BALTIMORE
GAS AND
ELECTRIC

CHARLES CENTER · P. O. BOX 1475 · BALTIMORE, MARYLAND 21203

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

June 1, 1981

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

Attn: Mr. Darrell G. Eisenhut, Director
Division of Licensing

Subject: Calvert Cliffs Nuclear Power Plant
Unit No. 1 & 2, Docket No. 50-317 & 50-318
Emergency Response Facilities Conceptual Design

Reference: NRC letter dated 2-13-81 from D. G. Eisenhut to All Licensees, Post-TMI Requirements for the Emergency Operations Facility.

Gentlemen:

The referenced letter provided clarification for TMI Action Plan Item III.A.1.2, specifying that we provide conceptual design information for the emergency response facilities by June 1, 1981 including the following:

(1) Task functions of the individuals required to report to the TSC and EOF upon activation and for each emergency class; and

(2) Descriptions of TSC instrumentation, instrument quality, instrument accuracy and reliability.

(3) Descriptions of TSC power supply systems, power supply quality, reliability and availability, and consequences of power supply interruption.

(4) Descriptions of the design of the TSC data display systems, plant records and data available and record management systems.

(5) Descriptions of the data transmission system to be installed between the TSC and control room

(6) Description of data to be provided to the EOF.

The following are our responses to the above items:

(1) See Attachment A.

(2) TSC instrumentation consists of existing plant process instrumentation loops and loop power supplies from which isolating transmitters derive the respective analog signals to be fed to a data acquisition and display system which has read-outs in the TSC. Where practical and possible, existing safety-related loops are used as the signal source. This helps to ensure high instrumentation quality, availability, and reliability. The instrumentation read-outs in the TSC will have an error of less than ±0.75% of process range. Attachment B lists the TSC inputs.

(3) The TSC power supplies are described below by function:

(a) Heat, ventilation and air conditioning system (HVAC) - a portion of the Control Room HVAC system was previously used to handle the area now occupied by the Tech Support Center. This system was supplemented by a 10 ton chiller & 3 fan coil units all of which are powered from a motor control center that will be picked up by a diesel generator within about 50 minutes after a loss of offsite power.

(b) Lighting - The lighting in TSC is powered from a panel that is picked up by a diesel generator in the event of loss of offsite power. In addition the TSC has emergency lighting that is powered from a self contained uninterruptable power supply providing about 2 hour battery backup.

(c) Computer Equipment - All essential computer equipment necessary for the continuous monitoring & recording of required plant parameters are powered from an uninterruptable power supply (UPS) providing about a 2 hour battery backup. In the event of a UPS failure, essential computer loads will be automatically transferred to an alternate power source.

(4) See Attachment C.

(5) See Attachment C

(6) See Attachment D.

If you require any further information at this time, please do not hesitate to call.

Sincerely,

cc: J. A. Biddison, Esquire
G. F. Trowbridge, Esquire
Mr. E. L. Conner, Jr.
Mr. R. E. Architzel

Attachment A

TASK FUNCTIONS TO BE PERFORMED AT THE EMERGENCY RESPONSE FACILITIES

FUNCTION	EMERGENCY CLASS		
	ALERT	SITE*	GENERAL*
Emergency Response Command and Coordination	TSC	EOF	EOF
Radiological Assessment - Onsite Conditions	TSC	TSC	TSC
Radiological Assessment - Offsite Conditions	TSC	EOF	EOF
Accident Assessment - Plant Operations	TSC	TSC	TSC
Accident Mitigation	TSC	TSC	TSC
Emergency Classification	TSC	EOF	EOF
Emergency Notification and Communication	TSC	EOF	EOF
Initiation of Onsite Protective Actions	TSC	TSC	TSC
Recommendation of Offsite Protective Actions	TSC	EOF	EOF
Radiation Exposure Control (Onsite)	TSC	TSC	TSC
Re-entry	TSC	EOF	EOF
Personnel Accountability	TSC	EOF	EOF
Analysis of Mechanical, Electrical & Instrument Control Problems	TSC	TSC	TSC
Core Protection	TSC	TSC	TSC
Offsite Engineering Support Related to Safety Analysis, Environmental Monitoring, Licensing, and Plant Modifications	N/A	EOF	EOF
Offsite Support for Mechanical Maintenance, Construction and Procurement	N/A	EOF	EOF
Offsite Administrative Support Related to Office Supplies, Food Service, Clerical Support, Housing and Communication Services	N/A	EOF	EOF

*Task Functions will be performed at the EOF subsequent to its activation. Activation will be in accordance with NUREG-0654.

Attachment B

SYSTEM	PROCESS PARAMETER	UNIT 1	UNIT 2	COMMON
CONTAINMENT	Containment 11 Pressure indication	X		
	Containment Dome Temp	X	X	
	Containment 21 Pressure Indication		X	
	Hydrogen Concentration	X	X	
	Containment Sump Water Level	X	X	
EMERGENCY CORE COOLING	HPSI Flow to Loop 11A	X		
	" " " Loop 11B	X		
	" " " Loop 12A	X		
	" " " Loop 12B	X		
	LPSI Flow to Loop 11A	X		
	" " " Loop 11B	X		
	" " " Loop 12A	X		
	" " " Loop 12B	X		
	Containment Spray Header 11 Flow	X		
	" " " 12 Flow	X		
	LPSI Flow Control	X	X	
	HPSI Flow to Loop 21B		X	
	" " " Loop 21A		X	
	" " " Loop 22B		X	
	" " " Loop 22A		X	
	LPSI Flow to Loop 21B		X	
	" " " Loop 21A		X	
	" " " Loop 22B		X	
	" " " Loop 22A		X	
	Containment Spray Header 21 Flow		X	
	" " " 22 Flow		X	
	Charging Pumps Discharge Flow	X	X	
	Salt Water Pumps Discharge Header Pressure	X	X	
	Salt Water Pumps Pressure	X	X	
	Component Cooling Pump 11 Discharge Pressure	X		
	Component Cooling Pump 12 Discharge Pressure	X		
	Shutdown Heat-Exchanger 11 Outlet Temp.	X		
	Shutdown Heat-Exchanger 12 Outlet Temp.	X		
	Refuel Water Tank 11 Level	X		
	Service Water Header 11 Pressure	X		
	Component Cooling Pump 21 Discharge Pressure		X	
	Component Cooling Pump 22 Discharge Pressure		X	
	Shutdown Heat-Exchanger 21 Outlet Temp.		X	
	Shutdown Heat-Exchanger 22 Outlet Temp.		X	
	Refuel Water Tank 21 Level		X	

SYSTEM	PROCESS PARAMETER	UNIT 1	UNIT 2	COMMON
	Service Water Header 21 Pressure		X	
FEEDWATER & MAKE-UP	Aux. Feedwater Flow Steam Generator 11	X		
	Aux. Feedwater Flow Steam Generator 12	X		
	Condensate Storage Tank 12 Level	X		
	Aux. Feedwater Flow Steam Generator 21		X	
	Aux. Feedwater Flow Steam Generator 22		X	
	Feedwater Flow to Steam Generator 11	X		
	" " " " " 12	X		
	" " " " " 21		X	
	" " " " " 22		X	
	Condensate Storage Tank 11 Level	X		
	" " " 12 Level		X	
MAIN STEAM	Steam Generator Level 11	X		
	" " " 12	X		
	Steam Generator 11 Pressure	X		
	" " 12 Pressure	X		
	Steam Generator Level 21		X	
	" " " 21		X	
	" " 21 Pressure		X	
	" " 22 Pressure		X	
NUCLEAR INSTRUMENTATION	% Power (INTERMEDIATE)	X	X	
	Q-Power	X	X	
	Thermal Power	X	X	
	% Power Source Range	X	X	
	In-Core Flux Detectors	X	X	
	In-Core Thermocouples	X	X	
RADIATION MONITORING	Waste Processing Area Radiation Monitor	X	X	
	Liquid Waste Discharge Radiation			X
	Containment High Range (East)	X	X	
	" " " (West)	X	X	
	Noble Gas Main Vent Low Range	X	X	
	" " " Mid "	X	X	
	" " " High "	X	X	
	Main Vent Flow	X	X	
	Condensate Vacuum Pump Discharge Radiation	X	X	
	Condensate Vacuum Pump Flow Rate	X	X	
REACTOR COOLANT SYSTEM	RCS Flow Loop 11B	X		
	" " Loop 12B	X		
	Subcooled Margin Loop 11	X		
	Subcooled Margin Loop 12	X		
	Pressurizer Level Hot	X	X	
	" " Cold	X	X	
	" Pressure	X	X	
	RCS Hot Leg Temp Loop 11	X		

SYSTEM	PROCESS PARAMETER		UNIT 1	UNIT 2	COMMON
	RCS HOT LEG TEMP	Loop 12	X		
	RCS Cold Leg Temp	Loop 11A	X		
	" " " "	Loop 11B	X		
	" " " "	Loop 12A	X		
	RCS Flow Loop 21B			X	
	" " Loop 22B			X	
	Subcooled Margin	Loop 21		X	
	" "	Loop 22		X	
	RCS Hot Leg Temp	Loop 21		X	
	" " " "	Loop 22		X	
	RCS Cold Leg Temp	Loop 21A		X	
	" " " "	Loop 21B		X	
	" " " "	Loop 22A		X	
	" " " "	Loop 22B		X	

Attachment C

The TSC Data Acquisition and Display System (DADS), Figure C-1 is being implemented to address the requirements for a TSC as described in NUREG 0578 and NUREG-0696. The system will "tap" into existing process loops and direct this information to the TSC computer which will process this information for the displaying of real time and historical data.

The TSC DADS will support a minimum of three (3) accident assessment "work stations" in addition to the official accident assessment/logging work station. The three work stations will each consist of:

a. A CRT/keyboard terminal for accessing the data base;

b. A three pen trend recorder; and,

c. A medium speed line printer.

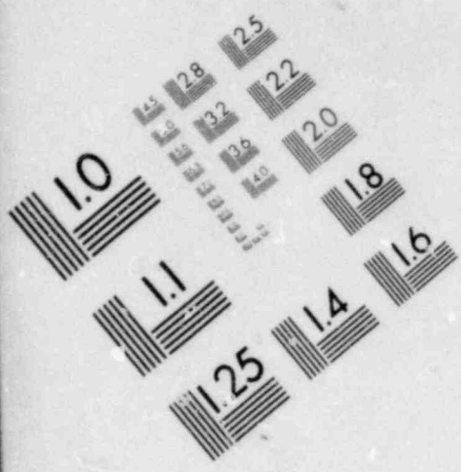
Via the work station consoles, one is able to access any of the data being monitored by the system and to direct the displaying of this data on its CRT, its line printer, or its trend recorder.

The system will ultimately be able to support multiple data links with off-site terminals.

The plant design documents will be available.

Communications in the TSC are provided by two page systems, a sound power system, a dedicated phone to the NRC, three standard phone lines and several other dedicated telephone lines..

The TSC conforms with the habitability requirements of NUREG 0578 and NUREG 0696. The structure itself is part of the existing Seismic Class I Auxiliary Building, and the air handling system is part of the Control Room air handling system. Radiation monitoring and alarm equipment for the TSC will be provided. The TSC location and arrangement are shown in Figures C-2, -3 and -4.



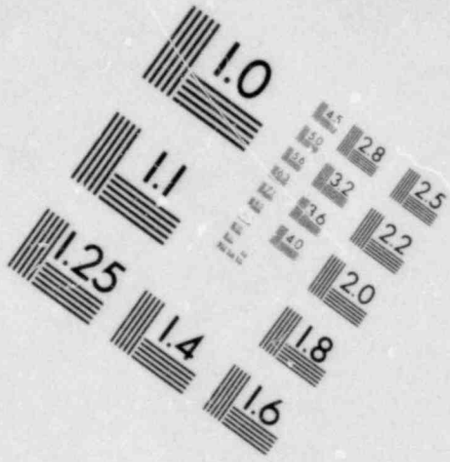
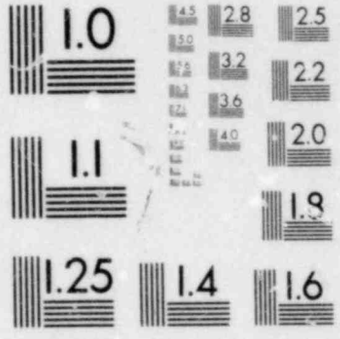
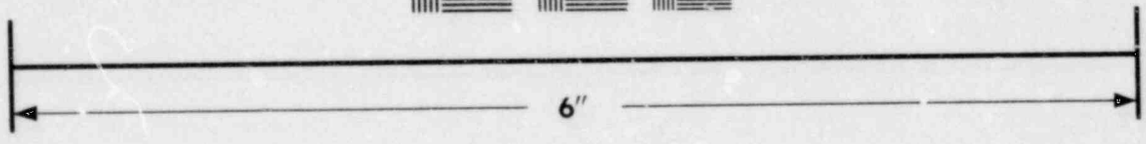
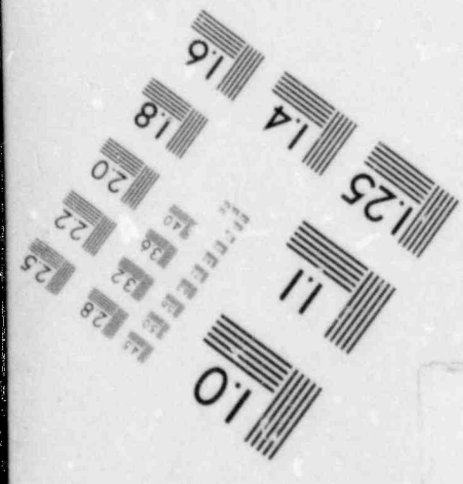
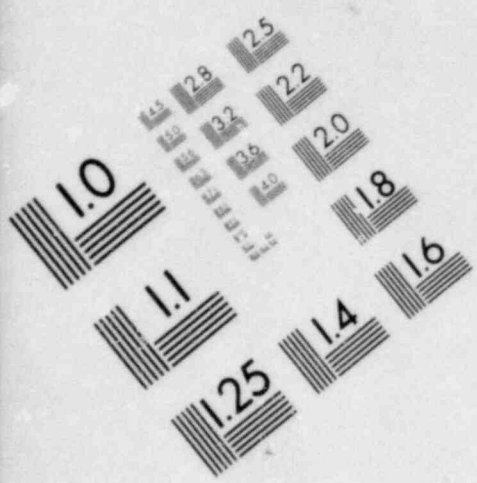


IMAGE EVALUATION
TEST TARGET (MT-3)









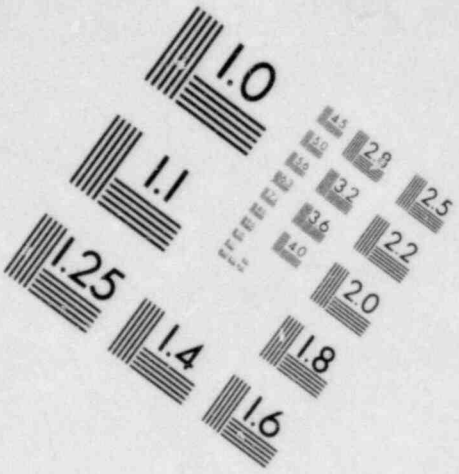
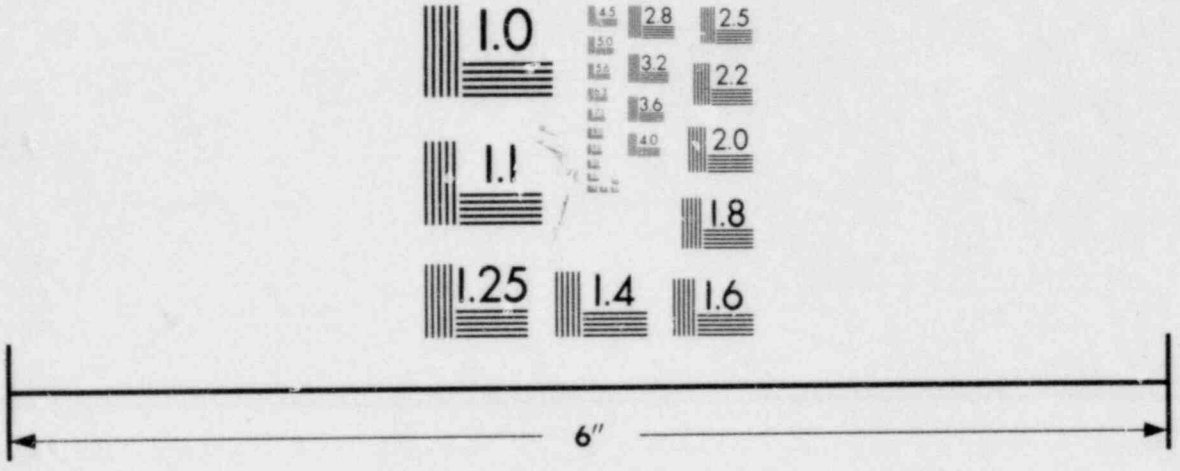
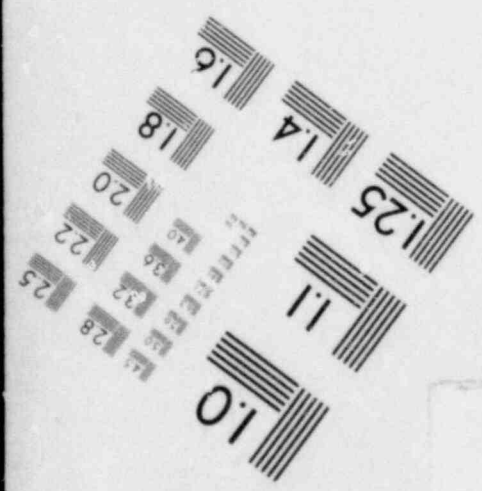
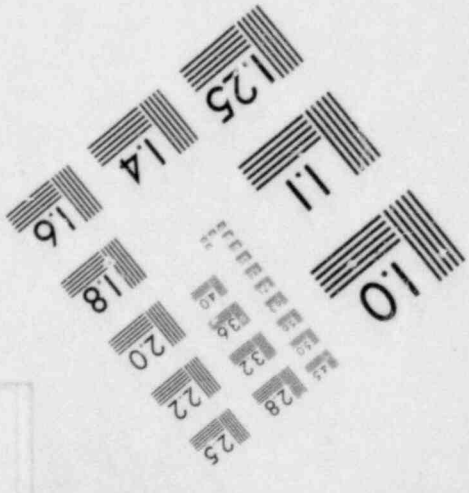


IMAGE EVALUATION TEST TARGET (MT-3)







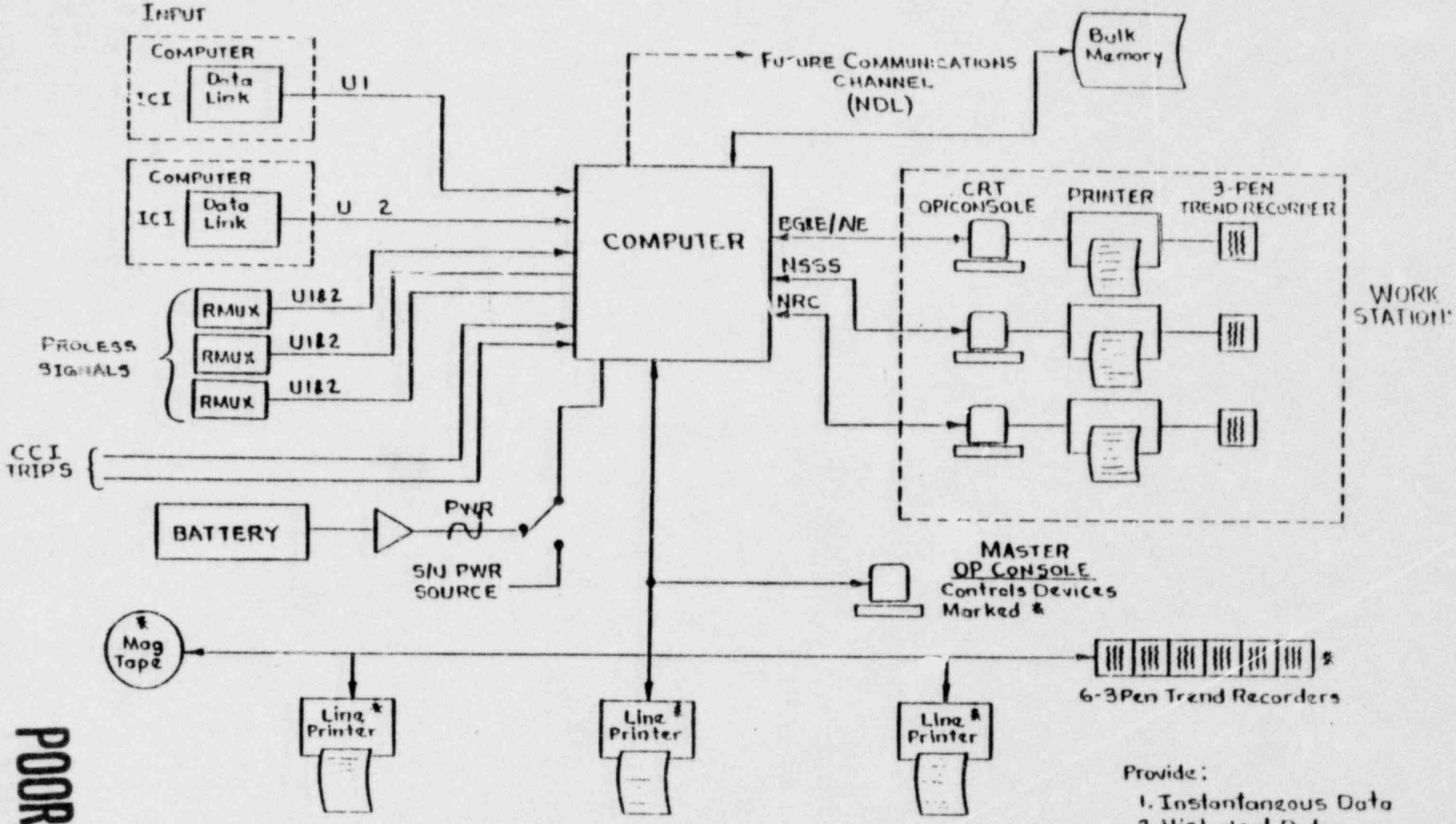


Figure C-1 TSC Data Acquisition and Display System (DADS)

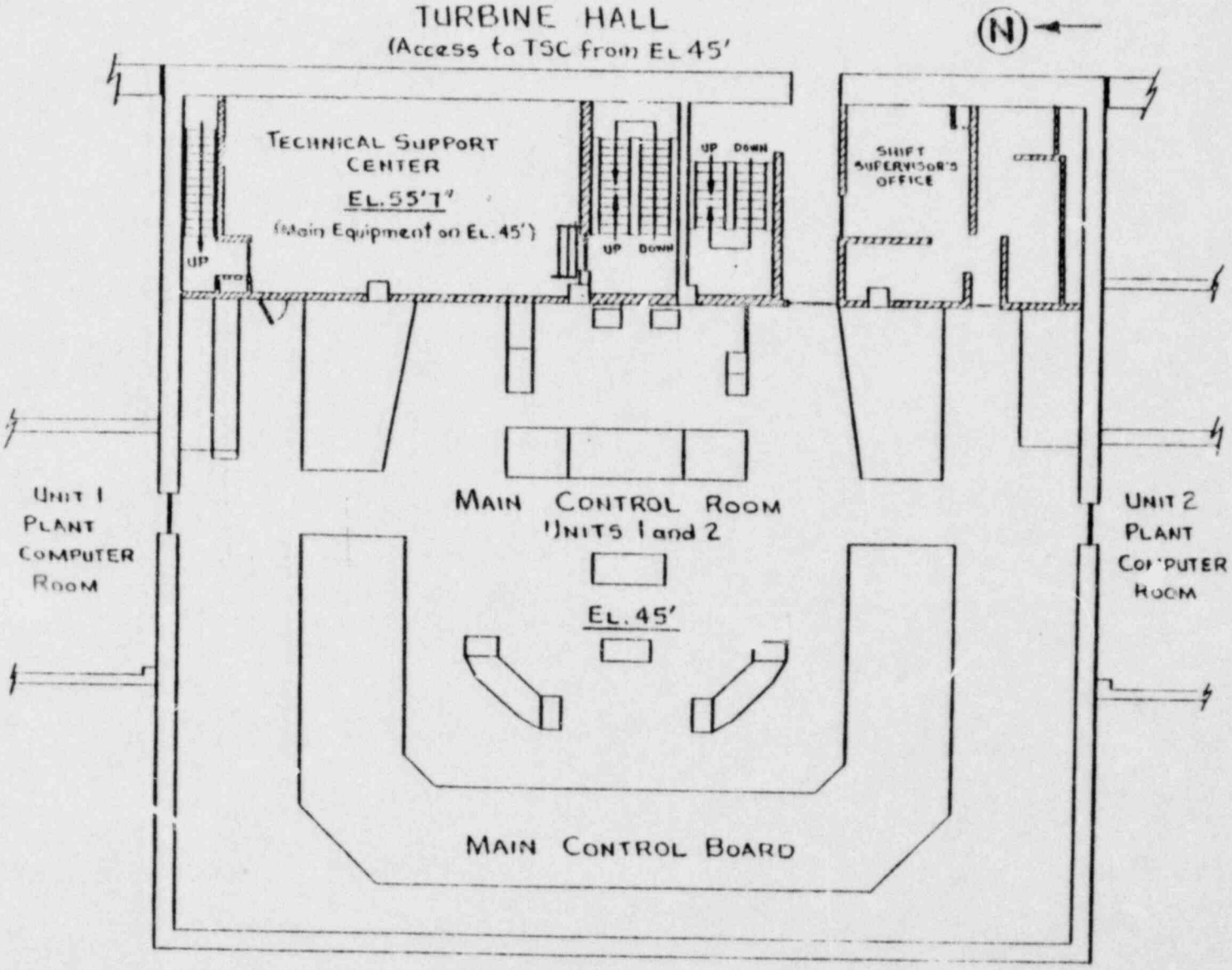


Figure C-2 Location of TSC Relative to Control Room

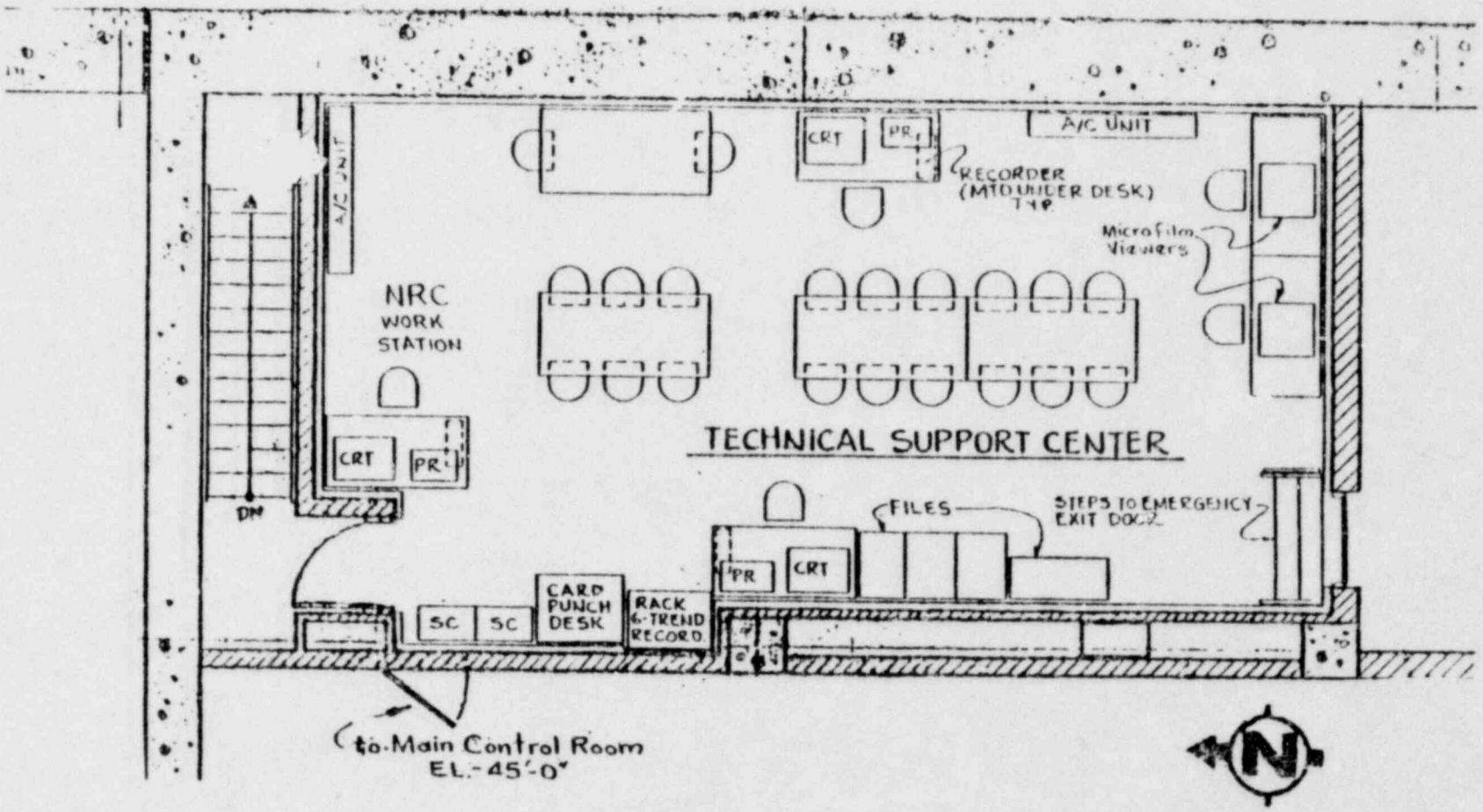


Figure C-3 Technical Support Center
Room 436 at El. 55' 7"

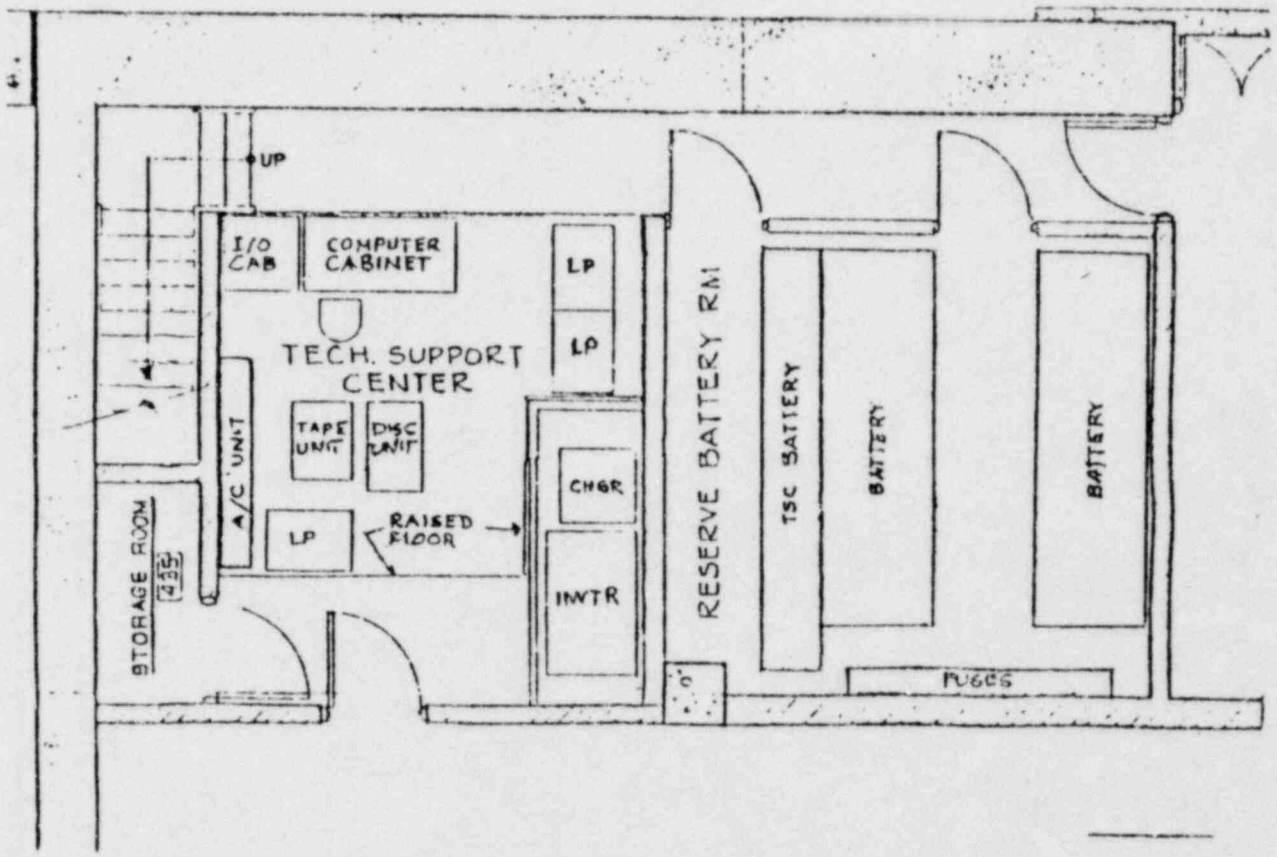


Figure C-4 Technical Support Center (Cont'd)
Rooms 432 and 442 at El. 45' 0"

Attachment D

The Emergency Operations Facility (EOF) for the Calvert Cliffs Nuclear Power Plant will be located approximately 12 miles Northwest of the plant with a driving time of 20-25 minutes. The building will be a new structure with no special radiation shielding and a conventional ventilation system.

Figure D-1 shows the preliminary functional layout for the EOF. It is expected that the relative layout and location of various functional areas will change as the floor plan is finalized. The k functions for the EOF are listed in Attachment A.

The power supply for the EOF will be an uninterruptable power supply rated at approximately 15 KVA. The size, communications, instrumentation and data displays for the EOF will be consistent with the requirements of NUREG-0696 and -0654 and will adequately support the monitoring of all radiological incidents at Calvert Cliffs Nuclear Power Plant which require the activation of the EOF. Inasmuch as the site location of the EOF has just been approved by Baltimore Gas and Electric Company, we are unable to provide any greater design detail at this time.

Preliminary Concept of Offsite Emergency Operation Facility (EOF)

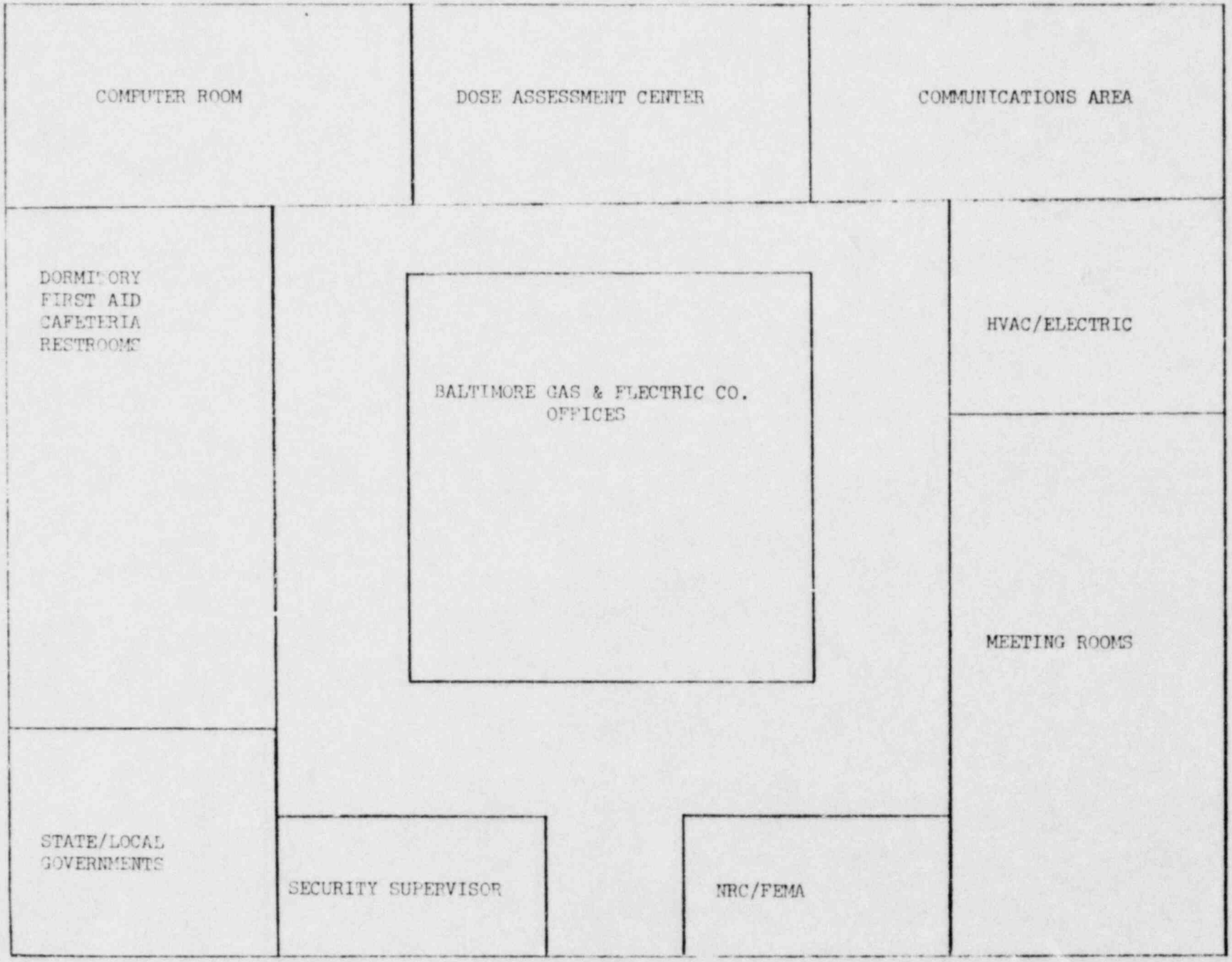


FIGURE D-1