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SUBJECT: Responds to RAI per 10CFR50.54(f) re adequacy & availability of design bases info.

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February 6, 1997

10 CFR 50.54(f)

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

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Response to Request for Information Pursuant to 10 CFR 50.54(f)
Regarding Adequacy and Availability of Design Bases Information

Reference: 1) Letter from James M. Taylor (NRC) to Dan Bollom (WPSC) dated October 9, 1996

By letter indicated in reference 1, the NRC requested information pursuant to 10 CFR 50.54(f), regarding the adequacy and availability of design bases information for the Kewaunee Nuclear Power Plant. Specifically the Commission requested:

(a) 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.

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

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

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

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

(f) The Commission also requested confirmation that design review or reconstitution programs have been or are being conducted and, if not, a rationale for not performing them.

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The scope of our response is to describe the major programs and processes relevant to design bases control as they currently exist or as they existed at the time of implementation. The detailed references contained in this response are for supplemental information only and are not intended as commitments. The referenced procedures and programs may be modified or eliminated in the future, consistent with our quality assurance program requirements, in order to meet changing regulatory requirements or plant priorities. No new commitments are intended by this response. Actions described to correct identified weaknesses have been committed to elsewhere.

The attachments to this letter provide the requested information:

- The response to Requested Action (a) includes a description of the major licensing, design, and configuration control processes.
- The responses to Requested Actions (b) and (c) describe the programs and projects conducted which have confirmed or upgraded procedures, design basis, and configuration of the plant.
- The response to Requested Action (d) describes the corrective action processes for identification and determination of extent of problems as well as for implementation of corrective actions and reporting to NRC as appropriate.
- The response to Requested Action (e) summarizes the effectiveness of the numerous processes and programs described in response to items (a) through (d).
- The response to Requested Action (f) describes the design review programs completed and in progress.

The information presented herein demonstrates reasonable confidence that KNPP is safely operated within its design bases.

Sincerely,

Clark R. Steinhardt
Senior Vice President - Nuclear Power

DJR/cjq
Attach.
cc - US NRC, Region III
US NRC Senior Resident Inspector
Mr. Lanny Smith, PSCW

Subscribed and Sworn to
Before Me This 6th Day
of February 1997

Jeanne M. Ferris
Notary Public, State of Wisconsin

My Commission Expires:
June 13, 1999

50-305 KEWAUNEE WPSC

ATTACHMENTS TO RESPONSE TO REQUEST FOR INFORMATION RE: ADEQUACY & AVAILABILITY OF DESIGN BASES INFORMATION

Rec'd w/ ltr dtd 2/6/97.....9702100481

ATTACHMENT 1

Letter from C.R. Steinhardt (WPSC)

To

Document Control Desk (NRC)

Dated

February 6, 1997

Response to Request for Information Pursuant to 10 CFR 50.54(f)

Regarding Adequacy and Availability of Design Bases Information

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NRC 50.54(f) Specific Request/Response

REQUEST (a)

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

APPENDIX B TO 10 CFR 50 IMPLEMENTATION

GENERAL OVERVIEW

The policy of Wisconsin Public Service Corporation (WPSC) is to comply with the requirements of 10 CFR 50.59, 10 CFR 50.71(e), and Appendix B to 10 CFR Part 50 relative to Engineering, Design and Configuration Control of the Kewaunee Nuclear Power Plant through the application of the "Operational Quality Assurance Program (OQAP)" as described by the docketed "Kewaunee Nuclear Power Plant Operational Quality Assurance Program Description", Revision 17, dated June 13, 1996. This program establishes the definition, implementation and audit, operation, maintenance, and modification activities related to nuclear plant safety. The OQAP complies with the requirements of 10 CFR 50, Appendix B, the provisions of ANSI N18.7 - 1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants", and the Regulatory Guides which endorse the daughter standards required by ANSI N18.7 - 1976 with exceptions, interpretations, and qualifications noted in Appendix A of the OQAP Description.

The requirements of the OQAP apply to those activities which affect the quality of structures, systems or components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. All structures, systems and components are classified as QA Type 1, 2, 3, or NA according to their function and importance to the safe operation of the reactor, with emphasis on the degree of integrity required to protect the public. The OQAP requirements are mandatory for all QA Type 1 items.

Appendix A provides a detailed breakdown of the OQAP and its implementing directives.

DESIGN CONTROL

Modifications to systems that are nuclear safety related, or are described in the USAR, and are considered significant for nuclear safety are controlled by the Plant Physical Change (PPC) Program. The program directives establish procedures to ensure compliance with the existing design and the requirements of 10 CFR 50.59. OQAP implementing directives and procedures have been prepared which augment the following aspects of the Plant Physical Change Program:

- Establish the structure, authority and responsibility of the groups or positions involved in design change activities.
- Correctly translate design inputs into specifications, drawings, procedures, or instructions.
- Identify and select the appropriate quality standards in design documents.
- Select and review the suitability of materials, parts, equipment and processes essential to the safety related functions of the structure, system or component.
- Assure that computer software which is an integral part of the operation of equipment, is designed, documented and tested adequately.
- Assure the change is subjected to at least the same measures applied to the original design, and provide for a independent design review.
- Assign responsibilities of all organizations involved in the Plant Physical Change process, both internal (KNPP) and external (contractor, vendor) and ensure a method of exchanging technical information.

The Plant Operations Review Committee (PORC), the on-site review organization, is responsible for reviewing proposed changes or modifications that affect nuclear safety. The Nuclear Safety Review and Audit Committee (NSRAC), the off-site review organization, reviews the safety evaluations for Safety Related PPCs to verify that such actions do not constitute an Unreviewed Safety Question.

CHANGES, TESTS AND EXPERIMENTS (10 CFR 50.59)

Changes, tests and experiments to the plant are reviewed using procedure GNP 4.3.1 (Rev. A), "Guide to Safety Review, Safety Evaluations and Second Level Reviews", to determine if an Unreviewed Safety Question is introduced by the planned change, test or experiment. GNP 4.3.1 is modeled after NSAC 125, "Guidelines for 10 CFR 50.59 Safety Evaluations". GNP 4.3.1 requires that a Safety Review be performed to determine if the proposed change, test or experiment is safe, and conforms to the USAR and Technical Specifications. If necessary, GNP 4.3.1 requires that a Safety Evaluation Report determine that the proposed change, test or experiment complies with all of the following:

> The probability of occurrence of an accident previously evaluated in the USAR is not increased.
>
> The consequences of an accident previously evaluated in the USAR is not increased.
>
> The probability of occurrence of a malfunction of equipment important to safety previously evaluated in the USAR is not increased.
>
> The consequences of a malfunction of equipment important to safety previously evaluated in the USAR is not increased.
>
> The possibility of an accident of a different type than any previously evaluated in the USAR is not created.
>
> The possibility of a malfunction of equipment important to safety of a different type than any previously evaluated in the USAR is not created.
>
> The margin of safety as defined in the basis for any Technical Specification is not reduced.

Failure to meet one of the above provisions requires USNRC approval of the proposed change, test or experiment prior to implementation.

PLANT PHYSICAL CHANGE CONTROL

PLANT PHYSICAL CHANGE OVERVIEW

Plant Physical Changes (PPCs) at KNPP are either permanent or temporary. The distinction between permanent and temporary is the intended duration of installation; temporary changes are those changes which are intended to remain installed for less than or equal to one plant operating cycle unless specifically approved for a longer period by the Plant Manager through the PORC.

PPCs are controlled through the following Nuclear Administrative Directives (NAD), General Nuclear Procedures (GNP) and Nuclear Engineering Procedures (NEP). Directives and Procedures interfacing with the PPC process control procedures are listed in Table 1. Procedures noted with "*" are supplemented by day-to-day implementation guidelines that are accessible through the plant computer Local Area Network. The guidelines contain day-to-day implementation instructions, examples of implementation methods, accounting information, and project management methods, in addition to forms, form letters, and work sheets.

NAD 4.3 (A) Plant Physical Change

This directive sets the expectations and responsibilities for performing Plant Physical Changes, and specifies the implementing procedures.

NAD 12.22 (A) Design Change Procedures

This procedure specifies the requirements for procedures required to install and retest PPCs.

GNP 4.3.1 (A) Guide to Safety Review, Safety Evaluations, and Second Level Reviews*

This procedure specifies: a) the requirements for performing a PPC under 10 CFR 50.59, and b) the requirements for independent verification of design adequacy. For 10 CFR 50.59 determinations, the procedure is modeled after NSAC 125.

GNP 4.3.2 (Orig) Physical Change Screening*

This procedure screens proposed PPCs prior to the start of implementation, determines if the PPC is permanent or temporary, and determines if the PPC has potential safety significance.

GNP 4.3.3 (Orig) Physical Change Control*

This procedure provides the requirements in performance of PPCs, the responsibilities of personnel involved, and the specific items to be addressed during the physical change process. GNP 4.3.3 interfaces with directives and procedures listed in Table 1.

NEP 4.8 (Orig) Design Considerations

This procedure provides guidance in the identification of appropriate design inputs for PPCs.

The owner of the PPC process is a member of the Engineering and Technical Support Organization (E&TS). Implementation of PPCs are generally performed by the E&TS organization members interfacing with the plant organization.

The E&TS Organization has responsibility for preparation of PPC installation design documents. E&TS and the Maintenance organization are responsible for the PPC installation, utilizing the Work Request process. Maintenance schedules and provides craft labor for installation. E&TS and Maintenance supervision review the installation for completeness and acceptability. The responsibility for document control, due to PPC implementation, is shared between E&TS and the plant departments.

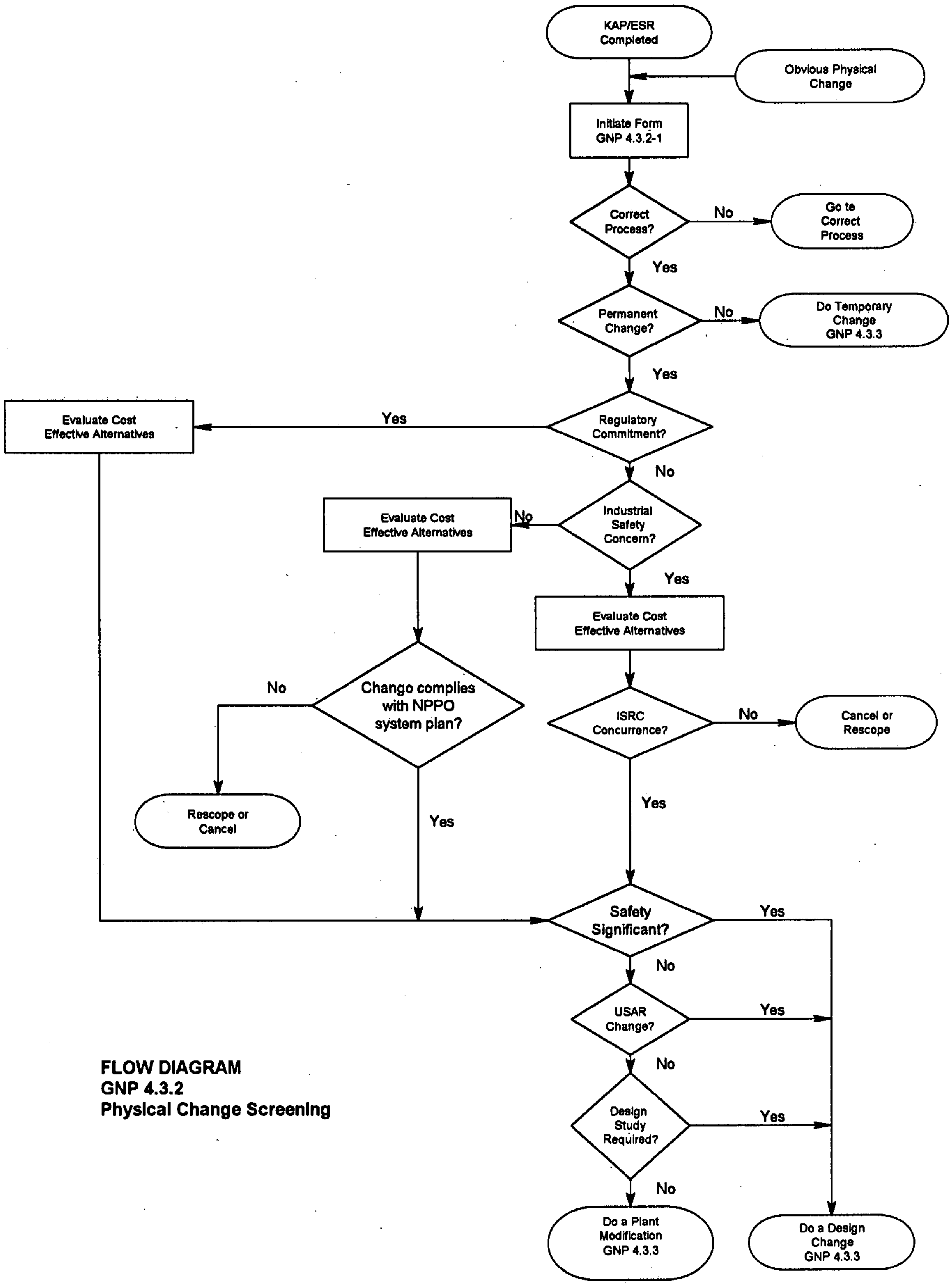
PPC PROCESS SUMMARY

Upon initiation, a PPC is screened to verify that there is a regulatory need, industrial safety need, or financial benefit to implement the change. If one or more of the above is confirmed, the PPC is classified as either a temporary change or permanent change to the plant. If the change is permanent, it is subclassified as either a Design Change or a Plant Modification. A Plant Modification is a permanent change that has no Safety Significance; a Design Change has potential Safety Significance and is subjected to preparation of a GNP 4.3.1 Safety Review/ Safety Evaluation and must be approved by the Plant Manager through the PORC per Technical Specification paragraph 6.5.a.6.d. All temporary changes are subjected to preparation of a GNP 4.3.1 Safety Review/ Safety Evaluation and must be approved by the Plant Manager through the PORC. This screening process is implemented by procedure GNP 4.3.2. The attached Figure 1 is a simplified flow chart of this process.

Preparation and implementation of temporary and permanent changes are controlled by GNP 4.3.3 and the appropriate interfacing procedures listed in Table 1. A PPC has four lifecycle stages: Preliminary Design, Detailed Design, Implementation and Closeout.

These lifecycle stages are summarized in attached Figure 2 flow chart.

FIGURE 1



KAP/ESR Completed
Obvious Physical Change
Initiate Form GNP 4.3.2-1
Correct Process?
No
Go to Correct Process
Yes
Permanent Change?
No
Do Temporary Change GNP 4.3.3
Yes
Regulatory Commitment?
Yes
Evaluate Cost Effective Alternatives
No
Industrial Safety Concern?
No
Evaluate Cost Effective Alternatives
Yes
Evaluate Cost Effective Alternatives
Chango complies with NPPO system plan?
No
Rescope or Cancel
Yes
ISRC Concurrence?
No
Cancel or Rescope
Yes
Safety Significant?
Yes
No
USAR Change?
Yes
No
Design Study Required?
Yes
No
Do a Plant Modification GNP 4.3.3
Do a Design Change GNP 4.3.3
FLOW DIAGRAM
GNP 4.3.2
Physical Change Screening

FIGURE 2

FLOW DIAGRAM
GNP 4.3.3
PHYSICAL CHANGE CONTROL
(DESIGN CHANGE / PLANT MODIFICATION)

PRELIMINARY DESIGN → DETAILED DESIGN → INSTALLATION → CLOSEOUT

PRELIMINARY DESIGN

- ESTABLISH PROJECT PLAN
- I.D. ACTUAL STAKEHOLDERS
- VERIFY ACCOUNTING
- DO PRELIMINARY DESIGN
- I.D. DESIGN INPUTS
- I.D. QA / EQ TYPES
- I.D. AFFECTED PLANT DOCUMENTS
- I.D. AFFECTED DRAWINGS
- I.D. AFFECTED ENG'G PROCESSES
- * PREPARE DESIGN DESCRIPTION
- ** PREPARE S.R. / S.E.R.
- VERIFY PC SHOULD PROCEED
- VERIFY DC/PM/MM CLASSIFICATION
- ** OBTAIN PORC APPROVAL

DETAILED DESIGN

- COMPLETE CALCS & EVALS
- PREPARE DESIGN DWG'S & SK'S
- PROCURE EQPT & MAT'L
- OBTAIN DCRDR (if req'd)
- COMPLETE S.L.R.
- I.D. TEST REQM'TS
- PORO PROCEDURES
- SEND OPS & TRNG REVIEW
- INITIATE MWR(s)

INSTALLATION

- ASSEMBLE INSTALLATION PACKAGE
- VERIFY OPS & TRNG RVW SATISFIED
- CONDUCT IPTE / TAILBOARD
- PROCESS FIELD CHANGES
- CONDUCT COMPLETION WALKDOWN
- NOTIFY OPS SUPVR WORK DONE
- TECH REVIEW MWR(s) w/ GROUP SUPVR
- DISPOSITION INSTALLATION PACKAGE
- SUBMIT AS-BUILT DRAWINGS
- SEND NOTIFICATION OF COMPLETION
- SUBMIT EQPT DATABASE UPDATES
- PERFORM CRITIQUE

CLOSEOUT

- PREPARE CLOSEOUT PACKAGE
- VERIFY AFFECTED PROC'S REV'
- CLOSEOUT PACKAGE TO VAULT

* = OPTIONAL FOR PLANT MODIFICATION
** = NOT REQUIRED FOR PLANT MODIFICATION

Preliminary design phase starts with a completed GNP 4.3.2 screening and will identify actual stakeholders, design input, Quality Assurance (QA) and Equipment Qualification (EQ) boundaries, and affected documents. For design changes and temporary changes, a GNP 4.3.1 Safety Review/ Safety Evaluation must be prepared for review and approval by the Plant Manager, through the Plant Operations Review Committee during this stage.

Following completion of preliminary design, the detailed effort begins which includes: preparation of design drawings, sketches, calculations and evaluations, procurement of equipment and material, approval of modification installation and retest procedures, completion of GNP 4.3.1 "Second Level Reviews", and initiation of Work Request(s) to install the change.

Installation activities of the completed detailed design include: preparation of installation work package in conjunction with the appropriate craft group(s), approval of deviations to design during installation, performance and results review of installation retests, and as-built data collection.

Closeout activities following the completion of the installation include: preparation of the as-built drawing revisions, equipment database updates, revision of affected plant procedures, initiation of revision to controlled documents such as the USAR, record organization, and transmittal of the change package records to the QA Vault.

IDENTIFICATION OF DESIGN INPUTS

Determination of appropriate design inputs is required to assure that a PPC will maintain the plant design basis. NEP 4.8 provides guidance to identify Plant Design Bases by referring to KNPP docketed correspondence for regulatory compliance, original plant construction, and after operating license issuance activities. Table 2 is the list of design input considerations from NEP 4.8.

Several resources are available to the responsible person for a PPC for identification of design bases in addition to the KNPP USAR and Technical Specifications. One significant resource is the Design Bases Database (DBDB) which is a comprehensive index of original plant construction correspondence, original plant design calculations, calculations performed after operating license issuance, and plant modifications. The DBDB can be interrogated in several manners; plant system number and keywords being two productive methods.

Other resources available for identification of design bases are system descriptions and logic descriptions, both historical to original plant construction and current generation. System descriptions are not taken as design basis documents at KNPP, but they provide insight into design intent and expected performance.

Other KNPP specific resources available to the responsible person for a PPC include:

Preliminary Safety Analysis Report
Final Safety Analysis Report
USAEC Safety Evaluation
Pioneer Service & Engineering Calculation Originals

After the Browns Ferry fire and the Three Mile Island accident, there have been several changes to NRC regulations that resulted in complex changes to the original plant design. Because of the complexity of the designs necessary to comply with these changes and because the plant equipment and components involve multiple plant systems, specific design descriptions of the method of regulatory compliance have been prepared to provide a high assurance that the design basis for compliance can be readily retrieved and understood by responsible persons for new PPCs. These design descriptions are:

Appendix R Design Description (10 CFR 50, Appendix R)

This document contains design criteria information for Hot and Cold Safe Shutdown Systems, Reactor Coolant Pump Lube Oil Collection, and Emergency Lighting.

Accident Monitoring Instrumentation Plan (Regulatory Guide 1.97)

This document contains information on the KNPP specific compliance to Regulatory Guide 1.97, Post Accident Monitoring, including USNRC approved exceptions and commitments for future actions.

Station Blackout Design Description (10 CFR 50.63)

This document contains design basis information for SBO duration, decay heat removal, primary inventory control, ventilation loss analyses, AAC power supply, battery capacity, instrument air backup, Containment Isolation, and manual actions, with associated emergency lighting and communications provisions.

CONFIGURATION CONTROL

Each PPC is required to identify and have updated to as-built status the following: drawings, equipment database, EQ records, plant procedures (Operations, Health Physics, Chemistry, Quality Programs, I&C, Maintenance, and Reactor Engineering), USAR, Technical Specifications, System Descriptions, vendor manuals, and the plant simulator.

REVIEWS AND APPROVALS OF PPCS

The design of all PPCs involving safety related structures, systems, and components receive an independent Second Level Review (GNP 4.3.1) by individual(s) not involved in development of the design of the appropriate engineering discipline(s).

All permanent PPCs with potential safety significance must be approved by the Plant Manager after review by the Plant Operations Review Committee.

All temporary PPCs must be approved by the Plant Manager after review by the PORC.

TABLE 1 - PPC INTERFACING DIRECTIVES AND PROCEDURES

NAD 1.2 (B)	Plant Fire Protection Program
	This directive describes the organization, responsibilities and requirements of personnel involved with implementation of the Fire Protection Program
NAD 1.6 (A)	Check Valve Reliability Program
	This directive defines the responsibilities and requirements in administration and use of the Check Valve Reliability Program
NAD 1.8 (A) NEP 5.6 (A)	Environmental Qualification Program Implementation Revision and Control of the EQ Reference Files
	This directive and procedure define responsibilities and requirements in administration and implementation of the Environmental Qualification Program
NAD 4.6 (A) GNP 4.6.2 (A)	Plant Setpoint Control Plant Setpoint Change Request Procedure
	This directive and procedure establish a system method for controlling plant instrument setpoints
NAD 5.1 (D) GNP 5.1.1 (B)	Drawing Control Drawing Development/Revision
	This directive and procedure establish the responsibilities and requirements for maintaining control of drawings
NAD 5.2 (B) GNP 5.2.1 (A)	Vendor Technical Information Program Control of Equipment Technical Information
	This directive and procedure define the responsibilities and requirements for vendor information control

TABLE 1 - (Continued)

NAD 5.3 (A)	Preparation and Control of Engineering Specifications *This directive establishes the responsibilities and requirements for preparation, revision, issuance, use and control of Engineering* Specifications
NAD 5.7 (B)	Revision and Control of System Descriptions *This directive specifies control and content of system descriptions*
NAD 5.23 (C)	Software Development and Control *This directive establishes responsibilities and requirements for computer software*
NAD 6.2 (Orig)	Procurement Technical Evaluation *This directive establishes the responsibilities and requirements for performance of Procurement Technical Evaluations*
NAD 8.2 (B)	Work Request
GNP 8.2.1 (B)	Work Request Processing *This directive and procedure establish the requirements and responsibilities for maintenance activities performed on plant equipment*
NAD 11.8 (Orig)	Kewaunee Assessment Process (KAP) *This directive defines the responsibilities and requirements for evaluating problems and ideas pertaining to KNPP*
NAD 12.13 (A)	Maintenance Procedures *This directive defines the responsibilities and requirements for the preparation and use of Maintenance Procedures*
NAD 12.15 (D)	Instrument & Control Department Procedures *This directive defines the responsibilities and requirements for the preparation and use of I&C Procedures*

TABLE 1 - (Continued)

NAD 15.3 (Orig)	Control of Safeguards Information *This directive defines 10 CFR 73.21 Safeguards Information and specifies its control*
GNP 4.3.4 (B)	Calculation/Evaluation Control *This procedure establishes the requirements for the preparation, review and revision of calculations and evaluations*
GNP 5.27.7 (C)	Design Basis Database Maintenance *This procedure defines the process by which the Design Basis Database will be maintained for complete, accurate, and current design information and calculations*
NEP 4.1 (Orig)	Human Engineering Review Process for Control Room Modifications *This procedure assures that appropriate human factors engineering is applied to all Control Room and Dedicated Shutdown Panel modifications, and that the modifications remain consistent with the Detailed Control Room Design Review*
NEP 4.2 (Orig)	Cutting of Concrete Reinforcing Bar *This procedure specifies review and documentation requirements for the cutting of concrete reinforcing bar*
NEP 4.9 (Orig)	Electrical Requirements for Load Changes *This procedure specifies guidance for adding, repowering or modifying electrical loads to the plant electrical distribution system*
NEP 4.10 (A)	Piping System Modifications - Bulletin 79-14 *This procedure specifies the requirements for continuing compliance with Bulletin 79-14*

TABLE 1 - (Continned)

NEP 4.11 (Orig)	Appendix R Design Compliance *This procedure provides guidance to ensure continuing compliance with the KNPP specific Appendix R design*
NEP 4.13 (Orig)	Motor Thermal Overload Heater Sizing *This procedure provides the method for sizing motor thermal overload heaters*
NEP 5.1 (B)	Revision to KNPP Technical Specifications *This procedure establishes the responsibilities and requirements for revisions to the Technical Specifications.*
NEP 5.2 (A)	Revision and Control of the USAR *This procedure establishes the responsibilities and requirements for revisions to the USAR*
NEP 14.3 (A)	Review of Design Changes for Impact on the KNPP Probabilistic Risk Assessment *This procedure provides a method to evaluate Plant Physical Changes for impact on the Probabilistic Risk Assessment*
NEP 15.30 (A)	Maintenance and Control of the USI A-46 Safe Shutdown Equipment List *This procedure identifies the responsibilities and requirements for maintenance, control and revision of the USI A-46 Safe Shutdown Equipment List*
NEP 15.32 (Orig)	Seismic Design & Analysis of Modified, New, and Replacement Equipment and Parts/Subcomponents Using the GIP Methodology *This procedure describes the responsibilities and requirements for performing seismic engineering evaluations using the Seismic Qualification Utility Group Generic Implementation Procedure methodology*

TABLE 2 - NEP 4.8 (ORIG) DESIGN CONSIDERATIONS

The following list of design inputs are based on ANSI N45.2.11-1974, "Quality Assurance Requirements for the Design of Nuclear Power Plants", and has been added to or revised to reflect specific WPSC plans, programs, directives, procedures, etc.

1. Basic functions of each structure, system and component.

2. Performance requirements such as capacity, rating, system output.

3. Codes, standards, and regulatory requirements including the applicable issue and/or agenda.

4. Design conditions such as pressure, temperature, fluid chemistry and voltage including the requirements imposed by the EQ Plan.

5. Loads such as seismic, wind, thermal and dynamic as described in Appendix B of the USAR.

6. Environmental conditions anticipated during storage, construction and operation such as pressure, temperature, humidity, corrosiveness, site elevation, wind direction, nuclear radiation, electromagnetic radiation and duration of exposure.

7. Review the proposed modification's impact on existing plant equipment. Also, include the proposed modification's impact upon the existing operating environmental parameters stated in the EQ Plan.

   Considerations include additional heat loads on area ventilation, vibration, noise, flooding, pressure, humidity, radiation, spray, personnel hazards, access, combustible loads, etc. The fiooding considerations include potential for flooding, capability to isolate, essential equipment location.

8. Interface requirements including definition of the functional and physical interfaces involving structures, systems and components.

9. Material requirements including such items as compatibility, electrical insulation properties, protective coating and corrosion resistance.

10. Mechanical requirements such as vibration, stress, shock and reaction forces.

11. Structural requirements covering such items as equipment foundations and pipe supports.

TABLE 2 - (Continued)

12. Hydraulic requirements such as pump net positive suction heads (NPSH), allowable pressure drops, and allowable fluid velocities.

13. Chemistry requirements such as provisions for sampling and limitations on water chemistry or introduction of contaminants.

14. Electrical requirements such as source of power, voltage, raceway requirements, electrical insulation and motor requirements. See NEP 4.9.

15. Electrical, mechanical, and structural requirements specified in the Appendix R Design Description.

16. Electrical routing and separation requirements specified in Regulatory Guide 1.97 and Appendix R, Design Description.

17. Layout and arrangement requirements.

18. Operational requirements under various conditions, such as plant startup, normal plant operation, plant shutdown, plant emergency operation, special or infrequent operation, and system abnormal or emergency operation.

19. Instrumentation and control requirements including indicating instruments, controls and alarms required for operation, testing, and maintenance. Other requirements such as the type of instrument, installed spares, range of measurement, and location of indication should also be included. Human factors considerations of instrument control and indication; Detailed control room design review (DCRDR) per NEP 4.1.

20. Access and administrative control requirements for plant security.

21. Redundancy, diversity and separation requirements for structures, systems and components.

22. Failure effects requirements for structures, systems and components, including a definition of those events and accidents which they must be designed to withstand.

23. Test requirements including in-plant tests and the conditions under which they will be performed.

24. Accessibility, maintenance, repair and inservice inspection requirements for the plant including the conditions under which these will be performed.

TABLE 2 - (Continued)

25. Personnel requirements and limitations including qualification and number of personnel radiation exposures for specified areas and conditions.

26. Transportability requirements such as size and shipping weight, limitations, Interstate Commerce Commission and Department of Transportation regulations.

27. Fire protection/resistance requirements to assure that the design change does not present a hazard not considered in the Fire Protection Program Analysis, does not interfere with installed fire protection equipment, and whether the change will require modification to existing fire protection equipment.

28. Handling, storage and shipping requirements.

29. Other requirements to prevent undue risk to the health and safety of the public.

30. Materials, processes, parts and equipment suitable for application.

31. Safety requirements for preventing personnel injury including such items as radiation hazards, restricting the use of dangerous materials, escape provisions from enclosures, and grounding of electrical systems.

32. Security and security equipment requirements as specified in the KNPP Security Manual and 10 CFR 73.

33. For all modifications involving replacement of QA-1 components, input data from certified vendor documents such as bulletins, drawings or specific data sheets maintained as a controlled document or field name plant inspection shall be obtained. For equipment inaccessible during plant operation, preinstallation verification of nameplate data shall be reconciled with design assumptions.

34. Temporary Change Requests (TCRs) which may affect the system, structure, or component in such a manner as to influence the design or system response testing.

35. Check Valve Reliability Program requirements, as described in NAD 1.6, to ensure appropriate application, inspection, and maintenance recommendations are met.

36. Installation of rigid supports for piping and electrical equipment should not span across buildings interface joints due to the differential displacement which could occur between building during a seismic event. For building interface locations, reference plant architectural drawings and Calculation No. C10580.

TABLE 2 - (Continued)

37. Equipment lineup and loading requirements to meet the KNPP station blackout design descriptions.

38. Safety and relief valve installation shall be in accordance with the requirements specified in Section III and Section VIII of the ASME Code or the ANSI/ASME B31.1 Standard for Power Piping as applicable to the installation. Static and dynamic fluid principles shall be incorporated into the setpoint design to ensure the valve will provide overpressure protection for all components of concern.

39 Consideration must be given to: 1) the susceptibility of low power analog and digital equipment to electromagnetic interference (EMI), and 2) the ability of new electrical or digital equipment to transmit EMI to other susceptible equipment. Incorporate the manufacturer's and current industry standards for EMI mitigation into the design. Update the restricted area list for portable transmitters contained in NAD 1.33, Appendix A if the equipment is susceptible to EMI.

40. Consideration shall be given to the effect(s) of changing the ground resistance of 125 VDC Environmentally Qualified Circuits in HELB and containment areas to avoid bypassing a safeguard control function.

41. Consideration shall be given to the seismic analysis requirements described in NEP 15.32 for proposed design modifications to equipment items included on the USI A-46 Safe Shutdown Equipment List and other equipment items previously evaluated for seismic adequacy in accordance with the Seismic Qualification Utility Group (SQUG) Generic Implementation Procedure.

42. Motor-operated valves included within the scope Generic Letter 89-10 (NAD 8.5, "Motor Operated Valve Program").

PROCUREMENT CONTROL

The procurement process, as implemented through NAD 6.1, "Procurement Control", requires that measures be established to ensure that purchased materials, components and services associated with safety-related equipment are purchased to specifications and codes equivalent to those specified for original equipment, or as specified by a properly reviewed and approved revision. Technical reviewers, working in conjunction with various plant personnel, are responsible for the performance of the review to ensure that the appropriate technical and quality requirements have been correctly included in the procurement documentation.

Where differences in replacement items are identified or when commercial grade products are used for safety-related applications, they are evaluated in accordance with NAD 6.2, "Procurement Technical Evaluation Program". The Procurement Technical Evaluation Program includes specific provisions for the review of the affect of changes on the design and configuration documentation. The determination of whether or not an Unreviewed Safety Question exists is also performed in accordance with GNP 4.3.1, "Guide to Safety Review, Safety Evaluations and Second Level Reviews". Depending on the nature and extent of the changes, independent, interdisciplinary, Plant Operations Review Committee (PORC), and Quality Assurance Typing Committee reviews may also be required.

REACTOR CORE DESIGN CONTROL

Fuel Management Directives (FMD's) and Fuel Management Procedures (FMP's) established by Nuclear Fuel Services (NFS) provide a comprehensive set of design controls and review processes relating to reactor core design. These FMD's and FMP's ensure that NFS activities are performed in accordance with the WPSC OQAP and hence Appendix B to 10 CFR 50.

FMD 4.1, Rev. 7, "Design Control," and FMD 6.1, Rev. 5, "Procurement Control," as implemented through FMP 4.1-0100, Rev. 11, "Design Change Control For Reload Cores," establish the responsibilities and define the requirements for controlling the design, analysis, and safety evaluation of reload cores. Reactor core design is divided into three linked processes:

1) Reload core pattern determination (Preliminary and Final Design);
2) Reload Safety Evaluation (RSE); and
3) Fuel Fabrication Procurement.

The reload core pattern determination process consists of the steps required to find a core loading pattern which meets all applicable reload design constraints, including those for each fuel design being loaded into the core. Constraints on storage of new and spent fuel are also addressed.

The constraints are kept current using information gathered through NFS' involvement in the NSRAC and PORC Committees and through routine interactions with the NPPO and KNPP staff. New constraints resulting from fuel vendor design or design method changes are identified via FMP 5.5-0003, Rev. 0, "Review of Nuclear Fuel Assembly Design Change." NFS audits of the fuel vendor also identify constraint changes.

The reload core pattern determination process is controlled by FMP 4.3-0210, Rev. 9, "Preliminary Design," and FMP 4.3-0810, Rev. 10, "Final Design." These FMP's call out the FMP's required to complete the entire process.

The preliminary reload core pattern is evaluated to ensure that the pattern does not result in an unreviewed safety question per the requirements of 10 CFR 50.59. The RSE process evaluates the pattern against the current bounding safety analysis values and Technical Specifications.

FMP 4.2-0610, Rev. 15, "Case Execution For Steady State Reload Safety Evaluation," controls the flow of work needed to perform the RSE process. FMP 4.2-0660, Rev. 24, "Comparisons of Reload Parameters to the Bounding Safety Analysis," establishes design objectives and operating constraints for the evaluation. FMP 4.2-0660 is kept current with plant configuration through a close interface with plant staff. Prior to the start of the RSE process, Table 5 of FMP 4.2-0660 is completed by the KNPP Licensing Director to identify plant changes which may impact the KNPP plant safety analyses or RSE. Any changes to FMP 4.2-0660 resulting from fuel vendor design or design methods changes are identified via FMP 5.5-0003, Rev. 0, "Review of Nuclear Fuel Assembly Design Change," or as a result of the audits that NFS conducts of the fuel vendor. FMP 5.5-0003 also calls for the USAR to be updated if a design change affects the USAR.

FMP 6.1-1003, Rev. 6, "Supplier Evaluation," establishes the method for evaluating potential suppliers of fuel and related components. The fuel fabrication procurement process requires audits and surveillance of the vendor to ensure that design and manufacturing changes of the fuel and related components are performed in a controlled manner and meet all required specifications. FMP 6.1-1003 addresses supplier audits for fuel. The supplier audits are conducted under the Quality Programs (QP) QAD 6.2, Rev. 13, "Supplier Qualification." KNPP QP personnel participate in supplier audits.

Quality Programs periodically audits Nuclear Fuel Services. These audits ensure that an NFS program to perform reactor core design is in place and being implemented properly. A second level review of the reactor core design process also occurs each reload. This is typically done by an outside vendor via an independent set of calculations. FMP 4.3-0280, Rev. 4, "Safety Analysis Evaluation," is used to compare NFS results to the independent vendor results. Second level reviews are performed in accordance with FMP 4.1-1001, Rev. 8, "Second Level Review," and FMP 14.1-0001, Rev. 4, "Independent Technical Review."

FMD 11.1, Rev. 5, "Deficiency Reports," guides the process used to document, classify, and take corrective action on any deficiencies encountered throughout the reload core design process. The FMD includes a determination of 10 CFR 21 reportability. FMD 11.2, Rev. 4, "Nonconformance and Corrective Action," guides the process used to document, classify, and take corrective action on any supplier deficiencies encountered throughout the reload core design process.

Computer codes used to perform reactor core design are controlled in accordance with FMD 5.3, Rev. 7, "Control and Documentation of Computer Codes," as implemented by FMPs in the 5.3 series. The FMPs identify and control the codes used for safety analysis and ensure that all code modifications are tested and reviewed. The resolution process for any errors found in a code used for safety analysis is also addressed in the 5.3 series FMPs in conjunction with FMP 4.2-0010, Rev. 2, "Resolution of Modeling Deviations and Errors."

Calculations are performed using a set of controlled input as a starting point. Controlled input is a set of input which has been independently reviewed and found to be acceptable. The integrity of controlled input is assured by FMPs in the 4.4-0200 series. Controlled input changes must be documented and reviewed.

DESCRIPTION OF USAR UPDATE PROGRAM/PROCESS

Nuclear Engineering Procedure, NEP 5.2, "Revision and Control of the Updated Safety Analysis Report", establishes the responsibilities and requirements for the initiation and implementation of revisions to the KNPP USAR. Implementation of the procedure assures that the requirements of 10 CFR 50.71 regarding frequency and content of updates are met. USAR updates are submitted within six months after a refueling outage, and reflect changes identified up to six months of filing. Changes to the USAR are performed using the 10 CFR 50.59 safety evaluation process, and are typically associated with plant modifications and changes to analyses or procedures. We have generally found that new USAR information has been maintained accurate and complete with some minor exceptions. A few instances have been identified where changes due to Technical Specification amendments have not always been reflected in the USAR; however, the correct information was contained elsewhere in our current licensing basis (i.e., TS). This program weakness is being addressed through the initiatives described in Response (f).

COMMITMENT CONTROL

All commitments made to the NRC are maintained in a computerized commitment tracking system and are controlled by procedure. NAD 5.25, Rev. A, "Commitment Tracking System" delineates the responsibility for administration of commitments and defines the term 'commitment' as "any condition or action agreed to or volunteered by a licensee that is contained in docketed correspondence." This definition and procedural controls are consistent with the Nuclear Energy Institute's (NEI) Guideline for Managing NRC Commitments, Revision 2, dated December 19, 1995. The NEI guideline was endorsed by the NRC in a letter from Dennis M. Crutchfield (NRR) to Joe F. Colvin, (NEI) dated January 24, 1996. The progress of commitment resolution and completion is tracked and monitored by management on a regular basis.

Changes to commitments are also controlled consistent with the NEI Guideline. GNP 5.25.2, "Changes to NRC Commitments" provides a structured process that can be used to modify or delete commitments and defines the circumstances in which interaction with the NRC staff is appropriate. Depending on the safety or regulatory significance, commitments either need prior NRC approval for the change or may be changed without prior interaction with the NRC staff. The guideline developed provides a process flowchart to follow when considering a change to a commitment and is similar to the direction developed by NEI. The flowchart immediately captures commitments that are already subject to codified processes, such as 10 CFR 50.54 or 10 CFR 50.59 and directs the staff member to process the change in accordance with the established rule. If the commitment is not subject to a codified process, an analysis is performed to demonstrate that the change does not reduce the degree of protection provided to the public health and safety. This analysis documents the known source of the commitment and a reasonable basis for change or cancellation. Each commitment is assigned to an individual who is responsible for implementation. Periodic reminders are sent to the responsible party, who then updates the commitment status. The administration of this process is subject to periodic audits by Quality Programs.

TECHNICAL SPECIFICATION CONTROL

NAD 5.14, "Revision and Control of the KNPP Technical Specification and Operating License" delineates the responsibilities and controls required to ensure that changes to the KNPP Technical Specifications are made in accordance with design basis assumptions. When proposing a change to the Technical Specifications, USAR assumptions and/or design requirements are reviewed to ensure no conflicts exist, as required by procedure. In accordance with 10 CFR 50.92(c), an evaluation is also performed to ascertain that the change does not involve a significant hazards consideration. As defined by 10 CFR 50.92(c), the proposed amendment involves no significant hazards considerations if operation in accordance with the amendment would not: a) involve a significant increase in the probability or consequences of an accident previously evaluated; or b) create the possibility of a new or different kind of accident previously evaluated; or c) involve a significant reduction in a margin of safety.

All changes to the KNPP Technical Specifications are also reviewed by the PORC and the NSRAC. Technical Specifications control is subject to periodic audit by Quality Programs.

DRAWING CONTROL

KNPP implements the requirements of 10 CFR 50 Appendix B for maintaining control over drawings depicting plant design bases with procedures governed by NAD 5.1, "Drawing Control". This directive and its implementing procedures outline the responsibilities and requirements for creation, revision, control, drafting and approval of drawings reflecting safety related systems, structures and components for the KNPP. NAD 4.3, "Plant Physical Changes" provides the responsibilities and requirements for physical changes to the plant. The implementing procedures and guidelines for this directive also delineate the steps required to identify, revise, approve and maintain control over drawings necessary for modifications to the plant.

Assessment of the effectiveness of the drawing control program is performed biennially as part of the OQAP during the QA Audit prescribed in NAD 14.5, "Quality Audits", and QP 14.5.1, "Performance of Audits". Document and Drawing Control Program audit instructions are given in Audit Instruction 5.3. The above assessment is the audit of record for drawing control, but conditions adverse to quality could also be identified during audits conducted for Design Control, and Modification and Planning Control.

The following documents implement drawing control for the KNPP:

NAD 5.1 (D) — Drawing Control

Defines the overall responsibilities and requirements for maintaining control of the KNPP drawings.

GNP 5.1.1 (B) — Drawing Development and Revision, DC, SCR, KAP, PTE

Provides procedural guidance to personnel revising existing drawings and creating new drawings associated with Plant Physical Changes, Procurement Technical Evaluations, Kewaunee Assessment Process or Simulator Change Requests.

GNP 5.1.2 (B) — Nuclear Drawing Control

Implements and documents the steps required for maintaining administrative control over the KNPP drawings and processing changes to those drawings.

GNP 5.1.3 (B) — Nuclear Drafting Control

Outlines requirements for drafting of the KNPP drawings, including revision control.

GNP 5.1.4 (B) — Drawing Development and Revision - Plant Drawing Discrepancies, Record Purposes, and Work Requests

Provides requirements for the submittal of drawing development or revisions not related to plant physical changes or evaluations.

GNP 5.1.5 (B) — Drawing Status - Equipment Cross-Reference Determination

Delineates the steps necessary to determine status (Void, Controlled, or Historical) of the KNPP drawings and for maintaining control of plant configuration information through links of plant equipment to plant drawings. Also includes interface with Vender Technical Information Program for vendor supplied information/drawings.

GNP 4.3.3 (ORIG) — Plant Physical Change Control

Provides requirements for creation of design drawings and as-built drawings for plant Physical Changes and identification of drawings affected by plant Temporary Changes. Includes requirements for updating controlled documents and databases.

The above documents implement the requirements of 10 CFR 50 Appendix B by defining the responsibilities and requirements for control, revision and approval of plant drawings depicting the safety related systems, structures and components. These responsibilities and requirements are commensurate with the original design of the KNPP.

FIRE PROTECTION DESIGN CONTROL

The KNPP Fire Protection Program is implemented through a cooperative effort between both plant and corporate staff that encompasses practical and regulatory fire protection requirements.

Ultimately, 10 CFR 50.48, APCSB BTP9.5-1, KNPP Technical Specifications, 10 CFR 50 Appendix A GDC3, 10 CFR 50 Appendix R, staff Safety Evaluation Report (SER) dated December 12, 1978 and SER Supplement dated February 13, 1981 form the licensing /regulatory basis for the KNPP fire protection program. The KNPP Fire Plan is a compilation of these and other regulatory requirements, and guide the implementation of KNPP fire protection practices and mitigative measures.

The following documents implement the above requirements.

Nuclear Administrative Directives (NAD's)

Provide an overview of the organization and responsibilities. NAD's show the organizational structure of fire responses outside of the Emergency Plan. Provide an overview of the Fire Plan and supporting procedures; (i.e., General Nuclear Procedure (GNP's), Fire Plan Procedures (FPP's), Instrument & Control Procedures (ICP's), Preventive Maintenance Procedures (PMP's), General Maintenance Procedures (GMP's), Operation Procedures (OP's), etc.).

General Nuclear Procedure (GNP's)

Are for the plant population and those aspects of the Fire Program that affect their work; (i.e., transient combustibles, ignition control, penetration).

Fire Plan Procedures (FPP's)

Serve to detail the necessary sections of the Fire Plan (i.e., Training, Qualifications, Drill Requirements, Operability, Surveillance, Administrative Requirements, Contingencies for O.O.S. Equipment) and indicate which support procedures specifically implement that item. Instrument & Control Procedures (ICP's), Preventive Maintenance Procedures (PMP's), General Maintenance Procedures (GMP's), Corrective Maintenance Procedures (CMP's), Surveillance Procedures (SP's), & Operation Procedures (OP's) serve to support those detailed commitments delineated in the Fire Plan Procedures so that the appropriate tests, inspections, etc. are performed, ensuring system integrity.

Fire Protection is part of the Physical Change Process review. The Fire Protection Process Owner (FPPO) is notified of all Physical Changes, when they are initiated and identifies anything that could affect the Fire Plan, Fire Plan Procedures, Fire Protection Program Analysis, and the Design Description for Appendix R. If the Physical Change does affect one of the above listed documents, Fire Protection is listed as a stakeholder to ensure that the proper changes are made to the programs. These changes are reviewed by the PORC.

The Fire Plan, Fire Plan Procedures, Fire Protection Program Analysis, and Design Description for Appendix R are periodically reviewed to see if changes are needed to comply with current commitments, audits, and industry standards. These changes are reviewed against the 50.59 criteria using GNP 4.3.1 "Guide to Safety Review, Safety Evaluations and Second Level Review".

Periodic technical reviews and audits are conducted on the KNPP Fire Protection Program. Technical reviews and audits are conducted by personnel independent of the KNPP Fire Protection Program. The KNPP Quality Programs Group does an audit on the Fire Protection Program annually. Nuclear Mutual Limited (NML), performs an inspection of the Fire Protection Program twice annually. The NRC also inspects the Fire Protection Program at KNPP periodically.

SOFTWARE CONTROL

Software control at the KNPP is achieved by NAD 5.23 which applies when there appears to be a need for the development, procurement, modification, and/or control of software/firmware. The directive establishes responsibilities and requirements based on QA typing of the software/firmware. For non-safety related software/firmware, the directive provides an input into other plant processes such as NAD 11.8, "Kewaunee Assessment Process", NAD 4.3, "Physical Change Process", or the maintenance work request process. Safety related software must follow NAD 5.23, which involves requirements for software life cycle and verification and validation. NAD 5.23 was implemented using ASME NQA-2a Part 2.7, "Quality Assurance Requirements of Computer Software for Nuclear Facility Applications" as a guidance document.

TRAINING PROGRAM SUPPORT OF DESIGN AND CONFIGURATION CONTROL

Training related to the major processes previously described is provided by the "Technical Staff and Management Training Program", T-TSM-TP, Rev. H. This training program is accredited by the National Academy of Nuclear Training.

Training provides the key element in effective implementation of the major processes related to design and configuration control. An overview of the training implementation is provided in Appendix B to this attachment. Table 1 of Appendix B details the specific training elements related to the processes described in the above response to NRC request (a).

REQUEST (b)

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

QUALITY PROGRAMS OVERSIGHT

Quality Programs employs audits, surveillances and inspections to confirm appropriate controls are applied to maintain design basis requirements in plant procedures. These activities are occasionally supplemented by subject matter experts to confirm the technical adequacy of procedures. Refer to Appendix A for a detailed description of the Quality Assurance Program, and Appendix D for a detailed description of audit and surveillance activity.

STARTUP TEST PROGRAM

The conduct of the Startup Test Program at KNPP was in accordance with the commitment of WPSC to 10 CFR 50 Appendix B and ANSI N45.2 - 1971 as described in the architect engineer's QA Procedures Manual under Project #23-7127. The process provided for conversion of Westinghouse prescribed startup requirements into four primary categories of procedures: Constructions Tests, Pre-operations Tests, Startup Tests, and Kewaunee Tests. This process is roughly as follows:

> Westinghouse (W) provided Pioneer Services and Engineering (PS&E) with a set of Startup Procedures (SU) under the 800 series Shop Order for KNPP for the construction and operation of the plant. These SU procedures included verification of parameters established for the design of the plant.
>
> A committee consisting of personnel from PS&E and WPSC was formed to review the SU procedures and provide startup test engineers to write procedures to accomplish the W requirements. The input to the procedures included not only the W SU procedures, but also the design drawings used for plant construction. That committee directed the establishment of Construction Procedures, Pre-op Test Procedures, Startup Test Procedures, and Kewaunee Test Procedures. The procedures of interest are the Startup Tests (ST) which were basically hot functional tests and the Kewaunee Tests (KT) which were core physics tests.
>
> The ST procedures and KT procedures which were written were then reviewed by the Lead Startup Test Engineer, the Plant Performance Engineer for QA, the Reactor Supervisor, and the PORC. After performance, the results were reviewed by the same personnel, including PORC.

Operations Procedures and the Surveillance Procedures were developed using elements of ST procedures and Pre-operations Procedures. Reactor Test Procedures were based on the KT procedures.

By virtue of the process established for the conversion of the Startup Tests specified by the NSSS vendor into the ST procedures and KT procedures, the Startup Test Program provided fidelity to the design bases requirements for KNPP. The procedure change controls in place since that time require evaluation of the impact of the change on the design basis information contained in the procedure under revision.

INSERVICE TESTING PROCEDURES

The Inservice Testing (IST) Plan was developed in accordance with 10 CFR 50.55a(f)(4)ii which references Section XI of the ASME Boiler and Pressure Vessel Code. Section XI further references ASME/ANSI OM, Part 6 and Part 10. The current IST Plan was written following ASME/ANSI OMa-1988 Addenda to ASME/ANSI OM-1987. The IST Licensing Basis Document was developed to document reasons for including or excluding Code Class I, II, or III valves from the IST Plan. Changes to the Licensing Basis Document are performed in accordance with GNP 1.24.2, "Revision and Control of the IST Licensing Basis Document". These changes are reviewed by the Shift Technical Advisor and the Plant Operations Supervisor. Final approval for changes to the IST Licensing Basis Document is by the Manager-Kewaunee Plant.

A weakness in the Plan was identified in 1995 during the replacement of a Safety Injection Pump. It was recognized that the IST testing, designed to monitor for degradation, would not adequately confirm that the new pump performance would meet design basis assumptions. The design basis assumption for the pump in question was retrieved and pump was tested with a Special Test Procedure (STP) to confirm its performance met design. The operability of other ESF pumps was not of immediate concern since no major repairs had been made and testing to monitor for degradation had been performed. Efforts to confirm design basis assumptions for ESF pumps are underway and are expected to be completed prior to startup scheduled for the first quarter of 1997. Future IST testing will be performed in a manner that will allow appropriate measured parameters to be compared to design basis assumptions.

Testing associated with the IST Plan is performed as Surveillance Procedures. Acceptance criteria are determined using the guidance found in OM-6 and OM-10, and applying this guidance to the reference value associated with each component. Any time maintenance is performed on an IST component which could affect operability, a retest is required to ensure proper operation. If a reference value change is required, the new value must be analyzed to ensure that the component is operating acceptably. This reference change is performed in accordance with

GNP 1.24.3, "Establishing Reference Values for IST Components". As part of the process for changing reference values, the USAR and Technical Specifications are reviewed to determine if any USAR assumptions or Technical Specifications will be violated. This review is documented on Form GNP 1.24.3-1 which is performed by the Shift Technical Advisor and reviewed by the Plant Operations Supervisor.

Changes made to the IST Plan are made in accordance with GNP 1.24.1, "Revision and Control of Pumps and Valves Inservice Testing Plan". The IST Plan Change Request, Form GNP 1.24.1-1, is completed by the originator and reviewed by the Plant Operations Supervisor to ensure the change complies with Section XI requirements, does not conflict with Technical Specifications, is technically adequate, and is compatible with plant systems and hardware. The Change Request form is then reviewed by the STA to determine if any USAR assumptions, Technical Specifications, or Code requirements will be violated. This review is documented on Form GNP 1.24.1-2. Relief from the requirements of the Code are evaluated as a change to the IST Plan in accordance with GNP 1.24.1. Relief Requests must be submitted to the NRC for approval prior to implementation.

OPERATIONS PROCEDURE CONTROL

All Operations procedures receive reviews similar to the Startup Test Procedures to ensure design bases requirements are maintained. Specifically, NAD 3.2, "Plant Procedures", Step 5.2.1, states "For new and revised procedures, ensure that the procedure maintains the level of nuclear safety and effectiveness specified and required in the USAR and Plant Technical Specifications and 10 CFR 50.59 requirements have been satisfied."

Each procedure group has a governing document for its preparation which is used in conjunction with NAD 3.2. The following are those documents:

NAD 12.2 - Surveillance Procedures
NAD 12.4 - Special Plant Procedures (SOPs for Operations)
NAD 12.3 - Operating Procedures (normal, abnormal, emergency)
NAD 5.9 - Alarm Response Procedures
NAD 5.16 - IPEOP Documentation Revision and Control

For any new or revised procedure, Form NAD 3.1-1, Revision Tracking and Processing Record, shall be attached. The Form restates the screening questions from GNP 4.3.1, Guide to Safety Review, Safety Evaluations, and Second Level Reviews":

1) Is this a change in the facility as described in the USAR or does this conduct tests or experiments not described in the USAR?
2) Does this require a change in the Technical Specifications?

If the answer to question 1 is YES, a safety evaluation report documented on Form GNP 4.3.1-3, is required. If the answer to question 2 is YES, application for a license amendment is required in accordance with NEP 5.1.

Periodic reviews of procedures are performed per Form NAD 12.3-1, Periodic Review Data Sheet. The Data Sheet questions:

- Is the technical content of the procedure adequate?
- Does the procedure adequately cover the subject?
- Does the procedure satisfy current flow and logic drawings?
- Does the procedure satisfy the USAR?
- Plus, additional administrative questions

If any of the questions is answered NO, changes shall be recommended and submitted with Form NAD 3.1-1.

The following additional procedural controls are in place:

NAD 3.7 Control of Informational Aids

Establishes a means to review, authorize, and control the use of Informational Aids.

NAD 12.6 Operations Instructions

Describes the responsibilities and requirements associated with instructions issued to Operations personnel which are of a general and continuing applicability.

NAD 12.8 Superintendent-Plant Operations Night Orders

Describes the responsibilities and requirements associated with instructions issued to Operations personnel which normally have short term applicability.

WORK CONTROL

The control of work is accomplished primarily through the Kewaunee Work Request System. NAD 8.2, "Work Request" directs that all maintenance and physical change installation activities are to be performed by a work request. Detailed instructions are contained in GNP 8.2.1, "Work Request Implementation". This procedure provides the detailed requirements for performing work at KNPP. The requirements include: authorization to start work, notification of completion of work, technical review, post-maintenance testing, re-test and return to service.

Systems and components are controlled by the use of the Tagout Control. NAD 3.3, "Tagout Control" requires Shift Supervisor authorization of the tagout prior to the start of work. This control prevents unauthorized work or manipulation of systems and components.

The detailed instructions for specific maintenance tasks are specified in Maintenance Procedures. NAD 12.3, "Maintenance Procedures" specifies the use, format, review and approval, revision control and periodic review requirements for Maintenance Procedures.

Work in the radiological controlled areas of the plant are further controlled by the use of the Radiation Work Permit. NAD 8.3 "Radiation Work Permit" provides the formal administrative control mechanism for the Radiation Protection Supervisor to impose proper radiological protection requirements.

SETPOINT CONTROL

The original setpoints for most safety related equipment were provided by the NSSS supplier, Westinghouse Electric. The methodology for establishing a conservative setpoint to assure the safety setting assumed in the design was not as rigorous as current techniques and was not well documented. This made it difficult to evaluate changes to operating and test procedures.

In recognition of this difficulty, Kewaunee commenced the development of a setpoint control program in 1990, which is based on U.S. Nuclear Regulatory Commission Regulatory Guide 1.105 titled, "Instrument Setpoints for Safety-Related Systems" and American National Standard/Instrument Society of America standard ANSI/ISA-S67.04-1988 titled, "Setpoints for Nuclear Safety-Related Instrumentation". A software program establishing a setpoint database and setpoint instrument loop accuracy calculations was developed and qualified.

The following procedural controls have been put in place:

NAD 4.6 Plant Setpoint Control

This Nuclear Administrative Directive establishes a systematic method for controlling plant setpoints. Implementation will be through support General Nuclear Procedures.

GNP 4.6.1 Plant Setpoint Accuracy Calculation Procedure

This procedure outlines the process for initiating and performing plant setpoint accuracy calculations.

GNP 4.6.2 Plant Setpoint Change Request Procedure

This procedure outlines the process for the initiation and processing of plant setpoint change requests.

The first application of this program has been successfully completed, and future applications will be undertaken as required to support plant operation.

PROCEDURE VERIFICATION

In 1988, KNPP initiated a Safety System Functional Inspection (SSFI) program to ensure that KNPP is being maintained within its design bases. As detailed in Appendix C, the SSFI Program included the functional areas of operation, maintenance and testing. Procedure content, fidelity, and performance were reviewed in relation to the functional areas. More than 800 procedures of various types were reviewed. Approximately 12% were recommended for revision to their technical content. Changes were recommended to the technical content of 101 procedures in the following areas:

	No. of Procedures Recomm. for Revision	Revisions Not Yet Completed
Corrective Maintenance Procedures	1	0
General Maintenance Procedures	3	1
Instrumentation & Control Procedures	30	1
Preventative Maintenance Procedures	12	3
Radiochemistry Procedures	6	0
Operations Procedures	22	2
Surveillance Procedures	17	6
Misc. Procedures and Directives	10	2
TOTAL	101	15

None of the procedural findings presented an operability concern, or placed the safety systems in a condition outside of their design basis.

Based on the safety significant systems covered, the number of procedures reviewed, the depth of the reviews, and the existing documentation, reasonable rationale exists to conclude that procedures continue to adequately reflect the design bases.

Additional procedure verification is currently in progress as part of the implementation of the NEI Initiative (NEI 96-05) as detailed in response to Request (f). Improvements in surveillance procedures for IST are being implemented as detailed in response Request (b).

PROCEDURE IMPLEMENTATION OF TECHNICAL SPECIFICATIONS

WPSC performs a review of the Procedural Implementation of Technical Specifications (PITS) List upon receipt of a Technical Specification amendment. The PITS list contains a cross reference of the Technical Specification line item and the implementing procedures. The responsible procedure reviewer(s) is notified of any procedures identified in the PITS list as corresponding to the Technical Specification line item revised, and asked to perform a review to see if the procedures are in need of revision. As an additional precaution, process owners are notified by letter upon receipt of a Technical Specification amendment. This letter notifies the process owner that the amendment was received and requests the owner to review and revise all procedures affected by the Technical Specification amendment. Specific followup is conducted to ensure that the affected procedures are revised. Internal assessments of this program have identified a few examples of implementing procedures which were deleted and replaced by others which were not reflected in the line item cross reference. A couple procedures listed in the cross reference did not contain current Technical Specification Limiting Condition for Operation. Corrective actions are being taken.

PROCEDURE IMPLEMENTATION OF REACTOR CORE DESIGN BASIS

FMDs and FMPs required by the OQAP provide guidance for the design, design verification, and safety analysis activities of NFS. The FMP's and FMD's are administratively controlled according to FMD 3.1, Rev. 5, "Administrative Control of Fuel Management Directives," and FMD 3.2, Rev. 7, "Administrative Control of Fuel Management Procedures." Administrative controls of the FMD's and FMP's ensure that design basis requirements, contained in FMP's and FMD's, are adequately controlled. Administrative controls, second level reviews, and Quality Programs (QP) audits of NFS provide the rationale for concluding that reactor core design basis requirements are translated into procedures.

Following is a summary description of NFS procedures that implement design basis requirements for reactor core design.

FMP 4.1-0100 (11) — Design Change Control for Reload Cores

Establishes the responsibilities and defines the requirements for controlling the design, analysis, and safety evaluation of reload cores.

FMP 4.3-0210 (9) — Preliminary Design

FMP 4.3-0810 (10) — Final Design

FMP 4.2-0211 (10) — Preliminary Design Constraints

Maintains design basis requirements for reload core determination.

FMP 5.5-0003 (0)	Review of Nuclear Fuel Assembly Design Change *Establishes a method for the review of the KNPP fuel assembly design and changes to the fuel design. This procedure provides for determination of whether there is an unreviewed safety question related to the nuclear fuel assembly design or design change.*
FMP 4.2-0660 (24)	Comparison of Reload Parameters to the Bounding Safety Analysis *Provides the design basis requirements for the Reload Safety Evaluation to ensure the requirements for 10 CFR 50.59 are met. FMP's 4.2-0670 thru 4.2-0689 contain design basis accident safety evaluation requirements. A reload core pattern must meet the required limits for all of the accident specific core physics parameters to be acceptable.*
FMP 4.2-0770 (4)	Plant Safety Analysis *Establishes the design basis safety analysis acceptance criteria for each of the design basis accidents. Safety analysis methods for the design basis accidents are provided in the current revisions of FMP's 4.2-0771 through 4.2-0785.*

PROBABILISTIC RISK ASSESSMENT (PRA) PROCEDURES

To provide assurance that the IPE reflected the as-built, as-operated plant, PRA basis documentation was defined and used in developing the Kewaunee PRA. Sources for the PRA bases documentation include: the Updated Safety Analysis Report (USAR), Technical Specifications, Operating Procedures, system drawings and descriptions, plant walk-throughs, maintenance records and procedures, and design change packages.

The PRA is maintained current with the plant design by reviewing design changes to the plant (PPCs) and to plant procedures and Technical Specifications. Changes to the PRA are made based on the results of this review. These reviews and associated PRA updates are governed by NEP 5.5, "Probabilistic Risk Assessment Control" and NEP 14.3, "Review of DC Final Distribution for Impact on the KNPP Probabilistic Risk Assessment."

TRAINING SUPPORT OF DESIGN BASIS INFORMATION

Training related to the major processes described above is provided by the "Technical Staff and Management Training Program", T-TSM-TP, Rev. H. This training program is accredited by the National Academy of Nuclear Training.

Training provides a key element in effective implementation of procedural control related to design and configuration. An overview of the training implementation is provided in Appendix B to this attachment. Table 2 of Appendix B details the specific training elements related to design basis information.

REQUEST(c)

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

QUALITY PROGRAMS OVERSIGHT

The methods used to confirm that systems, structures and components are consistent with design basis is through audits, surveillances and inspections. Refer to the Appendix A for a detailed description of the Quality Assurance Program, and Appendix D for a detailed of audit and surveillance activity.

PLANT MATERIAL CONDITION VERIFICATION

KNPP's SSFI Program includes an assessment of material condition of the Safety Systems inspected (refer to Appendix C). The Plant Material Condition functional area in the KNPP SSFI inspections include:

- Verification of configuration
- Nameplate verification
- System lineups
- Power supply
- Material condition (leaks, bolting, etc.)

Approximately 25% of the total 332 RIs (Request for Information (RI)) generated by the Program were found to contain an observation, concern or question related to equipment material condition or system/component configuration. Of those items:

- 64 RIs (79%) have been satisfactorily addressed (closed),
- 10 RIs (12%) are open pending implementation of corrective actions, and
- 7 RIs (9%) are being evaluated or are awaiting evaluation. Note that these 7 have been screened for operability and reportability.

Eight of the 81 RIs listed above (10%) were addressed by implementation of design changes. Approximately 40 design changes were initiated as a result of internal findings from the KNPP SSFI Program. Most of the design changes were to improve system performance or upgrade system designs to meet current standards. The effectiveness of the corrective actions is evident by the fact that all but 3 of the 40 modifications are completed.

The program generated six Licensee Event Reports concerning conditions outside or potentially outside design basis. All six have been resolved.

As part of KNPP's SSFI process, any observations, concerns or questions that are determined to be generic in nature (applicable to many or all plant systems) are labeled as such, i.e., prefixed with "R-999-", and are evaluated as a potential generic problem. Two generic issues were found associated with material condition problems (R-999-005 and R-999-006). One generic item has been satisfactorily addressed; no corrective actions were recommended. The other generic item is of low priority, does not impact operability or safety, and is awaiting evaluation.

SEISMIC DESIGN VERIFICATION OF PLANT MECHANICAL AND ELECTRICAL EQUIPMENT

Seismic verification walkdowns and analyses of selected mechanical and electrical equipment, cable trays, tanks, and heat exchangers were recently conducted at KNPP to address the NRC Unresolved Safety Issue (USI) A-46, "Seismic Qualification of Equipment in Nuclear Power Plants" (Ref. 1). USI A-46 addressed the NRC concern that equipment in older nuclear plants was not designed or analyzed in accordance with more recent seismic design criteria, and the NRC questioned the seismic adequacy of the equipment in these older plants and their ability to survive and function in the event of a design basis earthquake.

To address the USI A-46 issue, a group of utilities formed the Seismic Qualification Utility Group (SQUG) to develop a practical and cost-effective approach for resolving the issue using earthquake experience data. The approach developed by SQUG was to evaluate the seismic ruggedness of essential equipment items based primarily on the performance of similar power plant equipment subjected to actual earthquakes. This approach differs significantly from other current seismic qualification techniques, which requires that specific equipment items be formally shake table tested or evaluated using detailed dynamic analyses. The SQUG approach was recognized by the NRC as being the preferred method for resolving the issue. The NRC based this decision primarily on the fact that it was impractical to require older operating nuclear plants to comply with current seismic qualification requirements.

The SQUG approach is applicable to the major types of equipment found in power plants, but specifically excludes building structures, piping, and nuclear steam supply system (NSSS) components. Plant equipment and systems necessary to bring the plant from a normal operating condition to a safe shutdown condition were required to be identified. Equipment selected included active mechanical and electrical equipment required to support four safe shutdown functions; reactor reactivity control, reactor coolant pressure control, reactor coolant inventory control, and decay heat removal. Approximately 560 equipment items were evaluated for the USI A-46 program at Kewaunee, including tanks and heat exchangers. Cable tray and conduit raceway systems were also inspected during the walkdowns, and the seismic adequacy of approximately 1000 relays was also reviewed.

Four major screening criteria were used during the plant walkdowns for assessment of equipment seismic adequacy: (1) comparison of the seismic demand imposed on an equipment item to the equipment seismic capacity, (2) determination that the specific equipment item is similar to equipment items represented in the earthquake experience database, (3) evaluation of anchorage adequacy, and (4) assessment of seismic spatial interactions. By meeting all of the screening criteria, a trained walkdown engineer can judge whether or not a given equipment item will survive a design basis earthquake.

The plant walkdowns at Kewaunee were conducted by teams of trained seismic capability engineers. The teams consisted of contracted seismic engineering experts and Kewaunee engineers with plant systems expertise. Each walkdown team was provided with detailed original seismic design information on most equipment. This information consisted of equipment anchorage drawings and specifications, equipment outline drawings, and in some cases, original seismic test reports or design analyses of the equipment. The original plant design basis response spectra was used to establish the seismic demand on the equipment. Upon completion of the walkdowns, the anchorage of all significantly sized equipment items were rigorously analyzed.

Equipment items which did not comply with all of the walkdown screening guidelines were considered outliers. If an equipment item was declared an outlier, the review teams were required to determine if the condition constituted a deviation from the existing plant licensing or design basis. None of the identified outliers were determined to affect equipment operability. Of the approximately 560 equipment items evaluated during the walkdowns, 24 outlier issues affecting approximately 50 specific equipment items were identified. Corrective actions to resolve all the equipment outlier issues have been completed. In addition, 21 relay outliers were identified, with 19 of the 21 outliers resolved at this time. The remaining two relay outliers are scheduled to be closed out later this year.

The USI A-46 walkdowns verified the general assumption that properly anchored equipment in older nuclear power plants are seismically adequate. There were no major findings at Kewaunee which affected equipment operability or plant safety. The walkdown program demonstrated that the Kewaunee plant was seismically well-designed and the original seismic design basis was adequate. Upon completion of the walkdown program, the plant USAR was revised to include the SQUG seismic verification methodology as an alternative to existing methodologies for the seismic design and verification of modified, new, or replacement equipment.

SEISMIC DESIGN VERIFICATION OF PLANT BUILDING STRUCTURES

In coordination with the USI A-46 program, plant walkdowns were conducted to support the seismic probabilistic risk assessment (SPRA) performed for the Individual Plant Examination for External Events (IPEEE) program (Ref. 2). The SPRA was consistent with the methodology outlined in NUREG-1407 (Ref. 3).

The IPEEE plant walkdowns included the examination of plant equipment and primary site structures. Plant equipment walkdowns were conducted using the USI A-46 methodology, since the majority of the equipment items were common to both the USI A-46 and IPEEE programs. All site buildings containing systems to be considered in the SPRA, as well as support systems included in the SPRA, were assessed.

Included in the building structural assessment were the following structures:

- Containment Vessel (including the internal structures)
- Administration building basement (diesel generator rooms)
- Shield Building
- Auxiliary building
- Screenhouse building
- Screenhouse tunnel
- Turbine building mezzanine (battery rooms)
- Turbine building basement (safeguards equipment alley)
- Technical Support Center

The walkdowns were supported by thorough reviews of the Kewaunee USAR, seismic stress evaluations performed by Blume (Ref. 4), and design calculations and drawings generated by the plant Architect-Engineer, Pioneer/Fluor. All structures were determined to have a median seismic capacity equal to or greater than the plant seismic design basis. The SPRA study showed that the median seismic capacity of the plant is 0.38g peak ground acceleration, which is approximately a factor of three times the design basis earthquake level of 0.12g. The completion of the above program provides the rationale to conclude that reasonable assurance exists of equipment and structure seismic design adequacy.

PIPING CONFIGURATION/MATERIAL CONDITION

PIPE THINNING

KNPP has a Pipe Inspection Program to identify and inspect carbon steel piping that may be susceptible to flow accelerated corrosion or other erosion mechanisms. Plant piping is maintained to the thicknesses required by USAS B31.1.0-1967, Power Piping.

All high energy lines (service temperature > 200°F and design pressure > 275 psig) are included in the inspection program, as well as any additional piping selected due to its past maintenance history, operating conditions, or industry experience.

Inspections generally are performed annually, during plant operation using tangential radiography (RT), and during plant outages using ultrasonic examination (UT) or RT.

The Pipe Inspection Program commenced during Kewaunee's 1983 refueling outage. To date, more than 3,300 individual piping components have been examined, and more than 1,000 components have been replaced due to degraded wall thickness.

The program's first procedure, General Maintenance Procedure (GMP) 216, Pipe Inspection Procedure, was developed February 4, 1986. Current procedures include:

NAD 8.15 Pipe Inspection Program

Outlines personnel responsible for ensuring successful conduct of the program activities, and lists general requirements for maintaining the program

GMP 216 Pipe Inspection Procedure

Provides step-by-step instructions for performing UT examinations and provides a mechanism to document both UT and RT inspection results.

NEP 8.1 Pipe Inspection Program Coordination

Outlines the tasks necessary to conduct the program's activities.

NEP 8.3 Pipe Wall Thickness Evaluation

Provides guidance in evaluating and documenting inspection results when anomalies are identified.

This program and its associated implementing procedures provides rationale for concluding that the piping systems are maintained within the design requirements of USAS B31.1.0-1967.

PIPING RECONCILIATION

Plant modifications are implemented in compliance with GNP 4.3.3, "Plant Physical Change Control". During the implementation of the plant physical change process, it is determined if any regulatory requirements, such as IEB Bulletin 79-14 are affected. Changes to any piping system in the 79-14 program would then be controlled by NEP 4.10, "Piping System Modifications - Continued Compliance with IEB 79-14". This procedure assures that the piping system change is evaluated and drawings, calculations and reports are maintained current.

The 79-14 work includes analysis of the piping system for applicable design loading including weight, thermal, pipe rupture and seismic. The stresses in the piping and the pipe supports are verified to meet the maximum stress criteria listed in Appendix B of the USAR. The scope of work completed under the 79-14 Program is as follows:

1) All large bore piping systems. (111 analytical parts)

2) A sample of small bore piping systems. (68 analytical parts)

3) Analysis of a sample of integral attachments.

4) Approximately 300 modifications resulting from this scope have been completed.

No inoperable piping systems were identified as a result of the above analyses of a significant portion of safety related piping. Additional piping reconciliation is performed as part of piping modifications or when other field work identifies piping discrepancies warranting further analysis.

ISI PROGRAM

The Kewaunee Inservice Inspection Program (ISI) meets the requirement of 10 CFR 50.55a(g). This program, including a number of Augmented Examination Programs contained therein, provides for piping system tests including: pressure tests, ultrasonic examination, visual examination, radiographic examinations, magnetic particle and liquid penetrant examinations.

This program continues to provide rationale for concluding that pressure systems at KNPP continue to meet the design basis.

SYSTEM PERFORMANCE VERIFICATION

INSERVICE TESTING

Surveillance Procedures for testing IST components were developed in an effort to reproduce design conditions of the system and establish reference values in accordance with the ASME Code. Changes made to reference values are done so in accordance with GNP 1.24.3, "Establishing Reference Values for IST Components". As part of this change process, USAR assumptions and Technical Specifications are reviewed to ensure the new reference value is acceptable. Also included in the change process is a review of past reference value changes to preclude a gradual reduction in component performance. In the past, the philosophy of IST was focused on component degradation and did not always ensure that the component was meeting its design function. KNPP is currently reviewing accident analyses and design information to determine the limiting values for component operation. After this review is complete, the current acceptance criteria will be reviewed to ensure that the component is capable of fulfilling its design basis accident assumptions. These corrective actions are expeeted to be completed prior to the startup scheduled for the First Quarter of 1997. Additional information is provided in response to information Request (b).

A more extensive trending program is being developed at KNPP in an effort to determine component degradation prior to failure. This trending program includes the acceptance criteria for the component to easily recognize if a component's operation is approaching an unacceptable condition. This trending information is also useful to the Operations crews. By reviewing past performance prior to running a piece of equipment, any unusual operation can be recognized more easily.

MOTOR OPERATED VALVE TESTING

The Kewaunee Motor Operated Valve program, developed in response to Generic Letter 89-10, required a design basis reconstitution for each MOV covered by the program. This reconstitution included field verification of nameplate data, design flows, pressures, and fluid characteristics. Also required was reconstitution of the electrical design including power supplies, cable size and routing, and current protection.

Periodic testing and trending are performed to verify that valves in the program continue to meet their design basis.

CHECK VALVE TESTING PROGRAM

The Check Valve Reliability Program (CVRP) was developed in response to INPO SOER 86-03. The intent was to develop a program to help reduce the potential for failures of check valves that impact the health and safety of the public, personnel safety and plant availability. INPO SOER 86-03 listed the following systems to be included in the program: Main Steam, Service Water, Auxiliary Feedwater, Main Feedwater, Diesel Generator Air Start, Chemical and Volume Control, and Residual Heat Removal. In addition, WPSC added Component Cooling, Safety Injection, Internal Containment Spray, and Make-up Water to the AFW pumps to the scope of the program.

Check valves in the above mentioned systems were reviewed to determine the function of the valve, flow characteristics, sizing, piping characteristics, and type of valve in accordance with NAD 1.6, "Check Valve Reliability Program". EPRI document NP 5479 "Application Guidelines for Check Valves," was used to develop the evaluation process. This information was used to evaluate the need for inclusion in the disassembly program. All valves originally identified to be included in the program have been disassembled and inspected to detect internal degradation. Based on the initial inspection results and original evaluation, certain valves were removed from the program. The initial inspection results and original evaluation were also used to determine the frequency at which the remaining valves will be inspected. Following each inspection the results are reviewed to determine if changes to the frequency are required.

Changes to the CVRP are made in accordance with NAD 1.6. These changes are reviewed for technical adequacy by the Process Owner (STA) and the Mechanical Maintenance Engineering

Group. If valves are added to the CVRP, the review process is the same as the original process using the guidance of EPRI document NP 5479 "Application Guidelines for Check Valves".

REACTOR CORE PERFORMANCE TESTING

The KNPP Technical Specifications (TS) outline limiting conditions for operation of the reactor. The following activities are performed to provide assurance that the performance of the reactor core is consistent with the design bases.

1. Startup Physics Testing

   The startup physics testing is performed to determine or measure those physical characteristics of the reactor core which have not been previously tested or brought to the test conditions and to verify that these physical characteristics are consistent with the current safety analysis and the design bases. FMP 4.3-1517, Rev. 10, "Verification of Design Via Start-Up Test Analysis," was established to provide review and acceptance criteria, consistent with the reactor test procedures and Reactor Test Program, for the comparative analysis of startup test results versus calculated core physics parameters, and to provide a mechanism for re-analysis, if necessary. This procedure documents the review criteria (measured to predicted) and acceptance criteria (measured to limit) for the measurements taken during the startup physics testing. Startup test measurements meeting the acceptance criteria provide assurance that the actual reactor core is consistent with the design bases. The startup test results are documented in accordance with FMP 4.5-0105, Rev. 6, "Startup Report." This report is reviewed by PORC and NSRAC and is transmitted to the NRC.

2. Reactor Core Power Distribution Verification

   Power distribution maps are required to be taken on a periodic basis per Technical Specification 3.10.b to provide assurance that the operating power distribution limits (TS 3.10.b) and the quadrant power tilt limits (TS 3.10.c) are being met, as well as to provide assurance that the core operation is within the assumptions used in the design and safety evaluation processes. The power distribution maps also provide assurance that the fuel assemblies do not violate the power distribution and burnup limits established in the fuel assembly mechanical design evaluation provided by the fuel design vendor. FMP 4.3-0910, Rev. 11, "Power Distribution Validation," provides the method for determining that the core power peaking factor limits are not exceeded. FMP 4.3-0916, Rev. 4, "Peak Rod Exposure Surveillance," establishes a method for calculating the peak rod exposure and verifies that the mechanical design limits on burnup imposed by the fuel vendor are not exceeded. FMP 4.3-0930, Rev. 7, "INCORE Execution," provides the vehicle for verifying that the Technical Specification on quadrant power tilt is satisfied.

3. Plant Process Computer System Data

The core physics data for the Plant Process Computer System is outlined in FMP 4.3-0518, Rev. 3, "Plant Process Computer System (PPCS) Data Requirements". This cycle specific data is used by the PPCS to predict and monitor the core behavior during the cycle. Agreement of plant measurements and PPCS predictions provides assurance that core performance and configuration are consistent with the design bases.

4. Continuous Monitoring

Ongoing measurements taken by the plant (e.g. power, inlet temperature, pressure, reactor coolant system flow, critical boron concentration) ensure that the reactor is operating within the Technical Specifications and consistent with the plant safety analysis assumptions and the design bases.

DRAWING VERIFICATION

An internal Quality Assessment Report (QAR) was issued based on a SSFI activity which identified a number electrical drawing discrepancies. The Electrical Drawing Quality Baseline Project was developed to review differences between the as-built plant equipment and the wiring diagrams reflecting that equipment. This project was conducted during years 1992 through 1994. The focus of this effort was to compare wiring diagrams to the as-installed configuration of plant equipment.

Under the Electrical Drawing Quality Baseline Project, approximately 500 drawings were walked down between 1992 and 1994. This covered a significant portion of the safety related equipment. Verification of additional equipment occurs during pre- and post-modification walkdowns. The majority of safety related wiring diagrams that were suspected to contain discrepancies have been walked down.

The Electrical Drawing Quality Baseline Project has been effective in identifying and resolving minor discrepancies between the drawings and the field. The Electrical Drawing Quality Baseline Project, as a project, has been discontinued since the discrepancies found to date did not alter the design basis of KNPP and have not affected operability of equipment. As-built verification of drawings now occurs as part of the pre- and post-modification walkdowns. Discrepancies found during maintenance activities are also corrected. These two measures help to ensure as-built conditions are correctly depicted in design basis documentation, i.e. the drawings.

MAINTENANCE RULE

The KNPP Maintenance Rule Plan requirements are designed to identify and monitor performance of both safety and non-safety related systems. It identifies specific Systems, Structures, and

Components (SSC) along with their associated functions and the performance criteria requirements. The associated maintenance rule procedures identify the methods used to document and implement corrective actions to bring SSCs within acceptable performance. A historical performance review (July 1994 to July 1996) was used to obtain baseline SSC performance data. KNPP continues to monitor SSC performance on a monthly basis.

FIRE PROTECTION SYSTEMS STRUCTURES AND COMPONENTS

Fire Plan Procedure (FPP) 08-01, "Fire Plan Operability, Surveillance, and Contingency Requirements," is designed to identify the Fire Protection Equipment and/or System(s) Operability and Surveillance requirements regarding safety related areas. It also identifies the mitigating, corrective and backup actions necessary for fire protection at KNPP.

A table in FPP 08-01 covers: Component/System/ Structure, Operability Requirements, Activity (type of test), Surveillance Procedure (SP's), Surveillance Frequency, Surveillance Frequency Basis, and the Contingency Requirements. The table is broken down by: Detection, Fire Water System, Supression Systems, Barriers, Ventilation Systems, Appendix R, and other miscellaneous items important to the Fire Protection Program.

Implementation of FPP 08-01 provides reasonable assurance that fire protection systems are configured and operated within their design basis.

ELECTRICAL EQUIPMENT QUALIFICATION PROCESSES

The purpose of the KNPP Environmental Qualification (EQ) Program is to ensure continued compliance with 10 CFR 50.49 along with providing assurance that EQ component configuration and performance are consistent with the design parameters of the EQ Program.

Although equipment qualification was part of the original design of KNPP, implementation of 10 CFR 50.49 in 1983 resulted in additional KNPP processes to ensure that EQ components are consistent with the EQ design bases. Many of these efforts were initiated by the development of the EQ Master List. The master list was developed through a thorough review of USAR accident analyses, flow diagrams, plant equipment lists, schematic diagrams, wiring diagrams, and emergency operating procedures. As this list was developed, much time was also spent physically inspecting the equipment as well as researching the capabilities of the equipment to function in a post-accident environment. The NRC's SER in 1984 (Reference 5) on the KNPP EQ program stated that the methodology for developing the master list was acceptable and concluded, "Wisconsin Public Service's electrical equipment environmental qualification program complies with the requirements of 10 CFR 50.49."

In March 1987, the initial EQ inspection by the NRC at KNPP was conducted. This inspection reviewed EQ procedures, the master list, EQ maintenance, procurement, quality assurance, training, and actual plant and component configuration. The audit (Reference 6) concluded, "Based on their review, the inspectors determined that the licensee had established an adequate EQ program in compliance with the requirements of 10 CFR 50.49." However, there have been many on-going efforts to ensure this consistency is maintained.

Consistency in the EQ Program begins with the EQ Plan. The EQ Plan is a written program that delineates the requirements for the environmental qualification of electrical equipment important-to-safety. The purpose of the EQ Plan is to assist KNPP personnel in complying with 10 CFR 50.49. The EQ Plan delineates responsibilities of KNPP personnel, provides guidance for determining if a component is important-to-safety along with the applicable EQ Type and provides guidance for specifying KNPP environmental parameters.

NEP 5.8, "Revision and Control of the KNPP Environmental Qualification Plan" provides guidance for the administration of revisions to the EQ Plan. Proposed revisions to the EQ Plan include a Safety Evaluation following procedure GNP 4.3.1, "Guide to Safety Review, Safety Evaluations, and Second Level Reviews."

NEP 5.6, "Revision and Control of the Environmental Qualification Reference Files," provides guidance for the administration of revisions to the EQ Reference files. The EQ Reference Files may contain the manufacturer's test report, qualified life calculations, installation/maintenance manuals, vendor qualification-related correspondence, System Descriptions, and other supporting documentation necessary to prove qualification.

NEP 5.7, "Revision and Control of the Environmental Qualification Evaluation and Review Files," provides guidance for the administration of revisions to the EQER Files. The EQER is a documented engineering evaluation and review of all the available environmental qualification documentation for a piece of electrical equipment.

Instrumentation configuration is controlled under a separate plan to meet the requirements of Regulatory Guide 1.97. The KNPP Regulatory Guide 1.97 Plan was developed to assist KNPP personnel in maintaining WPSC's commitments to provide the control room operators with instrumentation that is qualified to monitor important-to-safety plant variables during and following an accident at KNPP.

Maintenance work required to maintain equipment qualifications is performed using the plant planning and scheduling system. The use of EQ labeling on most EQ components is yet another method used to "flag" maintenance personnel that a component is EQ. The purpose of the tags is to alert personnel that they are working on an EQ component and that EQ requirements may apply. Placement of the EQ labels is verified during EQ Field Verification walkdowns.

EQ Field Verification is an informal process used by EQ personnel as a method to collect data on many installed EQ components, e.g., nameplate information, location, orientation, etc. However, this verification also provides an opportunity to identify conflicts between the installed component and the assumptions of the EQ design documents. These walkdowns have resulted from the identification of EQ Discrepancies, NRC Information Notices, and other industry issues. Some of the walkdowns performed include terminal box/terminal block walkdowns, EQ circuit walkdown, solenoid valves/motor splice walkdowns, etc.

The above process and controls provide reasonable assurance that electrical equipment is configured in accordance with its design requirements.

TRAINING IN SUPPORT OF CONFIGURATION CONTROL

Training related to the major processes previously described is provided by the "Technical Staff and Management Training Program", T-TSM-TP, Rev. H. This training program is accredited by the National Academy of Nuclear Training.

Training provides a key element in effective implementation of the major processes related to design and configuration control. An overview of the training implementation is provided in Appendix B to this attachment. Table 3 of Appendix B details the specific training element related to Configuration Control.

REQUEST (d)

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

AUDIT, SURVEILLANCE AND INSPECTION

Problem identification and corrective action processes are performed by the Quality Programs Group by audit, surveillance and inspection procedures and by the general plant population through the Kewaunce Assessment Process.

Conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective materials and equipment (post-receipt inspection), and nonconformances are documented through Quality Assessment Reports (QAR) and/or Kewaunee Assessment Process (KAP). These provide the mechanism for all personnel to notify management of conditions adverse to quality. For situations determined to be significantly adverse to quality, investigations provide for identifying and correcting the condition as well as determining the cause of the condition to ensure that corrective action is taken to preclude recurrence.

Audit Activities - Appropriate directives and Quality Procedures have been established to control audit findings. Directives and procedures have been developed which provide for the description of unacceptable conditions, corrective action to be taken, response time, verification of implementation of the corrective action, and close out of the deficiency generated as a result of audits.

Nonconforming materials, parts, or components - Nonconforming items identified during receipt inspection are documented on a Material Nonconformance Report in accordance with Quality Programs procedures. These items are segregated to preclude misuse, further processing, or installation pending disposition. Material nonconformance reports are controlled and evaluated by cognizant plant personnel to determine the disposition of nonconforming items. Material nonconformance reports and dispositions are submitted to the responsible organization for implementation of corrective action. Provisions are established that ensure that items dispositioned as "repair" or "rework" are reinspected to verify acceptability. Safety related materials are tracked and documented from receipt through release in accordance with Quality Programs group procedures.

KEWAUNEE ASSESSMENT PROCESS

The Kewaunee Assessment Process (KAP) was created in 1996 to provide a tool for all plant staff members to identify and evaluate a wide variety of plant issues. All KAPs are classified as either problems or ideas. Problems are typically identified in response to an event or in response to a self identified condition that could result in an undesirable event. "Idea" KAPS are proactive suggestions to improve a plant process. Both problems and ideas are evaluated and corrective actions, or plans for implementation, are determined as part of the KAP.

KAP is not specific to a particular department or plant process. The problem/idea model is designed to be broad such that KAP can be applied by any plant staff member to any situation which requires a technical evaluation, and tracking of the resulting corrective actions.

KAP replaced several different, but mostly redundant processes all of which had been designed to evaluate technical issues. KAP has replaced five processes: Surveillance Procedure Exception Report (SPER), Engineering Support Request (ESR) Incident Report (IR), Radiological Occurrence Report (ROR), and ALARA suggestions. KAP was implemented on May 1, 1996. The backlogs that existed in the old processes as of that date are being closed out under those old processes. All new work is being initiated via KAP, which is resulting in an increasing backlog. Tracking and trending tools for this process are under development and will include reports to monitor and manage the backlog.

KAP implements several significant changes in the philosophy of how work should be done. Prior to KAP, issues were typically identified by plant staff members and then turned over to engineering for evaluation. Often, communication between the initiator and evaluator was poor. Many times the evaluator was unfamiliar with the equipment and work processes surrounding the issue. The KAP philosophy is, that in most cases, the initiator is most familiar with the issue, and should participate in the evaluation.

KAP is designed to be administratively as simple as possible. The steps of the process are:

INITIATION

All KNPP staff members are encouraged to initiate a KAP whenever they encounter an unexpected situation or have a thought on how a process improvement can be made. While this process encourages flexibility at all stages, certain legal requirements must be satisfied.

Operability and Reportability concerns are identified early in the process and involve review by the PORC. Additional details regarding PORC involvement can be found in the section entitled "Implementation Process for NRC Reporting". All employees are responsible for understanding and recognizing operability and reportability issues and taking the appropriate actions at the initiation stage. The Initiation section of the KAP form contains the following questions:

1. Is this a problem that raises an operability concern?
2. Is this a problem that is potentially reportable?
3. Is this a problem that affects plant operation or the operation of plant equipment?
4. Are you unsure how to answer these questions?

If the initiator answers "yes" to one or more of the questions, the KAP must immediately be brought to the attention of the Shift Supervisor where an operability determination is made and required reporting is initiated.

A KAP must be initiated if any of the problem situations are encountered:

1. Actually or potentially had a negative effect on personnel safety.
2. Actually or potentially had a negative effect on safe operation of the plant
3. Actually or potentially had a negative effect on plant reliability or availability
4. Identifies a significant problem with human performance or procedure adequacy.
5. Is potentially reportable to the NRC.

In addition to identifying problems, a KAP can be used to improve the way work is done. A KAP can be initiated for any idea that:

1. Saves money or time.
2. Makes money using a new or existing product or service.
3. Makes a process simpler, easier, or better.
4. Resulted from a lesson learned that could help other work groups.

The initiation step is considered complete when it is determined if the problem or idea needs further evaluation, reportability and operability requirements are complete, and the initiator determines the role they want to have in the evaluation.

PLANNING

Prior to performing the technical work, the planning step determines who will be involved, the scope of work, and when will it be completed.

> Forming a Team: The initiator needs to decide if help is needed. It is perfectly acceptable for the initiator to handle small issues not involving reportability or operability and use the KAP tracking system to document this work. If help is needed, the initiator is encouraged to stay involved throughout the process. The initiator should also identify if the issue should be owned by an existing team or work group. If a responsible group is not apparent, the KAP administrators can help form a team.

Determining Scope of Work: Technical scoping should include the following:

(1) Determine the boundaries of the evaluation. Decide if the evaluation will focus on one particular valve, a certain class of valves, or all valves in the plant. (2) Select evaluation tools. Decide exactly what work will be done. For instance, root cause analysis is applicable to an equipment failure; market survey and cost benefit analysis is applicable for a new business idea. (3) Determine deliverables, clearly articulate exactly what the finished product should be and at what point the issue will be turned over to other processes for implementation.

Determine Schedule: Scheduling of work is based on plant conditions, resource availability, and priority of the work.

For KAPs that require resources from engineering, these planning steps are typically included as part of the Engineering and Technical Support (E&TS) Work Flow Management process.

Work Flow Management teams, organized by technical discipline, perform the planning and prioritization of all new work.

EVALUATION

Performing a KAP is generally organized into three parts:

Information Gathering: This can consist of conducting interviews, retrieving logs, studying pertinent drawings, and a number of other potential sources of information.

Apply Tools: Once the team has an understanding of the issue, gained through information gathering, a number of evaluation tools are at their disposal including Cost/Benefit Analysis, Root Cause Analysis, 50.59, Engineering Calculation, Self Assessments, and Trending.

Draw Conclusions and Form Recommendations: Based on the information gained by applying the tools, an implementation plan is created. In general this will involve determining which process(es) to transition to. i.e Physical Change, Procedure Change, Training, etc. for implementation

IMPLEMENTATION

The recommendations of a KAP are implemented through other plant processes such as Physical Change (Design Change), Procedure Revision, Drawing Control, and Training. However, the KAP process tracks each open corrective action until it is completed to the satisfaction of the team that made the recommendation.

TRACKING AND TRENDING

A role of the KAP administration team is to develop and maintain a database of all KAPs and periodically analyze the data to identify trends. For instance, a completed KAP is expected to include one or more cause codes. A predefined list of cause codes is available to the evaluation team for the purpose of classifying similar events. Examples of predefined causes include: Corrosion (Mechanical Equipment/System) and Pre-job Briefing Inadequate (Human Performance Work Practices). One of the reports the KAP team is expected to prepare is a distribution of KAPs by cause code to identify those areas experiencing recurring problems. Some delays were encountered with the development of the data base tool for tracking and trending of the assessment process. Although the data base was under development and near completion, the lack of trending capability resulted in a recent NRC finding. The KAP backlog is recognized as increasing and will be addressed as part of the overall assessment of KAP trends. The database is scheduled for completion in the next few weeks and trend reports will be provided to KNPP management shortly thereafter.

OPERATING EXPERIENCE ASSESSMENT PROGRAM

The Operating Experience Assessment (OEA) Program was initiated in response to NUREG 0737, Item I.c.5 to provide a methodology for KNPP to review industry operating experiences and provide prompt review and dissemination of pertinent safety and reliability information. The program is split into three parts. The Screening of industry experience documents for applicability to KNPP, the evaluation of the applicable documents, and the tracking of recommendations initiated by the evaluations. A monthly status report containing Screenings, OEA Evaluations and OEA Recommendations is sent to the Senior Vice President - Nuclear Power, Managers, Department Heads and Leaders. The OEA Program is controlled by NAD 14.1, "Operating Experience Assessment Program" and SSEP-01, "Operating Experience Assessment Program".

INDUSTRY SOURCES

The industry operating experience reports are generated by NRC, INPO, Vendors, Government Agencies, Architect/Engineering Firms, and Industry sources. The reports include, but are not limited to the following:

NRC

Bulletins, Information Notices, Generic Letters, Inspection Reports, NUREGs, and Letters.

INPO

Significant Operating Experience Reports (SOER), Nuclear Plant Reliability Data System, Significant Event Reports (SER), Operations and Maintenance Reminders (O&MR), Significant Event Notices (SEN), Significant By Others, and Operating Experience.

Westinghouse

Technical Bulletins, Nuclear Safety Advisory Letters, and Letters.

Department of Energy

Operating Experience Weekly Summary, Safety Notices, and Technical Notices.

Miscellaneous Vendors

Notices, Bulletins, Technical Manual Revisions, and Letters.

Industry

Plant LERs and Industry Group reports.

SCREENING PROCESS

The Screening process is to select for evaluation those industry operating experience reports having a potential for significant impact on the safety and reliability of KNPP and to eliminate from further review those industry operating experience reports determined not to be applicable to KNPP. The Screener's decision on applicability to KNPP is based on (1) regulatory basis, and (2) like equipment or procedures at both PWRs and BWRs. The industry operating experience reports are individually tracked in the Screening Data Base.

OEA EVALUATION PROCESS

The industry operating experience reports screened applicable to KNPP and evaluated further as OEA reports are tracked in the OEA Data Base. The evaluator answers concerns raised by causes, recommendations, and points of interest in the source document and works with affected departments when completing the evaluation and formulating the corrective actions.

OEA RECOMMENDATIONS

The recommendations for corrective actions from OEA evaluations are formulated with input and approval from the affected department. The status of the recommendation is tracked in the OEA Data Base. Each month a report is issued to the Senior Vice President - Nuclear Power, Managers, Department Heads and responsible persons that states the status of each recommendation.

OEA PROGRAM EFFECTIVENESS

The effectiveness of this program in identifying problems and implementing corrective actions is demonstrated by substantive examples:

OEA No. 96-046 - Procedure Change
An industry report identified the potential for inadequate surveillance testing of solenoid valves on main feedwater regulatory valves. The OEA program identified the same vulnerability at KNPP and resulted in corrective actions taken to upgrade the appropriate surveillance procedure.

OEA 94-085 - NRC Reportable
A vendor reported a change to the Small Break LOCA Analysis of record. The corrective action program resulted in a report to NRC, as required by 10 CFR 50.46, as well as an update to USAR.

OEA 94-086 - Plant Modification
A vendor report on equipment problems in the Rod Control System resulted in implementing a design change to correct the identified problem at KNPP.

The OEA Program processes approximately 1000 incoming reports annually. The program has been successfully maintaining a stable system with minimal backlog.

IMPLEMENTATION PROCESSES FOR NRC REPORTING

NRC reporting requirements for 10 CFR 50.72 and 10 CFR 50.73 are assessed as part of the KAP process. When an adverse condition is identified the Shift Supervisor (SS) is notified. It is the SS's responsibility to determine if a condition is reportable. Upon identifying a reportable condition, it is also the SS's responsibility to initiate any immediate notifications to the NRC using the Emergency Notification System (ENS). The SS's responsibilities are delineated in the NAD 11.8, "Kewaunce Assessment Process". Guidance is provided to the SS in making reportability determinations in GNP 11.8.4, "Reportability Determinations".

In addition to the SS determination, a review of all KAPs is performed by Licensing personnel. This review provides an independent review of reportability determinations made by the SS and provides a means of performing reportability determinations for adverse conditions which may not involve plant equipment. If a condition is identified as being reportable, Licensing personnel are responsible for initiating any LERs that may be required. Licensing personnel responsibilities are also delineated in the NAD 11.8. Their responsibilities include: determining whether a 10 CFR 21 condition exists and initiating a report, if required; and ensuring any reportable or potentially reportable conditions are presented to the PORC.

The PORC is responsible for reviewing all reportable or potentially reportable events. Their review is to ensure PORC concurs with the reportability determination or they will provide insight to an alternate reportability determination. PORC is also required to review the final evaluation of reportable conditions to ensure concurrence with the evaluation and any corrective actions needs.

All KAPs involving potentially reportable or reportable conditions are presented to PORC. PORC responsibilities also include reviews of all other KAPs, which provides them the opportunity to raise questions on reportability determinations.

OPERABILITY DETERMINATIONS

Operability determinations are an on-going process. As plant staff perform plant related activities there is a continuing mind-set that assesses the condition of equipment and processes. It is when deficiencies are noted that the formal operability determination process is implemented.

The formal process for operability determinations is initiated similar to the reportability determination process. Operability determinations are initiated using the KAP process. Once a KAP is initiated after finding an adverse condition, the SS is notified. It is the SS's responsibility to determine the operable status of the equipment affected. The SS's responsibility for this determination is also delineated in NAD 11.8. The SS performs the operability determination using GNP 11.8.3, "Operability Determination". Technical resources are available to assist in complex operability determinations.

Like reportability determinations, the SS's operability determination is also reviewed by a Licensing representative and PORC.

GNP 11.8.3 provides guidance to the SS and any other staff member who is involved in making an operability determination. This procedure was developed in line with the guidance provided in Generic Letter 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections On Resolution of Degraded and Nonconforming Conditions and On Operability Determinations". The GNP also establishes the timeliness in which determinations should be made to ensure prompt assessments of operability.

TRAINING IN SUPPORT OF PROBLEM IDENTIFICATION PROGRAMS

Training related to the major processes previously described is provided by the "Technical Staff and Management Training Program", T-TSM-TP, Rev. H. This training program is accredited by the National Academy of Nuclear Training.

Training provides a key element in effective implementation of the major processes for problem identification and resolution. An overview of the training implementation is provided in Appendix B to this attachment. Table 4 of Appendix B details the specific training element related to Problem Identification Programs.

REQUEST (e)

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

OVERALL EFFECTIVENESS

The early vintage design of KNPP is straight forward and relatively simple, thus making safety system configuration control a manageable task. Modifications to the major safety systems have been minimal. The implementation of relatively recent design upgrades and verifications such as Appendix R and Seismic Qualifications (USI A46) have provided opportunities to make the design basis and documentation current in those selected areas. The SSFIs completed have confirmed that reasonable configuration control exists for those systems inspected.

The overall effectiveness of the current processes and programs at KNPP is evident by the number, depth and breadth of assessments described in the responses to the NRC Requests (a) and (d). Some corrective actions have not been implemented in a timely manner, but when completed have been demonstrated effective. Those that remain open are reviewed for immediate operability. The effectiveness in maintaining configuration with design is measured by the results of Quality Program Audits, SSFI, and the Kewaunee Assessment Process. These programs are corroborated by external assessments provided by NRC, INPO, ANI, etc. The small number of plant modifications related to design issues resulting from these assessments is one indication that the plant configuration is effectively being maintained. Processes are in place to deal with design discrepancies in a prompt and thorough manner upon discovery.

The extensiveness of KNPP's internal programs and their demonstrated corrective actions, along with the numerous independent reviews and audits, provide the rationale to conclude that there is reasonable assurance these processes and programs are maintaining the configuration of KNPP consistent with the design basis.

REQUEST (f)

NRC requests confirmation that design review or reconstitution programs have been or are being conducted and, if not, a rationale for not performing them.

DESCRIPTION OF LICENSING/DESIGN REVIEWS PLANNED OR IN-PROGRESS

We are currently performing reviews of our design and licensing basis in order to provide the necessary information for responding to the NEI Initiative (NEI 96-05) for assessing licensing basis information. In addition, we are in the final planning stages for an assessment of our USAR to be performed in 1997. These reviews will also provide additional confidence that our programs and processes have been adequate in maintaining our licensing/design basis information.

In response to the NEI Initiative, our operations and technical staffs are performing a review of USAR information related to four plant systems: Condensate, Component Cooling Water, Chemical and Volume Control, and Safety Injection. This review will verify that the USAR information is correct and accurately reflects operational practices and procedures. In addition to the USAR review, we are also reviewing a sample of various plant and program changes (e.g., design changes, operator workarounds, procedure changes) to verify that 10 CFR 50.59 was correctly applied and that our licensing basis accurately reflects the changes. Discrepancies identified in the reviews will be documented and dispositioned using the Kewaunee Assessment Process (KAP). We plan to complete the review, evaluation, and reporting necessary to respond to the NEI Initiative by April 15, 1997. The results from this assessment will be evaluated to determine if further review beyond that detailed below is necessary.

In addition to the NEI Initiative, we are planning to perform a comprehensive assessment of our USAR in 1997. Results from the NEI Initiative will be used in determining the final scope of this assessment. In general, our operations and technical staffs will verify that the information presented in our USAR is accurate and complete. This assessment will provide reasonable assurance that our USAR is consistent with our current licensing basis, contains correct design descriptions and analysis, and accurately reflects our current operating practices and procedures. We expect that the USAR review and the evaluation of results will be completed by December 31, 1997; any necessary corrective actions should be completed by the end of 1997 or a schedule for completion will be documented.

DESIGN BASIS DATABASE

In 1987, a project was initiated to review all documents held in the records storage vaults and identify those documents containing design basis information. The design basis documents identified by this effort were indexed in a computerized data base. Approximately 14,900 design basis documents were indexed at that time.

GNP 5.27.7, "Design Basis Database Maintenance", was developed to control the maintenance of the DBDB. GNP 5.27.8, "Design Basis Database User's Guide", was developed to provide detailed guidance to users of the DBDB. Process procedures require the DBDB to be updated due to physical changes, new and updated calculations, 50.59 reviews, USAR updates, etc. These activities have increased the number of entries from 14,900 to the current number of 16,564, demonstrating the effective use of this program. This DBDB is currently available to all users of the KNPP Local Area Network.

Another improvement to the DBDB has been a pilot project to investigate optical imaging technology that would allow a DBDB user to immediately retrieve and view an image of the document from designated workstations throughout the plant. About one third of the 1,300 calculations that are indexed by the DBDB have been scanned and placed in the imaging pilot system. Given the results of this pilot, a comprehensive imaging and microfilm system will be pursued for retrieval of most the DBDB documents.

To further improve the DBDB, WPS participated in the WOG Design Document Program Subgroup. This effort was active from the end of 1993 through 1995. This WOG project searched the Westinghouse archives of 24 major shop orders and all WCAPs for design basis documents. In June, 1996, KNPP received the plant-specific information from this WOG project which consists of an index of documents and optical image files of documents on compact discs. Optical image files for approximately 6,400 documents were received from Westinghouse as a result of this project. Work is currently under way to incorporate the index of these documents into the DBDB; this is expected to be completed early in 1997.

DESIGN BASIS RECONSTITUTION

A project to develop detailed design basis documents (design criteria document) was launched in 1989. Using the information from the Design Basis Database as a foundation, the design basis details from the documents described in Design Basis Database were brought forward into a standard template for the DCD. Four systems were completed with no design basis discrepancies identified which posed any serious challenge to system operability. The results of the SSFI program provide further confidence that existing processes are maintaining the plant within the design without the need to continue a large scale DCD reconstitution program. The DCD project was evaluated in 1994 for cost benefit, resource impact, and importance to safety. KNPP management suspended further work in this area due to the large cost and marginal benefit to safety.

The SSFI process remains in place and has been an effective tool to gauge the configuration of systems relative to their design bases. The results of the USAR reconciliation scheduled for completion in 1997 will be used to assess the need for additional SSFIs commencing in 1998.

EQUIPMENT DESIGN RECORDS

A number of initiatives have been or continue to be pursued to improve the availability and accuracy of information related to the design and configuration of the equipment at KNPP.

Walkdowns were completed to place additional electrical equipment in the Equipment Database. This effort resulted in the addition of 2000 breakers to the system. A verification project identified, field verified and added 3800 relays to the system.

Since 1990, a drawing review project has been underway to categorize drawings important to design and link them to associated equipment in the Equipment Database. This was undertaken to enhance our ability to identify all drawings affected by changes made to safety-related systems and equipment. As of December 1996, over 17,000 drawings have been reviewed.

REFERENCES

1. Generic Letter 87-02, "Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors, Unresolved Safety Issue (USI) A-46," dated February 19, 1987.

2. Generic Letter 88-20, Supplement 4, Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities - 10 CFR 50.54(f), dated June 28, 1991.

3. NUREG-1407, "Procedural and Submittal Guidance for the Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities", June 1991.

4. John A. Blume & Associates, Engineers, "Kewaunee Nuclear Power Plant -Earthquake Analysis of the Reactor - Auxiliary - Turbine Building," JAB-PS-01, February 1971.

5. Letter from SA Varga (NRC) to CW Giesler (WPSC) dated September 11, 1984

6. Letter from JJ Harrison (NRC) to DC Hintz (WPSC) dated April 22, 1987

APPENDIX A

QUALITY ASSURANCE PROGRAM DESIGN

The following describes the hierarchical system used by Wisconsin Public Service Corporation's (WPSC) Kewaunee Nuclear Power Plant (KNPP) to implement 10 CFR 50 Appendix B.

FIRST LEVEL

1.0 **Operational Quality Assnrance Program (OQAP)** - is the overall framework that establishes the general requirements for meeting the required elements of 10 CFR 50 Appendix B as applied to KNPP. Included in this program are the following sections:

Quality Assurance Program - OQAP Section No. 1, Revision 20 dated 7/26/96 - This section describes the overall framework of the Wisconsin Public Service Corporation OQAP for Kewaunee Nuclear Power Plant, and establishes general requirements for evaluating the status and adequacy of the program, provides for application of the program to safety-related items, activities affecting safety-related items, and describes other related programs and licensing commitments.

Organization - OQAP Section No. 2, Revision 22 dated 7/26/96 - Establishes lines of responsibility for implementation of the program.

Administrative Controls - OQAP Section No. 3, Revision 20 dated 7/26/96 - Establishes the requirements and responsibility for providing the administrative control of the program.

Design Control - OQAP Section 4, Revision 13 dated 7/26/96 - Establishes the requirements and responsibility for controlling design activities for the operational phase of KNPP.

Document Control - OQAP Section 5, Revision 11 dated 7/26/96 - Establishes the requirements and responsibility for general, technical, manual, and procedural documents and the control of computer software.

Procurement Control - OQAP Section 6, Revision 17 dated 7/26/96 - Establishes requirements and responsibility for control of procurement activities.

Material Control - OQAP Section 7, Revision 11 dated 7/26/96 - Establishes requirements and responsibility for the identification and control of materials and equipment, including receiving, handling, packaging, storing, shipping and issuing materials.

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Maintenance Planning and Control - OQAP Section No. 8, Revision 12 dated 7/26/96 - Establishes requirements and responsibility for planning and control of maintenance activities, including the installation activities associated with changes to the physical configuration of plant systems, structures and components.

Modification Planning and Control - OQAP Section No. 9, Revision 12 dated 7/26/96 - Establishes requirements and responsibility for control of plant physical changes to safety - related systems, structures and components.

Calibration Control - OQAP Section 10, Revision 10 dated 7/26/96 - Establishes the requirements and responsibility to assure that tools, gages, instruments and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated and adjusted at specified periods to maintain accuracy within necessary limits.

Nonconformances and Corrective Action - OQAP Section 11, Revision 16 dated 7/26/96 - Establishes the requirements and responsibilities for the control of material, parts and components which do not conform to specified requirements as well as ensuring that conditions adverse to quality are promptly identified and corrected.

Plant Procedures - OQAP Section 12, Revision 11 dated 7/26/96 - Establishes the requirements and responsibilities for procedures to be used in the operation, test and maintenance activities.

Training and Qualifications - OQAP Section 13, Revision 14 dated 7/26/96 - Establishes the requirements and responsibilities for indoctrination and training of personnel performing activities affecting quality to assure suitable proficiency is achieved and maintained.

Audits and Independent Technical Reviews - OQAP Section 14, Revision 15 dated 7/26/96 - Establishes the requirements and responsibilities for a comprehensive system of planned and periodic audits to verify compliance and effectiveness with all aspects of the OQAP. This section also establishes the requirements and responsibilities for an independent technical review program to evaluate the technical adequacy of ongoing safety-related activities affecting the operation of KNPP. This section establishes the requirements and responsibilities for the on-site (Plant Operations Review Committee - [PORC]) and the off-site (Nuclear Safety Review and Audit Committee [NSRAC]) activities.

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Records Management - OQAP Section 15, Revision 12 dated 7/26/96 - Establishes the requirements and responsibilities for management of quality assurance records.

2.0 **Operational Quality Assurance Program Description (OQAPD)** - is the docketed document that provides the summary of the OQAP. This document also specifies the exceptions, interpretations, and qualifications applied to the various standards described or committed to in the OQAP.

SECOND LEVEL

1.0 **Nuclear Administrative Directives (NAD)** - are prepared when necessary to govern Nuclear department related activities affecting quality, such as design changes, procurement, licensing, training, document control, operation, procedure control, material control, maintenance, and other related activities. The NAD's are the top level procedural guidance from which plant procedures are developed. These procedures are prepared using the guidance of NAD number 12.x series of directives. The following are the plant procedures groups that implement the NAD's and are described as follows 1) Title, 2) Directive number, 3) Revision and date, and 5) a short description of the procedure content:

- General Nuclear Procedures (GNP) - NAD 12.1 Rev. C dated 12/12/95 - A group of procedures which describe methods used in the implementation of specific tasks which are applicable to several (more than one) Nuclear Power Production groups.

- Surveillance Procedures (SP) - NAD 12.2 Rev D dated 4/30/96 - Procedures written to control the performance and documentation of a regulatory or a Technical Specification (TSpec) required surveillance, check, test, calibration, or inspection.

- Operating Procedures (OP) - NAD 12.3, Rev. B dated 9/3/96 - Step by step detailed document describing how to operate a particular system or the entire plant during some evolution such as startup, normal operations, shutdown, abnormal operation, and emergency operation.

- Special Plant Procedures - NAD 12.4, Rev. A dated 4/4/95 - Detailed procedures for activities of a significantly complex nature that are done infrequently enough not to require a normal plant procedure (ie., SP, PMP, ICP, etc.). These procedures are broken into two groups known as Special Operating Procedures (SOP) and Special Test Procedures (STP).

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- Operating Instructions - NAD 12.6, Rev. A dated 8/1/95 - Instructions issued to operating personnel which are of a general and continuing applicability.

- Reactor Test Procedures (RXT) - NAD 12.10, Rev. B dated 5/18/95 - A series of tests that may be required for post refueling startup testing. Other related tests performed between refuelings are also included. RXT's are divided into the following groups;

  1) Initial Criticality;
  2) Low Power Physics Tests; and
  3) Power Operation Tests.

- Reactor Engineering Procedures (RE) - NAD 12.11, Rev. A dated 7/21/94 - Step by step document describing methods used in the implementation of specific tasks within the Reactor Engineering group.

- Refueling Procedures (RE) - NAD 12.12, Rev. Orig. dated 8/24/93 - Procedures written to control the performance and documentation of activities related to reactor vessel disassembly/reassembly and fuel movement.

- Maintenance Procedures NAD 12.13, Rev. A dated 9/5/96 - Documents describing how and when preventive and corrective maintenance actions are to be done on mechanical and electrical components and equipment in the plant systems. These procedures are broken into three groups as follows;

  1) Preventive Maintenance Procedures (PMP);
  2) Corrective Maintenance Procedures (CMP); and
  3) General Maintenance Procedures (GMP).

- Radiation Protection and Chemistry Group Procedures - NAD 12.14, Rev. B dated 3/26/96 - Two groups of procedures written to describe and/or provide guidance for various radiation protection and chemistry related tasks. These two groups are broken into subgroups as follows;

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Radiation Protection

1) Health Physics Procedures (HP);
2) Computerized Dosimetry Management Procedure (HP-CDM); and
3) Health Physics Forms (HPF).

Chemistry

1) Radiochemistry Procedure (RC-C) and
2) Sewage Treatment Procedure (RC-ST).

- Instrument and Control Department Procedures - NAD 12.15, Rev. D dated 5/28/96 - Documents describing how and when preventive and corrective maintenance actions are to be done on Instrumentation and Control components and equipment in the plant systems. These procedures are broken into three groups as follows;

    1) Instrument and Control Procedure (ICP) - Control tasks performed on a periodic basis;
    2) General Instrument Procedure (GIP) - Control tasks common to many specific activities ie., venting a transmitter; and
    3) Corrective/Repair Procedure (CRP) - Control of a task written to support a Work Request that is not described by an existing department procedure.

- Quality Programs Department Procedures (QP) - NAD 12.18, Rev.C dated 4/18/95 - Documents which establish the responsibilities and requirements for the performance of activities conducted by the Quality Programs Department to implement the OQAP through surveillances, inspections and audits/assessments.

- Fire Plan Procedures (FPP) - NAD 12.19, Rev. B dated 2/13/96 - Written procedures that describe and direct the implementation of fire protection practices required by the Fire Plan.

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- Emergency Plan Implementing Procedures (EPIP) - NAD 12.20, Rev. C dated 1/7/97 - A series of procedures, appendices and forms that implement the emergency response for KNPP. These EPIP's are separated into the following groups or appendices;

    1) Administrative (AD);
    2) Environmental Group (ENV);
    3) Emergency Operating Facility (EOF);
    4) Radiation Emergency Team (RET);
    5) Operational Support Facility (OSF);
    6) Security (SEC);
    7) Technical Support Center (TSC);
    8) Appendix A; and
    9) Appendix B.

- Nuclear Engineering Procedures (NEP) - NAD 12.21, Rev. A dated 12/19/95 - Procedures that apply to the Engineering and Technical Support Group (E&TS) which are of a significantly complex nature to necessitate written guidance not already provided for. These procedures are provided in two groups as follows;

    1) General - procedures for E&TS that do not physically affect the plant structures, systems or components; and
    2) Plant - procedures for E&TS activities that physically affect plant structures, systems and components.

- Physical Change Procedures - NAD 12.22, Rev. A dated 4/30/96 - Work procedures which direct a change in the physical plant and causes a system, structure or component to differ from the current design document for that item. These directives apply to plant physical changes defined as Physical Change (DC) and Plant Modification (PM) in NAD 4.3, "Plant Physical Change".

- Nuclear Computer Systems Procedures - NAD 12.24, Rev. Orig. dated 7/5/94 - Plant Computer Procedure (PCG) are a series of procedures that test and / or verify computer system hardware/software functionality.

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- Security Procedures - NAD 12.25, Rev. A dated 5/28/96 - Written procedures that describe and direct the implementation of security practices required by the Security Plan. These procedures are divided into the following;

    1) Security Implementing Procedure (SIP); and
    2) Security Contingency Procedure (SCP).

- Preparation and Control of Nuclear Training Procedures (NTP) - NAD 12.26, Rev. Orig. dated 11/21/95 - Procedures that provide a description of training requirements for analysis, design, development, implementation, evaluation, and administration of nuclear training.

- Infrequently Performed Tests and Evolutions (IPTE) - Applicable to any plant procedure that has a potential to significantly degrade the plant's margin of safety which:

    1) Requires development of a procedure; as a minimum, this includes Special Test, Special Operating and Design Change Procedures,

    or

    2) Is covered by an existing procedure which is typically performed every refueling or less often

    and

    3) Is of a complexity such that it meets one of the following;

    - Could result in a performer losing familiarity with the procedure's objective due to frequency of performance,

    or

    - Requires significant coordinated efforts of personnel from different departments, beyond that which is considered routine,

    or

- Requires placing Engineered Safeguards equipment in a configuration other than for which it was designed.

2.0 **Fuel Management Directives (FMD)** - are prepared to govern Fuel Services Group or other groups under their cognizance, activities affecting quality, such as fuel procurement, core performance analysis, core design, etc. The FMD's are the top level procedural guidance from which fuel management procedures are developed.

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

The Technical Staff and Management Training Program, T-TSM-TP, Rev H, is accredited by the National Academy of Nuclear Training. The training program was evaluated during the week of December 11, 1995, by the Institute of Nuclear Power Operations (INPO) for the purpose of renewal of accreditation. The INPO accreditation team conducted the accreditation evaluation using ACAD 91-015, the objectives and criteria for Accreditation of Training in the Nuclear Power Industry. The Kewaunee Nuclear Plant presented its training program for renewal to the National Nuclear Accrediting Board on March 15, 1996. The Board renewed accreditation for Technical Staff and Management Training Program.

The TS&M Training Program (T-TSM-TP) enrolls nearly all of the engineering staff. Management's expectation is that everyone in these organizations completes the initial training, which exceeds the requirements of the INPO guidelines. Initial training covers the following topics: Code of Federal Regulation, USAR, Technical Specifications, OQAP, Procedures, Directives, Drawing Control Program, and Department Organization Familiarization. To complement the initial training program, we also expect that everyone attends a Basic Kewaunee Systems course. The Basic Kewaunee Systems course is approximately 80 hours of instruction not including individual study time and plant systems walkdowns. Engineers, Analysts, and Technicians who perform safety related work receive more advanced training covering applied engineering fundamentals and integrated systems operation.

Position specific training is provided to individuals based on their present and future needs. The topic selection results from discussions with individuals, process owners, managers and Training Development Committee meetings. The majority of training needs are identified through informal discussions between process owners and the Senior Engineering Instructor. These needs are discussed in Training Development Committee Meetings prior to development. The development and implementation of training material uses the systematic approach to training outlined in Kewaunee's Nuclear Training Procedures (NTP-1 through NTP-5) to ensure that the training effectively meets the trainee's needs. In 1996, The TS&M training program facilitated approximately 5,000 contact-hours of training.

Through attendance in position specific training and on-the-job coaching and mentoring, individuals become qualified to perform tasks independently. This qualification process occurs in two steps. The first step provides the skills and knowledge to competently complete task assignments, while the second step provides for independent verification of these abilities. Completion of qualification activities are documented and recorded by the training staff.

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

Training and Qualification completions are documented on matrices. Individual's task qualifications and training matrices provide the staff an up-to-date record of an individual's qualifications. Individuals can quickly determine who has had training and who is qualified to independently perform safety related work.

Process Owners, Group Leaders, and individuals formally (Training Request Form, NAD 13.3) or informally (phone, B-mail, Voicemail) notify the training staff of changes in processes, procedures, and performance associated with engineering tasks. An assessment is then made determining if continuing training is required to maintain an individual's qualifications. Continuing Training also provides training on relevant industry and plant events.

Each training session is evaluated in an effort to determine and improve its effectiveness. Trainees provide fcedback immediately following presentation of material. A sampling of training is evaluated periodically after 6 months to determine retention and usefulness. Supervisors and leaders provide regular fcedback informally and during Training development Committee meetings. The fcedback is utilized by the training department to improve lesson materials and plan for future needs.

Tables 1- 4 identify specific training implemented to support programs and processes addressed in each section. Table 1 outlines training topics that support engineering design and configuration control processes. Table 2 outlines the training topics that support design basis information that are translated into processes. Table 3 outlines training topics that support processes or programs that ensure that SSC Configuration and performance are consistent with the design basis. Table 4 outlines training topics on processes for identification and implementation of corrective actions.

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 1 -- Request (a)

Table 1 outlines training topics that support engineering design and configuration control processes.

Topic/ Process	Training Document
10 CFR 50.59 Changes, Tests, and Experiments	T-TSM-SG 3.1.24 Rev C, 10 CFR 50.59 Safety Evaluation T-TSM-LP 93-50-59C, Rev ORIG, TSM 50.59 Continuing Training
10 CFR 50.7 (c) Maintenance of Records, Making of Reports	T-TSM-SG 1.1.2 Rev. ORIG, USAR
Appendix B to 10 CFR 50, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing	T-TSM-SG 1.1.4, Rev ORIG, WPSC Operational Quality Assurance Program (OQAP)
Plant Physical Change Process	T-TSM-LP 3.1.17, Rev. B, Plant Physical Change Overview T-TSM-QGL, Rev A TS&M Qualification Guidelines Module 3, Job Specific Training Page 4, Section VII, DC, Tasks 1 through 9; Page 10, Section VII, Temp, Tasks 1 through 3.
Plant Security Technical Specifications	T-TSM-LP 3, Rev A, Plant Security T-TSM-SG 1.1.3, Indoctrination to KNPP's Technical Specifications, Rev ORIG T-TSM-QGL, Rev A, Page 5, Section VII, Licensing, Tasks 1 through 9
Electrical Cable Installation and Routing Appendix R	T-TSM-LP 3.1.44, Rev ORIG, Electrical Cable Installation and Routing T-TSM-LP 3.1.13, Rev ORIG, Appendix R Training
Fire Plan	Vendor Training -- KNPP Fire Protection Program Workshop
Drawing Control Process	T-TSM-SG 1.1.17, Rev ORIG Drawing Control and Database Overview

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TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 1 -- Request (a)

Table 1 outlines training topics that support engineering design and configuration control processes.

Topic/ Process	Training Document
Software Configuration Process	T-TSM-LP 3.1.27, Rev ORIG Software Control T-TSM-LP 93.12.14, Rev ORIG, TSM Continuing Training Meeting, December, 1993, NAD 5.23 Software Development and Control; GNP 5.23.1, Software Classification; GNP 5.23.2 Software Work Request; GNP 5.23.3, Software Inventory; GNP 5.23.4, Software Procurement
Reactor Core Design Controls	T-TSM-QGL, Page 10, RE, Tasks 1 through 78
OQAP	T-TSM-SG 1.1.4, Rev ORIG, WPSC Operational Quality Assurance Program (OQAP)
Directives	T-TSM-SG 1.1.5, Rev ORIG, KNPP Implementing Directives
Procedures	T-TSM-SG 1.1.6, Rev ORIG, KNPP Implementing Procedures T-MS-DC-4, Rev B, Procedure Preparation, Use and Revision
Information Systems	T-TSM-SG 3.1.2, Rev ORIG, Power Plant Facilities Information System (PPFIS) T-TSM-LP 94-10-20, Rev ORIG Material Component System (MCS)
Procurement	T-TSM-LP 3.1.18, Rev ORIG Procurement Process

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 1 -- Request (a)

Table 1 outlines training topics that support engineering design and configuration control processes.

Topic/ Process	Training Document
Commitment Tracking	T-TSM-LP 94-07-13, Rev ORIG, TS&M Continuing Training - July 1994; NAD 5.25, Commitment Tracking System; ECP 5.3, Commitment Tracking Procedure; GNP 5.25.2, Changes to NRC Commitments; Commitment Tracking Manuals
USAR	T-TSM-SG 1.1.2, Rev ORIG, USAR - Content Overview T-TSM-LP 95.11.13, Rev ORIG TS&M Continuing Training, November 1995; KNPP USAR

TABLE 2 -- Request (b)

Table 2 outlines the training topics that support design basis information that are translated into processes.

Topic/ Process	Training Document
In-service Inspection/ Testing	Vendor supplied training. Vantage Training Corp. June 14-16, 1994. T-TSM-QGL, Page 6, ISI, Tasks 1 through 6 T-MS-DC-19, Rev A, In-Service Inspection Program IST, Tasks 1 through 5.
SSFI	SSFI Training
Set Point Methodology	Setpoint Methodology - Vendor Training

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 2 -- Request (b)

Table 2 outlines the training topics that support design basis information that are translated into processes.

Topic/ Process	Training Document
Maintenance Department Procedure/Work Control	M-MD-LP 1.1.2, Rev B, Documentation M-MD-LP 1.1.3, Rev E, Procedures M-MD-LP 1.1.4, Rev E, Maintenance Work Request P-PMC-LP 96-07, Rev ORIG, Work Request Processing M-MD-LP 1.1.5, Rev ORIG, Nuclear Grade Equipment Qualification M-MD-LP/LAB 2.3.2, Rev A, Terminations and Splices Three examples of maintenance system lesson plans have been provided to show system technical specification training: M-MD-3.1.2, Rev B, Service Water M-MD-3.1.34, Rev B, Residual Heat Removal M-MD-3.1.35, Rev B, Chemical and Valve Control M-PMC-LP 96-05, Rev ORIG, Probablistic Risk Assessment Overview M-PEC-LP 96-02, Rev ORIG, Design Change Controls

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 3 -- Request (c)

Table 3 outlines training topics that support processes or programs that ensure that SSC Configuration and performance are consistent with the design basis.

Topic/ Proces	Training Document
Probabilistic Risk Assessment	T-TSM-LP 94-02, Rev ORIG Probabilistic Risk Assessment - Maintenance Rule Application T-TSM-LP 3.1.28, Rev A Probabilistic Risk Assessment Overview
Design Basis Database	T-TSM-LP 94.01, Rev ORIG Design Basis Database User's Guide

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TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 3 -- Request (c)

Table 3 outlines training topics that support processes or programs that ensure that SSC Configuration and performance are consistent with the design basis.

Topic/ Proces	Training Document
Equipment Qualification	T-TSM-LP 3.1.30, Rev ORIG EQ-Historical Perspective and Experience
	T-TSM-LP 3.1.31, Rev ORIG EQ-Overview of Environmental Qualification
	T-TSM-LP 3.1.32, Rev ORIG EQ-Elements and Responsibilities
	T-TSM-LP 3.1.33, Rev ORIG EQ-Integration of EQ
	T-TSM-LP 3.1.34, Rev ORIG EQ-Replacement Items
	T-TSM-LP 3.1.35, Rev ORIG EQ-Establishing Qualification
	T-TSM-LP 3.1.36, Rev ORIG EQ-Applicable Regulations and Standards
	T-TSM-LP 3.1.37, Rev ORIG EQ-Special EQ Topics
	T-TSM-LP 3.1.38, Rev ORIG EQ-Non-compliance and Consequences
	T-TSM-LP 3.1.39, Rev ORIG EQ Program and the Role of Maintenance
	T-TSM-LP 3.1.40, Rev ORIG EQ-Quality Assurance
	T-TSM-QGL, Rev A Pages 5 & 6, QA/EQ, Tasks 1 through 7.

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TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 3 -- Request (c)

Table 3 outlines training topics that support processes or programs that ensure that SSC Configuration and performance are consistent with the design basis.

Topic/ Proces	Training Document
Maintaining Plant Systems and Components	T-TSM-QGL, Rev A Page 7, Mnt, Tasks 1 through 8
Pipe Thinning	T-TSM-QGL, Rev A Page 9, Pipe, Tasks 1 through 8
79-14	T-TSM-LP 93.12.14, Rev ORIG TSM Continuing Training Meeting, December, 1993 ECP 4.13, Piping Modifications - Continued Compliance with IEB 79-14 T-TSM-LP 95.11.13, Rev ORIG TS&M Continuing Training, November, 1995; NRC IEB 79-14 Vendor Supplied Training -- See File
Walkdowns	PPFIS Walkdowns

TABLE 4 -- Request (d)

Table 4 outlines training topics on processes for identification and implementation of corrective actions.

Topic/ Process	Training Document
KAP - Kewaunee Assessment Process	T-TSM-LP 3.1.45, Rev ORIG Kewaunee Assessment Process T-TSM-QGL, Rev A Page 5, Eval., Tasks 1 through 6

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 4 -- Request (d)

Table 4 outlines training topics on processes for identification and implementation of corrective actions.

Topic/ Process	Training Document
Root Cause Analysis	T-TSM-LP 3.1.26, Rev ORIG Human Performance Root Cause Analysis T-MS-DC-7, Rev A, Root Cause Analysis
The topic of Root Cause Analysis has been trained using a variety of tools. The various tools are similar in methodology and process. The Management Oversight and Risk Tree (MORT) instructed by EG&G Services, Inc., process involves four (4) parts: 1. Change analysis -- compares a problem situation with a problem-free situation. 2. Energy trace and barrier analysis -- evaluates the concept that uncontrolled energy flows in the absence of adequate barriers causes accidents. 3. MORT Tree analysis -- uses fault tree methodology to analyze specific control factors and management system factors. 4. Positive (success) tree design -- a system for successful operation is comprehensively and logically laid out.	

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

TABLE 4 -- Request (d)

Table 4 outlines training topics on processes for identification and implementation of corrective actions.

Topic/ Process	Training Document
Root Cause Analysis and Corrective Actions course instructed by Failure Prevention, Inc., utilizes an eight (8) objective process: 1. Evidence Collection 2. Failure Mode Identification 3. Failure Scenario Construction 4. Root Cause Identification 5. Identification of Other Susceptible Items 6. Corrective Actions Identification 7. Implementation 8. Monitoring the Performance The Institute of Nuclear Power Operations (INPO), developed their Root Cause Analysis Training Course utilizing proven methods successfully employed in the nuclear industry and Good Practice OE-907, Root Cause Analysis (INPO 90-004). The process includes five (5) steps: 1. Data Collection 2. Event Analysis 3. Corrective Action Determination 4. Discussion of Findings 5. Followings to Determine Effectiveness The course instructs techniques applicable to both human and equipment problems but it focuses on human performance. The course recommends that for in-depth analysis of equipment problems use the techniques of fault tree analysis and MORT. These processes are described in the two previously mentioned courses.	

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TABLE 4 -- Request (d)

Table 4 outlines training topics on processes for identification and implementation of corrective actions.

Topic/ Process	Training Document
Description of Root Cause Analysis: Our current root cause analysis course was developed from the INPO Program. The techniques are applicable to both equipment and human performance problems but focuses on behavior. Root Cause Analysis determines how behavior shapes performance. Behavior is influenced prior to and during a performance. Root Cause Analysis determines the performance behaviors and the factors that influence the performance behaviors. The Root Cause Analysis methodology seeks to answer three (3) questions: 1. What happened? 2. How it occurred (behavior/mechanism)? 3. Why it happened (causes)? The goal of performing a Root Cause Analysis is to determine the causes of an event and corrective actions that will prevent a similar event from happening in the future. Root Cause Analysis utilizes the following techniques: 1. Change analysis 2. Barrier analysis 3. Event and Causal factor charting. 4. Task analysis 5. Interviewing The Root Cause Analysis process suggests the following strategy for conducting the evaluation: 1. Gather available information 2. Become familiar with the work activity 3. Organize information 4. Determine what you do not know and what you need to know 5. Conduct interviews 6. Determine causes of the event 7. Develop corrective action recommendations 8. Document results	

APPENDIX B

TECH STAFF AND MANAGEMENT TRAINING IMPLEMENTATION

<table>
<tr><th colspan="2">TABLE 4 -- Request (d)

Table 4 outlines training topics on processes for identification and implementation of corrective actions.</th></tr>
<tr><th>Topic/ Process</th><th>Training Document</th></tr>
<tr><td>Two example applications of root cause analysis are:
1. LER 95-007-01 TDAFW Pump Failure
2. IR 96-089 CCW Pump 1B Seal Failure

For both events an Event and Causal Factor (E&CF) Chart was developed. The E&CF Chart identifies situational conditions such as secondary events, assumptions, and questions. The E&CF Charts graphically show how barriers, changes, and cause and effect, were involved in the equipment and human performance problems. The format for event and cause factor charting utilized a more simple approach to diagraming. Both examples provided a basis for beneficial changes to prevent future similar inappropriate actions.</td><td></td></tr>
<tr><td>Licensing Reports
50.72, 50.73, 10 CFR 21</td><td>T-TSM-LP 11, Rev C
Licensing Incident Reports (IR), Licensee Event Report System (LER)

T-TSM-QGL, Rev A
Page 5, Licensing, Tasks 1 through 8

T-MS-DC-20, Rev B
Licensing</td></tr>
</table>

APPENDIX C

SSFI PROGRAM DESCRIPTION

PROGRAM OVERVIEW

KNPP's Safety System Functional Inspection (SSFI) Program is conducted in accordance with the SSFI Methodology and Plan. The objective of the program is to assess the operational readiness of plant safety systems by determining if the selected systems have been installed, modified, tested, operated, and maintained in accordance with the design basis of the system. The functional areas included in the inspections and some of the documentation reviewed are listed below:

Functional Areas
- Mechanical design
- Electrical design
- I&C design
- Operations
- Maintenance
- Testing
- Quality Assurance
- Configuration and material condition
- Training and qualifications
- System design changes

Documentation
- Updated Safety Analysis Report
- Project Design Manual
- System/Logic Descriptions
- Plant Drawings
- Equipment Database
- Equipment Nameplate Data
- Vendor Technical Manual
- Equipment/Purchase Specifications
- Material Management System
- QA Records
- Calculations
- Operating License & Technical Specifications
- Historical Equipment Performance Data
- Procedures
- Planning & Scheduling System
- Training Material

PLANT SYSTEMS INSPECTED

The systems were selected for review based on their complexity and importance to safety. The following plant systems have been inspected using the SSFI vertical audit methodology:

PLANT SYSTEMS	DATE INSPECTED
Internal Containment Spray	Sept - Oct, 1988
Instrument Air	Jan - Feb, 1989

APPENDIX C

SSFI PROGRAM DESCRIPTION

PLANT SYSTEMS	DATE INSPECTED
DC and Emergency AC Supply and Distribution	May - Jun, 1989
D/G Control Circuits	Jul - Aug, 1989
Service Water	Jan - Feb, 1990
Component Cooling	Sept - Oct, 1990
4160V/480V Supply and Distribution	Jan - Feb, 1991
Diesel Generator Mechanical/Electrical	Jun - Jul, 1991
Auxiliary Building Special Ventilation and Steam Exclusion and Control Room Air Conditioning	May - Jul, 1992
Shield Building Ventilation	Oct - Dec, 1992
Residual Heat Removal	Oct - Nov, 1993

Additionally, the following plant systems were inspected by NRC staff using a similar audit methodology:

PLANT SYSTEMS	DATE INSPECTED
Electrical Distribution System Functional Inspection (EDSFI)	Mar - May, 1992
Service Water System Operational Performance Inspection (SWSOPI)	Feb, 1994
Auxiliary Feedwater and Residual Heat Removal System Operational Performance Inspection (SOPI)	Jan, 1997

APPENDIX C

SSFI PROGRAM DESCRIPTION

FINDINGS

Findings resulting from the performance of internal SSFI's are documented in Requests for Information (RI). RI's document specific concerns, questions or observations to be evaluated. One RI may contain several concerns, questions and/or observations on a related topic.

Three hundred thirty-two (332) Requests for Information (RI) were generated as a result of KNPP's internal SSFI inspections on the systems listed above. The RIs were prioritized for evaluation. Three hundred (300) of the RIs generated have been evaluated to date, although all have been screened for operability and reportability. Forty-three (43) of the evaluated RIs are open pending closure, or verification of completion, of their recommended corrective actions.

Approximately forty (40) design changes were initiated as a result of internal findings from the KNPP SSFI Program. Most of the design changes were to improve system performance or upgrade system designs to meet current standards. Eight design changes were issued to correct a material condition finding. The effectiveness of the corrective actions is evident by the fact that all but 3 of the 40 modifications are completed. The program generated six Licensee Event Reports concerning conditions outside or potentially outside design basis. All six have been resolved.

SSFI OVERSIGHT AND CONCURRENCE

The NRC has evaluated KNPP's SSFI program during numerous inspections. NRC Inspection Reports 89-001, 89-011, 89-018 and KNPP's SALP 10 Report contain summaries of NRC's findings associated with the SSFI Program. In general, the NRC has concluded that KNPP's SSFI Program was being carried out by well qualified personnel in accordance with established procedures and that resolution of SSFI findings were being addressed in a satisfactory manner, including Plant Management demonstrating aggressive and comprehensive actions in response to significant findings by the SSFI teams.

APPENDIX D

QUALITY PROGRAMS OVERSIGHT

Quality Programs Department Procedures (QP) - NAD 12.18, Rev.C dated 4/18/95 - Documents which establish the responsibilities and requirements for the performance of activities conducted by the Quality Programs Department to implement the OQAP through surveillances, inspections and audits/assessments. The activities required by NAD 14.x series procedures are detailed further as follows:

AUDITS AND SURVEILLANCE - OQAP SECTION 14

Performance of Audits - per Quality Audits - QP 14.5.1, Rev. C dated 6/4/96, the purpose of which is to establish the responsibilities and requirements for planning, performing, and documenting audits of the OQAP and the Plant Technical Specifications, or other programs / processes. This procedure applies to audits performed or directed by the Quality Programs Audit/Assessment Staff, including those individuals who will be performing audits of both on-site and off-site plant activities, vendors, and/or other organizations participating in activities affecting quality.

Performance of Surveillances - per Quality Surveillances QP 14.5.2, Rev. C dated 8/26/96 the purpose of which is to provide a method for planning, performing, and documenting selected Quality Surveillances. These Quality Surveillances augment audits and verify compliance with and evaluate the effectiveness of the OQAP, work request, applicable procedures, other programs/processes, and the plant technical specifications. Quality Surveillances are documented on Quality Surveillances Reports (QSR) and provide a reference to Audit Instructions (AI). When conditions adverse to quality are discovered Quality Assessment Reports (QAR's) or Incident Reports (now replaced by the Kewaunee Assessment Program) are written and forwarded to appropriate levels of management for corrective action. The corrective action process will be discussed later.

Quality Surveillance Reports provide the documented evidence that a surveillance activity has been completed. QSR's are entered into a computerized database and made available to auditing teams to augment the performance aspect of specific audit subjects. These QSR's, reference through the use of AI numbers, are used to associate the surveillance with an internal audit.

Audit Instructions per Control of Audit Instructions - QP 14.5.3, Rev. A dated 8/26/96 are documented instructions, used as a guide, pertaining to the performance of specific audits describing related OQAP section elements, references, industry events, comments, and so forth. AI's are numbered consistent with OQAP sections. As an example, OQAP Section 4 - Design Control AI's are numbered AI - 4.x. or OQAP Section 8 - Maintenance Planning and Control are numbered AI - 8.x.

APPENDIX D

QUALITY PROGRAMS OVERSIGHT

Quality Programs Audit/Assessment Group verifies that Design Control and Configuration Management requirements are incorporated into the appropriate procedures and are being effectively implemented by conducting audits of the applicable processes, activities, and/or programs.

These audits are required by the OQAP and Technical Specifications and are addressed through Directives, Procedures, and Audit Instructions.

NAD 14.5, "Quality Audits", Rev. B, dated 5/28/96, describes the audit requirements, provides definitions, and audit frequencies.

- Purpose - .....verify compliance with and evaluate the effectiveness of the OQAP, implementing directives and procedures and that plant operations conform to the provisions of the Technical Specifications and Operating License.

- Paragraph 5.3.2 - ..... The adequacy of the implementing directives and procedures shall be included.

- Paragraph 5.3.3.3 - Implementing directives, procedures, instructions, etc. shall be reviewed to verify that the provisions of the KNPP Technical Specifications and Operating License are adequately addressed for each line item being audited.

QP 14.5.1, " Quality Audit Performance", Rev. C, dated 6/4/96, establishes the responsibilities and requirements for planning, performing, and documenting audits.

- Paragraph 6.2.2 - .... is being effectively implemented in accordance with the requirements of the OQAP, regulations, Technical Specifications, licensing commitments, and applicable implementing directives and procedures.

- Paragraph 6.2.6 - The audit should include a review of the adequacy of procedures used to perform activities which affect nuclear safety and the level of compliance with procedures. This should include a random review of completed procedures to ensure that temporary changes which altered the intent of the procedures received prior PORC review and approval by the Manager-Kewaunee Plant, that changes which were appropriate to become permanent were so incorporated, and that temporary changes made in accordance with Technical Specification Section No. 6 were documented properly and did not change the intent of the procedure (Reference 3.7).

APPENDIX D

QUALITY PROGRAMS OVERSIGHT

- Paragraph 6.2.6 - Audits should also include a review of randomly selected safety-related procedures to assure the timely revision of procedures. Items such as Technical Specifications Amendments, Plant Physical Changes, new/different work practices, new/different equipment, corrective actions from Kewaunee Assessment Process (KAP) forms, Quality Assessment Reports, etc., may require procedure revisions.

Audit Instruction(s) (AIs) - Documented instructions, used as a guide, pertaining to the performance of specific audits describing related program elements, references, industry events, commitments, etc.

Audit Instructions are used by the auditors as a reference and guide in establishing the audit checklist and in conducting the audits. The AIs are reviewed each time the audit is conducted and are updated as necessary to stay current with the appropriate program.

The following AIs pertain to Design Control and Configuration Management in some manner (directly or indirectly). Those AI's designated "*" have direct interface with "design engineering and configuration control".

	AI 2.2,	"Organization and Review", Rev.A, dated 4/26/96
	AI 3.14,	"Fire Protection Program", Rev. Orig, dated 7/10/95
*	AI 4.1,	"Environmental Qualification Program", Rev. A, dated 5/17/96
*	AI 4.2,	"Physical Change Control", Rev. A, dated 4/04/96
*	AI 4.5,	"Nuclear Fuel Management - Design Control Program", Rev. A, dated 6/07/96
	AI 5.3,	"Document and Drawing Control Programs", Rev. B, dated 4/26/96
	AI 5.5,	"Computer Software Control Program", Rev. Orig, dated 7/10/95
*	AI 6.4,	"Procurement Technical Evaluation Program", Rev. Orig, dated 5/08/96
*	AI 6.5,	"Procurement Control Program", Rev. B, dated 4/04/96
	AI 7.1,	"Material Control Program", Rev. Orig, dated 7/10/95
*	AI 8.1,	"Maintenance Program", Rev. Orig, dated 4/26/96
*	AI 8.4.2,	"Inservice Testing (IST) Program", Rev. A, dated 5/24/96 (Pumps & Valves)
	AI 11.3,	"Corrective Action Programs", Rev. C, dated 5/01/96
	AI 12.1.1,	"Surveillance Procedures Program", Rev. A, dated 12/11/95
	AI 12.3,	"Operations", Rev. A, dated 2/07/96
	AI 12.4,	"Reactor Engineering", Rev. Orig, dated 2/07/96
	AI 13.1,	"Training & Qualifications Programs", Rev. Orig, dated 7/10/95

APPENDIX D

QUALITY PROGRAMS OVERSIGHT

CORRECTIVE ACTION PROCESS - OQAP SECTION 11

Quality Programs Group - OQAP Section 14.0 implemented through NAD 14.5 - Quality Audits provides Quality Auditing and Quality Surveillance activities of all phases of plant operation and maintenance. QAR's are issued as a result of both formal plant internal audits and directly from surveillances performed by the Quality Programs Audit and Process Control groups. Conditions adverse to quality, audit open items, etc., are documented as Quality Assessment Reports (QAR) to which management responds to either the Lead Auditor, in the case of internal audit findings, or the individual who issued the QAR when a QAR is a result of a surveillance finding. QAR's, responses, proposed corrective action, closure of corrective action and verification of corrective actions are tracked in a computer database. QAR's and their corrective actions, resulting from internal audits, are made part of future audit checklists in order to evaluate effectiveness of the corrective action.

Suppliers providing basic components and services for safety-related use are evaluated to ensure that they are capable of meeting the requirements of the procurement documentation in accordance with QAD 6.2, Supplier Qualification. When the provisions of 10 CFR 50 Appendix B apply to the Supplier's Quality Assuance Program, audits or surveillances are performed to provide documented evidence of adequate design and configuration controls.

Upon receipt of purchased items, inspections are performed in acordance with NAD 6.3, "Receiving", to verify conformance of the received items and associated qualification documentation to the approved procurement documentation. When specified in the procurement documents, functional testing of the items may also be performed. The results of the inspections or tests are documented and reviewed to ensure acceptability of the items for use.

These programs incorporate the significant enhancements to the procurement process described in NUMARC 90-13, Nuclear Procurement Program Improvements, as well as improvements described in NRC Generic Letters 89-02, Actions to Improve the Detection of Counterfeit and Fraudulently Marked Products, and 91-05, Licensee Commercial-Grade Procurement and Dedication Programs.

Safety related material control activities are processed through Quality Control Procedures (QCP) or Quality Procedures (QP). Specific procedures are as follows:

- QP 6.3.1, Rev. Org. dated 7/30/96 - (Formally QCP 601) - Receipt Inspection and Documentation Review - This procedure specifies receipt inspection and receiving documentation activities.

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QUALITY PROGRAMS OVERSIGHT

- QCP 602, Rev. B dated 12/6/94 - Material Nonconformances - This QCP is applicable to any item found to be nonconforming during receipt, turn-in, or storage.

- QCP 603, Rev. C dated 12/6/94 - Control of QC Receiving Inspection and Hold Areas - This QCP defines the requirements for the control of the receiving inspection and hold areas.

- QCP 604, Rev. B dated 12/6/94 - Conditional Releases - This procedure defines requirements for Conditional Release Authorization.

Inspection

- Quality Control (QC) personnel are aggressively involved in the daily conduct of maintenance and modification activities as implemented through NAD 8.2, "Work Request". Provisions are included in GNP 8.2.1, "Work Request Processing", for ensuring the involvement of Quality Control personnel in the conduct of the work by requiring a QC review prior to the start of the work activity. During this review, the adequacy of the work scope is evaluated in accordance with established specifications, procedures, instructions and administrative controls. Hold or witness points may be established in the conduct of the work at critical evolutions to verify conformance to specified requirements.