



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555
May 16, 1985

Docket Nos. 50-460
and 50-508

APPLICANT: Washington Public Power Supply System
FACILITY: Washington Nuclear Project (WNP)-1 and WNP-3
SUBJECT: SUMMARY OF APRIL 30, 1985 MEETING ON DESIGN
READINESS REVIEW PROGRAM

On April 30, 1985, the NRC staff met with Washington Public Power Supply System to discuss the Design Readiness Review Program proposed for implementation on WNP-3 beginning July 1985, and on WNP-1 beginning about one year later. The purpose of the program will be to provide a documented basis for the acceptance, by both the Supply System management and the NRC, of the completed design. Meeting attendees are listed by Enclosure 1.

Background

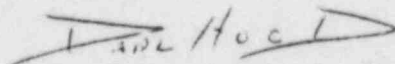
Construction on WNP-3 was suspended indefinitely in July 1983 with construction about 76.5% complete. Construction on WNP-1 was indefinitely suspended in 1982 when about 63% complete. Applications for operating licenses were docketed August 27, 1982, for WNP-3 and July 16, 1982, for WNP-1. Decisions regarding continuation, further delay, or termination of either or both projects are pending at this time. The Supply System's commitment to complete Phase I (defined below) of the Program prior to restart of construction and Program schedules (repeated here as Enclosure 2) are given in their letter of March 20, 1985.

Summary

The Program consists of two distinct phases. Phase I will focus upon the design completed to date and Phase II will cover design from construction restart through construction/licensing completion. Phase I will consist of a baselining effort of the design completion status, and will sample both the process and the product of design, as well as the design/construction interface. Phase II will sample the process design change, the product of the then ongoing design, and the feedback for construction/testing. A report on conclusions will be issued upon completion of each phase (presently estimated about late 1988 for Phase I, and upon completion of construction for Phase II).

Enclosure 3 is the handout used during the Supply System's presentation which provides further description of the two phases of the Program.

This meeting on the design aspects is one of a series of meetings to review the overall Readiness Review Program. The next meeting is scheduled on or about May 22, 1985 at Walnut Creek, California (Region V) to review the overall coordination aspects of the Program, as well as the Presentation Program.

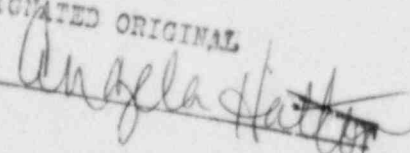


Darl Hood, Project Manager
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Enclosures:
As stated

DESIGNATED ORIGINAL

Certified By



WNP

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Enclosure 1

Readiness Review Meeting
April 30, 1985

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ORGANIZATION

NRR/DL/LB4 (for B.Chief)
NRR/DL/LB3 (Pr. Mgr. WNP-3)
IE/QAB
IE/QAB
Dir. Lic. & Assur. Supply Sys.
Mgr., Const. QA, WPPSS
WNP-3, Pr. Eng.
IE/QAB
NRR/LB3
IE/QAB
WPPSS, Mgr. Eng. Systems

SOURCE: WPPSS LETTER OF MARCH 20, 1985

ENCLOSURE 1
NEAR TERM ACTIVITIES

April 1985

- Meetings

- Preservation Program
- Engineering and Design Review Program Discussion

May 1985

- Meeting - Walnut Creek

Subjects:

- Discussion of Draft Preservation Program
- Initial Draft Engineering and Design Review

June 1985

- Satsop Meeting

- Present Final Preservation Plan

June 1985

- Final Draft - Engineering and Design Review Program Submitted to NRC for Comment

July 1985

- Final Preservation Plan Accepted by NRC

July 1985

- Meeting

Subjects:

- Engineering and Design Program Submitted
- Construction and Records Review Program Discussion

July 1985

- Final Engineering and Design Review Program Accepted by NRC

ENCLOSURE 2
READINESS REVIEW SCHEDULE

Construction and Record Review

There will be approximately 13 review packages in construction and records covering such subjects as:

- Reinforced Concrete
- Containment Building
- Structural Steel
- Mechanical Equipment Installation
- Piping Systems
- Piping Supports
- HVAC
- Cable Installation
- Cable Tray/Conduit Supports
- Instrumentation - Tubing/Supports and Instruments
- Electrical Equipment Installation
- Miscellaneous - NDE, Coatings, Soils and Fasteners
- NSSS

July 1985 - January 1986	-	Planning <ul style="list-style-type: none"> • Develop Sample Selection Criteria • Gather Inspection Criteria • Select Samples
January 1986 - May 1986	-	Assembly of Inspectors Inspections of Samples Begin
May 1986	-	Results of first inspection package submitted to NRC, Region V.
August 1986	-	Results of the second inspection package submitted to NRC, Region V.
Remainder of 1986 & 1987	-	Submittal of review packages at approximately 1-1/2 to 2 month intervals.

Engineering and Design

There will be a series of reviews conducted covering a cross-section of design work that has been accomplished to date.

July 1985	-	First sample selected for design review.
	-	Review Begins
January 1986	-	Results of first review submitted to NRC, Region V.

Each additional package to be submitted to NRC, Region V at three month intervals.

DESIGN READINESS REVIEW
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 3

APRIL 30, 1985

4/30/85

WNP-3 DESIGN READINESS REVIEW
PURPOSE AND GOAL

PURPOSE:

PROVIDE A DOCUMENTED BASIS FOR THE ACCEPTANCE, BY BOTH SUPPLY SYSTEM MANAGEMENT AND THE NRC, OF THE COMPLETED DESIGN OF WNP-3.

GOAL:

PRECLUDE THE NECESSITY FOR INDEPENDENT DESIGN REVIEW AT COMPLETION OF CONSTRUCTION THROUGH:

- (1) NEAR TERM ACCEPTANCE OF DESIGN COMPLETED TO DATE PRIOR TO CONSTRUCTION RESTART,
- (2) FINAL ACCEPTANCE OF COMPLETED DESIGN BASED ON AN ONGOING DESIGN REVIEW PROCESS,

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WNP-3 DESIGN READINESS REVIEW
PROGRAM DESCRIPTION - GENERAL APPROACH

- TWO PHASES
- PHASE I - DESIGN COMPLETED TO DATE
 - BASELINE (DESIGN COMPLETION STATUS)
 - DESIGN PROCESS REVIEW
 - DESIGN PRODUCT REVIEW
 - DESIGN/CONSTRUCTION INTERFACE REVIEW
 - INTERIM REPORT/CONCLUSION
- PHASE II - DESIGN THROUGH COMPLETION
 - DESIGN PROCESS CHANGE REVIEW
 - ONGOING DESIGN PRODUCT REVIEW
 - CONSTRUCTION/TESTING FEEDBACK REVIEW
 - FINAL REPORT/CONCLUSION

WNP-3 DESIGN READINESS REVIEW PHASE I

(JULY 1, 1985, TO RESTART)

- TAKE CREDIT FOR TECHNICAL AUDITS (SUCH AS THE ANSI N45.2 AUDIT) WHICH HAVE BEEN COMPLETED TO CONFIRM INTEGRITY OF DESIGN CONTROL PROCESS. (PREDICATED ON ACCEPTABILITY OF THE ANSI N45.2 AND OTHER AUDITS AS DETERMINED BY THE READINESS REVIEW TEAM.)
- COMPLETE THE SYSTEM DESIGN STATUSING PROGRAM NOW UNDERWAY. THIS ESTABLISHES A BENCHMARK FOR EACH SYSTEM TO IDENTIFY DESIGN WORK COMPLETED TO DATE.
- PERFORM A SERIES OF INDEPENDENT DESIGN REVIEWS FASHIONED AFTER THE CURRENT WNP-1 PEER REVIEW PROGRAM TO SAMPLE THE PRODUCT OF DESIGN PERFORMED TO DATE IN SPECIFIC TOPICAL AREAS TO INCLUDE, BUT NOT BE LIMITED TO, THE ITEMS LISTED ON THE FOLLOWING CHART. THIS PROVIDES CONFIDENCE IN PRODUCT AS STATUSED.
- NRC INVOLVEMENT
 - REVIEW SCOPE OF SELECTED REVIEWS
 - PARTICIPATE ON SELECTED REVIEWS AS DESIRED
 - REVIEW RESULTS, FOLLOWUP ACTION AS DESIRED BY ON-SITE VISITS
 - OPTIONAL ATTENDANCE AT "EXIT" MEETINGS
 - OPTIONAL MONITORING TRACKING/CLOSURE OF FINDINGS
- ESTABLISH ONGOING INDEPENDENT DESIGN REVIEW PROGRAM TO CONTINUE THROUGH SECOND PHASE.

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WNP-3 DESIGN READINESS REVIEW
PHASE I AND PHASE II

INDEPENDENT DESIGN REVIEW TOPICS

- SYSTEMS INTERACTION REVIEWS
 - APPENDIX R
 - CABLE SEPARATION
 - PIPE BREAK/MISSILE
 - EQUIPMENT QUALIFICATION
 - FLOODING
 - SEISMIC DESIGN
 - ISI/MAINTENANCE ACCESS
 - SAFE SHUT DOWN ANALYSIS
 - TESTABILITY REVIEWS
- PIPING/HANGER DESIGN REVIEW
 - PIPING STRESS ANALYSIS
 - HANGER DESIGN
 - AS-BUILT PROGRAM
- SYSTEM DESIGN REVIEW
 - THERMAL HYDRAULIC ANALYSIS
 - FUNCTIONAL ANALYSIS
 - COMPONENT APPLICATION
 - RELIABILITY/MAINTAINABILITY
 - NSSS/BOP INTERFACE
 - MATERIAL APPLICATION

WNP-3 DESIGN READINESS REVIEW
PHASE I AND PHASE II

INDEPENDENT DESIGN REVIEW TOPICS

(CONT'D FROM PREVIOUS PAGE)

- STRUCTURAL DESIGN REVIEW

- SEISMIC DESIGN
- STRUCTURAL ANALYSIS
- ARCHITECTURAL REVIEW
- COMPONENT/STRUCTURE INTERACTION

- MISCELLANEOUS REVIEWS

- INSULATION DESIGN
- REFUELING/MAINTENANCE EQUIPMENT
- SKID MOUNTED EQUIPMENT (I.E., DIESEL GENERATORS)
- INCORPORATION OF INDUSTRY EXPERIENCE INTO THE DESIGN

- SPECIAL REVIEWS BASED ON CONSTRUCTION REVIEW RESULTS

- COMMENCE AS CONSTRUCTION MODULE BEGINS FEEDING BACK
- SCOPE AND DEPTH PER FEEDBACK
- DESIGN REVIEW ELEMENTS INCORPORATED INTO CONSTRUCTION MODULE AS APPROPRIATE

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WNP-3 DESIGN READINESS REVIEW
PHASE I AND PHASE II

INDEPENDENT DESIGN REVIEW PROCESS

- SELECT REVIEW TOPIC
- SELECT STRUCTURE, SYSTEM, OR COMPONENT FOR REVIEW BASED ON TOPIC, COMPLEXIBILITY, AND RESOURCE LIMITATIONS, AS WELL AS FEEDBACK FROM CONSTRUCTION REVIEW AND OTHER DESIGN REVIEWS.
- DETERMINE LATEST "PRODUCT" DOCUMENTS
 - DRAWINGS
 - LISTS (I.E., INSTRUMENT, SETPOINT, ETC.)
 - VENDOR MANUALS
 - DESIGN REPORTS
 - PROCUREMENT/FABRICATION SPECIFICATIONS
 - UNINCORPORATED DESIGN CHANGE DOCUMENTS
- DETERMINE APPLICABLE CRITERIA/INPUT DOCUMENTS
 - LICENSING (SAR, QUESTIONS, POSITIONS, OTHER)
 - DESIGN SPECIFICATIONS
 - CALCULATIONS
 - OTHER DESIGN BASES
 - VENDOR MANUALS
 - INTERFACE DOCUMENTS
 - STANDARDS, GUIDES
 - CODES

WNP-3 DESIGN READINESS REVIEW
PHASE I AND PHASE II

INDEPENDENT DESIGN REVIEW PROCESS

(CONT'D FROM PREVIOUS PAGE)

- PREPARE REVIEW CRITERIA/CHECKLISTS APPROPRIATE TO SUBJECTS SUCH AS:
 - APPLICABLE CRITERIA INCORPORATED?
 - CORRECT DESIGN INPUT?
 - VALID ANALYTICAL MODELS?
 - AS-BUILT FEEDBACK?
 - DESIGN CHANGE CONTROL WORKING?
 - EQUIPMENT CLASSIFICATION ADDRESSED PROPERLY?
 - DESIGN DATA INTERFACE WORKING?
 - SYSTEM INTERACTION CONSIDERED?
 - DOCUMENT CONTROL WORKING?
- PERFORM REVIEW
 - SCHEDULE
 - REVIEW TEAM SELECTION
 - NOTIFY AE/NSSS
 - PRE-REVIEW/POST-REVIEW MEETINGS
- DOCUMENT FINDINGS
- MANAGEMENT REVIEW, ANALYSIS
- FOLLOWUP ACTION/TRACKING
 - NCRs
 - QFRs
 - DIRECTIVES
 - COMMITMENT TRACKING
- FEEDBACK TO SUBSEQUENT REVIEWS
- RECORD RETENTION

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WNP-3 DESIGN READINESS REVIEW
SUPPLY SYSTEM AND NRC BUYOFF OF DESIGN DONE TO DATE -
INITIAL PHASE RESULTS

- SYSTEM STATUS DEFINES BASELINE - DESIGN PERFORMED TO DATE
- TECHNICAL AUDITS OF PROCESS TO ASSURE DESIGN PROCESS INTEGRITY
- INDEPENDENT DESIGN REVIEWS TO ASSURE DESIGN PRODUCT INTEGRITY
- CONSTRUCTION BUYOFF PROGRAM:

INCLUDES ASSURANCE OF DESIGN/CONSTRUCTION INTERFACE, FURTHER
ASSURANCE OF DESIGN PRODUCT.
- INTERIM REPORT PROVIDING BASIS FOR ACCEPTANCE, BY BOTH SUPPLY
SYSTEM MANAGEMENT AND THE NRC, OF THE DESIGN COMPLETED TO DATE.

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WNP-3 DESIGN READINESS REVIEW
PHASE II

(RESTART TO FUEL LOAD)

- ONGOING INDEPENDENT DESIGN REVIEWS
- ONGOING FEEDBACK FROM CONSTRUCTION REVIEW
- PREOPERATIONAL TESTING RESULTS REVIEW
- TRACKING AND CLOSEOUT OF OPEN ITEMS
- ONGOING INVOLVEMENT OF NRC
- FINAL REPORT PROVIDING BASIS FOR ACCEPTANCE, BY BOTH SUPPLY SYSTEM MANAGEMENT AND THE NRC, OF THE DESIGN COMPLETED TO DATE.

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WNP-3 DESIGN READINESS REVIEW
PHASE I AND PHASE II

DESIGN REVIEW PARTICIPANT REQUIREMENTS

- SUPPLY SYSTEM AE, NSSS, OR CONSULTANT PERSONNEL PERFORMING REVIEWS NOT INVOLVED IN ORIGINAL DESIGN EFFORT FOR TOPIC BEING ADDRESSED*.
- MANAGEMENT REVIEW/FOLLOWUP ACTIONS INVOLVE CORPORATE SENIOR MANAGEMENT.
- REVIEW TEAM PERSONNEL QUALIFIED BY TRAINING/EXPERIENCE TO PERFORM ORIGINAL DESIGN; REPORT AS TEAM MEMBERS TO TEAM LEADER.
- REVIEW TEAM LEADER SUPPLY SYSTEM EMPLOYEE EXPERIENCED/QUALIFIED IN CONDUCTING SIMILAR REVIEW EFFORTS, FUNCTIONS INDEPENDENTLY FROM PROJECT/AE/NSSS MANAGEMENT; REPORTS AS TEAM LEADER TO CORPORATE MANAGEMENT.

*DEVELOP CRITERIA FOR DESIGN REVIEW TASK ASSIGNMENTS TO OBTAIN NECESSARY OBJECTIVITY, ESPECIALLY WHEN USING AE OR NSSS PERSONNEL.

ADVANTAGES OF THE WNP-3 DESIGN
READINESS REVIEW PROGRAM
JUST DESCRIBED

VS.

AN ELEVENTH HOUR INDEPENDENT DESIGN REVIEW

- PROBLEM IDENTIFICATION/RESOLUTION
 - MID-COURSE ADJUSTMENTS
 - EARLY IDENTIFICATION SIMPLIFIES RESOLUTION
- RESOURCE ALLOCATION
 - EASE OF DRAWING ON BROAD SPECTRUM OF INHOUSE EXPERTISE FOR RELATIVELY BRIEF ASSIGNMENTS
 - MINIMIZATION OF NEED FOR OUTSIDE RESOURCES
 - COMPATIBILITY WITH SUPPLY SYSTEM/NRC SCHEDULES, PRIORITIES
- SAMPLE SELECTION
 - FREEDOM TO SELECT REVIEW SAMPLES MOST SUITABLE TO TOPIC, PHASE OF DESIGN
 - MORE FLEXIBILITY TO ZERO IN ON PROBLEM AREAS/SYSTEMS
- RETENTION OF KNOWLEDGE/EXPERIENCE
 - LIMITED OUTSIDE RESOURCES
 - PROPER APPLICATION OF RESPONSIBLE ENGINEERS

ADVANTAGES OF THE WNP-3 DESIGN
READINESS REVIEW PROGRAM
JUST DESCRIBED

VS.

AN ELEVENTH HOUR INDEPENDENT DESIGN REVIEW

(CONT'D FROM PREVIOUS PAGE)

- CONTINUITY OF PROGRAM, PHASE I TO PHASE II
- FLEXIBILITY FOR NRC INVOLVEMENT
 - NRC OPTION/INITIATIVE
 - SMALLER SCALE EFFORT OVER TIME
- SUPPLY SYSTEM EXPERIENCE WITH THIS TYPE OF PROGRAM
 - WNP-1 ASME PEER REVIEW PROGRAM IN SUPPORT OF ASME N-CERTIFICATE QA PROGRAM
 - THREE YEARS RUNNING
 - COMBINE SUPPLY SYSTEM EXPERIENCE WITH WNP-2 DESIGN REVERIFICATION PROGRAM

MEETING SUMMARY DISTRIBUTION

Docket No(s): 50-460 & 50-508

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Local PDR

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