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AUTH.NAME AUTHOR AFFILIATION
TUCKER,H.B. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director
STOLZ,J.F. Operating Reactors Branch 4

SUBJECT: Forwards Rev 4 to util response to NUREG-0737,Suppl 1, including control room review implementation priority schedule.

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DUKE POWER COMPANY
P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

March 23, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. J. F. Stolz, Chief
Operating Reactors Branch No. 4

Subject: Duke Power Company
Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Mr. Denton:

Attached are five copies of Revision 4 to the Duke Power Company Response to Supplement 1 to NUREG-0737 for Oconee Nuclear Station. This document was originally submitted as an enclosure to my letter of April 14, 1983.

In accordance with the previously submitted schedule for Oconee Nuclear Station, the attachment includes the Control Room Review Implementation Priority Schedule for Oconee Units 1, 2, and 3.

Instructions for inserting Revision 4 into the Oconee document are included as part of the attachment.

Very truly yours,

H. B. Tucker

Hal B. Tucker

JSW:scs

cc: Mr. J. P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 2900
Atlanta, Georgia 30303

Mr. J. C. Bryant
NRC Resident Inspector
Oconee Nuclear Station

Mr. J. F. Suermann, Project Manager
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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DUKE POWER COMPANY
OCONEE NUCLEAR STATION

Response to Supplement 1 To NUREG-0737
Document Revision Transmittal

Revision Number 4

Instructions

Revise Volume 1 as Described Below:

Remove Page 2-6, Revision 1	Insert Page 2-6, Revision 4
Remove Control Room Review Supplemental Report Units 1, 2, and 3 (Tab 3.4) Page 7	Insert Control Room Review Supplemental Report Units 1, 2, and 3 (Tab 3.4) Page 7, Revision 4 and Page 8, Revision 4
	Insert Control Room Review Supplemental Report Units 1, 2, and 3 (Tab 3.4) Appendix D Page D-1, Revision 4

Revise Volume 2 as Described Below:

Remove Page 4-12, Revision 3	Insert Page 4-12, Revision 4
Remove Page 4-13, Revision 3	Insert Page 4-13, Revision 4
Remove Page 4-22, Revision 3	Insert Page 4-22, Revision 4

PROPOSED SCHEDULE FOR SUPPLEMENT 1 TO NUREG-0737 PROVISIONS - OCONEE NUCLEAR STATION

Milestone Activity	Completion Date
CRR	
o Steering Committee Formed	October, 1981
o Program Concept	January, 1982
o Review Team Selected	February, 1982
o Final Draft of Review Plan	May, 1982
o Plan Presentation to NRC	May, 1982
o Bio Technology Hired for Human Factors Assistance	June, 1982
o Mockup Space Rented and Construction Began	July, 1982
o Review Phase Activities	June, 1983
o Assessment of HED's	November, 1983
o SUMMARY REPORT	MARCH, 1984*
o IMPLEMENTATION SCHEDULE	SEE APPENDIX D OF THE CRR SUPPLEMENTAL REPORT (TAB 3.4)*
SPDS	
o Initial Design Basis & SPDS Approved	May, 1982
o Initial Design	November, 1982
o Revised SPDS Design and V&V	April, 1984
o SPDS Safety Analysis	February, 1984
o SPDS Training	October, 1984
o SPDS OPERATIONAL, UNIT 1	JANUARY, 1985* & **
o SPDS OPERATIONAL, UNIT 2	JULY, 1985* & **
o SPDS OPERATIONAL, UNIT 3	NOVEMBER, 1984* & **

* Indicates proposed commitment date
** Indicates estimated date - based upon completion of scheduled refueling outage.

4.0 Implementation Schedule

An implementation schedule was developed after an extensive review of the HED solutions recommended for implementation. Following the requirements of Supplement 1 to NUREG-0737, this review carefully considered the significance of each HED, including the contribution of the HED solution to the reduction of risk and enhancement in the safety of operation, the difficulty of installing the HED solutions, the need for rewriting operating procedures and retraining of operators, and the coordination of HED solution changes with changes resulting from other post TMI improvement programs such as the SPDS, operator training, new instrumentation from Reg. Guide 1.97, Rev. 2, and upgraded emergency procedures.

The integration of the changes resulting from each of the NUREG-0737, Supplement 1 improvement efforts, as well as, the scheduling and coordination of individual HED solution changes is a complex and demanding scheduling effort which requires cognizance of the inter-relationships between each of the improvement areas, operator training requirements, and the plant status required for the implementation of each change.

The Duke Control Room Review Team, comprised of engineering personnel, Senior Reactor Operators from each of the three Duke nuclear stations and human factors specialists, carefully assessed the significance of each HED, developed HED solutions, and determined the implementation priority of recommended solutions. The schedule was developed following a policy of scheduling the completion of the more significant HEDs first, consistent with the practical constraints of installation such as design/installation time, material procurement, and the coordination with training and procedures. An arbitrary policy of first completing minor changes with little significance was not followed; rather, emphasis was placed on completing the more significant changes first and coordinating all changes with plant operation and Operator training.

Since most HED solutions must be installed during an outage, and since a considerable amount of planning is necessary to complete the design/engineering and material procurement requirements to install the HED solution, as well as to complete the necessary Operator training and procedure changes, planned periodic refueling outages were chosen as implementation milestones. The Duke Control Room Review Team used these outages to establish a detailed schedule for both the installation of HED solutions and the necessary front end work to support the implementation of each solution.

To ensure the (1) proper introduction of changes into the Control Room with adequate time provided for Operator training and procedure modifications, (2) reduction or elimination of impact on plant availability and power generation and (3) the efficient use of company resources, HED solutions were prioritized and assigned to one of four implementation categories:

I. HED solutions to be installed by the end of the first refueling outage

II. HED solutions to be installed by the end of the second refueling outage

III. HED solutions to be installed by the end of the third refueling outage

IV. HED solutions to be installed by the end of the fourth refueling outage.

The necessary design work to support the implementation of HED solutions for each of the above categories is currently in progress. A commitment schedule for the completion of HED solutions is shown in Appendix D.

Oconee Nuclear Station
HED Solution Implementation
Commitment Schedule

Considering the magnitude of the changes required to implement all HED solutions, the complex coordination required for the installation of each HED solution with all NUREG 0737 Supplement 1 activities and the station modifications already scheduled for future outages, a commitment schedule with some degree of flexibility is required. The following commitment schedule summarizes the priority schedules developed by the Duke Control Room Review Team into percentages of the total HEDs to be corrected by the end of each fuel cycle.

UNIT	FUEL CYCLE NUMBER	% HED SOLUTION COMPLETION
Oconee 1	9	30
	10	30
	11	20
	12	20
Oconee 2	8	30
	9	30
	10	20
	11	20
Oconee 3	8	30
	9	30
	10	20
	11	20

The necessary design work to support the above schedule is currently in progress. While the calendar date of an individual refueling outage may vary due to variables in unit operation, the projected dates for the first refueling outage (end of fuel cycle) of each unit are second quarter 1986 (Unit 1), first quarter 1985 (Unit 2), and third quarter 1985 (Unit 3).

system programs rapidly.

4.2.5 INSTALLATION AND TESTING

The SPDS will be thoroughly tested prior to being made available to the operator. This testing will include actual operation of the SPDS logic on the OAC for several weeks during startup, shutdown and normal operation. This testing will be transparent to the operators as the displays are inhibited from operating. However, an alarm summary table will be used to capture SPDS alarm changes as well as SPDS input parameter changes. This testing has been completed on the original version of McGuire's SPDS logic and was very useful in verifying the proper functioning of the SPDS as well as revealing some discrepancies primarily resulting to dynamic plant conditions.

4.2.6 ENHANCEMENT PLANNING

The Operator Aid Computer Systems presently installed at Oconee will not support graphical presentations on the CRT videos.

Discussions are underway at this time exploring the upgrading of the OAC's as follows:

- Color CRT's to replace the present black and white CRT's.
- A color-graphic video Display Generator.
- The addition of central processing units to perform SPDS logic, supporting displays and ATOG displays.

A tentative schedule for these upgrades has been established. The above

upgrades are of an evolutionary nature and will present minimal impact to the functions presently performed on the OAC Systems. Previously implemented OAC upgrades have included the replacement of the original rotating bulk memory systems with bulk magnetic core memory storage systems which were installed to allow the plant data base to be accessed by more than one central processor.

These and numerous other enhancements have been made to improve the efficiency and reliability of these systems. Further, existing programs will be phased from the old CPU's to the new CPU's in an orderly fashion with minimal impact to the operator's use of the OAC as well as reliability of the OAC.

Every effort will be made to install the above OAC upgrades in conjunction with refueling outages starting with Oconee Unit 3 now scheduled for March, 1984. The other units are presently scheduled as follows:

Unit 1 - January, 1985

Unit 2 - July, 1985.

4.2.7 MAINTENANCE

Since the SPDS is being installed in the existing OAC Systems, the maintenance functions are already well defined and organized and demonstrated by the high availability of these computers.

location will minimize the interference caused by the STA performing his duty upon the incorporation of the pressure/temperature displays used in conjunction with the upgraded emergency procedures.

Management approved the purchase of replacement OAC computers for Oconee in July of 1983 with delivery to Duke Power by June 1984. These new computers will enable the implementation of the SPDS on new CRT's capable of color/graphic displays. A Staging Support Computer was also approved which will be used in prototyping the parallel operation of the old and new computer systems.

The SPDS will obtain its inputs via the existing OAC's. It has also been decided to implement pressure/temperature displays similar to those used with the B&W ATOG on the new OAC's.

The Staging Support Computer was received in December, 1983 and the Unit 2 computer in February, 1984.

The SPDS alarm logic design was completed in December 1983. Display alternatives have been developed and a final design will be selected in March 1984.