Omaha Public Power District
1623 Harney Omaha, Nebraska 68102
402/536-4000

April 15, 1983
LIC-83-093

Mr. Robert A. Clark, Chief
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Licensing
Operating Reactors Branch No. 3
Washington, D.C. 20555

Reference: Docket No. 50-285

Dear Mr. Clark:

Generic Letter 82-33,
Supplement 1 to NUREG-0737,
"Emergency Response Capabilities"

The subject letter asked all utilities to define their implementation schedules for the requirements identified in that letter. Accordingly, attached is Omaha Public Power District's response.

Sincerely,

W. C. Jones
Division Manager
Production Operations

WCJ/TLP:jmm

Attachment

cc: LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue, N.W.
Washington, D.C. 20036

Mr. L. A. Yandell, NRC
Senior Resident Inspector

A046

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Omaha Public Power District	)	Docket No. 50-285
(Fort Calhoun Station,	)	
Unit No. 1)	)	

AFFIDAVIT

. . . . . being duly sworn, hereby deposes and says that he is Division Manager - Production Operations of Omaha Public Power District; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached response to Generic Letter 82-33; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

W. C. Jones
Division Manager
Production Operations

STATE OF NEBRASKA)
) ss
COUNTY OF DOUGLAS)

Subscribed and sworn to before me, a Notary Public in and for the State of Nebraska on this 15TH day of April, 1983.

Notary Public

GENERAL NOTARY - State of Nebraska
J.T. GLEASON
My Comm. Exp. July 28, 1986

Enclosure

OMAHA PUBLIC POWER DISTRICT'S
RESPONSE TO GENERIC LETTER 82-33

Generic Letter 82-33 forwarded NUREG-0737, Supplement 1, which details the Commission's position on 5 TMI related tasks; all related to improved capabilities for responding to plant emergencies. These 5 tasks are:

(1) Implementation of a Safety Parameter Display System (SPDS).

(2) Performance of a Detailed Control Room Design Review (DCRDR).

(3) Evaluation of Compliance with Regulatory Guide 1.97, Revision 2 (R.G. 1.97).

(4) Implementation of Upgraded Function Oriented Emergency Operating Procedures (EOP's).

(5) Development of Emergency Response Facilities (ERF's).

The District has reviewed the above requirements and Attachments 1 through 5 detail the present status and final completion schedules for each of the 5 tasks. It should be noted that each of these 5 tasks are interrelated to one or more of the other tasks and, as such, these schedules have been integrated. The District has made significant progress in the development of the SPDS, EOP's, and ERF's and these tasks will be completed concurrently with the 1985 refueling outage. For DCRDR and R.G. 1.97, the initial stages of the planning effort were only recently initiated and will lag the other tasks in full implementation.

Attachment 1

SAFETY PARAMETERS DISPLAY SYSTEM

SCOPE:

The basic hardware installation and computer programming for Safety Parameters Display System (SPDS) is currently in progress. The SPDS is part of 2 major modification efforts: (1) the Emergency Response Facility Computer System (ERFCS) and (2) the Inadequate Core Cooling System (ICCS).

The ERFCS will be the real time data processing system which will present plant parameters to the operator in such a fashion as to be able to determine the safety status of the plant.

The ICCS is being installed in response to Generic Letter 82-28 and consists of 3 major components: (1) the Heated Junction Thermocouple (HJTC) system to monitor reactor vessel liquid inventory, (2) accident qualified Core Exit Thermocouples (CET's) for reactor temperature monitoring, and (3) a Qualified Safety Parameter Display System (QSPDS) which acts as a Class 1E data processing system for the HJTC, CET's, and other 1E signals. The QSPDS, in turn, provides the 1E data to the ERFCS via a fiber optic serial data link.

The scope of the project also includes: (1) the installation of mineral insulated cable and new electrical penetrations to link the HJTC and CET's to the control room, (2) cabling necessary to provide plant parameter to the ERFCS and QSPDS, (3) displays of the information in the EOF, TSC, and control room, (4) primary system pressure boundary modification to accommodate the HJTC probes, and (5) the qualified CET's.

PROJECT STATUS:

To date, the following work has been accomplished:

(1) HJTC probe holders are installed in the reactor.

(2) The new incore detectors (CET's) and their modified ICI reactor flanges are installed and operable through the existing plant computer.

(3) Approximately 60% of the mineral insulated cable in containment is installed (100% of the seismic hangers are installed).

(4) Approximately 75% of the cable outside containment is in place. This cable is approximately 20% terminated.

(5) The 2 new electrical penetrations are installed in containment.

(6) The ERFCS power distribution system is about 65% complete.

(7) The ERFCS signal junction cabinets are installed in the cable spreading room.

(8) The Sigma II computer has been removed and the computer room floor core drilled for the ERFCS data acquisition system.

(9) The QSPDS panels have been installed in the control room.

PROJECT SCHEDULE FOR COMPLETION:

The completion of the project scope is hinged around a successful factory acceptance test of the ERFCS, its delivery and installation, site testing, and operational availability testing.

The schedule, as provided by the ERFCS vendor, calls for a factory acceptance test (FAT) from May 23, 1983 to June 8, 1983; installation from June 20, 1983 to July 8, 1983; site testing from July 11, 1983 to July 22, 1983; and the operational availability testing from August 8, 1983 to February 8, 1984. NOTE: During the 6 month operational availability testing, no hardware or software changes which would impact the computer operation (i.e., the entry of a new program which could cause a software failure) will be permitted.

For the SPDS to be completed on a schedule which would provide the earliest possible operation, the operational availability testing must be complete by the beginning of the 1984 refueling outage (February 27, 1984). This allows only 3 weeks for contingencies to complete computer installation and testing. If any slippage were to occur, there may not be enough outage time available in 1984 to accomplish all outage related work necessary for an operable SPDS. Based upon the District's experience, it is normal to allow much more than 3 weeks for contingencies in a year long project; thus, we believe the probability of the operational availability testing being completed prior to the 1984 outage to be extremely low. Accordingly, the District expects the SPDS to be completed during the 1985 refueling outage, allowing for an operational date of November 30, 1985.

SAFETY ANALYSIS SCHEDULE:

The selection of parameters for the SPDS has been completed based upon the present generic Emergency Procedure

Guidelines (EPG's). However, other projects (such as implementing the plant specific EOP's or R.G. 1.97) can and are expected to result in changes and/or refinements to this parameter set. The District's ERFCS will allow the flexibility to incorporate such changes as the need arises. However, consistent with the present guidance provided in NUREG-0737, Supplement 1, the District intends to proceed with the development of the SPDS based upon the EPG's, without waiting for these other projects to be completed. By October 31, 1983, the District will provide a safety analysis justifying the set of SPDS parameters presently selected for the SPDS. Any subsequent changes to this parameter set will be evaluated in accordance with the criteria of 10 CFR 50.59.

TRAINING:

Training on the SPDS will be in at least 2 parts. Part 1 will consist of training on the operation of the SPDS computer (i.e., how to retrieve information, call up displays, trend points, etc.). This will require each shift and other appropriate emergency response personnel to be trained for 1 week.

The other training will be part of the new emergency procedures. In order to maintain system reliability, several weeks of I&C technician training will be required on both the ERFCS and QSPDS.

VERIFICATION AND VALIDATION:

The physical capabilities of the ERFCS and SPDS will be verified through the operational availability testing and subsequent District performance demonstrations. The validation of the SPDS parameter set will be included as part of the V&V effort for the new plant specific EOP's, as detailed in Attachment 4.

Attachment 2

DETAILED CONTROL ROOM DESIGN REVIEW (DCRDR)

The District will develop and implement the DCRDR program along the guidelines provided by the industry-supported Nuclear Task Action Committee (NUTAC) on DCRDR. Currently, the District is developing a draft program plan. The draft plan will be completed by May 30, 1983 and will be used as the specification for selecting a contractor to support the District in implementing the DCRDR.

DCRDR activities and tasks are expected to be integrated with other NUREG-0737, Supplement 1, issues in the following ways:

(1) EOP's - One basis for the DCRDR will be the systems review and task analysis conducted as part of the development of the plant-specific EOP's. DCRDR verification of task performance capabilities and validation of control room functions shall be integrated with EOP Verification and Validation (V&V) activities. Procedural modifications/enhancements shall be considered as a solution to identified Human Engineering Deficiencies (HED's).

(2) SPDS - The DCRDR survey and verification of task performance capabilities shall include an evaluation of the SPDS. SPDS enhancements shall be considered as a solution to identified HED's.

(3) R.G. 1.97 - The R.G. 1.97 design packages will require man-machine interface reviews as part of the human factors requirement. CR improvements emanating from the DCRDR shall be integrated with R.G. 1.97 based improvements.

(4) Integrated Training - Recommendations, based on operator interviews and walk-throughs/talk-throughs of procedures, for improvements resulting from the DCRDR shall be incorporated in training programs. Training shall be considered as solutions to identified HED's.

In planning the implementation of the DCRDR, the District has established the following milestones and completion dates:

Milestone	Completion Date
Develop Draft Program Plan	May 30, 1983
Define Manpower Requirements	May 30, 1983
Select Contractor	August 15, 1983

Milestone	Completion Date
Start Review	September 1, 1983
Submit Final Program Plan to the NRC	October 15, 1983
Review Operation Experience	February 1, 1984
Conduct CR Survey	April 1, 1984
Verification of Task Capabilities	August 1, 1984
Validation of CR Functions	October 1, 1984
HED Assessment	February 1, 1985
Submit Summary Report	April 1, 1985

Implementation and V&V of CR improvements have not been scheduled since it is not possible to develop a specific implementation schedule until completion of the review and assessment activities. The summary report will contain V&V and implementation schedules for correction of HED's.

Attachment 3

SCHEDULE FOR IMPLEMENTATION OF
REGULATORY GUIDE 1.97, REVISION 2

In accordance with our letter dated June 1, 1981, the District submitted a conceptual design for construction of Emergency Response Facilities (ERF's) and installation of the new ERF computer. In this conceptual design, the District committed to connecting some of the presently available instrumentation to the ERF computer and/or SPDS. The installation of this ERF computer and the SPDS is in progress and is expected to be completed during the 1985 refueling outage. Several available inputs, including some of the instrumentation installed per the requirements of NUREG-0737, are also in the process of being connected to the ERF/SPDS computer. The operational ERFCS/SPDS will provide indication of selected Fort Calhoun accident monitoring instrumentation; however, a preliminary review of the available inputs indicates some deviations from the recommendations of R.G. 1.97 as they presently exist.

The District plans to continue with the present installation plans and simultaneously do a detailed study to fully identify deviations from R.G. 1.97 requirements. This study will have to be closely coordinated with other NUREG-0737 Supplement 1 requirements; such as control room design reviews, emergency operating procedures, etc. The schedule for this study is, therefore, dependent upon timely completion of other items.

This study will constitute Phase 1 of R.G. 1.97 implementation and will provide information as requested in section 6.2 of NUREG-0737, Supplement 1. This will also provide justification for any deviations and schedule for upgrading and modifications of the existing instrumentation (Phase 2).

Various steps required for this study and the time required for each step are as follows:

(1) Preparation of the plant specific Types A, B, C, D, and E variable list - This will initially require review of the generic Emergency Procedure Guidelines to prepare a Type A variable list, preparation of review criteria and the actual review of Types B, C, D, and E variables to identify deviations from the R.G. 1.97 criterion, environmental qualification, redundancy, instrument ranges, power source and seismic qualification. With regard to the quality assurance requirements, it is the District's understanding that for the existing instrumentation, the QA

requirements applicable at the time of issue of the construction permit or as detailed in the USAR will be applicable. The completion of this step is expected to take approximately 34 weeks.

(2) Justification of deviations - Any deviations from the recommendations of R.G. 1.97 will be resolved by performing additional analysis to justify existing equipment, proposing Technical Specification or procedural changes or qualifying the existing instrumentation. If justification is not possible, the District will propose modifications and upgrading if required. This step is estimated to take approximately 20 weeks.

(3) Preparation of the conceptual designs and modifications schedule - In order to propose a realistic schedule for upgrading of the existing instrumentation, the District plans to do a conceptual design to fully define the scope of work and establish equipment delivery schedules. In preparation of the conceptual design, an iterative process will be used that considers changes associated with EOP's, control room design reviews, and the operable ERF/SPDS for proper integration of all requirements. It is expected that this step will take approximately 12 weeks.

(4) Preparation of the final report - The results of the preceding 3 steps will be summarized in a report to be submitted to the NRC. Preparation of this report and the internal reviews are expected to take approximately 16 weeks. The final report will provide information as requested in section 6.2 of NUREG-0737, Supplement 1, and will be available for NRC review by April 1, 1985.

The above schedule is summarized in the attached block diagram (Figure 1).

NUREG-0737, Supplement 1, also calls out a specific exception from R.G. 1.97 related to meteorological instrumentation. The District has evaluated these revised requirements. The results of this evaluation are provided below.

The 110M meteorological tower is equipped with a redundant primary power supply, fed from two separate power sources, and instrumentation. Reliable indication of the meteorological variables (wind speed, wind direction, and atmospheric stability) is provided by the tower instrumentation, via various equipment, in the control room. The available instrumentation and the level of redundancy are provided on the attached Table 1. A cross-comparison of the specifications for the currently installed instruments with ones indicated in R.G. 1.97, Revision 2, is also provided in Table 1.

Real time meteorological data is available in the control room from the plant computer by calling up the specific computer addresses. Historical meteorological data may be accessed by use of a magnetic tape which records one minute scan values from all instruments. Historical data is also available from the control room's computer log where hourly and 24-hour average data is available. Visual indications for wind speed, wind direction, and delta temperature are provided in the control room to provide real-time data and to immediately detect the failure of data recovery. Information on the meteorological conditions for the site vicinity can also be obtained via voice communication with the National Weather Service.

Meteorological instruments are inspected and serviced at a frequency that ensures an annual 90% joint data recovery for the meteorological variables per Regulatory Guide 1.23. No changes in the existing meteorological monitoring system are proposed as it has been historically providing reliable indications of the meteorological variables. The most recent annual joint data recoveries for 1980, 1981, and 1982 were 94.9%, 99.7%, and 97.6%, respectively.

Therefore, the District presently meets the criteria for the meteorological data. These parameters will be incorporated into the ERFCS for radiological assessments and will be available in the control room, TSC, and EOF.

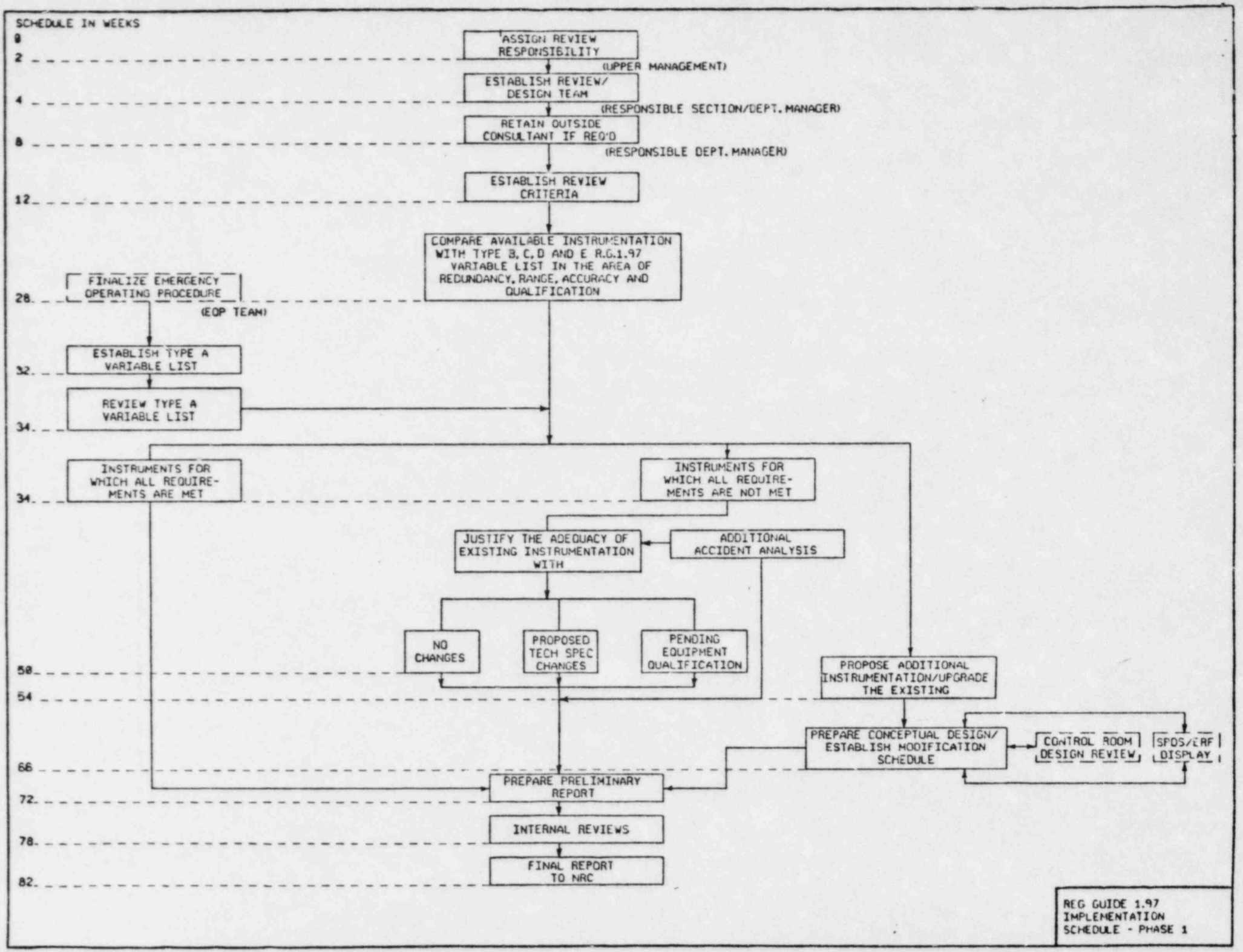
SCHEDULE IN WEEKS
0
2
4
8
12
28
32
34
34
50
54
66
72
78
82
ASSIGN REVIEW RESPONSIBILITY
(UPPER MANAGEMENT)
ESTABLISH REVIEW/ DESIGN TEAM
(RESPONSIBLE SECTION/DEPT. MANAGER)
RETAIN OUTSIDE CONSULTANT IF REQ'D
(RESPONSIBLE DEPT. MANAGER)
ESTABLISH REVIEW CRITERIA
COMPARE AVAILABLE INSTRUMENTATION WITH TYPE B, C, D AND E R.G.1.97 VARIABLE LIST IN THE AREA OF REDUNDANCY, RANGE, ACCURACY AND QUALIFICATION
FINALIZE EMERGENCY OPERATING PROCEDURE
(EOP TEAM)
ESTABLISH TYPE A VARIABLE LIST
REVIEW TYPE A VARIABLE LIST
INSTRUMENTS FOR WHICH ALL REQUIREMENTS ARE MET
INSTRUMENTS FOR WHICH ALL REQUIREMENTS ARE NOT MET
JUSTIFY THE ADEQUACY OF EXISTING INSTRUMENTATION WITH
ADDITIONAL ACCIDENT ANALYSIS
NO CHANGES
PROPOSED TECH SPEC CHANGES
PENDING EQUIPMENT QUALIFICATION
PROPOSE ADDITIONAL INSTRUMENTATION/UPGRADE THE EXISTING
PREPARE CONCEPTUAL DESIGN/ ESTABLISH MODIFICATION SCHEDULE
CONTROL ROOM DESIGN REVIEW
SPDS/ERF DISPLAY
PREPARE PRELIMINARY REPORT
INTERNAL REVIEWS
FINAL REPORT TO NRC
REG GUIDE 1.97 IMPLEMENTATION SCHEDULE - PHASE 1

TABLE 1

Instrument Specifications, Locations and Level of Redundancy

Meteorological Parameter	Instrument Specification			Instrument Location and Level of Redundancy	
		Reg. Guide 1.97	110M Met. Tower	Location	Quantity
1. Wind Direction	Azimuth (Degrees)	0 to 360	0 to 540	110M	1
	Accuracy (Deg.)	± 5	± 5	45M	1
	Damping Ratio	0.4 to 0.6	0.6	10M	2
	Distance Cons. (m)	≤ 2	1.2		
2. Wind Speed	Range (mph)	0 to 67	0 to 100	110M	1
	Accuracy (mph)	± 0.5	± 0.5	45M	1
	Starting Thres. (mph)	1.0	0.9	10M	2
3. Atmospheric Stability (Delta Temp)	Range (°C)	-5 to 10	-5 to 15	110M-10M	3
	Accuracy (°C)	± 0.15	± 0.1		

Attachment 4

SCHEDULE FOR UPGRADED EMERGENCY
OPERATING PROCEDURES (EOP'S)

Reference 1 transmitted the Combustion Engineering Owners Group's (CEOG's) latest report and revisions to Emergency Procedure Guidelines (EPG's).

Reference 2 stated that the guidelines contained in CEN-152, Revision 1, are applicable to the Fort Calhoun Station and will serve as the technical guidelines for the development of EOP's for the Fort Calhoun Station.

The District's process for developing EOP's will include the organization of a Procedures Writing Group to translate the technical guidelines contained in CEN-152, Revision 1, into EOP's; the use of workshops to verify the guidelines; the validation of the EOP's; and a training program for the EOP's. The District plans to implement the upgrade of EOP's following a refueling outage. The training for the upgraded EOP's must be completed prior to a refueling outage because the level of participation required of operations personnel in a refueling outage prohibits training during the outage.

The District intends to use the Procedures Writing Group to develop the EOP's from the EPG's. This group will consist of plant operations personnel and selected technical support personnel familiar with plant operations, transient response, and plant design. The product produced by the working group will be the upgraded EOP's. It is estimated that approximately 4 months will be required to develop the new EOP's.

The District intends to use workshops similar to those used by the CEOG to verify the EOP's. Participants in the workshop will include Fort Calhoun operations personnel and District engineers who are familiar with plant design and the transient response of the Fort Calhoun Station. These personnel will not have been involved in the Procedures Writing Group. In addition to considering the EOP's, the workshop participants will also consider the interface between EOP's and the SPDS. The current SPDS displays will be reviewed for their applicability to the EOP's. The product of these workshops will be a validated set of EOP's and the associated SPDS displays. It is estimated these workshops will require 2 months to complete.

The District will perform an EOP validation which will evaluate the EOP's for usability and operational correctness. The District anticipates using control room walkthroughs in this process. It is estimated the validation process will require 2 months to complete.

The District currently utilizes 6 operating shifts at the Fort Calhoun Station. Each shift is in training 1 week out of every 6 weeks. It is estimated that 2 weeks of formal training, per individual, will be required for training on the upgraded EOP's. Therefore, 3 months will be required to train all operations personnel at the Fort Calhoun Station on the upgraded EOP's.

The attached table shows that a total of 11 months will be required to implement the upgraded EOP's at the Fort Calhoun Station. The Fort Calhoun Station has recently completed a 4 month refueling outage. The next refueling is scheduled to start in late February or early March of 1984. Fort Calhoun operations personnel will be at simulator training during the months of May and June, 1983 and will not be available at that time to participate in a Procedures Writing Group. The District feels that it is absolutely necessary to have operations personnel in the Procedures Writing Group. Since there are only 9 months available from the time at which the operations personnel complete their simulator training to the start of the 1984 outage, it will not be possible to implement the upgraded EOP's following the 1984 refueling outage.

The next refueling outage is currently scheduled for September of 1985. The upgraded EOP's will be implemented following the 1985 refueling outage in December, 1985.

REFERENCES:

(1) Letter from R. W. Wells, CE Owners Group Chairman, to D. G. Eisenhut, NRC, "Transmittal of CEN-152, Revision 1, Combustion Engineering Emergency Procedure Guidelines", November 22, 1982.

(2) Letter from W. C. Jones to R. A. Clark (LIC-82-414), December 30, 1982.

DEVELOPMENT OF UPGRADED
FORT CALHOUN STATION EOP'S

Task	Months Required to Complete Task	Total Months
Procedures Writing Group Develops EOP's from EPG's	4	4
Verification Using a Workshop Process	2	6
Validation	2	8
Training	3	11

Attachment 5

EMERGENCY RESPONSE FACILITIES (ERF'S)

The ERF's for the Fort Calhoun Station consist of a Technical Support Center (TSC) and Operations Support Center (OSC) physically located within the plant's security boundary and an Emergency Operations Facility (EOF) located at the North Omaha Station 17 miles south of the Fort Calhoun Station. The TSC and portions of the OSC are physically located in the same building which is designed for continued occupation throughout all design basis accidents. With the exception of the data acquisition and radiological assessment to be provided by the ERFCS/SPDS, the ERF's are considered fully operational and meet the requirements of NUREG-0737, Supplement 1. As discussed in Attachment 1, the data acquisition capability will be available by November 30, 1985.