and the appropriate procedural enhancements will be made to strengthen the control of the passive commitment data base.[25]

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[17] New Initiative
[18] New Initiative
[19] New Initiative
[20] On-going activity
[21] 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 UFSAR noncompliances. We believe the UFSAR assessments and other initiatives qualify for such enforcement discretion, and is being docketed separately from this letter.
[22] On-going activity
[23] On-going activity
[24] On-going activity
[25] New initiative

We believe the implementation of the foregoing initiatives will achieve the following improvements.

- Continue to strengthen the culture and questioning attitude for challenging the design basis and ensuring configuration control.
- Enhance personnel awareness and understanding of the design basis and configuration control.
- Allow us to make aggressive use of self assessments to best self-identify and effectively resolve problems.
- Achieve aggressive evaluation which will further improve the design basis.
- Make more useful tools available to personnel to better evaluate the design basis and maintain configuration control.
- Improve some processes and better maintain the design basis and configuration control.

TABLE 4
Index of Waterford 3 Vertical Slice Self-Assessments

ASSESSMENT	PERFORMED BY	DATE
Emergency Feedwater System	Torrey Pines Technology	Mar. 1983
Reactor Auxiliary Building HVAC	Waterford 3 Quality Assurance	Sept. 1986
Component Cooling Water System	Main Line Engineering	Dec. 1988
Emergency Diesel Generator	Main Line Engineering	Oct. 1990
Electrical Distribution System Functional Inspection (IR 90-23)	NRC & Contractor personnel	Feb. 1991
Chemical and Volume Control System	Main Line Engineering	July 1992
Safety Injection System	Main Line Engineering	Aug. 1993
Emergency Feedwater System	EOI and non EOI personnel	Aug. 1995
High Pressure Safety Injection System	EOI personnel	June 1996
Entergy Engineering & Technical Support	EOI, industry, & contractor personnel	Aug. 1996
Engineering Team Inspection (IR 96-202)	NRC & contractor personnel	Oct. 1996
Control Room HVAC System	EOI & industry personnel	Nov. 1996

TABLE 5
Index of Significant Waterford 3 Assessments

ASSESSMENT	PERFORMED BY	TYPE OF ASSESSMENT	DATE
Construction Appraisal Team Inspection (IR 84-07)	NRC & Contractor personnel	NRC Team Inspection	Mar. 1984
System Entry Retest Team (IR 89-29)	NRC	NRC Team Inspection	Nov. 1989
Interfacing System LOCA Inspection (IR 90-200)	NRC & Contractor personnel	NRC Team Inspection	Aug. 1990
Verification of Containment Building Integrity (IR 91-12)	NRC	IP 61715, 61720	Apr. 1991
Team Inspection of GL 89-10 MOV (IR 92-02)	NRC & Contractor personnel	NRC team inspection	Jan. 1992
Service Water GL 89-013	EOI and non EOI personnel	Used elements of TI 2515/118	Dec. 1995
ISI/IST Audit	W3 QA & contractor personnel	QA audit	May 1996
Entergy Evaluation of Engineering Working Relationships	EOI management personnel	Management overview evaluation	July 1996
Ultimate Heat Sink	EOI & A/E personnel	Design review of system	Aug. 1996
Entergy UFSAR	EOI & contractor personnel	Self Assessment	Aug. 1996
IST Inspection (96-09, 96-20)	NRC	IP 73756, 92902	July & Aug. 1996
Maintenance Rule	Consultant	Self Assessment	Aug. 1996
IST Audit	INPO	Assistance visit	Sept. 1996
INPO Design Basis	INPO	Assistance visit	Nov. 1996
Entergy Design Basis Evaluation	EOI & contractor personnel	Systemwide evaluation	Dec. 1996
Maintenance Rule Baseline Inspection	NRC & contractor personnel	NRC team inspection IP 62706	Jan. 1997

TABLE 6
Index of Waterford 3 Design Basis Documents

System (DBD Title)	DBD No.
Appendix R/Fire Protection	DBD-018
Boron Management	DBD-050
Chemical & Volume Control	DBD-007
Component Cooling Water & Auxiliary Component Cooling Water	DBD-004
Compressed Air Systems	DBD-046
Containment Cooling HVAC and Related Systems	DBD-010
Containment Gas Control and Measurement	DBD-005
Containment Spray	DBD-013
Electrical Distribution (AC Portion)	DBD-011
Electrical Distribution (DC Portion)	DBD-008
Emergency Diesel Generator and Automatic Load Sequencer	DBD-002
Emergency Feedwater	DBD-003
Essential Chilled Water	DBD-037
Feedwater	DBD-020
Fuel Handling Building Ventilation	DBD-040
Fuel Handling System	DBD-023
Main Steam	DBD-006
Nuclear Island and Building Design - RCB	DBD-027
Nuclear Island and Building Design - Shield Building	DBD-028
Plant Monitoring Computer	DBD-048
Plant Protection System	DBD-012
Radiation Monitoring	DBD-032
Reactor Coolant & Steam Generator Blowdown	DBD-009
Safety Injection	DBD-001
Safety Related Air Operated Valves	DBD-014
Safety Related HVAC Control Room	DBD-038
Safety Related HVAC RAB	DBD-041
Sampling	DBD-042
Shield Building Ventilation	DBD-043

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 Waterford 3 completeness review for processes which could affect plant configuration and design in response to question (a).

Table 1 in Section VI on page 13 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 on page 14 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 on page 13) with their essential elements (Table 2 on page 14). 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, and 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[26]

The review of procedures determined the processes are adequately defined and well documented in the various Waterford 3 procedures. The review also determined the effectiveness elements are defined and well documented in procedures, with some isolated examples existing where there is a potential for vulnerabilities or a need indicated for improvement. These weaknesses were not isolated to a particular group of processes, effectiveness elements, or procedures. Rather, the weaknesses related to different issues and different processes, effectiveness elements, and procedures. The following is a summary of the type of weaknesses which were identified:

- A need to better document requirements which ensure that changes to the design and configuration consider UFSAR changes which have not been incorporated in the UFSAR.

- A need to complete implementation of the ER Process which will provide a vehicle to ensure that the design documents are timely updated whenever there are configuration changes.

- A need to improve the interface controls, communications, and review requirements between certain organizations on certain processes.

- A need to better control the Commitment Management System passive commitment data base.

- A need to validate system configuration and design basis parameters after maintenance, for example, do test to verify appropriate design basis parameters after maintenance and do independent verification of as-left valve position after LLRT testing.

Waterford 3 plans to take aggressive actions to correct these weaknesses as documented in Section X. These actions include, for example, changes to procedures, enhancement of the processes, or review and evaluation to determine the optimum corrective action.

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[26] 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 on page 14 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 UFSAR, 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 UFSAR discrepancies against designated licensing basis documents including NRC SERs. These screenings include a review of UFSAR 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 UFSAR search system provides a highly reliable tool in finding potential areas where the UFSAR 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 UFSAR 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 UFSAR?). If there is an impact on the UFSAR, the UFSAR change process is invoked, resulting in an update to the UFSAR 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 which are described in detail following Table 3 on page 35.

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, UFSAR 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 on page 13 is described, and examined against the applicable criteria of Table 2 on page 14 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 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 UFSAR 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[27].

- Design Input - which document design criteria, parameters, bases, and other requirements upon which the detailed final design is based,

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[27] 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.

- 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, 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.

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 activity. These activities include preparation, revision, review, approval, release, distribution, maintenance and retrieval.

<u>Design Input Documents</u>

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, Upper Level Documents, System Design Criteria, Analysis Basis 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: ES-P-001 Design Inputs
NOECP-306 Document Revision Notices
NOECP-323 Design Basis Document
NOECP-701 Safety Analysis and Design Basis Document
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
SD W4.201 Configuration Management

Notes: There are several subprocesses within the Design Input Process. There is need to improve timeliness of Safety Analysis DBD updates after reload. As part of the design basis improvement program the Safety Analysis DBD will be updated and the process revised to ensure a timely update after reload.[28]

The content guidelines for the DBDs will be upgraded based on lessons learned from our design basis upgrade review.[29]

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 - Design Process - Calculations							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	N/A	Y	N/A

Procedures: ES-P-001 Design Inputs
ES-P-002 Design Verification
NOECP-008 Design Verification
NOECP-011 Performance of Calculations
NOECP-306 Document Revision Notices
NOECP-318 Control and Tracking of Containment Free Volume Passive Heat Sink Capacity and Aluminum Zinc Inventory
NOECP-405 Installation of Pre-Engineered Access Platforms
NOECP-700 Assessment of Changes to Containment Design Analysis Parameters
PLG-009-016 Containment Building Administrative Controls During Refueling Outage
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations

[28] Detailed action based on Section X initiatives
[29] Detailed action based on Section X initiatives

Notes: Stand alone calculations that do not impact configuration can be revised without requiring a 10CFR50.59 evaluation. Procedure NOECP-011 has been revised to require a 10CFR50.59 evaluation. There is an ongoing review of about 300 calculations to confirm there has been no licensing basis impact.[30]

The subcompartment pressurization analysis is not specifically addressed in NOECP-318 in the implementation of a configuration change. This could result in not updating the subcompartment pressurization calculations even though the overall containment analysis is maintained. Procedure NOECP-318 will be revised to incorporate this area of improvement.[31] One other process presently has no specific reference to NOECP-318; the Engineering Work Authorization Processing Procedure UNT-007-053. This process depends on engineer knowledge to ensure the requirements of NOECP-318 are met. Implementation of the Engineering Request Process will correct this weakness.

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 - Design Process - Standards/Guides							
#1	#2	#3	#4	#5	#6	#7	#8
N/A	N/A	Y	Y	Y	N/A	Y	N/A

Procedures: AD-G-001-01 Design Engineering Administrative Manual
DE-001 Drafting Standards Guide
NOECP-001 Development, Revision, and Deletion of Procedures Standards and Guides
NOECP-315 Drawing, Production, Revision, Approval and Release

Notes: The guides provide preferred practices for engineering but they are not stand alone documents. Any product using information or

[30] Detailed action based on CR 95-1242
[31] Detailed action based on Section X initiatives

recommendations in the guide in the design product is reviewed for Element #1 and #2, design and licensing basis, under the process that controls the specific work activity.

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 - Design Process - Software							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	N	Y	Y	Y	Y	Y	N/A

Procedures: NOECP-601 Control of CCL Software
SD W4.203 Software Control

Notes: Site Directive SD W4.203 "Software Control" presently does not require a licensing review for new software purchased or developed outside of a configuration change. A revision will be made to SD W4.203 to require that a licensing bases review be performed for changes to software codes used for design calculations.[32]

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 - Design Output - Specifications							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	N/A	Y	Y	Y	N/A	Y	N/A

[32] Detailed action based on Section X initiatives

Procedures: PE-P-001 Common Procurement Specification Processing
NOECP-008 Engineering Reviews
NOECP-152 Procurement Specification Process
NOECP-306 Document Revision Notices
SD W4.203 Software Control

Notes: Element #2 is not applicable in the specification process. Any entirely new or changed part requires a configuration control process to be followed which would determine the need for licensing review.

Element #6 restoration controls are contained within the specific implementation process which installs the component.

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 - Design Output - Drawings							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	N/A	Y	N/A

Procedures: NOECP-306 Document Revision Notices
NOECP-315 Drawing, Production, Revision
NOECP-319 Incorporation of Redlined Drawings
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations

Notes: Element #6 restoration controls are contained within the specific implementation process which installs the component.

Element #8, temporary changes are handled with the Temporary Alteration Request process.

There is a need to improve the time between the implementation of configuration changes and notification to Design Engineering of completed installation to allow update of affected design documents. The Engineering Request Process will provide improvements to reduce this turn around time.[33]

[33] Detailed action based on Section X initiatives

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 - Design Output - Vendor Documents							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	N/A	Y	N/A

Procedures: NOECP-306 Document Revision Notices
NOECP-601 Control of CCL Software
SD W5.603 Control of Vendor Information
UNT-004-035 Control of Vendor Information

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 - Design Output - Databases							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	Y	Y	N/A

Procedures: NOECP-008 Engineering Reviews
NOECP-102 SIMS Component Database Changes
NOECP-103 Equipment Classification in the SIMS
NOECP-104 Environmental Qualification
NOECP-113 EQ Determinations
NOECP-306 Document Revision Notices
NOECP-317 Setpoint Changes
NOECP-601 Control of CCL Software
MD-001-020 Environmental Qualification Program
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations

SD W3.501 Station Information Management System and Control
SD W4.103 Equipment Qualification
UNT-001-015 Environmental Qualification Program
UNT-007-014 Setpoint Change Control

Notes: Element #8 is not applicable to the databases since changes are permanent.

There are numerous databases in the Design Output process. Those databases used in the design process such as the Setpoint List, the EQ List, and portions of SIMS have the appropriate elements to ensure that the data is accurate and controlled.

Portions of the SIMS data base are used for information only and are not controlled and validated for completeness and accuracy with the controls employed for the design change process. The appropriate procedures will be revised, and a caution will be added to SIMS to ensure personnel are aware that this data is for information only and to validate this data for completeness and accuracy when used for design or configuration control.[34]

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	Y

Procedures: ES-P-001 Design Inputs
ES-P-002 Design Verification
NOECP-008 Design Verification
NOECP-104 Environmental Qualification
NOECP-113 EQ Determinations

[34] Detailed action based on Section X initiatives

NOECP-301 Design Proposals
NOECP-302 Conceptual Design Change Packages
NOECP-303 Design Change Packages
NOECP-306 Document Revision Notices
NOECP-313 DC Implementation and Closeout
NOECP-314 Evaluation of Safety Related Equipment Installation
NOECP-405 Installation of Pre-Engineered Access Platforms
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
SD W4.102 Design Changes
SD W4.103 Equipment Qualification
UNT-007-028 Design Changes

Notes: Provisions to restore potential temporary changes needed as part of the installation process are part of the design change process.

Temporary Alteration

A temporary alteration is a change that places a SSC in use in a condition that deviates from plant configuration documentation. Temporary Alterations are intended to be returned to normal or converted to a permanent design change at some later date.

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

Procedures: NOECP-008 Engineering Reviews
NOECP-306 Document Revision Notices
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
UNT-005-004 Temporary Alteration Control

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: NOECP-008 Engineering Reviews
NOECP-306 Document Revision Notices
NOECP-403 Replacement/Repair of Safety and Non Safety Piping Components Due to Erosion/Corrosion
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
UNT-007-053 Engineering and Work Authorization Process

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/Substitutions							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	N/A

Procedures: ES-P-001 Design Inputs
ES-P-002 Design Verification
NOECP-008 Engineering Reviews
NOECP-150 Substitute Part Engineering Evaluation Report
NOECP-306 Document Revision Notices
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations

Notes: There is a need to improve the communications between maintenance and engineering so that engineering is promptly notified of the implementation of SPEERS. The new Engineering Request Process will provide improvement in this area.[35]

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.

[35] Detailed action based on Section X initiatives.

Configuration Management Process Elements - Setpoint Change							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	Y	Y	N/A

Procedures: ES-P-001 Design Inputs
ES-P-002 Design Verification
NOECP-008 Engineering Reviews
NOECP-306 Document Revision Notices
NOECP-317 Setpoint Changes
UNT-007-014 Setpoint Change Control
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations

Software Control (Plant)

Software is the code (executable, object and source), database information, command language structure, etc. used to control the operation of the plant or provides on-line information to plant operators. Software is categorized as safety-related software or other controlled software. An example of safety-related software is the Core Protection Calculators at ANO and Waterford. Examples of other controlled software 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)							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	Y	Y	N/A

Procedures: NE-006-XXX CPC Addressable Constant Administrative Controls
NE-007-XXX Plant Monitoring Computer
UNT-007-024 Control of Quality Related Software
UNT-007-029 Control of Radiation Monitor Database
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
SD W4.203 Software Control

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. Certain 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	N/A

Procedures: NOECP-702 Reload Analysis Report
SD W4.904 Core Reload Selection and Review Process
NE-002-003 Post Refueling Startup Testing Controlling Document
Notes: Element #8, temporary change restoration controls are not applicable since reload is not a temporary change.

MATERIALS/PROCUREMENT:

Commercial Grade Item (CGI)

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 involves testing and/or analysis to verify the item's ability to perform its intended functions.

Configuration Management Process Elements - Dedication (CGI)							
#1	#2	#3	#4	#5	#6	#7	#8
Y	N/A	Y	Y	Y	Y	Y	N/A

Procedures: NOECP-008 Engineering Reviews
NOECP-153 Commercial Grade Dedication Evaluation
PE-S-001 Commercial Grade Item Evaluation
Notes: Element #2 is not applicable in the CGI process. At Waterford 3 this process can dedicate parts approved by the existing design basis only. Use of new or changed part requires a configuration control process to be initiated.

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 Evaluations							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	N/A	Y	Y	Y	N/A	Y	N/A

Procedures: ES-P-002 Design Verification
NOECP-008 Engineering Reviews
NOECP-151 Resolving Procurement Document Change Requests
NOECP-152 Procurement Specification Preparation
NOECP-154 Requesting and Supporting Supplier Evaluation
SSI-801 Materials Technical Engineering Special Considerations and End Use Applications Authorized
SSP-805 The Materials technical Engineering Procurement Process
SSP-806 Materials Technical Engineering Procurement Methods and Format
SSP-827 Materials Technical Shelf Life Determination and Extension Process
SSP-876 Materials Determination Specific Gravity Testing

Notes: Element #2 is not applicable in the Materials Technical process. At Waterford 3 this process can buy identical replacement parts only. Any entirely new or changed part requires either the modification or Part Equivalency/Substitutions process to be followed.

Element #6, restoration controls are not part of the Materials/Technical process but part of the appropriate installation process.

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 Control							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	N/A	N/A	N/A	Y	N/A	Y	N/A

Procedures: SSP-702 Stores Operations Staging, Issuing and Returns
SSP-704 Stores Operations Materials Storage
SSP-711 Stockcode Consolidation
SSP-827 Materials Technical Shelf Life Determination and Extension Process

Notes: Element #2, licensing basis review if required is handled by the Materials Technical process if required.

Element #3 & #6, review and restoration controls are not part of the Storage/inventory Controls process but part of the appropriate installation process.

Element #4 is not applicable in the Storage/Inventory Controls process. At Waterford 3 this process can issue identical replacement parts only, therefore no update other than that covered by the appropriate installation process is needed.

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	N/A	Y	N/A	Y	N/A	Y	N/A

Procedures: NOECP-153 Commercial Grade Item Dedication Evaluation
PE-S-001 Commercial Grade Item Evaluation
SSI-801 Materials Technical Engineering Special Considerations and End Use Applications Authorized
SSP-805 The Materials Technical Engineering Procurement Process
UNT-005-015 Work Authorization Preparation and Implementation

Notes: Element #2 is not applicable in the end use authorization process. At Waterford 3 this process can dedicate parts approved by the existing design basis only. Use of new or changed part requires a configuration control process to be initiated.

Element #4 is not applicable in the end use authorization process. At Waterford 3 this process can issue identical replacement parts only and document update of installation is covered in the installation process.

Element #6 is not applicable in the end use authorization process. At Waterford 3 the installation process provides restoration controls.

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**
N/A	Y	Y	Y	Y	N/A	Y	N/A

Procedures: NOECP-001 Procedure/Guide Development
NOECP-002 Organization and Responsibilities
SD W2.101 Procedure Compliance
SD W2.105 Technical/Qualified Review and Control Process
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
SD W5.602 Problem Evaluation Information Request

Notes: Element #1 is not applicable since administrative procedures do not change the design basis.

Element #8 is not applicable to Design Engineering Procedures since temporary changes are not allowed.

The CMS process for passive commitments will be evaluated, and the appropriate procedural enhancements will be made to strengthen the control of the passive commitment data base.[36]

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	Y	Y	N/A

Procedures: UNT-005-022 Check Valve Monitoring, Maintenance and Trending Program
UNT-005-024 MOV Testing, Maintenance, and Trending Program
UNT-005-025 Fuse Control Program
UNT-005-031 AOV Testing, Maintenance and Trending Program

[36] Detailed action based on Section X initiatives

CONTROL OF LICENSE DOCUMENTS:

UFSAR Update

The UFSAR is periodically updated in accordance with 10CFR50.71(e) to include the effects of changes to the facility or procedures as described in the UFSAR, 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 UFSAR 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 UFSAR 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 UFSAR. Having identified an impact to the UFSAR, the responsible individual identifies any other potential UFSAR changes, documents the proposed changes to the UFSAR 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 UFSAR following implementation of the proposed change. Periodically (on a nominal refueling cycle schedule, not to exceed 24 months), the accumulated internal changes to the UFSAR 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 - UFSAR Update							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	N/A	Y	N/A

Procedures: LP-101 Handling of Incoming and Outgoing Correspondence
LP-114 Preparation, Review and Approval of FSAR Updates
SD W4.101 Operability / Qualification Confirmation Process
SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
SD W4.502 Revisions to Licensing Documents

Notes: Procedure SD W2.302 does not require that 10CFR50.59 evaluations consider the impact of approved UFSAR changes which have not been incorporated in the UFSAR. The UFSAR review, design basis review, coupled with management attention in this area indicate this weakness

has not resulted in an adverse impact on safety. Procedure SD W2.302 will be revised to require that 10CFR50.59 reviews consider the impact of approved but unincorporated UFSAR changes.[37]

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: LP-101 Handling of Incoming and Outgoing Correspondence
SD W2.105 Technical/Qualified Review and Control Process
SD W2.302 10CFR50.59 Safety Environmental and Impact Evaluations
SD W4.101 Operability/Qualification Confirmation Process
SD W4.502 Revisions to Licensing Documents
SD W4.503 Changes to the Technical Specifications, Technical Requirements Manual or Core Operating Limits
UNT-007-012 Implementation of Changes to Technical Specifications, Technical Requirements Manual, or Core Operating Limits Report

Technical Requirements Manual Change

The Technical Requirements Manual (TRM) in general contains those requirements that have been relocated from the Technical Specifications. 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

[37] Detailed action based on CR 97-0167.

[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	N/A	Y	N/A

Procedures: LP-101 Handling of Incoming and Outgoing Correspondence
SD W2.302 10CFR50.59 Safety Environmental and Impact Evaluations
SD W4.101 Operability/Qualification Confirmation Process
SD W4.502 Revisions to Licensing Documents
SD W4.503 Changes to the Technical Specifications, Technical Requirements Manual or Core Operating Limits
UNT-007-012 Implementation of Changes to the Technical Specifications, Technical Requirements Manual, or Core Operating Limits Report

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 - Commitments Management System							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	N/A	Y	N/A

Procedures: SD W4.501 Commitments Management System

OPERATIONS:

Normal, Off-Normal, and Alarm Response

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 Procedure Changes							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: OI-002-000 Annunciator, Alarm, Instrument Status Control
OP-100-010 Equipment Out of Service
OP-100-013 Writers Guide for Operating Procedures
OP-00X-XXX System Operating Procedures
OP-901-XXX Off-Normal Operating Procedures
OP-500-XXX Annunciator, Response Procedures
OP-600-XXX Annunciator Response Procedures
OP-904-XXX Off Normal Procedures
RF-00X-XXX Refueling Procedures

Notes: The procedure review process could be strengthened to explicitly require that changes to operations or maintenance procedures which could impact plant configuration or the design basis receive an engineering review. The process will be changed to incorporate this enhancement.[38]

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

[38] Detailed action based on Section X initiatives

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 Changes							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	Y	Y	Y	Y	Y

Procedures: OP-100-016 Emergency Operating Procedures, Change, Revision Verification and Validation Process
OP-902-XXX Emergency Operating Procedures
WG-001 Writers Guide for EOPs

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							
#1	**#2**	**#3**	**#4**	**#5**	**#6**	**#7**	**#8**
Y	Y	Y	N/A	Y	Y	Y	Y

Procedures: OP-100-003 Caution tag Control
OP-100-009 Control of Valves and Breakers
UNT-005-003 Clearances

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 Specification Interpretations							
#1	#2	#3	#4	#5	#6	#7	#8
Y	Y	Y	Y	Y	N/A	Y	Y

Procedures: OP-100-014 Technical Specification Compliance
UNT-007-004 Technical Specification Surveillance Control
UNT-007-012 Implementing Technical Specification Change Requests

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	Y	Y	Y

Procedures: N/A
Notes: Operator work-arounds are controlled by other processes such as the WA procedure and Equipment Out of Service procedure that have the necessary elements

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 are written that contradict existing plant procedures.

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

Procedures: OI-006-000 Operator Aids, Use and Control
OI-016-000 Daily Instruction/Standing Instruction
OI-034-000 Shift Supervisor Center Desk Guide

Notes: Operations has reduced the scope of the type of information that can go in standing orders. Prior to that change, there were some areas of weakness.

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: MD-001-032 Maintenance Department Work Authorization Closing
UNT-007-053 Engineering Work Authorization Process
UNT-005-002 Condition Identification
UNT-005-015 Work Authorization Preparation and Implementation

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	Y

Procedures: MD-001-020 Environmental Qualification Program
MM-004-XXX Mechanical Maintenance PM Procedures
UNT-001-015 Environmental Qualification Program
UNT-005-012 Repetitive Task Identification
UNT-005-015 Work Authorization Preparation and Implementation

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	Y

Procedures: MD-001-032 Work Authorization Closing
UNT-005-002 Condition Identification Procedure
UNT-005-015 Work Authorization Preparation and Implementation

Repair and Replacement

The Repair and Replacement Program determines 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 enables field work to be performed, in accordance with applicable Code requirements, to approved design change implementation packages.

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

Procedures: MD-001-022 Section XI Repairs and Replacements
UNT-005-015 Work Authorization Preparation and Implementation
UNT-007-053 Engineering Work Authorization Process

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	Y

Procedures: MD-001-021 M&TE Accountability
OI-032-000 Control of Operations Department M&TE
UNT-005-011 Calibration and Control of M&TE
UNT-005-009 Dispositioning of M&TE Nonconformances
UNT-005-015 Work Authorization, Preparation and Implementation
UNT-005-035 Instrument Calibration Calculations

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 on page 14) 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 tests and rework 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: CE-002-100 Chemistry Technical Specifications Surveillance Performance Coordination
LP-121 Basemat Monitoring
ME-003-XXX Electrical Surveillances
MM-003-XXX Mechanical Surveillances
NE-004-XXX Technical Specifications Surveillances
NOECP-402 Basemat Integrity Check
NOECP-451 Conducting Engineering Inspection of Reactor Containment Building Protective Coatings
OP-903-XXX Operations Group Surveillance Procedures
OP-904-XXX Operations Group Surveillance Procedures
PE-005-XXX Engineering Surveillances

In-Service Testing

In-Service Testing (IST) is an ASME Code driven testing program for ASME Section III Class 1, 2, and 3 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 - In-Service Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: NOECP-258 Control of Waterford 3 Pump and Valve Inservice Test Program
PE-005-XXX Surveillances
SD W3.201 ASME Section XI Responsibilities
STA-001-005 Accumulator Tests
UNT-006-021 Pump and Valve Inservice Testing

Notes: There is a need to make improvements to ensure that changes to the Design Bases (i.e., safety analysis assumptions, etc.) are reviewed for impact on the IST Program. The document cross reference database will address this area.[39]

The IST program is going through a major upgrade as noted in the Design Basis Documentation discussion of Attachment 1.

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: UNT-005-027 Infrequently Performed Test or Evolutions
UNT-007-022 Special Test Procedure

[39] Detailed action based on Section X initiatives

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: ME-007-XXX Electrical Retests
UNT-005-015 Work Authorization, Preparation and Implementation
UNT-005-020 Post Maintenance Testing
UNT-005-027 Infrequently Performed Test or Evolution

Notes: The maintenance retests have been identified as a weakness in that they do not consistently retest design basis parameters. The appropriate plant procedure will be revised to ensure maintenance retests consistently retest design basis parameters.[40]

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 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: MD-001-031 MOV Settings and Signature Analysis
PE-005-040 Differential Pressure Testing of MOVs
UNT-005-024 MOV Testing, Maintenance and Trending Program

[40] Detailed action based on Section X initiatives

UNT-005-031 AOV Testing, Maintenance and Trending Program
UNT-006-022 Check Valve Monitoring Maintenance and Trending Program

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: PE-001-014 Heat Exchanger Performance
PE-001-012 ACC/CC HX and Pump Performance
PE-004-021 CCW Heat Exchanger Performance

Snubber Testing

Snubbers are tested per requirements specified in the individual site Technical Specifications. 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: PE-005-011 Mechanical Snubbers Visual Inspection
PE-005-012 Hydraulic Snubbers Visual Inspection
PE-005-014 Snubber Sampling and Functional Test

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	N	Y

Procedures: PE-005-001 Containment Integrated Leak Rate Test
STA-001-004 Local Leak Rate Testing
UNT-006-019 Control of Local Leak Rate Testing

Notes: The as-left valve position may not have independent verification. The appropriate plant procedure will be revised to require that as left valve positions be independently verified.[41]

Fan/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 Reg Guide 1.52, Reg Guide 1.140, and ANSI 510.

Configuration Management Process Elements - Far .'ilter Testing			
#4	#5	#6	#7
Y	Y	Y	Y

Procedures: PE-004-XXX HVAC Tests
PE-005-XXX Surveillances

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 a visual inspection of the piping while it is at normal operating pressure.

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

Procedures: HP-001-110 Radiation Work Permits
NOECP-001 Development, Revision, and Deletion of Procedures, Standards and Guides

[41] Detailed action based on Section X initiatives

SD W2.302 10CFR50.59 Safety and Environmental Impact Evaluations
SD W2.501 Corrective Actions
SD W5.602 Problem Evaluation/Information Request
STA-001-007 Nominal Operating Pressure Testing
UNT-001-002 Procedure Development, Review & Approval
UNT-005-002 Condition Identification
UNT-005-012 Repetitive Task Identification
UNT-005-015 Work Authorization
UNT-005-027 Infrequently Performed Tests or Evolutions
UNT-006-017 Control of System Hydrostatic Testing
UNT-007-003 Control of Consumable Materials
UNT-007-022 Special Test Procedures

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**
N/A	Y	Y	Y

Procedures: FP-001-018 Pre Fire Strategies
FP-001-022 Design Change Fire Protection/Safe Shutdown Review
OP-903-056 Fire Protection Functional Test
SD W2.202 Fire Protection and Safety Programs
UNT-005-013 Fire Protection Program

Notes: Element #4 is not applicable because this testing class does not affect design basis documentation. Degradation discovered would be controlled by a design change or similar process.

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 on page 14) 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 (ISI) Program

The purpose of 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 as well as compliance with other requirements, such as proper selection of components, calibration of equipment, and qualification of examination personnel.

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

Procedures: NOECP-251 Ten Year Inservice Inspection
QAP-3XX Non Destructive Examination Series
QAP-4XX Non Destructive Examination Series
SD W3.201 ASME Section XI Responsibilities
UNT-005-015 Work Authorization, Preparation and Implementation

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: HP-001-110 Radiation Work Permits
NOECP-001 Development, Revision, and Deletion of Procedures, Standards and Guides
NOECP-254 Control of Flow Accelerated Corrosion
NOECP-255 Administration of Piping Inspection for MIC
NOECP-303 Design Change Packages
NOECP-306 Document Revision Notices
NOECP-403 Replacement/Repair Piping Corrosion
UNT-005-002 Condition Identification
UNT-005-012 Repetitive Task Identification
UNT-005-015 Work Authorization Preparation, and Implementation
UNT-007-003 Control of Consumable Materials
UNT-007-053 Engineering Work Authorization Processing

Note: There is no single document that integrates all the facets of a comprehensive MIC program. Design Engineering will evaluate the need to develop a site MIC Program Plan to accomplish this objective.[42]

Non-Destructive Examination (NDE)

The 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
N/A	N/A	N/A	Y

Notes: See Inservice Inspection. This process is included in the evaluation for Inservice Inspection.

[42] Detailed action based on Section X initiatives

Welding Program

10CFR50, Appendix B, 10CFR50.55a, and ASME Sections III and IX form the basis for the EOI welding program. The EOI welding program consists of one administrative procedure -- EP-P-001, thirty-one 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 performed in accordance with these documents.

Configuration Management Process Elements - Welding Program			
#4	**#5**	**#6**	**#7**
Y	Y	N/A	Y

Procedures: EP-P-001 Control of Special Processes
DEAM Appendix No. 2; EOI Welding Program Standards and Procedure Specifications
MM-001-051 Performance Qualification and Training
MM-001-054 Control of Documentation of Welding
NOECP-325 Review of Contractor Welding Programs
NOECP-326 Implementation of the Waterford 3 Welding Manual
NOECP-327 Administration of the EOI Welding Program
SD W3.201 ASME Section XI Responsibilities
UNT-007-056 EOI Welding Program

Notes: Element #6, restoration controls are outside the welding process and handled in the implementing work control process.

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. Some systems are reviewed daily, while others are reviewed only when an adverse trend appears.

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

Procedures: UNT-007-025 Plant Trending Program
UNT-007-052 Outside Containment Temperature Trending Program

UNT-007-054 Systems Engineering Program
UNT-007-055 Inside Containment Temperature Trending Program

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			
#4	**#5**	**#6**	**#7**
Y	Y	N/A	Y

Procedures: NOECP-252 Steam Generator Eddy Current Testing
NOECP-257 Steam Generator Secondary Side Loose Parts Inspection
PROG-I-252 Steam Generator Eddy Current Testing
PROG-I-257 Steam Generator Secondary Side Loose Parts Inspection
Notes: Element #6 restoration controls are handled under the WA 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 page 35, 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 XVI) 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 XVI). 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, Human Performance Evaluation System (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

Procedure references:
SD W2.501, Corrective Action, Revision 5, dated 8/6/96

CONCLUSION

The review of the Corrective Action Procedure, Site Directive W2.501, determined the corrective action processes are adequately defined and well

documented. The review also determined the effectiveness elements are defined and well documented in Site Directive W2.501. There were no processes or effectiveness elements identified which were missing.

The Waterford 3 corrective action program has evolved from separate corrective action and problem resolution processes to a single corrective action document process. This evolution and consolidation of the Corrective Action Program has resulted in a more effective program.

Waterford 3 management has taken aggressive and proactive actions to ensure employees identify and document potential problems and that such problems are documented at a low identification threshold. This message has been continuously stressed at Waterford 3. The results are evident. There has been sustained growth in the CR initiation rate since inception. Waterford 3 employees, Entergy and contractors alike, are sensitive to the need to identify and satisfactorily resolve problems.

More recent program improvements have been implemented to ensure the appropriate level of resources continues to be focused on areas of safety significance. These recent program improvements have included new grading process, new trending program which monitors effectiveness and communicates priorities, new human performance investigation process, more detailed and thorough root cause analysis, and more senior management involvement.

Waterford 3 believes these changes to the Corrective Action Program have been effective in enhancing problem identification and ensuring proper focus in problem resolution. We also believe that the NRC and third parties have recognized these achievements and are encouraged by our progress.
Our consistent emphasis on the importance of the corrective action process coupled with our findings of process completeness and the implementation of recent program improvements, provide confidence in the ability of our corrective action process to identify and prevent recurrence of problems, while reporting appropriate events to the NRC.

ATTACHMENT 1
WATERFORD 3 DESIGN BASIS DOCUMENTATION DISCUSSION

A Design Basis Documentation Program has been performed at Waterford 3 for selected systems and structures. As a result of recent plant issues several additional DBDs are being developed as noted below. Further, a program will be implemented to upgrade selected DBDs and mechanical calculations for safety significant systems to ensure the assumptions and methodologies are valid.

In 1988, Waterford 3 took action to strengthen the documentation for the design basis. As a result of the additional licensing activities and documentation requirements associated with being a Near Term Operating License plant, it was determined that a design basis reconstitution program was not necessary. Therefore, a Design Basis Documentation (DBD) program was developed. The purpose of having a DBD program is to consolidate plant design input and bases information in an easy to use format to improve the overall capability to operate and maintain the plant.

The Waterford 3 DBDs capture selected information that describes system and component design basis, including specific system and component requirements, interfaces, and accident analysis assumptions. The DBD in essence serves as a "road map" to identify the basis for the design requirements. The DBD program included the development of 29 DBDs as well as the turnover of the original A/E's design basis calculations (approximately 39,000) and other documentation. The source documents referenced in the DBDs are: drawings, licensing correspondence, correspondence between Entergy, A/E, and vendors including the NSSS vendor, vendor manuals, calculations, analyses, construction QA records, Pre-Op and Startup test results and internal correspondence (Entergy, A/E, NSSS). The DBDs meet the intent of NUMARC 90-12.

The DBDs received an independent verification of the accuracy of the design basis statements, completeness of the design basis information, and interpretation of the cited references. Open items were identified, tracked, and resolved. Potential plant operability issues were evaluated for impact under the site procedure for determination of operability. See Table 3 on page 35 for a list of DBDs.

The DBDs are maintained as controlled documents and are required to be updated by Design Engineering Procedure "Preparation, Review, and Approval of Design Basis Documents" NOECP-323. This is accomplished through the use of a Document Revision Notice (DRN). A writer's guide was used to ensure consistency of the DBDs. Additionally, numerous SSFI type self assessments

have been performed, and these SSFIs have been used as a means identifying problems with DBDs and in general validating the accuracy of DBDs and the plant systems.

Another significant accomplishment of the design basis documentation effort was the development of selected Safety Analysis Design Basis Documents (SADBD). The SADBDs document the UFSAR Chapter 15 accident analysis assumptions in detail adequate for use by the Safety Analysis Engineers. The SADBDs are controlled through procedure "Preparation, Review And Approval Of Safety Analysis Design Basis Document" NOECP-701.

In order to strengthen the Waterford 3 design basis and configuration control several basis documents are being developed or upgraded. These include the following documents:

- A Containment Isolation DBD is being developed to provide a summary of documents and information regarding each of the 74 mechanical containment penetrations. The DBD will describe the valves used in the isolation function and the applicable General Design Criteria. The DBD will serve as the basis for the information documented in the UFSAR on containment isolation.

- A Tornado Design Criteria Document is being developed to reconstitute the basis for wind speed, atmospheric pressure change, and tornado generated missile for Waterford 3. This effort consists of a comprehensive review of the design and licensing basis including the UFSAR, Safety Evaluation Report, calculations, drawings, and other key documents.

- An Inservice Testing basis reconstitution effort is underway to completely review and validate the testing basis for ASME Class 1, 2, and 3. This will document the basis for their incorporation or exclusion in the plan and reconstitute the testing basis for components as necessary. As part of this effort applicable IST licensing commitments have been reviewed. This document is controlled under NOECP-0258 "Control of the Waterford 3 Pump and Valve Inservice Test Plan" procedure.

- The Ultimate Heat Sink Design (UHS) Basis will be developed to ensure that the appropriate design basis events are adequately documented.

- The Emergency Feedwater (EFW) flow design basis will be developed to validate the minimum required EFW flow.

- Technical Specification LCO Instrument Uncertainty Evaluation Project will be performed to ensure that the basis for LCO values includes appropriate consideration of instrument uncertainty.

These additional basis documents are expected to be completed by the June 30, 1998.

In addition to the above new documents, a program will be implemented to review and upgrade selected existing DBDs and mechanical calculations for safety significant systems to ensure that the assumptions and methodologies are valid. The guidelines for the content of DBDs will be upgraded based on the lessons learned from this process.

This review and upgrade program is expected to be completed by December 15, 1999.

The design review and upgrade work was identified and prioritized based on consideration of the results of the Design Basis Evaluation, the safety function of the system, the degree of interface between the A/E and the NSSS supplier, the quality of the documentation for the original design, and judgment.