REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8411070028 DOC.DATE: 84/11/05 NOTARIZED: NO DOCKET #
FACIL:50-269 Oconee Nuclear Station, Unit 1, Duke Power Co. 05000269
50-270 Oconee Nuclear Station, Unit 2, Duke Power Co. 05000270
50-287 Oconee Nuclear Station, Unit 3, Duke Power Co. 05000287

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 response to 840928 request for addl info re items identified in NRC review of util control room review submittal.

DISTRIBUTION CODE: A003D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 21
TITLE: OR/Licensing Submittal: Suppl 1 to NUREG-0737(Generic Ltr 82-33)

NOTES:AEOD/Ornstein:1cy. 05000269
OL:02/06/73
AEOD/Ornstein:1cy. 05000270
OL:10/06/73
AEOD/Ornstein:1cy. 05000287
OL:07/19/74

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	NRR ORB4 BC	7	7			
INTERNAL:	ADM/LFMB	1	0	IE/DEPER/EPB	3	3
	NRR PAULSON,W	1	1	NRR/DHFS/HFEB	5	5
	NRR/DHFS/PSRB	1	1	NRR/DL/ORAB	1	1
	NRR/DL/ORB5	5	5	NRR/DSI/CPB	1	1
	NRR/DSI/ICSB	1	1	NRR/DSI/METB	1	1
	NRR/~~DSI/RAB~~	1	1	NRR/DSI/RSB	1	1
	REG ~~FILES~~	1	1	RGN2	1	1
	RGN2/DRSS/EPRPB	1	1			
EXTERNAL:	LPDR	1	1	NRC PDR	1	1
	NSIC	1	1	NTIS	1	1
NOTES:		1	1			

TOTAL NUMBER OF COPIES REQUIRED: LTTR 37 ENCL 36

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

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

November 5, 1984

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

Attention: Mr. John F. Stolz, Chief
Licensing Branch No. 4

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

Dear Mr. Denton:

In a letter dated September 28, 1984 the NRC provided the results of a review of the Oconee Nuclear Station Control Room Review submittal and requested that Duke Power respond to several items identified during the review. The Duke response for Oconee is contained in the attachment to this letter.

Very truly yours,

Hal B. Tucker

Hal B. Tucker

JSW:slb

Attachment

cc: Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Ms. Helen Nicolaras, Project Manager
Division of Project Management
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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

A003
1/1

1. Provide assurance that the five scenarios developed from the emergency operating procedures (ATOGs) and used in the task analysis represents a complete set of emergency tasks performed by operators for plant-specific emergency operations:

RESPONSE:

The Westinghouse Emergency Response Guidelines (ERGs) used as the basis of the task analysis for McGuire and Catawba are written in an event specific format. Each ERG prescribes the required emergency operating tasks for an emergency operating event, such as "Steam Generator Tube Rupture". Variations in plant status due to multiple failures, operating power level, etc. are handled by branching to appropriate tasks either within the selected ERG or in other appropriate ERGs. The task analysis of the set of ERGs covers the complete set of emergency operating tasks.

The B&W Abnormal Transient Operating Guidelines (ATOG) used as the basis of the task analysis for Oconee is written in a flow chart format. One moves through the ATOG flow path by answering successive questions concerning plant status. Depending upon plant status and conditions at each successive question/decision point, certain emergency operating tasks are prescribed. Variations in plant status due to multiple failures, operating power level, etc. are handled by branching to appropriate tasks at each decision point. The operating tasks prescribed for a specific emergency event will be determined by the plant status at each decision point. This is similar to the Westinghouse ERG where the operating tasks for a specific emergency event will be prescribed by using the event-specific ERG and branching to appropriate tasks as required by plant status. Also similar to the Westinghouse ERG, the task analysis of the set of emergency events covered in the ATOG represents a complete set of emergency operating tasks.

In contrast to the Westinghouse ERG, however, to determine the prescribed operating tasks for use in the task analysis of an emergency operating event using ATOG, a scenario for the event must be developed. Using the scenario, the proper path is taken at each decision point and the prescribed operating tasks are determined.

Five complex scenarios were used in the Duke task analysis. These scenarios were developed to provide a comprehensive set of emergency operating tasks for task analysis of all of the emergency operating events covered by the ATOG. The emergency operating events analyzed in the Duke task analysis are listed in Table 1. These events encompass both the ATOG and the existing Oconee emergency procedures. In addition, the scenarios used in the task analysis also cover operating tasks which exercise all operating systems in the Control Room, both emergency and normal.

1. Provide assurance that the five scenarios developed from the emergency operating procedures (ATOGs) and used in the task analysis represents a complete set of emergency tasks performed by operators for plant-specific emergency operations:

RESPONSE:

The Westinghouse Emergency Response Guidelines (ERGs) used as the basis of the task analysis for McGuire and Catawba are written in an event specific format. Each ERG prescribes the required emergency operating tasks for an emergency operating event, such as "Steam Generator Tube Rupture". Variations in plant status due to multiple failures, operating power level, etc. are handled by branching to appropriate tasks either within the selected ERG or in other appropriate ERGs. The task analysis of the set of ERGs covers the complete set of emergency operating tasks.

The B&W Abnormal Transient Operating Guidelines (ATOG) used as the basis of the task analysis for Oconee is written in a flow chart format. One moves through the ATOG flow path by answering successive questions concerning plant status. Depending upon plant status and conditions at each successive question/decision point, certain emergency operating tasks are prescribed. Variations in plant status due to multiple failures, operating power level, etc. are handled by branching to appropriate tasks at each decision point. The operating tasks prescribed for a specific emergency event will be determined by the plant status at each decision point. This is similar to the Westinghouse ERG where the operating tasks for a specific emergency event will be prescribed by using the event-specific ERG and branching to appropriate tasks as required by plant status. Also similar to the Westinghouse ERG, the task analysis of the set of emergency events covered in the ATOG represents a complete set of emergency operating tasks.

In contrast to the Westinghouse ERG, however, to determine the prescribed operating tasks for use in the task analysis of an emergency operating event using ATOG, a scenario for the event must be developed. Using the scenario, the proper path is taken at each decision point and the prescribed operating tasks are determined.

Five complex scenarios were used in the Duke task analysis. These scenarios were developed to provide a comprehensive set of emergency operating tasks for task analysis of all of the emergency operating events covered by the ATOG. The emergency operating events analyzed in the Duke task analysis are listed in Table 1. These events encompass both the ATOG and the existing Oconee emergency procedures. In addition, the scenarios used in the task analysis also cover operating tasks which exercise all operating systems in the Control Room, both emergency and normal.

TABLE 1

OCONEE NUCLEAR STATION

CONTROL ROOM REVIEW

EMERGENCY EVENTS FOR TASK ANALYSIS

Reactor Trip

ATWS Event

Turbine Trip

Turbine Failure to Trip on Reactor Trip

Failure of a Control Rod Group to Drop on Reactor Trip

Emergency Reactor Coolant System (RCS) Boration

Loss of Main Feedwater

Loss of Emergency Feedwater

Response to Low Once Through Steam Generator (OTSG) Level

Recovery of Feedwater Systems

Failure of Feedwater to Runback Following a Reactor Trip

Response to High OTSG Level

RCS Small Break

RCS Large Break (DBA)

Engineered Safeguards (ES) (ECCS) Actuation

ES Systems Alignment to the Emergency Sump

ES Termination after a LOCA

ES Termination after an Overcooling Event

High Pressure Injection (HPI) System Forced RCS Cooling

Solid Plant Cooling

Pressurizer Steam Bubble Recovery

Termination of HPI Forced RCS Cooling

Inadequate Core Cooling (ICC) Operations

Re-start of Reactor Coolant Pumps upon regaining Subcooled Margin

Loss of one HPI Train

Recovery of HPI Train

Loss of one Low Pressure Injection (LPI) Train

Recovery of LPI Train

EMERGENCY EVENTS
(Cont.)

Natural Circulation Operations
Thermal Shock Operating Region (TSOR) Operations
Main Steam Line Rupture
Single OTSG Cooldown
OTSG Tube Leak
Loss of ICS-NNI Power
Recovery of ICS-NNI Power
Loss of all AC Power
Emergency Power Switching Logic (EPSL) Operation
Load Shed
Keowee Hydro and Emergency Power Operations
Recovery of Station Power
Recovery from Load Shed
Loss of Instrument Air
Recovery of Instrument Air
Cooldown and Depressurization
Post LOCA Cooldown and Depressurization
Loss of Control Room

2. Verify that the task analysis process resulted in the identification of operator information and control needs and their associated display and control characteristics required to perform emergency tasks derived from the five selected scenarios. Also describe the process(es) used to identify these needs and characteristics and the bases for determining their adequacy;

RESPONSE:

Generic clarifications to the Task analysis process for the Control Room Design Review as described in Supplement 1 to NUREG-0737 were described in a memo from H. B. Clayton to D. L. Ziemann, dated April 5, 1984 with specific reference to the Westinghouse Owner's Group. Duke Power responded to those clarifications in a letter from H. B. Tucker to H. R. Denton, dated May 29, 1984, concerning Catawba Nuclear Station (Docket Nos. 50-413 and 50-414). Since the Task Analysis methodology for Oconee, McGuire and Catawba were identical, we refer you to the Duke response to the referenced clarifications and, in particular, to the response to comment number 4 of the clarifications which concerns the derivation of the characteristics of controls and displays in the Task Analysis.

In addition, we provide the following summary of the Oconee Task Analysis process:

As stated in Duke Power's Control Room Review Plan, the objective of Task Analysis was to evaluate the human engineering suitability of the controls and displays necessary to support the operator actions required during emergency operations. To accomplish this objective, a Task Analysis Team, consisting of one senior reactor operator and one meachanical/nuclear systems engineer, was required to perform four major activities:

1. Develop a complete list of operator tasks for each emergency operating scenario to be analyzed, using the B&W Abnormal-Transient Operating Guidelines (ATOG).

2. Identify the display and control requirements for each operator task.

3. Determine the presence or absence of controls and displays to support the display and control requirements.

4. Evaluate the human engineering suitability of the required controls and displays.

In this process, Task Analysis was divided into two phases: 1) a pre-fill stage followed by 2) a walk-through evaluation using a full-scale mock-up of the Oconee Control Room.

In the pre-fill stage, the Task Analysis Team analyzed operating scenarios developed from ATOG; developed a complete list of necessary operator tasks, using supporting operations and engineering documents; and identified the characteristics of the display and control requirements for each task. During this analysis, the control and display characteristics were compared to existing control room components and those components missing or not conforming to the required characteristics were documented as HEDs.

The documentation resulting from the pre-fill stage for each scenario included a Task Sequence Chart listing all tasks allocated to the operator; Task Data Forms for each task describing the operator's location, the action to be taken, the component to be used, and the component parameters used to verify operator actions; and HEDs documenting those controls and displays either missing or not conforming to the characteristics defined in the pre-fill process.

In the walk-through evaluation, (the second phase of Task Analysis) the senior reactor operator performed each action identified on the Task Data Form and reported his actions to the observing engineer. The engineer monitored the operator's actions to ensure that each step was completed in the proper sequence, observed the operator's interaction with the controls and determined the adequacy of the controls and displays available to the operator. The result of this phase, also documented on the Task Data Form, was either a confirmation that the controls and displays were adequate and properly arranged for the task, or an HED documenting the potential problems identified.

The Task Analysis process summarized above was a systematic approach governed by established procedures, standard data collection and evaluation forms, and performed by a senior reactor operator and mechanical/nuclear systems engineer trained in Task Analysis techniques by human factors consultants from Bio Technology. The program was routinely audited by Bio Technology to assure that the procedures were followed and that the objectives of Task Analysis were met, including the determination that the appropriate controls and displays were available to the operator. The Task Analysis procedures and resulting documentation demonstrate that the appropriate control and display requirements have been identified and properly evaluated.

3. Provide additional information and/or description for the proposed corrective actions involving the 48 HEDs identified in the Technical Evaluation Report (Enclosure 2):

RESPONSE:

TER, page 22, Section 1 (a)

0-1-0026

The present nameplate designation for this pump is RC-PB2. This designation will be changed on a new nameplate to read 1B2 RC PUMP to be more descriptive and consistent in format to other nameplates.

0-1-0032

The present nameplates are labeled A FW PUMP SPEED and B FW PUMP SPEED. The FW can be confused with the Filtered Water system. New nameplates will be provided and labeled as A FDW PUMP SPEED AND B FDW PUMP SPEED.

0-1-0093

Nameplates on these devices were hard to read due to small lettering. New labels with larger, bolder letters, and consistent with other control board nameplates will be provided.

0-1-0094

The position indication lights for the CCW PUMP DISCHARGE valves are located above the control switches for the CCW PUMP LUBE WATER valves. Although these two functions are separate, the indication lights appear to be associated with the control switches due to the location of the switch nameplates. These nameplates will be relocated closer to their respective switches and the switches will be demarcated to visually separate from the CCW PUMP DISCHARGE valve position indication lights.

0-0121

Due to space limitations two pairs of meters are located in a four meter group. Each pair is functionally related but the two pairs are not. To distinguish the relationships, one nameplate with larger lettering will be located above the individual meter nameplates which will label the first pair as AIR SUPPLY HEADERS and the second pair as BWST (for Borated Water Storage Tank).

0-1-0218

The position escutcheon for these rotary switches was engraved in a manner that indicated three positions. However, the switches are only two position switches. The escutcheons will be re-engraved to indicate two positions.

0-1-0254

This HED involves several labels and/or nameplates where rewording, additional words, etc. are needed to improve understanding and readability. Some examples of the changes to correct this HED are:

- Change meter nameplate on 1VB2 from LPSW to DECAY HX to LPSW FLOW TO DECAY HX

- Change nameplate for devices I27, I28, and I29 from COND BOOSTER PUMPS DISCH LOW to COND BOOSTER PUMPS DISCH PRESS LOW

- Change labels on the liquid waste and waste gas counters to indicate measurement parameters.

0-1-0280

This HED involves several devices which have lamp lenses, pushbuttons, and/or escutcheons that do not meet the Oconee color code standard. Some examples of corrections to be made are:

- Change green lenses to white on devices I48 and PB21 on 1UB1

- Change white OPEN pushbutton on device PB22 on 1UB1 to red

- Change the escutcheon for device S5S on 1UB1 from red to black

0-1-0282

The colors used in the ICS controller mimic are not consistent between similar flow paths. The mimic will be replaced to correct these inconsistencies.

0-1-0432

Several back-lighted status lamps have handwritten legends with poor contrast. In addition, the filled engravings on lenses for several pushbutton switches have worn and are not easily readable. New printed legends will be installed on the back-lighted status lamps and new lenses will be installed on these pushbutton switches.

0-1-0480

The meter scales for devices R18 (1UB2) and R1(1VB1) have % for the parameter units instead of nanoamps. New scales will be installed to show the correct measured parameter.

0-1-0490

The computer alarm acknowledge pushbutton will be relabelled as the COMPUTER ALARM ACKNOWLEDGE to distinguish this switch from the annunciator acknowledge pushbutton.

0-1-0575

This HED concerns several meters with inconvenient or hard to use scale graduations. Examples of changes to be made are:

- Change LPI PUMP SUCTION TEMP scale from present 2.5 degree increments to 10 degrees increments with numbered graduations at intervals of 50 degrees (0, 50, 100,...,300).

- Change QUENCH TANK LEVEL scale from 2.5" increments to major graduations of 10 inches and minor graduations of 5 inches. Numbered intervals are to be 0, 50, 100, and 150.

0-1-0576

The meter scales for dimineralized water make-up to the UST will be changed on all Units from reading in lb/hr to gpm to alleviate the necessity for operator conversion of the displayed valve.

0-1-0587

The computer point names for the seal return flows were changed to SEAL RETURN FLOW on all displays. Previously these parameters had been referred to by several names : SEAL RETURN FLOW, SEAL LEAKOFF FLOW, or SEAL LEAKAGE FLOW.

0-2-0050

This HED is not a surface enhancement solution HED. The HED is a supporting HED and was referred to HED 0-2-0042 for resolution.

0-2-0058

The 4 Core Flood Tank meters and the 6 Core Flood Tank control switches are located together as a group on vertical board 1VB2; however, the functional grouping is not easily associated visually due to other components located nearby. A demarcation line will be placed around this group to visually separate it from surrounding components.

0-2-0069

This HED concerns the Unit 2 switches that are functionally equivalent to those in HED 0-1-0094.

0-2-0228

The solution for this HED replaces the scales for meters I18 and I19 on 2AB1, and recorder RM10 on 2VB2. The existing scale graduations on these devices were inconvenient and hard to read. New scales will be graduated in standard graduation multiples of 1, 2, or 5 as need for each instrument.

0-2-0254

This HED is the Unit 2 equivalent of 1 HED 0-1-0254 and covers the same functional components.

0-2-0278

This HED is the Unit 2 equivalent of HED 0-1-0280 and covers the same functional components.

0-2-0281

This HED concerns several switches which have handles that do not meet Oconee coding conventions. Some examples of changes to correct this HED are:

- Change handles on switches S72 and S73 on 2UB1 to small J-handles to match coding convention for breakers.

- Change J-handle on devices S197, S198, S208, S209, S219 and S224 on 2AB3 to rotary knob to match coding conventions for valve control.

0-2-0418

This HED is the Unit 2 equivalent of HED 0-1-0490 and covers the same functional components.

0-3-0025

This HED is the Unit 3 equivalent of HED 0-1-0046 and 0-2-0058 and covers the same functional components.

0-3-0034

This HED is the Unit 3 equivalent of HED 0-1-0094 and covers the same functional components.

0-3-0063

The labeling for the range selector switch on counter R17 on 3UB1 will be changed to X.01, X0.1, X1,X10 to correct the existing incorrect range markings.

0-3-0226

This HED is the Unit 3 equivalent of HED 0-2-0228 and HED 0-1-0228.

0-3-0253

This HED is the Unit 3 equivalent of HEDs 0-1-0254 and 0-2-0254.

0-3-0254

Engravings on the pushbuttons for the alarm acknowledge switches are worn and will be replaced with new pushbuttons.

0-3-0276

This HED is the Unit 3 equivalent of HED 0-1-0280.

0-3-0279

This HED is the Unit 3 equivalent of HED 0-2-0281.

0-3-0411

The legend engravings for the indicating lamp lenses on the RCW PUMP DISCH LOW status lights will be changed from RCWP 3A to RCWPA, etc. (for pumps A, B, C, and D) to correct the current lens engraving.

0-3-0413

The device nameplate will be re-engraved to show 3B DAMPERS instead of the current incorrect engraving 1B DAMPERS.

0-3-0417

This HED is the Unit 3 equivalent of HED 0-1-0490.

<u>TER, page 22, Section 1(b)</u>

0-1-0253

This HED concerns several meters which have vertical legends on the scaleplate. The HED correction adds engraved meter nameplates located above each meter for easier meter identification.

0-1-0411

Existing pointers on several recorders are hard to see due to poor contrast with the recorder scale. These pointers will be replaced with new contrasting color pointers.

0-3-0077

This HED is the Unit 3 equivalent to HED 0-1-0121.

0-3-0252

This HED is the Unit 3 equivalent to HED 0-1-0253.

TER, page 22, Section 1(c)

0-2-0377

This HED is the Unit 3 equivalent of HED 0-1-0432.

TER, page 23, Section 2(a)

0-1-0015

The four voltmeters for the Main Feeder Bus Supply Transformers are not located together in a group. Rather, two of these meters are adjacent to two Main Feeder Bus voltmeters and the remaining pair are located separately. These meters will be rearranged to locate all four Main Feeder Bus Supply Transformer voltmeters together.

0-1-0039

Controls for pressurizer heater banks 2, 3, and 4 are not arranged in numerical order. In addition the control for bank 1 is separated from banks 2, 3, and 4 by non-related device HP-120. The pressurizer heater controls will be arranged to locate all controls together in numerical order.

0-1-0062

The selector switches for the display of ICS parameters are presently keylock switches. The selection of which instrument channel is displayed on each ICS meter is an operator function, and there is no justification for a keylock switch. These switches will be replaced with non-key rotary selector switches.

0-1-0069
0-1-0083A
0-1-0087
0-1-0099
0-1-0118

These HEDs originated in the Task Analysis and concerned problems with the physical arrangement of switches, meters, and components in several areas of the main control board. The recommended solution in each case rearranged the components or a portion of the components in each identified area to provide a more logical and consistent arrangement for the operator; and to eliminate problems where (1) related components were not grouped together, or (2) minor differences in arrangement existed between functional groups or between Units.

As an example, HED 0-1-0083A rearranged the controls for the HPI system. The rearrangement of HPI components was designed to eliminate the problems identified in the Task Analysis. Some examples of these identified problems are:

- Four injection valves (HP26, HP27, HP409, and HP410) are not grouped together.
- HP409 (B line injection) is located above HP410 (A line injection).
- HPI suction valves HP23, HP24, and HP25 are not grouped together.
- HP16 (make-up to the LDST) is located with the letdown valves.
- Valve switches for N1, HP22, HP98, and HP23 are mirror imaged between Unit 1 and Units 2 and 3.
- HP120 is separated from the rest of the HPI system by the controls for pressurizer heater bank 1.
- LDST pressure indication needs to be close to level indication since allowable pressure is related to level.
- HPI flow meters are not grouped together.

Each of the above HEDs involved a considerable amount of physical rearrangement similar to this example to group related components, eliminate minor differences between areas of similar function, and/or aid the operator in component and system function identification.

TER, page 23, Section 2(b)

0-1-504A

The problem description for this HED should read "There is no control room indication of individual reactor coolant pump seal flow". The word "seal" was inadvertently omitted.

4. Provide information concerning control room modifications made or planned as a result of other post-TMI Actions and as a result of Salem ATWS events and how those modifications or changes were incorporated into the DCRDR process.

RESPONSE:

Duke power provided an initial response to GL 83-28 by a November 4, 1983 letter. No additional control room changes were indentified in responding to GL 83-28 or as a result of the Salem ATWS event.

NUREG 0737 Items II.B.1, II.D.3, II.F.1, II.F.2, and II.E.1.2 resulted in modifications to the Control Board in the Oconee Control Rooms. These items included Reactor Coolant System Vents, Relief and Safety Valve Position Indication, Accident Monitoring Instrumentation, ICC Instrumentation, and Emergency Feedwater Flow/Steam Generator Level Indication. Proper consideration was given to the integration of the above items into the Control Room Review and the ATOG based Task Analyses.

Task Analyses for Inadequate Core Cooling and for an ATWS event were conducted by the Task Analysis Team during the Control Room Review. HEDs identified during the Task Analysis activities were assessed by the Review Team and required HED corrective actions described in the Supplement to the Final Report for the Oconee Nuclear Station Control Room Review. This report was submitted as Revision 3 to the Duke Response to Supplement 1 to NUREG-0737 for Oconee Nuclear Station.

5. Provide revised schedules with sufficient information for the staff to make an adequate determination of the timeliness of Duke Power Company's scheduling process. The staff has reviewed the HED Solution Implementation Commitment Schedules and finds that the scheduling process for implementing design changes lacks sufficient detail to identify which individual HEDs are assigned to each of the four implementation categories linked to the refueling outages.

RESPONSE:

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. Implementation of other regulatory requirements such as Reactor Vessel Level Instrumentation (RVLIS) and ATWS must also be considered.

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, resource 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 constraings of installation such as design/installation time, material procurement, and the coordination with training and procedures.

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.

It is important to note that Operators must be made aware of not only modifications to the Control Room, but all modifications to the plant as they affect operation. Of particular concern to Duke is to not overload the operator with too many plant changes during a single outage.

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 responsible use of company resources, HED solutions were prioritized.

Attached Table 2 provides the current schedule for HED modifications planned for installation during the forthcoming refueling outages. This schedule is our goal and will be adjusted as appropriate as detailed planning is completed prior to each refueling outage. Duke Power would be able to update this schedule on an annual basis to show the current status of completed HED modifications and those planned for installation during the next refueling outages following completion of the refueling outages and after installation plans for the next succeeding refueling outage of each Unit are established.

Duke is unable at this point to provide a firm commitment to complete a given HED modification for future outages beyond the next outage of each Unit. Too many variables are subject to change. We believe that the overall schedule as previously proposed and detail schedule as provided in the attached Table provide reasonable assurance that the identified HED solutions will be implemented in as short a time frame as is reasonably practical.

TABLE 2

OCONEE NUCLEAR STATION

CONTROL ROOM REVIEW

HED IMPLEMENTATION SCHEDULE

OCTOBER 22, 1984

I. Unit 1 HED solutions planned for completion by the end of fuel cycle 9, (expected August, 1986)

0-1-0001
0-1-0002
0-1-0004
0-1-0008
0-1-0010
0-1-0012
0-1-0014
0-1-0015
0-1-0017
0-1-0019
0-1-0020
0-1-0025
0-1-0026
0-1-0031
0-1-0032
0-1-0034
0-1-0037
0-1-0042
0-1-0046
0-1-0048
0-1-0052
0-1-0061
0-1-0067
0-1-0075
0-1-0077
0-1-0088
0-1-0090A
0-1-0093
0-1-0094
0-1-0106
0-1-0114
0-1-0119
0-1-0121
0-1-0216
0-1-0218
0-1-0219
0-1-0247
0-1-0250
0-1-0260
0-1-0280
0-1-0282
0-1-0284
0-1-0286
0-1-0297
0-1-0376
0-1-0381
0-1-0410
0-1-0411
0-1-0412
0-1-0422
0-1-0432
0-1-0480
0-1-0490
0-1-0542
0-1-0567
0-1-0587

II. Unit 2 HED solutions planned for completion by the end of fuel cycle 8, (expected January, 1987)

0-1-0002	0-2-0039
0-1-0008	0-2-0043
0-1-0010	0-2-0051
0-1-0012	0-2-0053
0-1-0014	0-2-0054
0-1-0017	0-2-0058
0-1-0025	0-2-0067A
0-1-0026	0-2-0069
0-1-0032	0-2-0071
0-1-0217	0-2-0077
0-1-0542	0-2-0085
0-1-0567	0-2-0087
0-1-0587	0-2-0090
0-2-0001	0-2-0217
0-2-0003	0-2-0247
0-2-0012	0-2-0250
0-2-0014	0-2-0253
0-2-0015	0-2-0254
0-2-0020	0-2-0258
0-2-0021	0-2-0260
0-2-0024	0-2-0264
0-2-0027	0-2-0278
0-2-0031	0-2-0281
0-2-0032	0-2-0296
0-2-0037	0-2-0325
	0-2-0367
	0-2-0377
	0-2-0379
	0-2-0410
	0-2-0418

III. Unit 3 HED solutions planned for completion by the end of fuel cycle 8 (expected September, 1985):

0-1-0002
0-1-0008
0-1-0010
0-1-0012
0-1-0014
0-1-0017
0-1-0025
0-1-0026
0-1-0032
0-1-0567
0-1-0587
0-3-0001
0-3-0009
0-3-0012
0-3-0013A
0-3-0017
0-3-0018
0-3-0020
0-3-0025
0-3-0031A
0-3-0032
0-3-0034
0-3-0043
0-3-0051
0-3-0052
0-3-0054
0-3-0055
0-3-0056
0-3-0063
0-3-0065
0-3-0067
0-3-0069
0-3-0074
0-3-0077
0-3-0216
0-3-0220
0-3-0221
0-3-0254
0-3-0279
0-3-0373
0-3-0383
0-3-0392
0-3-0397
0-3-0408
0-3-0410
0-3-0411
0-3-0412
0-3-0413
0-3-0417
0-3-0421
0-3-0426
0-3-0430

NOTES:

1) The order of HED solutions listed for a particular Fuel Cycle does not imply priority for that Fuel Cycle.

2) The total number of HED solutions to be implemented is as follows:

   Unit 1: 134
   Unit 2: 122
   Unit 3: 129

3) 40 HED solutions out of the group planned for Unit 1 Fuel Cycle 9 will satisfy the 30% commitment for the 1st refueling outage.

4) 37 HED solutions out of the group planned for Unit 2 Fuel Cycle 8 will satisfy the 30% commitment for the 1st refueling outage.

5) 38 HED solutions out of the group planned for Unit 3 Fuel Cycle 8 will satisfy the 30% commitment for the 1st refueling outage.