SEP 19 1985

DC 016

MEMORANDUM FOR: R. Wayne Houston, Assistant Director for Reactor Safety, DSI

FROM: Jack Kudrick, Acting Chief, Containment Systems Branch, DSI

SUBJECT: WNP-3 DRAFT SAFETY EVALUATION REPORT

The Containment Systems Branch has completed its review of pertinent sections of the Draft Safety Evaluation Report for WNP-3. We recommend concurrence in the report.

A marked up copy of p. 6-19 of the DSER is attached, which notes a typographical error.

/s/

Jack Kudrick, Acting Chief
Containment Systems Branch
Division of Systems Integration

Enclosure:
As stated

cc: B. K. Singh

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09/16/85	09/17/85	09/18/85

XA

2pp.

50-508

C. Y. Li / CSB.

5. The applicant should justify that the containment isolation setpoint pressure is the minimum value compatible with normal operating conditions.

6. The applicant should commit to seal close the 48-inch purge valves during operating modes requiring containment integrity.

6.2.5 Combustible Gas Control System

Following a LOCA, hydrogen may accumulate within the containment as a result of: 1) hydrogen dissolved in reactor coolant system; 2) metal-water reaction between the zirconium fuel cladding and the reactor coolant; 3) corrosion of metals by emergency core coolant and containment spray solutions; and 4) radiolytic decomposition of the post-accident emergency cooling water. The applicant has provided a combustible gas control system (CGCS) to monitor and control the hydrogen concentration in containment following a LOCA. The CGCS includes the containment hydrogen analyzers, the containment hydrogen recombiners, and the containment hydrogen purge system.

The hydrogen analyzer system consists of two redundant subsystems, each of which can take samples from six locations within containment and one location in the shield building annulus. The hydrogen recombiner system consists of two stationary 100% capacity thermal (electrical) recombiners located within the containment. Both the hydrogen analyzer system and the hydrogen recombiner system are designed to Safety Class 2 and Seismic Category I standards, and are powered from Class IE power sources. The recombiner will be started manually from the control room by the operator upon indication of a hydrogen concentration of greater than 3.0 volume percent.

Each of the two Westinghouse electric hydrogen recombiners is capable of processing 100 scfm of containment atmosphere for post-accident hydrogen control. The staff has reviewed tests that were conducted for a full-scale prototype and a production recombiner. The tests consisted of proof-of-principle testing, testing on a prototype recombiner, environmental qualification testing, and functional tests for a production recombiner. (These tests are described in WCAP-7820 and its supplements.) The results of these tests demonstrate that the recombiner is capable of controlling the hydrogen in a post-LOCA containment environment.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CF

SEP 19 1985

MEMORANDUM FOR: Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

FROM: Dennis L. Ziemann, Acting Deputy Director
Division of Human Factors Safety

SUBJECT: WASHINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECT NO. 3 (WNP-3) DRAFT SAFETY EVALUATION REPORT

The Division of Human Factors Safety (DHFS) has reviewed the Draft Safety Evaluation Report for WNP-3 as requested in your memorandum dated September 4, 1985. Our comments on this draft, cover Sections 13.2 (Training), 14. (Initial Test Program) and 18. (Human Factors Engineering). DHFS has not provided any comments on Sections 13.1, 13.4 and 13.5, since we have not provided any input to the draft SER for these sections.

1. Section 13.2
Delete the request for additional information, Questions 630.1, 630.2, 630.3, 630.4, 630.5, 630.6, 630.7, 630.8, 630.9, and 630.10. These questions were sent to the applicant in March 1983, and our Draft SER to you dated November 17, 1983, was based on the applicants responses to these questions.

2. Section 18.
The comments on this section are shown in the marked up enclosure of this section.

If you have any questions on this input to you, please call Frederick R. Allenspach at x24904.

Dennis L. Ziemann

Dennis L. Ziemann, Acting Deputy Director
Division of Human Factors Safety

Enclosure:
As stated

cc: G. Knighton
B. Singh

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600.

50-397

HFEB
Do you have any other sections of FSAR? If so pls get them from LQB (Probably Crocker)

18 HUMAN FACTORS ENGINEERING

Position

Licensees and applicants for operating licenses shall conduct a Detailed Control Room Design Review (DCRDR). The objective is to "improve the ability of nuclear power plant control room operators to prevent accidents or cope with accidents if the occur by improving the information provided to them" (NUREG-0660, Item I.D). The need to conduct a DCRDR was confirmed in NUREG-0737 and Supplement 1 to NUREG-0737. DCRDR requirements in Supplement 1 to NUREG-0737 replaced those in earlier documents. Supplement 1 to NUREG-0737 requires each applicant or licensee to conduct a DCRDR on a schedule negotiated with the Nuclear Regulatory Commission (NRC).

NUREG-0700 describes four phases of the DCRDR and provides applicants and licensees with guidelines for its conduct.

The phases are

(1) planning
(2) review
(3) assessment and implementation
(4) reporting

Criteria for evaluating each phase are contained in ~~NUREG-0801~~ Appendix A to Standard Review Plan (SRP), Section 18.1 of NUREG-0800.

A Program Plan is to be submitted within two months of the start of the DCRDR. Consistent with the requirements of Supplement 1 to NUREG-0737, the Program Plan shall describe how the following elements of the DCRDR will be accomplished:

(1) Establishment of a qualified multidisciplinary review team.

(2) Function and task analyses to identify control room operator tasks and information and control requirements during emergency operations.

(3) A comparison of display and control requirements with a control room inventory.

(4) A control room survey to identify deviations from accepted human factors principles.

(5) Assessment of human engineering discrepancies (HEDs) to determine which HEDs are significant and should be corrected.

(6) Selection of design improvements.

(7) Verification that selected design improvements will provide the necessary correction.

(8) Verification that improvements will not introduce new HEDs.

(9) Coordination of control room improvements with changes from other programs such as SPDS, operator training, Reg. Guide 1.97 instrumentation and upgraded emergency operating procedures.

A human factors evaluation of the design of the remote shutdown capability provided to meet 10 CFR Part 50, Appendix A, GDC-19 and 10 CFR Part 50, Appendix R, is not specifically identified as a requirement in Supplement 1 to NUREG-0737. The Committee to Review Generic Requirements is currently reviewing this issue to determine if further clarification is necessary. In the interim, we recommend that the scope of the DCRDR include a human factors evaluation of the design of the remote shutdown capability. To the extent practical, without delaying completion of the DCRDR, it should address any control room modifications and additions (such as controls and displays for inadequate core cooling and reactor system vents) made or planned as a result of other post-TMI actions and the lessons learned from operating reactor events such as the Salem ATWS events. Generic implications of the Salem ATWS events

are discussed in NUREG-1000 and required actions are described in Section 1.2, Post-Trip Review - Data and Information Capability, of the enclosure to Generic Letter 83-28.

A Summary Report is to be submitted at the end of the DCRDR. As a minimum it shall

(1) outline proposed control room changes

(2) outline proposed schedules for implementation

(3) provide summary justification for HEDs with safety significance to be left uncorrected or partially corrected

The NRC will evaluate the organization, process, and results of the DCRDR. Evaluation will include review of required documentation (Program Plan and Summary Report) and may also include reviews of additional documentation, briefings, discussions, and on-site audits. In-progress audits may be conducted after submission of the Program Plan but prior to submission of the Summary Report. Pre-implementation audits may be conducted after submission of the Summary Report. Evaluation will be in accordance with the requirements of Supplement 1 to NUREG-0737. Additional guidance for the evaluation is provided by NUREG-0700 and NUREG-~~0801~~. Results of the NRC evaluation of a DCRDR will be documented in a Safety Evaluation Report (SER) or SER Supplement.

0800 Appendix A to SRP Section 18.1

NUREG-0737 Supplement 1 also requires that each operating reactor be provided with a safety parameter display system (SPDS) that is located convenient to the control room operators. This system will continuously display information from which the plant safety status can be readily and reliably assessed. The principal purpose and function of the SPDS is to aid the control room personnel during abnormal and emergency conditions in determining the safety status of the plant and in assessing whether abnormal conditions warrant corrective action by operators to avoid a degraded core. A written SPDS safety analysis shall be prepared describing the basis on which the selected parameters are sufficient to assess the safety status of each identified function for a wide range of events, which include symptoms of severe accidents. The applicant's

safety analysis and SPDS implementation plan will be reviewed by the NRC staff to confirm: (1) the adequacy of the parameters selected to be displayed to detect critical safety functions; (2) that means are provided to assure that the data displayed are valid; (3) the adequacy of the design and installation of the system from a human factors perspective; and, (4) the adequacy of the verification and validation (V&V) program to assure a highly reliable SPDS.

Status

As requested by Generic Letter 82-33, in its letter of April 14, 1983, the Washington Public Power Supply System (Supply System) submitted a proposed schedule for activities required by Supplement 1 to NUREG-0737. By letter dated July 12, 1983, the Supply System submitted its "Control Room Design Review Program Plan for WPPSS Nuclear Project 3." The staff ~~is completing~~ its review of the Program Plan ~~and will forward its comments to the Supply System in the near future.~~

did not complete

A The Staff ~~will~~ review will be resumed ~~initiated~~ when the project is reactivated.

REFERENCES

1. NUREG-0660, Volume 1, May 1980; NRC Action Plan Developed as a Result of the TMI-2 Accident.

2. NUREG-0737, November 1980: Clarification of TMI Action Plan Requirements.

3. Supplement 1 to NUREG-0737, December 1982; Requirements for Emergency Response Capability (Generic Letter 82-33).

4. NUREG-0700, September 1981; Guidelines for Control Room Design Reviews.

5. Letter to G. W. Knighton, NRC, from G. D. Bouchey, Washington Public Power Supply System, Subject: Nuclear Project 3 Response to Generic Letter No. 82-33 Requirements for Emergency Response Capability, dated April 14, 1983.

6. Letter to G. W. Knighton, NRC, from G. D. Bouchey, Washington Public Power Supply System, Subject: Nuclear Project 3 Control Room Design Review Program Plan, dated July 12, 1983.