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re report

SUBJECT: Forwards response to NRC requirement to provide info re adequacy & availability of design bases info for plant.

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February 7, 1997
GO2-97-022

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21**
ADEQUACY AND AVAILABILITY OF DESIGN BASES INFORMATION

Reference: Letter dated October 9, 1996, JM Taylor (NRC) to JV Parrish (SS), Request for Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information

The referenced letter required that all licensees submit information which will provide the Nuclear Regulatory Commission (NRC) added confidence and assurance that each plant is operated and maintained within the design bases, and that any deviation from design bases is reconciled in a timely manner.

The Washington Public Power Supply System (Supply System) agrees with the NRC's position that licensee programs designed to provide configuration control sufficiently demonstrate that the plant's physical and functional characteristics are consistent with, and are maintained in accordance with, the plant's design bases. The Supply System also supports the NRC's belief that licensees are responsible for knowing the plant's licensing basis, having the appropriate documentation that defines the design bases, and providing formal guidance for assessing plant and/or procedure changes as required by NRC regulations. The Supply System believes that maintaining the design integrity of WNP-2, while integrating design function with operations, maintenance, and license requirements, is vital to ensuring efficient, safe plant operation, and providing adequate assurance of the protection of the health and safety of the public.

WNP-2 was constructed and verified to meet design bases requirements at the time it received its Operating License. Previous processes and procedures, along with the in-depth reviews provided by self assessments, reviews, audits, validations, and NRC inspections, provide reasonable assurance that WNP-2 has been maintained and operated in a manner consistent with the design since that time. WNP-2's current change management processes, coupled with personnel training on these processes, provide reasonable assurance that the plant will be maintained and operated in accordance with its design in the future.

A074

ADEQUACY AND AVAILABILITY OF DESIGN BASES INFORMATION

Pursuant to the requirements of 10 CFR 50.54(f), the Supply System hereby submits the enclosed response to the NRC's requirement to provide information regarding the adequacy and availability of design bases information for WNP-2.

Respectfully,

J. V. Parrish
Chief Executive Officer
Mail Drop 1023

Enclosure

cc: LJ Callan - NRC RIV
JE Dyer - NRC RIV
KE Perkins, Jr. - NRC RIV WCFO
TG Colburn - NRR
NRC Sr. Resident Inspector - 927N
DL Williams - BPA/399
NS Reynolds - Winston & Strawn

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

Subject: Adequacy and Availability of Design Bases Information

I, J. V. PARRISH, being duly sworn, subscribe to and say that I am the Chief Executive Officer for the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.

DATE 7 February, 1997

J. V. Parrish
Chief Executive Officer

On this date personally appeared before me J. V. PARRISH, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 7th day of February 1997.

Traci M. Hardy
Notary Public in and for the
STATE OF WASHINGTON

Residing at Kennewick, WA
County of Benton
My Commission Expires August 9, 1999


STATE OF NEW JERSEY
PUBLIC
NOTARY
EXPIRES

ADEQUACY AND AVAILABILITY OF DESIGN BASES INFORMATION

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

February 7, 1997

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GENERAL OVERVIEW

Introduction

Reference: Letter dated October 9, 1996, JM Taylor (Nuclear Regulatory Commission) to JV Parrish (SS), Request For Information Pursuant to 10 CFR 50.54(f) Regarding Adequacy and Availability of Design Bases Information

The referenced letter required that the Supply System describe the adequacy and availability of design bases information at WNP-2. In addition, the letter requested information related to plant procedure and configuration fidelity with that design bases information. In response to this required submittal, the Supply System reviewed past activities performed to provide us with an understanding of the condition of our design bases information and our fidelity with the design bases. We reviewed the scope and corrective actions for previous problems identified by both the Supply System and the Nuclear Regulatory Commission in this area, and performed a review of the programs and procedures used to maintain this information current.

This response consists of the cover letter, this short summary, Attachment 1, Appendices to Attachment 1, and Attachments 2 and 3. The attachments provide detail outlining the bases for and supporting the conclusions summarized here. Attachment 1 responds to the five specific categories of information requested in the referenced letter and includes the following sections:

Section A This section describes the engineering design and configuration control processes, including those that implement 10 CFR 50.59, 10 CFR 50.71(e), and 10 CFR Part 50, Appendix B.

Section B. This section describes the processes and procedures that have ensured that design bases requirements are translated into operating, maintenance, and testing procedures.

Section C. This section describes the activities and programs that provide assurance that system, structure, and component configuration and performance, as implemented in the plant are consistent with the design bases.

Section D. This section describes the processes for identification of problems and implementation of corrective actions, including actions to determine the breadth of problematic conditions and actions needed to prevent recurrence. In addition, Section D describes our program for reporting required conditions to the staff.

Section E. This section addresses the overall effectiveness of our current processes and programs and provides an assessment of the information provided in sections A through D in relation to maintenance of the plant's design bases.

Attachment 2 provides a summary of design review or reconstitution programs. Attachment 3 provides specific commitments to improvement and review efforts which relate to the issue of design bases compliance. They represent the only commitments in this response.

Summary of Results

WNP-2 was constructed and verified to meet design bases requirements at the time we received our Operating License. The processes and procedures in place throughout our operating history, including our self-assessments by line and independent organizations, have provided reasonable assurance that we have maintained fidelity between plant configuration and procedures and the design bases.

This response outlines the current programs and procedures for change management. Their provisions are similar to those maintained throughout our operating history. This response also identifies a series of special assessments and validation efforts which demonstrate that we properly translate design bases information into plant procedures. In addition, we describe efforts where we have validated plant configuration conformance with the design bases. These activities have identified deficiencies which have been addressed through our corrective action process, which has also been in place throughout the plant operating history. These assessments provide confidence that our programs and procedures have been effective throughout plant operation.

This response also identifies a series of routine efforts which assess our program and procedure effectiveness, or help to maintain fidelity with our design bases through self checking. These routine assessments have identified program weaknesses and individual failures to implement the program and procedural requirements. Again, those weaknesses and failures are addressed through our corrective action process. In addition, we have some special efforts related to operational improvements which validated and verified the fidelity of procedures and plant configuration to design bases. Examples of such efforts included implementing Improved Technical Specifications and Power Uprate. These routine efforts provide additional assurance that we have maintained fidelity with our design bases.

WNP-2 has also provided upgraded tools to assist personnel in managing change, especially in accessing licensing and design bases information. These tools make it easier to check and verify design bases information prior to implementing a proposed change to the plant or our operational methods.

WNP-2 has also maintained a Corrective Action Program for problems identified by our staff. This program evaluates the problem for operability of systems, reportability to regulatory agencies, cause analysis, and action to prevent recurrence. This program has been improved substantially over our operating history. The effectiveness of the program has also been regularly evaluated by our internal assessment process. The program has been used to correct deficiencies identified through the special and routine

assessment efforts mentioned earlier. This program has functioned acceptably over our operating history and thus provides assurance that we have maintained fidelity with our design bases.

The Supply System also recognizes that we have areas where we can further improve our change management practices and have thus provided commitments to specific improvement efforts in Attachment 3. These improvement initiatives will improve our ability to maintain WNP-2 consistent with the design bases in the future.

Response Process

A team was formed with senior management leadership which spanned organizational lines. Senior level line managers and staff with knowledge of, and programmatic responsibility for, programs and processes documented in this response were responsible for providing information and providing validation support for the submissions on which this letter is based. Through an interactive process, including working level personnel and management, the initial submissions were reviewed, assessed, and consolidated.

Validation

Validation of the data supporting the response was conducted by Supply System staff. The validation process confirms that referenced sources support the proposition for which they are cited.

For the portions of this response which describe current programs and procedures, this description represents a snapshot as of January 1997. These programs and procedures are fluid and will change as WNP-2 continues to identify more effective methods for performing work, including responding to industry initiatives and self identified deficiencies. As with all plants, our programs have evolved in response to industry and Nuclear Regulatory Commission initiatives since our Operating License was granted.

Background

WNP-2 is a General Electric Boiling Water Reactor-5 which received an Operating License in 1983. Based on internal and Nuclear Regulatory Commission reviews prior to the License we believe there is reasonable assurance the plant met the design requirements at that time. Change management programs were and are in place to control plant modifications and assure consistency with the design and licensing bases.

The term design bases is defined in 10 CFR 50.2 as ' "Design bases" means 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. . .'

Many efforts summarized in this response address the broader scope of licensing basis. However, these efforts also include activities related to design bases. This response summary is not intended to be a listing of every improvement initiative or corrective action taken by the Supply System which improved WNP-2 fidelity with the design bases. The summaries demonstrate a commitment to maintenance of the plant configuration and operation in accordance with the design and licensing bases throughout plant life.

WNP-2 change management programs have continued to grow and develop over time in response to self identified problems and industry initiatives and insights. Our Corrective Action Program has changed significantly as has our understanding and ability to perform root cause analyses for identified problems. The Corrective Action Program has evolved and, in turn, has improved our ability to identify programmatic weaknesses. This has led to improvements in our Procedure, Modification and Configuration Control Programs. Our programs have also been improved in response to industry initiatives such as Nuclear Safety Assurance Committee - 125 (including Nuclear Regulatory Commission guidance issued in 1996), Nuclear Management and Resource Council 90-12 and Generic Letter 91-18. We have also taken advantage of new technologies such as computer search capability for the Final Safety Analysis Report, and development of computer indexes for calculations and design bases documents to assist our staff in performance of reviews required for changes to the plant or procedures.

We have also improved our tracking of issues and the timeliness with which they are resolved. In the past, slow updating of documents or inadequate tracking of changes caused inconsistencies and errors in our evaluation of the design and licensing impact of changes to the plant.

Throughout this response we make reference to various plant documents including procedures. Appendix 1 provides a document hierarchy to assist in understanding the relationship among these documents.

Reference is made in this response to certain programs and procedures. These documents are retained on-site and are available for staff review.

Introduction

This attachment provides a summary of the information used to develop the response to the Nuclear Regulatory Commission's request. The information and programs summarized here ensure that WNP-2 has established and verified the adequacy of our design, and provide reasonable assurance that we have maintained fidelity with that design bases throughout the operating life of WNP-2. The following is a brief discussion of configuration control philosophy. This discussion is intended to assist the reader in integrating the information provided in the rest of this attachment.

Summary of Configuration Control Elements

We will focus the response to the 50.54(f) request by addressing five specific configuration control elements. Those are *Design Development, Design Translation, Change Management, Configuration Verification,* and *Support Activities.*

Design Development - This element covers the selection of design inputs, such as regulatory requirements (e.g., General Design Criteria from 10 CFR 50, Appendix A), performance requirements (e.g., from plant specific accident analyses) and requirements from applicable Codes and Standards (e.g., American Society of Mechanical Engineers, American Society for Testing and Materials, American Welding Society) which are used in the development, review, and authorization of design output documents (e.g., drawings, WNP-2 Plant Specifications, procurement specifications, calculations).

For an operating plant, key attributes to success include:

- Establishing an implementing procedure(s) to guide engineers in the selection of design inputs and the development of design outputs (to ensure adequacy of design);
- Providing access to the original design inputs and the analyses used to define the design and develop the original design outputs (availability of design);
- Routinely checking to ensure that the procedures are followed and the results from those procedures maintain fidelity with design requirements (adequacy of design).

Prior to receipt of the Operating License this function was the primary responsibility of the WNP-2 engineering staff through review and oversight of activities performed by the architect/engineer and major equipment vendors (such as General Electric for the Nuclear Steam Supply System). After plant licensing the responsibility for *Design Development* rests with the WNP-2 engineering staff augmented as necessary by contractors.

The results of this development were summarized in the Final Safety Analysis Report which was reviewed by the Nuclear Regulatory Commission. Nuclear Regulatory Commission approval of the adequacy of this design development is addressed in part by the safety evaluation reports and by the authorization of an Operating License for WNP-2.

Design development in the operating phase of a plant is almost exclusively associated with two activities, changing the plant through modifications, or the replacement of original parts with new parts when original parts are no longer available. Further discussion of *Design Development* in Sections A, B, and C of this attachment will be related to those two activities.

Design Translation - This element covers review of design outputs and translating them into configuration documents (see Appendix 2 for a list of examples of configuration documents). Key attributes for successful design translation at an operating plant include:

- Controlling design outputs to ensure their availability and to ensure that users can differentiate between current and historical design information;
- Establishing and implementing controls for the development of design output documents, including provisions for sources to be used and reviews to approve initial documents and revisions;
- Establishing and implementing controls for the development of procedures used to operate the plant, including provisions for source information and reviews and approvals, which ensure that we continue to operate in accordance with assumptions in the design and licensing bases;
- Providing for periodic self checks and independent reviews to ensure the controls are working and the resulting documents are maintaining fidelity with current licensing basis.

The first two key attributes are primarily implemented by engineering. The output documents define the configuration baseline.

Design Translation also addresses the review of the configuration baseline and vendor information to generate procedures and plans necessary to operate the plant safely and efficiently. Those procedures and plans include those identified in Chapter 13 of the Final Safety Analysis Report and other controlled documents. Some of the more important procedures and plans include:

- Operating Procedures (Plant Procedure Manual Volumes 2, 3 and 4);
- Emergency Operating Procedures (Plant Procedure Manual Volume 5);
- Maintenance Procedures (Plant Procedure Manual Volume 10);

- Surveillance Procedures (Plant Procedure Manual Volume 7);
- Calibration Procedures (Plant Procedure Manual Volumes 7 and 10);
- Test Procedures (Plant Procedure Manual Volume 8);
- Maintenance schedules for preventive and predictive maintenance (including Plant Procedure Manual 1.5.13, *Scheduled Maintenance System*).

The procedure control attribute is performed primarily by trained and licensed operators, maintenance technicians, engineers, and other support personnel. WNP-2 procedures and plans were developed prior to the Operating License and have been maintained and enhanced throughout plant operation. Sections A, B, and C will provide additional detail of our implementation of this element.

Change Management - This element addresses the desire to improve the plant configuration or the way we operate the plant. The need for such change may arise from situations such as: changes in equipment availability, corrective action for equipment failures or performance trends, enhancements to operation learned from sharing industry experience or self-assessments, or recommendations of equipment vendors. Key attributes for operational success in this element include:

- Establishing and implementing procedural controls addressing all change mechanisms to ensure each proposed change is evaluated for its effect on the current design and licensing bases;
- Implementing the procedural controls mentioned in the earlier design development and translation elements for all permanent plant changes, including obtaining the necessary independent approvals (e.g., Nuclear Regulatory Commission, State, etc.) prior to implementation;
- Establishing and implementing procedural controls to review the effect of temporary changes to the plant configuration or operation, (e.g., removing equipment from service for corrective and preventive maintenance or to perform tests in an off-normal plant configuration) including evaluating the effect on underlying design margins assumed in the safety analyses;
- Providing for the updating of the design and licensing bases to reflect permanent changes;
- Tracking all temporary changes to ensure they do not exist for long periods of time without being evaluated for inclusion in the plant licensing basis as a permanent change.

Appendix 3 is a sampling of the plant processes and procedures where changes may occur and must be evaluated. Further discussion in Section A of Attachment 1 will focus on the key processes and procedures from Appendix 3.

Configuration Verification - This element covers routine activities associated with operation of the plant which provide verification of configuration baseline. This includes activities related to verifying procedural adequacy and equipment performance, as well as those evaluations performed to provide additional assurance of conformance to the design and licensing bases. This element includes activities such as:

- Audits and surveillances by Quality Assurance personnel;
- Assessments by Nuclear Safety Assurance personnel;
- Periodic procedure reviews by qualified personnel;
- Nuclear Regulatory Commission and Institute of Nuclear Power Operations inspections and assessments;
- Plant Procedure Manual 1.2.7, *Emergency Operating Procedure Program Maintenance*;
- Plant Procedure Manual 1.3.1 (Operations), *Department Policies, Programs and Practices*;
- Plant Procedure Manual 1.3.19, *Plant Material Condition Inspection Program*;
- Plant Procedure Manual 1.3.29, *Locked Valve Checklist*;
- Plant Procedure Manual 1.3.51, *Plant Labeling Program*;
- Plant Procedure Manual 1.3.52, *Material Verification*;
- Technical Specification Surveillance Testing Program (Plant Procedure Manual 1.5.1 and Volume 7 procedures);
- Plant Procedure Manual 1.5.6, *Leakage Surveillance and Prevention Program*;
- Plant Procedure Manual 1.5.8, *Main Steam Safety Relief Valve Surveillance Program*;
- Plant Procedure Manual 1.5.9, *Plant Performance Monitoring Program*;
- Plant Procedure Manual 1.5.11, *Maintenance Rule Program*;
- Use of Nuclear Plant Reliability Data for equipment trending;
- Plant Procedure Manual 1.19.1, *Reliability Centered Maintenance Process*;
- Plant Procedure Manual 1.19.3, *Condition Monitoring Program*;
- Plant Procedure Manual 1.19.3A, *Vibration Monitoring Program*;
- Plant Procedure Manual 1.19.3B, *Motor Current Signature Analysis*;

- Plant Procedure Manual 1.19.3C, *Lubrication Oil Analysis Program*;
- Plant Procedure Manual 1.19.3D, *Thermographic Monitoring and Analysis Program*;
- Plant Procedure Manual 8.3.1, *Inservice Inspection, Inservice Testing and Appendix J Examination and Testing Program*;
- Plant Procedure Manual 8.3.3, *Suppression Chamber Protective Coatings Inspections*;
- Plant Procedure Manual 8.3.4, *Non-Destructive Testing and Examination Program*;
- Plant Procedure Manual 8.3.7, *Relief Valve Set Point Control and Logging*;
- Plant Procedure Manual 8.3.63, *Pipe Wall Thinning Surveillance Procedure*;
- Motor Operated Valve Testing Program;
- Plant Procedure Manual 8.3.131, *Check Valve Reliability Program.*

The preceding is not an all-inclusive listing of our configuration verification efforts. However, it should give some idea of the variety and volume of activities necessary to ensure compliance with design and licensing bases. Key attributes in this element include:

- Periodic self-assessment of procedure adequacy and plant configuration by knowledgeable individuals;
- Periodic testing of equipment to verify performance and the continued ability to meet the design and licensing bases;
- Independent verifications by organizations (e.g., Quality Assurance, Nuclear Safety Assurance) who have no direct responsibility for work quality or schedule;
- Utilizing observations (e.g., Institute of Nuclear Power Operations findings and Nuclear Regulatory Commission inspections) and the experience of others (e.g., operating and maintenance experience at other plants and in other industries) to evaluate and improve plant processes and equipment performance.

Sections B and C will focus on and provide more detail for some of our configuration verification efforts, both routine and significant special efforts. Section D will outline our program for identifying conditions where significant equipment failures or conditions adverse to quality are addressed and corrected. We also use that program to address industry experience.

Support Activities - This element addresses systematic training of personnel and specific program and procedural requirements. This training also addresses personnel

understanding of plant system interaction through training efforts on design bases and operational methodologies. In addition, this element covers the implementation of a Corrective Action Program to address deficiencies found in equipment or personnel performance. The Corrective Action Program also addresses programmatic breakdowns or weaknesses which represent challenges to maintaining the configuration baseline, and through it the design and licensing bases. Key attributes include:

- Systematic development of initial training and ensuring the right population attends the training;
- Development and presentation of refresher training in response to weaknesses or opportunities for improvement;
- Implementing a program which provides for identification of remedial action to correct deficiencies, and evaluates significant individual problems or trends of less significant problems for the implementation of action to prevent recurrence;
- Tracking and verification of actions taken to correct problems and prevent their recurrence, including evaluations of the effectiveness of such actions over time.

This element will be addressed in more detail in Sections B, C, and D.

Section A - Design and Configuration Control

This section provides information related to question (a) of the letter.

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

This section will address the elements of *Design Development* and *Design Translation*, as well as *Change Management*. It will describe how the key attributes noted below support change activities at WNP-2.

- Establishment of procedures for the selection of design inputs;
- Development of design and design output;
- Control of design outputs;
- Establishing procedures for the use of design outputs and configuration baseline in design development including revision of procedures used to operate the plant;
- Procedural controls for change mechanisms; and
- Procedural controls for reviewing, modifying, and updating design and licensing bases documents.

Design Change and Configuration Control Programs were developed at WNP-2 to meet the requirements of 10 CFR 50, Appendix B and implement guidance from Regulatory Guides and American National Standards Institute standards. The programs for developing and implementing a design change are concise and focused. The programs and process controls for configuration control are dispersed throughout plant procedures. There are a number of controlled activities which may change the physical plant configuration or the way plant equipment is operated. Such changes may be temporary or permanent. Each of those activities, where a proposed change may originate, need to have that proposed change evaluated by qualified personnel, prior to implementation, to ensure it does not adversely impact WNP-2 compliance with the design or licensing bases. In addition, the design or licensing bases documents, design output documents, and plant procedures must be updated to reflect the change. These controls are contained in each of the procedures controlling individual activities, or these individual procedures direct performers to another procedure to perform a specific *Change Management* activity, such as 10 CFR 50.59 safety evaluations.

The need for a change may be involuntary, such as when equipment fails or is determined to be in non-conformance with requirements. In these cases, access to design bases information may be necessary to evaluate the ability of the equipment to perform its design function under all applicable conditions so that operability decisions, implementation of compensatory actions, and reportability of the situation can be

determined and subsequent actions taken in a timely manner. This need necessitates that changes be incorporated and tracked in plant documents from the time of their implementation. Again, these configuration controls are dispersed in many individual procedures and programs.

The discussion which follows describes the key design change and configuration control procedures and processes at WNP-2.

A.1 Basic Controls for Design and Configuration Control

The basic controls for design and configuration are described in the WNP-2 Operational Quality Assurance Program Description, in Section 3 - Design Control, Section 5 - Instructions, Procedures and Drawings, Section 6 - Document Control, Section 11 - Test Control and Section 18 - Audits.

Design Control - This section requires procedures to be developed and implemented to cover:

- Translation of regulatory requirements and design bases to design documents;
- Specifying quality standards, including the standards in design documents and controlling deviations from the standards;
- Performing design analysis when required;
- Ensuring that design development and reviews include consideration of compatibility of parts, materials, components and processes, accessibility for maintenance, inspection and testing, and delineation of acceptance criteria for inspections and tests;
- Documenting and correcting errors in approved design documents;
- Controlling computer code programs.

In addition, the section requires procedures for interface controls among organizations, design verification performance, design document review, controls for changes to design documents, and provisions for assuring plant personnel and other organizations are made aware of design changes and modifications affecting performance of their duties.

Instructions, Procedures and Drawings - This section requires procedures for the development and implementation of procedures, instructions and drawings, including provisions for ensuring qualitative and quantitative acceptance criteria are developed and implemented for determining satisfactory work performance and quality compliance.

Document Control - This section requires the establishment of procedures to control preparation, review, approval, issuance, and changes thereto for documents including: design documents, as-built documents, Final Safety Analysis Report, and procedures.

Those procedures shall contain provisions for technical and quality review of the documents by qualified individuals prior to issuance. They will also contain provisions for identifying document status, prompt updating of documents, and making documents available at locations where work activities occur.

Test Control - This section requires the development and implementation of procedures to control tests such as:

- Equipment qualification;
- Proof tests prior to installation;
- Preoperational and startup tests;
- Surveillance tests during operations;
- Tests to demonstrate operation after modification and maintenance.

This section also requires development and implementation of minimum test procedure content and documentation and evaluation of test results.

Audits - This section provides for the development and implementation of a comprehensive system of audits and assessments to evaluate effectiveness of implementation of provisions of the Operational Quality Assurance Program Description.

The Operational Quality Assurance Program Description also defines requirements for control of *Nonconforming Materials, Parts and Components* as well as *Corrective Action.* These controls will be addressed in Section D of this attachment.

WNP-2 developed Nuclear Operating Standards and Policy Statements to bridge between the licensing basis (including Operational Quality Assurance Program Description) requirements and administrative procedures. Nuclear Operating Standard procedures and Policy Statements contain amplifications of some of the requirements in the licensing basis, however their primary function is to define upper level responsibility (by organizational unit or individual title) for activities or functions which must be performed to maintain safe operation of a nuclear plant.

Policy Statements 5.5, *Modifications* and 5.12 *Design Control and Configuration Management* provide additional outlines of activities and responsibilities in the area of plant modifications. Both the Nuclear Operating Standard and Policy Statement requirements are addressed in plant procedures which translate the requirements and responsibilities into specific actions and processes used to perform work.

Nuclear Operating Standard 23, *Plant Modification Control,* outlines the major activities related to modification of the plant. Modification is defined as any change to a structure, system or component including design changes and equivalent changes. An equivalent change is a hardware change that results in installation or modification of an

item or items, not identical to the original item or items, which meets the design bases of both the item(s) and applicable interfaces. The Nuclear Operating Standard is a requirement for all safety-related modifications and a guide for nonsafety-related modifications. The Nuclear Operating Standard defines the responsibilities for major steps of the modification process. Those major steps are implemented in plant procedures at the site wide or more specific organization level (as a plant procedure or a department instruction). The following are summaries of key procedures which implement the Design Change Program.

A.2 - Procedures

From the broad requirements defined in A.1, WNP-2 further develops requirements for design and configuration controls in a series of procedures. These procedures also define the methodology for implementing and controlling changes to the plant and maintaining design and configuration control.

The following subsections describe five major WNP-2 processes for design and configuration control. There are additional procedures and instructions which amplify and define the administrative processes which implement the elements mentioned in this summary (see Appendix 3). The sections themselves are summaries, not step by step explanations of the actions and documentation requirements actually performed to address change management. Additional details, appropriate procedures and instructions, are available for further review.

A.3 - Plant Modification Process

Changes to permanent plant structures, systems or components are controlled through Plant Procedure Manual 1.4.1, *Plant Modifications*. This procedure provides both a process for physical changes to the plant and for changes that only impact the documentation. After determining that a change is necessary or desired (a commercial determination), the procedure requires development of details surrounding the definition, evaluation and implementation of the permanent change to the plant. The procedure also establishes a method for tracking both the change and the change's effect on plant programs and procedures throughout the installation and testing stage, up to the declaration of operability. The plant modification procedure also guides the review of the change at various points in the process and documentation of the completed change.

In addition to the plant modification procedure, changes to the plant may occur through the procurement process for spare parts. Plant Procedure Manual 1.15.12, *Procurement Technical Reviews* controls the process for substitution (equivalency) evaluations and directs the individual to the Plant Procedure Manual 1.4.1 process for non-equivalent substitutions.

The following sections provide more detail on these two plant change processes.

A.3.1 Design Change Process (Plant Procedure Manual 1.4.1)

Initiation - Any individual may propose a change to the plant. A proposed change may come from Corrective Action Program evaluations (see Section D), review of industry experience, evaluation of plant operating or maintenance history, or from improvement ideas identified from operators or engineers. The proposed changes are typically documented on a Technical Evaluation Request, which initiates a cost benefit analysis to determine if the change should be made. In cases where a change is already authorized by an improvement program or is related to a planned design change, the Technical Evaluation Request step may be skipped since the benefits are known and analyzed.

Design Development - One of the initial actions for plant changes is the assignment of a project engineer and the development of a Plant Modification Record. The project engineer develops a detailed description of the proposed modification and ensures preparation of the supporting documentation. The Plant Modification Record is a form which tracks the review, authorization, installation, and close out of a modification. Each Plant Modification Record is uniquely identified for control purposes. The Plant Modification Record is in the front of the Plant Modification Record package, which contains documentation about the modification including:

- The Plant Modification Record;
- The Basic Design Change or Minor Design Change;
- Plant Procedure Checklist;
- Plant Procedure Revision Checklist;
- Spare Parts Checklist;
- Miscellaneous Plant Document Checklist;
- Scheduled Maintenance System Checklist (for preventive maintenance);
- Preoperational/Acceptance Test Procedures (and results);
- Installation package (Work Order);
- Partial Completion Notices;
- Field Change Requests.

Plant Modification Records are required for each permanent modification on systems, structures or components in the plant power block unless the modification is covered under an existing sub-program to the Plant Procedure Manual 1.4.1 process. The plant power block includes all systems, structures and components critical for safe plant operation, safe shutdown, or required to mitigate the effects of an accident. In addition, it includes equipment under engineering design controls whose failure would be of significant interest to the Control Room Operators, e.g., the river and circulating water pump houses, water filtration building, and security systems and lighting. The

sub-programs where changes do not require a Plant Modification Record are referenced below with their governing procedure.

a. Installation of small concrete anchors (Plant Procedure Manual 10.2.23);

b. Installation of fixed ladders (Plant Procedure Manual 10.2.60);

c. Installation of scaffolding (Plant Procedure Manual 10.2.53);

d. Plant software changes (Plant Procedure Manual 1.4.14);

e. Revision of Master Data Sheets and setpoints (Plant Procedure Manual 1.4.3);

f. Revision of motor operated valve setpoints (Plant Procedure Manual 1.4.13);

g. Installation of temporary shielding (Plant Procedure Manual 1.3.44);

h. Installation of temporary modifications (Plant Procedure Manual 1.3.9);

i. Use-as-is and repair dispositions (Plant Procedure Manual 1.3.12A);

h. Equivalent Changes which are: 1) beneath the level of detail in design documents; 2) within the level of detail contained in design documents but of configuration nature only or; 3) within the existing design bases and requirements (Plant Procedure Manual 1.15.12);

j. Limited design changes within the hot machine shop, chemistry laboratory or decontamination facility, which have been previously authorized in writing by Technical Services/Systems Engineering, and Design and Projects Mechanical/ Civil/Stress/Electrical/I&C Engineering;

k. Normal maintenance activities requiring a material substitution or equivalent change as defined in Plant Procedure Manual 1.15.12, *Procurement Technical Reviews*.

Each of the above listed change programs is proceduralized and has provisions for 10 CFR 50.59 screening and updating of licensing basis documents as necessary (this may mean performance of the screening/updating or that the scope of the change which can be made under each procedure is strictly prescribed and pre-evaluated to be below the level of detail, i.e., not described, in the licensing basis).

Non-power block modifications can be performed using a Plant Modification Record or a Facilities Service Request. Approval of the System Engineering Manager, Assistant Manager-Technical Services/Systems Engineering or Supervisor, Major Projects is necessary to use the Facilities Service Request. Facilities Service Requests can not be used for changes to safety-related systems, structures or components.

Depending on the scope of the changes proposed, the design change is developed and documented as either a Basic Design Change or a Minor Design Change. The Basic Design Change and Minor Design Change are documents which describe the design requirements for the change and the impact of the change on the design bases and design output documents. The Minor Design Change is generally restricted to simple, uncomplicated, limited scope design changes, however, they receive the review for effect on design and licensing bases the same as a Basic Design Change. .

During *Design Development* the engineers research the design bases to identify if the proposed modification has any impact on design inputs, using design outputs and configuration baseline information as a starting point. The Design Change package will have the details of this research, including the information searched and the subsequent changes which need to be made to output or baseline documents. If a revision to basic design inputs is necessary, then the Plant Modification Record package will have an explanation of the necessary changes and the subsequent effects and changes to design outputs and configuration baselines.

During Basic Design Change or Minor Design Change development, the need for changes to the documents which translate design are identified. These include areas, such as Technical Specifications, Operating License, Final Safety Analysis Report, plant procedures, training materials, plant simulator, drawings, calculations, Motor Operated Valve Testing Program, Inservice Test Program, Inservice Inspection Program, Leak Rate Test Program, equipment qualification files, setpoint documents, Fire Protection Program and other design output and configuration baseline documents. This identification occurs due to the work of the engineer, but also through the cross disciplinary review which the responsible engineer initiates. This review includes operations, maintenance, health physics, training, and other personnel as necessary. They assist in developing the necessary list of documents needing revision to maintain the configuration baseline. They also look for and identify additional training for operations and maintenance personnel to assure effective implementation of the modification. These items are tracked by the Plant Modification Record process to closure.

The project engineer develops work instructions and testing procedures to install the modification and verify that it performs as intended. The project engineer is responsible for ensuring the assumptions related to the Licensing Basis Impact Determination (see Section A.5) regarding the installation and testing activities are properly translated into the work tasks. Such assumptions/instructions may include such restraints as only installing the modification with the plant shutdown or only with certain systems in service. These assumptions/instructions also take into account the impact of voluntary entries into Technical Specifications Action statements or the need for additional management oversight during the installation time frame.

Configuration Baseline Evaluation - In both the Basic Design Change and Minor Design Change cases one of the steps, after the concept and details of the modification are developed, is completion of the Licensing Basis Impact Determination (see Section A.5). This is a comprehensive review of design and licensing basis information (using the configuration baseline information) to determine the effect caused by the change. The Licensing Basis Impact Determination is the initiation of the 10 CFR 50.59 screening process (as described further in Section A.5).

This comprehensive review identifies what changes are necessary to existing design and licensing basis documents, what changes are necessary to plant procedures and programs, and whether the change could represent an unreviewed safety question that would require prior approval by the Nuclear Regulatory Commission. The Licensing Basis Impact Determination includes evaluation of the final plant configuration, as well as the effects of the installation and post modification testing based on the required operational configuration at the time of installation and testing of the modification.

Reviews/Oversight - The modification package is reviewed by another cognizant engineer to ensure accuracy and completeness. In addition to the cross disciplinary review mentioned earlier, Project Review Group meetings are held to evaluate progress and resolve problems. The Project Review Group membership includes the responsible system and design engineers and as needed, representatives from configuration control, maintenance, operations, training, estimating, procurement, site support services contractor, planning/scheduling/outage, equipment engineering, fire protection, radiation protection, ALARA and chemistry groups. Part of the Project Review Group's effort is to ensure that the Licensing Basis Impact Determination is appropriately completed and to evaluate plant changes which may be occurring in parallel to ensure these do not change the conclusions reached in the Licensing Basis Impact Determination regarding installation and testing. If the Licensing Basis Impact Determination identified the need for 10 CFR 50.59 safety evaluations (see Section A.5), these safety evaluations are also reviewed for completeness and accuracy. If the Project Review Group identifies problems with the documents or the scheduling, these are returned to the project engineer for correction and resolution. Installation schedule revisions or alternative compensatory actions may be developed to address such problems.

In addition to Project Review Group review, the Plant Operations Committee reviews safety-related, Quality Class 1 or 2+, essential radioactive waste and plant fire protection modifications. Plant Operations Committee membership includes line management with experience and responsibility in engineering disciplines, operations, health physics, chemistry, maintenance, quality, and planning and scheduling. In addition, Plant Operations Committee reviews all 10 CFR 50.59 safety evaluations. Reviews of the modification package and the safety evaluations are another check of the conclusions drawn regarding the nuclear safety impact of the modification and the associated installation and testing activities, as well as the accuracy and completeness of the configuration baseline and plant procedure revisions. In addition the Plant

Operations Committee also evaluates the decisions on the need for training of operators and other staff who will be using the modification.

The Project Review Group or Plant Operations Committee may impose additional restrictions on the installation and testing of the modifications to enhance plant safety. Management may also determine that the modification requires additional management oversight to ensure installation actions. The project engineer is responsible for incorporating these restrictions into the installation work instructions.

Installation - During this activity, the project engineer ensures that work task instructions to install and test the modification are implemented.

Configuration control tasks are also completed during this period. These tasks include redlining or updating Top Tier drawings (which are maintained in locations like the Control Room), verifying that procedure revisions are complete and ready to implement, ensuring training has been developed and provided to plant personnel as necessary, and ensuring that other programs have been updated as necessary.

Field Changes - During installation, Field Change Requests may be authorized to deviate from directions in the Basic Design Change/Minor Design Change, or to convey as-built information back to engineering for configuration control. Field Change Request scope is limited in that it may not alter the Basic Design Change/Minor Design Change such that changes to Technical Specifications are needed, an unreviewed safety question is generated, or the intent or scope of the Basic Design Change/Minor Design Change is impacted. A scope or intent change by use of a Field Change Request may be granted on an exceptional basis, but such a change requires additional Plant Operations Committee review.

The field engineer initiates the Field Change Request which must be reviewed and approved by the project engineer and the department manager/supervisor responsible for the modification. If the Field Change Request caused a change to the design safety analysis or 10 CFR 50.59 safety evaluation, the change is made and the original reviewing organizations (preferably the same reviewer) also review and approve the Field Change Request. The Plant Operations Committee must review, and the Plant General Manager must approve, Field Change Requests where the 10 CFR 50.59 safety evaluation was changed to ensure the safety evaluation conclusions remain unaffected by the Field Change Request proposed.

Close-out - As a final verification, the actions tracked in the Plant Modification Record are reviewed by the project engineer to ensure they are complete. Close-out ensures changes to the design bases, output documents, and configuration baseline are complete such that future changes will be evaluated against the installed plant configuration. Not all changes to plant documents must be complete and issued, however those which are not complete are tracked individually (through a variety of means) and referenced in the Plant Modification Record. This individual tracking ensures that subsequent reviewers recognize that the plant has been modified and changes to the document are

still in progress. As an example, a section of the Final Safety Analysis Report may need updating due to a modification. The Final Safety Analysis Report will have a separate change notice developed and referenced in the Plant Modification Record along with input to a plant computer database to flag reviewers that a particular Final Safety Analysis Report section has been impacted by an installed modification. The actual update to the Final Safety Analysis Report section is completed pursuant to the requirements of 10 CFR 50.71(e).

Special Circumstances - At times, a Basic Design Change/Minor Design Change may be implemented in discrete parts, such as over several outages. Plant Procedure Manual 1.4.1 requires specific preplanning in the Plant Modification Record to address this implementation method and all reviews are based on this partial implementation approach. Partial Completion Notices are used to track the implementation of the parts of the overall change. The use of the Partial Completion Notice does not alter the review requirements for the Basic Design Change/Minor Design Change.

It may become necessary to revise the scope or intent of an existing non-installed Plant Modification Record. A Field Change Request is not appropriate for these significant changes. In these cases a revised Plant Modification Record is generated and processed just like a new Plant Modification Record. The record will have the old number with a revision to ensure continuity with the original modification, however the revised modification is an independent Plant Modification Record.

A.3.2 Procurement Related Plant Modifications

Conformance to the design bases may be affected by revisions to vendor supplied parts and materials. Frequently, original models are no longer available and evaluations must be performed to determine if the new items can be substituted, based on equivalency. If not, a design change demonstrating conformance with the design bases or a change to the design bases itself is necessary.

Procurement Guidance - Plant Procedure Manual 1.15.12, *Procurement Technical Reviews* controls the process for performing substitution (equivalency) evaluations for safety-related and augmented quality class permanent plant equipment at WNP-2. Detailed guidance is contained in the Procurement Technical Manual (SPES-1), Section 6.7 and its associated Exhibits. The Spare Parts Engineering Standards documents (SPES documents) are Procurement Department Instructions (see Hierarchy in Appendix 1 and Section A.7). These documents specify that if the procured item is not identical, but fulfills the design bases critical characteristics of the application, it may be considered equivalent and is not a design change. In any other case the substitution is a design change and will be processed per Plant Procedure Manual 1.4.1.

A substitution evaluation is required when the replacement is different in fit, form, function, material, or part number from that in the design database. If there is no design database documentation then a substitution evaluation is required when the replacement is

different in fit, form, function, material, or part number than the currently installed part. If a substitute item is equivalent, but there are physical changes which would require minor interface or mounting modifications to install the item, or there is an affect on top tier drawings, an equivalent change Technical Evaluation Request is processed per Plant Procedure Manual 1.4.1.

Evaluation - A substitution evaluation is performed by procurement engineers and approved by their manager. Depending on the scope of the change, system engineers may also review and approve the evaluation. The evaluation includes a screening of the licensing basis to determine if a formal Licensing Basis Impact Determination (see Section A.5) is required per Plant Procedure Manual 1.3.43. In addition, changes to plant drawings, programs, and procedures are also identified and tracked to completion. For vendor information or architectural engineering drawing documents this is through the use of a special type of Basic Design Change (55 series Basic Design Change). The 55 series Basic Design Change is addressed through the Plant Procedure Manual 1.4.1 process (detailed in Engineering Instruction 2.8) and represents a documentation only change (no plant hardware change required). Changes to programs or other documents are processed per the change controls applicable to the program or document.

A.4 - Temporary Change Processes

Temporary changes affecting the configuration baseline or the way the plant is operated can occur through a variety of processes, as shown in Appendix 3. It is important that the time such changes are in place be minimized or the change may become a de-facto design change. Typically, temporary changes are in place for a few hours or days at most; perhaps a few weeks during a refueling or maintenance outage. Some temporary changes may exist for longer periods, such as while awaiting installation of a permanent change incorporating the temporary change.

For most safety significant equipment the Technical Specifications specify the length of time they may be out-of-service. For other equipment, this becomes more of a judgment call based on the importance to plant operation or safety and the extent of the temporary change. Review of assumptions in the Individual Plant Examinations and Maintenance Rule procedure/database can be used to evaluate if the length of time is excessive. The point of the reviews and processes for temporary changes at WNP-2 is to ensure that the change is visible and that it is truly temporary. This is a key factor in controlling this area of change management. The following summaries will describe the more frequently used programs for changing the plant on a temporary basis, and the controls therein.

A 4.1 Temporary Modifications (PPM 1.3.9)

Introduction - Temporary modifications to WNP-2 are not frequent, however, when required, they are controlled and implemented using Plant Procedure Manual 1.3.9, *Temporary Modifications*. A temporary modification to plant equipment is allowed

only if it is reviewed to ensure that the change does not degrade plant safety or reliability or unacceptably alter the plant design.

Definition - A temporary modification is any alteration to plant systems, structures, or components that does not conform to the approved design configuration and does not change the design function.

Examples - If there is a question about the need for a temporary modification, the appropriate system engineer is contacted for an evaluation. The following are examples of temporary modifications; however, the list is not exhaustive.

- lifted leads;
- electrical jumpers;
- removed components;
- disabled annunciators/alarms;
- mechanical jumpers/bypasses;
- temporary setpoint changes;
- installed or removed blank flanges;
- disabled relief or safety valves;
- installed or removed filters or strainers;
- plugged floor drains.

Temporary Modification Implementation - The temporary modification process requires several reviews prior to implementation. These reviews include a 10 CFR 50.59 screening evaluation and, if necessary, a safety evaluation along with a review of plant procedures for potential impacts and a review of configuration control documentation for potential changes. All necessary documentation changes are prepared with the temporary modification and implemented coincident with the physical or analytical change.

Temporary modifications are implemented only after all appropriate reviews and approvals have been obtained and are tracked and implemented by, or with the concurrence of, licensed Control Room personnel. Temporary modifications are labeled to identify the changes. Tags are used to identify temporary modification equipment where it interfaces with permanent plant equipment. As necessary, caution tags are used that include a description of the change and the impact on plant equipment operation. Caution tags are developed per Plant Procedure Manual 1.3.8, *Plant Clearance Orders,* and represent instructions to operators on how equipment may be operated. Plant Procedure Manual 1.3.9 has provisions for review of plant baseline configuration documents to ensure changes are recognized and evaluated as to their impact on design bases assumptions and design translation into operating procedures. Once implemented, a temporary modification is tracked and periodically reviewed to verify it is still necessary and appropriate and to determine if it can be removed.

Control Room Shift Managers normally review the temporary modification log as part of their shift turnover process. Besides the routine shift review of the open temporary

modification records, the Operations Manager (or designee) reviews the status of temporary modifications at least weekly and prior to plant restart. An engineering representative reviews the status of temporary modifications at least quarterly to identify temporary modifications that should be removed or processed as permanent plant modifications. Particular attention is paid to temporary modifications that have been installed for greater than six months. These temporary modifications are evaluated using engineering judgment and review of plant priorities relative to modification activity to minimize the possibility of the temporary change becoming a de-facto permanent plant modification. Temporary modifications which can not be traced to permanent modification packages with installation dates, and are installed for a year or more, are evaluated for removal or incorporation as a permanent change with change notices prepared to update the licensing basis and configuration baseline. As a goal, engineering minimizes the number of temporary modifications existing after each annual refueling outage. The results of the engineering review are forwarded to the Plant Operations Committee for review.

A 4.2 Other Temporary Changes

Introduction - The plant configuration may also be changed temporarily due to maintenance or testing activities. Corrective maintenance activities are performed on equipment which is degraded or failed. The effect on plant operations is evaluated at the time the degraded or failed condition is identified. Preventive and predictive maintenance (which renders equipment temporarily inoperable) is scheduled based on when the equipment may be taken out of service. The controls which prevent such temporary changes from affecting design bases assumptions are described below. In addition this section will briefly address trending of equipment performance as it may relate to the design bases.

Maintenance Work - Maintenance work on operable equipment is screened for effect on plant operations per Plant Procedure Manual 1.3.7.C, *Work Request Screening,* Plant Procedure Manual 1.3.7.D, *Work Planning* and Plant Procedure Manual 1.3.7.H, *Testing (Post Maintenance/Modification Activities).* This screening is used to identify constraints on removing equipment from service to perform the work task. It includes an evaluation of the effect from other equipment which may be out of service and includes an evaluation of Technical Specification applicability. The expected duration of the out of service condition is also evaluated to ensure that the equipment can be removed for that period without unacceptable effect. These considerations are factored into the development of work schedules and boundaries used to remove equipment from service. They are documented in work impact sections of the work instructions. They are evaluated during the work authorization process, prior to beginning in field work. No equipment may be authorized for removal from service unless it is approved by an individual with a Senior Reactor Operator's License who has evaluated the removal for overall plant effect. If the equipment is addressed by Technical Specifications or has significant effect on plant operations, approval is through the Shift Manager or his designee.

WNP-2 has specific requirements for voluntary entry into Technical Specification Action statements provided by Plant Procedure Manual 1.16.6.B, *Voluntary Entry Into Technical Specification Action Statements to Perform Work Activities During Power Operations*, as it relates to voluntary removal of equipment from service. This procedure provides for reviews prior to the removal of equipment from service and the required entry into a Technical Specifications Action statement. Varying levels of approval are required dependent on the Technical Specification allowed out of service time. During this review, plant personnel may also perform evaluations of the equipment out of service time effect on plant safety using data from the Individual Plant Examination. This helps to define, during schedule development, the benefits and risks associated with work on equipment to identify the safest time to work on the equipment. It also identifies compensatory actions (such as stopping all work on redundant systems and "protecting" them through controlled access) which can be taken to maintain the highest level of plant safety during the equipment out of service duration.

In addition, Plant Procedure Manual 1.16.6.B also assigns responsibility for monitoring system out of service times. For selected safety systems (based on industry and plant performance monitoring reports), these out of service times are evaluated and reported to trend system performance. This trending is used internally to ensure that equipment is performing as expected, consistent with the assumptions in plant goals that were based, in part, on Individual Plant Examination and design bases assumptions.

Plant Clearance Orders - Plant clearance orders are used to control equipment status and thus provide protection for personnel and plant equipment during operation, maintenance, and modification activities. Additionally, the plant clearance order process ensures that the status of safety-related and other important equipment is independently verified by another qualified individual when the equipment is removed from, and restored to, service. Clearance order boundaries are developed in conjunction with the schedule for removing equipment from service. The development of the clearance order tags and their placement form the basis for the actual tracking of equipment out of service durations. This tracking assists in maintaining compliance with the Technical Specifications, especially related to entry into Technical Specification Action statements. Requirements and methodology for clearance order development, issuance, and removal are provided in Plant Procedure Manual 1.3.8, *Plant Clearance Orders.*

Equipment restoration requirements are also specified in the clearance order process. Equipment may not be returned to service in an off normal alignment without approval of the Shift Manager. Such line-ups are tracked via component status change orders (reference Plant Procedure Manual 1.3.1), which are short duration administrative controls. During plant operations, open component status change orders are reviewed weekly and if they have been in place longer than a week and are still needed, they are converted to a more permanent status, such as a revised plant procedure, temporary modification, or caution tag. The intent of this conversion is to ensure that the "new"

configuration is properly screened for licensing and design bases impacts (including 10 CFR 50.59 applicability). These controls minimize the possibility that a temporary change can become a de-facto permanent design change without proper evaluation of the effect.

With the exception of maintenance safety clearances and other clearances that stand alone, the Shift Manager has the ultimate responsibility for the review, approval, issuance, and implementation of the plant clearance order process. These other clearance "tags" are authorized by an individual with a Senior Reactor Operator's License, but are the responsibility of the work group members and are intended for the safety of work personnel, rather than ensuring nuclear safety.

Periodic Clearance Reviews - Quarterly reviews of open clearance tags are performed by licensed personnel to ensure the tag still needs to exist and is properly referenced to a source document, such as a Work Order, Plant Modification, Problem Evaluation Request, etc.[1] These documents have the Licensing Basis Impact Determination screening (see Section A.5) which ensures configuration baseline and licensing basis conformance. In addition, an engineering representative periodically reviews open clearance orders[2] (most likely caution tags). Those that have been in place for greater than one year are evaluated with respect to the potential to be de-facto plant modifications. Criteria for this review include the modifications schedule, baseline configuration document or procedure changes and engineering judgment. The results of this review are forwarded to the Plant Operations Committee for their review.

Section A.5 - Licensing Basis Impact Determinations

Introduction - The WNP-2 change management processes (see a sampling of those processes in Appendix 3) include an initial screening for effect on the licensing basis (including design). This screening compares the proposed change to the configuration baseline and plant procedures as described in the Final Safety Analysis Report or other licensing documents. Reliance is placed on the training and experience of the staff to recognize potential impacts to the configuration baseline information and plant procedures. If this initial screening identifies the need for any change to the reviewed documents, then change processes (e.g., plant modifications, procedure revision, revision of Master Data Sheets and setpoints, configuration document change, etc.) are utilized. These processes in turn direct the responsible individual to perform Licensing Basis Impact Determinations. This initial screening and subsequent direction to

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[1] These reviews are currently based on management expectations. They will be added to procedures in future revisions.

[2] These reviews were initiated after evaluations of observations from Nuclear Regulatory Commission Inspection Reports 96-02 and 96-03. The review was a corrective action associated with NOV 96-02-04. These inspections identified examples of tags which had been in place over 12 months without considering updates to the licensing basis.

perform the Licensing Basis Impact Determination is a cornerstone of our change management program.

The Licensing Basis Impact Determination evaluates the applicability of 10 CFR 50.54, 10 CFR 50.59, and license conditions to the proposed change. 10 CFR 50.59 allows the Licensee to make changes and conduct tests or experiments without prior Nuclear Regulatory Commission approval provided that the proposed change, test or experiment does not involve a Technical Specification change or an unreviewed safety question. If a Technical Specification change or an unreviewed safety question is involved, Nuclear Regulatory Commission approval is required to implement the activity. 10 CFR 50.59 also specifies the criteria for determining if an unreviewed safety question exists.

License Basis Reviews - WNP-2 implements the criteria of 10 CFR 50.59 in Plant Procedure Manual 1.3.43, *Licensing Basis Impact Determinations*. This procedure provides the process and criteria for evaluating changes that could impact the WNP-2 licensing and design bases as described in licensing basis documents. This procedure also provides guidance for screening to evaluate the need for changes to license basis and configuration documents including Security, Emergency and Environmental Protection Plans, Inservice Testing, Inservice Inspection, Containment Leakage Rate Testing, Motor Operated Valve Testing, Fire Protection and Operational Quality Assurance Programs, Offsite Dose Calculation Manual, Final Safety Analysis Report, Licensee Controlled Specifications, Technical Specifications, Plant Setpoints, and Plant Computer Software. Plant Procedure Manual 1.3.43 includes guidance for:

- Initial screening to identify needed changes;
- Performing screenings for licensing basis changes to determine if 10 CFR 50.59 applies and if a 10 CFR 50.59 safety evaluation is required;
- The preparation of a 10 CFR 50.59 safety evaluation;
- Determining if the change would impact other licensing documents or commitments subject to other change regulations and require a separate evaluation (e.g., Emergency Plan, Operational Quality Assurance Program, Fire Protection Plan, Security Plan, Environmental Protection Plan), and;
- Responsibilities related to the conduct of these evaluations.

10 CFR 50.59 Screening Evaluations - Performance of the screening requires a qualified individual to conduct a comprehensive review of the licensing basis to identify the effects of the proposed change and to identify the need for further evaluation. Personnel at WNP-2 are currently using a computer based search program that allows the user to search the Final Safety Analysis Report and other licensing documents. This greatly improves the ability of individuals to determine the licensing basis effects of a proposed test or change. Manual methods for determining the licensing basis effects are also available and must be used when the computers are not available or the documents are not on the database (see Section B and C summaries for discussions of

improvements). The 10 CFR 50.59 portion of the screening identifies the potential need to obtain prior Nuclear Regulatory Commission staff approval or the need to perform a safety evaluation. For this portion of the screening the following questions must be answered:

> Will the proposed activity involve a change to the Technical Specifications or affect a proposed Technical Specification change?
>
> Will the proposed activity change the facility as described in the Safety Analysis Report in a manner not evaluated by a previous applicable 10 CFR 50.59 safety evaluation?
>
> Will the proposed activity change a procedure or process as described in the Safety Analysis Report in a manner not evaluated by a previous applicable 10 CFR 50.59 safety evaluation?
>
> Will the proposed activity involve a test or experiment not described in the Safety Analysis Report?
>
> Does the proposed activity involve a change which, although not described in the Safety Analysis Report, could directly or indirectly affect the capability to perform a safety function of an important to safety structure, system or component described in the Safety Analysis Report?

If the proposed change involves a Technical Specification change, prior Nuclear Regulatory Commission staff approval is required. A "yes" response to any of the questions requires that a 10 CFR 50.59 safety evaluation be performed to determine whether an unreviewed safety question exists (unless a Technical Specification change is also involved and it covers the full scope of the change).

By performing the screening for licensing basis changes, the need to process a change to a licensing basis document may also be identified. Changes to licensing basis documents, including the Technical Specifications, are processed in accordance with Plant Procedure Manual 1.4.5, *Processing of Licensing Document Changes.*

When screening preparation is complete, review by another qualified individual is required. The qualified reviewer performs a review to ensure that:

- A thorough, adequate search of the licensing basis has been performed;
- Search criteria and search results are clearly identified and documented;
- Screening questions have been correctly answered;
- Licensing basis impacts have been accurately identified; and
- Justifications are clear and complete.

The reviewer and the originator of the screening must agree on the content and conclusions of the screening prior to further processing. If agreement can not be reached, the issue is brought to management for resolution.

10 CFR 50.59 Safety Evaluations - The safety evaluation is performed by a qualified individual to ensure the proposed activity does not constitute an unreviewed safety question. The safety evaluation consists of answering seven questions. These questions are based on the requirements of 10 CFR 50.59 and are:

May the proposed activity increase the probability of occurrence of an accident evaluated previously in the Safety Analysis Report?

May the proposed activity increase the consequences of an accident evaluated previously in the Safety Analysis Report?

May the proposed activity increase the probability of occurrence of a malfunction of equipment important to safety evaluated previously in the Safety Analysis Report?

May the proposed activity increase the consequences of a malfunction of equipment important to safety evaluated previously in the Safety Analysis Report?

May the proposed activity create the possibility of an accident of a different type than any evaluated previously in the Safety Analysis Report?

May the proposed activity create the possibility of a malfunction of equipment important to safety of a different type than any evaluated previously in the Safety Analysis Report?

Does the proposed activity reduce the margin of safety as defined in the bases for any Technical Specification?

Plant Procedure Manual 1.3.43 provides guidance for answering these questions. Each question requires a "yes" or "no" response and requires consideration of all accidents/transients, equipment malfunctions and Technical Specification margins of safety described in the Safety Analysis Report, which could be affected by the proposed change. A sufficiently detailed, logically supported justification for the "yes/no" response is also required. When preparation of the 10 CFR 50.59 safety evaluation is complete, review by a qualified individual is performed. The reviewer evaluates the 10 CFR 50.59 safety evaluation to ensure that it is technically sound and the conclusions are adequately justified and supported. A "yes" response to any of the above questions indicates that an unreviewed safety question exists. These changes require Nuclear Regulatory Commission staff approval prior to implementation of the proposed activity.

All activities requiring a 10 CFR 50.59 safety evaluation require Plant Operations Committee (pre-implementation) and Corporate Nuclear Safety Review Board review.

Qualified Individuals - Candidates to become qualified preparers and reviewers of screenings for licensing basis changes and 10 CFR 50.59 safety evaluations are identified by responsible managers/supervisors. These candidates must then complete qualification training. Initial qualification consists of training on the following training modules:

- Introduction to Analysis in the Final Safety Analysis Report;
- Final Safety Analysis Report Overview;
- Nuclear Regulations, Codes and Standards;
- Introduction to Technical Specifications;
- Licensing Basis Impact Determination Process (Plant Procedure Manual 1.3.43).

In addition to the initial qualification training, refresher training has been established, for which completion is required to maintain qualification.

A.6 Description of Final Safety Analysis Report/Technical Specification/ Licensee Controlled Specification Revision Process

Introduction - The Final Safety Analysis Report, Technical Specifications and Licensee Controlled Specifications are revised through controls currently specified in Plant Procedure Manual 1.3.43, *Licensing Basis Impact Determinations*, Plant Procedure Manual 1.4.5, *Processing of Licensing Document Changes* and Regulatory Instruction 2.0, *Preparation of Annual Amendments to the Final Safety Analysis Report.* This updating is important to ensure that this portion of the configuration baseline reflects the most current plant configuration and operating practices. The procedures noted also address periodic updating and submittal of the Final Safety Analysis Report to the Nuclear Regulatory Commission per 10 CFR 50.71(e).

The controls for changing the Final Safety Analysis Report and Technical Specifications have existed since receipt of the Operating License. The use and control of Licensee Controlled Specifications was developed to respond to Nuclear Regulatory Commission approved relocation to licensee controlled documents certain Technical Specification requirements.

Changes to the Final Safety Analysis Report/Technical Specifications/Licensee Controlled Specifications may occur through various processes. The originator of the proposed change screens their desired change using Plant Procedure Manual 1.3.43. Regulatory Affairs personnel assist in the development and review of the actual changes to the documents. Regulatory Affairs personnel are responsible for submittals to the Nuclear Regulatory Commission for Technical Specification Amendment requests and

the annual amendment to the Final Safety Analysis Report. Regulatory Affairs personnel also maintain control of the contents of the Licensee Controlled Specifications.

Licensing Document Change

Plant Procedure Manual 1.4.5 addresses development of licensing document changes (which have been identified through the review under Plant Procedure Manual 1.3.43). Any individual may propose a change to the Final Safety Analysis Report/Technical Specifications/Licensee Controlled Specifications. Changes are reviewed by subject matter experts and Regulatory Affairs personnel through a cross-discipline and technical review process described in Plant Procedure Manual 1.4.5. Regulatory Affairs personnel coordinate the reviews. Initiation of a change and tracking of reviews is provided by uniquely numbered Licensing Document Change Notice. The Licensing Document Change Notice also includes a copy of the Licensing Basis Impact Determinations, e.g., screening for licensing basis changes or 10 CFR 50.59 safety evaluations to support the change activity.

Change Review

In addition to the various cross discipline reviews, Licensing Document Change Notices for Technical Specification Amendment requests, Operating License, Off-Site Dose Calculation Manual, Emergency Plan, and Security Plan changes also require review by the Plant Operations Committee. Technical Specification Amendment and Operating License Amendment requests will also be reviewed by the Corporate Nuclear Safety Review Board prior to submittal. The purpose of these reviews is to ensure the change accurately reflects the intended plant configuration and operation, and to verify that the appropriate analyses have been completed to ensure continued compliance with the licensing and design bases.

Annual Final Safety Analysis Report Updates (10 CFR 50.71(e))

Regulatory Affairs also generates the annual Final Safety Analysis Report amendment based on a review of Licensing Document Change Notices and drawing changes (for drawings in the Final Safety Analysis Report). This update is prepared per guidance in Regulatory Instruction 2.0, *Preparation of Annual Amendments to the Final Safety Analysis Report.* This amendment is a summary of the changes made to the Final Safety Analysis Report which have already been evaluated and implemented. For most of these changes the Nuclear Regulatory Commission has not reviewed them prior to this submittal as the changes did not involve changes to the Technical Specifications or unreviewed safety questions.

A.7 - Procedure Change Process

Introduction - WNP-2 uses a number of procedures to govern processes and define equipment operation. As such, most proposed changes will impact at least one procedure. The procedure change process is also one of our key processes for change management. In addition, the procedure change process has requirements for periodic review of procedures to ensure their accuracy and conformance with the configuration baseline.

The procedure control program is outlined in Site Wide Procedures. Site Wide Procedures apply to all personnel performing work at WNP-2 as opposed to plant, directorate, or department procedures which may only apply to segments of the Supply System (see Appendix 1 for hierarchy). Site Wide Procedure SWP-PRO-01, *Description and Use of Procedures and Instructions* describes the procedures control program and establishes the requirements and responsibilities for using procedures at WNP-2. Site Wide Procedure SWP-PRO-02, *Preparation, Review, Approval, and Distribution of Procedures* provides requirements and administrative controls for preparing, reviewing, approving, and distributing new and revised procedures. This procedure ensures that new or revised procedures conform to the configuration baseline and licensing basis through technical reviews and screenings. Site Wide Procedure SWP-PRO-03, *WNP-2 Procedure Writers' Manual* provides administrative and technical guidance for writing procedures.

Initiation or Revision

Any individual may propose development of a new procedure or revision of an existing procedure. The requesting individual works with the manager responsible for the activity or the procedure sponsor to develop the procedure or change. Site Wide Procedure SWP-PRO-03 provides guidance and requirements for content and format of procedures. If a new procedure is being developed, the manager assigns a procedure sponsor. The procedure sponsor determines whether the procedure needs to be reviewed by the Plant Operations Committee, ensures that the Licensing Basis Impact Determination (as discussed in Section A.5) is completed, including safety evaluations if needed, and identifies the cross discipline reviewers and the qualified procedure reviewer. The procedure sponsor is also responsible for developing Licensing Document Change Notices (as discussed in Section A.6), ensuring ALARA reviews are completed and ensuring that a review is performed of other procedures which may be impacted by this procedure or revision. The sponsor, cross-discipline reviewer(s) and qualified procedure reviewer are responsible for performing technical reviews of the procedure.

Technical Review

The procedure sponsor is responsible for ensuring that the technical and administrative detail in the procedure is accurate and complete. The procedure sponsor and qualified procedure reviewer are responsible for performing a comprehensive review of the

procedure's technical content to confirm that the content is correct and that requirements and commitments are adequately addressed per the Procedure Verification Checklist. The Procedure Verification Checklist covers a large number of items such as:

- Do the procedure steps adequately and safely accomplish the objectives?
- Are all action steps necessary to accomplish the task specified?
- Are actions and objects of actions specifically stated?
- Have should, shall and may been used correctly?
- Are shall statements supported by Regulatory Requirement, Commitment or documented management expectations?
- Are graphs, figures and tables technically accurate and correctly referenced?
- Does the procedure provide for independent and simultaneous verifications when necessary?
- If the procedure removes systems or components from service, are there steps requiring notification and evaluation by the Shift Manager/Control Room Supervisor of equipment operability?
- Have all applicable procedures been revised?
- Does the procedure satisfy licensing basis requirements?
- Are limits and values consistent with source documents?
- Have the requirements of Plant Procedure Manual 1.3.43 been completed?

The cross-discipline reviewers are responsible for performing a discipline specific review of the procedure in their area of expertise per a review checklist containing items similar to those on the original Procedure Verification Checklist. The procedure sponsor resolves comments during this review cycle.

Screening for Licensing Basis Change

The procedure revision process requires a screening to be prepared and reviewed per Plant Procedure Manual 1.3.43 (see description of this process in Section A.5). The procedure sponsor is responsible for ensuring that a screening for licensing basis change, Licensing Basis Impact Determination and a safety evaluation are prepared and reviewed. If the procedure or revision requires a change to the Final Safety Analysis Report or other licensing basis document, the procedure sponsor is responsible for initiating a Licensing Document Change Notice per Plant Procedure Manual 1.4.5, and providing a draft copy of the proposed procedure, including any Licensing Basis Impact Determination documentation to each cross-discipline reviewer and the qualified procedure reviewer for review. In addition, the qualified procedure reviewer is responsible for reviewing changes made to the procedure after the screening, Licensing

Basis Impact Determination, or safety evaluations are performed and reviewed to ensure the screenings and evaluations remain valid.

Biennial Procedure Reviews

Periodic procedure reviews are required for all procedures which govern activities affecting WNP-2. The procedures are to be reviewed by a knowledgeable individual to determine if changes are necessary. Event driven procedures, such as Emergency Operating Procedures, emergency support procedures, Abnormal Operating Procedures (including annunciator response procedures) and emergency plan implementing procedures, shall be reviewed at least every two years. Non-event driven procedures also require a biennial review which can be met by a full technical review by a qualified procedure reviewer and cross-discipline reviewer(s), documented use of the entire procedure, detailed scrutiny of the procedure as part of a documented training program, drill, simulator exercise or other activity, or a comprehensive revision to the procedure.

Temporary Changes to Procedures

A procedure may be changed through the use of a temporary change. The change is documented on a Temporary Change Notice and may be a regular or one-time-only change. Temporary changes are to be used for resolving procedure conflicts that arise while the procedure is being performed, its use is imminent, or for necessary changes to event driven procedures. A one-time-only change is valid only for the one time it is performed, after which it is no longer valid and is removed from the procedure control system. A regular temporary change is in place for future use and is expected to be incorporated into the next revision of the procedure.

Licensing Basis Impact Determinations are not performed for temporary changes because the criteria which allow the use of a Temporary Change Notice precludes it from representing an unreviewed safety question. Those criteria include:

- The Temporary Change Notice shall not alter the intent of the procedure;
- The Temporary Change Notice can not alter the technical aspects of the objective or purpose of the procedure as described in the purpose section;
- The Temporary Change Notice can not alter the test method by which acceptance criteria is met;
- The Temporary Change Notice can not allow a system or component to be used in a manner outside its design bases;
- The Temporary Change Notice can not alter the procedure as outlined, summarized or completely described in Licensing Basis Documents;
- The Temporary Change Notice can not require a change to Technical Specifications;

- The Temporary Change Notice can not limit the ability of a safety-related system or component to perform its designed function;
- The Temporary Change Notice can not alter the acceptance criteria for safety-related, Fire Protection, Quality Class 1 or augmented Quality activities;
- The Temporary Change Notice can not alter setpoint or parameter values for plant equipment, unless it is accompanied by an authorization document, which includes a Licensing Basis Impact Determination;
- The Temporary Change Notice can not result in a substantial increase in man-hours in the radiologically controlled area or a substantial increase in the personnel exposure rate (ALARA considerations).

Temporary changes must be approved by two members of the management/supervisory staff, both of whom are knowledgeable in the area affected by the change. Temporary Change Notices to procedures requiring Plant Operations Committee review must be reviewed by an individual with a Senior Reactor Operator's License prior to implementation, and then by the Plant Operations Committee and approved by the Plant General Manager within 14 days of implementation. Temporary Change Notices to other procedures are to be reviewed and approved by the approving authority (usually the responsible department manager). If a Temporary Change Notice is not approved by these approval authorities, it is removed from the controlled procedure manuals and action is taken to restore the plant to the original procedural requirements.

Section B - Design Bases Translation to Current Documents

This section provides information related to question (b) of the letter.

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

Introduction

WNP-2 developed procedures to maintain, operate, and test the plant in accordance with regulatory requirements and guidelines. Those procedures have been revised and improved over the life of the plant. The procedure program described in Section A of this response has essentially been in place throughout our operating history. We have improved the procedure development and revision program and we have also improved the access to configuration baseline information. In addition we have also placed much greater emphasis on procedure compliance and adherence over the last several years of operation.

The following summaries address specific assessments focused on verifying our design bases translation, and specific improvements, or in some cases recreation of, our design bases and configuration baseline. Also described are routine verifications which check for proper translation of design bases information into procedures, and improvements in tools which assist in the access to configuration baseline information. In the aggregate, these individual summaries point to an active and vigorous effort to ensure proper translation of the design bases into operating, maintenance, and testing procedures. The assessments summarized here also indicate that our efforts are and have been sufficiently effective to provide reasonable assurance that we have properly translated necessary design bases information into the day to day operation of WNP-2.

Many of these efforts overlap within this section and Section C which addresses the plant configuration and performance. When this happens the effort will be mentioned in each section, with the emphasis in the summary focused on that portion of the effort applicable to the context of the particular section of the response in which it appears.

B.1 Special Verifications

WNP-2 instituted several special assessments that evaluated procedures and the translation of design bases. These assessments were sometimes the result of plant identified problems, responses to industry initiatives, or the result of desired changes to the plant or its licensing basis. The following is a summary of some of the most significant special verifications.

a. **Safety System Functional Assessments** - WNP-2 personnel completed four Safety System Functional Assessments between 1988 and 1992. They covered the Low Pressure Core Spray, AC Electrical Distribution, Standby Service

Water and Containment Atmosphere Control Systems. These involved in-depth review of the design bases, design output documents, procedures, plant modifications, and actual plant configurations to assess selected system operability. During these reviews the design bases were compared with plant procedures, including operations, maintenance, and testing procedures for conformance to design, technical adequacy, and consistency among procedures. The assessment teams included personnel from Nuclear Safety Assurance Division, engineering, consultants from architect/engineer or other firms specializing in reviews of design, operations and other plant personnel. The assessments identified inconsistencies between design output and bases documents, weaknesses in design output document control and updating, inconsistencies between procedures and bases or output documents, and in some cases actual in plant configurations or settings which affected the systems design function (notably AC Distribution System and Containment Atmosphere Control System). While most of the inconsistencies were of a minor nature, some significant problems with control and accessibility of current design information contained in electrical and mechanical calculations were identified. Some calculations or calculation updates were necessary to verify safety function for the AC Distribution System. WNP-2's findings were consistent with those from Nuclear Regulatory Commission inspections covering similar topics during the same period.

Nuclear Regulatory Commission Inspection 87-19, Safety System Functional Inspection covering portions of the AC and DC Electrical Distribution, Standby Service Water and Automatic Depressurization Systems identified significant deficiencies with management control of engineering work. This inspection resulted in the Supply System action plan for improvement in configuration management, mentioned elsewhere in this response. In addition, this inspection identified many questions regarding design documentation or field configurations for each of the systems. As each question was further evaluated it was apparent that the systems were capable of performing their design safety function. Nuclear Regulatory Commission Inspection Report 92-01, Electrical Distribution System Functional Inspection found the design acceptable but identified weaknesses in our configuration control, maintenance, surveillance, and quality oversight. Many of the actions taken as a result of the 87-19 inspection and internal assessments had not yet demonstrated the improvements expected. While specific actions were taken relative to the individual deficiencies, generic improvements continued to be directed by the earlier improvement plan for configuration management. Nuclear Regulatory Commission Inspection Report 93-201, Service Water Operational Performance found that the design contained adequate margin and found strengths in our Heat Exchanger Monitoring Program. However, it also identified weaknesses in our untimely resolution of issues, such as questions regarding water hammer events, spray pond icing, biofouling, and material degradation in the system. These

items were addressed in responses to the inspection and the actions are grouped in this response with other discussions of generic improvement programs.

The overall conclusion in the Safety System Functional Assessments was that the systems assessed (except the Containment Atmosphere Control) were capable of performing their safety function. From these assessments were concluded the Low Pressure Core Spray and Standby Service Water results were typical of other systems. Thus we do not expect to identify significant concerns with design bases fidelity in other systems. AC Distribution covers almost all electrical distribution such that correction/clarification of the issues identified in that assessment provides high confidence in the electrical capabilities of all systems. Also, Nuclear Regulatory Commission Inspection Report 87-19 addressed DC Distribution and the Automatic Depressurization System. Thus the action from that inspection's findings addressed the rest of the electrical distribution systems.

In the case of the Containment Atmosphere Control System, the assessment was not able to verify through comparison of design bases, plant configuration, system test results, and operating procedures that the system could perform its intended safety function. There were specific inconsistencies between the Final Safety Analysis Report and design bases information that made it difficult to determine the actual design bases for the system. There were also specific in-field configurations which would preclude successful operation of the system under the probable design bases conditions. To correct these concerns, a Technical Specification amendment request was required, revised testing and surveillance procedures were developed, and design changes were implemented to correct the in-field problems. The system was re-tested and confirmed to be operable. The Containment Atmosphere Control System findings were evaluated for generic impact and the need to review four other systems which had similar design development histories was identified. These mini-Safety System Functional Inspections were completed in 1992 and addressed the Main Steam Leakage Control, Process Radiation Monitoring, Post Accident Sampling and Control Room Heating, Ventilation, and Air Conditioning systems.

In each of those follow-on assessments, the design bases information was found to be incomplete. Operating, maintenance and testing procedures needed to be revised once the design parameters were defined and captured. After the design bases information was completed, the procedures were revised. This ensures that in these systems we have verified design bases translation. Some additional testing and equipment modifications were necessary to verify and ensure that the systems were capable of performing their design functions.

The internal Safety System Functional Assessments and Nuclear Regulatory Commission Safety System Functional Inspections all indicated that the main safety systems had adequate design bases information and were generally

operated, modified and tested to ensure their continued ability to perform their safety functions. The Containment Atmospheric Containment System and the other four systems evaluated in the mini-Safety System Functional Assessments were the only ones where there was significant difficulty in proving design bases conformance and operation. They were corrected as a result of the individual corrective actions from the Safety System Functional Assessments.

These assessments identified and reinforced the importance of a parallel effort to improve accessibility of design bases information (Design Requirements Documents, Safety Classification Program and Electrical Wiring Diagrams). The assessments also resulted in significant improvements in our design control and configuration programs. These included the development of better checklists to assure design reviews include all applicable source documents and a better understanding of the need to question and correct apparent discrepancies between the design and licensing bases. The assessments also resulted in re-reviews of calculations, drawings, and plant procedures for many systems, especially in the electrical distribution area.

The Safety System Functional Assessments represent in-depth reviews of vertical slices of the plants design bases and the translation of that design bases into operating procedures. The assessments checked design accessibility, design translation into configuration baseline documents and configuration baseline translation into operating and testing procedures. Where discrepancies were noted, they were corrected, providing a high confidence that for the systems evaluated we have properly translated design into procedures. The analysis of the problems found during these assessments for generic applicability led to the additional system reviews noted. These reviews also looked at modifications for the systems and verified that our change control practices were sound and implemented adequately. Even with errors and inconsistencies in configuration baseline information our reviewers were able to reach proper conclusions regarding the safety affect of changes. Errors in this activity were typically related to administrative problems with packages, or a lack of detail in the packages. For these reasons, the Safety System Functional Assessment efforts provide support that we have properly translated design into procedures.

b. **Improved Technical Specifications** - WNP-2 submitted the Technical Specification Amendment request for conversion to the "Improved" Technical Specifications in December of 1995. We expect Nuclear Regulatory Commission approval and subsequent implementation of the Improved Technical Specifications in the first quarter of 1997. During the development and review of the Improved Technical Specifications submittal, as well as revision of the supporting operating and surveillance testing procedures, our staff verified design bases for the Improved Technical Specifications Bases sections. These efforts involved review of the design bases. The reviewers developed a greater understanding of the function and limits for systems and

components. With this understanding, the Improved Technical Specifications Bases sections were drafted. Those Bases were then used to check implementing procedures and surveillance procedures, verifying acceptance criteria, test methodologies, and operating parameters to ensure our ability to conform to the Improved Technical Specifications.[3] During this review we also performed an additional informal check for operational and surveillance test procedure conformance with our existing Technical Specifications.

The Improved Technical Specifications review is complete except for a few discrete subjects. We are providing additional review (as a routine self-check) of plant procedures by licensed operators to provide additional assurance that our procedures are ready to implement the Improved Technical Specifications. The Improved Technical Specifications review process evaluated fidelity between our design bases and plant operating and test procedures for the Technical Specification Bases subjects. Reviewers of the Improved Technical Specifications submittals included operations, maintenance, engineering, training, and licensing personnel. Through their review, revisions to plant procedures were developed to implement the Improved Technical Specifications. These procedures will ensure continued consistency between the design bases requirements and our plant procedures.

c. **Technical Specification Surveillance Improvement Program** - In 1992, WNP-2 chartered a Technical Specification Surveillance Improvement Program to verify compliance with each surveillance requirement. This effort involved review of design bases, design output document information and comparison of that information with the Technical Specification surveillance implementing procedures. The review was performed by a dedicated group of Supply System and contractor personnel with significant experience in implementing and interpreting Technical Specifications. They compared each line of the Technical Specifications surveillance requirements with our surveillance procedures, ensuring that the methodologies and acceptance criteria in our procedures would properly implement the Technical Specifications requirements. This review was completed in 1994 and corrected several deficiencies in surveillance procedures, several of which were reported in Licensee Event Report 93-010.[4] Documentation packages were generated for all surveillance requirements and additional improvement items were identified for surveillance procedures. This

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[3] Nuclear Regulatory Commission Inspection Report 96-08 indicated electrical calculations and surveillance procedures to support licensee's conversion to Improved Technical Specifications were thorough and well documented.

[4] Nuclear Regulatory Commission Inspection Report 94-04 indicated the Technical Specification Surveillance Improvement Project review reflected strong performance in identifying and correcting deficiencies in surveillance procedures.

effort verified plant procedure consistency with design bases as they relate to surveillance requirements.

d. **Power Uprate** - In 1995, WNP-2 completed a plant power uprate program. In preparation for this uprate a systematic review of design bases information and comparison of plant procedure requirements and equipment performance was performed to ensure our ability to operate at the new higher power level. The review verified applicability of General Electric generic analyses along with performance of plant specific analyses to ensure adequacy of design margins resulting from power uprating. Areas covered included plant heat balance, core thermal limits, core stability, reactor coolant system capability, reactor vessel internals capability, reactor recirculation capability, engineered safety features capabilities including containment and Emergency Core Cooling Systems, electrical system capability, plant setpoints, emergency procedures, and environmental qualification. Calculations were performed and verified to support the uprate. This effort also included development of test procedures to validate the plant capabilities and design assumptions. In addition, revision of surveillance procedures to support continued operation at the uprated power level were also completed. Over 100 plant procedures (including operating, emergency operating, test, and maintenance procedures) required revision to implement and support the new uprated power levels and were subjected to 10 CFR 50.59 review.

Power uprate required a comprehensive evaluation of plant design bases to determine if existing control parameters needed changes to support the uprated condition. Those parameters were then used to develop operations and testing procedure revisions to implement the change. A team of engineers reviewed and developed the changes necessary to support the uprate. They were assisted by General Electric in the comparison of the plant features and parameters with those used by other plants who had Nuclear Regulatory Commission approval for similar uprates. Both the Plant Operations Committee and the Corporate Nuclear Safety Review Board reviewed the submittal packages for the uprate. The Plant Operations Committee also reviewed procedure changes necessary to support the uprate and the results of the uprate testing program.

Since this effort involved substantial reanalysis of limiting plant accidents and transients, Chapters 6 and 15 of the Final Safety Analysis Report were also evaluated and revised to support the uprate. This is another example of verifying design translation to configuration baseline. As these reviews were recently completed and the procedures revised and issued to support the uprate, we have a high confidence that operating, test, and maintenance procedures revised for this effort are in conformance with design bases. This effort was also extensively reviewed by the Nuclear Regulatory Commission as approvers of the submittal to go to the uprated power level and through their routine inspection activities at the time of the power uprate.

e. **Motor Operated Valves** - In response to concerns identified in Nuclear Regulatory Commission Generic Letters 85-03 and 89-10, WNP-2 developed a Motor Operated Valve Program. Engineers and contractors reviewed the design bases and the operating procedures which call for operation of each safety-related motor operated valve. This cross check verified proper translation of design into normal, offnormal, emergency operating procedures, and surveillance procedures. This comparison then led to establishment of testing methodologies and procedures which are used to periodically test the operation of the valves. The analyses involved determining the weak link in the valve operator and ensuring that this component would be able to support valve performance under design bases conditions. Valves were then tested, in some cases under degraded voltage at differential pressures postulated for design bases events, to support valve operability determination and to secure baseline data to evaluate performance trends through future tests.

As a result of this program development, some valve operators were identified as deficient and were replaced via plant modifications. Some valves had limited margins and were replaced via plant modifications, or additional maintenance procedures were developed to maintain the margin. This effort validated that the operating procedures operated the valves per design assumptions. The effort also developed test procedures for each safety-related motor operated valve with an active safety function.[5] Changes to the plant are evaluated for impact on the Motor Operated Valve Program through the activities in Plant Procedure Manual 1.4.1 and during cross-disciplinary reviews performed for Plant Procedure Manual 1.3.43 and Site Wide Procedure SWP-PRO-02.

f. **Emergency Operating Procedure Verification and Validation** - During 1991-1993 WNP-2 personnel developed revised Emergency Operating Procedures based on the Boiling Water Reactor Owner's Group Emergency Response Guidelines, revision 4. Emergency Response Guidelines strategies were developed from extensive review of reference Boiling Water Reactor plant design and safety analyses used to initially license plants like WNP-2. WNP-2 personnel, including operators, engineers, and training personnel developed flow charts and procedures to implement the Emergency Response Guidelines. These charts and procedures were compared to the licensing basis and design bases specific to WNP-2 to ensure compatibility. Deviations were taken and the bases for each deviation documented to reflect the unique features of the plant design bases versus the reference design used by the Boiling Water Reactor Owner's Group.

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[5] Nuclear Regulatory Commission Inspection Report 96-04 indicated we adequately demonstrated existing design bases capability of motor operated valves included within the Generic Letter 89-10 program and have implemented long term measures to maintain design basis capability of motor operated valves.

These flow charts and procedures were validated by table top performance, simulator scenarios, comparison with plant design drawings and actual in-field walkdowns to ensure the actions could be performed as stated.[6] This effort provided assurance that the assumptions regarding the design bases were properly translated into these procedures and, combined with the plant walkdowns, that the plant configuration reflects the design bases.

g. **Setpoints** - WNP-2 committed to an upgrade of our setpoint methodology and a review of plant setpoints to ensure harsh environment effects were incorporated in our plant setpoints due to process deficiencies identified prior to plant licensing. This review was performed by a team of contractor and plant personnel who evaluated, and revised as necessary, approximately 400 plant setpoint calculations. The reviewers determined design function and limits for equipment from review of the configuration baseline and design and licensing bases. They then checked the calculations used to develop the operating setpoints ensuring that those setpoint calculations (design output documents) correctly reflected the allowances (developed in equipment qualification packages or on Master Data Sheets) for equipment tolerances and harsh environment effects. They generated either an Instrument Setpoint Change Request or a Plant Modification per Plant Procedure Manual 1.4.1, which controls configuration baseline modifications. Work Requests are developed to authorize actual revision of in-field equipment settings. Either the Work Request or the modification resulted in revision of plant operating and testing procedures.

This effort is ongoing with over 70% of the original scope completed to date. As each calculation is completed, plant setpoints are modified and procedure acceptance criteria revised. The setpoint program process (Plant Procedure Manual 1.4.3, *Revision of Master Data Sheets and Setpoints*), which includes requirements to perform a Licensing Basis Impact Determination per Plant Procedure Manual 1.3.43, ensure proper maintenance of this translation of design bases information into plant procedures. The completed verifications or procedure revisions provide additional assurance that the operating and testing procedures properly reflect translated design bases information.

h. **Cycle Specific Reload Analysis** - In preparation for each new operating cycle at WNP-2, a core design is prepared, analyzed, and approved for implementation. The conditions for design are specified in a controlled database that aligns assumptions in the refuel analyses with the Technical Specification

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[6] This Emergency Operating Procedure review effort and the resulting procedures were reviewed by the Nuclear Regulatory Commission in Inspection Report 94-01, dated March 18, 1994. The Emergency Operating Procedures were noted to be improved and were satisfactory to mitigate events. Some specific concerns were identified and have been subsequently addressed.

requirements. The analyses include both a design and a safety analysis. These are performed by the fuel vendor or WNP-2 using Nuclear Regulatory Commission approved methods where required.

The design analyses ensures compliance with criteria for acceptable fuel assembly performance during normal operation, anticipated operational occurrences, and postulated accidents. Design bases analyses are required for both fuel rods and fuel assemblies. The fuel rod designs must comply with regulatory requirements for the following:

- Rod internal pressure;
- Cladding strain;
- Cladding temperature;
- Fuel temperature;
- Cladding fretting wear;
- Cladding fatigue;
- Cladding corrosion;
- Hydriding;
- Cladding collapse;
- Fuel enthalpy.

Fuel assembly designs must comply with regulatory requirements for the following:

- Structural integrity;
- Corrosion;
- Hydriding;
- Dimensional compatibility;
- Hydraulic loads;
- Dimensional stability;
- Shipping and handling loads;
- Fuel coolability.

Testing, inspection, and surveillance programs are reviewed and updated to ensure the operational acceptability of the proposed reload fuel designs. These programs are described in generic topical reports submitted by the fuel vendor and the Supply System to the Nuclear Regulatory Commission.

Safety analyses determine the safety margin during normal operation, anticipated operation occurrences, accidents, and special events. They also ensure that any proposed changes to plant configuration satisfy all safety requirements, licensing commitments, and regulatory guidelines and commitments. Furthermore, safety analyses identify any changes in operating limits or Technical Specifications that will be required as a result of changes in plant configuration.

A Core Operating Limits Report is developed prior to each reload cycle. It includes the thermal limits that the reactor core is to be operated within (e.g., Average Planar Linear Heat Generation Rate, Minimum Critical Power Ratio and Linear Heat Generation Rate). The analytical methods used to determine the Core Operating Limits Report are those topical reports and those revisions and/or supplements of the topical reports previously reviewed and approved by the Nuclear Regulatory Commission, which describe the methodology applicable to the current cycle. The applicable topical reports are listed in WNP-2 Technical Specification 6.9.3.2. The core operating limits included in the Core Operating Limits Report are determined such that applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, Emergency Core Cooling System limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met. The Core Operating Limits Report information becomes the current configuration baseline reflected in operating procedures. Surveillance procedures verify continued conformance with these limits.

Since WNP-2 currently operates on an annual refueling cycle, this activity ensures high confidence in our translation to procedures and conformance with the licensing and design in this area each year.

i. **Fire Protection Program Procedures** - In response to concerns raised in Quality Assessments, the 1985 Systematic Assessment of Licensee Performance, and other Nuclear Regulatory Commission Inspections in early 1986, the Supply System performed a comprehensive review of implementing procedures for the fire protection program in 1987. This review researched the design and licensing requirements and evaluated the procedures against those requirements. The review focused on commitment verification, design and construction adequacy, program administration, and procedure adequacy and conformance. The review concluded that these aspects of the fire protection program were either adequately implemented or improvement actions (from earlier assessments or inspections) were in place. The procedures were adequate, although minor revisions were necessary. This was an extensive assessment of program commitments and implementing procedures, including general operating procedures, as well as Technical Specification surveillance and maintenance testing procedures. From this review we developed confidence that our procedures implemented the design bases requirements.

In 1992, another Quality Assessment (292-295) of the fire protection program identified weaknesses with the then current operating procedures for dealing with safe shutdown of the plant in the event of a Control Room fire (comparison of Safe Shutdown Analysis, requirements and Control Room evacuation procedures related to fire). A systematic review of the safe shutdown requirements as compared to operating procedures was also performed. This review identified deficiencies in the procedures related to dealing with a fire

outside the Control Room (reference Licensee Event Report 92-18) and plant configuration problems with inadequate lighting in areas where actions are required to address safe shutdown in the event of a fire. Due to corrective actions from the reviews, four more weaknesses were identified in operating procedures dealing with the level instrumentation used to make decisions after a fire and certain pump and fan line-ups necessary to meet the fire analysis assumptions (reference Licensee Event Report 92-43). Based on the reviews and correction actions for the deficiencies noted in these reviews, we have confidence that our procedures for safe shutdown of the plant reflect design and licensing bases.

B.2 Design Bases Accessibility and Training

The quality of procedure reviews and proposed change reviews are dependent, in part, on the availability and accessibility of design and licensing bases information. Obtaining this information at WNP-2 can sometimes involve searching and individuals must possess a knowledge of past record filing practices and programs which developed the applicable documents. Over time, we have recognized the need to assist our reviewers with additional tools. Some of the tools were provided in the form of additional instructions in procedures, such as the checklists seen in several of the procedures summarized in Section A. Others took the form of specific documents or databases or search capabilities that assist the reviewer of proposed changes. The following are summaries of some of the more significant improvement programs which we have developed to assist the reviewers.

a. **Design Requirements Documents and Component Safety Classification Program** - In response to self identified problems, Nuclear Regulatory Commission inspection results and changes in the availability of vendor supplied replacement parts, the Supply System began an improvement program to enhance accessibility of design bases information. A comprehensive action plan for improvements in configuration management (part of the response to Nuclear Regulatory Commission Inspection Report 87-19) was developed in 1987 and included development of Design Requirements Documents and a Component Safety Classification Program.

The Design Requirements Documents Program was developed in November of 1987. Objectives of this program included identifying and organizing design bases information at a system and topical level. The initial scope identified 55 Design Requirements Documents covering plant systems (several of the Design Requirements Documents encompassed two or more systems). Additionally 20 Design Requirements Documents were identified for topical subjects. The intent of this program was to ensure accessibility to design bases information. In some cases, it was believed that information would have to be regenerated due to inaccessibility of architect/engineer and vendor information, and the program would identify and assure this effort was completed.

The Design Requirements Documents have summary information on the design bases, such as design function, requirements and bases, and provide a map or index to the location of the actual design bases information. As such, they are more representative of design output documents, rather than actual design bases.

The development process for Design Requirements Documents involved a team of contractor and WNP-2 engineering personnel accessing and in some cases filing design bases information, verifying some as-built configurations to resolve questions, and where necessary regenerating design bases documents. Information was retrieved from the original construction files and correspondence, from the architect/engineer files, from installation and startup test reports, and from calculations. The Design Requirements Documents underwent several independent reviews by WNP-2 staff and some were sampled by Nuclear Safety Assurance Division and Quality Assurance personnel, especially during our Safety System Functional Assessments and the Nuclear Regulatory Commission's Safety System Functional and Electrical Distribution System Functional inspections.

Over the period of Design Requirements Documents development, WNP-2 continued to evaluate the project scope and results, as well as benchmark our experience with that of others within the industry. During this work we found and corrected over 3600 errors or inconsistencies among documents. Five Problem Evaluation Requests and one Licensee Event Report (93-13)[7] were generated due to this review effort. The Problem Evaluation Requests involved a configuration error, Post Accident Sampling System relief valves installed backwards (no effect on system operability); the two items referenced in the Licensee Event Report; a potential for plugging of strainers in a standby service water pump motor cooling line (modified the design although no operating or testing problems ever noted); and a switch and speed control unit which required evaluation to determine if they needed seismic or environmental qualification (subsequently concluded they did not). For the large number of systems and design information reviewed only these conditions required further evaluation. This demonstrated that the vast majority of the items identified had no safety significance. The Design Requirements Document development process validated our ability to access design bases. By making the information more easily available, the Design Requirements Documents enhance our review of changes and our periodic procedure reviews.

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[7] Licensee Event Report 93-13 identified two original design errors regarding: 1) a potential primary containment release path from the suppression pool to the reactor building if a loss of power to two Reactor Core Isolation Cooling DC valves occurred simultaneous with a Loss of Coolant Accident; and 2) a degradation of the secondary containment boundary due to drain lines that have non-safety grade isolation valves that did not automatically close during accidents, nor were there adequate administrative controls to manually isolate the valves. The first situation was corrected by plant modification and the second by administrative controls.

The Design Requirements Documents effort was suspended in 1994. At that time, 24 (plus 3 more beyond original scope) of the original 55 system related Design Requirements Documents and 11 of the original 20 identified topical areas were complete. Completion of the other systems and areas was not determined to be cost-effective, at that time, and our experience with the completed reviews indicated that design bases information was accessible. Even though we had identified discrepancies among documents, very few had any significance. In addition, the results of on going assessments by ourselves and the Nuclear Regulatory Commission (Safety System Functional Assessments and Safety System Functional Inspections, review of modifications, etc.) continued to demonstrate that when the WNP-2 staff reviewed a change, they traced through the document inconsistencies when performing the evaluation and thus those inconsistencies did not challenge design margins. We concluded that inconsistencies or errors in remaining systems were not likely to be safety significant and thus the program was not cost effective. The Design Requirements Documents developed are maintained current by our configuration programs, described in Section A.

The Component Safety Classification Program was also a part of the Design Bases Document Improvement Program. The primary intent of the Component Safety Classification Program was to ensure the proper safety classification of components in design output databases (particularly the Master Equipment List) that are used to screen the impact of changes to the plant. The effort involved engineers reviewing the licensing and design bases to determine component/system design function, component/system safety function, and environmental and seismic qualification requirements. The engineers were also compiling the database information on a component/part level to assist in procurement decisions. One of the outputs of this effort was the Component Classification Evaluation Record, which summarizes design bases information. This Component Classification Evaluation Record documents the validity of computer database entries and also provides a roadmap to design bases information at the component level. The classification effort did not necessarily re-verify the stated design bases during the compilation, unless conflicting information was discovered. This did not occur frequently.

The Component Classification Evaluation Record development process evaluated many components to a level of design and licensing bases detail greater than was typically available in architect/engineer and vendor information. As such it actually represents a creation of the design bases. For example, an architect/engineer or vendor may have classified a pump assembly as safety-related, but current spare parts information may now break the pump assembly into separate parts. Many of these parts may only be available as commercial grade items due to changes in the manufacturers' quality programs or scope of supply. The part may or may not have direct impact on the overall ability of the assembly to meet its safety function and thus this review was

necessary to support substitution evaluations and commercial grade dedication efforts. The process for the Safety Classification Program again demonstrated the availability of the design bases information. Compilation in the Component Classification Evaluation Record enhanced information accessibility in supporting change processes and procedure reviews.

Errors or inconsistencies identified during this process are included in the characterization of the 3600 errors or inconsistencies discussed in the earlier Design Requirements Documents section. This program also identified over 1900 components which could be downgraded in safety classification. Many of these were classified as safety-related only because of their relationship to larger component or system classifications. The Component Classification Evaluation Record development effort identified the actual function of the component and its relationship to the safety function of the system, and supported downgrading of many components and sub-components. This effort enhanced system understanding and improved replacement part economics.

The Component Classification Evaluation Record effort began in 1991 and was suspended in 1994. The initial scope was to summarize the design bases for all safety-related components. Many non-safety-related components were also addressed during this effort based on business needs. By 1994 there were completed Component Classification Evaluation Records for over 70% of the safety-related components. For reasons similar to the Design Requirements Document, remaining items were not likely to carry significant risk of problems, completion of further systematic reviews was determined to not be cost effective. At this time, Component Classification Evaluation Records are developed on an as-needed basis and the original Component Classification Evaluation Records are maintained as a design output document by our configuration control process (described in Section A).

The results of these two efforts provide configuration baseline information which can be more easily accessed during procedure or while analyzing proposed changes. As such, they represent significant efforts to improve the tools available to reviewers. Some of the individual work involved in developing Design Requirements Documents and Component Classification Evaluation Records also checked procedure adequacy when questions arose, confirming our design translation.

b. **Electrical Wiring Diagrams** - In 1984 it was recognized that information regarding electrical circuits and logics was sometimes difficult to understand due to the variety and number of documents containing pieces of this information. To improve accessibility, an engineering program was developed to consolidate information from the various documents through the development of Electrical Wiring Diagrams. Electrical Wiring Diagrams were developed by WNP-2 engineers and contractors as revised design drawings and treated as a

documentation modification per Plant Procedure Manual 1.4.1. The original scope included the development of 2060 Electrical Wiring Diagrams. As these Electrical Wiring Diagrams were developed the source documents, such as General Electric elementary drawings and Burns and Roe electrical tables, were superseded and archived. Their design information is now included on the new Electrical Wiring Diagrams.

Examples of the Electrical Wiring Diagram objectives include:

- Consolidation of various elementary and switch developments;
- Provide cross references to vendor information;
- Eliminate "black box" portions on drawings by replacing them with actual circuitry;
- Identify safety and non-safety portions of circuits on the same drawings;
- Unify presentations and standards from the various sub-vendor's information;
- Use Master Equipment List equipment part numbers on drawings;
- Enhance computer based design databases.

This effort continues through June, 1997, at which time all but 140 drawings (out of 2060) are expected to be complete. At that time, the programmatic effort will be complete and the remaining Electrical Wiring Diagrams will be developed on an as-needed basis to support future plant modifications. This scope is based on priority analysis using the significance of the equipment and the likelihood of modification in the future.

As noted in summary Section B.3.b, Quality Assurance identified weaknesses in the maintenance of the developed Electrical Wiring Diagrams in 1988. The problem arose due to the parallel implementation of a modification(s) and the development of a particular Electrical Wiring Diagram. As a result, from 1992 to the present Electrical Wiring Diagrams (completed prior to the program correction resulting from the Quality Assurance audit) were "reconstituted." This consisted of verifying the incorporation of all modifications implemented prior to 1989. Electrical Wiring Diagrams are maintained as top-tier drawings and modified per Plant Procedure Manual 1.4.1 as changes are made to the plant.

The Electrical Wiring Diagram effort confirmed the availability of design information (proper design translation) and provided a more accessible source of design bases information. Its primary function was to provide easier access to configuration baseline information. While individual questions may have involved review of plant procedures, this was not the primary focus of the Electrical Wiring Diagram effort. The development of more readily accessible

information enhances the quality of the periodic procedure reviews and the analysis of proposed changes.

c. **Training** - Weaknesses in training of personnel who are required to access design bases information became a concern in the late 1980s and early 1990s. The Nuclear Regulatory Commission Electrical Distribution System Functional Inspection (Inspection Report 92-01) and our own internal assessments led to conclusions that not all members of our staff had an understanding of the methods to access design bases information. In addition to the improvements in accessibility of design information mentioned above (Design Requirements Documents, Electrical Wiring Diagrams, Component Classification Evaluation Record), we improved our systematic training for individuals who access design and licensing information.

The training for qualified reviewers and preparers of procedures now addresses in detail where requirements are identified and how they are translated from licensing basis to plant procedures.[8] With the development of Final Safety Analysis Report word search capability in 1993, training on how to access and search the Final Safety Analysis Report was also included in the qualified reviewer and preparer training.

Refresher training on how to implement word searches, and cautions regarding relying too heavily on them, was held in 1995 and 1996 for reviewers and preparers to reinforce the management expectations and procedural requirements in this area. This was in part a response to two concerns identified during inspections in 1995.[9]

WNP-2 Engineering Support Personnel training was also enhanced and the population of personnel required to attend was expanded significantly. In addition, emphasis was placed on attending (a weakness identified in our self-assessments) and completing the training, even at the expense of completion of other tasks. The Engineering Support Personnel target population was originally composed of system, project, and reactor engineers, selected engineering program engineers, quality assurance engineers and licensing engineers. In 1995 it was decided to include all technical employees and managers reporting to Engineering General Manager and procurement

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[8] System engineer use and understanding of Design Requirements Documents was initially weak, as indicated in Nuclear Regulatory Commission Inspection 94-02. Requiring system engineers to attend training, perform system walkdowns and become more aware of the design and design output documents, including Design Requirements Documents, as part of their ongoing training and qualification addresses this concern.

[9] Nuclear Regulatory Commission Inspection Report 95-20 and Response to Notice of Violation 95-20-03.

engineers. This also coincided with a reorganization which moved most of the WNP-2 personnel performing engineering functions (except Quality Assurance, Procurement, and Licensing) under the Engineering General Manager.

Training program enhancements were made with the development of a 13 week Plant Management Certification Course focusing on the design and operation of plant systems. This course includes classroom training and four weeks of simulator exercises. Since it began in 1994, over 50% of the Engineering Support Personnel population have attended the class. In addition a significant number of other personnel have also attended, thus strengthening the depth of knowledge of plant design and licensing requirements and operations throughout the Supply System. This strengthens our design engineers understanding of operational needs, making them more aware of why certain information needs to be in procedures, and our non-engineers understanding of design bases, and how to find them. This better understanding strengthens our procedure review.

A Plant Procedures and Processes course has also been implemented and is required for the Engineering Support Personnel population. This course covers topics including:

- Documents, Records and Configuration Management;
- Industry Regulations, Codes and Standards;
- Data Systems Overview;
- Plant Procedures;
- Industry Documents and the Operating Experience Review Program;
- Engineering Drawings;
- Introduction to Procurement;
- Problem Evaluation Request and Problem Evaluation Request Disposition Process;
- Introduction to Work Management.

The course is scheduled for 40 hours and is intended for entry level engineers or other participants to give them an overview and explain how many of the processes work. This training introduces the engineer to the Design Requirements Document and other data programs designed to assist them when they review changes or procedures. Increased emphasis on attendance at this and other sections of the Engineering Support Personnel training program has strengthened the common understanding of where information can be found and how it fits in with the overall operation of the plant.

The development of a common knowledge base assures greater consistency in the reviews performed and thus provides greater assurance that plant configuration baseline information is properly translated into plant procedures.

d. **Calculations** - During the internal AC Distribution System Functional Inspection performed in 1989, weaknesses were noted in control and accessibility of electrical calculations. These weaknesses were related to plant files which contained electrical calculations which were preliminary in nature or used preliminary information (assumed values, rather than actual as tested or calibrated values). These calculations were not always clearly identified as superseded or easily traceable to later calculations to make it clear to a reviewer which calculations actually supported the current plant configuration. As such, this condition could lead to errors when analyzing the impact of proposed changes and also made it difficult to justify the current configurations during assessments. In addition, some individual calculation errors were also identified. As a result, specific improvements in updating calculations and identifying superseded calculations were made. Revised calculations were also performed to address specific issues. Once these revised calculations were performed reviews were completed of operating and test procedures to ensure that values such as acceptance criteria were current and correct. These reviews were tied to specific corrective actions from the inspections and assessments.

In 1992, the Nuclear Regulatory Commission conducted an Electrical Distribution System Functional Inspection as documented in Inspection Report 92-01. This inspection reviewed electrical calculations and identified many of the same accessibility and tracking issues found by the Supply System and also identified errors and inconsistencies in other calculations. As our corrective action from our earlier efforts was ongoing, this inspection reviewed draft revised calculations, some of which were the result of corrective actions from the earlier Supply System Safety System Functional Assessment. We also provided for review, draft calculations that were developed while the team was on-site. These reviews validated the corrections to those specific earlier problems and acknowledged the ability of our staff to generate corrected calculations in a timely manner.[10]

Nuclear Regulatory Commission inspectors also identified weaknesses in our corrective action tracking. We implemented improvements in our corrective action tracking process which is further described in Section D.

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[10] Nuclear Regulatory Commission Inspection Report 96-08 noted that electrical calculations used to support the Improved Technical Specifications were thorough and well documented, demonstrating the effectiveness of our corrective action in this area.

These calculation revisions performed in response to our Safety System Functional Assessment and the Nuclear Regulatory Commission Safety System Functional Inspections/Electrical Distribution System Functional Inspection have provided us with current design bases and configuration baseline information. The correction of the calculations and archiving of preliminary calculations are configuration control efforts which improved our accessibility to electrical design. Most major electrical calculations have been updated. The calculations which were revised represent "re-constitutions" of original design bases or configuration baselines updated with current data. The calculations form part of the configuration baseline which is used by personnel to perform change management activities and thus these upgrades also represent improvements in design accessibility for our personnel.

B.3 Routine Verification Activities

These following summaries are of two activities which are an integral part of our operations. They have significant impact on our assurance that plant procedures match design requirements, because they are performed on a regular and routine basis. The procedure review process addresses all procedures affecting WNP-2 and the Quality Assessment efforts address all plant activities which could impact Nuclear Safety. Together, they provide a large number of checks of procedure adequacy over our operating history.

a. **Periodic Procedure Reviews** - As indicated in Section A.7, procedures are reviewed periodically by knowledgeable individuals to determine if changes are needed. These reviews are equivalent to the original review performed when the procedure was developed. All sections of the procedure are evaluated. These reviews have been on a two year cycle since receipt of the Operating License and this means that most procedures have had at least six reviews to confirm their adequacy and conformance with design and licensing bases. We have often modified procedures to improve their performance and our ability to implement them. We have also identified weaknesses or errors in procedures during these reviews and elsewhere, which have led to procedure revisions. These reviews have provided a periodic check of procedure adequacy and translation of design bases.

b. **Quality Assessments** - Quality Assurance audits and surveillances have been an integral part of our self-assessment efforts since receipt of the Operating License. Audits often addressed programmatic and procedural adequacy as compared to licensing basis documents (including 10 CFR 50, Appendix B requirements and ANSI Standards). Surveillances more often compared the actual plant configurations and operating practices to requirements from procedures and design output documents (drawings in particular). In addition, Nuclear Safety Assurance personnel, performing in part the Technical

Specifications function of Independent Safety Engineering have provided assessments of plant modifications and responsiveness to industry issues.

The Design Change and Configuration Management processes have been evaluated in major assessments such as those in 1985 (AU 285-347 OQAPD), 1986 (AU 286-0381 Engineering Activities), 1988 (AU 288-434 Design Modification Control and Associated Engineering Activities), 1989 (AU 289-0460 WNP-2 Engineering), Safety System Functional Inspections in 1988-92, 1989 (TA 89-009 Assessment of the Design Requirements Document Program), 1989 (TA 89-012 Safety System Outage Modification Inspection Summary Report), 1990 (AU 90-542 Engineer and Technician Support Activities), 1992 (TA 292-015 Setpoint Program), 1994 (TA 294-001 Design Change Process),[11] Safety System Outage Modification Inspection, 1995 (TA 95-002 Equipment Qualification) and 1996 (AU 296-017 WNP-2 Design Control Audit).

The focus of most of these assessments has been to verify the adequacy and implementation of the program for design changes. In some of the assessments this was done by comparing the program documents to the attributes in the licensing basis. In the 1988 audit (AU 288-434), for example, the comparison resulted in significant recommendations to improve the program through clarification of terms, the addition of checklists to ensure engineers were accessing all pertinent design input, and the development of checklists to ensure the completed design packages contained a complete history of the modification. Engineering implemented these recommendations through the addition of more detail to procedures and the consolidation of several existing programs. Later audits noted improvement in the quality and consistency of the change packages.

In most of the assessments, samples of the design changes processed since the last assessment were reviewed for compliance with the procedure and technical adequacy. These assessments typically found design change packages to be administratively complete and technically correct. This is the typical situation, however each audit usually identifies one or more packages needing some improvement. In almost all cases the problems identified are with program compliance such as failure to document information, failure to update certain documents, or failure to obtain review signatures, rather than technical adequacy of the change. Often the changes reviewed are in the development stage and the Quality reviews are correcting package problems that may have been caught prior to package close-out.

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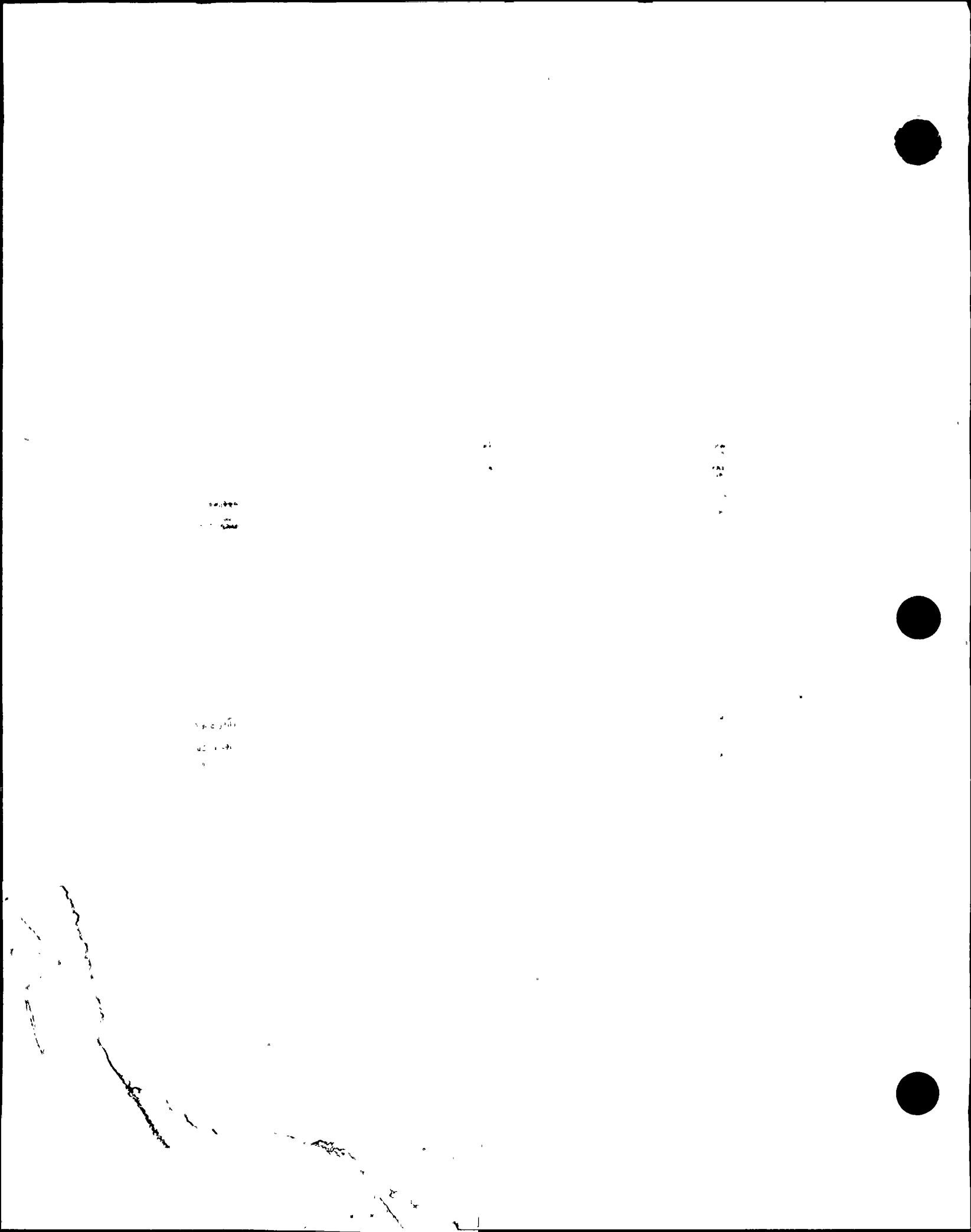
[11] Nuclear Regulatory Commission Inspection 94-29 indicated this assessment was superior in that it (the assessment) contained several substantial findings and recommendations for improving safety performance of engineering.

Many of the assessments also evaluate the installation instructions, post modification testing, and by sampling, observe the physical installation of the modification as it occurs. Quality assessments helped focus engineering on weaknesses in their installation package preparation by noting the large number and sometimes more complex nature of the Field Changes which were required to implement some changes. From the evaluations it was apparent that the pre-installation walkdown was weak and the interface with the people who would have to install and operate the modifications needed improvement. In the late 1980's and early 1990's engineering worked to ensure more complete pre-installation inspections to improve the installation instructions. Expectations were defined and enforced. Procedural requirements were clarified to support those expectations. In addition, they worked to make the interfaces with other organizations like operations and maintenance more effective prior to the actual installation of the modification. These changes were facilitated by Quality assessment results and by comments and observations from the Nuclear Regulatory Commission during this same period.

Even though deficiencies were noted, we have corrected the programmatic and procedural deficiencies and provided additional training, procedure clarifications, and clarified management expectations to improve implementation. These assessment results demonstrate the ongoing effort to continually improve the design change programs and their implementation. This provides assurance that changes processed through these programs are consistent with design bases, design outputs have been generated, and procedures have been updated.

Procedure adherence and adequacy is a feature of almost all Quality Assurance and Nuclear Safety Assurance Division assessments. The following are examples of assessments where specific groups of procedures were evaluated for adequacy and conformance to licensing basis requirements; Operational Quality Assurance Program Description in 1985 (AU 285-347), 1987 (AU 287-0423), 1991 (AU 91-591), Conformance to Technical Specifications and License Conditions in 1988 (AU 88-446) and 1989 (AU 89-498), Technical Specification Compliance in 1990 (AU 90-536), Conformance to Technical Specifications and License Conditions in 1991 (AU 91-557), 1992 (AU 92-608) and 1994 (AU 294-069), Technical Specifications 1993 (AU 93-642) and 1995 (AU 295-082), Evaluation of Emergency Operating Procedures, Technical Bases, Validation and Training (TA 90-007) and 1991 Comparison of Emergency Operating Procedure Values and Graphs with Associated Calculations (TA 91-007).

Typically, these assessments compare the current procedures to either the programmatic requirements for writing and approving a procedure, or the technical requirements for the activity being performed. In most of the assessments noted here. the technical requirements are from the Technical



Specifications or the Final Safety Analysis Report. The types of procedures evaluated in these assessments are operating, equipment calibration, or Technical Specification surveillance procedures.

Typically these assessments have identified that WNP-2 procedures are in compliance with, and implement, the programmatic and technical requirements. They do find some deficiencies in procedures, such as working inconsistencies or weaknesses which could lead to mistakes during procedure implementation errors in technical values based on review of the source (although many of these were due to source errors/inconsistencies), and failures to implement upper tier administrative requirements.

In addition to the Quality Assurance assessment findings in the late 80's and early 90's, several Licensee Event Reports noted missed Technical Specification surveillances. Results from Nuclear Regulatory Commission inspection reports also identified similar issues. WNP-2 recognized the need to perform a comprehensive reverification of the adequacy of our Technical Specification surveillance procedures. This was a significant corrective action and is discussed further in the section on Technical Specification Surveillance Improvement Program.

Quality Assurance personnel have also assessed the procedure development program several times. The more significant findings from those assessments include failures to complete the periodic reviews on time, failures to perform biennial review of required procedures, and occasional weak reviews as indicated by weaknesses which remained in the procedure after the periodic review. Also during the late 1980's and early 1990's the Plant Operations Committee found that the procedure support packages were often incomplete and did not have sufficient information to determine that all aspects of the design and licensing bases had been evaluated. Many times these packages would return to the Committee several times before a procedure change was accepted.

As a result of these problems observed by Quality and the Committee, significant improvements in procedure controls were implemented to better define the expectations for reviews and the responsibility for those reviews. It was recognized that too many unnecessary reviews were required, which led to late reviews due to work load. Changes to the administrative requirements were instituted which reduced this burden, and better tracking of the periodic reviews was implemented.

In addition, Quality Assurance worked with the plant staff to develop improvements in the program which led to the establishment of the standardized qualified procedure reviewer concept in 1994, who's responsibilities are described in Section A.7. Part of the reason for establishing this qualified

procedure reviewer program was to strengthen the performance of the periodic procedure reviews. This was done by developing a standard training program and requiring a minimum qualification for procedure reviewers.

This area is also being strengthened by the development of a standardized procedure concept for all organizations, utilizing sitewide, departmental, and group procedures (instructions), as described in Appendix 1. Prior to this time, upper tier requirements were in the Final Safety Analysis Report, Nuclear Operating Standards and various program documents, and each organizational unit had its own independent set of procedures. This led to difficulty in determining who had responsibility for some administrative requirements and whether or not an organization's administrative requirements applied to personnel not in their organization. All of these points are being clarified by the Site Wide Procedure program and the development of a Requirements Tracking System, as described in Attachment 3 of this response.

While the assessments are by nature a sample, the corrective action taken on many of the deficiencies is more generic and broad based. As an example, Quality Assurance Surveillance 2-88-188 AC Distribution, compared plant operating procedures against actual plant configurations and noted discrepancies and conflicts between breaker loads on various drawings, operating procedures, and local load labeling. Investigation of the cause of these deficiencies noted that access to this information from existing drawings was cumbersome and personnel using the information were prone to error due to the many cross references and checks necessary. In addition, the Electrical Wiring Diagram upgrade effort was noted to be weak in that modifications were not always being properly reflected in the issued Electrical Wiring Diagram documents. As a result, the plant committed to a generic improvement program to develop additional controlled load lists, improved in-field labeling, and changes to the Configuration Control and Modification programs to address the weaknesses in modification control related to Electrical Wiring Diagrams (see item B.2.b of this section for additional information on the Electrical Wiring Diagram program).

Quality Assurance, Nuclear Safety Assurance Division and Nuclear Regulatory Commission[12] assessments in the late 1980s and early 1990s also indicated a

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[12] Nuclear Regulatory Commission inspections 93-04, 93-37, 94-201, 95-07 and 95-13 are examples where the Nuclear Regulatory Commission identified multiple or significant non-compliances with WNP-2 procedures. Throughout 1992-1996 management was taking steps to redefine, communicate and ensure compliance with those expectations regarding compliance with plant procedures. These steps included procedure clarification, management meetings, additional performance measurements, special assists from other Licensees through the Institute of Nuclear Power Operations and disciplinary actions, including termination's for repeated or significant violations of procedures. Progress was slow, but improving, until management changes were made and the Performance Enhancement Strategy process was developed in

general plant attitude that procedures were guidance, rather than mandatory requirements. Extensive corrective action with personnel has resulted in clearer and more consistent understanding of management expectations. Those management expectations have been translated into specific guidance in plant procedures and into individual performance expectations. Plant tracking systems now routinely track procedure compliance efforts and managers have specific performance expectations for their routine evaluations of procedure implementation. This heightened awareness that procedures must be strictly complied with has enhanced the level of review for procedures during routine biennial reviews and during change evaluations for modifications or corrective actions. As a result, procedure requirements are more completely evaluated and verified against licensing and design requirements to ensure we know why procedure actions are required. This awareness has resulted in greater assurance that procedures match design requirements and that the plant is operated in accordance with these requirements.

The summaries above are a sample of the Quality efforts over the life of the plant. These organizations continue to assess programmatic and procedural adequacy and procedural implementation. Through their routine efforts we have additional confidence that the programs for translation of design information into procedures are working. The adverse findings noted in the assessments and the resultant corrective actions demonstrate that we are self identifying and correcting problems regarding translation. These efforts implement key attributes for independent review from the *Design Development, Design Translation* and *Change Management* elements of configuration control.

B.4 Summary

The summaries provided in this section regarding the Design Requirements Documents, Electrical Wiring Diagrams and a portion of the calculation and setpoint discussions, provide evidence that we have improved the accessibility and availability of our design bases information. The Technical Specification Surveillance Improvement Program, Emergency Operating Procedure Verification and Validation effort, Motor Operated Valve Testing and corrected items from the calculation and setpoint summaries demonstrate focused efforts to upgrade the translation of design information into procedures. The Power Uprate Program, Improved Technical Specification implementation and cycle reload analysis are all examples where specific programs check or improve the validity of our procedures with the design bases. The Safety

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1995. Management attention to the Performance Enhancement Strategy actions coupled with actions taken in response to the mis-positioning of a Reactor Water Clean-up Valve have driven home the concept of strict procedural compliance to all organizations and personnel. We continue to monitor this area through assessments and trend indicators. While errors do still occur, their potential impact is much lower, and the cause(s) are no longer related to a lack of understanding or poor attitudes toward procedure compliance.

System Functional Assessments represent in-depth reviews of systems, including their operating, maintenance and testing procedures, to ensure that the procedures are current and technically correct and that they have been properly maintained while the plant is being modified. The assessment results validate the overall adequacy of our procedures. When taken together, these efforts provide evidence that we have evaluated our procedures and checked them for accuracy in many ways. There are many other special efforts not summarized here, including Nuclear Regulatory Commission inspection, Institute of Nuclear Power Operation assists and operations verification and validation of procedures which provide additional checks of the proper translation of design into procedures.

Throughout plant operation we have implemented programs for procedure controls. Those controls included the periodic reviews summarized in this section. We have implemented a routine assessment program using our Quality organizations. We have provided training for procedure preparers and reviewers, including how to assess configuration baseline information. We have many other routine efforts not summarized, (e.g., using questioning attitudes when performing a procedure, system engineer review of design bases and procedures for training and familiarity, and the Nuclear Regulatory Commission inspections) which can and do check and identify needed improvements in our procedures, including some related to design bases.

When taken together these summaries present a strong bases for having reasonable assurance that WNP-2 has properly translated design bases into operating, maintenance, and test procedures. This does not mean that our procedures will be error free. However, we do have confidence in the routine efforts summarized here to identify and correct such errors.

Section C Configuration and Performance Consistency

This section provides information related to question (c) of the letter.

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

Introduction - Throughout our operating history WNP-2 has maintained design control and configuration management programs similar to those current programs described in Section A. These programs have controlled changes to the plant and provide for reviews and tests to ensure design bases assumptions and limits were met by changes. In addition to verifications related to individual changes/modifications, we also have routine reviews which check plant configuration and an extensive set of test procedures to verify equipment performance. Key elements of these test activities will be discussed in summaries in this section of the response.

This portion of the response will summarize routine activities which provide additional assurance of configuration or equipment performance. We have also performed some specific activities which verify portions of our plant configuration. The following summaries will highlight some of the more significant efforts. We also have opportunities to identify configuration issues every day through the routine actions of our system engineers, training personnel, operators, and maintenance personnel as they walkdown plant systems. We encourage a questioning attitude on the part of our staff and have provided a Corrective Action Program to resolve concerns regarding configuration or performance issues (as described in more detail in Section D).

When viewed in the aggregate the activities described in the following summaries and those routine activities listed above provide reasonable assurance that the existing design bases is reflected in the plant configuration and performance of equipment.

C.1 - Special Configuration Verifications

a. **Safety System Functional Assessments** - As indicated in Section B the Supply System has performed four full scope Safety System Functional Assessments and four mini-Safety System Functional Assessments. The general assessment methods, systems reviewed, and personnel involved have been described earlier in Section B. Extensive walkdowns of plant components were performed during these inspections. These walkdowns compared configuration baseline with actual plant configurations, including special attention to modifications which had been performed. All of the Safety System Functional Assessments, including the mini-Safety System Functional Assessments, identified labeling discrepancies between the field labels and various configuration baseline information. These individual deficiencies were corrected and generic action was directed toward support of the plant labeling effort as described later in this response. Some configuration errors were noted, such as failure to have double

isolation valves on a drain line, or piping runs which needed additional supports or specific analysis to determine if the as-built condition was adequate. Again, the individual cases were corrected. In these situations the discrepancies between the physical plant and the configuration baseline were determined to be isolated occurrences.

Walkdowns in some cases validated the effectiveness of previous corrective action efforts. For example, in the AC Distribution Safety System Functional Assessment (TA 89-13), it was noted that the fuse verification effort (see description in part C.1.b following this summary) had clearly verified fuse sizes and labeled them to facilitate removal and replacement for many panels in the Control Room.

Overall, the Safety System Functional Assessment results provided significant confidence that plant configuration supported design bases conclusions. Baseline configuration documents were sometimes inconsistent and this has led to corrections such as the Electrical Wiring Diagram effort and improvements in calculations discussed in Section B of this response. Performance of these assessments provided significant confidence that the plant was in conformance with the design at the time of licensing and has been maintained in conformance during our operating history.

b. **Fuse Program** - Due to problems noted through our Corrective Action Program in 1984, WNP-2 initiated a control and instrumentation fuse reverification effort. This program includes: 1) engineering development of fuse lists which show loads, devices, and power sources based on review of baseline configuration documents; 2) defining improvements in fuse labeling and placing revised labels in the field; and 3) in-field verification of fuse size and types through plant walkdowns. Development of the fuse lists was completed in 1985. Control Room verifications and labeling improvements were completed in 1989 (as noted above, the AC Safety System Functional Assessment validated the improvements). In-plant verification and labeling upgrades continue, with approximately 85% of all plant fuse locations inspected. As plant configurations are checked, discrepancies between the lists and the configuration are addressed through the Corrective Action Program. Investigations into such discrepancies may include electrical circuit analysis which reverify, or in some cases reconstitute, design bases. Fuse changes which are identified are evaluated for impact through the design and configuration control programs.

This effort was necessary due to inconsistencies and confusion regarding the actual size and characteristic requirements for fuses from configuration documents and in plant labeling discrepancies as compared to configuration documents. Part of this confusion was from the lack of understanding of the labeling standards used in the various configuration drawings. The same fuse will be labeled one way in a circuit diagram and another way in a panel terminal

block drawing. The generation of fuse lists cleared up this confusion. In addition, the lists provided better support of fuse sizing and type for replacement, which had in the past been made as like-for-like replacements.

This program is an in-field re-verification of plant configuration, fuse-by-fuse to ensure fuse type characteristics and sizes match configuration baseline requirements. For the panels and fuses verified under this program we have high confidence that the plant is in conformance with the configuration requirements.

c. **Fire Protection** - Throughout plant operation we have conducted extensive self-assessments which involved plant walkdowns and verifications of design bases as it relates to fire protection issues. These assessments have identified and corrected minor discrepancies with plant configurations for detection and suppression systems.

In addition, along with the industry (reference Nuclear Regulatory Commission Generic Letter 92-08), WNP-2 identified concerns with the installation of Thermo-Lag fire barriers. We identified discrepancies between qualification documents and in plant configurations for this material. As a result, we performed extensive review to identify safe shutdown equipment which requires a fire barrier (which was provided by Thermo-Lag applications) to support the plant licensing and design bases. We are making modifications to the plant to eliminate the need to rely on Thermo-Lag. These modifications may include rerouting cable such that Thermo-Lag type barriers are not required, or replacement of Thermo-Lag material with other qualified barrier material. This effort ensures for the current Thermo-Lag applications that we have revised our method of meeting the requirements. In these assessed areas we have high confidence that the plant configuration is consistent with configuration documents, or deficiencies are being corrected.

We have also identified discrepancies between the configuration baseline and the as-installed and maintained fire penetration seals (reference Licensee Event Report 94-02). Due to in-field discrepancies, such as damage to the seal surface or what appeared to be excessive shrink or lack of adhesion, all fire seals were declared non-conforming and compensatory action was taken. As a result of these findings, the design bases were researched and additional qualification fire testing was obtained. To correct the situation every essential seal (over 3600 seals) has been re-inspected and verified to meet the design requirements or identified for repair. From our inspections about 9% of the essential seals will require some form of rework. In addition, over 3300 non-essential seals have been re-inspected to verify configuration and conformance with design bases. This corrective effort continues into 1997. For the areas inspected to correct the deficiencies, we have high assurance that the actual plant configuration matches the baseline (or we are correcting the deficiencies).

These two examples of configuration verification taken in response to identified plant problems support the conclusion that for these areas the plant configuration is consistent with design bases.

C.2 - Routine Component Configuration Verifications

a. **Quality Assurance Assessments** - Our Quality Assurance and Nuclear Safety Assurance Division staffs routinely check plant configuration status through audits, surveillances, assessments, and plant walkdowns. Quality Assurance and Nuclear Safety Assurance Division personnel routinely assess samples of the modifications being implemented by the plant to ensure that they are properly evaluated, documented, and the necessary updating is completed in a timely manner. Assessments such as those in assessments 88-002, 89-001, 89-012 (Safety System Outage Modification Inspection covering nine modifications), 90-006, 90-010 (Outage Modification Inspection), 90-020, 91-005, 93-004 and 94-001 (Supply System Outage Modification Inspection) represent some of these activities. These assessments compare the modification to the design requirements, by researching the configuration baseline, e.g., Final Safety Analysis Report, drawings and calculations, and comparing them to the revised design outputs prepared for the modifications. These revised outputs are then compared to the actual in-field installations. These checks are validating the configuration as it is being made and represent assurance that for the items checked, the final as-built status matches the revised configuration baseline.

These assessments have verified the configuration of many of the modifications implemented in the plant. These assessments have also identified some procedure compliance problems and programmatic weaknesses. Several of the assessments in the 1980's coupled with other adverse findings from audits and Nuclear Regulatory Commission inspections led to a major engineering improvement effort, implemented over a five year period. This effort rewrote the modification process, better defined responsibilities and actions, provided additional training, provided more detail through the use of checklists for implementers and addressed a programmatic weakness regarding failure to analyze, and addressed the impact the modification installation process had on plant operations. These improvements focused on ensuring post installation tests validated the ability of the modified structure, system, or component to perform its intended function. They also improved the reviews of the as-built documentation packages to ensure that the as-built information was correct and complete. As noted, later assessments verified the improvements in the process.[13]

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13 Technical Assessment 90-020 Post Engineering Improvement Plan Independent Design Review, specifically assessed a plant modification prepared after the engineering organization implemented extensive improvements from earlier identified deficiencies in their design change

Quality Assurance surveillances routinely verified in plant installed configurations. Examples include, 287-273 Hi Pressure Core Spray Walkdown, 287-293 Low Pressure Core Spray Verification Walkdown, 288-204 Verification of Plant Modification Request 02-86-232, 289-007 Reactor Closed Cooling Walkdown, 289-040 Fuel Pool Cooling Walkdown, 289-043 Seismic Supports for Motor Control Centers, 290-090 Reactor Core Isolation Cooling Walkdown, 291-055 Forced Outage Recovery (Emergency Diesel Generator and Floor Drains), 291-082 Emergency Lighting Walkdown, 292-037 Equipment Qualification Maintenance, 292-088 ECCS Pump Room Seals, 294-045 Modifications to Residual Heat Removal-Valves 8&9, 295-027 Preaction Sprinkler System Walkdown, 295-101 New Fuel Storage Vault Modification, and 296-033 Non-Essential Fire Penetration Seals. In each of these surveillances Quality Assurance personnel compared the baseline configuration (drawings, tables, and databases) with the actual in-plant configuration. Most of these assessments found that the plant configurations were satisfactory. The Motor Control Center Seismic Support surveillance identified a deficiency with shims installed but these were re-evaluated and found to be acceptable. The Emergency Lighting surveillance identified a maintenance deficiency which rendered some of the lights inoperable, and the Pump Room Seals surveillance identified a design deficiency by the original architect/engineer. While many of the surveillances did identify minor discrepancies among configuration baseline documents, they were corrected as part of the follow-up to the surveillance.

Quality Assurance personnel have also performed at least 13 audits focusing on the fire protection area. These audits routinely involve verifications of detection and suppression systems and fire barriers in the field using configuration baseline information and plant walkdowns. Significant adverse findings from routine Quality Assurance audits have occurred related to plant configurations for Thermo-Lag and fire barrier penetration seals (see discussion in Section C.1.c). The audits have also identified minor discrepancies with baseline documents and some in-field installations (sprinkler heads which were obstructed, or openings in Class 1E cabinets under sprinklers), however typical findings are positive in that the plant configuration matches the design bases and configuration baseline.

Quality Assessment activities are performed on a routine basis. They are based on sampling the activities in progress and comparing the observations to acceptance criteria, and involve hundreds of individual observations each year. Many of the observations which demonstrate conformance with the programs

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program. It validated that in this case the program improvements and engineering implementation of those programs resulted in a modification without the previous experienced deficiencies, such as inadequate post modification testing or inaccurate as-built information.

and processes are not typically retrievable without an individual search of the assessment report. Our reviews for this response noted many examples of satisfactory performance. The deficient conditions are tracked and resolved through the Corrective Action Program noted in Section D. Based on the on-going nature of the Quality assessments and their use of the corrective action process, this effort provides a positive input to our confidence that our configuration is consistent with the design baseline.

b. **Clearance Order Tagging** - WNP-2 has a protection tagging program designed to maintain plant and personnel safety when removing equipment from, and returning equipment to service. This program is controlled through PPM 1.3.8, *Plant Clearance Order*, (as discussed in Section A.7). This program requires that licensed operations personnel use controlled and current drawings and procedures to identify boundaries for removing equipment from service for maintenance or testing. The personnel developing clearance orders generate tags which are placed on the equipment in the field to reflect the off-normal status. As such, each time a clearance order boundary is developed and the tags are placed in the plant we verify that the plant configuration and configuration baseline (drawings, tables, etc.) match.

Discrepancies which are found during the development of the clearance order boundary, or found when the tags are being placed in the plant, are promptly brought to management's attention. Drawing discrepancies are corrected prior to the tags being placed and may be corrected through the design control or other configuration control programs. If the discrepancy is significant, a Problem Evaluation Request is generated invoking our Corrective Action Program. This initiates reviews for operability and reportability to ensure that the in-plant configuration is correct and equipment is capable of performing its intended function. The current Corrective Action Program is described more completely in Section D.

When a clearance order is placed in the plant, any discrepancies (labels, components out of place, different models, etc.) must be resolved prior to continuing with the tagout and removing equipment from service. Early in our history, we identified discrepancies between drawing descriptions and in plant labels for components. Those discrepancies required correction prior to completing the tagout or were identified and corrected through our modification program. These discrepancies were due in part to inconsistencies between our architect/engineer and vendor designations and multiple changes introduced in our labeling format to create greater consistency in tagging. A major improvement in this effort was the designation of a labeling coordinator in operations and the development of an improvement program, plant labeling, which will be described later. The coordinator works with vendors to make the labels and helps prioritize the work with engineering when discrepancies require

their evaluation. Significant effort has been made to ensure consistent labeling in the plant and at this time there are fewer instances of such discrepancies.

This routine program provides another opportunity to identify discrepancies between the plant and configuration baseline documents. Our Corrective Action Program or modification program has been used to correct such discrepancies. This program represents another portion of our rationale.

c. **Plant Labeling** - As described earlier, the plant labeling program was a correction for early plant discrepancies. It was proceduralized in 1989 and is currently defined in Plant Procedure Manual 1.3.51, *Plant Labeling*. This program allows anyone to request a label, but defines strict methods and materials to be used to generate the actual plant label. Engineering is involved through the development of plant designators for new or previously unlabeled components. These items are processed through the design change or configuration control programs, as appropriate. In addition, the Labeling Program Coordinator ensures that procedures are updated for newly identified equipment.

A concerted effort was made by the operations and engineering departments to replace labels in the plant with ones conforming to the Plant Procedure Manual guidelines during routine work activities in 1990-1994. In addition many previously unlabeled components were identified and labeled during this period. These components had not been required to have labels by construction standards, but we recognized the need to provide labels since the components were often referenced in plant procedures or were needed to perform equipment tagouts. With a renewed emphasis on procedure compliance, and efforts to reduce human errors related to tagouts, this improvement in plant labeling supported several programs.[14]

Verification of plant labels occurs most frequently during tagging or procedure implementation. Each time this is done we are verifying plant configurations by comparing configuration with actual plant configuration. The upgrade in the labels during the 1990's also represents a verification of the plant configuration at the time each label was placed in the plant.

d. **Inservice Inspection** - In accordance with 10 CFR 50.55a we have implemented and maintained an Inservice Inspection Program which includes routine inspection of piping, component supports, valves, pumps, and bolted and welded connections. Implementation of this program required the development of Inservice Inspection diagrams which were based on fabrication

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[14] Nuclear Regulatory Commission noted significant improvement in plant labeling in Inspection Report 95-29, dated November 13, 1995.

and construction drawings and in plant verifications through walkdowns. In the implementation of this program, over 13 years, we have only identified one error between the drawings and the in-field configuration. This indicates that we have maintained consistency between the design bases and plant configuration. The Inservice Inspection Program continues to evaluate and ensure continued component performance in accordance with our design bases. The Inservice Inspection Program is updated by the design change and configuration control programs and discrepancies or inspection deficiencies are addressed through our Corrective Action Program.[15]

C.3 - Routine Equipment Performance Verifications

These summaries focus on the portion of the (c) question regarding component performance consistency with the design bases. The equipment performance monitoring programs, summarized below, which follow are based on the translation of design requirements into configuration baseline information and plant procedures. Tracking equipment performance per acceptance criteria in procedures validates performance per the design bases. The following summaries represent some of the more significant portions of our overall equipment test and monitoring programs.

a. **Technical Specification Testing** - Equipment performance is verified on a routine basis through the implementation of the Technical Specification surveillance requirements. As indicated earlier in this document, we have provided assurance that our surveillance procedures are consistent with our design bases through efforts such as the Technical Specification Surveillance Program, Power Uprate and Improved Technical Specifications reviews. Implementation of the procedures on the schedules defined by the Technical Specifications routinely tests the ability of plant equipment to perform their safety functions. If equipment fails to perform as indicated by the surveillance tests the equipment is declared inoperable, the appropriate Technical Specification action is taken and corrective maintenance is performed to return the system to operable status. The Corrective Action Program is used to determine cause(s) behind the failure (as described in Section D) and implement and track action to prevent recurrence. Technical Specification surveillance results, including specific values such as flows, pressures and currents, are reviewed by the system engineers to identify early indication of equipment degradation, even if the procedure acceptance criteria are met.

The Technical Specifications Surveillance Program has been in existence since initial plant operations. We have identified and corrected deficiencies in our individual test methods/procedures. When such situations arise the systems are

[15] Nuclear Regulatory Commission Inspection 96-20 and 94-18 inspected the program finding it satisfactory and implemented properly.

re-tested per the new test methods, as necessary, prior to declaring the system operable and continuing with routine plant operation. As indicated earlier we have performed comprehensive reviews to ensure we are properly testing systems and components per the Technical Specifications requirements.

In addition, the setpoints used in calibrating equipment and verifying compliance with the Technical Specification requirements for plant instrumentation have been validated by the Setpoint Improvement Program discussed in Section B.3.f.

Implementation of the Technical Specification Surveillance Program confirms equipment performance on a regular schedule.

b. **Inservice Testing** - In accordance with 10 CFR 50.55a we have implemented and maintained an Inservice Testing Program for pumps and valves throughout the life of the plant. The program is based on specific test procedures which are performed on a defined schedule consistent with regulatory requirements. These procedures routinely test the ability of components to perform their safety function by operating the equipment and verifying flows, pressures, stroke times for valves and other parameters, and comparing those values to acceptance criteria developed from design bases and vendor information. Engineers review the data to identify performance failures and also to identify degradation in performance prior to actual failures. The maintenance program and procedures are used to correct or replace failed or failing equipment. The Corrective Action Program is used to determine cause(s) and coordinate action to prevent recurrence. The design change program requires updating of the Inservice Testing Program for plant changes.

Implementation[16] of this program ensures equipment performance is consistent with design bases.

c. **Maintenance Rule Implementation** - WNP-2 has implemented a program (Plant Procedure Manual 1.5.11, *Maintenance Rule Program*) to monitor equipment performance. In the program actual plant system and component performance is compared to target performance standards developed from reviews of the design and licensing bases assumptions and data from the Individual Plant Examination. Equipment performance which is not consistent with these target values is evaluated per the plant Corrective Action Program. While this program was only implemented in July, 1996, it will provide additional assurance that equipment performance is consistent with the design bases.

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[16] Nuclear Regulatory Commission review of program indicated it was well managed and maintained (Inspection Report 94-19).

d. **Leak Rate Testing** - WNP-2 has established leakage monitoring programs (Plant Procedure Manual 1.5.6 and 8.3.1, along with Volume 7 and 8 surveillance and test procedures) which use specific monitoring and test procedures to check for leakage from systems and between systems. Procedures include tests such as checking flows at plant and system drains, pressurizing systems or sections of systems and monitoring pressure drops. These procedures may be run periodically or on demand based on observed plant conditions. In addition, we have developed procedures to implement Appendix J Leak Testing requirements from 10 CFR 50. All these procedures are based on reviews of design bases and output documents to develop test boundaries and acceptance criteria for leakage. The tests are scheduled and performed on a routine basis. Some leakage is verified by daily monitoring provided through routine operator rounds. Leakage in excess of defined criteria is evaluated and resolved through our work control process, and, if necessary, the Corrective Action Program.

As an example, the leak rate tests for the containment ventilation inlet and exhaust isolation valves frequently identified the need to rework the valves. Maintenance trend data supported the need to perform additional cause analysis and determine a fix other than rework of the valves. In our original design these large butterfly valves had soft seats which were thought to provide better sealing characteristics. However, our experience indicated that in actuality these valves were high maintenance items and were very sensitive to actuator settings and maintenance practices. We identified the need to replace the valves with hard seat valves used by others in the industry and performed the modifications to the plant over three outages. Since that time the maintenance requirements have been substantially reduced and the leak rate test results are much more consistent.

Performance testing and monitoring ensures that structures, systems, and components are performing as expected and containing the liquids as assumed in the design bases. If leakage is excessive this indicates a need to take corrective action. Such leakage may mean that pump and valve seals are failing, or piping may have corroded or cracked, and this structure, system, or component performance needs to be compared with design bases assumptions. Corrective action may be remedial or more extensive if the structure, system, or component is not performing per the design bases. Our experience with this program indicated that it works well to identify precursors to some types of failures and thus is an integral part of the plant performance monitoring.

e. **Routine Plant Operations** - Operations personnel routinely evaluate equipment performance. Parameters which are identified in plant procedures (particularly daily logs and Technical Specification surveillances) define operations limits, such as flows, temperatures, current, etc. Operators verify these parameters through the use of installed instrumentation in the Control Room and locally

throughout the plant. These parameters are routinely checked as part of operator rounds and daily log-keeping. Conditions outside specified limits are reported to shift management and investigated with assistance from system engineers and others as necessary. These investigations may result in equipment being declared inoperable, with corresponding Technical Specifications Actions, and actions per the maintenance program to rework or repair plant equipment. The Corrective Action Program is used as necessary to determine cause(s) and coordinate action to prevent recurrence.

These parameter limits are often based on design requirements or assumptions used in developing the design, or vendor recommendations for monitoring the performance of equipment. The monitoring of these parameters is another method of ensuring equipment performance is consistent with the configuration baseline and the licensing and design bases.

f. **Post Modification/Maintenance Testing** - Procedure requirements in our modifications program and maintenance program require the development and performance of tests to assure that the modified or reworked/repaired equipment will perform its design function. As indicated in Section A of this response, determination of appropriate tests to verify proper installation and function of a modification is a responsibility of the project engineer. The project engineer may require tests similar to those performed during the construction or start-up phase, or he may specify performance of routine operational tests, such as surveillance of inservice tests. The adequacy of this testing is evaluated during development of the modification and is reviewed with the modification package, including review by the Plant Operations Committee, as necessary.

Similarly, whenever corrective maintenance is performed on equipment, the work planner, in conjunction with maintenance, system engineering and operations personnel must identify appropriate post maintenance tests (as described in Plant Procedure Manual 1.3.7.H, *Testing (Post Maintenance/ Modification Activities)*). Again, such tests may be routine operational tests such as surveillance or inservice tests, or they may be more like the original plant construction and start-up tests. The planner develops the proposed tests and the work review by operations personnel confirms the adequacy of such tests and authorizes their performance. Plant Procedure Manual 1.5.7, *Post Maintenance/Modification Testing*, is a reference for the different types of tests which may be performed and the kind of situations when they should be performed to verify or validate certain equipment performance features.

Implementation of post modification/maintenance tests assures that equipment performance is consistent with the design bases and may also provide baseline information to assist in Maintenance Rule trending of equipment performance.

C.4 Other Activities

We also have an extensive set of detailed maintenance procedures for repair and testing of equipment. The procedure reviews discussed earlier in this response provide assurance that these maintenance procedures are consistent with the licensing and design bases and maintain configuration baselines. Performance of these individual maintenance procedures is an act of verification of plant configuration and they are written to ensure that upon completion, we have returned the equipment to a configuration consistent with baselines and design bases. If you wish further detail on the type and level of detail in our maintenance procedures, they are available onsite for your review. While not summarized further, this represents a portion of the rationale for our conclusions regarding plant configuration and equipment performance.

We also have extensive preventive and predictive maintenance procedures and supporting schedules. Preventive maintenance procedures and schedules are developed from configuration baseline requirements and vendor information, and go through the same procedure reviews described earlier in this response. Their performance also provides an opportunity to verify consistency with some configuration baseline requirements. The performance of the procedures themselves provide assurance that the equipment will continue to perform as intended by the manufacturer. If you wish further detail on the type and schedules for preventive maintenance, we will provide it separately as it can also be very extensive. Preventive maintenance activities provides a portion of our rationale for conclusions regarding plant configuration and equipment performance.

Predictive maintenance procedures are state-of-the-art diagnostic technologies and vendor recommendations and are designed to predict equipment failures prior to the actual failure to allow for planned replacement or repair. Some of those predictive methods are described in procedures referenced in Appendix 3. Performance of these individual diagnostics on equipment confirm operations within design parameters or trigger more extensive review and repair. Predictive maintenance is also a portion of the rationale for concluding that equipment performs in accordance with the design bases.

C.5 Summary

The routine reviews of plant configuration from Quality Assurance and inservice inspection programs, coupled with daily checks like clearance order tagging, routine informal system walkdowns performed by system engineers and walkdowns of plant problems by planning and maintenance personnel prior to developing or implementing a work request are checks of plant configuration. Integrating the implementation of the configuration controls identified in Section A of this response for changes to the plant with these routine reviews provides reasonable assurance that plant conformance is maintained consistent with the configuration baseline, and where discrepancies are

found we correct them. The special verifications mentioned in Section C.1 provide assurance that we have maintained plant configuration since receipt of the Operating License throughout plant life.

We implement more testing than outlined here, including testing of relief and air-operated valves, heat exchanger performance, pipe wall thinning, non-destructive examinations like thermography, vibration and oil analysis. However, the programs summarized provide an idea of the types of testing performed routinely to ensure equipment performance. The routine test programs outlined in Section C.3 and others not specifically described, when taken together, indicate that we check for and correct equipment performance which is not in conformance with our configuration baseline, and through these efforts verify that our design and licensing bases are accurately reflected in the as-built plant configuration. Based on the above points, we have reasonable assurance that the plant configuration and performance has been maintained in accordance with the design bases throughout the life of the plant.

Section D - Corrective Action Program

This section addresses Nuclear Regulatory Commission question (d) of the letter.

> 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 Nuclear Regulatory Commission.

D.1 Introduction

10 CFR Part 50, Appendix B, Criterion XVI, *Corrective Action,* includes a requirement for identification of problems and determining and implementing appropriate corrective actions. Implementation of the Appendix B problem identification and corrective action requirements will be referred to herein collectively as the 'corrective action' process through the use of a Problem Evaluation Request. At WNP-2, the corrective action process is implemented through the Plant Procedure Manual sections 1.3.12, *Problem Evaluation Requests* and 1.3.12A, *Processing of Problem Evaluation Requests*.

Overview - The corrective action process has gone through several changes to improve the identification of conditions adverse to quality and provide corrective actions necessary to preclude recurrence. As presently configured, the corrective action process is the sole vehicle at WNP-2 which provides for a root cause determination to be made for an identified condition. The information provided in the Problem Evaluation Request provides the data for trending equipment, design, process, or human performance issues. Since initial operation of WNP-2, Plant Procedure Manual 1.3.12 and associated procedures have required that station personnel identify non-conforming conditions, perform appropriate safety significance and reportability determinations, document disposition of identified conditions, and enter items into the Plant Tracking Log.[17]

Exception for Security Programs and Safeguards Controls - Per Plant Procedure Manual 1.3.12, problems related to Security Programs and Safeguards controls are not subject to the Problem Evaluation Request process. However, Security and Safeguards problems are brought to the attention of Security management for processing in accordance with Security procedures. Security deficiencies identified by Quality during audits, surveillances or assessments are, however, subject to the Problem Evaluation Request process.

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[17] All actions taken pursuant to the corrective action process are subject to a periodic review of at least once per six months. This is accomplished in part by Quality Corrective Action Program audits.

Scope - The corrective action process applies to issues identified during operations or while shut down, including those from Quality audits, surveillances, assessments and industry Operating Experience Reviews. The process includes an implementing management/review framework. Issues which do not meet the Problem Evaluation Request threshold are identified, documented, and appropriately dispositioned by other plant processes.[18]

D.2 Corrective Action Process Description

Plant Procedure Manual 1.3.12 describes the initiation of a Problem Evaluation Request for documenting and/or evaluating potential or actual problems as well as the consequences resulting from an identified condition. The companion procedure, Plant Procedure Manual 1.3.12A describes the method for processing Problem Evaluation Requests, including administration, screening for operability and reportability, identification of corrective action type, resolution, and closure.

Intent of Corrective Action Process - Documentation of a condition adverse to quality assures that management attention is directed toward addressing the problem and resulting consequences relative to WNP-2 activities. This ensures the matter is promptly and adequately resolved. The corrective action process ensures:

- Safe and reliable plant operation;
- Identification, evaluation, and disposition of problems assuring that the cause is determined and actions developed to prevent or reduce the probability of recurrence;
- Investigation and root cause analysis of significant events;
- Identification and trending of conditions adverse to quality;
- Notification of appropriate levels of management and affected organizations.

Problem Evaluation Request Initiation Requirements - Any individual discovering a potential condition or event adverse to nuclear safety, plant reliability, or quality should initiate a Problem Evaluation Request if the condition:

- Affects equipment relied upon in the plant licensing, including its design bases;
- Constitutes a procedural and regulatory compliance deficiency;

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[18]Problems identified which do not meet the Problem Evaluation Request threshold are considered for documentation through processes such as the Gold Card program or the Work Request process. A Gold Card is recommended for those conditions resulting from human performance errors that did not result in undesirable consequences. A work request is recommended if the condition is a broke/fix item not causing adverse conditions, trends, or undesirable consequences.

- Consists of a documentation or process deficiency that can affect safe operation of the plant;
- Is a condition adverse to quality;
- Is discovered during Quality assessments;
- Consists of a personnel error resulting in a challenge to safe plant operation or plant safety;
- Is based on an adverse trend discovered during review of Problem Evaluation Requests or Gold Cards;
- Consists of a reportable accident, lost work day or serious injury accident, or near miss;
- Is based on ineffective or inadequate corrective action implementation or non implementation affecting safe plant operation; or
- Is based on External Operating Experience documents applicable to WNP-2.

Notification Requirements - If a condition has an immediate impact on personnel or nuclear safety, impacts equipment operability, may be reportable to an outside agency, involves an uncontrolled release of radioactive material, or is a threat to Plant Security, the individual discovering the condition must ensure that the Control Room Supervisor or Shift Manager is immediately notified.

The Plant General Manager, Operations Manager, or Engineering General Manager should be notified of Problem Evaluation Requests which identify a plant design issue.

Problem Evaluation Request Validation - The Problem Evaluation Request originator's supervision or duty Shift Manager validates the Problem Evaluation Request. Validation includes verification that the Control Room Supervisor or Shift Manager was notified where appropriate. The Shift Manager gives consideration to placing activities on hold where human performance issues were involved, evaluating the necessity of 'for cause' chemical testing, establishment of an Incident Review Board and assuring that the procedural and documentary requirements of Plant Procedure Manual 1.3.12 have been met, including an assessment of whether the Problem Evaluation Request is "significant."

The Incident Review Board is convened at the discretion of the Shift Manager or senior management for significant human performance errors, equipment failures, or plant events. This could include situations like tagging errors, procedure performance issues that result in damage to plant equipment and plant trips. The Incident Review Board is composed of line personnel from engineering and other departments, with assistance from Quality, who gather evidence, de-brief involved personnel and recommend additional root cause analysis techniques, such as advanced investigative testing, to assist in determining the cause and action to prevent recurrence of the problem. Their

recommendations are due to management within 48 hours of the event. They act as an advisory body to the dispositioning manager for the Problem Evaluation Request.

Initial Operability Assessment and Reportability - Once the Problem Evaluation Request is validated, an initial operability assessment is performed by an operations reviewer if a safety-related, augmented quality or Technical Specification-related structure, system, or component is involved.

In addition, the Control Room Supervisor or Shift Manager is required to take any prompt corrective action, including verifying the ability to operate within the constraints of the Technical Specifications upon review of the Problem Evaluation Request. The operations reviewer also determines whether the identified problem is reportable. Guidance has been proceduralized and included in operations training to assist in identifying and reporting to offsite agencies, including the Nuclear Regulatory Commission and state agencies. These notifications will be performed by the Control Room staff. Licensing personnel are also on call around the clock to assist in interpreting reportability requirements.

D.3 Problem Evaluation Request Resolution And Processing

Problem Evaluation Request Morning Meeting - Each new Problem Evaluation Request condition (originated since the last meeting) is discussed for assignment of a dispositioning manager, operability and reportability at a daily meeting (excluding weekends) conducted by the Problem Evaluation Request Program Coordinator. This meeting validates the decisions made earlier regarding reportability.

The Problem Evaluation Request Program Coordinator leads the morning meeting as a central focus for information gathering and to provide any initial trend information found relative to each described condition. Managers from engineering, operations, maintenance, quality, and other organizations attend the meeting. As the meeting format has evolved, additional pertinent information has been brought up as standard discussion items for each Problem Evaluation Request. These include determination of significance in accordance with stated criteria, designation of the issue as human performance related, identification of the issue as representing an adverse trend or clarification of the issue prior to assignment.[19]

Operability Review - The first action taken after a Problem Evaluation Request is validated is an operability review to determine the status of the affected structure, system, and/or component. This is a recheck of the initial operability decision made by the shift operating crew. A determination is made if the structure, system, or component is: (a) operable, (b) operable but degraded or non-conforming, or (c) not

[19]An additional benefit of the Problem Evaluation Request morning meeting is that it serves as a forum to provide additional information about the issue.

operable. If the structure, system, or component is operable but degraded or non-conforming, an interim disposition is provided with appropriate corrective actions to assure continued operability.[20] If engineering judgment was used to determine operability, a follow-up assessment of operability is performed in accordance with Generic Letter 91-18. Priority is given to dispositioning Problem Evaluation Requests involving a degraded or non-conforming condition. After the Problem Evaluation Request disposition and corrective action plans have been approved, they are routed to the Problem Evaluation Request Program Lead for tracking via the Plant Tracking Log system.

Root Cause Analysis and Corrective Action Plans - If the Problem Evaluation Request is significant (historically about 10% of all requests generated), a root cause analysis is performed.

A significant Problem Evaluation Request is an event or condition which results from equipment failure, program failure, or inappropriate actions, and has an undesirable impact on plant safety, personnel safety, plant reliability, power production, or regulatory position. A root cause analysis is performed for all significant Problem Evaluation Requests. Examples of a significant Problem Evaluation Request would be:

- Loss of design control, including modification, incorrect installations, or an unauthorized design change;
- Loss of control of safety tagging boundary with potential or actual personnel injury or plant transient;
- Any event or condition that alone could have prevented fulfillment of the safety function of structures, or systems;
- Any violation of Technical Specifications;
- Notice of cited violation or an event requiring a Licensee Event Report.

Root Cause Analysis is required for all significant Problem Evaluation Requests. It may be performed for other Problem Evaluation Requests as determined by the dispositioning manager. Guidance on how to perform this analysis is provided in PPM 1.3.48, *Root Cause Analysis*. This procedure describes various root cause methodologies along with recommendations on when to use them. This procedure coupled with the training given to Problem Evaluation Request dispositioners gives them the tools needed to perform an appropriate analysis. The Problem Evaluation Request dispositioner selects the appropriate methods and performs the cause analysis. Quality staff members are available as internal consultants to assist in this effort. Problem Evaluation Request conditions which are not significant get a more limited

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[20]Equipment not expressly subject to Technical Specifications is assessed for reasonable assurance of safety in accordance with Generic Letter 91-18.

scope cause determination. This analysis may not necessarily identify the generic nature of a less significant Problem Evaluation Request, however, trending of these conditions evaluates the need to provide more inclusive analysis. WNP-2 staff have written many Problem Evaluation Requests on trends of less individually significant Problem Evaluation Requests to identify the trend and institute a more complete root cause analysis.

After all reviews and root cause analysis, the Problem Evaluation Request dispositioner develops corrective action plans to address deficiencies and to preclude recurrence. The Problem Evaluation Request Program Lead schedules significant and selected Problem Evaluation Request disposition packages for Corrective Action Review Board review.[21] Corrective actions are not closed until all actions are complete and Plant Tracking Log items are closed.

When other processes are used as part of the corrective action process, each is tracked under one common number for each identified condition. For example, where a corrective action for a Problem Evaluation Request states that an Request For Technical Services needs to be written and resolved, the corrective action plan number is the same as the Problem Evaluation Request with an additional digit at the end identifying it as a corrective action to that specific Problem Evaluation Request. For a Problem Evaluation Request numbered 296-0999 the corrective actions would be numbered 296-0999-01, 296-0999-02, etc.

Tracking and Trending - With the use of trending codes applicable to each Problem Evaluation Request, a search can be made on the Plant Tracking Log and common issues may be identified as a trend or potential trend adverse to quality. These trending codes are alpha-numeric designators for types of events or causal factors. When identifying causal factors they are preliminarily assigned by Quality personnel, based on experience, until the cause analysis is complete. Quality personnel compare trend codes with system and equipment designators to provide lists of similar Problem Evaluation Requests to the one being reviewed at the morning meeting, which helps determine significance and priority of actions. In addition these codes can be used by any staff members, but most often Quality, to determine if a particular type of problem is occurring and thus needs additional management attention. The Problem Evaluation Request dispositioner reviews the Plant Tracking Log for similar events and possible adverse trends for identification of generic impact or human performance issues. The dispositioner also reviews the Technical Specifications, Final Safety Analysis Report, Operating Experience Report, and other database documents including design documents.

For example, Problem Evaluation Requests identifying a specific piece of equipment can be searched as a key word to identify a specific equipment problem trend, or

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[21]The Corrective Action Review Board function is discussed after tracking and trending.

- Adequacy of Problem Evaluation Request corrective actions;
- Corrective action plans open greater than one year;
- Follow-up assessment of operability and interim disposition.

Quality also ensures findings identified during audits have been documented to address program improvements.

D.6 Nuclear Safety Issues & Differing Professional Opinion Programs

The Supply System maintains an alternate (to the Problem Evaluation Request) means of focusing management attention on issues under the title of the Nuclear Safety Issues Program. Nuclear safety issues may include actual or potential:

- Issues affecting personal radiological safety, quality, and the safe reliable operation of Supply System licensed nuclear sites;
- Violations by Supply System employees or contractors of license conditions, Technical Specifications, Nuclear Regulatory Commission rules or regulations, or the provisions of the Atomic Energy Act or Energy Reorganization Act;
- Allegations of intimidation, harassment, or other forms of discrimination relating to;
    - Raising a nuclear safety issue, or
    - A decision making process that could affect the results of a nuclear safety issue.

The Nuclear Safety Issues Program, as controlled by procedures General Information Handbook 3.4.6 and Nuclear Safety Issues Program-1, provides the Supply System with a process for the identification, tracking, and resolution of issues affecting nuclear or non-nuclear safety that may not have been identified via the normal corrective action process or when the issue has been addressed under the corrective action process, but may not have been resolved to the satisfaction of the concerned employee. Employees are also encouraged to resolve differing professional opinions through a process controlled by procedure General Information Handbook 3.4.7, *Differing Professional Opinions.*

The Nuclear Safety Issues Program is a confidential process that allows an employee to remain anonymous, upon request, and have their concern evaluated. In cases where the concerned employee is known, the employee receives a written response to his or her concern. Each concern receives a thorough evaluation, is fully documented, and applicable corrective actions tracked to completion. Some corrective actions are placed into the Problem Evaluation Request process, as controlled by Plant Procedure Manual 1.3.12 & 1.2.13a. The concerned employee is provided the opportunity to review and comment on the findings of the Nuclear Safety Issues Program investigation and have the report reflect their comments.

searched as a key word such as 'pump' or 'valve' which can give information of possible generic issues.

D.4 Corrective Action Review Board

The Corrective Action Review Board is a self imposed quality checkpoint designed to assess the function and improve the effectiveness of the corrective action process. Corrective Action Review Board is made up of senior line managers from groups such as quality, operations, maintenance, regulatory affairs, engineering and others. The Corrective Action Review Board reviews all significant Problem Evaluation Requests. The Corrective Action Review Board functions as a sub-committee of the Plant Operations Committee.

The Corrective Action Review Board ensures, through its review, that senior management's expectations for the Corrective Action Program are being implemented. The Corrective Action Review Board reviews significant and other selected Problem Evaluation Requests, evaluates the scope and depth of the analysis, and evaluates the expected effectiveness of the corrective action. Some of the many items the Corrective Action Review Board focuses on are timeliness of corrective action, repetitive issues, generic implications, and human performance. The Corrective Action Review Board further assesses the effectiveness of root cause analyses and assures that common items between significant Problem Evaluation Requests are identified and addressed.

D.5 Quality Review

The Quality department reviews Quality initiated Problem Evaluation Requests and selected Problem Evaluation Request documents for reasonable assurance that the corrective action will:

- Eliminate the cause of the deficiency;
- Address generic issues applicable to other systems, programs, procedures;
- Includes timely completion dates considering the significance of the deficiency; and
- Verifies closure, by review of objective evidence (i.e., procedures, hardware, records, training files, memos, etc.) or by personal observation.

Quality also evaluates the corrective action process to assure that appropriate issues are identified and corrected. Quality is responsible for initiating revised procedures upon the identification of a change to the corrective action process. For example, Corrective Action Audit 296-059 of August 8, 1996, evaluated:

- Whether the Problem Evaluation Request threshold (identification and reporting) was understood by plant personnel;
- Trending of repeat Problem Evaluation Request;

The Supply System expects all deficiencies to be reported to an appropriate level of supervision or management. However, if the concerned employee is either not satisfied or for some reason is uncomfortable in using the normal corrective actions process (Problem Evaluation Requests), they are encouraged to bring their concern to the Nuclear Safety Issues Program. Employees are also made aware of their right to contact the Nuclear Regulatory Commission at any time with their concerns.

D.7 Assessment Of Corrective Action Process

WNP-2 recognized in 1988 that our root cause analysis effort was weak and inconsistent. This condition was identified in Quality Assurance and Nuclear Regulatory Commission assessments. As a result we identified and staffed an organizational unit under Nuclear Safety Assurance to perform root cause analysis for all conditions which were significant. This group ultimately consisted of five dedicated engineers who were given specific training in various root cause techniques. After they were trained they were assigned plant problem reports, called Non-Conformance Reports at that time, and working with line organization personnel developed root cause(s) and corrective action plans to prevent recurrence. Non-Conformance Reports were a subset of the total plant problems reported in Problem Evaluation Requests and were roughly equivalent to the currently defined significant Problem Evaluation Requests. This process worked although it involved significant interactions and was sometimes not timely. In addition line managers were sometimes reluctant to implement corrective action, due to their limited involvement during the root cause analysis process.

As a result of continuing assessment of our Corrective Action Program, by Quality Assurance and the Nuclear Regulatory Commission, and new management expectations in 1992, the Corrective Action Program was redirected. The threshold for reporting problems was lowered so that more items were included in the population. In addition, it was recognized that all conditions adverse to quality should get some level cause evaluation and action to prevent recurrence, although they did not all require the complex analysis performed under our root cause procedures at the time. This led to a recognition that the root cause determination for problem conditions of all levels needs to be the responsibility of the line managers. As a result, root cause training for line managers and their staff who analyze problems was developed and presented. The responsibility for the analysis was clearly defined and assigned to the line managers. The Nuclear Safety Assurance Division root cause group was phased out although some experts in particular root cause techniques were retained to work with line staff personnel as internal consultants. This transition was accomplished in 1994. Both Quality Assurance and Nuclear Safety Assurance personnel were tasked with special reviews of Problem Evaluation Requests during this period to ensure that root cause analysis was performed, documented, and corrective action taken to prevent recurrence. In addition a special senior management review of Problem Evaluation Requests was instituted to allow managers, like the Plant Manager, an opportunity to coach department managers on their implementation of the revised root cause and

corrective action responsibilities. Both this review and the level of the Quality Assurance and Nuclear Safety Assurance Division reviews were to be reduced as staff members demonstrated their competence and consistency in cause analysis and correction action.

Nuclear Regulatory Commission inspections such as 93-04, 94-34 and 94-201, indicated that our root cause efforts continued to need improvement. Those additional Quality and Nuclear Safety Assurance reviews indicated that the additional management review and training were not resulting in the improvements expected or needed. In response to those inspections we initiated further procedure changes and provided additional training for personnel who disposition Problem Evaluation Requests. As part of the Performance Enhancement Strategy developed in 1995 the Corrective Action Review Board and 100% sampling of Problem Evaluations Requests by Quality Assurance was implemented. These efforts resulted in improvement although the Corrective Action Review Board and Quality assessments continued to find problems with individual cause analysis and corrective actions.

The WNP-2 Performance Self-Assessment of June 1996, evaluated the corrective action process. The corrective action process has not yet proven consistently effective at eliminating previous problems. The corrective action procedures were revised during the self-assessment period and there are plans for further revision to more clearly identify responsibilities and requirements without effecting a substantive change in the requirements. Problems encountered during self-assessment supported the conclusion that not all workers understood or met management's expectations with regard to the corrective action process. While the positive message was that issues were being identified and developed, there was a demonstrated lack of understanding and a failure to meet management's expectations with regard to the proper application of the Problem Evaluation Request process to help prevent recurring conditions. Additional training in the development of performance improvement plans, using a process which has been effective in many industries, and the development of better tracking systems for precursors to Problem Evaluation Requests should further improve our corrective action process. In addition, the establishment of an electronic Problem Evaluation Request in late 1996 allows more self-trending. It also allows managers to compare levels and types of corrective actions for similar problems to ensure greater consistency.

Management continues to monitor and evaluate progress in this area.

D.8 Summary

Throughout this section we have described the current corrective action program. A reporting and evaluation program for conditions adverse to quality has existed throughout the operation of WNP-2. The program described here is significantly improved from that originally developed and the personnel performing operability analysis and root cause analysis are significantly better trained in those techniques than

they were in the first few years of plant operations. Our trending program for Problem Evaluation Requests is also significantly improved over earlier time utilizing techniques and methods shared with the industry through Institute of Nuclear Power Operations contacts.

WNP-2's current program is effective in identifying and evaluating actions to correct plant problems. The program is implemented effectively by the majority of staff members, however through our routine assessments by staff and Quality personnel, and our evaluations by the Corrective Action Review Board, we continue to identify the need for improvements in individual efforts. We also continue to evaluate and refine the threshold for reporting conditions through the Problem Evaluation Request process. WNP-2 has several programs in progress to improve human performance which involve a much greater degree of self evaluation than we have practiced in the past (e.g. Gold Card, performance self assessments). These programs often identify and correct behaviors before a condition which meets the threshold of a Problem Evaluation Request occurs. Based on all of these programs we have an effective corrective action program which supports operation of WNP-2 within the design and licensing bases.

Section E - Overall Effectiveness

The engineering configuration and control processes described in Section A meet regulatory requirements. Processes similar in scope and detail have been in place and implemented throughout the WNP-2 operational history.

Change Management depends on trained personnel implementing sound programs. The following key elements from WNP-2 management expectations support change control:

- WNP-2 staff is expected to strictly adhere to procedures. If procedure inconsistencies or problems are evident, management is to be contacted and the procedure is to be revised prior to continuing with the activity. Plant configurations or situations that do not match procedure requirements (including labeling, configuration, acceptance criteria, or actions which are inconsistent with training) are cause for stopping the activity and contacting management.

- Procedures define thresholds for reporting and resolving issues through the use of the Corrective Action Program with provisions for root cause analysis, corrective action, and trending.

- Equipment performance is demonstrated through surveillance tests, operator monitoring, and maintenance history trending per the Maintenance Rule. Deficiencies are to be addressed through the corrective maintenance program and the Corrective Action Program as necessary.

- Plant configuration and operation are expected to adhere to the requirements and assumptions in the design and licensing bases. Deviations or changes from the current bases are to be evaluated and the bases revised prior to implementing the deviation or change.

The Supply System appreciates the need to maintain configuration control of WNP-2's design bases. Our programs and processes have not been static, but have been enhanced in response to ongoing industry developments and internal and Nuclear Regulatory Commission findings. We have described the procedures and key programs which support *Change Management*. It is evident that they contain controls to implement development of *Design Bases* and their *Translation* for activities during the operation of WNP-2. Personnel utilizing the four key management expectations described above, and our current program requirements as described in Sections A and D, have the tools to evaluate changes to the plant and ensure conformance with the design and licensing bases.

Management oversight and independent assessments provide reasonable assurance that personnel are meeting those expectations. The summaries in Sections B and C demonstrate some of the *Configuration Verifications* actions, oversight, and assessments performed during the operational period at WNP-2 which support the

conclusion that there is reasonable assurance that our staff continues to implement the programs and procedures. *Support Activities,* such as computer databases, computer search capabilities, training, Design Requirements Documents, Electrical Wiring Diagrams, Component Classification Evaluation Records, and other programs enhance accessibility of design bases information and strengthen our ability to manage change.

In Section B we discussed the various checks we have performed to ensure translation of design information into operating, maintenance, and test procedures. The Safety System Functional Assessments have provided confidence that we have properly translated design into procedures. The special reviews (Technical Specification Surveillance Improvement Program, Emergency Operating Procedure Verification and Validation, Motor Operated Valve Testing, Setpoint Program, Improved Technical Specifications, Power Uprate, and improvements to our calculations), and the actions taken as a result, provide additional assurance that the procedures involved in these efforts properly incorporate design requirements. The routine self-checks (Quality assessments, procedure reviews, etc.) and the actions taken in response to findings, indicate that the programs described in Section A are being implemented effectively. Those same items also point to an effort to continually upgrade and improve our performance throughout WNP-2's operating history. These items taken together provide a level of confidence that we have continued to properly translate design bases into procedures.

In Section C we discussed special checks (Safety System Functional Assessments, fuse verification, fire protection evaluations) of plant configuration which evaluated and with corrective actions noted, verified configuration conformance to design bases. We also discussed routine efforts (Quality assessments, tagging, labeling, in-service inspection) that provide assurance the programs noted in Section A are being effectively implemented to ensure design bases are reflected in the plant as-built conditions. These efforts provide confidence that the plant configuration matches design bases.

Also in Section C we discussed the routine testing and monitoring program (e.g. Technical Specification Surveillances, in-service testing, leak rate testing, operations monitoring, modification testing) used to validate equipment performance. The acceptance criteria in these procedures are based, in-part, on design bases. Performance of the tests and our response to conditions which do not meet acceptance criteria ensure that we continue to meet design bases. Thus our equipment performance meets design bases assumptions.

Applicable to the rationale in both Sections B and C are the improvements in accessibility and availability of design bases information due to efforts like the Design Requirements Documents, Component Classification Evaluation Records, Electrical Wiring Diagrams, Fuse Lists, Setpoint Program files and calculation file upgrades. These special files, coupled with other configuration baseline information, training enhancements and computer search capabilities for the Final Safety Analysis Report provide better tools for the people who perform the change management functions

using the programs described in Section A. The use of these tools, coupled with trending efforts such as the Maintenance Rule and Problem Evaluation Report Trending (described in Section D), provide assurance that we will maintain configuration conformance with design bases in the future.

In Section D we describe the Corrective Action Program which is applicable to all activities related to WNP-2. A Corrective Action program similar to the one described has been in effect throughout our operating history. This program meets requirements and is implemented effectively. We have provided a brief history of significant program improvements during our operating history which indicate a continued effort to improve and refine our process and the way it is implemented. We continue to evaluate our performance in this area and work on further improvements. Nonetheless, implementation of the Corrective Action Program, coupled with the routine and special assessments performed throughout our operating history, provides additional assurance that WNP-2 maintains conformance to licensing and design bases.

Our past programs for change review adequately met regulatory requirements. Our self-assessments, Nuclear Regulatory Commission inspection results, and self-identified deficiencies demonstrate a common understanding of the need to adhere to design bases requirements throughout the plant life. We have always recognized the need to maintain consistency with design and licensing documents. Corrective actions and improvement programs summarized earlier in this report provide assurance that WNP-2 staff have identified and corrected deficiencies with our design bases and have reviewed the plant configuration and procedures to limit such deficiencies.

Document Hierarchy

Requirements and Commitments, such as those in:

- Operating License;
- Technical Specifications;
- Final Safety Analysis Report (especially the Regulatory Guide applicability sections);
- Supply System correspondence (especially letters to the Nuclear Regulatory Commission);
- Policy Statements Manual and Nuclear Operating Standards.

Procedures, such as:

- Site Wide Procedures;
- Plant Procedures Manual;
- Directorate or department (designators unique to the organizational unit);
- Instructions, such as Engineering Instructions, Engineering Design Procedures, Operating Instructions, Maintenance Instructions, and other designators unique to organizational units).

NOTE: The Supply System is in the process of changing our procedure designations. Many of the Plant Procedure Manuals will be converted to Site Wide Procedures. The Nuclear Operating Standard documents will be incorporated into the Final Safety Analysis Report, other program descriptions, the Site Wide Procedures or they will be eliminated.

Examples Of Configuration Documents

Cable and Raceway and Electrical Penetration Schedule

Civil Structural Drawings for Permanent Plant Buildings and Facilities (Site specific set to be developed)

Communication System drawings

Containment and Wall Penetration Lists

Electrical Connection Diagrams

Electrical Elementaries or Electrical Wiring Diagrams

Electrical One-Line Diagrams including power distribution and motor data

Electrical and I/C Penetration Diagrams

Electrical Raceway Drawings

Electrical Relay Setting Lists

Equipment Qualification Files

Fire Protection System Drawings

Flow Diagrams

Final Safety Analysis Report

Fuse List

General Arrangements

Hanger Details - Safety-Related Piping, Heating, Ventilation, Air Conditioning, and Inaccessible Class 2

Instrument Connection Diagrams

Instrument Loop Diagrams

Instrument Rack and Panel Layout Drawings

Instrument Setpoints (for Technical Specifications and Critical Parameters)

Internal Panel Layout/Branch Module/Wiring/Engraving Diagrams

Examples Of Configuration Documents

Lighting Plans

Logic Diagrams

Master Equipment List

Operating/Maintenance Manual Drawings

Operating/Maintenance Manual Text

Panel Schedules

Piping and Tubing Isometrics - Safety-Related and Inaccessible Class 2

Piping Stress Isometrics - Safety-Related and Inaccessible Class 2

Security System Drawings

Synchronizing Diagrams

Termination Cabinet Drawings

Appendix 3 to WNP-2 50.54(f) Design Bases Response Attachment 1

Procedures Controlling Change

Site Wide Procedure SWP-PRO-02, *Preparation, Review, Approval and Distribution of Procedures*

Plant Procedure Manual 1.3.1 (Operations) *Department Policies, Programs and Practices* - addresses Night and Standing Orders, temporary plant line-up changes through the Component Status Change Order, logging and tracking of equipment out of service per Technical Specifications due to surveillance or other reason.

Plant Procedure Manual 1.3.7, *Work Management* - Controls for performing corrective, preventive and predictive maintenance. Plant Procedure Manual 1.3.7A-J provide specific actions and responsibilities for various portions of the planning, authorization, work performance and close-out of maintenance work.

Plant Procedure Manual 1.3.8, *Plant Clearance Orders* - Removal from service, tracking and restoration of equipment to support maintenance or testing activities, from the workman protection standpoint.

Plant Procedure Manual 1.3.10B, *Fire Protection Impairments* - Evaluation, removal from service, tracking and restoration fire protection barriers and equipment.

Plant Procedure Manual 1.3.11, *Removal and Tagging of Equipment and Material*

Plant Procedure Manual 1.3.30, *Repair, Replacement and Alteration of American Society of Mechanical Engineers Items*

Plant Procedure Manual 1.3.42, *Troubleshooting Plant Systems and Equipment*

Plant Procedure Manual 1.3.43, *Licensing Basis Impact Determinations*

Plant Procedure Manual 1.3.44, *Control of Temporary Shielding*

Plant Procedure Manual 1.3.47, *Fuse Replacement Program*

Plant Procedure Manual 1.3.57, *Barrier Impairment* - Evaluation, removal from service, tracking and restoration of plant barriers, such as the walls and doors providing the secondary containment envelope or doors to the heating, ventilation, air conditioning systems.

Plant Procedure Manual 1.4.1, *Plant Modifications*

Plant Procedure Manual 1.4.3, *Revisions of Master Data Sheets and Setpoints*

Plant Procedure Manual 1.4.4, *Plant Instrumentation Design Documentation*

Plant Procedure Manual 1.4.5, *Processing of Licensing Document Changes*

Procedures Controlling Change

Plant Procedure Manual 1.4.14, *WNP-2 Software Control*

Plant Procedure Manual 1.6.2, *Document Control*

Plant Procedure Manual 1.6.12, *Configuration Document Change Request*

Plant Procedure Manual 1.10.4, *External Operational Experience Review*

Plant Procedure Manual 1.15.2, *Material, Equipment, Parts and Supplies Procurement*

Plant Procedure Manual 1.15.12, *Procurement Technical Reviews*

Plant Procedure Manual 1.16.4, *Change Control* - Instructions for defining, submitting, review and authorization of projects and modifications from a budget/economic view.

Plant Procedure Manual 1.16.6 B, *Voluntary Entry into Technical Specification Action Statements to Perform Work Activities During Power Operations.*

Plant Procedure Manual 1.17.4 *Master Equipment List Update, Control, Use and Authority*

Engineering Directorate Procedure 2.11, *Field Changes*

Engineering Directorate Procedure 2.12, *WNP-2 Drawing Preparation and Revision*

Engineering Directorate Procedure 2.14, *Deferral of Drawing Revisions*

Engineering Directorate Procedure 2.15, *Preparation, Verification and Approval of Calculations*

Engineering Directorate Procedure 2.25, *Design Evaluation Process for Proposed Plant Modifications*

Engineering Directorate Procedure 2.34, *Control of Engineering Configuration Management System*

Engineering Directorate Procedure 2.36, *Partial Implementation*

Engineering Directorate Procedure 2.37, *Formal Design Reviews*

Engineering Directorate Procedure 2.39, *Reviewing Technical Submittals/Vendor Submittals*

Engineering Directorate Procedure 2.50, *Generating Facility Minor Design Change Process*

Procedures Controlling Change

Engineering Directorate Procedure 4.4, *Preparation of Inservice Inspection Program Plans*

Engineering Directorate Procedure 4.10, *Preparation and Revision of Pump and Valve Inservice Test Program Plans*

Engineering Instruction 2.3, *Preparation and Revision of WNP-2 Design Specifications*

Engineering Instruction 2.8, *Generating Facility Design Change Process*

Engineering Instruction 2.20, *Special Design Verification Analyses*

Engineering Instruction 2.22, *Preparation and Approval of Equipment Modification Specifications*

Fuel Management Instruction 4-3, *Reload and Fuel Design Reviews*

ATTACHMENT 2

Design Review/Reconstitution Programs

This attachment addresses the information requested regarding "...whether you have undertaken design reviews or reconstitution programs, and if not a rationale for not implementing such a program. If design review or reconstitution programs have been completed or are being conducted, provide..."

As indicated in Attachment 1, Sections B and C in particular, the Supply System has performed design reviews and reconstituted several key portions of our design bases. Our self-assessments check for fidelity with design bases in both plant configuration and operation. We have enhanced the ability of our staff to review changes to the plant through program improvements, training, and the development of additional tools such as computer search capability of the Final Safety Analysis Report, Electrical Wiring Diagrams, Design Requirements Documents and revised calculation indexes. From our review of these improvement efforts and our review of past problems identified by WNP-2 and the Nuclear Regulatory Commission, we do not believe that a systematic design review or design reconstitution is necessary to ensure our continued ability to provide reasonable assurance of the protection of the health and safety of the public.

Based on information from internal assessments, feedback from our engineering staff, initial information from our Final Safety Analysis Report upgrade effort and recent observations from the Nuclear Regulatory Commission Design Bases Review Inspection, we are evaluating the potential benefits of additional assessments similar to Safety System Functional Assessments or to complete the Design Requirements Document review to further enhance our *Change Management* process.

Commitments

We have recognized a need to further improve the accessibility of our design and licensing bases information. The following describe some specific improvement efforts which we have undertaken to continue to improve our recognition and adherence to design and licensing requirements. This list is not all inclusive of our improvement efforts, however they represent specific commitments to efforts which provide additional systematic review of the design bases information and may identify inconsistencies which may require corrective actions and be reportable to the Nuclear Regulatory Commission. As such, we believe items found during these programs or identified by issues evaluated under these programs should be considered for enforcement discretion under the modified policy regarding Section VII.B.3 of Nuclear Regulatory Commission Enforcement Policy as referenced in the information request letter.

FSAR Upgrade - As a portion of our Performance Enhancement Strategy, which we discussed for the first time with Region IV personnel on May 15, 1996, we will be reviewing our current Final Safety Analysis Report. This review will be directed at verifying the technical accuracy of the statements in the Final Safety Analysis Report, consolidating information to improve accessibility and enhance maintainability, and ensure that the Final Safety Analysis Report contains the necessary information consistent with Regulatory Guide 1.70. We believe that some information in the current Final Safety Analysis Report is unnecessary, some information is duplicated in several sections, some information not currently in the Final Safety Analysis Report needs to be added, and the current Final Safety Analysis Report format for some information is difficult to update. This review has alread begun and will continue through calendar year 1998, at which time we intend to submit the updated Final Safety Analysis Report. At the completion of this effort we will evaluate the lessons learned to determine if additional programmatic efforts are warranted.

Requirements Tracking Database - We are reviewing the current licensing basis documents to identify all administrative and operational requirements for inclusion in a computer database. The database will provide enhanced access to these commitments to assist in review of plant and procedure changes. Development of the database also includes verification of where the commitment is met in the current operating programs and procedures. This review process is ongoing and expected to be completed in 1997.

OPERATIONAL QUALITY ASSURANCE PROGRAM DESCRIPTION
REVISION 23, SUMMARY OF CHANGES

Section 1 - ORGANIZATION

Paragraph 1.3.2, the Vice President, Nuclear Operations, was changed to delete the Manager, Planning and Controls. This position is an administrative position that has no nuclear responsibilities.

Paragraph 1.3.2.1, the Director, Quality, has been revised as follows:

- The position, Manager, Supplier Quality has been eliminated.
- The position, Manager, Quality Support Services has been eliminated.
- A new position title, Manager, Quality Programs was added.
- A clarification was inserted for the representative from the Quality Organization, to be a management representative as a member of the Plant Operations Committee.
- The responsibilities listed in Paragraph 1.3.2.2.1.1, Manager, Quality Services, have been clarified to remove unnecessary information, and to add the responsibilities for the Independent Safety Engineering Group (ISEG) functions.
- New responsibilities were added in Paragraph 1.3.2.1.2, Manager, Quality Programs, for administration of the nonconforming condition and corrective action program.
- The responsibilities listed in Paragraph 1.3.2.1.3, Manager, Plant Quality Control, have been clarified to remove unnecessary information.
- The responsibilities listed in Paragraph 1.3.2.1.3, Revision 22, for Manager, Supplier Quality have been moved to the Manager, Procurement, Paragraph 1.3.2.4.4, Revision 23.

The responsibilities listed for the Plant General Manager, Paragraph 1.3.2.2.m. and n. Revision 22, have been moved to Paragraph 1.3.2.8, Director, Engineering, in Revision 23. The position, Technical Services Manager has been moved to the Engineering Directorate.

The responsibilities listed for the Director, Support Services, Paragraph 1.3.2.4, Revision 23 have been expanded to include:

- Procurement, spare parts engineering, vendor quality and warehousing,
- Industrial Safety and Health.

Reporting to the Director, Support Services is the Manager, Procurement. Responsibilities for this position are listed in Paragraph 1.3.2.4.4.

The Managers reporting to the Director, Regulatory and Industry Affairs, listed in Paragraph 1.3.2.7, Revision 23 have been revised. The functions listed in Paragraph 1.3.2.7.e, .f, & .g, Revision 22 for the Director, Regulatory and Industry Affairs have been moved to Paragraph 1.3.2.1.m, .n, & .o, Revision 23 for the Director, Quality. The functions listed in Paragraph 1.3.2.7.h, Revision 22 have been moved to Paragraph 1.3.2.8.i, Revision 23 for the Director, Engineering.

The responsibilities listed for the Director, Engineering, Paragraph 1.3.2.8, Revision 23 have been revised to include:

- The supply, engineering, and efficient in-core management of nuclear fuel,
- Transient analysis and licensing issue resolution to support technical specification changes and reload fuel licensing,
- Reliability and availability analysis to improve plant performance, safety, and maintainability,
- The titles of Managers reporting to the Director have been revised.

The positions listed in Revision 22, Paragraph 1.3.3, 1.3.4, and 1.3.4.2 have been deleted from the OQAPD. These positions do not have operational QA responsibilities.

The position Manager, Procurement and Materials Management, Paragraph 1.3.4.1, Revision 22 has been given a new title and moved to Paragraph 1.3.2.4.4, Revision 23, Manager, Procurement.

The changes to Section 1 - ORGANIZATION are not a reduction of commitments.

Section - 2 - QUALITY ASSURANCE PROGRAM, Revision 16 was changed as follows:

- The title Quality was changed in Paragraph 2.2.4 and 2.2.6,
- Table 2-1 was changed to delete reference to NOS-40, Radioactive Waste Management and NOS-43, Nuclear Plant Security. 10 CFR 50, Appendix B does not apply to either of these programs.

  The requirements for control of these programs are listed in WNP-2 Plant Procedures Manual: PPM 1.12.1, Radioactive Waste Management Program; PPM 1.7.2, Security Responsibilities for WNP-2 Site Personnel; PPM 1.7.3, Personnel Access Control; PPM 1.7.6, Personnel Escort Procedures; PPM 14.1.3, Identification Badge Control, and the WNP-2 Physical Security Plan.

The changes to Section 2 - QUALITY ASSURANCE PROGRAM is not a reduction of commitments.

Section - 4 - PROCUREMENT DOCUMENT CONTROL, Revision 6 was changed as follows:

Paragraph 4.2.6 was changed to state that procurement documents shall be reviewed by Procurement and Quality personnel. Revision 5 stated that they would be reviewed by QA personnel. The review of procurement documents is a normal process conducted by a member of the Procurement Organization. Quality personnel will continue to review procurement documents as part of audits, surveillances, or technical assessments.

The change to Section 4 - PROCUREMENT DOCUMENT CONTROL is not a reduction of commitments.

Section - 7 - CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES, Revision 8 was changed as follows:

Paragraphs 7.2.2.b, and 7.2.4 Revision 8 were changed to identify Procurement personnel for performing vendor evaluations. Revision 7 identified this activity being performed by Supplier, Quality.

The change to Section 7 - PURCHASED MATERIAL, EQUIPMENT, AND SERVICES is not a reduction of commitments.

Section - 9 - CONTROL OF SPECIAL PROCESSES, Revision 11.

Paragraph 9.2.4 was changed to identify the organization as Quality rather than Quality Assurance.

The change to Section 9 - CONTROL OF SPECIAL PROCESSES is not a reduction of commitments.

Section - 10 - INSPECTIONS, Revision 9.

Paragraph 10.2.3 was changed to identify the organization as Quality rather than Quality Assurance.

The change to Section 10 - INSPECTIONS is not a reduction of commitments.

OPERATIONAL QUALITY ASSURANCE PROGRAM DESCRIPTION
REVISION 23, SUMMARY OF CHANGES

Section - 15 - NONCONFORMING MATERIALS, PARTS, OR COMPONENTS, Revision 9.

Paragraphs 15.2.4 and 15.2.7 were changed to identify the organization as Quality rather than Quality Assurance.

The change to Section 15 - NONCONFORMING MATERIALS, PARTS, OR COMPONENTS is not a reduction of commitments.

Section - 18 - AUDITS, Revision 12.

Paragraph 18.2.1 was changed to identify that External audits of Supply System vendors are performed by other Supply System organizations. Revision 11 identified this activity as being performed by the Quality organization. Paragraph 1.3.2.4.4, Revision 23 identifies the Procurement organization performing vendor audits.

The change to Section 18 - AUDITS is not a reduction of commitments.

Appendix I, QUALIFICATION REQUIREMENTS, Revision 11.

Position titles were changed to reflect the position titles for key Quality Personnel.

The change to Appendix I is not a reduction of commitments.

OPERATIONAL QUALITY ASSURANCE PROGRAM DESCRIPTION
REVISION 24, SUMMARY OF CHANGES

This revision is the result of changes to the organizational structure and consisted of revising position titles, reporting relationships, editorial clean-up, moving responsibilities from one organization to another, and adding information concerning the new procedures system.

The organizational restructure consolidated nuclear plant activities and plant support activities under newly created Vice President positions reporting to a Chief Executive Officer (CEO). This restructuring and re-alignment of nuclear plant activities under the newly created Vice Presidents allows better focus on plant safety. Corporate responsibility for overall plant nuclear safety was elevated to the CEO. The elevation of corporate responsibility for overall plant nuclear safety to the CEO ensures that plant activities affecting nuclear safety continue to have the responsibility and oversight of a single corporate executive. The organizational restructure was communicated to the NRC on February 16, 1996, via GO2-96-028, JV Parrish to JM Taylor, Subject: WNP-2, Operating License NPF-21 Organizational Enhancements.

Section 1 - ORGANIZATION.

Section 1. Organization has been completely revised to reflect the organizational structure changes and new position titles.

- Reporting to the Chief Executive Officer/Chief Nuclear Officer
  - Vice President, Nuclear Operations
  - Vice President, Operations Support/Public Information Officer
  - Vice President, Administration/Chief Financial Officer

- Reporting to the Vice President, Nuclear Operations
  - Engineering General Manager
  - WNP-2 Plant General Manager
  - Nuclear Training Manager

- Reporting to the Vice President, Operations Support/Public Information Officer
  - Quality Manager
  - Regulatory Affairs Manager
  - Security Programs Manager
  - Procurement Manager

- Reporting to the Vice President, Administration/Chief Financial Officer
  - Administrative Services Manager

Section 1.3.1 - The position title has been changed to the Chief Executive Officer (CEO). The CEO has the responsibilities of the Chief Nuclear Officer. The responsibility for the Chief Nuclear Officer to appoint members to the Corporate Nuclear Safety Review Board were added. Changed titles of individuals reporting to CEO.

Section 1.3.2 - Some responsibilities for the Vice President, Nuclear Operations that appeared in Revision 23 have been reassigned in Revision 24 to the Vice President, Operations Support/PIO and the Chief Executive Officer.

Section 1.3.2.1 - The responsibility for nondestructive examinations assigned to the Engineering General Manager that appeared in Revision 23 have been reassigned in Revision 24 to Supervisor, Quality Programs.

Section 1.3.3 - The Vice President, Operations Support/Public Information Officer has been assigned in Revision 24 the responsibilities for: emergency preparedness, safety and health; Quality Assurance program definition, implementation and effectiveness; maintaining cognizance of changing regulatory requirements and providing controlled interface between the Supply System and regulatory agencies; and reviewing internal and external operating experience events.

Section 1.3.3.1 - The Manager, Quality continues to have a direct reporting responsibility to the CEO/Chief Nuclear Officer while administratively reporting to the Vice President, Operations Support/PIO.

Section 1.3.3.1.2 - The Supervisor, Quality Programs assigned responsibilities have been expanded to include in plant QC functions and nondestructive examinations.

The position, Manager, Plant Quality Control listed in Revision 23 has been eliminated. The responsibilities have been reassigned to the Supervisor, Quality Programs in Revision 24.

The position, WNP-1 QA Staff listed in Revision 23 has been eliminated, because this position performs no nuclear operational function.

Section 1.3.3.2 - The Manager, Regulatory Affairs assigned responsibilities have been expanded to include developing and maintaining the emergency response program.

The position Emergency Planning Manager that appeared in Revision 23 has been deleted and the responsibilities have been assigned in Revision 24 to the Manager, Regulatory Affairs.

The changes to Section 1 - ORGANIZATION are not a reduction of commitments.

Section 2 - QUALITY ASSURANCE (QA) PROGRAM, Revision 17.

Section 2.2.1 - Added information concerning the Site Wide Procedures (SWPs). The SWPs are replacing the Nuclear Operating Standards (NOSs). Three (3) SWPs have been issued and they are identified in Table 2-2. When all the SWPs are issued, the NOSs will be cancelled. Position titles have been updated to reflect the revised organization and titles.

The change to Section 2 - QUALITY ASSURANCE PROGRAM is not a reduction of commitments.

Section 3 - DESIGN CONTROL, Revision 7.

Section 3.2.6 was clarified regarding the approval for changes to design documents, to agree with compnay procedures.

The change to Section 3 - DESIGN CONTROL is not a reduction of commitments.

APPENDIX I - QUALIFICATION REQUIREMENTS, Revision 12.

Appendix I. The qualification requirements for the position Plant Quality Control Manager have been eliminated. The responsibilities for supervision of the Quality Control function have been delegated to the Supervisor, Quality Programs. There is no regulatory requirement for the position of Quality Control Manager/Supervisor.

The change to Appendix I - QUALIFICATION REQUIREMENTS is not a reduction of commitments.