MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
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April 15, 1983

JAMES P. McGAUGHY, JR.
VICE PRESIDENT

U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
License No. NPF-13
File: 0272/L-800.0
Response to Generic Letter 82-33,
Emergency Response Capability
AECM-83/0232

This letter is being transmitted in response to the NRC's Generic Letter 82-33 entitled "Supplement 1 to NUREG-0737; Requirements for Emergency Response Capability." The purpose of this submittal is to provide the MP&L actions with regards to the integration and implementation of those tasks covered by Supplement 1 to NUREG-0737. The specific elements covered by this document include the safety parameter display system (SPDS), emergency operating procedures (EOPs), Regulatory Guide 1.97 (Revision 2), detailed control room design review (CRDR), and the GGNS emergency response facilities (ERFs).

The attached report on "Integration and Scheduling of Supplement 1 to NUREG-0737" discusses each of the above elements and the actions to be taken by MP&L to integrate them together and also into the overall GGNS project work scope. Appendix A to this report provides the GGNS Integrated Schedule as requested in your letter to provide the MP&L plans for phased implementation and integration. MP&L has completed a substantial portion of the tasks covered by Supplement 1 to NUREG-0737 during the licensing phase of GGNS and, therefore, MP&L is proposing to integrate future tasks in light of those already completed. Section 8.0 of the attached report provides the dates for completing the basic emergency response capability tasks, as requested by the NRC Staff.

In accordance with 10 CFR 50.54(f), MP&L is transmitting this report under affirmation as a basis for modification of the GGNS operating license. The confirmatory order to be issued by the NRC should reflect the schedule and actions proposed in the attached report in keeping with the philosophy established by the Commission's approval of SECY-82-111B and the resulting Supplement 1 to NUREG-0737.

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ADD:
W. Paulson

If you have any questions, please contact this office.

Yours truly,

JPM:rg

Attachment

cc: Mr. J. B. Richard (w/a)
Mr. R. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
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BEFORE THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

LICENSE NO. NPF-13

DOCKET NO. 50-416

IN THE MATTER OF

MISSISSIPPI POWER & LIGHT COMPANY
and
MIDDLE SOUTH ENERGY, INC.
and
SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

AFFIRMATION

I, J. P. McGaughy, Jr., being duly sworn, stated that I am Vice President - Nuclear of Mississippi Power & Light Company; that on behalf of Mississippi Power & Light Company, Middle South Energy, Inc., and South Mississippi Electric Power Association I am authorized by Mississippi Power & Light Company to sign and submit to the Nuclear Regulatory Commission, this prepared report for the Operating License of the Grand Gulf Nuclear Station in accordance with 10CFR50.54(f); that I signed this submittal as Vice President - Nuclear of Mississippi Power & Light Company; and that the statements made and the matters set forth therein are true and correct to the best of my knowledge, information and belief.

J. P. McGaughy, Jr.

STATE OF MISSISSIPPI
COUNTY OF HINDS

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 15th day of APRIL, 1983.

(SEAL)

Notary Public

My commission expires:

13 FEBRUARY 1985

GRAND GULF NUCLEAR STATION
UNIT 1

REPORT ON INTEGRATION

AND SCHEDULING OF

SUPPLEMENT 1 TO NUREG-0737

Mississippi Power & Light

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to provide MP&L's response to the NRC's Generic letter 82-33 (dated December 17, 1982) on Supplement 1 to NUREG-0737 for the April 15, 1983, submittal. This document will provide our plans and schedule for the Grand Gulf Nuclear Station (GGNS) in meeting Supplement 1 to NUREG-0737 concerning Emergency Response Capability.

The tasks which are considered in this document, as identified by the elements of NUREG-0737 Supplement 1 are:

- Safety Parameter Display System (SPDS)
- Emergency Operating Procedures (EOPs)
- Regulatory Guide 1.97 (Rev. 2)
- Control Room Design Review (CRDR)
- Emergency Response Facilities (ERFs)
- Integration and Training

1.2 Scope

The scope of this document and NUREG-0737 Supplement 1 is (1) to establish the licensing bases for previous tasks completed and designing, procuring, and implementing the remaining tasks being addressed by NUREG-0737 Supplement 1, (2) to integrate those tasks to best benefit the control room operator actions and (3) to implement these modifications, as determined necessary, on a reasonable and workable schedule. MP&L believes this type of integrated program development and planning to be a commendable effort on the part of the NRC to move from dictated schedules that have historically proven to only complicate effort completion, and move toward workable integrated schedules considering total project scopes.

It is important to recognize that an integrated program should not establish fixed dates for completion of tasks. The development and completion of one task may change the direction and premise of another task for example, a good SPDS could obviate the need for additional modifications to control rooms or could justify the acceptability of existing accident monitoring instrumentation. As stated in Supplement 1 to NUREG-0737 "Each licensee needs flexibility in integrating these activities, taking into account the varying degree to which the licensee has implemented past requirements and guidance." Schedules based on milestone completion is the most effective means to implement integrated tasks.

1.3 NRC Requirements vs Guidance

Previous NRC guidance in the form of NUREGs and Regulatory Guides has moved closer toward being regulatory requirements, especially on guidance developed to support the TMI Task Action Plan. NUREG-0737 Supplement 1 recognized this concern and reaffirms that such NUREGs as -0654, -0696,

-0700, -0801, -0814, -0835, and -0899 are again only to be used as sources of guidance and information and should not be misconstrued as requirements. Regulatory Guides such as R.G. 1.97, 1.23, and 1.47 are only to be considered as guidance or as an acceptable approach to meeting the formal requirements. The inclusion of regulatory guidance into plant design should only be required considering the plant specific needs for that facility.

The requirements and guidance contained in Supplement 1 replace the corresponding requirements in the previous NUREG-0737 items and therefore, will be used in meeting the remaining GGNS tasks for the action plan items. The NUREG-0737 items included are:

o I.C.1	Guidance for the Evaluation and Development of Procedures for Transients and Accidents
o I.D.1	Control Room Design Reviews
o I.D 2	Plant Safety Parameter Display Console
o III.A.1.2	Upgrade Emergency Support Facilities
o III.A.2.2	Meteorological Data

The previous schedules established with respect to these items have been superceded by the schedules established by MP&L's response to Generic Letter 82-33.

1.4 GGNS Involvement in NUTAC on Emergency Response Capability

A Nuclear Utility Task Action Committee (NUTAC) on Emergency Response Capabilities was established by a group of utility representatives in recognition of the need for industry guidance in implementing Emergency Response capabilities. The principal objectives of the NUTAC are to achieve industry consensus on emergency response facility guidelines, accident monitoring instrumentation guidelines, and an evaluation of the man-machine-training-procedures systems. The NUTAC began meeting in September, 1982 and is expected to continue until approximately mid 1983. Additional NUTAC efforts beyond this date will be conducted as required to address all needs of Supplement 1 and emergency response capability.

The NUTAC is in the process of developing utility guidelines for the following:

- Technical Criteria and implementation plans for NUREG-0737 Supplement 1 issues not covered by other NUTACs,

- Effective Emergency Response Capabilities Implementation Program.
  - Emergency Response Facilities
  - Regulatory Guide 1.97
  - Verification & Validation
  - Total Integration

On October 21, 1982, members of this NUTAC met with the NRC Staff to discuss these actions being taken by the committee. The philosophy being taken by this committee was believed to be mutually agreeable to both the NRC and licensees.

MP&L has been an active member of this NUTAC since its inception. The results being developed by the NUTAC are expected to provide a substantial contribution to the total integration philosophy and implementation mechanism and will be considered in the final integration actions to be used for GGNS.

2.0 SAFETY PARAMETER DISPLAY SYSTEM (SPDS)

2.1 SPDS Background Actions/Documentation

MP&L began work on developing a total emergency response facility information system (ERFIS) and a safety parameter display system (SPDS) prior to the final issuance of NUREG-0696. The scope and design of the ERFIS/SPDS system was based on what was believed to be the functional design requirements for such a system at that time. A general functional description of the ERFIS/SPDS system including the proposed list of selected parameters (based on a draft revision of Regulatory Guide 1.97) was provided for NRC review in AECM-81/52 dated February 12, 1981. In light of the requirements of item I.D.2 of NUREG-0737 (Nov. 1980) and in consideration of the NTOL status of GGNS, MP&L committed to supply a functionally operable ERFIS/SPDS system by October 1982.

2.1.1 SPDS Software and Hardware Development - Science Applications Inc. (SAI) was retained in mid-1980 to develop a prototype ERFIS/SPDS system for both the hardware and software packages. The functional requirements and system descriptions began development expeditiously and were completed by October 1980. This was discussed with the NRC at this time.

The SPDS conceptual displays were established in January 1981, given what was believed to be an acceptable display design for operator usage. These proposed displays were provided for NRC review in GGNS FSAR Section 13.B.1.10 by Amendment 49 (7/81). This design utilized rotating parameter and graphic displays with critical safety function (CSF) viewing on multiple pages. However, during design progression it became evident that the NRC's intent was to have a fixed SPDS display for each mode of operation. The existing SPDS displays were then modified to give only one display of selected parameters per plant mode without showing the entire CSF parameter displays. These display configurations without CSF displays have remained virtually the same since early 1981.

The primary hardware consists of two identical ERFIS dedicated computers which supply both online and standby data acquisition, processing, and storage, using T-Bar switching. Presently five nineteen inch color monitors with RAMTEC display generators are being planned for ERFIS use in the control room (1 CRT), TSC (2 CRTs), and EOF (2 CRTs). ERFIS dedicated printer/plotters will be supplied in both the TSC and EOF.

Due to hardware and software development and implementation delays, the October 1982 date for ERFIS/SPDS functional operation was unable to be met. This was discussed in MP&L letter AECM-82/398 dated September 29, 1982.

With the recent issuance of Supplement 1 to NUREG-0737, an internal licensing review of the ERFIS/SPDS system was conducted based on the more recent NRC guidance, industry reports, and the BWR Owners Group efforts as discussed in the

section 4.2. As a result of this review, the display information presently available on the GGNS SPDS is not believed to be sufficient to meet the NRC guidance or industry accepted displays for operator interaction and modifications to the system are planned. Even though the present displays are believed to aid control room operations they do not serve the operator in the most effective way for accident and response recognition. Therefore, good faith credit on the previous MP&L efforts to meet the NRC's established implementation dates can only be taken to the extent that the existing SPDS can be modified and still meet the more modern SPDS designs.

To date, MP&L has not received any input or acceptability review of the GGNS ERFIS/SPDS design from the NRC. The GGNS ERFIS/SPDS description provided for NRC review in AECM-81/52 (February 12, 1981) and a description of the Class A model for atmospheric dispersion and dose assessment in AECM-81/350 (September 28, 1981) have not been addressed for acceptability by the NRC. The MP&L response to item I.D.2 in FSAR Chapter 18 and the system description for the SPDS in FSAR section 13.B.1 did not receive NRC review. In addition, the GGNS SER (NUREG-0831) has not provided the necessary description in either SER section 22-I.D.2 or Chapter 13.

2.1.2 Dose Assessment Model Development - Based on the guidance of NUREG-0654, MP&L developed an offsite dose assessment model to meet the level of detail required of a Class A atmospheric dispersion model. A preliminary description for this model was transmitted to the NRC in AECM-81/103, dated April 10, 1981, and a detailed description was later provided in AECM-81/350, dated September 28, 1981.

This model provides dose estimates and a plume characterization (including plume dimensions and locations, magnitude arrival times of peak relative concentrations) within the 10 mile EPZ or for travel periods of three hours.

The approach used by GGNS is to develop the model in modular form running on a real time basis with a batch processing program to provide periodic reports from archived data. The model consists of a sampling and activation module, an accidental release module, and a display module and is presently planned to be integrated to the existing Emergency Response Facility Information System.

This model will supply meaningful data to control room personnel within 15 minutes of an alert to aid in responding to the emergency situation. Additionally the model will perform a simple validation of the meteorological input data and alert the operators of a possible meteorological tower malfunction.

Calculations will be performed by using a puff advection model for atmospheric dispersion and standard dose equations for radiological dose assessments. The approach is to use the primary meteorological tower to characterize site meteorology

with the puff advection model to provide a realistic dispersion estimation of effluents released from the GGNS. This model was made site specific to GGNS by adding the terrain, wake parameters, and other unique site area features.

The specific requirements for the Class A model, as dictated by NUREG-0654, are not necessary to meet the requirements of 10 CFR 50, Appendix E. Even though the GGNS model presently meets the Class A model level of detail, MP&L believes that the specific licensing commitment to provide a Class A model should be removed as a licensing commitment for GGNS.

2.2 Use of NRC/Industry/Owners Group Guidance Documents

Due to the early requirements to implement an ERFIS/SPDS system, the only guidance document available for use was a draft of NUREG-0696. In a good faith effort, MP&L began implementation of what was believed to be the requirements of the needed ERFIS/SPDS system (except seismic qualification) as then required by NUREG-0696. The system design was later compared to the final revision of NUREG-0696 for accuracy. Parameter selection was based on a second draft of Reg. Guide 1.97 (Rev. 2). NUREG-0835 on human factors for the SPDS and NSAC-39 on SPDS verification and validation were unavailable when the GGNS display design was frozen to meet the required operational date of the system.

MP&L initially joined the BWR Owners Group Committee on Control Room Improvements, which began developing the generic position and displays on the SPDS for BWRs. However, due to the scheduled time frame for SPDS implementation on GGNS, MP&L established their own technical requirements and display configurations.

Since that time, the BWR Owners Group has published several guidance documents and participated in a cooperative venture with Sandia Laboratories and NSAC to develop the BWR Graphics Display System Dynamic Screening Program. These documents through the review of the BWR Owners Group have developed an acceptable basis for SPDS operator information using concise display graphics. MP&L expects to utilize these documents in evaluating the existing displays for design modification.

2.3 Existing SPDS Status

The hardware for the ERFIS/SPDS system has been incorporated into the GGNS lower cable spreading room. However, due to such things as modifications being conducted from the SPDS acceptance test results, incorporation of the dose assessment model, other recent control room modification efforts, and the need for software modification the installation of the SPDS operator peripherals in the control room and TSC/EOF are not being conducted at this time. The functional design requirements for the SPDS are presently being re-evaluated for the GGNS ERFIS/SPDS system to meet the requirements of Supplement 1 to NUREG-0737.

2.4 Future Implementation Actions on SPDS

Since the GGNS SPDS software will be modified to more closely align with the GGNS emergency procedure and to meet the critical safety function display requirements of Supplement 1 to NUREG-0737, a functional requirements review will be conducted to determine what modifications to the software codes are necessary to more accurately reflect the control room needs. Even though the ERFIS/SPDS hardware has been delivered at GGNS, the total system operation cannot be supported until the SPDS display information has been thoroughly considered and established based on a safety analysis review. Therefore, the schedule proposed in Appendix A will be pursued to assure timely implementation.

The following actions must still be accomplished prior to functional operation of the ERFIS/SPDS.

- Review GGNS EOPs for designing displays
- Prepare revised Functional Requirements Document & Specs
- Modify SPDS software programs for display revision
- Modify hardware, as required
- Perform system V&V
- Incorporate SPDS into simulator
- Incorporate dose assessment model into system
- Perform safety analysis based on revised design.
- Develop ERFIS/SPDS usage procedures
- Develop ERFIS/SPDS training program
- Validate ERFIS/SPDS system

MP&L will develop and submit to the NRC an ERFIS/SPDS Implementation Plan which will include the completion of the installation and modifications to the system as required. The plan will include elements of the V&V program, procedure preparation, training efforts and functional operation of the system.

The tasks for ERFIS/SPDS completion, necessary software modifications, V&V planning, safety analysis timing, procedure development and training plans are shown in the schedule attached in Appendix A. An effective integration and implementation of the SPDS is further discussed in the section 7.4 of this report.

2.5 Justification for Near Term Acceptability

Until the ERFIS/SPDS system becomes functionally operable, the existing control room design and plant status monitoring provisions are sufficient to avoid any substantial increase in risk to the safe operation of GGNS until the SPDS is available. The following information provides this justification:

2.5.1 BOP Computer Capability - MP&L has designed into GGNS an advanced computer based plant status monitoring system which is capable of providing almost unlimited system status information on human factored CRT displays. As part of the overall computer based system at GGNS, a BOP computer has been designed to provide operator information on plant process data through two identical CRTs on the P680 Operator Control Console and a

CRT on the P866 Monitoring Console at the Shift Supervisors desk. In addition, an Engineering Console will be provided in the Tech Support Center. The output format for these are generated by a Batch Display Compiler and a Interactive Display Compiler.

Among the displays available, there are approximately 50 pre-established displays which provide real time plant process diagrams and operator guides. More than 30 of these displays are actuated by single key direct action call up which requires no computer interaction. Even though these process diagrams and operator guides do not directly display the specific critical safety functions in a concise format, they provide complete parameter displays in logical formats that are easily accessed.

The major plant systems and some grouped functions are available for display. Some examples of these system displays are the B21-Nuclear Boiler System, C11-CRD Hydraulics, D17-Process Radiation Monitoring, E12-RHR system, M51-Drywell Cooling, M41-Containment Cooling, N11-Main Steam and more than 30 other systems. The grouped function displays include LPRM readings, power flow mapping, post-LOCA injection system mapping, RPV level bar charts, and other grouped parameter bar charts.

In addition to the direct action functions, the operators can perform interactive sequence functions, free format interactive functions, and menu selection functions. This system capability provides a comprehensive parameter display monitoring capability for rapid and organized plant monitoring and accident response.

2.5.2 Existing Improvements in Accident Response Capability - As discussed in the other sections of this report, MP&L has made substantial progress to assure efficient accident response and plant status features available to the control room operator.

The control room preliminary design assessment (PDA), as discussed in Section 5.1, resulted in a number of modifications to improve the overall operations in the control room. The GGNS PDA has been approved by the NRC for full power operation.

A recently revised set of emergency operating procedures (EOPs) as discussed in Section 3.1 are being implemented at GGNS which are based on symptom based BWR Owners Group EPGs. The NRC Staff has also accepted these procedures on GGNS for full power operation.

MP&L has reviewed the variable requirements of R.G. 1.97 for GGNS compliance, as discussed in section 4.5 of this report. GGNS presently monitors all the variables (except for SLCS flow and primary coolant radioactivity) listed in Table 1 of R.G.

1.97 (Rev. 2). Even though not all the present instrumentation is environmentally qualified (for those requiring qualification), it is acceptable to rely on the existing instrumentation (as stated in NUREG-0737 Supplement 1) until it can be fully upgraded as required.

MP&L is also in the process of completing an "isolation valve status board" in the control room which will schematically represent the major isolation valves in the plant. This board, which is located above the P870 panel, indicates isolation valve open/close status by use of on/off lighting. This should be a substantial aid to operator recognition of isolation status.

In addition, MP&L has also provided an onsite simulator for operator training which will be identical the existing GGNS control room. Simulator training which directly represents the GGNS control room operations can be conducted without simulator/control room variance. An SPDS will also be added to the simulator as part of the SPDS implementation.

2.5.3 Offsite Dose Assessment Capability - Since the GGNS offsite dose assessment model (Class A model) discussed in section 2.1.2 is not scheduled to be available for use during the first fuel cycle MP&L will institute those compensating actions discussed in AECM-81/327, dated August 28, 1981. These compensating actions include having procedures for calculating gaseous effluents, providing timely availability of health physics personnel, and providing direct access to radiological and meteorological data for dose projection. MP&L's dose assessment capability has been tested through emergency preparedness exercises and witnessed by NRC Region II I&E representatives.

2.5.4 Risk of Premature Implementation of the SPDS - Even though the SPDS hardware is near completion, the necessary modifications to the software should be accomplished prior to incorporation of the SPDS into the control room.

Recent modifications or additions to the control room design were made during the NTOL phase of GGNS. As a result, the operator training program has had to make adjustments for these modifications the training to assure accurate operator understanding. Additional provisions of an SPDS at this time may tend to degrade operator response understanding instead of enhancing it.

Based on the above control room operator monitoring and response capability and the status of the existing ERFIS/SPDS system, MP&L believes that it is both safe and prudent to schedule the implementation of this system as indicated in Appendix A.

3.0 EMERGENCY OPERATING PROCEDURES (EOPs)

3.1 EOP Background Actions/Documentation

MP&L began preparation of symptom-based emergency operating procedures (EOPs) in accordance with the requirements of items I.C.1, I.C.7 and I.C.8 of NUREG-0737 during the NTOL stage of GGNS.

In compliance with item I.C.1, the BWROG transmitted by letter dated June 30, 1980, the Emergency Procedures Guidelines (EPGs) for the BWR 1-5 product lines were transmitted to the NRC. On October 21, 1980, the NRC informed the BWR Owners' Group that the guidelines were acceptable for trial implementation on six NTOL plants. These plants were either BWR-4 or BWR-5 product lines. MP&L participated with the Owner's Group in extending the guidelines to address BWR-6/Mark III plants, and on January 31, 1981, these revised guidelines were transmitted to the NRC. On January 27, 1981, MP&L provided to the NRC by letter (AECM-81/44) the Grand Gulf Nuclear Station (GGNS) Emergency Procedures which were written based on the revised BWR Emergency Procedures Guidelines.

A meeting was conducted with the NRC Procedures and Test Review Branch (PTRB) on February 26 and 27, 1981 to review the initial symptom based EOPs for GGNS. In addition on March 9 and 10, 1981 simulator demonstrations were conducted using the GGNS EOPs to validate their design. Based on the NRC's review and the simulator demonstrations, the GGNS EOPs were revised and transmitted to the NRC by AECM-81/140, dated April 15, 1981.

The requirements of item I.C.7 of NUREG-0737 state that the NSSS vendor will review the emergency operating procedures to further verify their adequacy. A meeting, therefore, was conducted on November 3 and 4, 1981 with members of GE to review the GGNS procedures. Comments were received from GE and evaluated by MP&L for incorporation into the GGNS EOPs. The EOPs with the initial incorporation of GE comments in the EOPs was transmitted to the NRC by AECM-82/299 dated June 28, 1982 and a copy of the actual GE comments was transmitted by AECM-82/344 dated August 20, 1982.

Based on the NRC PTRB's review of the GGNS EOPs (with GE comments incorporated) as indicated by NRC correspondence on September 15, 1982, MP&L elected to re-evaluate the inclusion of the GE comments and transmitted a revised set of draft EOPs for NRC review (AECM-82/543 dated November 12, 1982.) A conference call was conducted with the NRC PTRB on November 16, 1982 to finalize EOP review and comment incorporation. As a result of MP&L's commitment to incorporate NRC comments (as indicated in AECM-82/554 dated November 23, 1982), an approved revision to the GGNS EOPs was set in place at the GGNS site in January, 1983.

Item I.C.8 of NUREG-0737 requires that the NRC review and audit selected EOPs for NTOL applicants to determine operational adequacy. As previously discussed, a meeting was conducted with the NRC on February 26 and 27, 1981 to review the EOPs. The EOPs were evaluated based on GGNS control room design, plant characteristics, administrative controls and operator training.

On March 9 and 10, 1981, a set of revised procedures were employed to direct operator responses to simulated transients and accidents on the Perry simulator. A team of NRC and contractor personnel observed the simulator exercises and discussed the exercises with the operations personnel following each simulation. The transients and accidents observed included a wide range of simulations from minor transients to major accidents with multiple system failures.

On June 11, 1981, the same team of NRC reviewers observed the Grand Gulf control room operators participate in a walk-through of the procedures in the Grand Gulf Unit 1 control room. The simulated event was a large break LOCA. The scenario included multiple failures including several failures beyond the design basis, which exercised a majority of the symptom-based emergency procedures. The procedures were discussed with the operations personnel during and after the event. The efficient manner in which the procedures were executed indicated that the Emergency Operating Procedures were generally clear, properly sequenced, and compatible with the control room equipment and arrangements.

As discussed in the GGNS SER, the demonstration of the procedures in the simulator and in the control room, and the changes made to the procedures as a result of this process, the NRC concludes that the Emergency Operating Procedures are acceptable for full power operation.

3.2 Use of NRC/Industry/Owners Group Guidance Documents

3.2.1 BWR Owners Group EPGs - In a GE submittal dated June 30, 1980, the BWR Owners Group provided a draft of Revision 1 to the generic emergency procedure guidelines (EPGs) 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. In a NRC letter dated October 21, 1980, the staff indicated that the generic guidelines prepared by General Electric and BWR Owners Group were acceptable for trial implementation at six (6) selected BWR facilities.

As discussed in the GGNS SER the NRC's review of the emergency procedures developed from the BWR Owners' Group Guidelines and the observation of the procedures being implemented on a simulator and in a walk-through in the control room, they have concluded that the guidelines have been adequately incorporated into the procedures. The existing set of GGNS EOPs are based on Revision 1B of the BWROG EPGs.

MP&L, being a member of this owners group, will continue to review the development of later revisions of the procedures guidelines. This is consistent with the intent of NUREG-0737, item I.C.9 for long term upgrading of procedures.

3.2.2 NUREG-0899, Guidelines for the Preparation of EOPs - Future implementation of revised EOPs, if necessary, for GGNS will consider the use of the formalized program planning as discussed in this NUREG.

3.2.3 INPO Documents - The Emergency Operating Procedures Implementation Assistance (EOPIA) Review Group under the auspices of INPO have and are continuing to develop guidance for EOP upgrading. Included are the EOP Writing Guidelines, Procedures Generation Package Guidelines, and EOP Verification and Validation Guidelines. These documents are expected to provide valuable guidance for performing on EOP program development review.

3.3 Existing EOP Status

MP&L presently has in place an approved set of symptom based EOPs using Revision 1B of the BWR emergency procedure guidelines. The NRC has reviewed and approved both the BWR guidelines and the GGNS procedures for full power operation.

GGNS operator training programs have been established and training based on these EOPs is in progress at the GGNS site. Use of the EOPs during operator training on the GGNS simulator provides a means for validating the EOPs by trial and error. Modifications to the EOPs as a result of the operator exercises will be reviewed and revised as determined necessary.

The EOPs consist of three primary symptom based procedures:

EP-1; Level Control
EP-2; Cooldown
EP-3: Containment Control,

Six contingency procedures:

EP-4; Level Restoration
EP-5; Rapid RPV Depressurization
EP-6; Core Cooling Without Injection
EP-7; Core Cooling Without Level Restoration
EP-8; Alternate Shutdown Cooling
EP-9; RPV Flooding

and one ATWS related procedure:

EP-10; Reactivity Control

3.4 Future EOP Implementation Action

MP&L will continue to monitor the progress of the BWR Owners Group on Emergency Procedures Guidelines (EPGs). The GGNS EOPs will be reviewed periodically for technical improvement based on revised editions to the EPGs. Prior to any modification to the existing GGNS EOPs, careful consideration to the plant specific application for GGNS will be performed and appropriate documentation given.

A long term review of the GGNS EOPs based on the incorporation of the SPDS, simulator usage of the EOPs, improvement to the EPG technical guidelines, R.G. 1.97 positioning, and operations experience will be

conducted to determine the effective use of the EOPs and whether further redesign and modification is required. This review will also consider the EOP writing style and format for improved operator understanding. If substantial improvement to the EOPs is determined necessary from this review, MP&L will develop an EOP procedures generation package (PGP) with the necessary preparation to all or part of the technical guidelines, writers guide format, validation program and/or training program. This review is expected to be performed prior to the second refueling outage as shown on the schedule in Appendix A.

3.5 Justification for Near Term Acceptability

GGNS has implemented an NRC approved set of symptom based EOPs for use up to full power operation and no justification of near term acceptability is required.

4.0 REGULATORY GUIDE 1.97 (Revision 2)

4.1 R. G. 1.97 Background Actions/Documentation

In AECM-81/225, dated July 21, 1981, MP&L committed to comply with Regulatory Guide 1.97 (Revision 2) or provide alternate justification for implementation of the guide. Subsequent to this commitment, MP&L received the GGNS Operating License which contained License Condition 2.C.(23) requiring MP&L to submit a proposal including a proposed implementation schedule for meeting Revision 2 of R.G. 1.97 by July 15, 1982. In response to this requirement, MP&L transmitted AECM-82/317, dated July 15, 1982, which provided a complete description of how GGNS presently complies with the variable requirements of Table 1 of the guide. Based on the further development of SECY-82-111, the final schedule to provide the GGNS position on R.G. 1.97 was deferred by AECM-82/563 (dated November 29, 1982) in order that a review of the total integration of all emergency response capabilities could be considered.

In addition, thirteen signals specifically identified for post accident tracking in FSAR Section 7.5 were discussed in AECM-82/78, dated April 1, 1982, which provided their existing qualification and the efforts to upgrade them, as necessary.

In the GGNS License Condition 2.C.44(f), MP&L was requested to submit a report addressing the analysis performed by the BWR Owners Group on additional instrumentation necessary to determine inadequate core cooling (ICC). In AECM-82/368, dated August 30, 1982 MP&L presented a review of the BWR Owners Group report which indicated that no further instrumentation is required to detect ICC at GGNS.

Mississippi Power & Light Company was also requested, in a February 21, 1980, letter from NRC, to identify the degree to which Grand Gulf Nuclear Station complies with the NUREG-0588 criteria which included accident monitoring instrumentation. MP&L has conducted a review of equipment qualification documentation at GGNS Unit 1 in accordance with NUREG-0588, which included a review and upgrading of instrumentation necessary for accident monitoring. The results were provided to the NRC in AECM-81/231 (July 1, 1981). AECM-81/335 (September 1, 1981), and AECM-81/502 (December 21, 1981).

MP&L has also incorporated additional meteorological capability at GGNS. Based on the requirements of NUREG-0654, and NRC licensing pressure MP&L provided a backup meteorological tower to supply met data in the event that the primary tower capability was lost. This met tower is a free standing 33 foot tower, which is capable of providing wind speed, wind direction, and a 7 category estimator of atmospheric stability. Information from the tower can be provided directly to the EOF and TSC in the event of loss of the primary tower or an accident.

Regulatory Guide 1.97 and NUREG-0737 Supplement 1 now supercede the requirements of NUREG-0737 item III.A.2.2 and do not require that a backup met tower be provided for secondary meteorological data input to the station. The GGNS licensing commitment to provide this tower, as

1 of NUREG-0737. This document is expected to provide valuable guidance for the integrated review and incorporation of any necessary R.G. 1.97 instrumentation.

4.3 Existing R.G. 1.97 Status

MP&L has met the initial documentation requirements for R.G. 1.97 (Revision 2) by providing a compliance report discussing the instrument ranges, qualification, power supply, channel redundancy, and independence as requested by NUREG-0737 Supplement 1.

4.4 Future R.G. 1.97 Implementation Actions

MP&L will be preparing a complete compliance response to R.G. 1.97 (Revision 2) including a full position statement to meet or justify exceptions to the guide. The review for determining the need for additional post accident monitoring instrumentation will consider the existing instrumentation coverage for accident scenarios, EOP requirements, instrumentation displays, human factors adequacy, and development of the SPDS.

Modifications and additions for post accident monitoring instrumentation as determined necessary for GGNS will be implemented on a schedule commensurate with the safety significance, lead time requirements, and the outage availability for performing the modifications.

Most, if not all, of the accident monitoring instrumentation for GGNS will be available on the ERFIS computer in both the TSC and EOF and also the BOP computer in the TSC.

4.5 Justification for Near Term Acceptability

The following instrumentation is required for plant status monitoring or control action as indicated in the GGNS emergency operating procedures:

RPV Level	LPCS Pressure
Narrow Range	LPCS Flow
Wide Range	HPCS Pressure
Shutdown	HPCS Flow
Fuel Zone	RPV Water Temperature
Drywell Pressure	Drywell Temperature
RPV Pressure	Suppression Pool Temperature
Suppression Pool Level	CTMT Temperature
Flux Monitoring (APRMs)	CTMT Pressure
SLCS Operation	Control Rod Position

All of the above instrumentation channels for accident monitoring are 1E qualified to their respective environment and meet the minimum redundancy and separation criteria for 1E instrumentation, except for the fuel zone and upset range RPV level, control rod position, and the APRM flux monitoring. Class 1E qualification is not required for control rod position monitoring per Regulatory Guide 1.97 (Revision 2).

In addition, GGNS presently has instrumentation to monitor all variable requirements of R.G. 1.97 (Revision 2) except for "radioactivity concentration in the primary coolant" and "standby liquid control system (SLCS) flow" and over most of the required monitoring ranges Radioactivity concentration in the primary coolant can be monitored by online and grab sample analysis in the post accident sampling system. SLCS flow can be monitoring by SLCS storage tank level or SLCS pump discharge pressure.

Even though all of the monitoring instrumentation is not qualified to the requirements of R.G. 1.97, the NRC states in Supplement 1 to NUREG-0737 that it is acceptable to rely on currently installed equipment if it will measure over the range indicated in Reg. Guide 1.97.

MP&L believes that GGNS presently has instrumentation sufficient to monitor plant status during accident conditions until further review and implementation of Reg. Guide 1.97 is performed.

5.0 DETAILED CONTROL ROOM DESIGN REVIEW (CRDR)

5.1 CRDR Background Actions/Documentation

During the NTOL phase for GGNS, MP&L chose to perform a Preliminary Design Assessment (PDA) in accordance with TMI Action Plan item I.D.1 to determine control room human engineering adequacy. MP&L retained Essex Corporation to perform an independent review of the GGNS Unit 1 control room. The evaluation was conducted during the period from June 17, 1980, to October 1, 1980, and employed state of the art human engineering evaluation techniques using criteria from NUREG/CR-1580.

The results of the PDA review were provided in a summary report to the NRC in AECM-80/316, dated December 29, 1980. An NRC Human Factors Engineering Branch (HFEB) team reviewed the report and conducted an onsite design review from June 8 to June 12, 1981. The human engineering discrepancies (HEDs) identified by MP&L were reviewed by the NRC for appropriate corrective action. A final summary report mutually agreed upon by both the NRC and MP&L was provided in AECM-81/291, dated August 7, 1981 for resolution of all HEDs.

Of the almost two hundred HED's identified more than a hundred were given a priority 1 or 2 to be completed prior to operation beyond 5% power. The remaining HEDs were not considered to be a safety significant concern and were given a priority 3 for review during the future detailed CRDR to be conducted by GGNS.

During the initial PDA evaluation, several areas required for review were not sufficiently developed to perform the survey. In AECM-81/459 dated November 24, 1981, MP&L transmitted the review results of all remaining survey requirements (except for the control room environmental survey) using the recently approved NUREG-0700 check lists. Approximately forty additional HEDs were identified of which almost half were corrected prior to fuel loading. The remaining were identified as Priority 3.

The control room environmental survey was later conducted and the resulting report was transmitted by AECM-82/333, dated July 30, 1982. Of the seventeen additional HEDs identified only three required corrective action prior to full power operation.

A member of the NRC HFEB conducted a pre-fuel load review of the GGNS control room on April 14, 1982, to verify the satisfactory implementation of the HED corrective actions. Based on the control room improvements performed, operation of GGNS above 5% power was approved. MP&L is presently closing out those remaining HED corrective actions necessary for full power operation.

MP&L has provided all the necessary information to resolve the remaining open items identified in the GGNS SER and later supplements. This information should be reflected in the next SER supplement and removal or modification of the GGNS License Condition 2.C.(44a) should be provided for full power operation.

5.2 Use of NRC/Industry/Owners Group Guidance

5.2.1 NUREG/CR-1580 - The GGNS PDA was performed using NUREG/CR-1580, "Human Engineering Guide to Control Room Evaluations." This document was the basis for the later development of NUREG-0700 and provided the best available guidance for conducting the survey. Data collection was accomplished by comparing features of the control room design with principles of good human factors using initial checklists developed from this guide. Data reduction consisted of identifying the potential errors associated with those design features found as deficient, estimating the magnitude of the effect, and assigning a priority based on the estimated corrective effort and impact on operator performance.

5.2.2 NUREG-0700 - Followup reviews for fuel loading were conducted using the guidance and checklists provided by NUREG-0700, "Guidelines for Control Room Design Reviews." The detailed CRDR to be conducted in the future is expected to use the checklists in this document as the basis for the survey. The planning and program development for this survey will also draw primary guidance from this document.

5.2.3 NUREG-0801 - "Evaluation Criteria for Detailed CRDR," will also provide supportive guidelines for determining the acceptability of the detailed CRDR planning, NRC site visits, summary results, and HED implementation verification.

5.2.4 NUTAC Documents - The CRDR NUTAC is also in the process of issuing guidance documents for detailed CRDR planning and conduct of reviews. Four documents are scheduled for publication which are the CRDR Implementation Guidelines, CRDR Survey Development Guidelines, Human Factors Principles for CRDR, and the CRDR Task Analysis Guidelines. MP&L will also consider these documents in development of the detailed CRDR.

5.3 Existing CRDR Status

MP&L has conducted a Preliminary Design Assessment with the necessary HEDs identified and their corrective actions implemented or being implemented for full power operation. This PDA on GGNS has been approved by the NRC. The GGNS control room design incorporates advanced BWR control room displays and instrumentation provisions which use human factors considerations. The priority 1 and 2 HEDs have or are being completed for full power licensing.

5.4 Future CRDR Implementation Actions

Since MP&L has completed a PDA for GGNS, MP&L plans to conduct the detailed CRDR after the other elements of Supplement 1 have been fully considered. MP&L is expected to begin the CRDR planning phase around the 2nd scheduled refueling outage, as shown in Appendix A to this report. This will allow for inclusion of modifications that will be made for SPDS, EOPs, ERFs, and R. G. 1.97.

6.0 EMERGENCY RESPONSE FACILITIES (ERFs)

6.1 ERF Background Actions/Documentation

MP&L began work on the GGNS emergency response facilities -- Technical Support Center (TSC), Operational Support Center (OSC), and Emergency Operations Facility (EOF) prior to the final issuance of NUREG-0696. AECM-80/24, dated March 11, 1980, addressed the TSC and OSC concerns of NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations."

On October 30, 1980, MP&L delivered an emergency preparedness presentation for GGNS before the NRC in Bethesda, Maryland. At this meeting we advised the Staff of our program toward compliance with the applicable regulations, acquainted them with the design and implementation schedules for our facilities outlined our plans for new facility construction, and solicited their comments on our overall effort to upgrade emergency preparedness at GGNS.

Initial preparation for the EOF was begun June 11, 1980; site selection was completed August 12, 1980, and site preparation began November 6, 1980. Locations for the TSC and OSC, which were to be situated in existing Unit 1 structures, were described to the NRC in AECM-81/52, dated February 12, 1981. The conceptual design of the EOF, which was to be a new facility about, was located onsite 0.6 miles from Unit 1.

In planning the EOF for GGNS, we based our design for a single, near-site structure, having a protection factor of 50, on meetings held with the NRC on September 8 and October 30, 1980. On February 17, 1981, however, the NRC released the Final Report of NUREG-0696, in which two options for EOF habitability were listed. The conceptual design of GGNS did not fit either of these options. One was to have the EOF within 10 miles of the TSC with a protection factor of 5, and a backup EOF within 10-20 miles of the TSC. The second option was to have the primary EOF between 10 and 20 miles from the TSC, with no backup EOF required. Based on our previous discussions with the Commission, we submitted a conceptual design for the EOF as originally planned via AECM-81/25 on April 8, 1981. This submittal constituted an exception to the requirements of NUREG-0696 for which we requested NRC approval. We received no response from the NRC Staff on this submittal and therefore, we proceeded with the construction of the EOF as it was designed and submitted. Construction began June 10, 1981.

To ensure an adequate state of emergency preparedness during the construction of the permanent EOF, an interim EOF was established in the GGNS Training Building located approximately 0.5 miles from Unit 1. The TSC, OSC, and interim EOF were fully utilized during the November 3-5, 1981, emergency preparedness exercise observed by the NRC (and documented by NRC Region II Inspection Report No. 50-416/81-44, dated December 10, 1981). The TSC and OSC have undergone minor changes to that previously provided to the NRC and are addressed in AECM-83/0222, dated April 13, 1983.

On April 27, 1982, in letter AECM-82/112, MP&L provided an updated report on the TSC and EOF, describing changes which had been made since the April 8, 1981, submittal. This letter also reminded the NRC that no response had been received as to the acceptability of the EOF exception to NUREG-0696 requested in AECM-81/25. MP&L again moved toward completing the EOF by the October 1, 1982, requirement of Generic Letter 81-10.

The permanent emergency response facilities, including the EOF which was nearing completion, were inspected by Region II representatives during the August 2-6, 1982, appraisal. In Inspection Report 50-416/82-57, dated September 20, 1982, the Control Room, TSC, OSC, and EOF were all found to be adequate. These findings were confirmed during the January 26, 1983, emergency preparedness exercise, in which all permanent emergency response facilities were successfully utilized. MP&L has, therefore, taken no further action with regard to a backup EOF.

On September 29, 1982, via AECM-82/398, MP&L advised the NRC that the EOF would not be fully complete by our previous commitment of October 1, 1982. Although the facility was structurally complete by that date, certain essential systems, such as the telephone system (over which we have no direct control), were not able to be completed by that date. The emergency response capability of GGNS was not affected by delaying the EOF, because the interim EOF was available until the permanent EOF became operational.

6.2 Use of NRC/Industry/Owners' Group Guidance Documents

Due to the early requirement to implement emergency response facilities, the only guidance initially available on this issue was NUREG-0578. MP&L letter (AECM-80/24), dated March 11, 1980, contained implementation criteria prepared by the BWR Owners' NUREG-0578 Implementation Subgroup, which MP&L basically endorsed. We received the NRC letter on "Preliminary Clarification of TMI Action Plan Requirements", which superceded NUREG-0578, on September 5, 1980, and reviewed its criteria as they pertained to emergency support facilities. At the time we formulated our plans for the TSC, OSC, and EOF, as presented during our October 30, 1980 meeting with the NRC Staff, the only requirements for an EOF were those contained in the NRC letter mentioned above. No requirements for a backup EOF were in existence, as NUREG-0696 was only in draft form. The NRC Staff voiced no objection to our proposals, so we proceeded with our plans as we had presented them.

6.3 Existing Emergency Response Facility Status

The TSC and OSC have been completed and equipped in general accordance with the information provided by us in AECM-81/52 and AECM-82/112 except for the ERFIS/SPDS implementation and records management terminal in the TSC. The EOF is functionally complete and has been basically equipped for emergency use with furniture, equipment, and supplies. The EOF has replaced the interim EOF and will be used for all future emergency response activities. MP&L is not providing a backup EOF and does not consider one to be necessary given the protective design of the EOF.

6.4 Future Implementation Actions

Although the EOF is essentially complete and useable (as demonstrated during the January 26, 1983, exercise), some additional work is required to make it fully operational. The air conditioning/ventilation monitors have to be installed, and the radiation monitors must be calibrated. Additional records/documents will be provided in the EOF Technical Library. The ERFIS/SPDS system for the TSC and EOF will be provided as discussed in Section 2.0 and shown in Appendix A.

6.5 Justification for Near Term Acceptability

Although the ERFIS dose assessment model is not scheduled to be in place until after the first GGNS outage, both the TSC & EOF have the capability to perform dose assessment through the use of isopleths, maps, programmed calculators, and manual procedures.

The work needed for completion of the EOF will not impair the ability of the facility to be fully utilized in an emergency situation. This is borne out by the successful use of the EOF in the January 26, 1983, emergency preparedness exercise, and the appraisal of the facility documented in NRC Region II Inspection Report No. 50-416/82-57.

7.0 PHASED INTEGRATION AND IMPLEMENTATION OF NUREG-0737 SUPPLEMENT 1

MP&L recognizes the need to integrate the elements of NUREG-0737 Supp. 1, since each element of this document provides various means to improve operator recognition and response to both normal and abnormal plant conditions. An overall integration process will hopefully eliminate redundant or conflicting control room provisions and at the same time assure that the operators have proven means for reliable control room actions.

During the GGNS licensing process many modifications and system improvements were imposed or committed without full consideration of scheduling impact and implementation interaction. To avoid additional scheduling burdens and possible duplication of efforts, MP&L is reviewing the overall scheduling of GGNS activities to better assure that further commitments for NUREG-0737 Supplement 1 are able to be met without impacting the safe operation of GGNS.

The following discussion outlines the proposed means to accomplish both the scheduling of NUREG-0737 Supplement 1 into the overall project schedule and the specific phased integration and implementation of individual elements within NUREG-0737 Supplement 1.

7.1 Previous Good Faith Effort to Meet NUREG-0737

MP&L has strived in a conscientious and good faith effort in the past to complete the NRC requirements established from the TMI Action Plan. As an NTOL applicant, MP&L met, with few exceptions, the positions and schedules dictated by NUREG-0737. MP&L's complete response to NUREG-0737 was transmitted by AECM-81/153, dated June 12, 1981, which was later incorporated into Chapter 18 of the GGNS FSAR. This completed response was submitted within only a short time after issuance of NUREG-0737 and in most cases MP&L had already substantially begun implementation of these requirements prior to this submittal.

In order to implement the requirements of NUREG-0737, MP&L had to follow guidance that may have lacked definition or was later proven to be invalid. In what was believed to be conscientious efforts by both the NRC and MP&L, the implementation of various systems and structures has resulted in designs being which are no longer required or are not state-of-the-art designs. Now that the NRC has issued Supplement 1 to NUREG-0737 which recognizes the need for integration of the SPDS, EOPs, CRDR, R.G. 1.97 and ERFs efforts, these examples become more obvious.

Section 3.7 of NUREG-0737 Supplement 1 states, "The NRC will make allowances for work already done by licensees in a good faith effort to meet requirements as they understood them." In some good faith efforts MP&L has developed established programs and plant operations around structures/systems which, while not meeting the latest NRC general guidance, are still effective in meeting their functional requirements. In other efforts, MP&L has committed to systems that are no longer required or has designed systems that must be reworked. The following are examples of GGNS efforts that fall into these categories.

Backup EOF - MP&L has an operational onsite EOF with a protection factor of 50 and dedicated air supply systems for habitability. No backup EOF has been provided and is not considered necessary based on the GGNS EOF design. This is an exception being taken to NUREG-0696 and NUREG-0737 Supplement 1 due to a previous understanding with the NRC Staff as discussed in Section 6.1.

SPDS Display - The "as built" displays for the GGNS SPDS do not presently meet the minimum requirements of NUREG-0737 for displaying critical safety functions (CSFs). MP&L plans on modifying the GGNS SPDS displays, as necessary, which will effect final implementation of the SPDS. This is discussed in Section 2.1.

Backup Met Tower - MP&L has installed a backup met tower, as discussed in section 4.1, to meet the requirements of NUREG-0654, but is no longer required by NUREG-0737 Supplement 1.

Class A Model - Even though continuous offsite dose assessment modeling is required by 10CFR50 Appendix E, the specific requirements to meet the level of detail of a Class A model are not considered mandatory. Even though the GGNS model design presently fulfills these requirements, a Class A model should not be part of the licensing basis for GGNS. This is discussed in Section 2.1.2.

MP&L wishes to avoid additional commitments that may be modified or negated in future efforts. This is especially true given the scope and cost of implementing Regulatory Guide 1.97 (Rev. 2) for accident monitoring instrumentation.

7.2 Near Term Project Work Scope

MP&L's primary goal for full power operation and through the first refueling outage is to assure the safe operation of GGNS by completing those activities known to require implementation. There are a variety of activities which must be accomplished to prepare the plant for operation and to keep it operating safely and efficiently. For example, the near term tasks which must be considered include:

- Performing required maintenance for plant equipment and systems.
- Implementing design change packages aimed at ensuring plant safety, reliability and regulatory compliance. This includes the GGNS licensing commitments and operating license conditions.
- Incorporating modifications to correct any problems identified during power ascension testing and the early operating phases of the plant.

The extensive manpower requirements to implement these efforts must be effectively scheduled to assure optimum utilization of MP&L's manpower resources. Efforts have been initiated to prioritize the various tasks for each of the categories listed above in order that higher priority activities can be actioned first. The manpower required to perform the

tasks must then be estimated in order to establish the length of time needed to complete the action. Finally, these tasks must be scheduled to determine the critical path efforts and identify scheduling constraints. The efforts which are being considered for full power operation and through the first refueling outage are expected to require almost the total GGNS manpower for tasks already identified or being anticipated.

7.2.1 Scheduling Activities for Full Power Operation - There are currently about 1000 design change packages (DCP) which have been prepared or are being prepared for implementation. A committee of plant management staff meets regularly to assess the need for the identified changes. This group assigns the priority for each DCP based on the impact which the change has on plant operation.

There are approximately 250 DCPs assigned a priority 1 or 2, which must be complete before full power licensing. Included in these priority categories are those changes required to meet technical specifications and license commitments, to correct safety hazards, to avoid restrictions on operating capability, or to protect plant equipment. Progress on the physical work associated with these DCPs is tracked and "close-out schedules" are then developed to detail the tasks required to ready the various systems for full power.

An ongoing activity which also involves significant manpower is maintenance. Preventive maintenance and surveillance activities are expected to require about 31 man-years of work per year. Corrective maintenance may require up to half again as much effort as the planned preventive maintenance program. All near term GGNS manpower is being applied to continuing in-plant testing, performing required maintenance, and closing the priority 1 and 2 DCPs for full power licensing.

7.2.2 Scheduling Activities through the First Refueling Outage - The remaining lower priority DCPs not implemented for full power licensing will be implemented up to and through the first scheduled refueling outage. An effort is underway to plan the modifications to be accomplished during the first outage of GGNS. This scheduling effort will consider required changes and expected manpower resources in defining the scope and duration of the outage work. The schedules now being developed will also be subject to shifts in priorities which may occur as new required changes are identified during power ascension testing and the first year of operation.

Other tasks to be worked during this period include maintenance and licensing commitments. The maintenance activities are expected to require the same level of activity as previously described for full power operation. A thorough review of the FSAR, final ER, SER, and MP&L - NRC correspondence has identified numerous commitments which are being tracked on the MP&L Licensing Commitment Tracking System (LCTS). Many of the

commitments are for ongoing programs or are for specific actions which must be performed prior to startup from the first refueling outage. These activities are considered open and are identified in the LCTS.

Additionally, during this period the GGNS Operations Enhancement Program (OEP) will be in effect. A program report was transmitted to the Regional Administrator on March 11, 1983, by letter AECM-83/0177.

The principal goal of the GGNS Operations Enhancement Program is to improve the short- and long-term safety, reliability and operating effectiveness of the Grand Gulf Nuclear Station. More specific goals include:

- Improve management controls necessary for safe and reliable operations.
- Increase the proficiency and quantity of licensed personnel.
- Emphasize procedure awareness and regulatory concerns.
- Establish efforts to improve the utilization/effectiveness of management and licensed operating personnel.
- Correct short-term deficiencies prior to the next criticality.

The majority of the tasks in the program are in the short term category and will be completed prior to the next criticality. Longer term tasks include those to be completed prior to commercial operation and those to be completed by the start of the first planned refueling outage. Continuing tasks include such items as periodic or annual management reviews, audits, assessments, and training programs. MP&L intends to conclude the GGNS Enhancement Program by the start of the first planned refueling outage.

Based on this philosophy, scheduling efforts will be geared to minimize the burden on the MP&L manpower resources to allow plant personnel to concentrate on the safe and reliable operation of GGNS. The following project scheduling efforts are being pursued to accomplish this goal.

7.3 Incorporation of NUREG-0737 (Supp. 1) Activities Into Project Schedule

The implementation of the remaining tasks to be completed in accordance with Supplement 1 to NUREG-0737 must be factored in with the project work scope discussed in section 7.2 above. The level of improved plant safety and reliability for the tasks addressed by Supplement 1 must be considered commensurate with tasks being performed for full power operation and then through the first scheduled refueling outage.

MP&L agrees that the implementation of the remaining Supplement 1 tasks should be accomplished by a phased integration process, and agrees that these tasks will aid operator recognition of plant status. However, MP&L does not believe that the level of improved operator performance is significant enough to warrant implementation prior to or during power ascension, when considered with those activities already accomplished during GGNS licensing.

Those project tasks presently being considered for implementation through the first regularly scheduled refueling outage are items which could restrict future operations or which could affect the efficient operation of GGNS. Based on the tasks already completed on GGNS to meet the Supplement 1 requirements, the only task that is presently believed by MP&L to require allotting MP&L manpower during the first fuel cycle is the ERFIS/SPDS systems. Therefore, this task will be given a commensurate priority and is presently scheduled to be implemented after the end of the first scheduled refueling outage as shown in Appendix A.

The incorporation of the Supplement 1 tasks will be integrated into the overall project scheduling efforts and may impact the ultimate scheduling of these tasks. MP&L is presently pursuing the development of a first outage project schedule and the eventual inclusion of the longer term Supplement 1 tasks.

7.4 Phased Integration and Implementation of NUREG-0737 Supplement 1 Elements

MP&L has made substantial progress toward implementation of each of the elements identified by Supplement 1 of NUREG-0737 as discussed under their respective topics in this report. MP&L believes that the existing NUREG-0737, Supplement 1 efforts completed for GGNS justify the near term operation of GGNS and the additional long range efforts should consider both phased integration and GGNS operational experience. This is consistent with the intent of NUREG-0737 Supplement 1.

An "Integrated Schedule and Task Description" for the phased implementation of the SPDS, EOPs, CRDR, RG 1.97, and ERFs task efforts are provided as Appendix A to this report. The tasks identified in the integrated schedule consider both historical activities already performed and future efforts being planned. The integration and input relationships of each task are represented on the schedule by triangular input symbols. A Task Description and an Expanded Description of the major subtasks have also been included in Appendix A.

The intent of the attached program is to represent the inter-relationships of each of the task efforts for phased integration along with relative time frames for accomplishing the remaining tasks.

The overall framework for integration of emergency response capability tasks on GGNS are threefold. The first step will be to receive operating experience feedback on those elements already performed for GGNS. Secondly, will be to complete installation of the SPDS based on the ongoing improvement of industry guidance and the GGNS EOP design. Finally, continued operating experience and effective use of the SPDS will serve as the basis for further improvements to the control room.

As shown on the schedule and as discussed in this report, MP&L has implemented an NRC approved set of symptom based EOPs, submitted a preliminary compliance statement for R.G. 1.97, conducted an NRC approved control room preliminary design assessment, and completed an almost completely functional EOF, TSC and OSC. These were established as part of the GGNS licensing basis for full power operation as previously required by NUREG-0737. Any additional modifications to these efforts at this time, based strictly on the near term implementation of additional tasks, could jeopardize effective ongoing operator training and degrade comprehensive operator understanding. Any benefit for improving control room modifications from station and operator experience feedback would also not be available. MP&L is also in the process of providing complete simulator training at the GGNS site using a simulator which will be identical to the GGNS control room. This will provide near term validation of the existing EOPs, control room design, and operator/machine interface.

An important aspect for additional control room enhancement lies in the development of an effective, well designed SPDS. This can be provided by a single display source or a combination of informational sources giving easily acquired plant status on a continuous basis. MP&L is presently in the process of developing such a system for improving operator efficiency. However, this system will need additional modification for safety status monitoring prior to functional installation as discussed in Chapter 2.0 of this report.

The operating experience gained from the existing control room design should also be fed back into the SPDS implementation program. Any control room deficiencies that may be recognized during initial operation of GGNS may be alleviated by modifications to the SPDS. The SPDS, once functionally operable, will the act as a basis for evaluating the need for modifications to the future EOP, CRDR, R.G. 1.97, ERF and training efforts. This is represented in the schedule and inputs identified in Appendix A. The proposed efforts to be conducted in the future for EOP development, CRDR, and RG 1.97 implementation are discussed in their respective sections of this report.

7.5 Integrated Training

The development of an effective training program should be a dynamic process of identifying overall training needs to accomplish effective control room operation and emergency response capability goals. MP&L has already developed extensive GGNS training programs which have been reviewed against the requirements of Regulatory Guide 1.8, ANSI 18.1 (1971), TMI Action Item I.A.2.3, SRP Section 13.2 and H. R. Denton's March 28, 1980, letter.

As discussed in GGNS FSAR Section 13.2, a GGNS Staff Training Program has been developed and implemented to ensure that sufficient personnel are trained and qualified to safely operate and maintain the plant throughout its design life. This program includes courses in operator licensing, nuclear fundamentals, systems operation, simulator training, operating practices, procedures training, casualty response and other various

programs. This program has been designed to the latest operator training philosophies and as indicated in the GGNS Safety Evaluation Report "provides an effective means of preparing personnel for station operation and license examination."

A program for Emergency Preparedness Training has also been established as discussed in the GGNS Emergency Plan. The purpose of this training is to assure that in the event of a station emergency, effective overall station and offsite response actions are conducted. This overall training program includes a General Employee Training Program, Specialized Emergency Plan and Procedure Training and Off-site Support Agency Training. Effective training, as part of the overall emergency response capability, will help to assure coordinated response actions between the control room, TSC, EOF, and OSC and offsite support agencies.

As a means to further assure that effective and integrated emergency response training goals are being accomplished, MP&L will develop an Emergency Response Capability Integrated Training Program. This program will be designed to effectively document that reactor operator and plant staff training is being accomplished. It is presently envisioned that this integrated training program will include the following elements:

- A "Systematic analysis" which will be conducted to determine discrete job performance requirements,
- "Training objectives" derived from the systematic analysis which will describe desired trainee performance after training,
- "Training" designed to meet the specified objectives,
- "Trainees' performance" which will be evaluated during training to demonstrate mastery of objectives,
- "Training program upgrading" based on trainee performance on the job.

The scope of the training plan will include use of SPDS, CRDR, EOPs, R.G. 1.97 instrumentation and the emergency response facilities. The program will also be reviewed periodically to determine whether the goals of the program are being accomplished and to determine the need for additional operator training or control room modifications.

8.0 DATES FOR COMPLETION OF NRC IDENTIFIED TASKS

The integrated schedule as shown in Appendix A of this report represents MP&L's estimation for completion of those tasks identified by Supplement 1 to NUREG-0737. The overall task work to incorporate these elements into the future project work efforts will be performed in order to determine the overall project schedule. This schedule provides our planning efforts and time frames for completion of the NRC identified dates for NRC reporting. The schedule for achieving further Supplement 1 activities after SPDS implementation will be based on milestone completion and refueling outage scheduling.

The following dates and time frames are being provided for those task completion dates requested by the NRC in Generic Letter 82-33. The number in parenthesis after these tasks represent the numeric designation of the tasks shown in the integrated schedule in Appendix A.

Task	Date
o SPDS Implementation Plan (2.7.3)	App. 6 months after commercial operation
o SPDS Safety Analysis (2.7.5)	App. 6 months prior to SPDS operation
o SPDS Operability (2.1.5)	App. 9 months after 1st refueling outage.
o EOP Technical Guideline Submittal (BWR EPGs, Revision 1) (3.1.1)	January, 1981
o EOP Procedure Generation Package Submittal (3.5.3)	As further determined necessary from EOP review
o EOP Implementation (3.2.3)	January 1983
o Regulatory Guide 1.97 Implementation (4.2.3)	During 2nd, 3rd, and 4th refueling outages
o Detailed CRDR Program Plan Submittal (5.2.1)	Prior to 2nd refueling outage
o Detailed CRDR Summary Report Submittal (5.4.3)	Prior to 3rd refueling outage
o Completion of ERF's (except ERFIS/SPDS) (6.1.2)	February 1983
o Integrated Training Plan Submittal (1.1.1)	After 1st refueling outage

APPENDIX A

NUREG-0737 SUPPLEMENT 1

TASK DESCRIPTION AND

INTEGRATED SCHEDULE

TASK 1.0 INTEGRATION OF TASKS FOR NUREG-0737 SUPPLEMENT 1 ELEMENTS

1.1 Integrated Training Efforts

*1.1.1 Develop Integrated Training Plan (I.T.P.) for all of NUREG-0737 (Supp. 1) aspects

1.1.2 Review goals and implementation of I.T.P. based on feedback and modify plan as required.

1.2 Develop and Submit Generic Letter 82-33 Response

1.2.1 Submit Prelim 50.54(f) letter response and schedule

1.2.2 Receive NRC review of initial response and schedule

1.2.3 Negotiate MP&L Position Report and schedule with NRC

1.2.4 Receive NRC confirmatory order

*Further explained on attached expanded description of program subtasks

TASK 2.0 ERFIS/SPDS IMPLEMENTATION

2.1 SPDS Hardware Installation

2.1.1 Design and procure SPDS hardware
2.1.2 Install SPDS computer in lower cable spreading room (without plant specific data input)
2.1.3 Add SPDS to simulator
2.1.4 Complete installation of hardware in Control Room and TSC
2.1.5 Make SPDS functionally operable (with GGNS database incorporated)

2.2 Incorporate ERFIS/SPDS Software

2.2.1 Develop and incorporate initial software program
2.2.2 Develop new SPDS software specifications based on revised funtional requirements
2.2.3 Complete SPDS software for simulator
2.2.4 Incorporate Dose Assessment model into ERFIS database
2.2.5 Modify SPDS software codes for additional control room display capability as required from revised functional requirements and specs.
2.2.6 Integrate all system codes into ERFIS/SPDS
2.2.7 Modify SPDS software and database based on new R.G. 1.97 instrumentation and EOPs, as necessary

*2.3 ERFIS/SPDS Verification and Validation

2.3.1 Develop V&V Test Plan
2.3.2 Develop Validation Functional Test Procedure
2.3.3 Complete ERFIS/SPDS system V&V

2.4 ERFIS/SPDS Procedures

*2.4.1 Develop set of control room, TSC, and EOF procedures for SPDS usage (or revise EOPs to include SPDS)
2.4.2 Implement SPDS oriented procedures based on EOPs (BWROG EPGs Rev. 1B)
2.4.3 Revise SPDS procedures based on EOPs (BWROG EPGs Rev. 3 or later), if required

2.5 SPDS Training

2.5.1 Develop SPDS training program around EOPs and SPDS procedures
2.5.2 Complete initial training for specified control room, TSC, and EOF personnel

2.6 Man/Machine Interface Validation

*2.6.1 Develop ERFIS/SPDS validation test program based on SPDS procedures, EPP usage
2.6.2 Complete validation of man/machine interface

2.7 ERFIS/SPDS Documentation

2.7.1 Review SPDS Functional Design Requirements Report to determine design deficiencies

*2.7.2 Revise GGNS SPDS Functional Design Requirements Report based on deficiency analysis review.

*2.7.3 Prepare Implementation Plan and submit to NRC

2.7.4 Receive NRC review of SPDS Implementation Plan

*2.7.5 Perform "Safety Analysis" review of SPDS design and submit report to NRC

2.7.6 Receive NRC review of SPDS "safety analysis"

2.7.7 Develop overall V&V and man/machine Validation Report

2.7.8 NRC to conduct onsite audit of ERFIS/SPDS system

TASK 3.0 EMERGENCY OPERATING PROCEDURES (EOPs)

3.1 Establish EOP Criteria

3.1.1 Develop Technical Guidance (BWROG EPG's Rev. 1B)
*3.1.2 Develop Technical Guidance (BWROG EPG's Rev. 3) or later including plant specific usage plan and submit to NRC.
*3.1.3 Develop plant specific EOP writers guide based on Technical Guidance
*3.1.4 Develop EOP Validation Program
*3.1.5 Develop EOP Training Program

3.2 Develop New Symptom Based EOPs

3.2.1 Develop new EOPs based on BWROG Rev. 1B EPGs
3.2.2 Receive NRC review and concurrence
3.2.3 Implement EOPs
3.2.4 Develop new EOPs based on BWROG Rev. 3 (or later) EPG's
3.2.5 Receive NRC review and concurrence
3.2.6 Implement new EOPs

3.3 EOP Training

3.3.1 Train operators based on symptom based EOPs (Rev. 1B EPGs)
3.3.2 Train operators based on revised symptom based EOPs (Rev. 3 EPGs or later)

3.4 EOP Validation

3.4.1 Validate EOPs on simulator/walk-through (EPG Rev. 1)
3.4.2 Validate EOPs based on EOP Validation Program

3.5 EOP Documentation

3.5.1 Review need to develop new symptom based EOPs given SPDS implementation, operating experience, new technical guidance, etc.
3.5.2 Receive NRC approval of EOP technical guidelines
3.5.3 Prepare and submit "Procedures Generation Package (PGP) (using 3.1.2, 3.1.3, 3.1.4 and 3.1.5 criteria) to NRC
3.5.4 Receive NRC review and concurrence on PGP
3.5.5 Document EOP revisions to PGP

TASK 4.0 REG GUIDE 1.97

4.1 R.G. 1.97 Position

4.1.1 Develop GGNS R.G. 1.97 position (excluding I.C.C)

4.2 Hardware Modifications

4.2.1 Begin design and procurement of the items that require IE upgrade and design of instrumentation that can be installed during the 2nd refueling outage

4.2.2 Continue design and begin procurement of remaining P.A.M. instrumentation based on 4.1.2 input

4.2.3 Install instrumentation to be provided during 2nd outage

4.2.4 Install instrumentation that has been determined necessary for 3rd outage.

4.2.5 Final instrumentation will continue through the fourth refueling outage due to those instruments having longer procurement or system development times

4.3 Documentation

4.3.1 Prepare and submit R.G. 1.97 Compliance report to NRC iaw L.C. 2.C.(23)

*4.3.2 Submit R.G. 1.97 compliance/position report to NRC

4.3.3 NRC to audit modifications performed during outages

TASK 5.0 CONTROL ROOM DESIGN REVIEW (CRDR)

5.1 Control Room (and RSP) Modifications

5.1.1 Complete all control room modifications required from NUREG-0737 and the Preliminary Design Assessment for 5% power
5.1.2 Isolation valve status board functionally completed in control room
5.1.3 Powerplex functionally added to control room
5.1.4 SPDS functionally operable in control room
5.1.5 Implement detailed CRDR modifications during 4th outage

5.2 Establish CRDR Criteria and Planning

*5.2.1 Develop CRDR program plan (and review team) based on -0700 guidelines, PDA results, Task Analysis (EOP Technical Guidelines), etc. Submit to NRC
5.2.2 Receive NRC review and approval of CRDR program plan
5.2.3 Finalize CRDR review program

5.3 CRDR Review Process

5.3.1 Perform preliminary design assessment (PDA) for pre-O.L. review
5.3.2 Perform detailed CRDR based on approved review program and team

5.4 CRDR Documentation

5.4.1 Develop, submit to NRC, receive approval and implement PDA summary report.
5.4.2 Document completion of all required PDA C.R. modifications
*5.4.3 Document the results of the detailed CRDR (5.3.2) and prepare CRDR Summary Report including control room HED's and their resolution. Submit to NRC
5.4.4 Receive NRC review and establish NRC site audit as required.
5.4.5 Establish final CRDR summary report for performing C.R. modifications
5.4.6 NRC to issue SER on CRDR
5.4.7 Document modifications conducted during 3rd outage and 4th outage, as required

TASK 6.0 EMERGENCY RESPONSE FACILITIES (ERF's)

6.1 Emergency Response Facility Implementation

6.1.1 Design and build emergency response facilities based on specifications detailed in MP&L/NRC correspondence
6.1.2 Complete structural and functionality of EOF, TSC, and OSC
6.1.3 Install ERFIS/SPDS hardware in the TSC and EOF
6.1.4 Implement total ERFIS/SPDS functionality in TSC and EOF including training on SPDS and dose assessment model

6.2 ERF Documentation

6.2.1 Document design criteria and bases for ERF implementation
6.2.2 Receive NRC Reg II approval of ERF's
6.2.3 Receive NRC NRR approval of ERFs
6.2.4 Document completion and operability of ERFIS/SPDS in TSC and EOF

EXPANDED DESCRIPTION OF SELECTED NUREG-0737
SUPPLEMENT 1 PROGRAM SUBTASKS

1.1.1 INTEGRATED TRAINING PLAN - This plan will provide the overall training program goal for developing operator ability to comprehend plant conditions and cope with emergencies effectively. The scope of the training plan will include use of SPDS, CRDR, EOPs, R.G. 1.97 instrumentation and the emergency response facilities. The contents will include the following:

- o Perform a systematic analysis to determine discrete job performance requirements
- o Develop training objectives from the systematic analysis and describe the desired trainee performance after training
- o Conduct training to meet the specified objectives
- o Evaluate Trainees' performance during training to demonstrate mastery of objectives
- o Revise training program based on trainee performance on the job

2.3 SPDS VERIFICATION/VALIDATION EFFORTS - This effort presently includes the proposed V&V Test Plan and the Validation Functional Test Procedure. The V&V efforts are conducted to assure that the ERFIS/SPDS system is designed, tested and installed as determined by the functional requirements.

2.4.1 SPDS PROCEDURES - SPDS procedures must be developed to describe the timely and correct safety status assessment of the plant when the SPDS is and is not available. The procedures will be either stand alone procedures specifically for the system or will be integrated into the existing EOPs and EPPs.

2.6.1 MAN/MACHINE VALIDATION TEST PROCEDURES - The purpose of this validation process is to assure that once the system has been installed and completely operational that it is functionally adequate. The evaluation will demonstrate that the system actually accomplishes the role it is designed to do. This will include procedure usage, training sufficiency, control room compatibility, and effective emergency recognition. This will be both a pre-functional implementation review and an ongoing operator feedback process and will be part of the Integrated Training Plan.

2.7.2 SPDS FUNCTIONAL DESIGN REQUIREMENTS REPORT - This report will be the initial document for the system design that describes the SPDS functional requirements. The functional requirements should include system interface requirements, performance requirements, test requirements, human factors considerations, parameter selection, physical characteristics, reliability, test and maintenance requirements, etc. This report will act as the basis for the continued verification/validation and safety analysis efforts.

2.7.3 SPDS IMPLEMENTATION PLAN - This document describes the entire implementation process for the ERFIS/SPDS system. The plan will describe the design, development, installation, training and functional operation of the system. It will also include the methods to be used for design verification and system installation validation. This plan will be submitted to the NRC for review.

2.7.5 SPDS SAFETY ANALYSIS REVIEW - This system review is conducted to assure that the selected parameters are sufficient to assess the safety status of each identified safety function for a wide range of accident events. The review should include an analysis of the total parameter selection adequacy which include EOP relationships and response. The review will also include the human factors aspects for readability, display (parameter) response to critical safety functions, labeling alarms, and the man/machine interface. This report will be submitted to the NRC for review.

3.1.2 EOP TECHNICAL GUIDANCE - The EOP Technical Guidance consists of the established emergency procedures guidelines (EPG's) and any plant specific modifications to the guidelines required by GGNS. It will also include the mechanism to be used to convert the EPGs into EOPs, and will be the basis for the CRDR Task Analysis.

3.1.3 EOP WRITERS GUIDELINES - This includes the instructions to be developed for the plant specific writing format for the EOPs. Generic guidance and any GGNS human factors modifications will be included.

3.1.4 EOP VERIFICATION AND VALIDATION PROGRAM - This program verifies that the EOPs are technically correct and consistent with the writers guide; and validates that the procedures are usable and are operationally correct. This process can include simulator usage, control room walk throughs, desk top review computer modeling, etc.

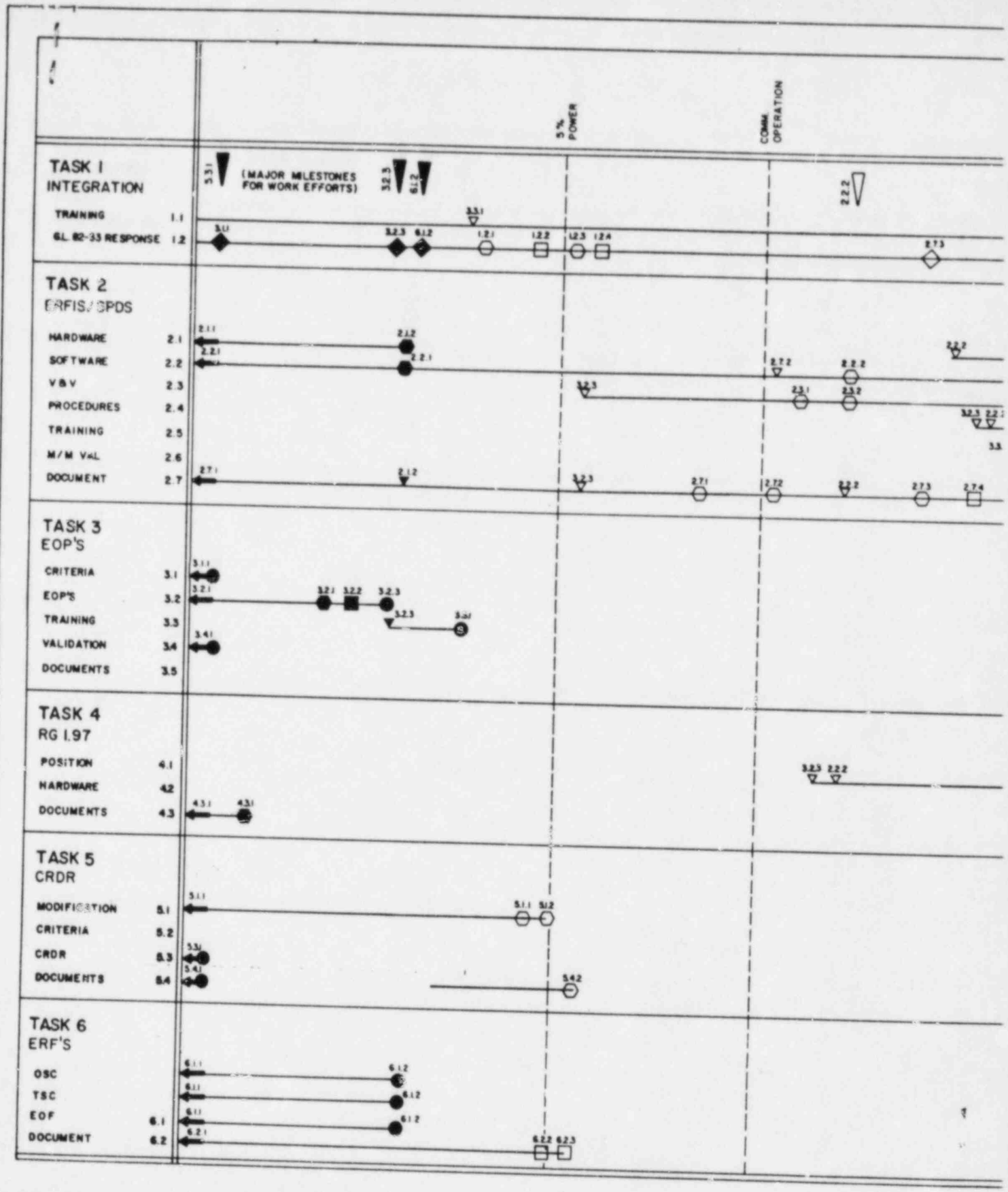
3.5.3 EOP PROCEDURES GENERATION PACKAGE - This is an NRC review document that includes the GGNS EOP technical guidance, writers guidelines, EOP validiation program and EOP training program.

4.3.2 R.G. 1.97 COMPLIANCE/POSITION REPORT - This report will consist of 1) a compliance summary on how GGNS presently meets the variable requirements of R.G. 1.97 including instrument ranges, qualification, power supply, redundance etc. and 2) the MP&L position to further meet the requirements of R.G. 1.97 and justification for deviation from the requirements.

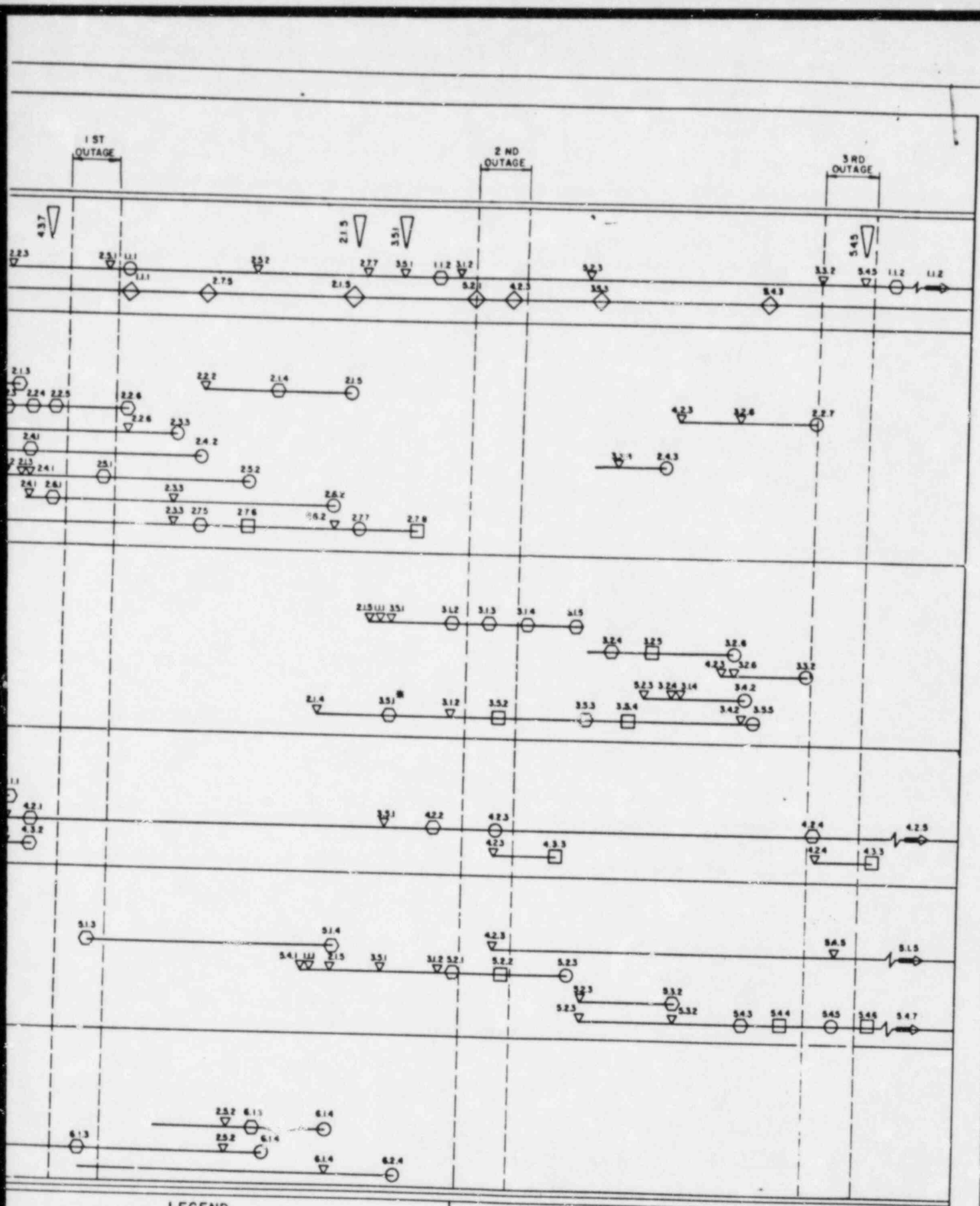
5.2.1 CONTROL ROOM DESIGN REVIEW (CRDR) PROGRAM - This is a total program which will act as the basis for review of the control room design and human factors survey. The program will include staffing and qualification of review team, CRDR Task Analysis, CRDR methodology including NUREG-0700 usage, and methodology for assessing human engineering deficiencies. This program will be submitted to the NRC for review.

5.4.3 CRDR SUMMARY REPORT - This report will summarize the results of the actual detailed CRDR survey and include actions to be taken for resolution of discrepencies identified. The report will include 1) HEDs identified during CRDR, 2) MP&L determination of HED significance,

3) proposed corrective actions, 4) schedule for corrective actions, and 5) overall control room improvement. This document will be submitted for NRC review.



* THIS REVIEW WILL DETERMINE THE EXTENT OF THE REVISION NECESSARY FOR THOSE EOP SUBTASKS BEYOND THIS POINT IN THE SCHEDULE.



LEGEND

- SUBTASK COMPLETION
- TASK COMPLETION
- ACTIONS NOT SHOWN
- INPUT INFORMATION
- NRC REVIEW COMPLETION
- S.L. 82-33 DATES

EMERGENCY RESPONSE CAPABILITY
NUREG-0737 SUPPLEMENT 1

INTEGRATED SCHEDULE