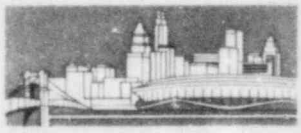
THE CINCINNATI GAS & ELECTRIC COMPANY



CINCINNATI, OHIO 45201

E. A. BORGMANN
SENIOR VICE PRESIDENT

April 14, 1983

Docket No. 50-358

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

Dear Mr. Denton:

RE: WM. H. ZIMMER NUCLEAR POWER STATION - UNIT 1 - NRC GENERIC LETTER 82-33 OF DECEMBER 17, 1982, REQUIREMENTS FOR EMERGENCY RESPONSE CAPABILITY, SUPPLEMENT 1 TO NUREG-0737

The Cincinnati Gas & Electric Company, on behalf of itself and as an agent for Columbus and Southern Ohio Electric Company and The Dayton Power and Light Company, hereby transmits its position on matters covered by NUREG-0737 Supplement 1, in particular a proposed schedule for satisfying emergency response capability requirements. CG&E will work with its NRC project manager, Mr. L. L. Kintner, in negotiating a mutually acceptable schedule.

Very truly yours,

THE CINCINNATI GAS & ELECTRIC COMPANY

E. A. Borgmann

By
E. A. BORGMANN

B001

EAB:dew
Enclosures
cc: With Enclosures
(See Reverse Side)

State of Ohio)
) ss
County of Hamilton)

Sworn to and subscribed before me this 14th day of April, 1983.

Alice M. Leurck
Notary Public

ALICE M. LEURCK
Notary Public, State of Ohio
My Commission Expires December 16, 1986

CG&E Response to NRC Generic Letter 82-33

NRC Generic letter 82-33 requested a description of our integrated plan and timetable for acquisition of the emergency response capabilities (ERC's) discussed in NUREG-0737 Supplement 1. Exhibit 1, and the narrative below, describe the current status of, and an integrated plan for completion of, work on these ERC's. The schedule for implementing this plan is shown in Exhibit 2.

Due to the construction and licensing status at the time the TMI requirements were issued, CG&E addressed those requirements in our FSAR or in separate letters to the NRC. Items that have been reviewed and approved by the NRC are addressed in the Safety Evaluation Reports issued by the NRC. In a few cases, this early effort has resulted in some differences between our systems and the final guidance issued by the NRC. We rely on the NRC commitment to make allowances for the work done in a good faith effort.

Detailed Control Room Design Review:

Current Status

The preliminary assessment of the Wm. H. Zimmer Station control room was completed by CG&E in early 1981. That report titled, "Preliminary Assessment Human Factors Review of the Zimmer Nuclear Power Station Control Room", was submitted to the NRC staff on February 4, 1981.

The objective of the preliminary assessment of the control room was to identify human factors and instrumentation improvements and establish a schedule, approved by the NRC staff, for implementation.

To accomplish the stated preliminary control room review objective, a Review Team (committee) was assembled consisting of individuals from the CG&E Engineering Department, Zimmer Station Operations Division and Sargent & Lundy instrument & controls group. Other persons were utilized in the course of the Review Team's efforts and included consultant personnel from General Physics Corporation to provide input in human factors engineering.

This preliminary assessment utilized two basic approaches. The first used a questionnaire to gather operator opinion. The questionnaire had been previously developed and followed in other control room assessments and was given to operator license candidates. The questionnaire was designed to elicit comments from operating personnel concerning improvements that could be made to emergency operating procedures, training, communications, annunciators, panel layout, control room environment/workspace, controls and displays.

The second method used involved comparing the operator-control room interfaces with established criteria. Using a human factors checklist, the following areas were evaluated:

A. Controls
B. Displays
C. Functional Grouping
D. Labeling
E. Annunciator and Alarm System
F. Emergency Procedures
G. Environment/Workspace
H. Computer Interface

Review of controls included coding, accidental activation, knobs, dials and switches. Displays were examined with regard to meter types, scale design, indicators, counters and chart recorders. Functional grouping was evaluated in terms of the arrangement of controls and displays, and their organization within subsystems. Labeling was assessed in terms of content, accuracy, readability, color and location. The review of annunciators and alarms included prioritization audibility, reflash capability and location of test switches. Procedure walk-throughs were used to examine the simulated action required for the following procedures.

1. Reactor Scram (OP.EOP.01)
2. Small Piping Break Inside Primary Containment (OP.EOP.02)
3. Loss of Coolant Accident (OP.EOP.03)
4. Turbine Generator Trip (>30% Power) (OP.EOP.09)
5. Turbine Generator Trip (<30% Power) (OP.EOP.10)
6. Emergency Shutdown with Standby Liquid Control System (OP.EOP.27)
7. Loss of DC Power (OP.EOP.28)

The content of procedures was also independently reviewed in terms of format, clarity, readability, sequencing of steps, and need for further procedural aids.

Workspace and environment was assessed in terms of layout, protection, communication system, and ventilation. Illumination and sound measurements were taken. Finally, the computer system was reviewed for efficiency.

Individual members of the review committee participated in several of the identified tasks and the findings of both methods were reviewed, opinions consolidated, improvements recommended, and implementation schedules established. The schedule for several tasks depends on the results of engineering studies and evaluations being performed jointly with the General Electric Co., Sargent & Lundy, and CG&E.

The original intent for resolution of the preliminary review findings was to perform improvements by using "color padding" or installation of mimics. As the preliminary review progressed, CG&E management established the policy that hardware changes which may be safety significant would be implemented during the preliminary assessment period. These changes included:

(1) Rearrangement of the feedwater control switches;

(2) Installation of a primary containment isolation valve status panel;

(3) Relocation of primary containment equipment and floor drain pump control switches;

(4) Relocation of primary containment parameter indicators;

(5) Relocation of over twenty (20) annunciator window boxes to place the annunciators near the control switches;

(6) The addition of four (4) discharge pressure indicators for the emergency core cooling pumps;

(7) Rearrangement of the Intermediate Range Neutron Monitor selector switches;

(8) Relocation of primary containment isolation valve reset switches;

(9) Addition of directional auditory scheme for the control room annunciators;

(10) Main control room lighting improvements;

(11) Prioritization of annunciators by use of color coding.

A Human Factors Engineering Branch (HFEB) team of the NRC staff reviewed the CG&E preliminary assessment report. After reviewing the subject report, the HFEB team, assisted by human factors consultants from Lawrence Livermore National Laboratory and BioTechnology, Inc. conducted an onsite control room audit from February 23 to 27, 1981. All human factors design improvements identified and reported by CG&E in their preliminary assessment were reviewed during the HFEB audit to evaluate the suitability of the proposed modifications.

The HFEB team's report is documented in the NRC Staff Safety Evaluation Report, Appendix F. The team's report states:

> Although our review identified some additional human factors deficiencies, we found that the control room was generally designed to promote effective and efficient operator actions.

Annunciator panels are used to indicate required operator actions, and will not be used as plant status indicators. Controls are generally well laid out and within easy reach of most operators, and follow generally accepted design conventions for position and direction of movement. Visual displays are generally adequate with respect to design, location and illumination. Controls and displays are generally well organized, and show consideration for functional and sequential arrangement. Control room layout and physical design of the control panels and consoles reflects consideration of human anthropometry. Color has been used effectively, and use of mimics on the panels and consoles enhances operator effectiveness in interfacing with controls and displays.

The NRC Control Room Design Review/Audit report (ref. 5) was forwarded to CG&E April 1, 1981. A meeting was held on April 14, 1981, during which identified deficiencies were discussed, means for the correction of most deficiencies were resolved, and schedules for correcting deficiencies were established. In subsequent telephone communications with CG&E, all issues were resolved, and a report containing the applicant's commitments (ref. 6) was submitted to NRC.

Program Plan

Implementation of the The Detailed Control Room Design Review (DCRDR) is on hold pending completion of outstanding control room construction. The Program Plan for the DCRDR will be submitted approximately one (1) month after work is authorized to continue in the affected area, in order to allow incorporation of any new findings or recommendatins.

Summary Report

The Summary Report for the DCRDR will be submitted approximately one (1) year after the Program Plan for DCRDR is submitted.

Safety Parameter Display Console

Current Status

Shortly after the release by the Nuclear Regulatory Commission of draft NUREG 0696, The Cincinnati Gas & Electric Company began to develop specifications for a Safety Parameter Display System (SPDS). Prior to the NRC's formal release of NUREG 0696, The Cincinnati Gas & Electric Co. had been evaluating the capabilities of various contractors to provide a SPDS for the Wm. H. Zimmer Nuclear Power

Station. This effort culminated in a request for quotation being issued. Subsequent to that, but before any award of contract, the NRC issued the final version of NUREG 0696 which relaxed the seismic requirements for the SPDS. With that change, CG&E determined that the appropriate manner to implement the SPDS was to integrate it into the Technical Support Center Data Acquisition and Display System (TSC DADS). This method had the advantage of ensuring a common database between the TSC DADS and the SPDS. In addition, it would allow any monitor on the DADS to become an SPDS monitor at the users discretion.

The original request for quotation addressed the design of a self contained SPDS. Based upon the decision to incorporate the SPDS into the TSC DADS system hardware, which had already been purchased, the scope of the SPDS design was reduced to development of computer software only.

In June, 1981 S. Levy Inc. was selected to design and develop the SPDS signal validation algorithms and implementing software. The scope of the SPDS design program was established as follows:

1 -- Develop Work Plan
2 -- Select Appropriate Signals
3 -- Create Signal Algorithms
4 -- Program Signal Algorithms
5 -- Incorporate Natural Circulation Analysis
6 -- Create Display Software
7 -- Checkout SPDS
8 -- Write Final Report
9 -- Provide Licensing Support As Needed

These tasks have been completed and the software has been integrated into the TSC DADS data aquisition system. The TSC DADS/SPDS computer system hardware has been purchased and received. The computer system has been installed and is operational with the TSC DADS and the SPDS software loaded. The data acquisition system and system monitors are partially installed, with construction currently on hold. Final design and pursuant installation of the control room interface to the SPDS is dependent upon the completion and acceptance of the Detailed Control Room Design Review program. With the exception of the control room interface, completion of the SPDS data aquisition and display hardware will be completed approximately six months from the resumption of electrical construction in this area.

Safety Analysis Report and Implementation Plan

S. Levy Inc. has prepared a final report which contains the justification for the selection of the parameters displayed by the Zimmer SPDS, as well as the justification for the algorithms employed in the SPDS. This document has been received by The Cincinnati Gas & Electric Company.

The design of the SPDS hardware and process interfaces was performed by Sargent & Lundy Engineers, the Architect Engineer for Zimmer. The AE employed standard design and design modification controls. The SPDS design has been described in previous submittals.

The S. Levy Safety Analysis Report and an implementation plan for the SPDS software design verification, design validation, and hardware installation verification will be submitted by August 1983.

SPDS Operable and Operators Trained

The SPDS will be fully operational within one year after work is authorized to continue in the affected areas. Preliminary training of the operators has commenced. This training will be augmented and intensified as the SPDS approaches a fully operational status. The final training program which results from the integration of all control room elements (Exhibit 1) will enhance operator understanding of the SPDS role in overall emergency preparedness.

The Cincinnati Gas & Electric Company requests that SPDS selected parameter set, the validation algorithm justifications, and the SPDS validation/verification implementaiton plan review be initiated at the time of its submittal in August 1983. Since the SPDS software design and development is complete and delivered and the system hardware is partially installed, a pre-implementation review is not requested. The design verification and validation program is scheduled for completion within three months of receipt of NRC comments on the SPDS implementation plan. We request that the final inspection and review of the installed SPDS system be completed commensurate with our schedule for completion of the system which is within one year of the resumption of electrical construction in this area. A firm date will be provided later.

Integration of Control Room Elements

When the emergency procedures, control room design review, safety parameter display system and Reg. Guide 1.97 designs and/or plans are complete, the results will be evaluated to identify potential improvements with respect to the total emergency response capabilities of the control room. This integration program will result in the following:

Final training program;

Final Emergency Operating Procedures;

Final Control Room Modifications;

Final SPDS Display.

The final integrated training program including the SPDS, DCRDR, EOPs, Reg. Guide 1.97 and ERFs will be completed by July, 1984.

Regulatory Guide 1.97

Current Status

The following information is supplied concerning Regulatory Guide 1.97 and its application to Emergency Response Facilities. A preliminary assessment of Post Accident Monitoring Instrumentation has been performed. The results of the assessment indicate that fifty-five (55) of the sixty-three (63) plant variables addressed by Regulatory Guide 1.97 have been incorporated in the current plant design. Instrumentation for forty (40) variables was purchased and installed prior to the issuance of Revision 2 to Regulatory Guide 1.97. Many of these instruments do not meet the range, environmental, seismic or power supply requirements for Category 1 and Category 2 instrumentation. The remaining variables have been recently redesigned and procured and do meet Regulatory Guide 1.97 requirements. These instruments are discussed and identified in the following paragraphs.

The majority of the currently designed variables are displayed in the Technical Support Center and the Emergency Operations Facility. These variables were identified in Appendix B, entitled "Plant Sensor Data Displayed in CG&E Emergency Response Facilities" of our Design Submittal for Emergency Response Facilities dated August 1982. This tabluation also identified variables that will be displayed or are utilized by the SPDS.

After Regulatory Guide 1.97 was issued, CG&E identified certain variables to be upgraded or installed as a result of evaluations of NUREG 0737 and Regulatory Guide 1.97. Engineering and procurement of instrumentation to monitor these variables is complete. These plant parameters are listed below:

1. Safety Relief Valve Position

2. Suppression Pool Water Level

3. Drywell Pressure

4. Containment High Range Radiation

5. Standby Gas Treatment System And Main Plant Vent Stack Noble Gas And Particulate Radiation Monitors

6. Post Accident Sampling and Analysis System

7. Suppression Pool Water Temperature

Plant parameters identified in Items 1-6 above were required by NUREG 0737. A full description of these instrumentation systems was previously submitted in Revision 73 of the FSAR, Appendix L Section 24 and 30. Supplements 1 and 2 of the Zimmer Safety Evaluation Report (NUREG 0528) conclude that Items 2-6 meet the requirements of NUREG 0737 Item II.F.1. The staff required implementation of Item 1, Safety Relief Valve Indication, prior to fuel loading.

Additionally, engineering and procurement has begun for the variables listed below. These variables are to be installed prior to initial fuel load.

1. Containment Hydrogen Concentration

2. Containment Oxygen Concentration

3. Emergency Damper Position

4. Containment Isolation Valve Position

The variables discussed in the first paragraph are currently being reviewed to compare the existing instrumentation with the requirements of Regulatory Guide 1.97. This evaluation is not complete. Utilizing the design criteria, as well as the results of the above comparison, a list of the remaining accident monitoring instrumentation, Regulatory Guide requirements and deviaitons from the requirements will be developed. The results of this evaluation and the BWR owners group Position on Revision 2 to Regulatory Guide 1.97 will be used to prepare a report describing how ZPS-1 meets the requirements of Regulatory Guide 1.97. The report will identify deviations from the

guidance in Regulatory Guide 1.97 and will present justifications for or alternatives to the Regulatory Guide Requirements. The report will also present a schedule for implementation of CG&E's position on Regulatory Guide 1.97. This report will be submitted in August of 1983.

Emergency Operating Procedures

Current Status

The CG&E Co. has been an active participant on the BWR Owner's Group Emergency Procedures Subcommittee since its inception. The Generic Guidelines and Contingencies developed by that subcommittee have been incorporated into plant specific procedures since early 1981.

The plant specific procedures have been reviewed by the General Electric Co. for compatibility with the generic guidelines and have been found acceptable. The plant specific procedures utilize the generic guidelines, adding plant specific parameter limits as appropriate and deleting those systems that are not applicable to the Zimmer BWR 5 design.

A procedure writer's guide was developed and used to generate the plant specific procedures. This guide included definition of action words, procedure format, procedure working, use of notes and cautions, etc.

In early 1981, the NRC requested that CG&E demonstrate the use of these Zimmer specific emergency procedures utilizing an appropriate BWR simulator. During March, 1981 the NRC staff review team witnessed this procedure demonstration at the General Electric BWR Training Center, Morris, Illinois and completed their review by observing a procedure walkthrough in the Zimmer control room. The NRC documented their evaluations in the Safety Evaluation Report as follows:

> In a submittal dated June 30, 1980, the BWR Owners' Group provided a draft of the generic guidelines for Boiling Water Reactors. The guidelines were developed to comply with Task Action Plan Item I.C.1(3) as clarified by NUREG 0737 and incorporated the requirements for short-term reanalysis of small-break loss-of-coolant accidents and inadequate core cooling (Task Action Plan Items I.C.1(1) and I.C.1(2)). In a letter dated October 21, 1980, from D.G. Eisenhut to S.T. Rogers, the staff indicated that the generic guidelines prepared by General Electric and the BWR Owners' Group were acceptable for trial implementation at the Zimmer Station. Additional information was requested by the staff and was submitted by the Owners'Group on January 31, 1981. This

additional information is still under review prior to the staff making a final conclusion on the acceptability of the guidelines for implementaiton on all Boiling Water Reactors. The guidelines are still considered acceptable for trial implementaiton at the Wm. H. Zimmer Nuclear Power Station. Based on our review of the emergency procedures developed from the BWR Owners' Group Guidelines, and our observation of the procedures being implemented on a simulator and in a walk-through in the control room, we conclude that the guidelines have been adequately incorporated. This fulfills the requirements of Section I.C.1 of NUREG 0694."

Should revisions to the generic emergency guidelines be made by the BWR Owner's Group, and these revisions found acceptable to the NRC, the Zimmer plant specific procedures will be revised as appropriate, addressing the generic changes. Revisions to the implemented emergency procedures are presented to the operators through an established training program. This training plan consists of several phases.

Phase 1 Each licensed operator receives a copy of the revised plant specific procedure(s) for their personal use.

Phase 2 Each licensed operator receives classroom training on the use of and basis for each plant specific procedure. Included are written and/or oral examinations.

Phase 3 Each licensed operator receives training at a BWR simulator utilizing the Zimmer procedures. This provides the opportunity to slowly progress through a casualty by "freezing" the simulator to allow the operator to verify the correct procedure is bieng used and that the correct step is being implemented. In addition, a casualty or scenario can be repeated if necessary.

Phase 4 Each licensed operator receives Zimmer control room training in the use of the plant specific procedures during scheduled drills. These drills simulate plant specific casualties and require the operators to implement the proper procedure to restore the plant to a safe condition. Drill performance is evaluated by supervisors in the Operations and/or Training Divisions.

Generic Technical Guidelines

The BWR Owner's Group generic guidelines have been submitted and found to be acceptable to the NRC staff. The latest revision to the generic guidelines were submitted in a letter from T.J. Dente, Chairman, BWR Owner's Group to D.G. Eisenhut dated December 22, 1982.

Submittal Date for Procedures Generation Package

An Emergency Procedures Writer's Guide is now being developed which addresses additional areas of concern when writing emergency procedures. This writer's guide is based on inputs from NUREG 0899," Guidelines for the Preparation of Emergency Operating Procedures" and INPO's "Emergency Operating Procedures Writing Guideline" (INPO 82-017). The Emergency Procedures Writer's Guide will be used for future review and revision of the existing emergency procedures and newly identified procedures.

A program for EOP verification/validation is in draft stage. References for this program include NUREG 0899; "Emergency Operating Procedure Verification Guideline" (INPO 83-004) and "Emergency Operating Procedure Validation Guideline" (INPO 83-006). Plans for verification/validation presently include videotaping licensed control room operators as they walk through simulated casualty senarios using plant specific emergency procedures.

The Procedures Generation Package will be submitted by September 1983.

EOP Implementation

The plant specific procedures have been reviewed, found acceptable to the NRC staff and implemented. These procedures, which incorporate the BWR Owner's Group generic technical guidelines were first approved for implementation on February 4, 1981. Zimmer Operations Division personnel have received annual classroom lectures concerning the use of plant specific procedures and were examined on the procedures during NRC operator exams for SRO and RO licenses. In addition, the operators have received annual training at a BWR simulator concerning the use of these procedures. Two groups of NRC license candidates were given simulator exams which included the utilization of these procedures during simulator casualties.

Emergency Response Facilities

The TSC, OSC, and EOF will be fully functional, with respect to structure, implementation procedures, and trained staff, with the exception of some communications, by September 7, 1984. Installation of some communication equipment will take 2-3 months (approximate) to complete after work is authorized to continue in the affected areas.

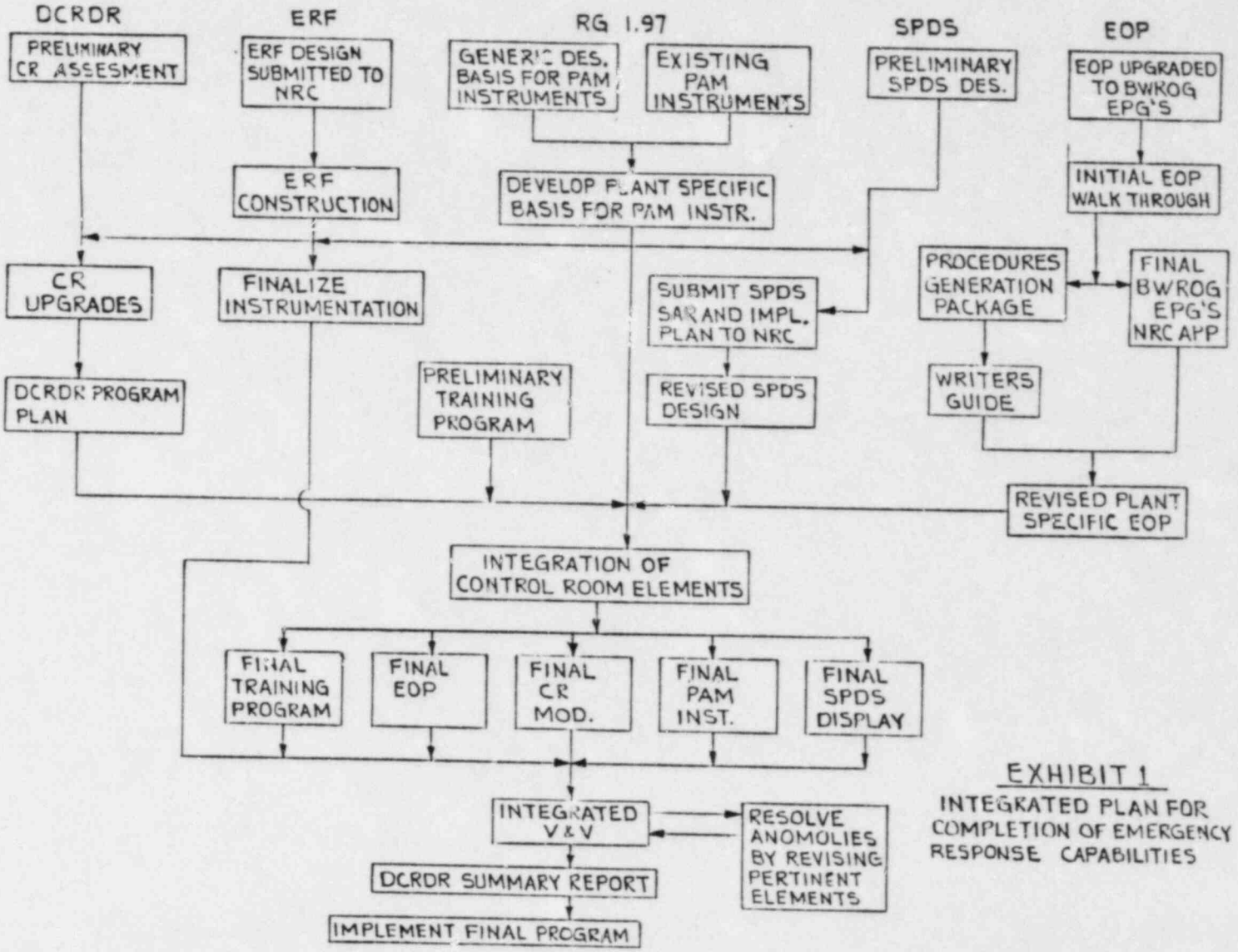
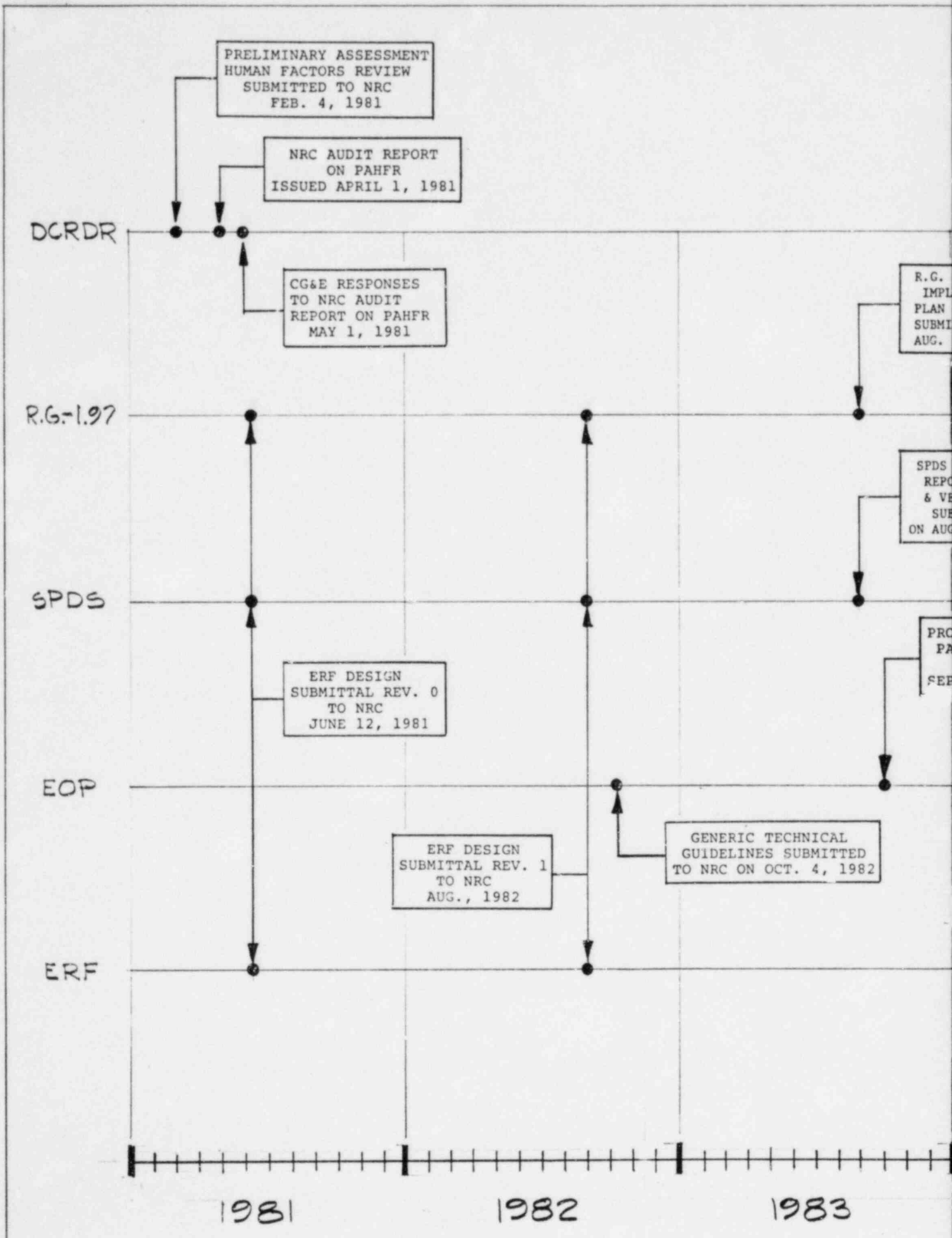


EXHIBIT 1

INTEGRATED PLAN FOR COMPLETION OF EMERGENCY RESPONSE CAPABILITIES


PRELIMINARY ASSESSMENT HUMAN FACTORS REVIEW SUBMITTED TO NRC FEB. 4, 1981
NRC AUDIT REPORT ON PAHFR ISSUED APRIL 1, 1981
DCRDR
CG&E RESPONSES TO NRC AUDIT REPORT ON PAHFR MAY 1, 1981
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EOP
GENERIC TECHNICAL GUIDELINES SUBMITTED TO NRC ON OCT. 4, 1982
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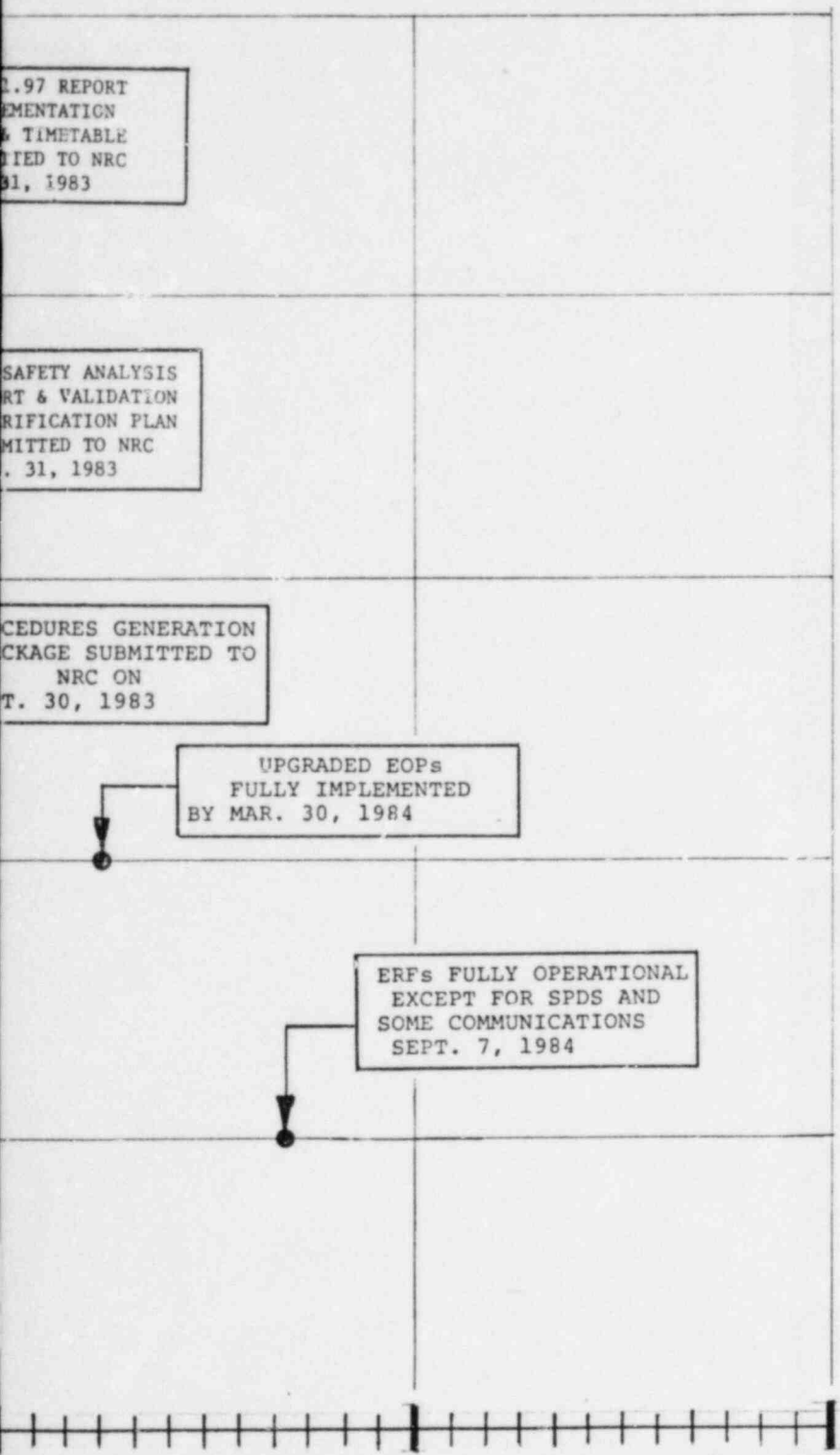
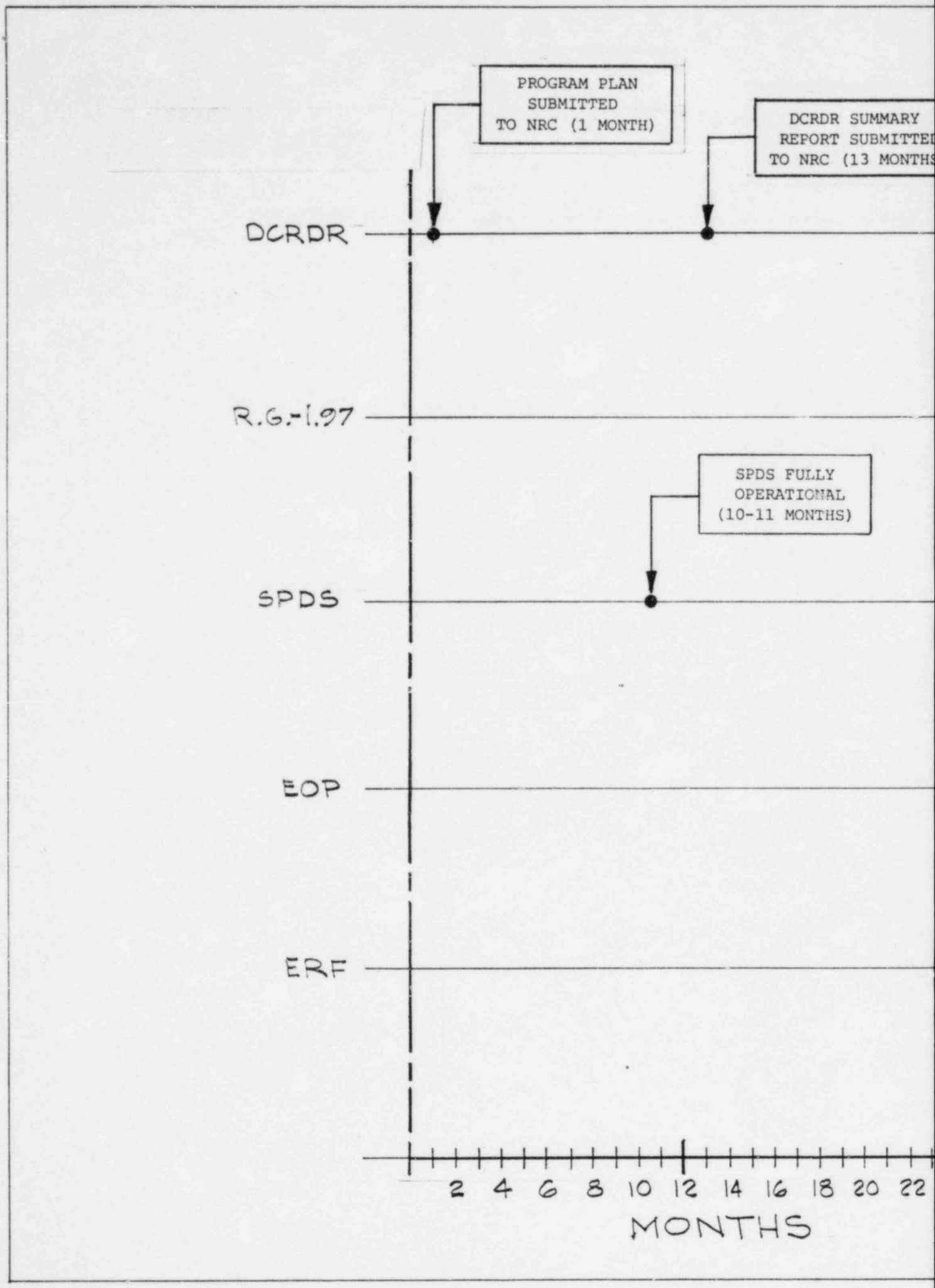


EXHIBIT 2
(SHEET 1 OF 2)

TIMETABLE
FOR
EMERGENCY RESPONSE CAPABILITIES
IMPLEMENTATION PLAN
APRIL 15, 1983


PROGRAM PLAN
SUBMITTED
TO NRC (1 MONTH)
DCRDR SUMMARY
REPORT SUBMITTE
TO NRC (13 MONTHS
DCRDR
R.G.-1.97
SPDS FULLY
OPERATIONAL
(10-11 MONTHS)
SPDS
EOP
ERF
2 4 6 8 10 12 14 16 18 20 22
MONTHS

MONTHS AFTER WORK IS
AUTHORIZED TO CONTINUE
IN THE AFFECTED AREA

EXHIBIT 2
(Sheet 2 OF 2)

TIMETABLE
FOR
EMERGENCY RESPONSE CAPABILITIES
IMPLEMENTATION PLAN
APRIL 15, 1983