Omaha Public Power District

1623 HARNEY ▪ OMAHA, NEBRASKA 68102 ▪ TELEPHONE 536-4000 AREA CODE 402

June 1, 1981

Mr. Robert A. Clark, Chief
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactors Regulation
Division of Licensing
Operating Reactors, Branch 3
Washington, D. C. 20555

Reference: Docket 50-285

Dear Mr. Clark:

The Commission's letter dated February 18, 1981 detailed the Commission's schedule and requirements for the Technical Support Center (TSC) and Emergency Operations Facility (EOF). Omaha Public Power District's letter to the Commission dated April 2, 1981 provided the District's schedule for implementing the EOF and TSC. Part of the District's commitment was to provide a conceptual design of these facilities. Accordingly, Attachments 1, 2, and 3 are provided. Attachments 1 and 2 provide descriptions of the conceptual design of the TSC and EOF, respectively. Attachment 3 provides a summary of the task functions to be performed upon activation of the TSC and EOF.

Sincerely,

W. C. Jones
Division Manager
Production Operations

WCJ/KJM/TLP/lp

Attachments

pc: LeBoeuf, Lamb, ›iby & MacRae

Send Drawings To Reg Files

A045 S 1/1

Make Apperture Card Distribution

ATTACHMENT 1

DESIGN DESCRIPTION FOR TECHNICAL SUPPORT CENTER (TSC) FORT CALHOUN STATION - UNIT NO. 1

TABLE OF CONTENTS

1.0 GENERAL

2.0 DESIGN BASIS - REQUIREMENTS

- 2.1 Building
- 2.2 Power Supply
- 2.3 Display System
- 2.4 Communications System
- 2.5 Records Management System

3.0 LOCATION

4.0 BUILDING

- 4.1 Structure
- 4.2 Environmental Features
- 4.3 Fire Protection System
- 4.4 Functional Area

5.0 POWER SUPPLY SYSTEM

- 5.1 System Description
- 5.2 Power Supply Quality
- 5.3 Reliability and Availability
- 5.4 Consequences of Power Supply Interuption

6.0 COMMUNICATIONS SYSTEM

7.0 RADIATION MONITORING

- 7.1 Area Monitor
- 7.2 Particulate, Iodine, and Noble Gas Monitor

8.0 TSC INSTRUMENTATION

9.0 DISPLAY SYSTEM

10.0 RECORDS MANAGEMENT SYSTEM

11.0 SCHEDULE

12.0 TASK FUNCTIONS OF INDIVIDUALS

13.0 ATTACHMENTS

DESIGN DESCRIPTION FOR
TECHNICAL SUPPORT CENTER (TSC)
FORT CALHOUN STATION - UNIT NO. 1

1.0 GENERAL

The Technical Support Center (TSC) for the Fort Calhoun Station - Unit #1 is under construction. The design work on the TSC building was started in January, 1980 and the construction began in June, 1980. The District's intentions were to meet the schedule and functional requirements as set forth in NUREG-0578, Item 2.2.2-b. After receipt of the revised requirements and schedule from the NRC, the work on the TSC display system was suspended and the schedule was relaxed. At this stage, the TSC building is about 98% complete. The following is a brief description of the facility.

2.0 DESIGN BASIS - REQUIREMENTS

2.1 Building

The TSC building was designed to meet the criteria of NUREG-0696. The criteria is outlined as follows:

The TSC complex must be able to withstand the most adverse conditions reasonably expected during the design life of the plant including adequate capabilities for (1) earthquakes, (2) high winds (other than tornadoes), and (3) floods. The TSC need not meet seismic Category I criteria or be qualified as an engineered safety feature (ESF).

The criteria outlined above encompasses the criteria specified in NUREG-0696.

2.2 Power Supply

The TSC shall be provided with a reliable power source.

2.3 Display System

The display system in the TSC will be designed to meet the functional requirements as outlined in NUREG-0696.

2.4 Communications System:

The TSC communications system will be the primary communications center for the plant during an emergency. It shall be able to become fully functional within 30 minutes and provide reliable voice communications to the control room, the Operations Support Center (OSC) the Emergency Operations Facility (EOF), and the NRC. It will also provide dedicated telephone lines to the NRC Operations Center, Health Physics Network, and direct access to the control room, the OSC and the EOF. The TSC Voice Communications facilities shall include means for reliable primary and backup communication. A Facimile transmission capability between the TSC, the EOF, and the NRC Operations Center shall also be provided.

2.5 Records Management System

The Records Management System for the Technical Support System will meet the requirements of NUREG-0696.

3.0 LOCATION

The Technical Support Center (TSC), is located at the north side of the plant. The north wall of the auxiliary building is shared as the south wall of the TSC. To the east of the TSC is a machine shop. It is less than a 2 minute walk from the TSC through the machine shop to the control room. (See Key Plan on drawing (G/C 4778-295-101-001)

4.0 BUILDING

4.1 Structure

The Technical Support Center (TSC) is composed of the protected area and the equipment area. The protected area is manned during post-accident conditions. It is comprised of heavy concrete mat construction with 1-1/2 foot thick reinforced concrete walls and ceiling. This part of the structure is to be kept at positive pressure and the building air is passed through a pre-filter, HEPA filter, and charcoal filter before entering. Flood barriers protect all areas of the TSC from flooding and is designed for a 100 year recurrence frequency.

The equipment area is "L" shaped and located to the east and south of the protected area. The equipment area has concrete footings and common steel construction with concrete block walls. There are six rooms which comprise the equipment area: the Diesel generator room, UPS room, Battery room HVAC and Charcoal filter room, an unassigned room and Storage room.

4.2 Environmental Features

The TSC provides an environment which is equal or superior to that of the control room. Design considerations are given to lighting, air conditioning, and proper noise reduction to provide an atmosphere conducive to optimal performance.

4.3 Fire Protection System

The fire detection system provides for automatic detection in all areas of the TSC. Fire suppression is provided by portable fire extinquishers and a sprinkler system in the Diesel generator room. A deluge system is built into the charcoal filter.

4.4 Functional Areas

4.4.1 Technical Support Area

The Technical Support Area includes office space for 25 management, technical and engineering support personnel. This area will include enclosed offices for management and technical personnel, with dedicated communcti on links to the control room, theNRC, and the off-site EOF. This area will also contain audio/visual equipment for briefings, conferences, discussions, etc.

4.4.2 Display and Instrument Area

The Display Area is part of the Technical Support Area and displays the real time information from which the safety of the plant can be assessed. It provides the TSC/Control room interface during emergency situations. The Display Area will include work station(s) each equipped with two general purpose CRT consoles to provide an overview of the plant parameters by interaction with the computer. There is also a desk area which is sufficient for three engineers to study plant design and performance. In addition to the equipment described above, a separately enclosed instrument room has been provided to accommodate several Radiation Monitors, Annunciator Panel and if required, Analog trend recorders.

4.4.3 Meteorological Room

The Meteorological room contains the equipment necessary to monitor parameters affecting the consequences of radioactivity released during incidents which require activation of the TSC. A CRT and keyborad will be provided to display meteorological information, maps, calculated off-site doses, off-site radiation monitor readings, release data and other relevant information. Hard copies of all data will be available.

4.4.4 Computer Room

The TSC Computer room is completely covered by a "floating floor" to provide raceways for cabling between the display, communciations and computer areas. The Computer room is located between the Instrument room and Communication room. The Computer room has also been given special HVAC consideration to maintain a constant operating environment.

4.4.5 Communication Room

All communications are routed thru the Communication room. This room contains all the interface required to interconnect the communciation equipment. The room will also contain telecopies of incoming and outgoing messages and sketches. Storage will be provided for walkie-talkies and other portable radio equipment.

4.4.6 Records Center

The Records Center contains the equipment necessary to provide all the technical data available for the as-built conditions and layout of the structures, systems and components of the plant.

4.4.7 TSC Offices

The offices are in conjunction with the Technical Support Area which houses the remaining engineering support personnel. The office area contains a pull-down projection screen for visual illustrations, descriptions, briefings, etc. The office area may also be used as a temporary classroom for operator training and conferences. Kitchen facilities and restrooms are maintained for the use of TSC personnel.

5.0 POWER SUPPLY SYSTEM

5.1 System Description

A one line diagram for the power distribution system for the TSC is shown on drawing #293 206-001. The primary source of the power supply for the TSC is from the 13.8KV power feed from substation 1251. In addition, a 200KW standby diesel generator has been porovided to meet power supply needs of the TSC during power interruptions from the primary souce. In the event of power failure or under voltage, the standby diesel generator will automatically start and load within 10 seconds. An uninterruptible power supply system (UPS) with a 30-minute battery backup and voltage regulated bypass transformer has been provided to supply clean and reliable power to the TSC computer and display system.

5.2 Power Supply Quality

5.2.1 Power Supply to the TSC computer and display system will be from a 30 KW Uninterruptable Power System which is capable of delivering power that meets the following specifications:

Voltage: 120/208 VAC (5% Adjustment Range), 3-phase, 4-wire.
Phase Voltage Harmonic Distortion: 5% total, 3% single harmonic.
Frequency: (1) Internal oscillator: 60 Hz ±0.1%
(2) Internal sync: within ± 2°
(3) Line sync range: ±0.5 to 1.0Hz
(4) Slew rate: 1Hz/sec.
Phase Voltage Unbalanced: ± 2.5% with 20% load unbalance.
Phase Separation: (1) 120° ±1° balanced loads
(2) ±1° per each 10% unbalance
Overload Current: 125% for 10 minutes.
Current Limit: 150% for 10 seconds.
Fault Current: Minimum 200% for 10 cycles plus 150% for 10 seconds.
Voltage Regulation: ±1% for a 0-100% load @ 0.8Pf. and 0°-40°C ambient temp.
Voltage Transient Response: ±8% for a 50% step load change.
Voltage Transient Recovery: ±2% within 25 milliseconds.
Load Unbalance: 50% of rating, maximum continuous.
System Efficiency: 81% minimum @ rated system load.

Environment:
Ambient Temperature: Operating 0° to 40°C.
Relative Humidity: Operating: 0 to 95% for ambient temperature of 0° to 50°C.
Non Operating: 0 to 100%
Barometric Pressure, Operating: sea level to 4000 ft., standard.

5.2.2 Power supply quality for other auxiliaries will be as follows:

Voltage: 208 or 480V, 3-phase, 3-wire, 60HZ;
120V, 1-phase, 60HZ.
AC Voltage regulation: ±2%
AC Frequency regulation: 3%

5.3 Reliability and Availability

Quantitative reliability data for the standby diesel generator and 13.8KV power supply is not available. However, it is expected that the power supply system for the TSC as described in Paragraph 5.1 will meet the reliability requirements outlined in NUREG-0696.

5.4 Consequences of Power Supply Failure

(a) 13.8KV Power Feed

Interruptions of the 13.8KV power feed will have no adverse effect on the TSC because the standy diesel generator is fully capable of meeting power requirements of the TSC.

(b) Standby Diesel Generator

Failure of this system alone will have no adverse effect. However, if the standby diesel generator fails to start during 13.8KV power feed interruptions, power supply to TSC support systems such as HVAC, fire protection, annunciator system, etc., will be interrupted. The computer system and display system will, however, remain unaffected for at least 30 minutes becuase the battery will support the UPS system. Additionally, the Fire Protection Alarm system will be functional for 24 hours because it has its own standby battery. Battery powered emergency lights will provide necessary lighting.

(c) Uninterruptible Power Supply System

This is a highly reliable unit. Reliability data furnished by the vendor indicates a MTBF of 502988 hrs and MTTR of 0.427 hrs, (i.e. reliability is 0.99995). Additionally, a regulated voltage bypass transformer has been provided as an alternate source of power for the computer system.

6.0 COMMUNICATIONS SYSTEM

6.1 Reliable communication links for intraplant and plant-to-offsite communication will be provided to meet the total needs of the TSC. A combination of dedicated telephone facilities dial telephone system, paging/intercom system, and radio communication provide local and long distance communication with other emergency response facilities and organizations. Provisions will be made to allow for further expansion of communication facilities as the need arises. Telephones, public address speakers, and handsets will be conveniently located to permit effective utilization of the communication capabilities.

6.2 A local dial telephone system (private automatic branch exchange PABX) will be used for uninterrupted private communication between plant areas that are routinely occupied with telephone lines also extended into the EOF. An attendant's console in the TSC can answer and distribute incoming calls and control use of outgoing lines. The telephone system will be directly tied to the company telephone systems in Omaha to provide intracompany telephone communication which is not affected by the public telephone network. Direct trunks to the Blair telephone office will provide access to the public telephone network. In addition, trunks will be tied directly to an Omaha telephone office to provide alternate access to the public telephone network and toll free access to the Omaha telephone exchange area. Diverse call routing capability of telephone calls will minimize potential telephone company overload conditions that may occur during an emergency. A total of 20 lines including two in the NRC office area will be available for use in the TSC at all times. Additional lines may be readily diverted from other unoccupied office areas.

6.3 The intercom and paging system will provide a separate means of intra-plant communication: paging and several party lines. The system will permit communications throughout the plant. Handsets will be available at various positions in the TSC and speakers are used where essential to provide effective operation.

6.4 A separate dedicated telephone network between the TSC, EOF, OSC, and control room will provide alternate communications between these locations to ensure reliable communications.

6.5 Dedicated telephone facilities in the TSC operate in conjunction with dedicated telephone facilities to be installed in the EOF to initiate and maintain communication with appropriate government authorities for the lower emergency levels when the EOF is not manned and until the EOF is manned for the higher emergency levels.

6.6 The local telephone company will have telephone cable in place to the TSC to provide additional telephone services as needed. Separate company telephone cables will have sufficient capacity to further expand the communication capability to support effective operation of the TSC.

6.7 UHF radio communication in the TSC will provide communication with the control room, plant portable radios, and the monitoring teams in the field. The TSC will coordinate the offsite radiological monitoring teams for the lower emergency levels and until the EOF is manned for the higher emergency levels.

6.8 An extension of the hotline telephone on the NRC emergency notification system (ENS) located in the NRC office area, provides communications to the NRC Operations Center for plant operations information.

6.9 A dedicated telephone on the NRC health physics network (HPN) located in the NRC office area, provides transmission of radiological information by NRC personnel onsite to the NRC Operations Center. This telephone will be used by NRC personnel only unless otherwise designated.

6.10 A Xerox model 400 facsimile machine is readily available in the third floor office building and may be easily removed, transported, and installed in the TSC and used with any telephone in the TSC to transmit or receive telecopies. Telecopies can be sent at 4 and 6 minute transmission speeds.

6.11 These diverse means of communication will be available in the TSC to provide primary and alternate communication capability to allow the TSC its intended function as any situation develops.

7.0 RADIATION MONITORING

The TSC will be provided with an Area Monitor and a Particulate, Iodine and Noble Gas Monitor (PIG). Both the area monitor and the PIG Monitor will be located in the instrument room. The PIG Monitor will draw sample from the HVAC duct (inlet side). Description of both monitors is as follows:

7.1 Area Monitor:

The Area Monitor selected for the TSC is a Victoreen Model 808D. It detects gamma radiation above 80KEV with an operating range of 20% from 80KEV to 2 MEV. The detector is an internally mounted GM tube type. It has an alarm trip point that is internally adjustable from background to full scale. The display face contains a failsafe indicator, an output meter, and alarm lights. The external controls consist of a manual reset button and an internal alarm point set potentionmeter.

7.2 Particulate, Iodine and Noble Gas Monitor:

The sampler and detector subsystem contains an Eberline Model SA-6 combined particulate, iodine and noble gas sampler in one compact, lead-shielded assembly. Three inches of lead shielding is provided with one inch of lead between individual samplers. The Particulate Subsystem contains a filter 2 inches in diameter and a beta scintillation detector with provisions for radon background subtraction. The Iodine Subsystem includes a 2 inch diameter cartridge containing TEDA impregnated for drift by automatic gain stabilization. The Noble Gas Subsystem contains a sample chamber of volume 270cc. It uses a beta scintillation detector which is compensated for background by signal subtraction from an Eberline DAl-1 Area Monitor.

The electronics of the system contain the detector high voltage, signal amplifier, and line driver. Three readouts are provided containing all alarm functions of alert, high and failure, along with check source actuation controls. The checksource for each detector is a motor driven assembly completely shielded from the detector in the retracted position. Hard copy records are kept by a three-pen recorder. The sampling mechanics includes a regulated flow pump with flow indicators.

8.0 TSC INSTRUMENTATION

With the exception of the TSC Radiation Monitoring System, no separate instrumentation system is being proposed. Input data to the TSC display system will be composed of currently available sensor data of variable types A, B, C, D, and E as specified in Reg. Guide 1.97, Rev. 2 and those meteorological variables specified in proposed Rev. 1 to Reg. Guide 1.23, "Meteorological Measurements, Programs and Support" of Nuclear Power Plants and in NUREG-0654, Rev. 1, Appendix 2. The District is reviewing the requirements outlined in Reg. Guide 1.97 and at this stage is unable to commit itself to meeting all requirements by the 1982 refueling outage (November 1982-February 1983). To start with, the existing instrumentation will be connected to the new computer system. If required and felt necessary, the existing instrumentation will be later upgraded and/or new instrumentation will be added to meet Reg. Guide 1.97 requirements.

9.0 DATA DISPLAY SYSTEM

9.1 Computer System Description

This section outlines the conceptual design for the Emergency Response Facility (ERF) computer systems that will provide the Data System at the Technical Support Center (TSC), Emergency Operations Facility (EOF) and Control Room (CR).

The conceptual design of the ERF computer system is based on the guidance given in NUREG-0696 and includes provision for the SPDS. The computer system is to be compatible with the Emergency Operating Procedures (EOP) based on guidelines presently being generated by the Combustion Engineering Owners Group. The data display system will consist of a computer and associated peripherals. The displays will be generated for the Control Room, the Technical Support Center, and the Emergency Operations Facility. The computer system is being configured such that it will serve as the primary source for the safety parameter display of sensor signals within the plant from both safety and non-safety grade souces and meteorological data required by Reg. Guide 1.23. The ERF computer system will be designed such that it can process and display both plant data and ERF data. Figure 1 shows such a configuration where the computer system fulfills the role of a plant process computer data system and an ERF data system. During installation and initial operation, the proposed computer system will be exclusively devoted to ERF data processing. The plant process computer data system will be gradually added to the ERF computer system to assure that high reliability of the system is maintained.

The computer system will be composed of an on-line, real-time computer with its associated disc(s), tape drive and other peripherals. It will drive the CRTs and printers located in the Control Room, TSC, and EOF. Safety system signals will come through safety grade isolators prior to entering the computer system. In addition, these signals will be displayed on other instrumentation in the Control Room.

A conceptual drawing of the proposed computer system is shown in Figure 2. The primary ERF display system and SPDS is composed of a high reliability, nonqualified computer, its associated peripherals and output devices consisting of CRT's and printers. The isolation of Class 1E signals and their display (if the SPDS is required) is also shown. Option 1 shows isolation being achieved either by a conventional isolator or a qualified multiplexing system. In this case the seismic qualification of the backup SPDS (if it is required), would be achieved using conventional instrumentation. Option two includes two Class 1E computers and seismically qualified displays. The displays would serve as the seismically qualified backup to the SPDS (if it is rerequired) as well as backup displays for reactor vessel level monitoring system and core exit thermocouples. These two options are presented at this time to show how the proposed ERF computer system would be integrated into the SPDS. The District proposes that this single computer system when augmented by the proposed options can fully meet the requirements of NUREG-0737 items I.D.2 (SPDS) and III.A.1.2 (SPDS) when and if I.D.2 becomes a requirement.

The computer system will be designed and configured with sufficient hardware equipment to meet the required level of availability. Bidders will be requested to propose a computer system with configuration similar to that shown in Figure 2, but may suggest alternative configuration as long as the bidder satisfies the operational requirements as well as the availability requirements.

It is our intention to purchase the computer system on a turnkey basis such that one vendor will take full responsibility on the entire computer system. The computer system will include at a minimum, the following hardware components and services:

a. Real time digital computer including input-output, memory, arithmetic unit, and control unit.

b. Bulk storage devices such as disc and magnetic tape.

c. Output peripherals such as CRT's, printers, keyboards and desks.

d. Input-output termination cabinets and I/O circuitry.

e. Power distribution facilities excluding Uninterruptable power supply system.

f. All interconnecting cables between the control processing units and peripherals located at different locations.

g. Complete programming necessary to provide the functional requirements.

h. Training of personnel both in operation as in hardware and software maintenance.

i. Documentation, spare parts and special test equipmen .

j. Supervision of installation.

k. Stringent acceptance tests both at the contractor facilities prior to shipment, and at site.

9.2 Functional Requirements Description

The data available for display at the TSC will provide information sufficient to determine the following plant conditions:

a. Plant steady-state operating conditions prior to the accident.

b. Transient condition producing the initiating event.

c. Plant system dynamic behavior throughout the course of the accident.

The data available for display at the EOF will provide sufficient radiological, meteorological and other environmental data to assess on-site and off-site environmental consequences, coordinate radiological monitoring, and recommend implementation of off-site emergency plans.

Programs required to support the Emergency Response Facilities will include:

. Critical Safety Function Displays

. Meteorological and Radiological Displays

. Historical Data Storage & Retrieval

These displays and historical data storage and retrieval will be provided in the plant control room, TSC and EOF.

A. Critical Safety Function Displays

This program will display the plant status to assertain that critical functions are being fulfilled. In cases of abnormal conditions, information regarding the source of difficulty associated with the critical functions will be displayed.

The following critical functions are planned to be monitored and displayed by this program:

. Core Reactivity Control

. Core Heat Removal

. RCS Inventory Control

. RCS Pressure Control

. RCS Heat Removal

. Containment Pressure/Temperature Control

. Containment Isolation

. Radiological Emission Control

B. Meteorological and Radiological Displays

This program will display data needed for making current, site specific estimates and predictions of atmospheric effluent transport and diffusion during and immediately following an accidental airborne radioactivity release.

C. Historical Data Storage and Retrieval

The Historical Data Storage and Retrieval program will provide control room, TSC and EOF personnel the means to retrieve historical information of plant data in order to assist them to identify the mitigation of plant events and to perform diagnostics of past events.

Time trend on the CRTs as well as alphanumeric logs will be available to the users as the medium of information.

The extent of the time history period will be according to NUREG-0696 guidelines.

9.3 Specific Requirements of the Computer System

9.3.1 Reliability

The Emergency Response Facilities computer system will have an operational availability goal of at least 99%, whenever the reactor is in power operation, hot standby or hot shutdown modes. The design of the computer system will be to limit scheduled outages to no more than 16 hours per calendar quarter whenever the reactor is in these modes and the system shall be capable of becoming fully operational within 30 minutes during these outages.

In addition to the above operational criteria, the ERF computer system will have the availability goal, while the reactor is in cold shutdown or refueling modes, of at least 80%. The ERF computer system must be able to be available within 30 minutes during scheduled outages for preventative maintenance of instrumentation, power supplies, or air conditioning units.

9.3.2 Interface Requirements

The ERF computer system will not meet Class IE requirements. However, when signals are received from sensors providing signals to safety system equipment or displays, suitable isolation will be provided to assure the computer system will not degrade performance of the safety system equipment or displays. The computer system will be independent of the plant control room and shall not degrade nor interfere with the plant's operation. If required suitable backup displays, qualified to Class 1E requirements, will be provided such that the system can serve as the primary SPDS.

9.3.3 Computer System Data

The minimum ERF data set will be composed of currently available sensor data of variable types A, B, C, D, and E as specified in Reg. Guide 1.97, Revision 2, and those meterological variables specified in proposed Revision 1 to Reg. Guide 1.23 "Meteorological Measurements, Programs and Support of Nuclear Power Plants" and in NUREG-0654, Revision 1, Appendix 2.

The data will be sufficient to assess the steady state operating conditions prior to the accident, transient conditions producing the initiating event, and plant system dynamic behavior throughout the course of the accident. The data will be sufficient to review the accident sequence, determine mitigating actions, evaluate damage, and determine plant status during recovery.

The data will be sufficient to assess actual and potential on-site and off-site environmental consequences in an emergency condition. There will be sufficient radiological, meteorological and other environmental data needed to assess environmental conditions, coordinate radiological monitoring and recommend implementation of off-site emergency plans.

The data will be sufficient to provide a continuous indication of the safety status of the plant and aid in the rapid detection of abnormal operating conditions. The data will be sufficient to provide additional information for diagnosis and mitigation of these abnormal operating conditions.

9.3.4 Data Source, Collection and Storage Requirements

As explained in previous paragraph, data will be supplied by currently available sensors.

The time resolution for data collection will be sufficient to prevent loss of data during transients. Sample frequencies will be chosen consistent with the use of the data.

Data storage and recall capability will be sufficient to provide two hours of pre-event and 12 hours of post-event data. Capacity to record at least two weeks of additional post-event data with reduced time resolution will be included. All data storage and retrieval will be performed without interrupting data acquisition.

9.3.5 Data Display Requirements

Sufficient data display will be provided at the TSC, EOF and control room, such that the tasks of these respective facilities can be accomplished. In the control room, the display system will be accessible to the Shift Supervisor, Control

Room SRO, STA and Control Room RO. In addition to the data displays, printout devices will be provided in the TSC and EOF such that personnel can perform their assigned tasks with unhindered access to the data. The data will be continuously available to all ERF locations.

Trend and time history display capability will be available in all locations. Call-up manipulation and presentation of data will be easily accomplished. Data will be logically distributed between display pages, and display pages may be partitioned. All displays will be human factor engineered.

The NSSS Safety Status displays of the ERF computer system will consist of derived variables which monitor the critical safety functions of core reactivity, core heat removal, RCS inventory, RCS pressure. RCS heat removal, containment temperature and pressure, containment isolation, and radioactivity release. The displays shall be made of a number of pages on several levels which have a hierarchy based upon the level of detail required by the operator or support personnel in performing various tasks. The hierarchy consists of a top level display which will show the overall critical safety function status of the plant. The next level will show the individual function status and the third level will show subfunction diagnostics. These displays will allow the operator or support personnel to rapidly determine the safety status of the plant and to diagnose possible abnormal operations. The displays will incorporate a feature which will allow monitoring of all critcial safety functions whenever paging through these displays. In addition to the primary displays to monitor safety functions, the system will be capable of producing time histories from either currently received data or past data stored within the computer system. It is planned that the system will have a capability of plotting parameters such as pressure vs. temperature, in order to provide real-time analyses of nuclear power transients.

The monitoring of the critical safety functions will be done by algorithms which monitor various system parameters. These algorithms will indicate the possible loss of a safety function and will indicate to the operator the variable or variables causing loss of the function.

10.0 RECORDS MANAGEMENT SYSTEM

A complete as-built satellite records file will be maintained on-site with all safety-related records to comply with NUREG-0696 requirements. A mixed retrieval system will be available as an index to all records maintained in the facility. For the most part, engineering design records will be retrievable thru an on-line computer based index program. Additional safety-related records will be indexed and retrieved via a manual system. Access to a particular record is through the index which indicates the location of the record. Reproduction equipment is available on site for the reproduction of hardcopy from microfilm; 16mm microfilm reader/printer and 35mm aperture card printer and viewers are available for print reproduction.

The day-to-day plant operational records will be controlled, indexed, and filed by the plant administrative staff. These records will be located in the plant's administrative office. In addition, a complete as-built satellite records file of engineering design records will be maintained in this area.

11.0 SCHEDULE

Complete TSC facility including display system is expected to be operational by June 1983. This schedule is based on the following assumptions:

1.) Data base requirements will be limited to the existing instrumentation.

2.) Commercial grade, Mil Spec Computer Hardware and Display System will be acceptable.

3.) Lead time for computer is not more than 10 months.

4.) Installation of the new computer system including connections from the existing instrumentation will be done during the 1982 refueling outage.

5.) Approximately four (4) months are allowed for debugging the system.

12.0 TASK FUNCTIONS OF INDIVIDUALS

12.1 The task functions of individuals required to report to the TSC upon activation and for each emergency class are outlined in Appendix "A".

13.0 ATTACHMENTS

Drawings:

G/C 4778-293-101-001
G/C 4778-293-206-001

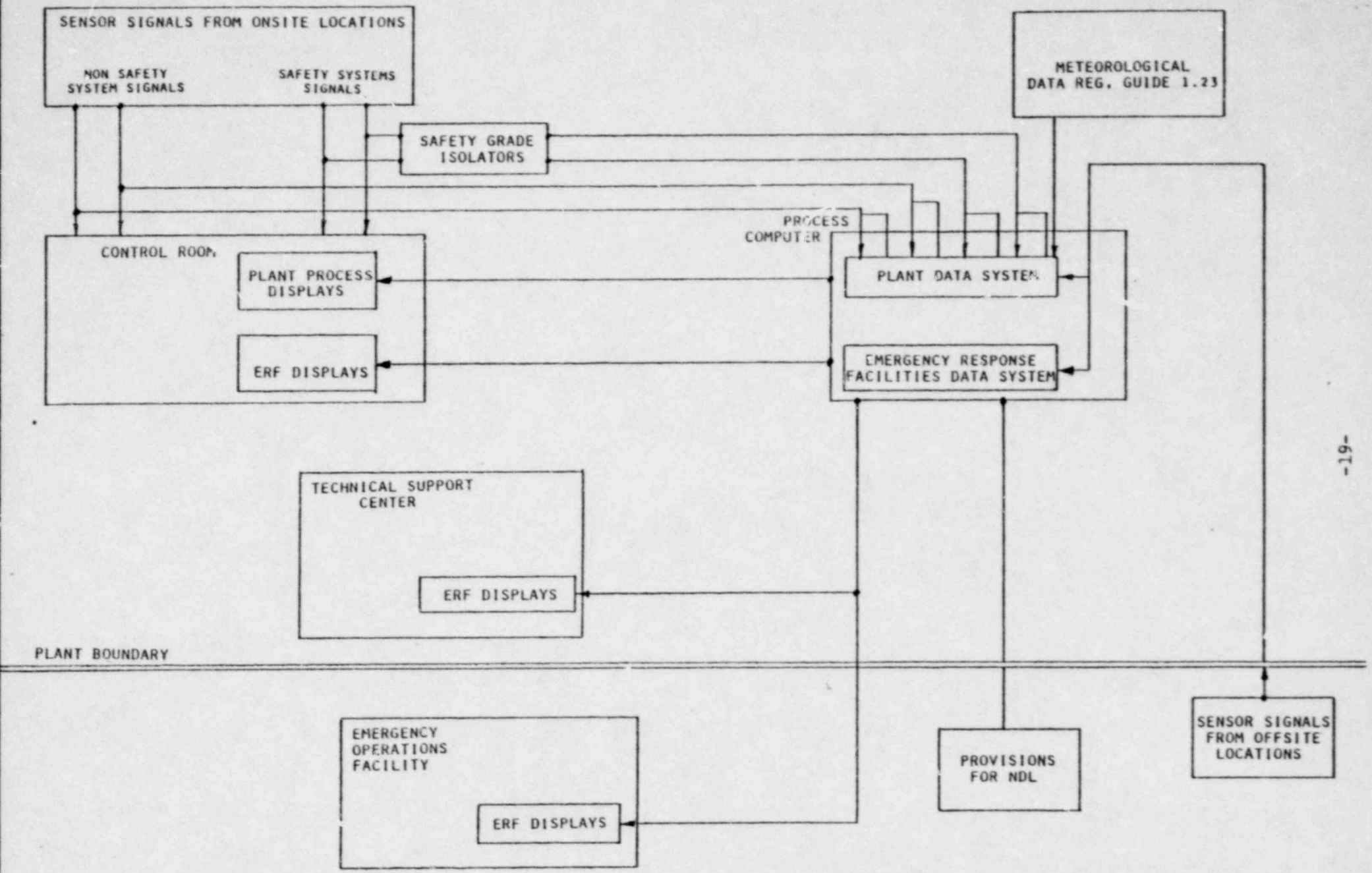


FIGURE 1 CONFIGURATION OF PROPOSED COMPUTER SYSTEM SERVING PLANT AND ERF FUNCTIONS

ATTACHMENT 2

CONCEPTUAL DESIGN DESCRIPTION

EMERGENCY OPERATING FACILITY (EOF)

For

Fort Calhoun Station

TABLE OF CONTENTS

1.0 GENERAL

1.1 PURPOSE

2.0 DESIGN BASIS - REQUIREMENTS

2.1 BUILDING

2.2 POWER SUPPLY

2.3 DISPLAY SYSTEM

2.4 COMMUNICATION SYSTEM

2.5 RECORDS MANAGEMENT SYSTEM

3.0 LOCATION

4.0 BUILDING

4.1 STRUCTURE

4.2 ENVIRONMENTAL FEATURES

4.3 FIRE PROTECTION SYSTEM

4.4 FUNCTIONAL AREAS

TABLE OF CONTENTS

(Continued)

5.0 POWER SUPPLY SYSTEM

5.1 SYSTEM DESCRIPTION

5.2 POWER SUPPLY QUALITY

6.0 DISPLAY SYSTEM

7.0 COMMUNCIATION SYSTEM

8.0 INSTRUMENTATION SYSTEM

9.0 RECORDS MANAGEMENT SYSTEM

10.0 SCHEDULE

11.0 TASK FUNCTIONS OF INDIVIDUALS

12.0 ATTACHMENTS

CONCEPTUAL DESIGN DESCRIPTION
FOR EMERGENCY OPERATIONS FACILITY
FOR THE
FORT CALHOUN STATION

1.0 GENERAL

This document develops a conceptual design description of an Emergency Operations Facility (EOF) for the Omaha Public Power District's Fort Calhoun Nuclear Station. The conceptual design is developed in response to NUREG-0696 Emergency Criteria for Emergency Response Facilities, February 1981, NRC.

The Emergency Operations Facility (EOF) is a component of the Emergency Response Facilities (ERF). The ERF facilities and systems are intended to operate as an integrated system to support the control room in the mitigation of the consequences of accidents and to enhance the Licensee's capability to respond to abnormal plant conditions.

1.1 PURPOSE

The Emergency Operations Facility (EOF) is a nearsite support facility for the management of overall licensee emergency response (including coordination with Federal, State, and local officials), coordination of radiological and environmental assessments, and determination of recommended public protective actions. The EOF

shall have appropriate technical data displays and plant records to assist in the diagnosis of plant conditions to evaluate the potential or actual release of radioactive materials to the environment. A senior licensee offical in the EOF shall organize and manage licensee offsite resources to support the TSC and the control room operators.

2.0 DESIGN BASIS - REQUIREMENTS

2.1 BUILDING

The building is to be sited at the North Omaha Power Station, which is 17 highway miles from the Fort Calhoun Power Station. The building will be designed to meet the requirements of the Omaha Municipal Building Code which provides for the adoption of the National Building Code - 1976 Edition.

In addition, as per NUREG-0696, Section 4.2, the building will be designed for winds and floods with a 100 year recurrence frequency.

2.2 POWER SUPPLY

The EOF will be provided with a reliable power source.

2.3 DISPLAY SYSTEM

The Display System in the EOF should be designed to meet the functional requirements as outlined in NUREG-0696.

2.4 COMMUNICATION SYSTEM

When activated the EOF Communications system will serve as the primary center to coordinate emergency response activities with local, State, and Federal emergency response organizations; coordinate radiological and environmental assessment; exchange information with TSC on all pertinent radiological data, meteorological data, and plant operations; and coordinate public information. Reliable primary and backup means of voice communications will be provided to the TSC. The Control Room, NRC, and State and Local Emergency Operations Centers. A facsimile transaction capability between the EOF, TSC, and the NRC Operations Center shall also be provided.

2.5 The Records Management System will be designed to meet the requirements of NUREG-0696.

3.0 LOCATION

The location selected for the EOF is at the North Omaha Power Station. This location is approximately 17 highway miles south of the Fort Calhoun Station. The driving time at legal speeds from the Fort Calhoun Station to the North Omaha Station is 22 minutes.

In response to NUREG-0696, Section 4.2, "Location, Structure and Habitability", the selected location complies with the category of being located beyond 10 miles of the Technical Support Center (TSC), but not greater than 20 miles.

The North Omaha Station EOF location is located within the Omaha City limits. Accordingly, it is located close to the centers of the major governmental agencies in this area. It is also located close to O.P.P.D.'s corporate offices. In addition, the location provides ready access to Eppley Airfield and is well situated for easy access from major road arterials.

4.0 BUILDING

4.1 STRUCTURE

The proposed building for the EOF will be a single storied pre-engineered insulated metal clad building. A conventional HVAC System is anticipated.

4.2 ENVIRONMENTAL FEATURES

Since the designated location is beyond 10 miles of the Nuclear Power Station, no special ventilation features are required.

Interior features such as lighting and decor will be such as to provide an environment conducive to relatively long-term concentrated activities.

4.3 FIRE PROTECTION SYSTEM

A Fire Detection System will provide for automatic detection in all areas of the EOF. The system will meet all applicable requirements of NFPA. The air conditioning system within the EOF will be equipped with smoke detection equipment. Remote annunciation of fire and smoke conditions is to be provided in the Unit 1 and 2 control room at North Omaha Station. In general, fire suppression is provided by portable fire extinguishers.

4.4 FUNCTIONAL AREAS

Facilities will be provided in the EOF for the acquisition, display, and evaluation of all radiological, meteorological, and plant system data pertinent to determine offsite protective measures. Layout for the proposed EOF building is shown on Figure 1.

The EOF building in response to NUREG-0696, Section 4.4 Size, will be large enough to provide working space for at least 35 persons allowing 75 $Ft.^2$/Person. Also to be provided per Section 4.4 are:

a) Space for EOF data system equipment needed to transmit data to other locations;

b) Sufficient space to perform repair, maintenance, and service of equipment displays, and instrumentation;

c) Space for ready access to communications equipment by all EOF personnel who need communications capabilities to perform their functions;

d) Space for ready access to functional displays of EOF data;

e) Space for storage of plant records and historical data or space for means to readily acquire and display those records; and

f) Separate office space to accommodate at least five NRC personnel during periods that the EOF is activated for emergencies.

The required functions will be accommodated by providing the following designated areas:

1) Data Display System and Emergency Assessment Area
2) Recovery Staff Area
3) Advisory Staff Area
4) Plant Records and Historical Data Room.
5) Laboratory Area
6) NRC Office.
7) State & Local Officials Office

In accordance with NUREG-0696, Section 4.1, the EOF facility may be used by designated licensee personnel for normal daily operations as well as for training and exercises as long as such activities do not degrade EOF activation, operations, or reliability.

5.0 POWER SUPPLY SYSTEM

5.1 The primary source of the power for the EOF will be from the 13.8KV power feed from substation 911/1211. This substation is fed by the five generating units at the North Omaha Facility. In addition, it also has the capability of being fed by the gas turbines located at the Jones Street facility along with the capability of being tied into circuit number 1521 (Iowa).

5.2 POWER SUPPLY QUALITY

5.2.1 The power supply quality for the display system will be compatible with the requirements of the display system hardware.

5.2.2 Power supply quality for other auxiliaries will be as follows:

Voltage: 208V or 480V, 3Ø, 3W, 60Hz; 120V, 1Ø, 60Hz.

AC Voltage regulation: ±2%

AC Frequency regulation: 3%

6.0 DATA DISPLAY SYSTEM

6.1 Computer System Description

This section outlines the conceptual design for the Emergency Response Facility (ERF) computer systems that will provide the Data System at the Technical Support Center (TSC), Emergency Operations Facility (EOF) and Control Room (CR).

The conceptual design of the ERF computer system is based on the guidance given in NUREG-0696 and includes provision for the SPDS. The computer system is to be compatible with the Emergency Operating Procedures (EOP) based on guidelines presently being generated by the Combustion Engineering Owners Group. The data display system will consist of a computer and associated peripherals. The displays will be generated for the Control Room, the Technical Support Center, and the Emergency Operations Facility. The computer system is being configured such that it will serve as the primary source for the safety parameter display of sensor signals within the plant from both safety and non-safety grade souces and meteorological data required by Reg. Guide 1.23. The ERF computer system will be designed such that it can process and display both plant data and ERF data. Figure 1 shows such a configuration where the computer system fulfills the role of a plant process computer data system and an ERF data system. During installation and initial operation, the proposed computer system will be exclusively devoted to ERF data processing. The plant process computer data system will be gradually added to the ERF computer system to assure that high reliability of the system is maintained.

The computer system will be composed of an on-line, real-time computer with its associated disc(s), tape drive and other peripherals. It will drive the CRTs and printers located in the Control Room, TSC, and EOF. Safety system signals will come through safety grade isolators prior to entering the computer system. In addition, these signals will be displayed on other instrumentation in the Control Room.

A conceptual drawing of the proposed computer system is shown in Figure 2. The primary ERF display system and SPDS is composed of a high reliability, nonqualified computer, its associated peripherals and output devices consisting of CRT's and printers. The isolation of Class 1E signals and their display (if the SPDS is required) is also shown. Option 1 shows isolation being achieved either by a conventional isolator or a qualified multiplexing system. In this case the seismic qualification of the backup SPDS (if it is required), would be achieved using conventional instrumentation. Option two includes two Class 1E computers and seismically qualified displays. The displays would serve as the seismically qualified backup to the SPDS (if it is rerequired) as well as backup displays for reactor vessel level monitoring system and core exit thermocouples. These two options are presented at this time to show how the proposed ERF computer system would be integrated into the SPDS. The District proposes that this single computer system when augmented by the proposed options can fully meet the requirements of NUREG-0737 items I.D.2 (SPDS) and III.A.1.2 (SPDS) when and if I.D.2 becomes a requirement.

The computer system will be designed and configured with sufficient hardware equipment to meet the required level of availability. Bidders will be requested to propose a computer system with configuration similar to that shown in Figure 2, but may suggest alternative configuration as long as the bidder satisfies the operational requirements as well as the availability requirements.

It is our intention to purchase the computer system on a turnkey basis such that one vendor will take full responsibility on the entire computer system. The computer system will include at a minimum, the following hardware components and services:

a. Real time digital computer including input-output, memory, arithmetic unit, and control unit.

b. Bulk storage devices such as disc and magnetic tape.

c. Output peripherals such as CRT's, printers, keyboards and desks.

d. Input-output termination cabinets and I/O circuitry.

e. Power distribution facilities excluding Uninterruptable power supply system.

f. All interconnecting cables between the control processing units and peripherals located at different locations.

g. Complete programming necessary to provide the functional requirements.

h. Training of personnel both operation as in hardware and software maintenance.

i. Documentation, spare parts and special test equipment.

j. Supervision of installation.

k. Stringent acceptance tests both at the contractor facilities prior to shipment, and at site.

6.2 Functional Requirements Description

The data available for display at the TSC will provide information sufficient to determine the following plant conditions:

a. Plant steady-state operating conditions prior to the accident.

b. Transient condition producing the initiating event.

c. Plant system dynamic behavior throughout the course of the accident.

The data available for display at the EOF will provide sufficient radiological, meteorological and other environmental data to assess on-site and off-site environmental consequences, coordinate radiological monitoring, and recommend implementation of off-site emergency plans.

Programs required to support the Emergency Response Facilities will include:

. Critical Safety Function Displays

. Meteorological and Radiological Displays

. Historical Data Storage & Retrieval

These displays and historical data storage and retrieval will be provided in the plant control room, TSC and EOF.

A. Critical Safety Function Displays

This program will display the plant status to assertain that critical functions are being fulfilled. In cases of abnormal conditions, information regarding the source of difficulty associated with the critical functions will be displayed.

The following critical functions are planned to be monitored and displayed by this program:

- Core Reactivity Control
- Core Heat Removal
- RCS Inventory Control
- RCS Pressure Control
- RCS Heat Removal
- Containment Pressure/Temperature Control
- Containment Isolation
- Radiological Emission Control

B. Meteorological and Radiological Displays

This program will display data needed for making current, site specific estimates and predictions of atmospheric effluent transport and diffusion during and immediately following an accidental airborne radioactivity release.

C. Historical Data Storage and Retrieval

The Historical Data Storage and Retrieval program will provide control room, TSC and EOF personnel the means to retrieve historical information of plant data in order to assist them to identify the mitigation of plant events and to perform diagnostics of past events.

Time trend on the CRTs as well as alphanumeric logs will be available to the users as the medium of information.

The extent of the time history period will be according to NUREG-0696 guidelines.

6.3 Specific Requirements of the Computer System

6.3.1 Reliability

The Emergency Response Facilities computer system will have an operational availability goal of at least 99%, whenever the reactor is in power operation, hot standby or hot shutdown modes. The design of the computer system will be to limit scheduled outages to no more than 16 hours per calendar quarter whenever the reactor is in these modes and the system shall be capable of becoming fully operational within 30 minutes during these outages.

In addition to the above operational criteria, the ERF computer system will have the availability goal, while the reactor is in cold shutdown or refueling modes, of at least 80%. The ERF computer system must be able to be available within 30 minutes during scheduled outages for preventative maintenance of instrumentation, power supplies, or air conditioning units.

6.3.2 Interface Requirements

The ERF computer system will not meet Class IE requirements. However, when signals are received from sensors providing signals to safety system equipment or displays, suitable isolation will be provided to assure the computer system will not degrade performance of the safety system equipment or displays. The computer system will be independent of the plant control room and shall not degrade nor interfere with the plant's operation. If required, suitable backup displays, qualified to Class 1E requirements, will be provided such that the system can serve as the primary SPDS.

6.3.3 Computer System Data

The minimum ERF data set will be composed of currently available sensor data of variable types A, B, C, D, and E as specified in Reg. Guide 1.97, Revision 2, and those meterological variables specified in proposed Revision 1 to Reg.

Guide 1.23 "Meteorological Measurements, Programs and Support of Nuclear Power Plants" and in NUREG-0654, Revision 1, Appendix 2.

The data will be sufficient to assess the steady state operating conditions prior to the accident, transient conditions producing the initiating event, and plant system dynamic behavior throughout the course of the accident. The data will be sufficient to review the accident sequence, determine mitigating actions, evaluate damage, and determine plant status during recovery.

The data will be sufficient to assess actual and potential on-site and off-site environmental consequences in an emergency condition. There will be sufficient radiological, meteorological and other environmental data needed to assess environmental conditions, coordinate radiological monitoring and recommend implementation of off-site emergency plans.

The data will be sufficient to provide a continuous indication of the safety status of the plant and aid in the rapid detection of abnormal operating conditions. The data will be sufficient to provide additional information for diagnosis and mitigation of these abnormal operating conditions.

6.3.4 Data Source, Collection and Storage Requirements

As explained in previous paragraph, data will be supplied by currently available sensors.

The time resolution for data collection will be sufficient to prevent loss of data during transients. Sample frequencies will be chosen consistent with the use of the data.

Data storage and recall capability will be sufficient to provide two hours of pre-event and 12 hours of post-event data. Capacity to record at least two weeks of additional post-event data with reduced time resolution will be included. All data storage and retrieval will be performed without interrupting data acquisition.

6.3.5 Data Display Requirements

Sufficient data display will be provided at the TSC, EOF and control room, such that the tasks of these respective facilities can be accomplished. In the control room, the display system will be accessible to the Shift Supervisor, Control Room SRO, STA and Control Room RO. In addition to the data displays, printout devices will be provided in the TSC and EOF such that personnel can perform their assigned tasks with unhindered access to the data. The data will be continuously available to all ERF locations.

Trend and time history display capability will be available in all locations. Call-up manipulation and presentation of data will be easily accomplished. Data will be logically distributed between display pages, and display pages may be partitioned. All displays will be human factor engineered.

The NSSS Safety Status displays of the ERF computer system will consist of derived variables which monitor the critical safety functions of core reactivity, core heat removal, RCS inventory, RCS pressure. RCS heat removal, containment temperature and pressure, containment isolation, and radioactivity release. The displays shall be made of a number of pages on several levels which have a hierarchy based upon the level or detail required by the operator or support personnel in performing various tasks. The hierarchy consists of a top level display which will show the overall critical safety function status of the plant. The next level will show the individual function status and the third level will show subfunction diagnostics. These displays will allow the operator or support personnel to rapidly determine the safety status of the plant and to diagnose possible abnormal operations. The displays will incorporate a feature which will allow monitoring of all critcial safety functions whenever paging through these displays. In addition to the primary displays to monitor safety functions, the system will be capable of producing time histories from either currently received data or past data stored within the computer system.

It will be desired that the system will have a capability of plotting parameters such as pressure vs. temperature, in order to provide real-time analyses of nuclear power transients.

The monitoring of the critical safety functions will be done by algorithms which monitor various system parameters. These algorithms will indicate the possible loss of a safety function and will indicate to the operator the variable or variables causing loss of the function.

7.0 COMMUNICATION SYSTEM

Reliable communication links to coordinate offsite radiological monitoring teams; coordinate emergency response activities with those of local, State, and Federal emergency response organizations; exchange information with the TSC on all pertinent radiological data, meteorological data, and plant operations; and coordinate public information; will be provided to allow the EOF to perform its intended function during nuclear emergencies and recovery operations. A combination of dedicated telephone facilities, plant and local dial telephone systems, and radio communication will provide necessary communication links. Telephones, speakers, and handsets are conveniently located to permit effective utilization of the communication capabilities.

Several lines from the nuclear plant dial telephone system (PABX) are extended to the EOF to provide uninterrupted private communication with all plant areas served. The full capability of the plant telephone system is available as needed. In addition to lines installed for company use, one line in the NRC office area is available for use at all times.

Additional dial telephone service is provided by the company telephone system in Omaha. This will provide private intra-company telephone communication and access to the public telephone network. Direct trunks between the company telephone system in Omaha and the nuclear plant telephone system provide an alternate means of communication with the plant which is not affected by the public telephone network. In addition to lines installed for company use two lines installed in the NRC office area are available for use at all times. Additional lines would be provided by the local telephone company as needed.

A separate dedicated telephone network between the TSC, EOF, OSC and control room will provide alternate communications between these locations to ensure reliable communications.

Dedicated telephone facilities from the EOF will provide private communication with the Nebraska State EOC, Washington County EOC, Iowa State EOC, and Pottawatamie County EOC to coordinate radiological information and appropriate offsite protective measures with the State and local emergency response agencies. A radio

link between the EOF and Harrison County EOC provides alternate communication to coordinate emergency actions with Harrison County if needed.

An extension of the hotline telephone on the NRC Emergency Notification System (ENS) is located in the NRC office area of the EOF in addition to the extensions located in the Control Room, Shift Supervisor's office, Plant Manager's office, and the TSC. The ENS provides direct communication to the NRC Operations Center to coordinate emergency response activities. When any telephone handset is lifted from the cradle it will automatically ring in the NRC Operations Center and the Regional Office. This facility is provided by the local telephone company and integrated in the ENS communication network.

A dedicated telephone on the NRC Health Physics Network (HPN) is located in the NRC office area of the EOF in addition to dedicated telephones located in the Control Room, Shift Supervisor's office, and the TSC. The HPN provides direct communication of radiological information by NRC personnel at the EOF. This network is a dial-up line which would tie together the site, NRC Headquarters, and the Regional Office. Use of this telephone is restricted to NRC personnel only unless otherwise designated. The necessary equipment and facilities are provided by the local telephone company and integrated in the communication network.

A facsimile machine capable of one minute, 4 minute, and 6 minute transmission speeds, is designated for use by the public information specialist at the EOF to send telecopies to the company spokesperson at the Emergency News Center or other locations as required. In addition, a Xerox model 400 facsimile machine is readily available in the North Omaha plant office area. This machine may be easily removed and installed in the EOF and requires no hardware connection to the voice facility and so may be used with any telephone in the EOF to send or receive telecopies. The Xerox 400 is capable of the four and six minute transmission speeds.

Sufficient telephone cable facilities within the EOF allow expansion of the communication capability to support effective operation of the EOF as the needs arise.

A dedicated telephone circuit between the EOF and the Omaha/Douglas County Civic Center provides uninterrupted private communication to the Emergency News Center in the Civic Center. Coordination of the public information between the public information specialist at the EOF and the official spokesperson at the Emergency News Center will occur over this circuit.

A radio control station in the EOF is capable of operation through both plant UHF radio repeaters. This will provide radio communication with other radio control stations on the system, portable radios at the plant, and with the offsite radiological monitoring teams equipped with mobile radios.

8.0 INSTRUMENTATION SYSTEM

Input data to the EOF display system will be composed of currently available sensor data of variable types A, B, C, D, and E as specified in Reg. Guide 1.97, Rev. 2 and those meteorological variables specified in proposal Rev. 1 to Reg. Guide 1.23 "Meteorological Measurements, programs and support of Nuclear Power Plants and in NUREG-0654, Rev. 1, Appendix 2. The District is reviewing the requirements outlined in Reg. Guide 1.97 and at this stage is unable to commit itself to meeting all requirements by the 1982 refueling outage (November 1982 - February 1983). To start with, the existing instrumentation will be connected to the new computer system. If required and felt necessary, the existing insturmentation will be later upgraded and/or new instrumentation will be added to meet Reg. Guide 1.97 requirements.

9.0 RECORDS MANAGEMENT SYSTEM

A complete microfilm as-built satellite records file will be maintained at the EOF with all safety-related records to comply with federal and industry codes and standards. The file will be maintained by regular peridoic update. A mixed retrieval system will be available as an index to all records maintained in the facility. For the most part, engineering design records will be retrievable thru an on-line computer based index program (which is not part of the display system computer). Additional safety-related records will be indexed and retrieved via a manual system.

Access to a particular record is through the index which indicates the location of the record. Equipment for the reproduction of hardcopy from microfilm will be located at the Jones Street Station and will be transported to th EOF upon notification of an emergency. The equipment will be a 16mm microfilm reader/printer and 35mm aperture card printer and viewer.

10.00 SCHEDULE

Complete EOF facility including display system is expected to be operational by June 1983. This schedule is based on the following assumptions.

1. Data base requirements will be limited to the existing instrumentation.
2. Commercial grade, MIL Spec computer hardware and display system will be acceptable.
3. Lead time for computer is not more than 10 months.
4. Installation of new computer system including connections from the existing instrumentation will be done during 1982 outage.
5. Approximately four (4) months are allowed for debugging the system.
6. EOF building will be complete by October 1, 1982.

11.0 TASK FUNCTIONS OF INDIVIDUALS

The task functions of individuals required to support to the EOF upon activation and for each emergency class are outlined in Attachment 3.

12.0 ATTACHMENTS

Drawings

1. Figure 1 Configuration of proposed computer system serving plant and E.R.F. functions.

2. Figure 2 Data collection processing and display system block diagram for E.R.F.

3. Figure 3 E.O.F. preliminary layout

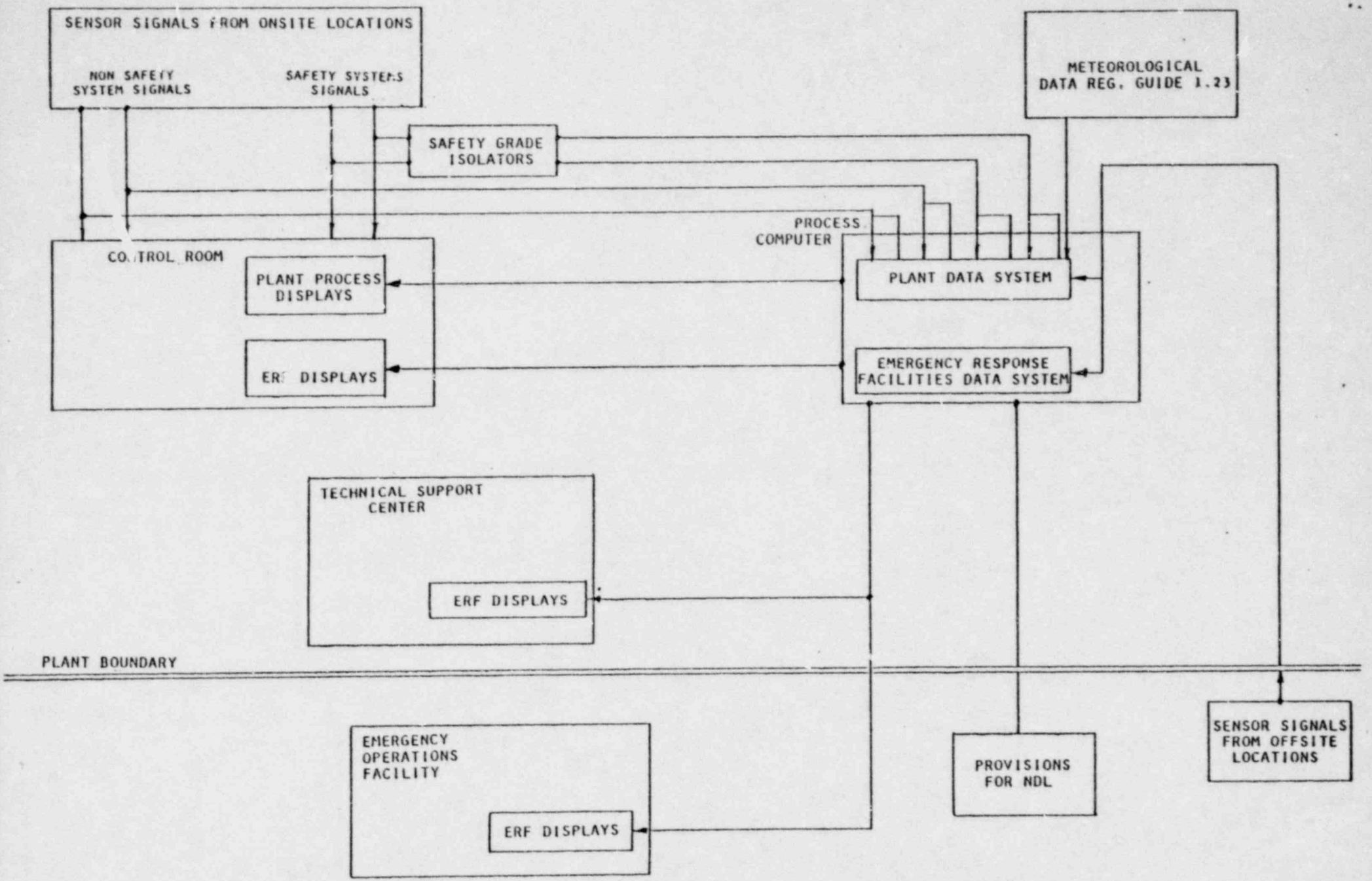
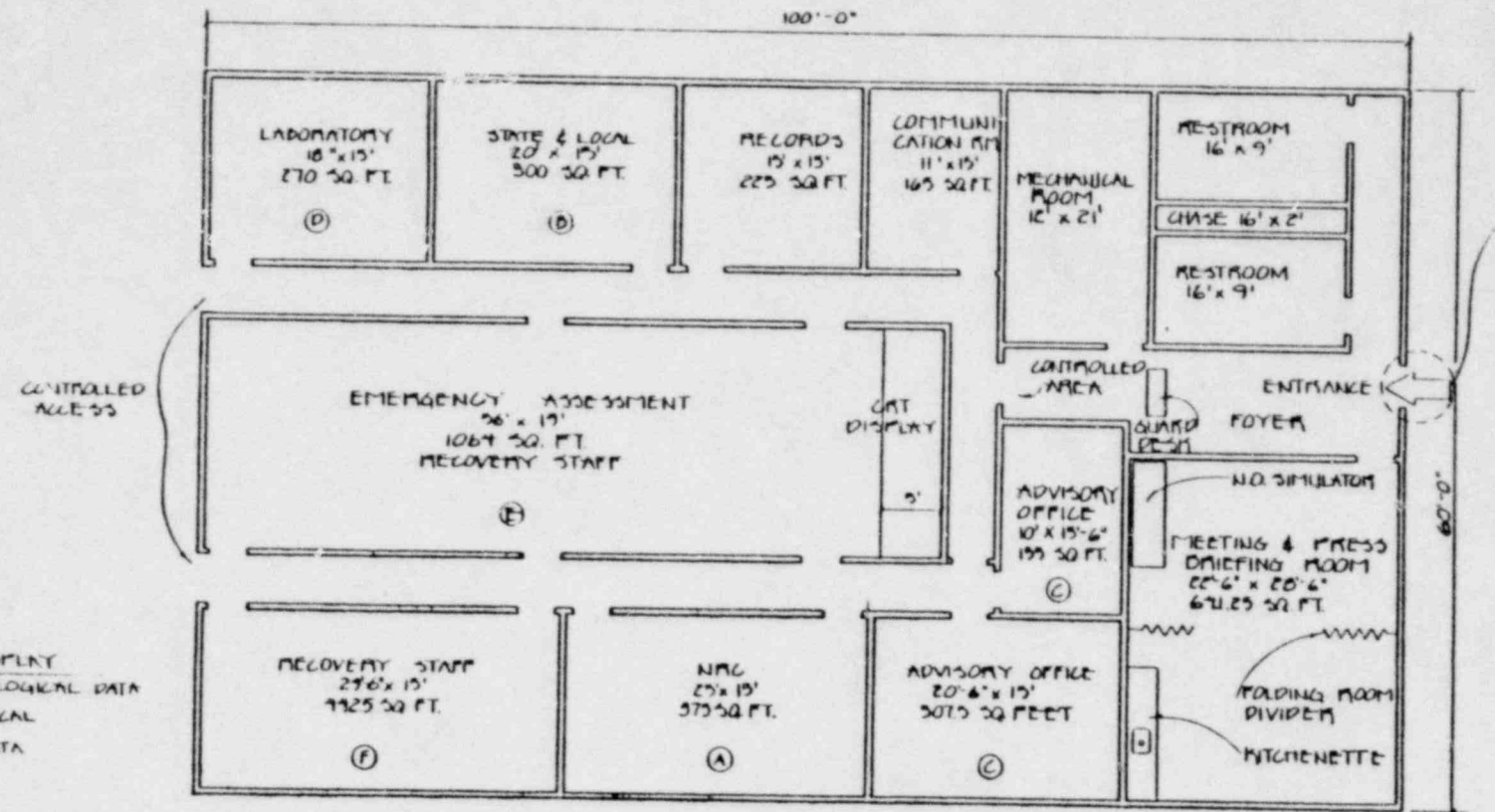
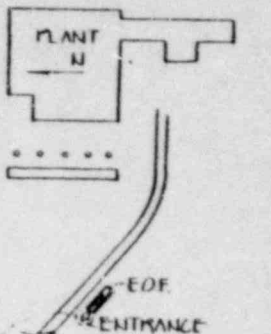


FIGURE 1 CONFIGURATION OF PROPOSED COMPUTER SYSTEM SERVING PLANT AND ERF FUNCTIONS

POOR ORIGINAL





VICINITY PLAN

CRT DISPLAY
1) METEOROLOGICAL DATA
2) RADIOLOGICAL
3) PLANT DATA

WORKING SPACE
NUREG-0696, FEB 81, SEC 9.5, P.19
SIZE: FOR 35 PERSONS W/ 75 FT²/PERSON WORKING SPACE

ROOM No.	FUNCTION	# OF PERSONS	SPACE REQ'D SQ FT.	SPACE PROVIDED SQ FT.
A	NRC	5	375	375
B	STATE & LOCAL	4	300	300
C	ADVISORY	6	450	462.5
D	EMERGENCY ASSESSMENT	1	75	75
E	CRT ASSESS NRC STAFF	9 2	675 375 + 1050	1064
F	RECOVERY STAFF	7	525	525

MM FC-81-99

REV. NO.	DRAWN	CHECK	ENG.	CIVIL DPT.	ELEC. DPT.	MECH. DPT.	Q CONTROL	P.E.
REV. 1	M.B.E. 5-18-81	SKB 5-20-81						
M.B.E. 5-22-81								

EMERGENCY OPERATION FACILITY
AT NORTH OMAHA STATION
PRELIMINARY LAYOUT

SCALE 1/8" = 1'-0"

OMAHA PUBLIC POWER DISTRICT
OMAHA, NEBRASKA

FIGURE 5 REV. 1

STAFFING FOR EOF/TSC

The Technical Support Center (TSC) will be activated for alert, site area, and general emergencies. The Emergency Operations Facility (EOF) will be activated for site area and general emergencies. In the event of activation, the personnel (by title) listed below will report to the TSC or EOF. The function performed by each individual is described with the Fort Calhoun Station Emergency Plan or the Atomic Industrial Forum's "Nuclear Power Plant Emergency Response Plan" dated October 11, 1979.

Technical Support Center

1. Technical Support Manager
2. Core Physics Coordinator
3. Systems Analysis/Procedure Support Coordinator
4. Shift Support Coordinator
5. Instrument & Control Support Coordinator
[1]6. Security & Technical Support Administrative Supervisor.
7. Health Physics/Chemistry Supervisor
8. Procedure/Training Supervisor
9. Manager of Waste Management
[2]10. Radwaste/Technical Support Coordinator
11. Maintenance/Quality Control Supervisor
12. NRC - 5 personnel

Technical support personnel augmenting the operating staff for all emergencies shall also report to the TSC. These additions are:

1. Instrument & Control Technician
2. Electrical Maintenance Technician
[3]3. I&C or Electrical Maintenance Technician
[3]4. Technical Augmentation Staff Communicator
[3]5. Technical Augmentation Staff Communicator
[3]6. Technical Augmentation Staff Communicator
[3]7. Mechanical Maintenance Technician
[3]8. Radwaste Technician
[3]9. HP/Chemistry Technician (onsite survey)
[3]10. HP/Chemistry Technician (onsite survey)
[3]11. HP/Chemistry Technician (inplant surveys)
[3]12. HP/Chemistry Technician (inplant surveys)
[3]13. HP/Chemistry Technician (radiochemistry)
[3]14. HP/Chemistry Technician (access control)
[3]15. HP/Chemistry Technician (HP monitoring)
[4]16. Offsite Survey Monitor
[3]17. Offsite Survey Monitor
[3]18. Offsite Survey Monitor
[3]19. Offsite Survey Monitor

Emergency Operations Facility

1. Recovery Manager
2. Licensing Administrator
3. Emergency Coordinator
4. Dose Assessment Coordinator
5. Environmental Survey & Analysis Supervisor
6. Radiochemical Analysis Coordinator
7. Administrative Logistics Manager
8. EOF Information Specialist
9. EOF Technical Liaison
10. Scheduling/Planning Manager
11.[4] Advisory Support
12. FEMA Representative
13. Nebraska Representative
14. Iowa Representative
15. Local Government Representative
16.[5] HP/Chemistry Technician - Radiochemistry
17. Dose Assessment Operator
18. Dose Assessment Operator
19. Clerical Specialist
20. Communication Specialist
21. Computer Specialist
22. NRC - up to 9 personnel

[1]Also performs function of Data Facility Supervisor.

[2]Also performs function of Conceptual Design Coordinator.

[3]These emergency team members report to TSC for initial instructions only.

[4]Advisory Support will include up to 6 consultants.

[5]Assigned to laboratory area.