Florida
Power
CORPORATION
Crystal River Unit 3
Docket No. 50-302

February 8, 1997
3F0297-01

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20055-0001

Subject: Response to Request for Information Pursuant to 10CFR50.54(f) Regarding the Adequacy and Availability of Design Basis Information

References: A. NRC letter to FPC, 3N1096-05, dated October 9, 1996
B. FPC letter to NRC, 3F1196-21, dated November 13, 1996
C. FPC letter to NRC, 3F1196-26, dated November 27, 1996

Dear Sir:

The purpose of this letter is to respond to your letter to Florida Power Corporation (FPC) dated October 9, 1996, (Reference A), requesting information regarding our configuration control processes at Crystal River Unit 3 (CR-3) and whether our plant configuration conforms with the design bases. Our response to the NRC's request for information is attached, and a summary is provided below.

FPC has taken extensive actions to document its design bases and to regenerate, as needed, its design documents. These actions include the following:

- FPC has developed Design Basis Documents (DBDs) for 80 systems and Enhanced Design Basis Documents (EDBDs) for the 37 most safety significant of these 80 systems.
- FPC has developed Analysis Basis Documents which identify the design bases of the accident analyses described in the updated Final Safety Analysis Report (FSAR).

- FPC developed and implemented Improved Technical Specifications (ITS), including development of Technical Specification Bases Back-up Documents to assure that the ITS and design bases are consistent.

- FPC has regenerated selected design documents as part of its Electrical Calculation Enhancement Program, Instrument Uncertainty Calculations Analysis Program, EOP Cross-step and Improved Technical Specification programs as well as to meet other specific needs.

FPC has performed and continues to perform walk-downs, tests, and assessments to assure that the plant configuration, performance and procedures are consistent with the design bases. In addition to the normal activities such as surveillance tests, in-service tests, post-maintenance and post-modification tests, and plant walk-downs, FPC has performed system functional assessments of the Makeup and Purification/High Pressure Injection System, the Instrument Air System, the Electrical Distribution System, Heating, Ventilating and Air Conditioning systems, and the Service Water Systems. Similarly, the NRC has performed a number of extensive team inspections, including an Operational Safety Team Inspection, an Electrical Distribution System Functional Inspection, and a Service Water System Operational Performance Inspection. These assessments of the consistency of plant configuration with the design bases identified specific issues which were or are being corrected through our corrective action program.

In the summer of 1996, FPC management undertook a comprehensive review of our design process including various facets of the process that could affect our design bases documents. This review was performed by an Independent Design Review Panel (IDRP). From the review we concluded that our design process, including control of the design bases should be enhanced. Also, in the summer of 1996, the NRC performed an Integrated Performance Assessment Process evaluation at CR-3, which included a Safety System Functional Inspection of the Decay Heat Removal System. This inspection identified additional design issues and areas needing improvement.

In August 1996, FPC performed a comprehensive root cause analysis which culminated in the "Management Corrective Action Plan Phase II (MCAP II)." Revision 0 of this corrective action plan and the IDRP report were transmitted to the NRC by Reference B. Revision 1 of the plan, which incorporated the corrective actions from the IDRP, was transmitted to the NRC by Reference C.

FPC and NRC assessments had also determined that the Emergency Diesel Generators (EDGs) and Emergency Feedwater System (EFW) currently do not fully conform with their design bases, and there are lower than desired design margins on some of the other safety systems. As a result, FPC has kept CR-3 shut down and is implementing actions to resolve the deficiencies with the EDGs and EFW system and to take other actions to assure that CR-3 is operated in accordance with the design bases.

As a result of the reviews and determinations discussed above, FPC has developed a "System Readiness Review Plan." This plan will review 105 systems using a graded approach designed to provide additional assurance that plant systems, structures, and components conform to the design bases. The "System Readiness Review Plan" is described in section (e) of the attached response. A more complete description will be provided by separate correspondence.

Based on our review, as detailed in the attachment (and considering the improvements made to date), FPC concludes that our current processes and programs provide reasonable assurance that the configuration of CR-3 will be maintained consistent with the design bases. FPC recognizes that it needs to make additional improvements in its processes and programs, that some of its systems need to be upgraded to conform with their design bases, and that confirmatory reviews for other systems structures and components are warranted. FPC is taking the necessary actions to accomplish these objectives, and provide additional assurance that the plant operation and configuration are within the design bases.

If you have any questions regarding the attached response, please contact me.

Sincerely,

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

PMB/RCW
Attachment

xc: Director, Office of Nuclear Reactor Regulation
Regional Administrator, Region II
Senior Resident Inspector
NRR Project Manager

STATE OF GEORGIA

COUNTY OF FULTON

P. M. Beard, Jr. states that he is the Senior Vice President, Nuclear Operations for Florida Power Corporation; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

Sworn to and subscribed before me this 8th day of February, 1997, by P. M. Beard, Jr.

Brenda J. Murray
Signature of Notary Public
State of Georgia

Notary Public, Douglas County, Georgia
My Commission Expires October 18, 2000

Stamp Commissioned Name of Notary Public

Personally known ____ OR Produced Identification ✓.

Type of Identification Produced FLORIDA Drivers License.
B630-673-36-111-0

Florida Power Corporation

Response to NRC Request for Information

Pursuant to 10CFR50.54(f)

Regarding Adequacy and Availability

of

Design Basis Information

February 8, 1997

NRC Request

(a) Description of engineering design and configuration control processes, including those that implement 10CFR50.59, 10CFR50.71(e), and Appendix B to 10 CFR Part 50.

FPC Response:

FPC has established processes to assure that the overall configuration elements for Crystal River Unit 3 including the design bases, documentation, procedures and physical configuration are consistent and remain so. The essential attributes of the current processes have generally been in place since commercial operation of the facility began in 1977. These processes are based on 10CFR50, Appendix B, Criterion III, ANSI N45.2.11, and related criteria and standards as addressed in the CR-3 Quality Assurance Program (Section 1.7 of the CR-3 FSAR).

The specific requirements of 10CFR50.59 and 50.71(e) are addressed separately in our control processes and herein. Our 10CFR50.59 program was modified to generally reflect NSAC-125. FPC was an active contributor to the development of the NSAC guidance and the efforts to gain its endorsement. We are also currently actively involved in Industry/NRC efforts to provide resolution of the remaining outstanding generic issues with NSAC-125 (NEI 96-07).

<u>Design Control Process</u>

One of the primary purposes of the engineering design control process is to assure the design bases, as defined by 10CFR50.2, are maintained. As described in 10CFR50.2, design bases is defined as, "Design Bases mean that information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design...." NUREG-1397 has further clarified this definition. This response focuses on the definition of 10CFR50.2 as further clarified by the NUREG. Maintenance of the design bases is accomplished by requiring that appropriate engineering activities be performed for changes, whether they are physical changes or changes to documentation/procedures. The quality of the engineering design is assured by procedural requirements that include 10CFR50 Appendix B requirements.

FPC has made significant efforts beginning in the early 1980s and continuing to the present to assure we have complete and accurate design bases information available. These efforts include the Design Basis Documents, Analysis Basis Documents and the Enhanced Design Basis Document (EDBD) Program. These and other initiatives are discussed more fully in section (c) of this response.

Engineering work is governed by the Nuclear Engineering Procedures (NEPs). A list of these procedures is attached as Appendix A. The NEPs are a comprehensive set of procedures covering performance of design-related work. Some of the key elements covered include the identification of design requirements and preparation of 10CFR50.59 safety evaluations (NEP-210), design analyses and calculations (NEP-213), drawing control (NEP-133), material specification (NEP-

?20), software control (NEP-135), design verification (NEP-261), project control and closure of design change packages (NEP-271).

The process that most frequently affects the plant design is the plant modification process. At Crystal River Unit 3, this process is the Modification Approval Record (MAR) process. The MAR process is applicable to safety related and certain non-safety related structures, systems and components and is controlled by NEP-210, *"Modification Approval Records."* NEP-210 provides the overall direction for the process and references other NEPs which provide guidance for specific activities within the process. The MAR process has been in existence since the plant began initial operation. Although the process has evolved due to experience, the basic elements related to the control of the modification process have been present. Physical changes to the plant except those that can be performed by the Plant Equipment Equivalency Replacement Evaluation (PEERE) or Commercial Grade Work Request (CGWR) process, described later, are performed in accordance with the MAR process.

The MAR Process was recently upgraded as a result of a Business Process Improvement (BPI) effort. The BPI was performed in 1993 and implemented in November 1994. The objective of the BPI was to streamline the process. In performing the BPI, FPC recognized it was essential that requirements, including NRC regulatory requirements, be satisfied by the revised process that was developed. To assure that regulatory compliance was maintained, the BPI started with the identification of all regulatory requirements, and upon completion of the redesigned process demonstrated that the requirements continued to be met.

The MAR process, as described in NEP-210, begins with the formal assignment of responsibility for the design change package (MAR Package) and for the verification of the package, and concludes with final documentation updates and package close out. It also covers the preparation and processing of the 10CFR50.59 safety evaluation. The process identifies interfaces and provides for coordination with the appropriate organizations to assure a complete, valid and fully accepted change results from the process.

FPC utilizes a project team approach for significant plant modifications. This approach is controlled by NEP-212, *"Processing of Modification Projects by Nuclear Projects"*, and Nuclear Operations Directive (NOD)-38, *"Planning, Budgeting and Scheduling Project Controls."* The project team concept is utilized to assure cross functional input to the design and coordination throughout the modification process. Design review boards are convened to provide the cross-functional reviews at the preliminary and final design stages of the project.

The design development begins with the requirement to identify and document the necessary design inputs. This includes identifying the source design input documents such as the design bases, regulatory requirements, codes, and standards with explanatory information such that reviewers and verifiers can review and understand the design input without additional information from the originator. The procedure includes specific requirements, various forms and specific guidance which incorporate the elements of ANSI N45.2.11, Section 3, *"Design Input Requirements."* Additional instructions to address CR-3 plant specific requirements are also included. Additional design documents such as analyses/calculations, drawings, procurement documents (specifications) and other controlled documents to support the design change are required to be developed or revised if already in existence to support the design change. Specific procedures in the NEP manual or other controlled procedure manuals provide instructions for development or revision.

Safety related design work including design changes is required to receive design verification in accordance with NEP-261,*"Design Verification."* This procedure incorporates the elements of ANSI N45.2.11, Section 6, *"Design Verification"*, including requirements for independence between the verifier and the originator, identification of the verification method, and documentation of the results. Guidance is also provided as an aid for verification by the design review method based on the provisions of ANSI N45.2.11, Section 6.3.1 as modified to address CR-3 plant specific considerations.

Safety related design work, including design changes, requires approval by an appropriate level of engineering supervision. Generally, for design activities, the approval of the various design documents and design changes (MARs) is the responsibility of the respective discipline supervisor. When a project team is utilized, the team also reviews and concurs with the MAR prior to approval.

The Plant Review Committee (PRC) is our on-site safety review committee composed of management personnel from the key functional areas of the organization. MARs with a 10CFR50.59 safety evaluation are required to be reviewed and approved by the PRC. A PRC review of a MAR may also be requested by the engineering supervisor or any individual participating in the review process. MARs are required to be authorized for installation by the Director, Nuclear Plant Operations (FPC's equivalent to Plant Manager).

The Field Change Notice (FCN) is used to modify an issued MAR. NEP-251, *"Preparation, Review and Approval of Field Change Notices"*, provides the direction for preparation, review and approval of FCNs, including design control measures commensurate to the original design. The procedure also includes provisions for MAR impact assessment (discussed later), appropriate change documents, and distribution of the completed FCN. The FCN is compared to the 10CFR50.59 safety evaluation for the original MAR to determine if there is an impact that requires a revision to the 10CFR50.59 safety evaluation. The FCNs that result in revised 10CFR50.59 safety evaluations are reviewed and approved by the PRC and Director, Nuclear Plant Operations prior to being implemented.

Drawings affected by design changes are revised or developed under the interim drawing process. This process is controlled by NEP-133, *"Control and Approval of Drawings,"* which provides a mechanism to illustrate what changes are being made to the plant while the change is in process. It also assures that multiple changes to the same drawing are tracked and coordinated and establishes the requirements for updating the original drawings when the field installation is complete.

MARs and associated FCNs are handled as a single package. Most engineering documents/drawings are updated to as-built configuration after the installation is complete and the related systems are returned to service. At that time, changes to a particular document/drawing resulting from a MAR and its FCNs are incorporated. Various timeframes are used for completion of revisions, depending on the nature of the document. "Control Room" drawings (e.g., flow diagrams) are required to be as-built prior to the systems being returned to service. Other drawings may take longer, but the Drawing Control System maintains outstanding changes as "interim drawings" until they are as-built. Following outages where a number of modifications may have been made which affect the same drawing, the revisions to the drawing are usually performed all at the same time. Drawing revisions are coordinated and accomplished through a single group within the configuration management section of engineering.

The review and revision to analyses and calculations, as well as the development of new analyses and calculations, is a fundamental element of engineering design work. The control of analyses and calculations is described by NEP-213, *"Design Analyses/Calculations."* This procedure is referenced in NEP-210 for the MAR process, but may also be used as a stand-alone procedure for work that does not affect the plant physical configuration. The procedure explicitly recognizes the significant interface requirements, primarily between design engineering, system engineering, licensing, maintenance and operations, associated with performing analyses and calculations. Appropriate personnel are required to concur and sign-off the analyses and calculations to assure inputs and assumptions are valid and the results are assessed for impact on the plant operation and documentation.

Analyses and calculations are processed differently depending on the nature of the analysis/calculation and the timing of expected installation of the associated MAR. A computerized on-line index is available for engineers to determine the latest revision of a particular analysis/calculation. Analyses/calculations are maintained as "living" documents and are controlled in a file available to the design engineering organization. Cross referencing analyses/calculations to other analyses/calculations or to other documents and components in the plant can be accomplished via two methods: (1) the Records Management computerized index (SEEK) system; and (2) through the Configuration Management Information System (CMIS) by the identification of common equipment tag numbers affected by the calculations. CMIS is described later.

Several of the analyses/calculations (including the more recent large computer generated type such as Emergency Diesel Generator loading, Electrical System, Station Blackout, and Engineered Safeguards System Hydraulic) are controlled such that the impact on these analyses/calculations are assessed by a case study when design changes are being developed. The technical acceptability of the proposed change and cumulative effect of pending changes are assessed by a case study to determine if a formal revision to the respective analysis/calculation is required at that time or if the change can be collected with other pending changes and a formal revision made at a later date. Recently, the NRC identified an apparent violation as a result of assessments for proposed changes not being verified prior to use in safety related work. This deficiency has been corrected and requirements and controls are now in place to assure that assessments are verified and have supervisory approval prior to the modification being put into service.

In the recent NRC Integrated Performance Assessment Process (IPAP) Inspection Report, Inspection Report 96-201 dated August 23, 1996, the NRC commented that "Engineering procedures and design guides were adequate for performing design changes...." The NRC and FPC, however, have identified some weaknesses related to our implementation of these processes and execution of engineering design work. As a result, FPC has initiated substantial corrective actions within the engineering organization to establish clear expectations for maintaining the design bases of the plant, for defining the design bases, and for ownership of the design bases down to the system level. These actions are identified in the

Management Corrective Action Plan Phase II (MCAP II).

Configuration Control Processes

The configuration control requirements for design changes include many elements starting with the engineering design change process for MARs described in NEP-210. Part of NEP-210 is the process to assure that MARs are evaluated for impact on the design bases. The process includes performing a "MAR Program Impact Assessment" which guides the design engineer through a checklist of key items to consider. The checklist includes considerations for specific items such as Emergency Diesel Generator loading calculations, Control Room Habitability Envelope, Station Blackout, High Energy Line Breaks, Safety Parameter Display System, and others as well as guidance for considering changes to the plant design basis documents and the Configuration Management Information System (CMIS). The procedure points to the respective controlling procedure for each of the items to effect the necessary change.

NEP-216, "*Plant Design Basis Documents*", is the engineering procedure for control of the Design Basis Documents and Enhanced Design Basis Documents (which includes design bases information). This procedure contains provisions for issuing interim changes (referred to as "Temporary Changes" (TC)) as the need for them is identified. The TC includes information specifying whether the TC is immediately effective or will be effective upon completion of a specific activity as well as requiring a 10CFR50.59 evaluation. The TC is verified by an independent engineer and approved by the respective discipline supervisor, then it is forwarded to Configuration Management for an administrative review and distribution. Configuration Management personnel determine the need for a "roll-up" revision to the design basis documentation based upon the time since last revision. If the design basis document is not immediately revised, the TC is entered into the appropriate section of the DBD/EDBD so users are aware of the TC.

Other physical changes that affect design details, but not the design bases, can be made using either a Commercial Grade Work Request (CGWR) or a Plant Equipment Equivalency Replacement Evaluation (PEERE). The CGWR may only be used after a screening is performed in accordance with Administrative Instruction AI-410, *"Preparation and Processing of Requests for Engineering Assistance"*. This screening is designed to assure the change will not affect the design bases. NEP-211, *"Commercial Grade Design Control"*, provides the direction for the CGWR process. The PEERE process is used for replacement of plant equipment when a manufacturer can no longer supply exact replacement equipment or when it is decided that it is more appropriate to utilize an equivalent part. This process assures that the new replacement equipment satisfies the design bases requirements for critical characteristics and authorizes replacement with the equivalent equipment. NEP-254, *"Plant Equipment Equivalency Replacement Evaluation"*, governs the PEERE process. Configuration control requirements, including documentation, drawings, specification, and analyses/calculations, are incorporated into CGWR and PEERE processes.

The Project Management group is responsible for obtaining reviews and approvals after a MAR is issued by Engineering. This includes reviews by various departments to assess the impact on procedures under their control, a PRC review and the plant director's approval. NEP-212 contains these provisions for controlling the project management requirements of a MAR. The same review process applies to CGWRs, FCNs, and PEEREs, when it is determined that configuration control is required. The MAR is subject to review by Operations, Maintenance, Chemistry/Radiation Protection, Security, Fire Protection, and other groups as appropriate. The review requires identification of respective procedures required to be changed prior to return to service as a result of the MAR, as well as those procedures required to be changed prior to MAR closure. Affected procedures are required to be changed prior to use. MARs are expected to be closed within six months of the return to service date. In addition, training impact is considered and a determination made if training is required and, if so, whether it is required prior to system turnover to Operations. The training review also evaluates the MAR for required changes to the plant reference simulator.

Pre-fabrication and field activities associated with plant modifications are implemented through the Maintenance Activity Control System (MACS) which is controlled by the CP-113 series procedures. Field work is performed in accordance with controlled documents. Development of associated work packages for field installation of modifications is controlled by the AI-602 series procedures. These procedures require evaluations for inspection plans which are developed in accordance with CP-113C, *"Inspection Planning."* Post modification functional tests are developed and controlled by CP-134. Work packages and functional test procedures are developed by specific organizational elements that are staffed with individuals having expertise in translating the design bases provided in the MAR package into these various work products.

Design changes in the plant are initiated and approved by Engineering. This includes FCNs to previously issued MARs and temporary modifications. Other changes in the field, such as jumpers used for trouble-shooting or testing, are controlled by procedures that have been reviewed by Engineering.

FPC has developed a number of computerized tools that have become an integral part of the configuration control process. FPC has an extensive Local Area Network (LAN) that covers the CR-3 site. Most CR-3 personnel have personal computer (PC) work-stations that are tied to the LAN. Satellite stations are available for those who do not have a PC workstation. The computerized tools can be accessed from the PC work-stations making large amounts of information available for immediate use. They are also subject to our software control program as defined by NOD-37, "*Software Quality Assurance.*" A brief description of these tools is provided as follows:

- FPC developed a general data base manager, the Configuration Management Information System (CMIS). It was developed as an integral and principal part of the design basis efforts in the 1980's. It contains multiple categories of information on approximately 60,000 major components in the plant. For example, it identifies key attributes such as safety classification; it is our Equipment Qualification (EQ) Master List and safety list; and it cross-references components to procedures and drawings. A large number of stand-alone data bases, lists and other information were merged into this application. The information is displayed on the computer screen in fields that are categorized by levels based on the safety significance of the information. The most significant information is verified and controlled, while the less significant information was less rigorously developed and is intended only as an aid for reference. These fields are coded in accordance with their level of control so the user knows whether the information has been verified. Our design control processes require only verified data be used for input to safety related work; therefore, if the information from the system is needed but not verified, it is verified before being used.

- The Maintenance Activity Control System (MACS) is used to generate, control, and review field work requests, whether they involve the implementation of some portion of a modification or are intended for corrective/preventive maintenance. The CMIS interfaces with MACS to identify safety classification, EQ status or other key information for components. This information is essential to the proper treatment of the work request within the overall work control process.

- The Nuclear Operations Commitment System (NOCS) is integral to commitment management and proper control of procedural content. NOCS relates continuing commitments made to the NRC to their implementation in our procedures and is an integral part of the procedure development and change control processes. This system is used to check for continuing commitments when changes to procedures are being developed.

- FulText, is a text search and retrieval system containing a wide range of documents. Current revisions of controlled documents such as plant procedures, technical specifications and the FSAR as well as NRC correspondence and a wide assortment of other information is readily searchable with this system.

- The Fully Integrated Material Information System (FIMIS) is a data processing system for the procurement information retrieval, control, and replenishment of items to be maintained in Stores. It contains the appropriate information (drawing references, codes and standards, description, safety classification, procurement method, receipt inspection plan, manufacturer and part number, storage requirements, etc.) to assure items are correctly ordered and received to maintain plant configuration. It provides a Bill of Material (BOM) for specific plant tags and indicates engineering approval status or restrictions associated with the various parts associated with the tag. FIMIS is also electronically linked to MACS.

Related Training:

FPC has a Technical Staff and Manager Training Program accredited by the National Academy for Nuclear Training. This training program requires periodic meetings between training and appropriate line management to provide curriculum oversight, evaluation of the training, and periodic evaluation.

Initial and continuing classroom training for the plant technical staff (Design and System Engineering, Licensing, Operations Engineering, etc.) is provided through the Engineer Orientation Program, the Advanced Engineer Training Program, and annual Technical Staff and Manager Requalification Training. The initial programs provide students with CR-3 specific instruction on plant systems, procedures and fundamentals. The orientation program also includes training on the CR-3 modification process and the Enhanced Design Basis Document (EDBD). Completion of position specific process and procedure training is monitored and tracked through position-specific qualification guides.

Selected Nuclear Engineering Procedures, Nuclear Operations Directives, Administrative Instructions and Compliance Procedures (CPs) are included as part of the position specific qualification guides for individuals requiring qualification. The individual is required to read/review the assigned procedures and then discuss them with a supervisor. The supervisor will "sign off" the individual (for qualification) if satisfied with the individual's level of understanding.

Continuing training includes training on new topics or refresher training on selected topics based on needs identified through the curriculum committee.

The qualification guides for Design Engineers, System Engineers and Licensing Engineers include training on the following, as appropriate:

NEP-133, *Control and Approval of Drawings*
NEP-210, *Modification Approval Records*
NEP-211, *Commercial Grade Design Control*
NEP-212, *Processing of Modification Projects by Nuclear Projects*
NEP-213, *Design Analyses/Calculations*
NEP-215, *Configuration Item Data Control*
NEP-216, *Plant Design Basis Documents*

NEP-251, *Preparation, Review and Approval of Field Change Notices*

NEP-253, *Preparation and Control of a Document Change Notice*

NEP-254, *Plant Equipment Equivalency Replacement Evaluation*

NEP-261, *Design Verification*

NOD-11, *Maintenance of the Current Licensing Basis*

NOD-38, *Planning, Budgeting and Scheduling Project Controls*

AI-400C, *New Procedures and Procedure Change Processes*

AI-410, *Preparation and Processing of Requests for Engineering Assistance*

AI-602, *MAR Work Package Preparation, Implementation and Closure*

AI-602A, *Commercial Grade Work Request Preparation, Implementation and Closure*

CP-113A, *Work Request Initiation and Work Package Control*

CP-113B, *Work Request Evaluation*

CP-113C, *Inspection Planning*

The qualification guide for Licensing Engineers also includes Nuclear Licensing Procedures (NL-07 specifically addresses Technical Specifications and NL-08 specifically addresses the FSAR).

Required distribution for modification packages includes Nuclear Operations Training. Packages are distributed to the Technical Training Supervisor, Engineering Support Training Supervisor, Operations Classroom Training Supervisor and Simulator Training Supervisor for evaluation of training impact. This process (distribution, evaluation and implementation) is controlled by TDP-105, *"Lesson Plan Preparation."* MAR packages are also distributed to the Simulator Maintenance and Engineering Supervisor for evaluation of impact on the CR-3 plant reference simulator. This process is controlled by TDP-401, *"Simulator Source Document Evaluation."*

10CFR50.59 and 50.71(e) Processes:

CR-3 curently uses a tiered process to control changes to the facility and procedures. NOD-11 establishes the site-wide requirements for maintaining the current licensing basis. This directive is based on the guidance of NSAC-125/NEI 96-07. The directive provides high-level guidance for evaluating activities in accordance with 10CFR50.59. Lower level department-specific procedures assure the requirements of the higher tier directive are implemented properly for appropriate activities.

These department-specific implementing procedures provide detailed instructions for evaluating whether a proposed activity requires a change to the technical specifications, the technical specification bases, or the FSAR. The procedures also instruct the user to determine whether new information needs to be added to the FSAR. Primarily, these activities involve plant modifications (including temporary modifications) and procedure changes.

Changes to the facility or procedures are evaluated against a number of criteria to assure compliance with licensed programs, comliance with event-free operations requirements, identification of activities requiring special approvals or briefings and other key attributes. The second phase of the evaluation determines whether the activity involves a change to the improved technical specifications (ITS). If a change to the ITS is required, the procedure dictates that the activity cannot be turned over to Operations without first receiving NRC approval via a license amendment. Activities which do not involve a change to the technical specifications are further reviewed to determine whether a 10CFR50.59 safety evaluation is required. If the safety evaluation determines that an Unreviewed Safety Question (USQ) is created, the procedures prohibit turnover to operations of the activity until NRC approval is received via license amendment.

Recently, some weaknesses have been identified in the 10CFR50.59 safety evaluation process at CR-3. Significant corrective actions have been initiated to resolve the weaknesses. These corrective actions are identified in our MCAP II. Some of the corrective actions included reviewing previous 10CRFR50.59 safety evaluations in order to determine how to best revise and strengthen the process providing additional training to personnel performing the evaluations establishing a single implementing procedure, clearly defining management expectations with respect to 10CFR50.59 safety evaluations and establishing a independent review group to review 10CFR50.59 safety evaluations for plant modifications performed at CR-3. Some of these actions have been implemented over the last several months, and implementation of others is in progress. A recent NRC inspection report, 50-302/96-17, noted that review of two preliminary 10CFR50.59 safety evaluation appeared to be more complete than past evaluations and that questions raised by the NRC had already been identified and were being addressed by the independent review group.

As discussed above, modifications, temporary modifications and procedure changes are required to be evaluated to determine whether a 50.59 safety evaluation is needed. Additionally, the corrective action procedure, CP-111, has recently been revised to include a requirement that a non-conforming condition may need to be evaluated to see if the condition is a USQ. Specifically, a 10CFR50.59 safety evaluation is required when the non-conforming condition conflicts with the FSAR description and the condition is not corrected for an extended period of time. CP-111 currently states that the degraded or non-conforming condition requires a 10CFR50.59 safety evaluation if it is not fixed within 90 days.

Changes to the FSAR including those resulting from the design change process are submitted to the Manager, Nuclear Licensing with an accompanying 10CFR50.59 or screening evaluation. The process within Licensing for FSAR changes is controlled by Nuclear Licensing procedure NL-08. Nuclear Licensing maintains hard copy files of the FSAR changes and associated safety evaluations. Nuclear Licensing is responsible for submitting changes to the FSAR and a summary of changes made under 10CFR50.59 to the NRC in accordance with 10CFR50.71(e) and

10CFR50.59, respectively. The update of controlled hard-copy versions of the CR-3 FSAR coincide with the submittal of an FSAR revision to the NRC. These updates can occur as much as 24 months apart depending on the fuel cycle length. To assure that personnel are aware of in-process changes to the FSAR in the interim period of time, Nuclear Licensing maintains a pending FSAR electronic file which is searchable at PC workstations via the Fultext document search software program. This allows personnel performing activities which may affect the FSAR to know whether their work affects the same FSAR sections as the work of others, thus alerting them to the need for coordination.

NL-08 prescribes the duties and responsibilities of the individual assigned the task of maintaining the FSAR. The procedure includes specific instructions on the format and content of the FSAR, the timing of submittals, the definition of editorial changes not requiring a 10CFR50.59 safety evaluation, and maintenance of the electronic and pending FSAR files.

In addition to 10CFR50.59 related changes, FPC's practice is to update the FSAR to reflect safety analyses for license amendments and other safety analyses required by the NRC. FPC will modify applicable procedures to formally implement this practice.

Conclusion

FPC concludes that the engineering design and configuration control processes, including those that implement 10CFR50.59, 10CFR50.71(e) and Appendix B to 10CFR Part 50, in place today provide reasonable assurance that the design bases will be maintained. However, recent review by FPC and others have identified areas where improvement is needed. These improvements have been identified in MCAP II and committed to the NRC in other correspondence.

NRC Request

(b) Rationale for concluding that design bases requirements are translated into operating, maintenance, and testing procedures.

FPC Response:

FPC believes there is reasonable assurance that design bases requirements are translated into operating, maintenance and test procedures. The rationale for this includes the following:

- Design bases information is available to and used by the procedure writers when appropriate.
- Procedures controlling the development and revision of procedures are in place.
- Specific reviews of procedure technical content by engineering are required.
- Procedures have been in use and have been demonstrated appropriate.
- Oversight of the processes and procedures provides additional assurance that the design bases have been translated into procedures.
- A NOCS review is performed for procedure changes to assure any affect on continuing commitments is addressed.

Processes implemented by procedures are in place at CR-3 to assure the above elements are followed to produce high quality, technically accurate procedures and procedure changes that conform with the design bases. Controlled process for procedure development and changes have been in place since before plant commercial operation. These processes have been enhanced as experience has identified areas for improvement, and implementing procedures will continue to evolve and even now are undergoing evaluation and improvement. When areas for improvement, errors or issues with procedures are identified, the problem identification and corrective action system (discussed in section (d)) or Nuclear Procedure Observation and Suggestion Tracking (NUPOST) (for improvements) are utilized to document and track the necessary actions through resolution.

The computerized tools discussed in section (a) are used as appropriate by the procedure writers and reviewers through their PC work-stations. In addition, controlled hard copy versions of key design bases documents are available at various site locations. This provides the procedure writers with access to relevant design bases information. In addition, the procedure writers have general plant experience and are expected to interface with personnel throughout the organization for support and clarification when they need help or have questions. They are expected to maintain a questioning attitude and to pursue resolution of any item or issue that appears incorrect.

During procedure development or change development, references are identified and documented which link the procedure to the source documents. Various regulatory requirements, standards, calculations, modifications, correspondence or other reference documents are listed to facilitate review and future revision. The Quality Assurance packages for procedure revisions contain these references.

Following the development or revision of a procedure, documented reviews are required by qualified reviewers and technical experts. These reviews assure that the procedure conforms with established quality standards for both administrative and technical considerations including impact on and conformance with the design bases. Recently, FPC had a review performed by an Independent Design Review Panel (IDRP) which identified that this area should be strengthened. As a result, specific requirements for engineering technical reviews of procedures that could effect the design bases are being incorporated into controlling procedures.

In addition to the above reviews, the Plant Review Committee (PRC) has a responsibility to review 10CFR50.59 safety evaluations performed for procedures. These procedures are presented to this cross-functional group and receive a review from various perspectives, including the effect on and conformance with the plant design bases.

The following procedures control the processes that assure design bases requirements are translated into operating, maintenance and test procedures:

AI-400C, *"New Procedures and Procedure Change Processes"* - This procedure addresses operating, maintenance and some test procedures. It was recently streamlined to enhance the process while strengthening the 10CFR50.59 safety evaluation and design bases review attributes.

AI-400F, *"New Procedures and Procedure Change Processes for EOPs, APs, and VPs"* - This procedure is currently being revised to enhance process efficiency and controls.

CP-134, *"Preparation, Approval and Performance of MAR Functional Test Procedures"*

NEP-210, *"Modification Approval Records"* - Interim controls by management directive have been put in place to enhance multi-discipline design input review and the 10CFR50.59 evaluations directly relating to assurance of adequate procedure revisions resulting from the modifications. A future revision to this procedure will incorporate these interim controls.

NEP-211, *"Commercial Grade Design Control"*

NEP-212, *"Processing of Modification Projects by Nuclear Projects"*

NEP-213, *"Design Analyses/Calculations"* - Improvements have been realized over the last year by requiring affected organizations to concur with design inputs and assumptions. They must also concur in and accept the results.

AI-400C and 400F require field validations of procedures where applicable, some minor changes do not warrant field validation. (AI-400F requires validation using AI-402C, "AP and EOP Verification and Validation Plan.") CP-134 requires testing of the design change being implemented, and this testing is often supervised or conducted by the test engineer who was the author of the procedure. These individuals are accountable for efficiently and successfully accomplishing the test. Complex tests are both field validated and "table-top" validated during test planning and through pre-job briefings.

AI-400C, AI-400F and CP-134 require that procedure changes conform with the design bases. Checklists and other review aids are supplied in the procedure to facilitate this requirement. Further assurance is gained by appropriate review of new and revised procedures by appropriate members of the design engineering organization.

Most operating, maintenance and test procedures have been in place for a number of years and have thus been validated through use on a number of occasions. With few exceptions, our use of procedures in response to plant transients has been adequate, and has demonstrated the technical adequacy of the procedures. The adequacy of the procedures is an integral part of the post-trip review process. AI-704, *"Reactor Trip Review and Analysis"* provides guidance for the post-trip review and the restart approval process. It also provides guidance for the preparation of the Unplanned Operating Event Report (UOER). UOERs 93-01 and 96-01 document examples of procedure adequacy.

The recent NRC IPAP evaluation included vertical slice assessments and reviews of procedures. The IPAP concluded that "Normal operating and emergency operating procedures in general were adequate for accomplishing their intended function...." In the engineering area, the NRC concluded "Overall, the licensee's performance in the area of procedures and programs was good."

A simple and effective computerized tool called NUPOST which stands for Nuclear Procedure Observation and Suggestion Tracking has recently been implemented that allows users or other reviewers to make suggestions to improve procedures. This tool provides for continuous validation and improvement of our procedures.

Audits, surveillance and other self-assessments are routinely performed for activities that affect or could affect the design bases. These assessment activities specifically address procedure technical quality and the conformance of activities to procedural guidance. This includes conformance of the procedures to the design bases, when applicable. For example, during one audit, 94-08-IAIR, a sampling of information from the EDBDs was compared against plant procedures, drawings, supporting calculations and the FSAR. This audit identified an inconsistency between the plant configuration, FSAR and EDBD for the Instrument Air/Station Air system. These assessments have also identified some procedural deficiencies with respect to conformance with the design bases. These findings have been identified and corrective action for them is being tracked by our problem identification and corrective action program.

As a result of our experience and some weaknesses identified by assessments, several initiatives have been undertaken to provide additional assurance that procedures conform with the design bases. These initiatives are described as follows:

The EOP Upgrade Program is currently being completed. FPC has developed a thorough cross reference and step-basis document for our EOPs. The design basis for each step is being reviewed and re-generated if missing or not retrievable. The recent NRC IPAP inspection of this program has indicated it appears to be resolving the EOP issues.

The Instrumentation Uncertainty Calculation Analysis Program was initiated because some calibration procedures used at CR-3 did not accurately reflect the setpoint calculations. Some of the calculations themselves were also found to have deficiencies. This was identified during our efforts to comply with Generic

Letter 91-04 which deals with extension of calibration intervals to support two-year operating cycles. FPC has established a graded approach to determine instrument string uncertainty using standard industry methodology based on the importance of the specific parameter. The program is reviewing the instrument strings from the sensing device through the indicator or actuation device to assure proper uncertainties are used and these are appropriately factored into the overall string uncertainty calculation. The objective is to assure instrument and string capability matches the functional requirement. This program is ongoing and has evolved into a standard I&C methodology for CR-3.

A Regulatory Guide (RG) 1.97 Instrumentation Study was initiated when FPC recognized that the administrative link between EOP content and RG 1.97 classification was not effectively maintained. FPC is currently reevaluating the use of instrumentation in the EOPs to determine if new RG 1.97 variables need to be identified or existing ones reclassified. A third party verification of this review will be performed.

The Technical Specification Bases Back-up Documents were developed as an integral part of the development of the Improved Technical Specifications (ITS) which were implemented in 1994. Before the scope of the ITS Bases was fully defined, FPC developed Technical Specification Bases Backup Documents as a tool to relate the design bases to the Technical Specification Bases during the development process. The fundamental purpose was to enhance the relationship between the design bases and the ITS. The Bases Back-up Documents reflect the research that was performed for most of the ITS bases that exist today. The Bases Backup Documents are kept for historical reference. Other change processes now assure the relationship between the design bases and ITS bases is maintained. As part of the development of the ITS, we also performed a comparison of the procedures implementing ITS required surveillances and tests to the ITS to assure the accuracy of the procedures by identifying and resolving discrepancies.

As noted earlier, FPC has an effective computerized system, NUPOST, to generate and collect comments on various procedures. This has generated a backlog of changes for the operating procedures (OP). Further, the issues discussed in the NRC request under 10CFR50.54(f) and other industry experience have led us to conclude that we should reduce the backlog and our process should be improved to be more consistent with current industry best practices such that all aspects of the change process are effectively performed in a timely manner. FPC has established a contract with an outside consultant who will use experienced personnel to assist us in developing and implementing a program to meet our objective. FPC plans to test the new process with a pilot program to review approximately 30 procedures. This pilot is in progress and is expected to be completed by the end of June 1997. Based on results of the pilot, plans will be established to complete this effort. Part of this program includes a review and revision of the procedure writer's guide to assure applicable requirements are efficiently met. This includes assuring that appropriate reviews are required to be performed on new and revised procedures. FPC expects that this effort will provide an additional element of assurance that the operating procedures are consistent with the design bases.

Conclusion

FPC concludes that there is reasonable assurance that the design bases are translated into operating, maintenance, and test procedures. The rationale for this conclusion is based on the programs and processes in place today. These are:

- Design bases information is available to and used by the procedure writers when appropriate.
- Procedures controlling the development and revision of procedures are in place.
- Specific reviews of procedure technical content by engineering are required.
- Procedures have been in use and have been demonstrated appropriate.
- Oversight of the processes and procedures provides additional assurance that the design bases have been translated into procedures.

Review of our programs and procedures recently have identified some specific weaknesses and opportunities for improvement that we are pursuing. These improvements are not essential to the conclusion drawn above but will provide important enhancements as part of a continuous improvement program.

NRC Request

(c) Rationale for concluding that system, structure, and component configuration and performance are consistent with the design bases.

FPC Response:

FPC recognizes that some of the systems at CR-3 need to be upgraded to conform with their design bases, and that confirmatory reviews for other systems, structures and components are warranted. These improvements have been identified in MCAP II and are being committed to NRC in other correspondence. Nevertheless, FPC believes that, in general, there is reasonable assurance today that other systems, structures, and components configuration and performance are consistent with the design bases. This is based on the fact that FPC has programs and processes in place to assure that the plant configuration and performance conform with the design bases, and has performed assessments to verify conformance with the design bases. The key elements of these programs, processes and assessments are as follows:

- The design bases information for the plant is documented and available.
- Processes are in place to maintain the plant configuration consistent with the design bases.
- Processes and procedures are in place to periodically test critical

system parameters to assure conformance with the design bases.

- System walk-downs and observations are conducted on a periodic basis by plant personnel to assess system condition including conformance with the design bases.
- Processes are in place to identify and document non-conformances (including non-conformance with the design bases), evaluate them for operability issues, determine whether they are reportable and to develop and implement corrective actions.
- Oversight of design and configuration control activities are performed including Quality Programs audits and surveillances, self-assessments, Plant Review Committee, Nuclear General Review Committee and other independent third party reviews.

Access and Availability of Design Bases Information

FPC has undertaken a number of initiatives to assure the design bases of the plant are available and accessible, and to assure that these initiatives and plant configuration are consistent. These initiatives have included:

- Developing "Design Basis Documents"
- Developing "Analysis Basis Documents"
- Developing "Enhanced Design Basis Documents"
- Developing "Safety Function Diagrams/Shutdown Logic Diagrams"
- Developing "Tech Spec Bases" and "Tech Spec Bases Back-up Documents"

- Implementing an "Electrical Calculation Enhancement Program"
- Implementing an "Instrument Uncertainty Calculation Analysis Program"
- Performing a review of the FSAR
- Installing computerized information systems

These efforts have compiled a significant amount of information related to the plant design bases. This information is available and accessible to support design related work and other activities that could affect the design bases or plant configuration. A review of the design bases information by an Independent Design Review Panel (IDRP) performed from June through October 1996 identified several improvements that could be made in this area. These included better definition of what information specifically is design bases information, assigning ownership and accountability for the accuracy of the information at the system level, improving the site-wide understanding of the design bases in general and enhancing the availability of the information to personnel who need it. These recommendations have been evaluated and the corrective actions have been incorporated into the MCAP II. The panel also concluded that there was a good general knowledge of the design bases within the engineering organization. Some of the initiatives undertaken by FPC are described in more detail below.

FPC initiated a program to develop Design Basis Documents (DBD) in the early 1980s. This was prior to the availability of broad industry experience in this type of effort. The Design Basis Documents were developed by the Nuclear Steam

Supply System vendor and Architect Engineer for approximately 80 systems. The resulting documentation was useful in identifying a considerable percentage of the design information. FPC implemented the Enhanced Design Basis Document (EDBD) program to assure the design bases information as defined in 10CFR50.2 was identified and to identify the source documentation for the critical values and parameters in the most safety significant systems. These systems included the Emergency Core Cooling Systems and their support systems as well as others which rank high in significance in our Probabilistic Safety Assessment (PSA). The EDBD program was initiated in 1989 and covered thirty-seven systems. The EDBDs were completed in 1992. The focus of the effort was to assure the design bases were specifically identified for the safety significant systems as identified by the PSA. The approach used for developing this information started with the identification of the fundamental regulatory requirement, identified the specific safety function required by the FSAR and regulatory requirements, and documented the critical values and parameters necessary to meet the function. The development of the EDBDs was consistent with the guidance provided in NUMARC 90-12. The FPC program was also reviewed by an NRC Team that reviewed Design Basis programs at six utilities. This led to the process used by FPC being reflected in NUREG-1397 "*An Assessment of Design Control Practices and Design Reconstitution Programs in the Nuclear Industry*". The EDBDs contain the design bases values and parameters for the systems and references to the source documents where the bases and details for the parameters were found. Reconstitution of design bases information was not included as part of this program, but instead reconstitution of specific bases have been performed as necessary to support modifications and other activities. Validation of the operational documentation and configuration against the EDBD information was performed during this program to assure there was consistency between the identified design bases, the documentation/procedures and the physical configuration of the plant. Documentation of the validation fills numerous volumes and is maintained for historical reference purposes.

FPC initiated an Analysis Basis Document (ABD) Program to evaluate plant operation and configuration with respect to the FSAR Chapter 14 Safety Analyses input assumptions. This was primarily done to provide additional assurance that there were no major issues related to the configuration of the plant with respect to the safety analysis assumptions. The program was phased in over several years in the mid to late 1980's and included determination of the bases for each input to the safety analyses and validation that the assumptions were consistent with the operation and configuration of the plant. The results of this program are documented in a set of ABDs which are controlled and maintained up-to-date as required by NEP-216. The information in these documents was validated and the validation records are maintained for historical purposes. The Chapter 14 Analyses at the time of this effort did not contain the full details on the spectrum of Small Break Loss of Coolant Accidents (SBLOCA). FPC is currently re-analyzing the SBLOCA scenarios and the results are being incorporated into the ABD and FSAR as appropriate.

FPC developed Safety Function Diagrams (SFD) and Shutdown Logic Diagrams (SLD) as part of the implementation of the Equipment Qualification program enhancement effort in the late 1980s. This effort was initiated to assure the EQ Master List was complete and was consistent with the design bases. These diagrams show the equipment and supporting equipment necessary to fulfill the key plant safety functions and the logic that is credited for satisfying the safe shutdown requirements. Although the diagrams were developed as tools to assure the EQ program was implemented properly and are not required for accurate and complete design work, they contain important information that may be used for other design related purposes. Subsequent to their development, these documents were not well-maintained or utilized fully for several years. FPC has a current initiative underway to revalidate these documents and plans to maintain the revalidated documents as controlled documents.

Improved Technical Specifications (ITS) were implemented for Crystal River Unit 3 in 1994. The FPC plant-specific development of the ITS included an effort by our design engineering department to develop Technical Specification Bases Back-up documents. This multi-volume document supports most of the Technical Specification Bases and provides the rationale and source document references for the Technical Specification Bases. This document was developed in part because in the early stages of the industry ITS program, there was uncertainty as to the level of detail that would be in the actual bases. FPC considered it important to understand the bases for the ITS and to assure the ITS Bases were consistent with the design bases and therefore developed the Bases Back-up documents. The development of the Bases back-up documents was accomplished through our NSSS vendor and an independent consultant. The development process included the review of appropriate procedures as well as a thorough review of ITS content and the design bases of the plant. We now rely on our configuration control processes to assure the Technical Specification Bases remain consistent with the design bases.

The Electrical Calculation Enhancement Program was conducted during the period of late 1987 through 1992. This was a comprehensive reconstitution of the safety significant electrical design of the plant from the switchyard to the end device. The NRC performed an Electrical Distribution System Functional Inspection at CR-3 in 1993 and found our electrical calculation program and the calculations themselves to be comprehensive and complete.

The Instrument Uncertainty Calculation Analysis Program was initiated in 1994 to resolve concerns that were first identified during the efforts to support the extension of the instrument calibration interval to twenty-four months. These efforts were initially focused on automatic actuation setpoints, but the program has expanded to other ITS Allowable Values and a number of other instrument uncertainty related issues (EOP input, tank volume calculations, etc.). These are very comprehensive calculations assessing instrument string uncertainty from the sensing device through the indicator or actuation device using standard industry methodology. The net result of this program is reconstituted design bases for those setpoints and related instrument strings translated into outputs that are much more usable in plant operating, calibration and test procedures.

The recent IPAP Inspection Report commented that "...licensee engineering staff was using good computer analysis techniques for electrical calculations..." and that "...recently performed instrument setpoint calculations appeared to be conservative and in accordance with industry standards...."

FPC is currently performing a review of our Final Safety Analysis Report (FSAR) which encompasses a portion of the NEI initiative 96-05, "Assessing Programs for Maintaining the Licensing Basis." This operational review goes beyond the sample scope of the initiative with respect to the FSAR. This review includes a comparison of the statements of fact in the FSAR with the EDBDs, operational procedures, and technical specifications to assure FSAR statements are properly reflected in them. This review will be completed for plant systems described in the FSAR and is nearing completion. Approximately 350 discrepancies have been identified. The resolution of these discrepancies are being handled within the corrective action program.

FPC developed a computerized data base system to allow plant design bases and configuration data to be accessed over the Local Area Network (LAN). The Configuration Management Information System (CMIS) is a tag-number based system that contains the design and safety classification system for the equipment in the plant. This system is also accessible through the MACS system which is our work planning system. The CMIS provides readily accessible design information on approximately 60,000 specific plant equipment items. The information on the system is categorized by level depending on the safety significance of the information. Verification has been performed on information that has safety significance.

__Processes in Place to Maintain Plant Configuration Consistent with the Design Bases__

FPC has processes implemented by existing procedures in place to maintain the plant configuration consistent with the design bases. Section (a) of this response describes the design and configuration control processes that are used to assure design work adequately considers the plant design bases, is performed in accordance with regulatory requirements and appropriately changes design bases documentation. Section (a) further discusses the processes for maintaining the physical configuration of the plant in conformance with the design bases. The processes utilized have been in existence since the initial operation of the plant, although they have been modified and enhanced as the result of experience. The processes that are used to assure procedure changes do not create conditions that are outside the design bases or inappropriately change the plant configuration are described in response Section (b). These processes assure that the appropriate engineering reviews are performed for changes initiated both internal to and outside the engineering organization. These reviews determine the acceptability of the change and assure, where necessary, that other documentation that may be affected by the change is also reviewed and updated.

Processes and Procedures in Place to Periodically Test Critical System Parameters

FPC maintains a technical specification surveillance program, Performance Test program, In-Service Inspection (ISI) Program and In-Service Test (IST) program to assure safety system functions remain fully operable. The implementing documentation for these programs falls under the control processes for assuring the plant configuration remains consistent with the design bases. Values and parameters identified to be periodically inspected or tested are derived from the design bases. Appropriate conservatism is included in the testing or inspection methodology to assure the tests will assure the design bases requirements will be met. Testing of the critical parameters is controlled by the plant technical specifications and tests are performed in accordance with approved procedures.

Pump testing performed in accordance with the ASME Code Section XI uses acceptance criteria based on system performance criteria developed using system hydraulic calculations. These calculations assure fluid safety systems can meet their design bases and this can be confirmed by testing. The IPAP evaluation recognized this program as a strength.

FPC also performs post-maintenance and post-modification tests. These tests help assure that maintenance and modifications have been properly implemented and conform with design requirements. Additionally, following these activities and as part of plant evolutions, FPC performs walk-downs to assure proper system lineups. FPC has controls, tagouts and clearances to assure that inoperable equipment is not inadvertently placed in service.

System Walk-downs and Observations

Plant system walk-downs and general plant walk-downs are also key to providing confidence in the conformance of the plant to the design bases. These walk-downs are regularly performed by plant operators, maintenance personnel, and system engineers for purposes that would lead to the identification of conditions that are not consistent with the plant design bases. Plant operators and system engineers perform routine system walk-downs to identify deficiencies related to either the performance or configuration of the system. One particular function that Operations performs is the system tag out process for clearances to perform work on systems. Other personnel, including the plant security force personnel, are frequently in the plant and have identified issues related to configuration control and conformance with the design basis. These walk-downs have been effective in identifying problems with configuration, including equipment not in expected position. Numerous other examples of issues identified during walk-downs are contained in our problem identification and corrective action system. Overall, these walk-downs have not identified any generic concern regarding conformance with the design bases.

Process to Identify and Document Non-Conformances

The Problem Identification and Corrective Action Program is another important consideration in assuring the plant configuration and performance conform with the design bases. This program is described more fully in response Section (d). This program provides the mechanism to document problems or suspected problems when they are found to assure they receive a proper level of review and appropriate corrective actions are taken. The problem identification process involves a single graded approach to problem identification and resolution. The process assures prompt review for operability issues, reportability considerations and a cross functional screening to assign a significance level. There are four significance levels to the system and, depending on the significance of the issue, the item may be trended, receive an apparent cause determination, be designated to receive a root cause determination or, in the most significant cases, a full root cause investigation. The full root cause investigation is performed by a dedicated team led by a qualified team leader from an organizational area not directly involved with the problem. The process is designed to make it easy for personnel to document an issue and provides the mechanism to trend lower level issues so adverse trends may be identified and addressed before a larger issue results. The program also assures effective corrective action is taken to correct the problem identified. This program is used to document and address problems identified as related to the design bases or configuration control.

Oversight and Assessments

FPC performs assessments to assure conformance with the design bases. Oversight of programs and initiatives helps assure that the processes are working properly and the products developed are of an acceptable quality. FPC has utilized several methods to perform this oversight function. One of the primary methods of management oversight is provided by periodic Quality Programs Department (QPD) audits. In the design and configuration control area the audits have covered a wide range of topics. Several examples include aspects of the 10CFR50.59 process, design control procedure compliance, sampling of information from the Enhanced Design Basis Document and comparison with plant documentation and configuration, and review of the FSAR updates for compliance with 10CFR50.71(e). Audit results are documented in formal reports, and findings from these audits are documented as precursor cards for follow-up action and tracking. These audits have been helpful in identifying design bases issues. Examples of issues identified through audits include: conflicting information in the EDBDs for Reactor Building Cooling and Reactor Building Spray; and discrepancies between the FSAR and the EDBDs. There have also been positive findings such as: samples of information from the EDBDs have been compared to information in drawings, procedures, supporting calculations and the FSAR and have been found to be consistent; and samples of assumptions stated in the FSAR and other design documents have been verified to be supported by calculations and analysis.

QPD also performs surveillances at the request of management or when an adverse trend is detected. This process is frequently used during the execution of a focused program. As an example, during the implementation of the ITS, surveillances were performed on the rewrite and conversion of the Technical Specification required surveillance procedures. Audits and surveillances have also been performed by QPD on the Instrument Uncertainty and Calculation Upgrade Program and on the EOP Upgrade Program. As with the audits, results are documented and findings are tracked through the corrective action process.

System functional assessments have also been performed utilizing the basic inspection process of the regulatory SSFI. These type assessments have been performed on the Makeup and Purification/High Pressure Injection System, the Instrument Air System, the Electrical Distribution System, Heating Ventilating and Air Conditioning (HVAC) systems and the Service Water System. These assessments have been performed as part of the QPD audit program and have involved both internal technical resources and outside resources.

One of the primary objectives of these assessments is to assess the ability of the systems to meet operational performance requirements and conformance with the design bases. All of the assessments identified non-conformances which were processed through our corrective action program.

Self-assessment is another oversight method that has been utilized and has been incorporated into NOD-45, "*Management Self Assessments and Performance Monitoring.*" An internal assessment was performed of the engineering organization in 1990. This assessment included a review of design engineering using the INPO Document 90-009, "Guidelines for the Conduct of Design Engineering". Recommendations implemented from this self-assessment included enhancements to the calculation process, development of a program for the issuance of discipline oriented design guidelines, and the development of an engineering quarterly report, "Performance Indicator Monitoring Report." In 1995 FPC had an INPO "Assist Visit" to review the design organization/modifications process, and FPC also performed a self-assessment of the PEERE process. The review originated as a result of a number of precursor cards identifying issues with the PEERE process. This review identified some interface issues which were corrected. In 1996 a self-assessment of the procurement process including the procurement engineering functions was performed. One particular issue identified in the engineering area was the need to incorporate Electric Power Research Institute guideline NP-5652 into our process for downgrading the classification of component piece parts. Appropriate process changes were made to resolve this finding.

One particular form of assessment that FPC has used is to charter a panel of independent experts to focus on a particular area of concern. This approach was used in 1996 when FPC established an Independent Design Review Panel (IDRP) to review the CR-3 processes and programs related to the plant design bases. This panel was comprised of senior nuclear executives and highly qualified technical personnel including four management representatives from the other utilities that operate B&W reactor plants. This panel did an in-depth review of the design bases and configuration control processes over a five month period. This effort resulted in a formal report with recommendations for enhancing our overall processes. The recommendations and FPC corrective actions are identified in our MCAP II. Some of these include: clearly defining the role of Operations for assuring that plant operation is consistent with the design bases; enhancing the Design Review Panels for modifications to require Operations representation; training for organizations in addition to Engineering on the design bases; the panel also encouraged FPC to continue to pursue why there are plant configuration differences between CR-3 and the other B&W plants, particularly in the Emergency Feedwater and Core Cooling systems. In general the IDRP found the design bases documentation at CR-3 to be generally consistent with industry practices and regulatory guidance, that the design bases information is well understood by design and systems engineers and that the combination of the EDBDs, FSAR and technical specifications provides a high confidence level that sufficient information exists to address design bases issues.

Oversight of activities at the plant including conformance of the plant configuration and performance with the design bases is also provided by the Nuclear General Review Committee (NGRC). This committee is composed of senior level individuals with expertise and broad based experience in the nuclear industry. This committee reports to the senior vice president who is the Chief Nuclear Officer. FPC has made significant changes in the overall membership and improvements to the operation of this committee over the past year. Improvements include additional focus by the NGRC on issues related to the performance of the plant and the plant configurations as they relate to the design bases.

NRC Inspections

The final element of oversight is the NRC inspection program. Numerous inspections in the design bases and configuration control area have been performed including an Operational Safety Team Inspection (OSTI) in 1987, an Electrical Distribution System Functional Inspection (EDSFI) in 1993, a Service Water System Operational Performance Inspection (SWSOPI) in 1994 and a Decay Heat System Safety System Functional Inspection (SSFI) as part of the Integrated Plant Assessment Program review performed in 1996. All of these NRC activities focused heavily on the design bases and configuration control for the systems reviewed and identified issues which have been or are being resolved through our corrective action program.

Recent Problems Involving the EDGs and EFW

Recently, FPC and the NRC have identified that the Emergency Diesel Generators (EDGs) and Emergency Feedwater System (EFW) at CR-3 do not fully conform with their design bases. As a result, FPC has kept CR-3 shutdown and is currently implementing actions to correct this condition and is taking other actions to assure that CR-3 is operated in accordance with the design bases. These include implementation of a "System Readiness Review Plan", discussed in Section (e), using a graded approach to review 105 systems.

Conclusion

FPC recognizes that some of the systems at CR-3 need to be upgraded to conform with their design bases, and that confirmatory reviews for other systems, structures and components are warranted. These improvements have been identified in MCAP II and have been committed to the NRC in other correspondence. Nevertheless, FPC concludes that, in general, there is reasonable assurance today that other systems, structures, and components are able to perform their safety functions.

The rationale for this conclusion is based on the following:

- The design bases information for the plant is documented and available.

- Processes are in place to maintain the plant configuration consistent with the design bases.
- Processes and procedures are in place to periodically test critical system parameters to assure conformance with the design bases.
- System walk-downs and observations are conducted on a periodic basis by plant personnel to assess system condition including conformance with the design bases.
- Processes are in place to identify and document non-conformances (including non-conformance with the design bases), evaluate them for operability issues, determine whether they are reportable and to develop and implement corrective actions.
- Oversight of design and configuration control activities are performed including Quality Programs audits and surveillances, self-assessments, Plant Review Committee, Nuclear General Review Committee and other independent third party reviews.
- The results of inspections and assessments have verified, in general, that plant SSCs are able to perform their safety functions.

NRC Request

(d) 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.

FPC Response:

FPC's program for identifying and correcting non-conformances has evolved significantly over time. During the early years of plant operation, we utilized a report referred to as a Non-conforming Operation's Report (NCOR). These reports were categorized relative to significance which consequently led to different levels of root cause evaluation and subsequent review.

During our early design bases efforts, FPC utilized existing processes to identify, track and correct design bases non-conformances. Later programs in the design bases area did establish a process, as recommended by NUMARC 90-12 and our discussions with the NRC, for identification and resolution of discrepancies uniquely identified as part of these or other focused efforts. The process identified the issues, provided for a prompt review for operability considerations, categorized the items based on safety significance, established time frames for resolving issues in the various categories, and tracked the issues through resolution. A separate organizational unit within the engineering department was dedicated to the resolution of these issues. As the number of issues trended downward, the focused organizational unit was phased out and the separate process was eliminated.

The current non-conformance system has evolved over the last few years, moving to a single non-conformance identification and corrective action system. Initially, this process used a document called a problem report (as opposed to the preceding NCORs) and these were handled (tracked, trended, closed, etc.) by our independent Quality Assurance (QA) organization. In time, it was determined that some attributes made the program less effective than was desired. Perceived ownership by the QA organization did not provide the expected level of line accountability, the threshold for classification of an issue as a problem was higher than desired, and the documentation process was cumbersome. In addition, FPC desired to identify and correct precursors to prevent problems.

As a result, FPC enhanced its process by transferring ownership of the problem identification and corrective action process to the plant line organization and by developing a low threshold precursor identification program. This process included a simple-to-use card that could be filled out by anyone and input to the process easily. Significant efforts were also put forth to educate the general plant population on the importance of identifying and correcting low level issues to prevent larger problems.

This concept and philosophy is embodied in our Event Free Operations Program. This program has been effective over the last two years in identifying several thousand suggestions, constructive criticisms, precursors, potential and real problems. However, under this program, it was difficult to tell where the threshold between a precursor and a problem fell and when a formal root cause evaluation was warranted. This was recently addressed by merging the two systems (precursor and problem report systems) into a single system with four categories, Grade A through Grade D, based on significance. Items in the least significant category, Grade D, are addressed by trending. Issues in the Grade D category are usually general comments, questions or very minor issues that may not need corrective action. The second category, Grade C, requires an apparent cause determination and corrective action judged appropriate by the apparent cause reviewer. The upper two categories, Grade B and Grade A, require formal root cause evaluations and corrective actions with the most significant, Grade A, receiving a full root cause investigation performed by a dedicated team led by an independent team leader selected from an organizational area not directly involved with the problem.

One of the important attributes of our current program is the simplicity with which individuals can identify an issue. A single pocket sized card is filled out by the originator and submitted. The individual does not have to have an understanding of the various categories or how the process works. The individual categories, Grade A through Grade D are assigned by a multi-disciplined group of manager level personnel which meets daily to perform this function.

Compliance Procedure (CP)-111, "*Processing of Precursor Cards for Corrective*

Action Program," is the site procedure used for the identification, documentation, evaluation and correction of adverse conditions. Identification of design issues are handled under this procedure. Once an issue is identified, an initial screening is made by the Nuclear Shift Manager to determine if there are operability or regulatory reporting requirements. If operability is potentially in question, the SSOD is involved in the determination. Separate procedures more fully address these aspects of the process. CP-150, *"Identifying and Processing Operability Concerns,"* is based on the guidance provided by Generic Letter 91-18 and other NRC staff guidance. CP-151, *"External Reporting Requirements,"* addresses reportability generally and, in particular, addresses design bases issues by providing guidance for setting up a review group and the process to disposition them. CP-151 is a recently developed procedure which has taken the external reporting aspects of the process out of CP-111 and other documents and consolidated them into one specific procedure for this purpose.

As noted above, after an issue has been reviewed from an operability and reportability standpoint, it is reviewed by a cross-functional screening committee. Based on the significance of the issue, this committee may require the development of a formal root cause along with a corrective action plan, an apparent cause evaluation, or a decision that the issue be trended only. CP-111 requires that significant issues requiring a formal root cause evaluation with a corrective action plan and a plan to prevent recurrence be tracked to completion. For problems requiring a root cause evaluation, an extent of condition assessment is either part of the root cause process or is a corrective action.

Each of the position-specific qualification guidelines for positions included in our accredited Technical Staff and Manager training program includes a requirement for training on CP-111 and CP-150. A requirement for training on CP-151 is being added to these qualification guides. Training on CP-111 is conducted for licensed and non-licensed operators, Shift Technical Advisors (STAs), Nuclear Shift Managers (NSMs), craft personnel and first-line supervisors. Additionally, training is provided to licensed operators, STAs and NSMs on CP-150 and CP-151.

CP-111 also establishes the Corrective Action Review Board (CARB) composed of senior site management. This board is chartered to provide oversight of the root cause evaluations and the resulting corrective actions. This provides additional assurance that the corrective actions are consistent with the identified root cause, will prevent recurrence of the problem and are able to be implemented.

Audits, assessments and NRC inspections of the problem identification and corrective action program have been and continue to be performed on a regular basis. These oversight activities have identified some deficiencies and weaknesses and were among the factors contributing to the changes outlined above. Some of the most recent issues identified have resulted in changing to the single graded approach process, extensive training in root cause evaluation for selected personnel and increased emphasis on trending of less significant issues. Since these substantial revisions were only made recently, sufficient experience has not yet been accumulated to judge the effectiveness of these revisions. However, FPC expects that these revisions will result in substantial improvements in corrective actions, and FPC will monitor and audit the implementation of the revised process to assure its effectiveness.

Conclusion

FPC concludes that adequate processes are in place today for identification of problems, implementation of corrective actions (including actions to determine the extent of problems and actions to prevent recurrence), and reporting to NRC. Several substantial changes made recently provide additional assurance that these processes are adequate.

NRC Request

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

FPC Response:

FPC has taken a number of initiatives over the years to enhance design control and configuration management. Although our processes and programs have been developed in a manner consistent with NRC identified priorities and industry practice, they have not consistently provided the desired level of conformance with design bases for all systems. In particular, we have determined that the EDGs and EFW currently do not conform fully to their design bases. Thus, FPC recognized that the overall effectiveness of our processes and programs need to be improved.

In response, we have initiated a number of corrective actions including our System Readiness Review Plan to confirm that other systems, structures, and components conform with their design bases. Additionally, we have voluntarily kept the plant shut down until we resolve the EDG and EFW system issues and complete other actions to assure that CR-3 systems are operated in accordance with the design bases, (reference FPC letter to the NRC, 3F1096-22, dated October 28, 1996). Additional efforts set forth in MCAP II and our regular corrective action program are structured to provide the desired level of effectiveness in our programs/processes for maintaining the design bases. Each of these are discussed in more detail below.

General discussions with the NRC related to the performance of the design engineering organization and configuration control have been taking place for approximately two years. These have been in conjunction with discussion of several other management related issues. These discussions resulted in FPC developing the Management Corrective Action Plan (MCAP) in March 1995 that has been discussed with the NRC in periodic meetings. In April of 1996, additional focus was placed on general areas warranting improvement related to the operation of CR-3 including Engineering performance and configuration management of the design bases.

Considering these issues and experience gained from the 1996 refueling outage, FPC chartered an Independent Design Review Panel (IDRP) composed of senior nuclear executives, technical experts and design engineering managers from the sister B&W plants. This panel was charged with reviewing the overall design bases and configuration management programs at CR-3. The panel completed the review and issued a final report dated October 15, 1996. This report was docketed under letter NRC 3F1196-21, dated November 13, 1996. Specifically related to the design bases and configuration control area, the IDRP review provided valuable recommendations for improving these programs. The report also noted the "Past initiatives by FPC relative to improving its knowledge of the CR-3 Design Basis were significant and were reviewed by the Panel". The IPAP team also positively noted the extent of design bases information available to design engineering.

Coincident with these FPC initiatives, the NRC performed an Integrated Performance Assessment Process (IPAP) evaluation that included an SSFI of the Decay Heat Removal System at CR-3 during the summer of 1996, which identified similar weaknesses. From these and other sources, FPC performed a comprehensive root cause analysis and developed the Management Corrective Action Plan Phase II. Revision 0 of this plan was issued on October 31, 1996 and Revision 1, which incorporated the recommendations from the IDRP, was issued on November 22, 1996. These plans were discussed at meetings with the NRC and were docketed under letters NRC 3F1196-21 dated November 13, 1996, and NRC 3F1196-26, dated November 27, 1996 respectively.

In September of 1996, CR-3 was shut down due to a problem with the turbine lube oil system. While shutdown, the FPC design engineering organization identified concerns related to conformance of the EDGs and the EFW system with their design bases. Based on these concerns, FPC has maintained the plant shutdown until they are resolved.

As part of our efforts to address the extent of condition of design bases issues, FPC is implementing a "System Readiness Review Plan" to systematically and methodically review 105 plant systems to provide additional assurance that the plant configuration is within the design bases.

A brief description of the "System Readiness Review Plan" follows:

The plan will be implemented for 105 plant systems using a graded approach. Each of the systems will be classified into 1 of 3 levels. The level classification of the 105 systems will be determined by a process that takes into account factors such as the importance to plant safety as determined by the Maintenance Rule ranking process, Probabilistic Safety Assessment ranking, number of modifications performed on the system, and other opportunities for configuration change. These factors are matrixed and weighted to provide an overall ranking. Sensitivity assessments will be performed to check the effect of the various factors. Then, as a cross check, the systems essential to maintaining the integrity of the three fission product boundaries (fuel clad, reactor coolant system, containment) were identified and compared to the ranking above. Based on these efforts, the systems are then classified as Level 1, Level 2 or Level 3. The level classifications are being reviewed by the Plant Review Committee for concurrence.

Level 1 systems will receive the most comprehensive review and will involve extensive research of design and licensing bases documentation to identify the parameters and attributes for the system walk-downs.

"Timelines" will be developed for these systems to identify modifications, past non-conformances and significant NRC interactions related to these systems. An as-found condition assessment that identifies open issues with the systems such as operator work-arounds, open maintenance requests, pending modifications, overdue preventive maintenance, etc. will be performed. A multi-discipline team walk-down of the systems will be performed. These teams will use FPC and independent personnel including Engineering, Licensing and Operations personnel. Discrepancies identified during these processes will be documented in our problem identification and corrective action program. Once the steps are completed, an as-left assessment will be performed by the team to determine the conformance of the plant configuration with the design and licensing bases documentation, material condition of the system, and the ability of the system to perform the required design and licensed functions. Discrepancies will be reviewed and corrective actions categorized for resolution. These may include actions required to be completed prior to restart, items that can be completed during mode ascension or items that can be completed post restart.

Level 2 systems will also receive a comprehensive review and will receive input on specific issues that may be generic resulting from the Level 1 reviews. Level 2 systems receive a focused design and licensing bases review. An "as-found" assessment to identify open issues and team walk-downs will be performed. As with Level 1 systems, discrepancies will be documented in our problem report and corrective action program. An overall assessment will also be performed by the team to determine the ability of the system to perform the required design and licensed functions.

Level 3 systems will receive an "as-found" assessment and a comprehensive walk-down by the system engineer. Discrepancies will be identified and dispositioned as they are for Level 1 and Level 2 systems.

The plan requires the development of a report on the system which is ultimately reviewed by senior management for their concurrence on the readiness of the system for power operation. Guidance is also established for monitoring and tracking the system performance and status of corrective actions through mode ascension and into power operation.

We will provide the NRC with a separate submittal by the end of March 1997, describing the "System Readiness Review Plan" and will discuss this process with the NRC. This will include a schedule for completing the plan.

FPC has also initiated a number of improvement activities for the 10CFR50.59 safety evaluation process. The fundamental procedures (NOD-11, NEP-210 and AI-400) have been and are being reviewed and revised to reflect the best practices of the industry, respond to feedback from the NRC and to reflect our own lessons-learned. The role of the Safety Analysis Group has been expanded to include independent review of 10CFR50.59 safety evaluations for modifications being performed. The size of the group has been expanded to provide the diverse technical experience to conduct multi-disciplined reviews of the 10CFR50.59 safety evaluations. A one day "sensitivity" training session was held with this group to help assure their knowledge of the current issues and practices. More comprehensive training, which will include personnel on site responsible for 10CFR50.59 safety evaluations, is scheduled to begin at the end of the first quarter 1997.

A recently completed assessment of the CR-3 licensing organization and processes has identified process issues related to the availability of existing licensing and design bases information. This assessment determined that this information should be more accessible to personnel who perform 10CFR50.59 safety evaluations and to assure the configuration control processes are effective in keeping the numerous documents consistent and accurate. Based on this assessment, FPC is developing additional actions to improve the processes which affect design and licensing bases document control.

FPC over the last decade has made concerted efforts to develop the design bases information for the plant and make it available. This has been done through a prioritized review of activities. FPC focused first on the fundamental design bases reflected in the principal safety analyses (Analysis Basis Documents), and then the balance of the fundamental design with emphasis on regulatory-related attributes (safety list, EQ Master List). FPC also developed Design Basis

Documents for approximately 80 systems and Enhanced Design Basis Documents for the 37 most safety significant of the 80 systems. In parallel, FPC conducted an extensive effort to develop Improved Technical Specifications and performed plant specific work, which resulted in CR-3 being the first plant to implement a full conversion to the ITS. FPC is also completing an extensive EOP upgrade program to assure that our plant specific procedures conform with our plant specific design bases, and we are continuing with efforts to establish a higher level of consistency between the routine operating procedures and design bases.

Conclusion

FPC concludes that our current processes and programs provide reasonable assurance that the configuration of CR-3 will be maintained consistent with the design bases. The rationale for this conclusion is based upon our responses in Sections (a) through (d). Additional enhancements are being made to our programs, processes and implementation to provide added confidence and assurances that CR-3 will be operated and maintained within the design bases and deviations will be reconciled in a timely manner.

NUCLEAR ENGINEERING PROCEDURES

Procedure #	Title
100 Series	Organizational Requirements
101	Nuclear Engineering Procedures Manual Overview
102	Organization of the Nuclear Engineering and Projects Department
103	Management of Design Activities Assigned to External Engineering Organization
104	Interface Design Control
105	Interface Procedure for Control of Crystal River Fossil Plant Design Changes Affecting CR3
110 Series	Procedural Requirements
111	Procedure Development and Control
115	Control of Nuclear Engineering Manuals
120 Series	Training Requirements
121	Indoctrination and Training to Nuclear Engineering Operations and Procedures
130 Series	Documentation Requirements
131	Document Approval and Control
132	Control of Records Retention
133	Control and Approval of Drawings
135	Use and Control of Computer Software

NUCLEAR ENGINEERING PROCEDURES

Procedure #	Title
140 Series	Review and Reportability Mechanisms
144	10CFR21
145	Design Control Program Audits
200 Series	Pre-Design Development
201	Preparation and Processing of SPs and Engineering Studies
202	Preparation and Processing Conceptual Designs and Design Walkdowns
210 - 240 Series	Design Development
210	Modification Approval Records
211	Commercial Grade Design Control
212	Processing of Modification Projects By Nuclear Projects
213	Design Analyses/Calculations
215	Configuration Item Data Control
216	Plant Design Basis Documents
217	Environmental and Seismic Qualification Program Manual
218	Fire Protection/Detection Design Considerations
219	System Design Considerations and Protection of Safeguards Information
220	Specifications and Minispecifications
221	Engineering Software and Technical Information Review
222	Qualification For Equipment in the Scope of 10CFR50.49
223	Preparation, Review, and Processing of Bills of Material (BOM)

NUCLEAR ENGINEERING PROCEDURES

Procedure #	Title
224	Emergency Diesel Generator Load Calculations
225	Receipt Inspection and Test Procedure
227	Established Load Capacity Cable Tray Criteria at CR3
228	Inventory Adjustments to Incorporate Modifications/PEEREs/CGWRs
229	ASME Section XI Repair/Replacement Program
230	High Energy Line Break (HELB) Design Considerations
231	Environmental Qualification Maintenance Program
232	Environmental Qualification Walkdowns
233	Review of Vendor Supplied Components Requiring Seismic Qualification
234	Station Blackout
235	Design Considerations for Motor Operated Valves
250 Series	<u>Change Documents</u>
251	Preparation, Review, and Approval of Field Change Notices
253	Preparation and Control of a Document Change Notice
254	Plant Equipment Equivalency Replacement Evaluation
255	Maintenance of Seismic Qualification for Replacements
260 Series	<u>Design Verification</u>
261	Design Verification
270 Series	<u>Design Closure</u>
271	As-Building of Modification Approval Records, Commercial Grade Work Requests, and PEEREs

NUCLEAR ENGINEERING PROCEDURES

Procedure #	Title
280 Series	Nuclear Fuel Management
281	Nuclear Fuel Design
282	Special Nuclear Material Inventory Reporting to DOE/NRC
283	Fuel Assembly and Component Accountability
284	Monthly Fuel Accounting
285	Saxon Updates
286	Cycle Startup Report
287	Core Damage
288	Pressure Temperature Limits Report
290 Series	Nuclear Safety Analysis
291	Engineering Study/MAR Safety Analysis Using the CR3 PRA Model
292	ITS/ITS BASES Change Safety Analysis Using the CR3 PSA Model
300 Series	ISI/OTSG
301	Control of ASME Section XI Examination Program Plans, Manuals, and Reports
302	Verification of Certification for NDE Personnel, Equipment, and Consumables
303	Retention and Control of Calibration Blocks
304	Control of FPC Section XI NDE Procedures
305	Control of Relief Requests
306	Control of Plant Modifications for PSI and ISI Requirements
307	ANII Interface Requirements