



Public Service Company of Colorado
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June 30, 1981
Fort St. Vrain
Unit No. 1
P-81178

Mr. Darrel G. Eisenhut, Director
Division of Reactor Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Emergency Response Facilities

References: (1) Generic Letter 81-109
(2) PSC letters P-81116
dated April 8, 1981
(3) P-81159 dated
June 1, 1981

Dear Mr. Eisenhut:

Attached is PSC's conceptual design submittal in response to NUREG-0696.

The Emergency Response Facilities presented in our Conceptual Design are based upon the emergency functions that are deemed to be necessary for the Fort St. Vrain (FSV) HTGR per the FSV Radiological Emergency Response Plan (RERP). As has been indicated in previous correspondence, many details of emergency response for the FSV HTGR are different from those of a LWR facility.

The following is offered in response to the documentation, in regards to NUREG-0696, requested by Generic letter 81-10.

Documentation

1. NRC Position

Provide description of task functions of individuals required to report to the TSC and EOF upon activation for each emergency class.

PSC Response

Functional responsibilities are provided by the ERF Conceptual Design. Additional detail may be found in the Fort St. Vrain Radiological Emergency Response Plan.

2. NRC Position

Provide descriptions of TSC Instrumentation, Instrument Quality, instrument accuracy and reliability.

PSC Response

This is provided by the ERF Conceptual Design.

3. NRC Position

Provide descriptions of TSC Power Supply Systems, power supply quality, and consequences of power supply interruption.

PSC Response

This is provided by the ERF Conceptual Design.

4. NRC Position

Provide Descriptions of the design of the TSC Data Display Systems, Plant Records and data available and Record Management Systems.

PSC Response

This is provided by the ERF Conceptual Design.

5. NRC Position

Provide Descriptions to the Data Transmission System to be installed between the TSC and Control Room.

PSC Response

This is provided by the ERF Conceptual Design.

6. NRC Position

Provide Description of data to be provided to the EOF.

PSC Reply

This is provided by the ERF conceptual design.

Implementation Schedule

NRC Position

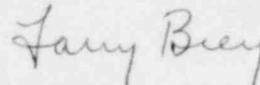
The implementation schedule has been changed for the ERF to be operational by October 1, 1982.

PSC Reply

PSC currently has established an OSC, TSC and EOF per the existing FSV RERP. These facilities will be upgraded and the SPDS will be established to the levels described in the ERF Conceptual Design. Following discussion with manufacturers and reviewing Engineering time required, it is felt that an optimistic schedule for Full Implementation of the Conceptual Design is May 1, 1983.

It is PSC's intention to provide a staged implementation of the ERF Conceptual Design as equipment becomes available and design details are completed. PSC will proceed in an expeditious manner toward the above schedule.

Very truly yours,



H.L. Brey, Manager
Nuclear Engineering Division

HLB/MEN: pa

Attachment

EMERGENCY RESPONSE FACILITIES
NUREG-0696
CONCEPTUAL DESIGN
FOR
PUBLIC SERVICE COMPANY OF COLORADO'S
FORT ST. VRAIN NUCLEAR GENERATING STATION

PREFACE

The following conceptual design is being submitted in accordance with The Requirements of NRC Guidelines and NUREG-0696. PSC is currently involved in the detailed design of the requisite EMERGENCY RESPONSE FACILITIES (ERF). This design presents the basis for meeting the ERF Requirements as they apply to a HTGR. Since the proposed modifications and equipment procurement require long lead time, it is especially important to receive timely NRC approval of this Plan.

The Plan is arranged in Sections and numbered corresponding to the sections of NUREG-0696 to facilitate review. All figures are numbered accordingly to the corresponding section of NUREG-0696.

1.0 INTRODUCTION

As indicated in previous responses to TMI Action Plan requirements, the Fort St. Vrain High Temperature Gas Cooled Reactor (HTGR) utilizes a completely different reactor concept than that of a LWR.

PSC has continually been placed in the position of interpreting documents written around LWR Technology and applying the requirements to a HTGR. This has necessitated establishing our own design criteria for the implementation of an Emergency Response Program.

Efforts have been made to present and explain specific differences as they relate to PSC's implementation of action plan requirements in our previous submittals. It is imperative that the philosophy of previous Emergency Response Plan submittals be integrated into the review of this plan in order for PSC's position on certain elements of the Emergency Response Facilities to be appreciated and understood.

1.1 Background

PSC has been responsive to the NRC's post TMI-2 requirements. This responsiveness has required a large PSC effort in terms of manpower and expenditures. Much of the PSC effort has been required to interpret those requirements, written around LWR technology, and applying them to the FSV HTGR.

PSC was responsive committing to NUREG-0578 and other NUREG's and Regulatory Guides when they were in their "preliminary" and "draft" status.

These commitments were made in good faith and in some cases carried through to the design and construction phases to meet NRC imposed deadlines. Now that the documents are being issued in their final form, with significant changes, we are forced into major reevaluation, redesigning and replanning efforts.

PSC's previous correspondence committing to the ERF are listed in Attachment 1. These previous commitments will be discussed in this Implementation Plan as follows:

- A) Commitments that have not changed will be reiterated.
- B) Commitments that necessitate revision will be revised if final design data is available.
- C) Commitments made to the previous guidance (i.e. NUREG-0578) that differ from NUREG-0696 but meet the intent of NUREG-0696 will be justified.

This will result in having all of the PSC commitments for the ERF in one document and thus be easier for both the NRC and PSC to follow.

1.1.1 PSC Position

PSC supports the overall concept of the emergency facilities, and in fact was developing an ERF concept similar to those proposed by NUREG-0696 prior to the TMI-2 event. While PSC supports the concept of a TSC, OSC, and EOF, it is also felt that NUREG-0696 contains guidance in many areas that is unnecessary for efficient emergency response management and guidance in some cases which is a detriment to the overall response management.

1.1.2 General Philosophy

PSC's overall emergency response plan has been established as shown schematically in Figure 1.1.2 which provides for several emergency centers to include a Technical Support Center (TSC), a Personnel Control Center (OSC in NRC terms), a Forward Command Post (EOF in NRC terms), an Executive Command Post, and the Emergency Operations Center (EOC). These emergency centers are established with the following primary in mind.

1.1.2.1 Technical Support Center

The Technical Support Center (TSC) is located adjacent to the reactor building within the protected area. This center will be equipped with necessary instrumentation and displays and will be staffed in an emergency to provide plant management, technical support, and overall on-site management of the emergency in the following areas:

- A. Plant Conditions and Assessments to include overall diagnosis of plant conditions, evaluate trends, coordinate analyses, and provide technical and operational support to the control room for terminating and/or mitigating the consequences of the emergency.
- B. Provide engineering and technical analysis for plant operations.
- C. Provide health physics and radiological support and assessment, project off site doses, and recommend radiological protection measures.
- D. Determine and recommend repair/damage control and corrective actions that may be necessary in terms of mechanical/electrical repairs or maintenance.
- E. Evaluate instrument and control systems and coordinate repair/damage control in terms of repair, maintenance and/or modification activities.
- F. Provide general on site administrative and logistics support and serve as the primary communications center between various other emergency organizations with primary emphasis on the Personnel Control Center (OSC), the Forward Command Post (EOF), and the Control Room.
- G. Overall operational emergency management will take place in the TSC.

1.1.2.2 Personnel Control Center (OSC)

The Personnel Control Center is located on-site (two alternate locations). This center is provided primarily as a gathering location for plant support personnel and to provide coordination for plant support in terms of personnel. This center is equipped

with necessary equipment and staffed with personnel for the following functions in support of the TSC.

- A. Maintain continued personnel accountability, handle personnel contamination surveys and conduct decontamination if necessary.
- B. Provide logistics support for first aid, medical transportation and assist in search and rescue efforts as may be required.
- C. Provide coordination for on-site monitoring teams and provide coordination for contract environmental monitoring teams. The center serves as a collection point for such monitoring information in support of the TSC.
- D. Provides coordination of special response teams such as fire fighting and rescue teams.
- E. Coordinates with security for site access of personnel and emergency vehicles.

1.1.2.3 Forward Command Post (EOF)

The Forward Command Post is located approximately twelve (12) miles southeast from the site. The Forward Command Post is staffed with necessary personnel including a corporate officer of the Company for overall coordination of Federal, State, and Local entities in managing the off-site and environmental aspects of the emergency and coordinating with the Executive Command post for overall Company administrative, contract, and logistics support.

In this respect the Forward Command Post was never, and is not now, intended to provide a role of plant diagnosis or operational assessment.

Contrary to the guidance of NUREG-0696, and given the emergency response facility assignments, it is not PSC's intent to continually provide diagnostic information in the form of displays or instrumentation (i.e., SPDS or TSC Data Set) to the Forward Command Post. This data will be available on a call up basis only. Radiological and meteorological data will be provided on a continuous basis for dose assessment. The

State Health Department will be coordinating their field monitoring teams from the Forward Command Post as will other State, Federal, and Local entities.

NUREG-0696 infers (by requiring data on a real time basis) that site activities and plant operations will be managed from the Forward Command Post (EOF). PSC maintains that this is not the function of this facility and that voice communication between the TSC and Forward Command Post is adequate to provide the emergency response management at the EOF.

1.1.2.4 Executive Command Post

This center is located in PSC's corporate offices in Denver for the primary purpose of providing corporate support for the emergency and providing overall coordination for Company resources. This center will be staffed to provide:

- A. Technical support in terms of design, liason with technical experts, detailed studies or evaluations, and liason with consultants as may be necessary.
- B. Coordination of communications, media relations, preparation of press releases, announcements, and interviews.
- C. Coordination of Company manpower, equipment and resources including legal, financial, general office support, transportation, security assistance, and related logistics support as may be required.

1.1.2.5 Emergency Operations Center

This is a State facility located at Camp George West in Golden, Colorado. This facility is the primary location from which the State excercises control of all emergencies whether the emergency involves floods, tornados, radiological incidents, or any other emergency that is normally handled by the Division of Disaster Emergency Services (DODES). The Governor or his designee will exercise overall State control from this center. Public Service Company will provide technical support people at this center. This center will be the primary location for media briefings and press releases and for coordination of Federal Agency response such

as FEMA, Radiological Assistance Teams (RAT), and IRAP as necessary.

1.1.3 ERF Staffing and Specific Responsibilities

The ERF staffing and specific details of the emergency response organization and functions are contained in the Fort St. Vrain Radiological Emergency Response Plan as submitted via P-81074, dated February 27, 1981.

1.1.4 Activation and Use

Activation and use of the ERF's will generally follow the criteria of Table 1.

1.2 Control Room

The Responsibilities of Control Room Personnel during activation of the TSC and EOF are provided in the FSV Emergency Response Plan.

The Data System equipment to be provided in the Control Room to meet its ERF function are illustrated by Figure 1.2.

The communications equipment to be provided in the control room to meet its ERF function is as follows:

- NRC Hotline
- NRC Health Physics Network (HPN)
- Dedicated Line to TSC
- Dial Telephones Switched Network
- Gai Tronics In-Plant Communications
- Dedicated Intercom to TSC
- Radio Communications to OSC, TSC & EOF

See Figures 1.6.1 and 1.6.2 for further details

1.3 Emergency Response Facilities

Details of management plans, facility staffing and other ERF operational details shall be contained in the FSV Emergency Response Plan.

1.3.1 Technical Support Center (TSC)

The FSV Technical Support Center was designed and constructed in accordance with the guidance and schedule provided by NUREG-0578.

Details of the FSV TSC are provided by Section 2 of this plan.

1.3.2 Operational Support Center (OSC)

Conceptual Design information is provided in Section 3.

1.3.3 Emergency Operations Facility (EOF)

Conceptual Design information is provided in Section 4.

1.3.4 Safety Parameter Display System (SPDS)

Conceptual Design of the FSV SPDS is provided in Section 5 of this plan.

1.3.5 Nuclear Data Link (NDL)

See Section 6 for discussion regarding the NDL.

1.4 Activation and Use

ERF activation and use details are provided in the FSV Emergency Response Plan. This plan will be updated as new ERF equipment and/or facilities are placed into service.

1.5 Reliability

The data systems and instrumentation of the ERF are being designed and constructed to provide a very high degree of reliability.

NUREG-0696 specifies certain unavailability factors; however, the basis upon which these factors are to be calculated appear to be unacceptable. For example, operating time is defined as "any length of time the reactor is above cold shutdown status and down time is defined as any length of time the data systems are out of service. There is no definition, however, of the time frame over which the various parameters are to be considered. Due to lack of any guidance PSC is assuming that unavailability is to be determined on an overall basis assuming a twelve month operational period. Otherwise the unavailability factor is somewhat meaningless.

The SPDS cold shutdown unavailability is even harder to implement. For example if the unit should be down for a short duration and SPDS system should be brought down at the same time for repair or maintenance the SPDS down time divided by cold shutdown time could easily approach unity. In our opinion, this formula is invalid and cannot be applied to the SPDS system for all circumstances.

1.6 Communications

NUREG-0696 specifies a communication system wherein every emergency facility is talking with every other facility. We object to these types of communications especially direct communications from various facilities

to the control room. These types of communications can only lead to confusion in overall management of the emergency. Initially the control room has all communications responsibility, but once the TSC is established it should serve as the on site communications center. Communications to the control room at this point should be limited to the TSC-Control Room interface. The TSC will then interface with the OSC and the EOF. See figures 1.6.1 and 1.6.2.

2.0 TECHNICAL SUPPORT CENTER

2.1 Function

The FSV onsite TSC will provide the following functions:

- A) Provide plant management and technical support to plant operations personnel during emergency conditions.
- B) Relieve the reactor operators of peripheral duties and communications not directly related to reactor system manipulations.
- C) Prevent congestion in the control room.
- D) Perform EOF functions for the Alert Emergency, for the Site Area Emergency, and General Emergency until the EOF is functional.

The TSC will be activated and utilized as indicated in the PSC Emergency Response Plan. See Section 1.1.2.1 for further details.

2.2 Location

The TSC is housed on the second floor of a new building located immediately east of the plant control room. The location is within two minutes walking distance from the control room (See Figure 2.2).

2.3 Staffing and Training

The TSC will be manned by PSC technical and plant management personnel according to the PSC Emergency Response Plan and the class of emergency action. A Senior Member of Plant Management will coordinate TSC activities in support of accident mitigation and recovery operations and will serve as an interface between the TSC, EOF and Control Room.

TSC staff personnel will participate in periodic activation drills in order to maintain their proficiency.

2.4 Size

PSC proceeded, in good faith, with the construction of a TSC based on the limited guidance of NUREG-0578. The construction of a new building which houses the TSC is now complete.

Approximately 1015 square feet are provided for the TSC.

The guidelines of NUREG-0696 now indicate that space should be provided for 25 people at 75 square feet per person or a total of 1875 square feet.

The FSV Emergency Response Plan anticipates a maximum of 15 people in the TSC (10 PSC personnel and 5 NRC personnel).

The available space is more than adequate for this number of people and we do not anticipate further construction.

A private NRC conference room is not available in the TSC room. Facilities are available immediately adjacent to the TSC room that are adequate for conferences.

2.5 Structure

The TSC complex is a reinforced concrete structure designed to be able to withstand the most adverse conditions reasonably expected during the design life of the plant including: (1) earthquakes (per uniform building code), (2) high winds other than tornadoes, and (3) floods.

2.6 Habitability

The TSC is designed to have the same level of radiological habitability as the plant control room under accident conditions. TSC personnel are protected from both direct and airborne radioactivity during accident conditions.

The TSC is constructed of prestressed concrete designed to provide the required protection from postulated direct radiation sources.

The TSC ventilation system includes high efficiency particulate air (HEPA) and charcoal filters to prevent airborne contaminants other than noble gases from entering the TSC. The TSC ventilation system is not seismic Category I qualified.

The Ventilation System is designed to automatically go into the recirculation mode of operation upon detection of an elevated level airborne radioactivity outside of the TSC structure.

Radiation monitoring systems are being provided in the TSC. The monitoring systems will include both installed

and portable monitors. The monitoring systems will have local alarms with trip levels set to provide early warning to TSC personnel of adverse conditions that may affect the habitability of the TSC. Detectors will be able to distinguish the presence or absence of radionuclides at concentrations as low as 10 microcuries/cc.

Protective equipment will be provided in the TSC that will allow TSC personnel to function in presence of low-level airborne contamination and/or travel between the TSC and Control Room.

2.7 Communications

The TSC Voice Communication Systems will include intercom to control room, commercial telephones and radio network.

The TSC Voice Communications equipment shall include:

- NRC Hotline
- NRC HPN
- Dedicated Line to OSC
- Dedicated Line to CR
- Dedicated Line to EOF
- *Dial Telephones - Switched Network
- Gai Tronics In Plant Communications
- Dedicated Intercom to CR
- Radio Communications to CR, OSC, EOF & Field Monitor Teams

*Switched network provides access to

- Five (5) outside lines on the Greeley exchange
- One (1) outside line on the Longmont exchange
- Two (2) direct access Denver lines
- Eight (8) Denver exchange tie lines

Two (2) of the dial telephones will be designated for NRC use. The switched network will be utilized for facsimile transmission. See Figures 1.6-1 and 1.6-2 for further details.

2.8 Instrumentation, Data System Equipment and Power Supplies

The TSC will be able to display data comparable in accuracy and reliability to the corresponding data displayed in the control room. The TSC will be able to display necessary data independently from actions in the control room and without degrading or interfering with control room and plant functions. See Section 7 of this

Conceptual Design and Figure 2.8 for further details on the TSC data system equipment.

The total TSC System of Instrumentation, Data System equipment and power supplies will be designed to achieve a functional unavailability goal of less than 1% per year above cold shutdown conditions.

The System of TSC Instrumentation, Data System Equipment and Power Supplies will be designed such that circuit transients or power supply failures and fluctuations will not cause a loss of any data vital to the TSC function.

The TSC Data System Equipment will be powered from two independent noninterruptible power sources. Simultaneous failure of both of these sources would have to occur before all Data System functions are lost.

TSC Building Systems are normally powered from PSC distribution system power and backed up by the Alternate Cooling Method Diesel Generator.

2.9 Technical Data and Data System

The TSC Data Set will include the following as they apply to the FSV HTGR:

- A) Regulatory Guide 1.97 Revision 2 - Type A, B, C, D and E variables
- B) SPDS Data Set
- C) EOF Data Set
- D) Any Other Data Transmitted Offsite for ERF Functions

Most of the TSC Data Systems will be fully integrated with the FSV plant computer.

Data storage and recall ability will be provided for the TSC Data Set as follows:

- A) Two (2) hours pre-event data
- B) Twelve (12) hours of post event data
- C) Two (2) weeks of additional post event data

The data acquisition and storage will be provided with a time resolution commensurate with the characteristics of each parameter.

Data display and printout capabilities will consist of the following:

- A) sufficient number of CRTs for viewing alpha numeric and/or graphical representations of pertinent:

- Plant System Variables
- Inplant Radiological Variables
- Meteorological Information
- Offsite Radiological Information

- B) Data Printer
- C) Full Graphics Capability
- D) CRT Hardcopy Device

The TSC displays will be designed so that call up, manipulation and presentation of data can be easily performed.

The SPDS will be displayed in the TSC with the same CRT display capability that is provided in the Control Room.

2.10 Records Availability and Management

NUREG-0696 specifies ready access to certain records by TSC and EOF personnel to include drawings depicting conditions of plant structures down to the component level. Our records, drawings, etc., are stored in the onsite Records Center and as such TSC personnel have reasonable access to these records and drawings. Within the TSC itself we do maintain an up-to-date set of documents which include:

- Technical Specifications
- Operating Procedures
- Emergency Operating Procedures
- FSAR
- Reference Design Books
- Process and Instrumentation Diagrams
- Electrical Schematics
- I & C Schematics

PSC maintains that the above documents provide the basis of immediate emergency response management. Other records and detailed drawings are readily accessible from the onsite Records Storage Center but are not stored as such within the confines of the TSC.

Of greater concern is that essentially the same list of documents is specified by NUREG 0696 for the EOF. Based on this criteria three separate Records Centers would be required for an immense volume of documents especially when one considers the volume of documents necessary to define plant conditions down to the component level. We have indicated that we do not see the functions of the EOF as managing plant operations and we therefore see no value in maintaining the type of records system specified.

The records which we intend to maintain at the TSC and EOF are outlined in Table 2.

3.0 OPERATIONAL SUPPORT CENTER

3.1 Functions

To provide a gathering location for plant support personnel and to provide coordination for plant support in terms of personnel. See Section 1.1.2.2 for further details.

3.2 Habitability

No special habitability features, other than existing plant radiation monitoring systems, are provided for the OSC. An alternate OSC has been designated should habitability become a problem.

3.3 Communications

The OSC Communications equipment to meet its intended function will consist of the following:

- Dedicated line to TSC
- Dial telephone switched network
- Gai Tronics in plant communications
- Radio communications TSC, CR & field monitor teams

The alternate OSC will be equipped with essentially the same communications equipment with the exception of the dedicated line. See figures 1.6.1 and 1.6.2 for further communication system details.

4.0 EMERGENCY OPERATIONS FACILITY

4.1 Functions

Detailed functions of the EOF are provided in the FSV Emergency Response Plan. See Section 1.1.2.3 for further information.

4.2 Location, Structure and Habitability

The FSV EOF will be located in the PSC Ft. Lupton District Office Building. This location is acceptable to state and local organizations participating in FSV's Emergency Response efforts. The FSV EOF is approximately 12 miles Southeast of the FSV plant site.

The structure was originally constructed for heavy duty warehouse or industrial use and has a life expectancy of at least that of the design life of the FSV plant.

There are no radiological concerns at the EOF due to its location. This eliminates the need for radiation and ventilation protection other than provided by the normal

HVAC System and EOF structure.

4.3 Staffing and Training

The FSV EOF will be staffed and operated per the FSV Emergency Response Plan.

EOF staff personnel will participate in periodic activation drills in order to maintain their proficiency.

4.4 Size

Approximately 3360 square feet will be provided for EOF personnel and equipment.

4.5 Radiological Monitoring

To ensure adequate radiological protection of EOF personnel, portable radiation monitors shall be provided in the EOF per the FSV Emergency Response Plan.

These monitors will provide a continuous indication of radiation conditions in the EOF and include local alarms for early warning of EOF personnel.

4.6 Communications

The EOF Voice Communication equipment will include:

- NRC hotline
- NRC HPN
- Dedicated line to TSC
- Dedicated line to the State Emergency Operations Center

- *Dial telephones, switched network
- Radio communications (PSC frequency) to TSC, CR and field monitoring teams
- **State communications network
 - Weld County Radio Network
 - Civil Defense Radio Network
 - Colorado State Patrol Radio Network
 - National Guard Radio Network
 - State & Local Government Radio Network

- *Three (3) of the dial telephones will be designated for NRC use.

- **The State Communication Network is established by means of a mobile communications van, and as such, this communications system is totally independent of that provided by PSC.

See Figures 1.6.1 and 1.6.2 for further details.

4.7 Instrumentation, Data System Equipment and Power Supplies

The EOF Data System equipment will be integrated into the FSV plant computer system. The use of the plant computer in this function will not degrade the integrity of the data supplied to the EOF or the security of the software used to process the data.

The EOF data system equipment will perform its functions independently from actions in the control room and without degrading or interfering with control room and plant functions. See Figure 4.7 for further details on the EOF Data System equipment.

Power for the EOF will be from the PSC distribution system.

4.8 Technical Data and Data System

The EOF Data Set will include the following:

- A) Meteorological Information
- B) Inplant Radiological Variables
- C) Offsite Radiological Information

The computerized portion of the TSC Data Set, Data storage and recall ability will be provided for the EOF Data Set as follows:

- Two (2) hours pre-event data
- Twelve (12) hours of post event data
- Two (2) weeks of additional post event data

Data display and printout capabilities will consist of the following:

- A) CRT's
- B) Data Printer
- C) Full Graphics Capability
- D) CRT Hardcopy Device

The EOF displays will be designed so that callup, manipulation and presentation of data can easily be performed.

4.9 Records Availability and Management

Based on the function of the EOF complete documentation of plant components will not be required. See Section 2.10 for further details.

5.0 SAFETY PARAMETER DISPLAY SYSTEM

5.1 Function

The PSC SPDS will consist of two subsystems.

The first subsystem will be integrated into the FSV Computer System and will be utilized to augment the second subsystem. CRTs will be utilized to display and trend plant parameters and/or derived variables representative of the safety status of the plant.

The second subsystem will be seismically qualified and will provide continuous indication of appropriate plant parameters and/or derived variables that represent the safety status of the plant.

Available human factors engineering will be incorporated into the design of both SPDS subsystems. See Figure 5.1.

5.2 Location

A dedicated SPDS will be located in the CR and TSC. The EOF Data System equipment is also capable of displaying the SPDS variables. Only the control room will have a seismically qualified SPDS.

5.3 Size

The SPDS will be compatible with the existing available space in the control room. It will not interfere with normal movement or with full visual access to other control room operating systems and displays.

5.4 Staffing

No other personnel in addition to the normal control room operating staff are required for the operation of both SPDS subsystems.

5.5 Display Considerations

The first SPDS subsystem will provide a single primary display format designed according to available human factors principles and will be displayed for each mode of plant operation.

These same parameters will be available via the non-seismic second subsystem of the SPDS. The second subsystem will also provide the capability to recall additional data on secondary displays for analysis and diagnosis function.

5.6 Design Criteria

The first SPDS subsystem will be human factors engineered, integrated into the Plant Computer System and will have a performance level consistent with the parameters and trends of parameters being monitored. This Subsystem will provide capability for rapid assessment of the safety status of the plant, will be flexible, and will be human factors engineered. This subsystem will not be seismically qualified.

The second SPDS subsystem will be human factors engineered and seismically qualified, thus it will be available during and following earthquakes.

6.0 Nuclear Data Link

We understand from the Regional Meetings on NUREG-0626 that the NDL is not presently a requirement, and we along with many other utilities, feel that it should not become a requirement. The NDL as prescribed by the NUREG is to provide real time data transmission to the NRC operations center for accident management. We fail to see any advantage of transmitting real time data with the intent of involving NRC Headquarters in emergency response management. It is our position, therefore, that the NDL be eliminated and that information transmitted be limited to dedicated voice communications.

7.0 ACQUISITION AND CONTROL OF TECHNICAL DATA

7.1 Sources of Technical Data

The parameters specified in Regulatory Guide 1.97 Rev. 2 and Regulatory Guide 1.23, as they apply to the FSV HTGR will be provided as inputs to the plant computer system. The exact parameters selected and the basis for selection will be documented. Isolation will be provided for all interfaces with safety systems.

7.2 Acquisition of Data

Figure 7.1 represents the configuration of the plant computer system equipment currently being evaluated by PSC.

7.3 DAS Functional Limitations

The FSV computer system will be utilized for the DAS function in a manner such that external demands for processing or services that may also be required will not be degraded.

7.4 DAS Design, Verification, and Configuration Control

A Functional Test to demonstrate and evaluate the integrity of the software and the plant computer as an integrated data acquisition system will be performed. The test will be performed with the system operating continuously on live input signals.

The original DAS development and subsequent changes will be performed in accordance with existing engineering procedures.

reliability consistent with the TSC, SPDS and EOF unavailability requirements.

8.0 EMERGENCY RESPONSE FACILITY INTEGRATION

The ERF are integrated into the FSV Emergency Response plan to state and local emergency response facilities.

The systems design of the ERF will ensure the following functional criteria are satisfied:

- A) The operation of any system or subsystem within the FSV ERF will not degrade the performance or reliability of any reactor safety or control system or of any safety related displays in the control room.
- B) Actions in the control room and operation of control room systems will not degrade or interfere with the functional operation of ERF systems.
- C) Normal operation of any system or subsystem in the ERF will not degrade or interfere with the functional operation of other systems in those facilities.
- D) The DAS hardware and software will be protected against unauthorized manipulation of or interference with input signals, data processing, data storage and data output.

The data set that will be available for display and use in the TSC and EOF will be as follows:

Regulatory Guide 1.97 Type A,B,C,D and E variables;
Meteorological variables specified in Regulatory Guide 1.23 and NUREG-0654, Revision 1, Appendix 2; and variables displayed by the SPDS; as they apply to the FSV HTGR.

9.0 VERIFICATION AND VALIDATION CRITERIA

The design, development, qualification and installation of the SPDS, TSC, EOF and NDL facilities will be independently reviewed in accordance with existing Engineering and Quality Assurance Procedures.

ATTACHMENT 1

PSC has submitted details on the FSV TSC Design in the following correspondence:

<u>Correspondence Number</u>	<u>Date</u>	<u>Subject</u>
P-79249	10-29-79	Follow up actions resulting from the NRC reviews regarding the TMI Unit 2 accident
P-79298	12-12-79	FSV unit No. 1 TMI lessons learned
P-79299	12-12-79	Revised follow up actions resulting from the NRC Reviews regarding the TMI Unit 2 accident
P-79312	12-28-79	Additional information regarding January 1, 1980 action items resulting from the TMI unit 2 accident.
P-80028	2/20/80	Additional information resulting from TMI Unit 2 NRC review team site visit of January 21-22, 1980.
P-80427	12-19-80	Revised schedule for post accident sampling capacity and on site Technical Support Center.
P-80438	12-20-80	Fort St. Vrain Unit No. 1 TMI action plan requirements NUREG-0737
P-81116	4-08-81	Fort St. Vrain Unit No. 1 Post TMI Requirements emergency operations facilities.

TABLE 1

TRANSFER OF EMERGENCY RESPONSE FUNCTIONS
FROM THE CONTROL ROOM TO THE TECHNICAL SUPPORT
CENTER AND THE EMERGENCY OPERATIONS FACILITY

EMERGENCY RESPONSE FUNCTIONS	EMERGENCY CLASS			
	Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
Supervision of Reactor Operations and Manipulation of Controls	CR	CR	CR	CR
Management of Plant Operations	CR (TSC)	TSC	TSC	TSC
Technical Support To Reactor Operations	CR (TSC)	TSC	TSC	TSC
Management of Corporate Emergency Response Resources	CR (TSC)	TSC	EOF (ECP) (FCP)	EOF (ECP)
Radiological Effluent and Environs Monitoring, Assessment, and Dose Projections	CR (TSC)	TSC	EOF (EOC) (FCP)	EOF (EOC)
Inform Federal, State, and Local Emergency Response Organizations and Make Recommendations for Public Protective Actions	CR	TSC (EOF) (FCP)	EOF (EOC) (FCP)	EOF (FCP) (EOC)

TABLE 1

TRANSFER OF EMERGENCY RESPONSE FUNCTIONS
FROM THE CONTROL ROOM TO THE TECHNICAL SUPPORT
CENTER AND THE EMERGENCY OPERATIONS FACILITY

EMERGENCY RESPONSE FUNCTIONS	EMERGENCY CLASS			
	Notification of Unusual Event	Alert	Site Area Emergency	General Emergency
Event Monitoring by NRC Regional Emergency Response Team		TSC (EOF) (FCP)	TSC & EOF (FCP)	TSC & EOF (FCP)
Management of Recovery Operations	CR (TSC)	TSC (EOF) (FCP)	TSC & EOF (ECP) (FCP)	TSC & EOF (ECP)(FCP)
Technical Support of Recovery Operations	CR (TSC)	TSC & ECP	TSC & ECP	TSC & ECP

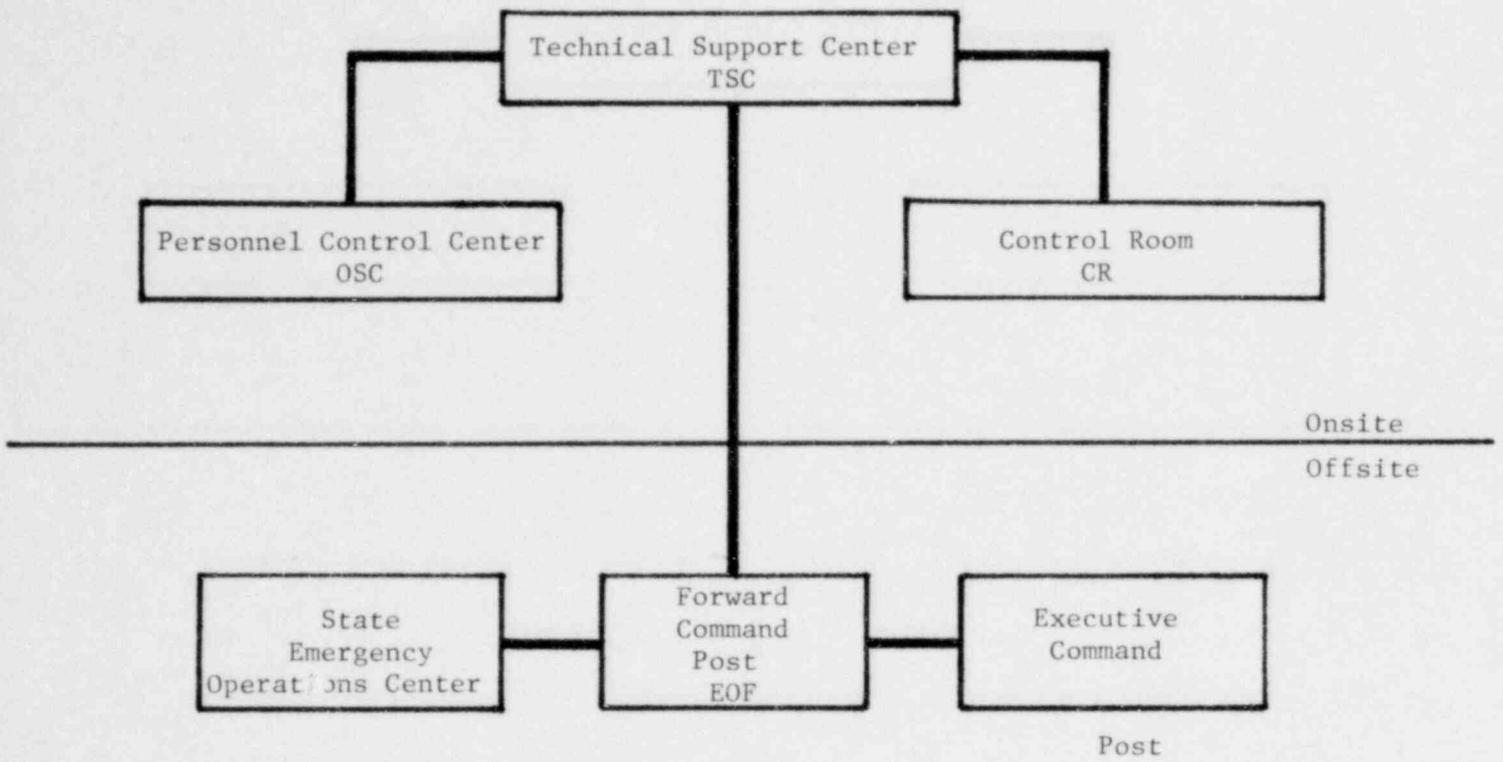
NOTE: (Ch), (TSC), (EOF), or (TSC, EOF) indicates that activation of this facility (or the performance of this function) is optional for the indicated emergency class.

Legend: CR - Control Room
TSC - Technical Support Center
EOF (FCP) - Emergency Operations Facility
ECP - Executive Command Post
EOC - Emergency Operations Center (State)

TABLE 2

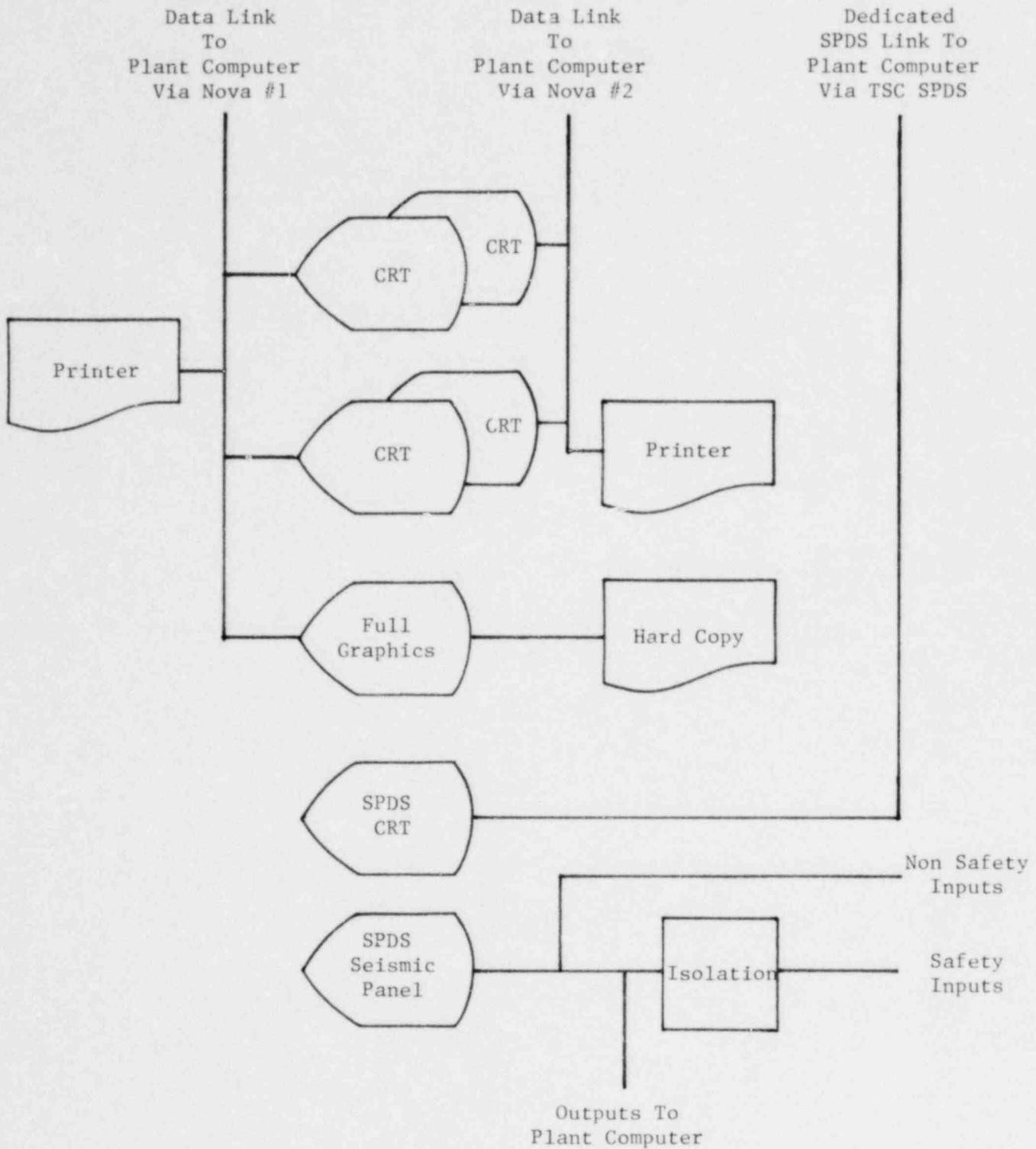
ERF DOCUMENT/RECORDSDocuments Maintained in ERF's/Records Facility

	TSC	EOF	On-Site Record Center
Technical Specifications	X	X	X
Operating Procedures	X		X
Emergency Operating Procedures	X		X
FSAR	X	X	X
Reference Design Books	X		X
Process and Instru- mentation Diagrams	X	X	X
Electrical Schematics	X	X	X
Instr & Contr Diagrams	X	X	X
Offsite Population Data	X	X	X
Evacuation Plans	X	X	X
Licensee Radiation Exposure Records			X
Environs Radiological Records			X
Drawings, Plant Structures & Syst.			X
Safety Committee Records & Reports			X
Plant Operating Records			X
State RERP	X	X	X
FSV RERP	X	X	X



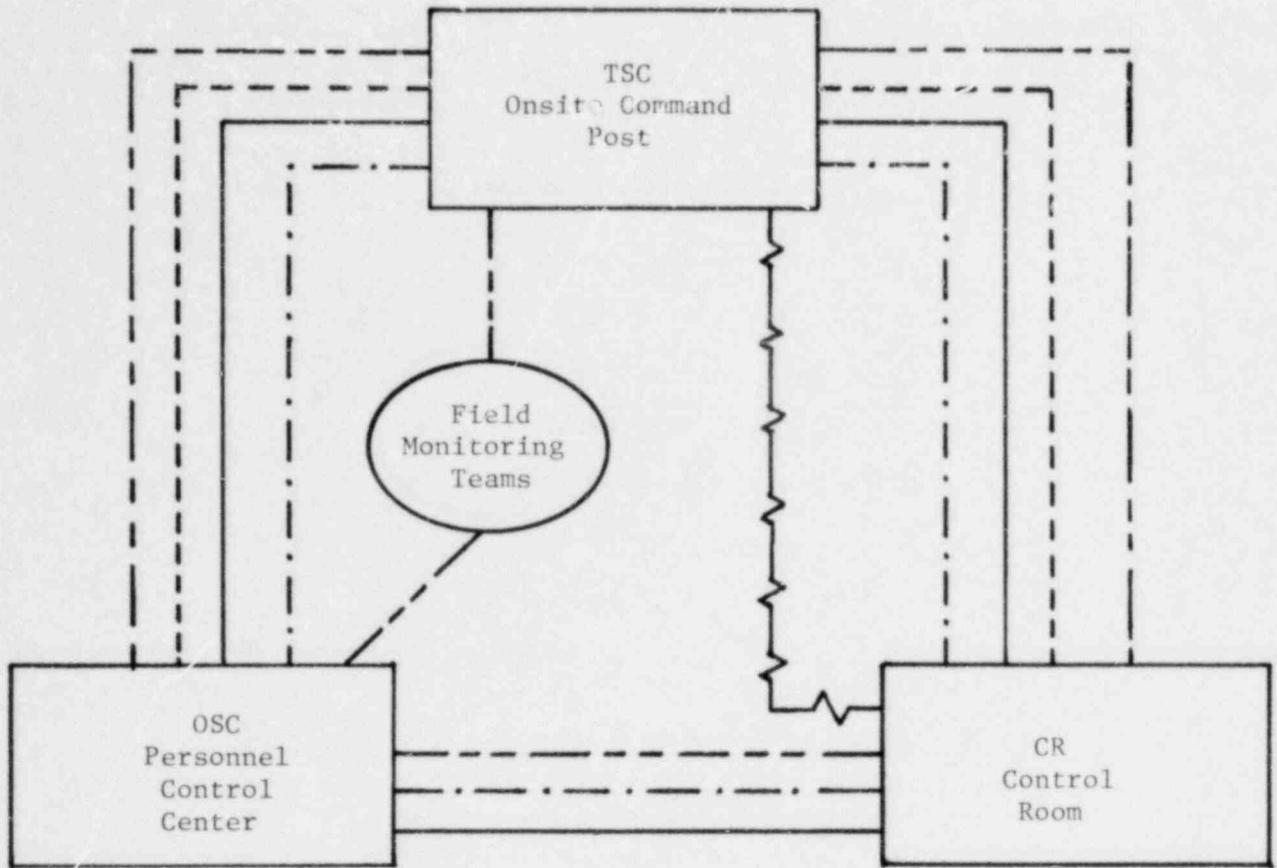
ONSITE-OFFSITE EMERGENCY ORGANIZATION

FIGURE 1.1.2



CONTROL ROOM DATA SYSTEM EQUIPMENT

Figure 1.2

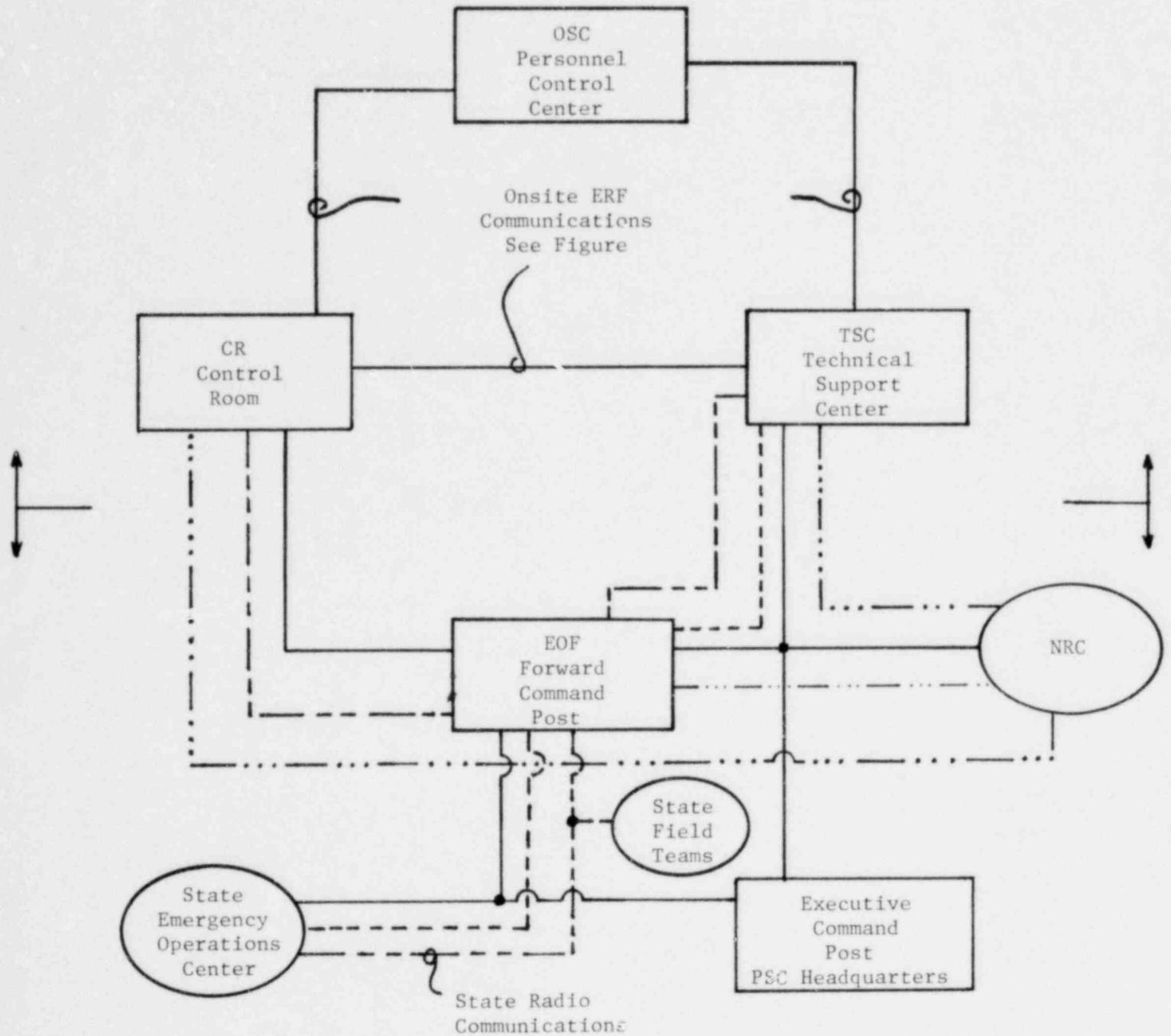


- · — · — · — Gaitronics
- Switched Network (Includes Paging Capability)
- Dedicated Telephone
- Radio
- ~~~~~ Intercom

FSV ONSITE ERF COMMUNICATIONS

FIGURE 1.6.1

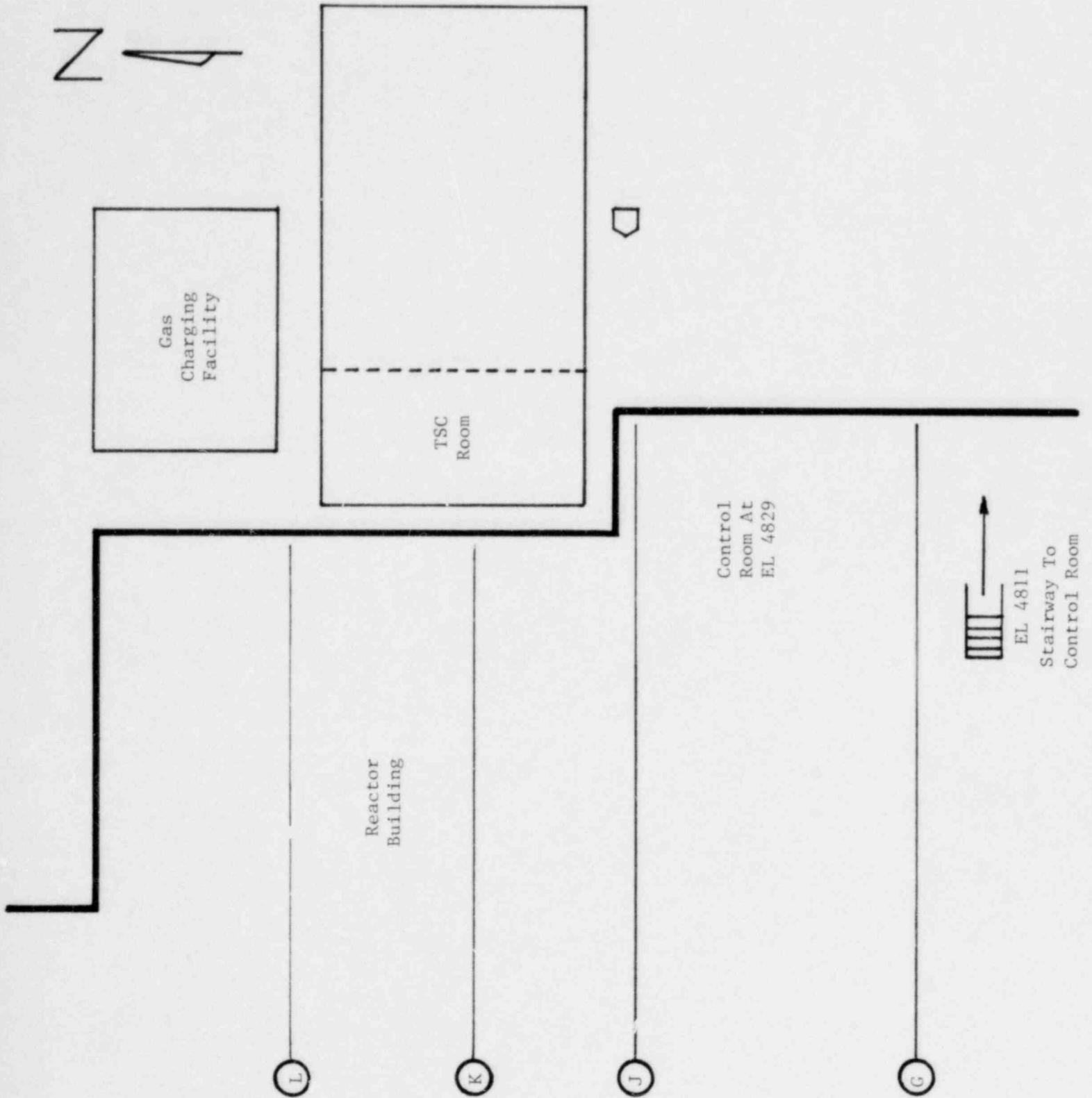
- Dedicated Telephone
- Switched Network (will also be used for Facsimile Transmission)
- NRC Hotline/HPN
- Radio (The Executive Command Post can also be contacted by radio dispatch from the CR or TSC via PSC's main dispatch center)

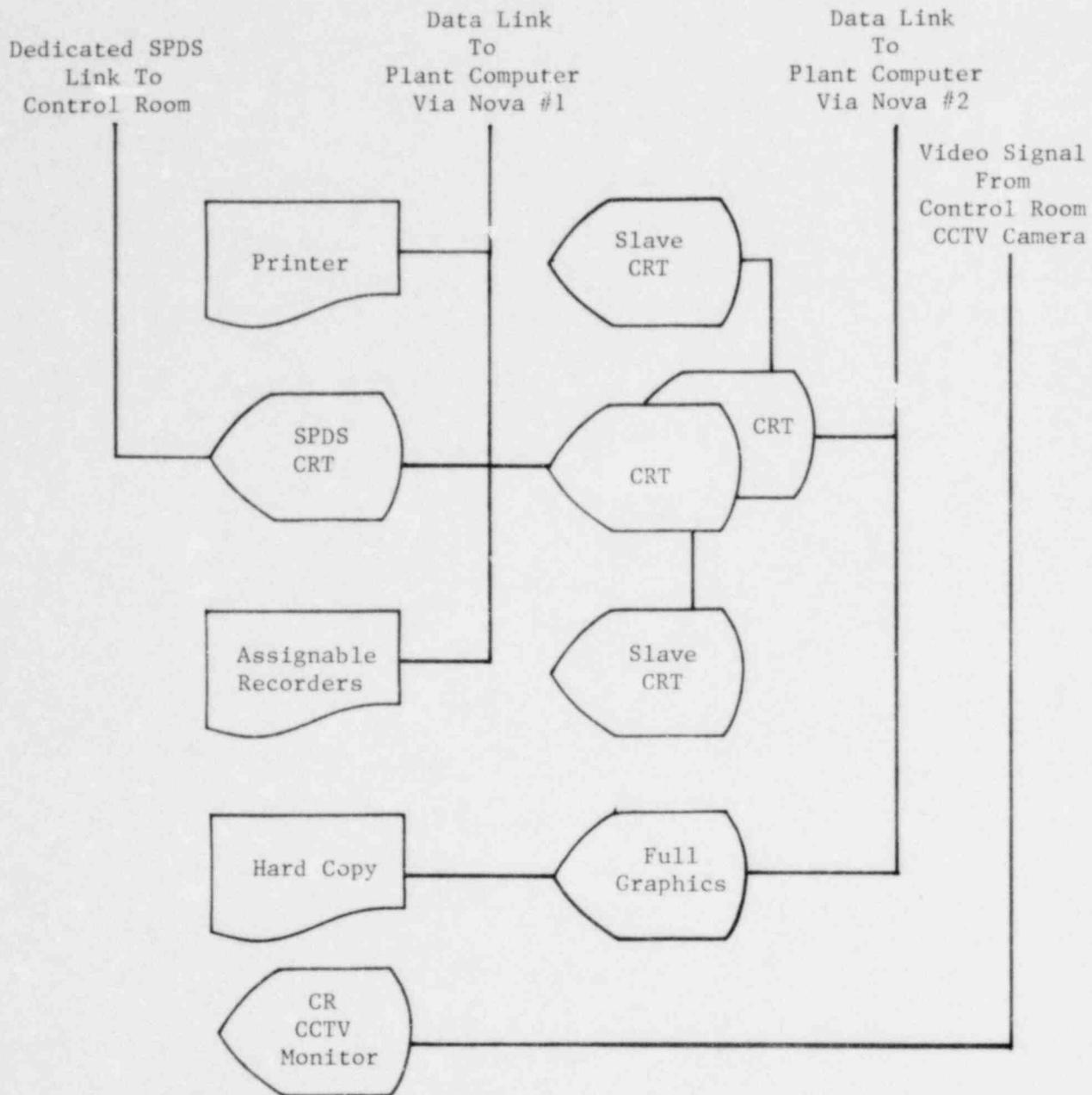


ERF COMMUNICATIONS

FIGURE 1.6.2

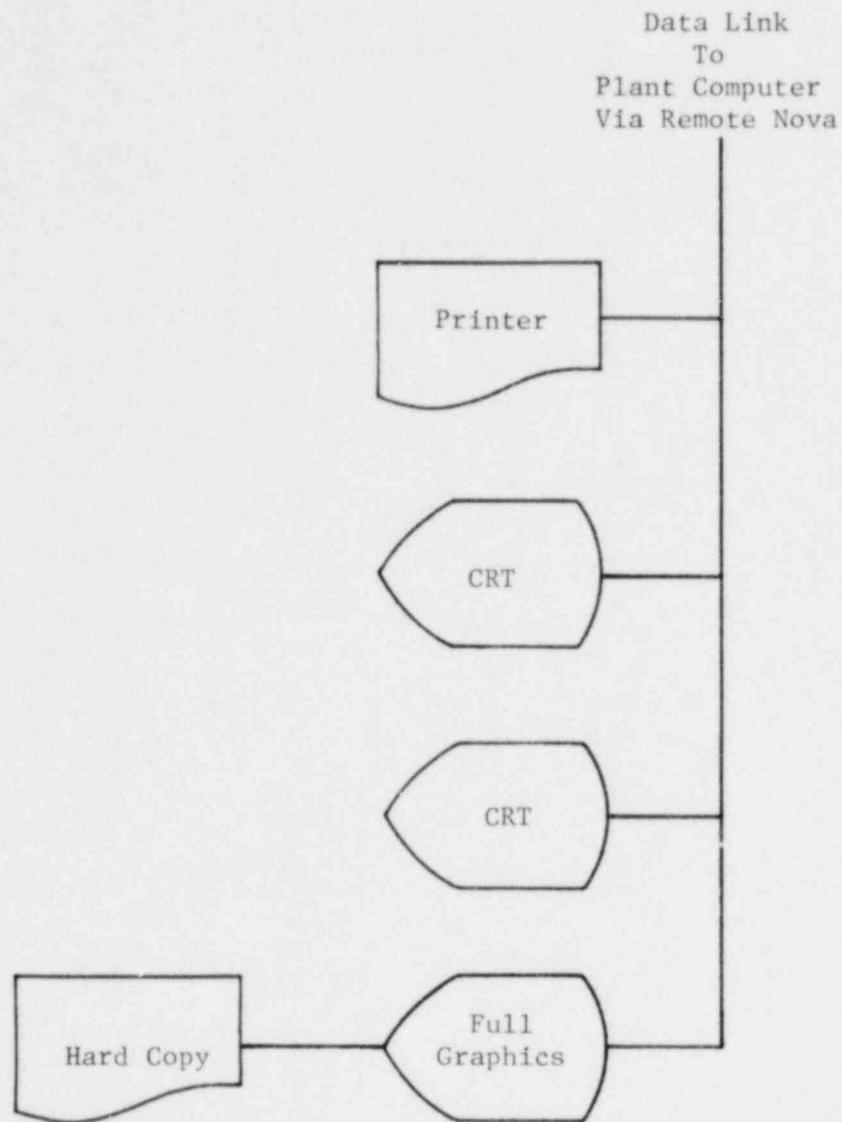
TSC LOCATION PLAN
FIGURE 2.2





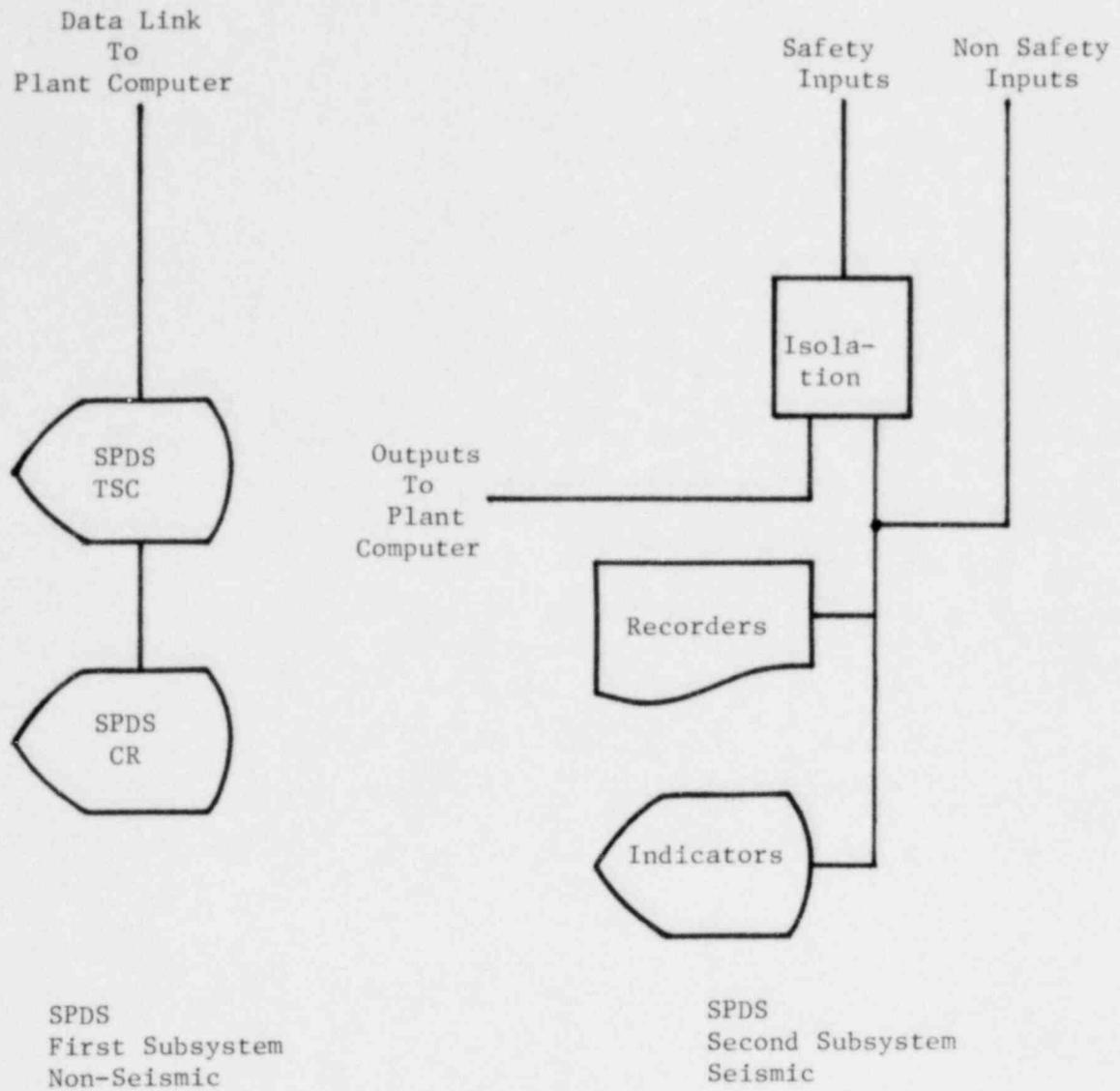
TSC DATA SYSTEM EQUIPMENT

FIGURE 2.8



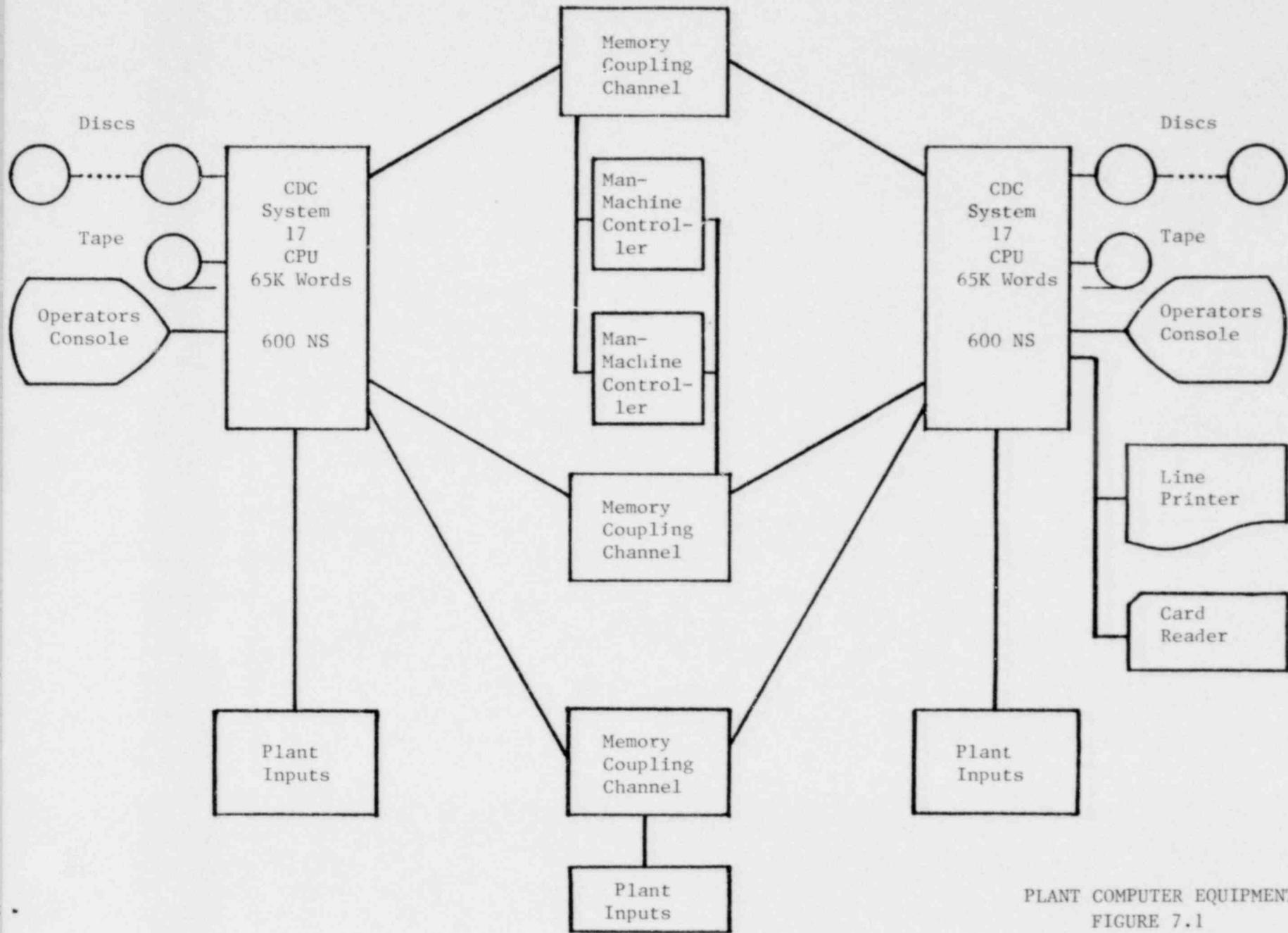
EOF DATA SYSTEM EQUIPMENT

FIGURE 4.7



SPDS SUBSYSTEMS

FIGURE 5.1



PLANT COMPUTER EQUIPMENT
FIGURE 7.1