SAN ONOFRE
NUCLEAR GENERATING STATION
Units 2 and 3
EMERGENCY RESPONSE FACILITIES

EMERGENCY RESPONSE
FACILITY
FUNCTIONAL DESCRIPTION

SOUTHERN CALIFORNIA EDISON COMPANY
2244 Walnut Grove
Rosemead, California 91770

March 31, 1982

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

I. Introduction

The purpose of this report is to provide a functional description of the Emergency Response Facilities for Units 2 and 3 of the San Onofre Nuclear Generating Station. This report reflects the state of the permanent facilities as of March 19, 1982. Additionally, the report addresses facilities (Training Facility/EOF) and hardware (Safety Parameter Display System) that have been contracted for, or scheduled for completion or installation in the near future.

The San Onofre Nuclear Generating Station (SONGS) is located in San Diego County, approximately 62 miles southeast of Los Angeles and 51 miles northwest of San Diego. It is sited entirely within the Camp Pendleton Marine Corps base near the northern end of its 18 mile shoreline. Santa Fe Railroad tracks and Interstate 5 lie within 1,000 feet of the station. The nearest privately owned land is approximately 2.5 miles from the site (Figure 1).

The site is 4,500 feet long and 800 feet wide. Units 2 and 3 comprise 52.8 acres of the 83.63 acre site. The power block for both units and the site switchyard cover 27.7 acres with the remaining 25.1 acres used for the batch plant, a temporary switchyard, and a parking and access area (Figure 2). Access to the site from I-5 is provided by the Basilone Road exit and a frontage road running parallel to, and positioned between, I-5 and the site's eastern boundary.

The Unit 2/3 Technical Support Center (TSC) and Operational Support Center (OSC) are located in the Unit 2/3 Auxiliary Building. The EOF will be located approximately one kilometer from SONGS at Japanese Mesa on the Camp Pendleton Marine Base. Upon completion of the permanent Training Facility/EOF (scheduled for completion by 1/83), all EOF functions will be performed at the new facility.

The plant grade elevation is 30 feet above mean sea level, and the soil on which the site is located is arkosic sandstone of the San Mateo formation.

The site climate is characterized as marine and is subject to daily land and sea breezes. The most frequent wind is a west to west-northwest breeze of 5-7 mph. The strongest winds are from the northeast, occasionally reaching 30-50 mph. The Los Angeles International and San Diego airports provide reasonable long and short term meteorological data. A Southern California Edison (SCE) 40 meter meteorological tower is located onsite atop a bluff 30 meters above mean low water level and approximately 60 meters inland.

The preceding paragraphs have been an overview of the environs in which the site and facilities are located. A further description of the Auxiliary Building and Technical Support Center is provided in Section II of this report. The Operational Support Center is addressed in Section III. The final two sections of this report deal with the Training Facility/EOF under construction (Section IV) and the Qualified Safety Parameter Display System to be installed in the near future (Section V).

II. Technical Support Center

A. Function

The Technical Support Center (TSC) serves as the location for the coordination of onsite emergency activities and until the Emergency Operations Facility (EOF) is operational, all offsite activities. The TSC is the facility from which all onsite emergency response functions are directed except for direct supervision of reactor

operators and actual manipulation of reactor controls. The Center houses the Emergency Coordinator and his staff who provide plant management, administrative, and technical support to operations personnel in the control room.

The TSC serves as the primary communications center for the plant during emergencies. Therefore, initial and follow up notification with respect to the plant will be through the TSC. The TSC provides an area where abnormal plant conditions can be displayed for diagnosis by the emergency response personnel. The TSC is also an area for the assessment of potential or actual radioactive releases to the environment. To this end, it is a central point for the receipt of meteorological data and for the receipt and analysis of SCE field monitoring data. After analysis of this data, offsite dose projections and recommendations for protective actions originate in the TSC.

The TSC is activated during Alert, Site Emergency and General Emergency conditions. However, the Watch Engineer has the option of activating the TSC during an emergency classified as an Unusual Event. TSC personnel will perform the functions of EOF personnel until the EOF is operational.

B. Location (Figures 3a and 3b)

The TSC is located adjacent to (above and behind) the Control Room on the 39-foot elevation (Mezzanine Level). It is part of the Control Room Complex and is located in the Unit 2/3 Auxiliary Building. The TSC is composed of 5 rooms:

- Room 238, the Health Physics Dose Assessment Area and Plant Management Decision Area, was previously designated as the Visitors Gallery. It is now a dedicated emergency facility. It may also be used by the Shift Technical Advisor and Shift Communicator during non-emergency, on-shift periods.

- o Rooms 248A and 248B, the Engineering Support Area and the Communications Area respectively, are also a dedicated emergency facility. Room 248A will be used as a Conference Room for operations personnel during normal working hours.
- o Room 251, the designated NRC consultation room, is at present unoccupied. Its future, non-emergency use is to be the Plant Superintendent's Office.
- o Room 252, the designated Administrative Leader and Staff Area is at present unoccupied. Its future, non-emergency use is Plant Superintendent's Secretary Office.

Travel time from the TSC to the Control Room is approximately 30 seconds. To proceed from the TSC to the Control Room, one leaves the TSC (Room 248A) and proceeds down one flight of stairs to a security door by the security Central Alarm Station. After passing through the security door (Control Room security mantrap), a short hallway leads to the Watch Engineer's Office and Control Room. Travel time from the TSC to the Turbine Plant Lab, where secondary system analyses are performed, is approximately 30 seconds, the same as to the Control Room. The time required to travel from the Technical Support Center to the Radiochemistry Lab or the Health Physics Counting Room is approximately 2 minutes. Both the Radiochemistry Lab and the Health Physics Counting Room are on the 70-foot elevation of the Auxiliary Building, and the most direct access route is by means of the Auxiliary Building elevator located across a hallway from the Plant Superintendent's Secretary's Office. During an emergency, the stairwell located near the elevator is used in lieu of the elevator to prevent breaking the TSC environmental envelope. The stairwell is also available in the event of a power failure rendering the elevator inoperative. The Operational Support Center (OSC) is also located on the 70-foot elevation of the Auxiliary Building in Room 403. The time to travel between the Operational and Technical Support Centers is approximately 2 minutes.

C. Staffing

As previously stated, the Technical Support Center consists of 5 rooms, four of which (all rooms except 251) are continuously staffed by SCE personnel whenever the TSC is operational.

Room 238 is split into a Health Physics Dose Assessment Area and a Plant Management Decision Area. The Dose Assessment Area is under the supervision of the Health Physics Leader, who directs both onsite and offsite SCE monitoring, performs dose projections, and advises the Emergency Coordinator on the radiological aspects of the emergency (including recommended protective actions). Assisting him in this function is the Station Dose Assessment Team, consisting of 3 members. To support this teams assigned functions the Dose Assessment Area has a Health Physics/Radiological Status board, a site plan, a 50 mile vectored area map, covered in plastic to allow writing on the surface, and an Apple II computer terminal is available to be used for source term dose assessment and dose projection. To communicate with mobile radiological monitoring teams, a radio control console is installed in the Dose Assessment Area. A Hewlett Packard computer terminal for meteorological data from the onsite meteorological tower is presently installed to collect and store at this time.

The Plant Management Decision Area is staffed by the Emergency Coordinator, who is in overall control of onsite (and offsite, until the EOF is operational) emergency efforts. Assigned to assist the Emergency Coordinator in the Plant Management Decision Area is the Emergency Advisor who assists and advises the Emergency Coordinator in assessment activities and protective/corrective actions, and the Manager of Nuclear Operations who is the corporate interface between the TSC (a plant facility) and the Emergency Operations Facility (a corporate facility). Also in the Plant Management Decision Area is the Corporate Engineer who supports the Manager of Nuclear Operations, the Emergency Planning Coordinator who assists the Emergency Coordinator

in the details of the emergency effort, and the Emergency Coordinator's Assistant who provides administrative assistance to the Emergency Coordinator. To enable the above personnel to complete their assigned duties, the following equipment is available:

- 2 Critical Function Monitoring System video display screens and keyboards (discussed in Section II.G.).
- Plant Status board.
- EOF Status board.
- Teletalk intercom console.
- Health Physics (beige) telephone - TSC to ODAC.
- Edison Decision Circuit (white) telephone.
- Plant Emergency Response Telephone (ivory) telephone.
- 3 PAX telephones.

(For further explanation of the emergency communications system, refer to Figure 5 and Appendix 5).

Room 248 is physically divided into an Engineering Support Area (248A) and a Communications Area (248B). Personnel in the Engineering Support Area are under the supervision of the Technical Support Leader who provides technical and engineering expertise for the Emergency Coordinator. His staff provides a reservoir of technical expertise, and have the following equipment to assist them in performing their duties: Plant Status board, access to the Critical Function Monitoring System displays, and all the necessary plant documentation (discussed in Section II.H.). The Communications Area is staffed by assigned communicators (on and off duty shift communicators or by the Engineering Support staff). The communicators operate the bank of telephones in Room 248B. (Refer to Section II.F. for a discussion of TSC telephones.) Also assigned to Room 248A is the Chemistry Leader who provides data and recommendations on the chemistry of the primary system and balance-of-plant systems.

Room 252 is normally occupied by the secretary of the Plant Superintendent, however, during drills and emergencies, this area will be utilized by the Administrative Leader and the Security Leader.

The Administrative Leader coordinates the logistical and administrative support for the emergency effort. The Security Leader coordinates and directs plant security, traffic accountability, plant and site evacuations, and plant access control. The above personnel all have access to the PAX telephone system, and the Security Leader and Administrative Leader both utilize an Accountability Status board.

The remaining personnel in the TSC are for secretarial support, if necessary, and any NRC personnel utilizing Room 251 as their office. When fully staffed, the total number of personnel present in the Technical Support Center is approximately 25, including NRC personnel. The total number of personnel present varies with the emergency classification level.

D. Size and Structure

The overall dimensions of the entire TSC complex is 26' x 53' resulting in a total of 1378 square feet. When the TSC is fully staffed by a complement of 25 persons, each person is provided with a work space of greater than 55 square feet. Room 248 is physically divided by a wall, creating two distinct work areas, thereby allowing the Communications Area (248B) to be relatively quiet for the better transmission and receipt of vital information. The Engineering Support Area (248A) is an open area with tables to allow greater flexibility in the arrangement of the work space. This enables personnel to have easy access to various data displays, plant records and/or as-built drawings. A counter along the east wall of Room 238 provides work space for the personnel assigned to the Dose Assessment Area and Decision Area when the TSC is operational.

The primary means of entrance and exit to the TSC, other than the elevator, is the stairwell in the northwest corner of Room 248A. A stairwell located near the Plant Superintendent's Secretaries Office, with a firedoor at the bottom of the stairs, is available for emergency exits.

The TSC is located in the Unit 2/3 Auxiliary Building, a Seismic Class 1 structure. As such, the Auxiliary Building will withstand the plant's Design Basis Earthquake, with resulting ground accelerations postulated to be .67g. The Auxiliary Building is also designed to withstand winds up to 100 mph (the postulated 100 year wind is less than 60 mph) and a maximum flood level of 30.8 feet. The postulated maximum flood level of 30.8 feet is 8.2 feet below the 39 foot elevation of the TSC. The TSC has concrete floors and walls constructed of drywall over concrete. The majority of the east wall of Room 238 consists of metal mesh bullet proof glass windows.

E. Habitability

The TSC shares the environmental envelope with the Control Room and is considered part of the Control Room Complex (Figures 4a and 4b).

The Control Room Complex Heating Ventilation and Air Conditioning System (HVAC) is common for Units 2 and 3. It consists of a Normal and an Emergency Ventilation System.

The Normal Ventilation System continuously supplies outside air to the control room through two outside air intakes. One air intake has a volume damper and is used for normal outside air. The other intake has a normally closed, motorized damper which when opened, supplies 100% outside air. Fresh air makeup is approximately 4,800 cfm. The system has a supply fan with a prefilter that supplies air at a slightly positive pressure to the control room and other non-radioactive areas. The temperature in this area is maintained at 70-75^{o}F with 50% relative humidity. The control room air is then

removed through an exhaust fan or an independent smoke exhaust fan. The smoke removal capability of the system is 6.53 atmosphere changes per hour.

There are two airborne radiation detectors at the outside air inlet to the Normal Ventilation Unit. These monitor the outside air entering the Control Room Complex (and therefore the TSC). One detector is a beta scintillation detector measuring gross beta. The other detector is a gamma scintillation detector/single channel analyzer measuring gross gamma and gamma from I-131. The range of this gamma detector is 10^{-9} to 10^{-4} uCi/ml. If radiation at this sample point is above preset limits, a control room isolation signal closes the Normal Ventilation isolation dampers and starts the Emergency Ventilation System.

The Control Room Complex Emergency Ventilation System is a Seismic Class 1 system, designed to remain functional during and after a Design Basis Earthquake. The Control Room Emergency HVAC System is divided into two redundant subsystems. Each subsystem includes an emergency ventilation unit, emergency air conditioning unit, and two fan coil units. The emergency ventilation units contain a prefilter, a heating coil, high efficiency particulate air (HEPA) filters, activated charcoal filters, and a supply fan. Outside air is provided at a reduced rate through HEPA and charcoal filters. The HEPA filters are 99.97% efficient with the carbon (charcoal) absorbers 95% efficient for iodine. The Emergency Ventilation System supplies approximately 35,500 cfm of air, with 1,000 cfm of this from outside air. The system maintains Control Room Complex temperatures in the band of 70-85^{o}F.

The control room and the TSC are both Radiation Zone 1 facilities, denoting that they are in an area where background radiation is less than .25 mR/hr during operation (with 1% defective fuel cladding). Shielding is provided to permit access and occupancy under LOCA

conditions, with doses limited to 5 Rem whole body from all contributing modes of exposure for a 30-day period. Most of the plant shielding is ordinary concrete with a bulk density of 140 lbs/cu. foot. An oversized shield wall exists between the control room (and TSC) and the containment building to further attenuate radiation during and following a LOCA.

There is portable radiation monitoring equipment that is dedicated for use in the Technical Support Center. This equipment includes: 1) CP-6 - a high range (0-100 R/hr. on the highest scale) beta-gamma ion chamber, 2) SML-2/Pug Frisker or equivalent - a Geiger-Mueller tube for detecting beta-gamma contamination, and 3) a Radeco air sampler with particulate, charcoal, and silver zeolite cartridges. All portable radiation monitoring equipment has procedures detailing limita tions and instrument reliability.

For any personnel movement out of the TSC during a period of airborne contamination, there are 10 sets of personnel anti-contamination suits and face masks with cannisters. At least 35 film badges and low range (0-200 mR) dosimeters are kept in the TSC, along with a box of potassium-iodide (KI) thyroid blocking agent. For a list of typical emergency equipment kept in the TSC, refer to Appendix 1.

F. Communications and Information Handling (Figure 5)

The Technical Support Center serves as the primary onsite communications center. The following paragraphs list the communications available in the TSC. For a detailed description of the Emergency Telephone System at SONGS, refer to Appendix 5.

The following communications from the TSC to the Control Room are provided:

- o Edison PAX System
- o Interagency Telephone System
- o Plant Emergency Response Telephone (PERT)
- o Teletalk Intercom

For communications between the TSC and OSC, there are available:

- o PAX telephones
- o PERT telephone

The following communications are available from the TSC to the Emergency Operations Facility:

- o Plant Emergency Response Telephone (PERT)
- o Interagency telephone
- o Orange County Teletype
- o Edison Decision Circuit (EDC) telephone
- o EOF Hotline

The lines of communication between the TSC and State and Local Emergency Operations Centers are composed of:

- o PAX telephone (through the Bell system)
- o Interagency telephones
- o Orange County Teletype
- o USMC Fire Department telephone
- o USMC Phone Exchange
- o Office of Emergency Services - Sacramento (Future)

The following telephones are available in Room 251 for use by the NRC:

- o Emergency Notification System telephone
- o Health Physics Network telephone
- o 2 Bell telephones (independent of the SONGS exchange)

This arrangement gives the TSC communications flexibility, and continuous access to the Bell telephone system in the event of local damage to the San Clemente exchange. Finally, there are 10 PAX telephones located at various work stations in the TSC. The telephones can access most SCE facilities using a 5 digit number, and can connect to the Bell system using a 1 digit number.

There is a Motorola radio console in the Dose Assessment Area of Room 238. This radio allows the Health Physics Leader to communicate with the mobile radiological teams. In the event of radio failure, the radiation monitoring teams use telephones at the base of SCE siren towers or public telephones. Other stations utilizing radio communications are: 1) the U-2/3 Primary Operations Circuit, 2) U-2/3 Secondary Operations Circuit, 3) State Parks, and 4) the Orange County Health Office.

Other methods of information gathering and dissemination are available to personnel in the Technical Support Center. The equipment includes a Plant Status board, a Health Physics Status board, an EOF Status board, an Accountability Status board, onsite and offsite maps (with acetate overlays), a facsimile machine, an Apple II computer used for source term and offsite dose assessment, 2 Critical Function Monitoring System CRTs, and a Health Physics CRT. The last three items are described in detail in Section II.G.

G. Instrumentation, Technical Data, Data System Equipment and Power Supplies (Figures 6, 7, and 8)

The equipment discussed in this section is comprised of: 1) the Critical Function Monitoring System (CFMS); 2) the Health Physics computer; and 3) the Apple II computer. Additionally, the radioanalysis of fluid and solid samples, where these analyses are performed, and what equipment is available to perform these analyses are covered within this section.

The CFMS is used to present the user with a concise, integrated and understandable presentation of information which will assist him in assessing the overall safety status of the plant. The CFMS utilizes color graphic CRT displays as the user-machine interface. The use of overhead monitors provides a CRT color graphic display of critical information associated with selected safety functions. The CFMS is

an installed and operating system for Unit 2. There will be two CRT displays available in the control room, and 2 CRT displays in the TSC which may be used independent of the control room display. The CRT displays for CFMS utilized eight colors to represent status, and provide parameter and alarm information. These colors and types are as follows:

- o Information Colors
  - Black - Display Background
  - Blue - Non-essential or non-information bearing data, out of range, bad data
  - Cyan - Essential or information bearing normal data or text
- o Status Colors
  - Green - Off, de-energized, closed, passive
  - Red - On, energized, open, active
  - White - Intermediate between green and red
- o Alarm Colors
  - Yellow - Cautionary alarm, attention required
  - Magenta - Danger alarm, immediate attention required

Wherever possible, the above colors and uses apply. In the case of the graphical trends where colors are used to differentiate between trends, green, white, red and cyan are used for trend channels 1 through 4 respectively.

The CFMS uses a standard set of symbol shapes and dynamic behaviors. All symbols have both a color and shape code to indicate an alarm state and status. Symbols appear hollow when active and solid when passive. No specific shape is assigned when the component represented by the symbol provides a failed or bad data indication. Flash is used to indicate an unacknowledged alarm. As soon as the alarm is acknowledged the flash stops, the symbol or parameter value remains in its status or alarm color, and an acknowledged indicator is displayed.

The CFMS provides any of 20 fixed format, display pages selected by a keyboard associated with each CRT. A hierarchial selection and display technique is used in the selection of the appropriate display page. The hierarchy contains three levels, addressing the overall status, functional status, and subfunction diagnostic display (Figure 7).

The Level 1 (upper level) display provides the operator with a broad overview of the status of all critical functions (Figure 7b). When an abnormality occurs, the affected critical function is highlighted by a color change, on-off blinking, and audible annunciation. Operators are then guided in a systematic manner through the display hierarchy to the display page that contains the most detailed information. This is done by a flashing numeric indicator adjacent to the affected critical function. These numeric indicators (sector alarms) refer to the appropriate Level 2 display (Figure 7c). The operator accesses the Level 2 display by means of the CFMS keyboard, that has two major function keys, PAGE and SECTOR. PAGE provides direct access to any display in the system. SECTOR provides pre-programmed access that automatically leads the operator to the source of critical function problems.

To access a level 2 display upon the occurrence of a sector alarm, the operator would press the "SECTOR" key, followed by the number, one through nine, indicated in the flashing alarm color near the affected critical function, followed by the "EXECUTE" key. This sequence would cause the correct Level 2 display of the detailed status of the alarmed function to appear on the operator's CRT. Should further diagnosis be necessary, the Level 2 display would also have a sector alarm indicator that would lead the operator to a Level 3 display of detailed function diagnostics (Figure 7d). Should the operator desire to return to a higher level display, depressing "SECTOR" zero will cause a return to the higher level display previously selected.

In addition to the hierarchial access, a direct paging mode is available in which the operator would depress the "PAGE" key, followed

by the number of the desired page, followed by "EXECUTE." This sequence would cause the selected page to be displayed to the operator. "FORWARD" and "BACK" key functions allow for multi-page display capability and for "lateral" movement through the hierarchy of displays. For example, if the operator has a Level 2 "page" currently displayed, he can scan all the other Level 2 displays simply by repeatedly pressing "FORWARD." This will cause a sequential access of all Level 2 pages in a closed, circular manner such that the operator would end up with his original display page, after he had scanned all existing pages in that level.

The operator would most often use the page mode in conjunction with special purpose Level 1 displays. The Level 1 displays include:

A. CFMS MONITOR - This page lists the seven critical functions;

- o CORE REACTIVITY
- o CORE HEAT REMOVAL
- o RCS INVENTORY
- o RCS PRESSURE
- o RCS HEAT REMOVAL
- o CONTAINMENT TEMPERATURE/PRESSURE
- o CONTAINMENT ISOLATION

B. OUT OF RANGE LIST - This page lists those sensors which have failed range tests for reasonableness. An inappropriate zero or negative output or the exceeding of a maximum scale can signal an out of range sensor.

C. BAD DATA LIST - This page lists those I/O cards which have failed. This failure is a hardware failure and is signaled to the system to indicate trouble in the I/O system itself. This signal causes a BAD DATA indicator to be set on all channels connected to this failed card.

D. DISPLAY DIRECTORY - This page is the system index page. This page lists the page numbers for the displays. It enables the operator to find any page and access it using the key strokes "PAGE, ---,EXECUTE".

E. ALARM LIST - This page displays the current alarms, indicates those that have been acknowledged, and those which have just alarmed.

F. COMPUTER STATUS LIST - This page shows the present status of the computer and its peripherals. It tells the operator whether or not the system is operational. It also provides a listing of diagnostic messages generated by comprehensive on-line, self-checking software.

The central or middle level of the hierarchy contains four pages. These deal with the following:

A. THE CORE - This page display is concerned with presenting information about the reactor core. The hot and cold leg temperatures, pressurizer pressure and level channels, excore detector outputs, and the CVCS system status including boron concentration.

B. THE PRIMARY SYSTEM - This page provides an overview of the primary coolant system including the reactor coolant pumps, steam generators, pressurizer, core and charging system connections.

C. THE SECONDARY SYSTEM - This page provides information concerning the status of the steam generators, main condenser, condensate storage tank, main and auxiliary feed pumps, and condensate pumps.

D. THE CONTAINMENT SYSTEM - This page displays the information relevant to the containment environment, containment spray operation, containment radiation monitors status, hydrogen concentration and sump levels, radiation levels and some balance of plant equipment.

Since the lowest level hierarchy expands the detail of the middle level hierarchy, it can be thought of as being in three sections; each section dedicated to displaying more detail concerning its source in the middle level. The three sections in the lowest level are associated with:

A. Primary system
B. Secondary system
C. Containment

The lower level of hierarchy associated with the Primary System contains six pages of informational displays. These are the following:

A. SAFETY INJECTION 1 - This page displays information concerning the Safety Injection Systems, their pumps, valves, reactor water storage tanks, pressures, and flows.

B. SAFETY INJECTION 2 - This page presents the status of the safety injection tanks and their associated valves' positions.

C. LETDOWN/CHARGING - This page shows the status of the Letdown and Charging Systems. The pumps status as well as the condition of the volume control tank, boron concentration, and charging and letdown flows.

D. BORATION/DILUTION - The information displayed on this page is relevant to the boric acid and primary makeup tanks, their associated pumps and piping systems.

E. PRESSURIZER - The information presented here is vital to the functions of RCS pressure and inventory. The summary of information presented here provides that data necessary to assess the condition of the plant's overall RCS pressure and inventory safety functions.

F. SHUTDOWN COOLING - Data presented here allows the operator to monitor the Shutdown Cooling System and to determine if there is a heatup or cooldown rate inappropriate to the plant's required condition. The display also shows the status of pumps, valves and heat exchangers.

The lower level of hierarchy associated with the Secondary System contains three pages of informational displays. They are as follows:

A. MAIN STEAM SYSTEM - This page presents information pertaining to the Main Steam System from the steam generators to the turbines. It covers data presenting main and auxiliary feed flows, relief valve positions, turbine sump radiation levels, as well as heatup and cooldown rates. The pressurizer pressure and temperature are also shown.

B. MAIN FEEDWATER - This system is presented in detail because of the importance it bears on the core heat removal function. The systems main condenser, condensate pumps, feed pumps, and feedwater control valves status are displayed.

C. AUXILIARY FEED - The Auxiliary Feed System status as an alternate feedwater source during plant emergencies is required, thus the status of this system is valuable to the plant operator. The Auxiliary Feed System is also required for plant cooldown. This page displays the status of the condensate storage tank, auxiliary feed pumps, and associated important valves.

The lower level of hierarchy associated with the Containment System contains three pages of informational displays. They are as follows:

A. CONTAINMENT SPRAY/COOLING - This page shows the layout of the Containment Spray Cooling Systems, including the containment spray pumps, the containment emergency sump, and spray coolers. The four containment emergency coolers are also displayed with their status.

B. CONTAINMENT ISOLATION 1 - This page displays the valves needed to isolate the containment. The two groups presented are the valves closed by the containment isolation actuation signal and the valves closed by the containment purge isolation signal.

C. CONTAINMENT ISOLATION 2 - This page shows the status of the other two systems used to isolate the containment. They are the main steam isolation signal and the safety injection actuation signal operated valve systems.

The Engineered Safety Features alarms are located at the lower left corner of the display. They will be to the right of the Critical Function Monitor matrix. Normally they will be invisible and will be displayed in YELLOW upon an ESF signal being generated.

The ESF systems which alarm here are the:

A. CCAS - Containment Cooling Actuation Signal.
B. CIAS - Containment Isolation Actuation Signal.
C. CPIS - Containment Purge Isolation Signal.
D. CRIS - Containment Radiation Indication Signal.
E. CSAS - Containment Spray Actuation Signal.
F. EFAS1 - Emergency Feed Actuation Signal 1.
G. EFAS2 - Emergency Feed Actuation Signal 2.
H. FHIS - Feed Header Isolation Signal.
I. RAS - Recirculation Actuation Signal.
J. SIAS - Safety Injection Actuation Signal.
K. TGIS - Toxic Gas Isolation Signal.

All inputs to the CFMS are sampled and stored each second on a 67 mb disc for later review. Two shifts (16 hours) worth of data can be stored for on-line disc retrieval.

As the disc allocated area for one shift approaches the maximum limit, precautionary messages to the computer operator's console

and the Computer Status List page are generated to remind operations personnel to perform a disc backup. Data recorded prior to 16 hours can be obtained by mounting the tape containing the recorded data and performing a tape retrieval operation.

The CFMS is built around the Perkin-Elmer 3220 computer. This is a 32 bit computer system with 786 kb of memory. The computer is supported by two disc drives, a freestanding 67 mb disc pack for historical data storage and a panel mounted 10 mb disc unit for system software and diagnostic programs. This equipment is located in the computer room behind the Unit 2 control room. It receives its power from a 120V power panel fed from an inverter (supplied by DC with AC backup). This arrangement provides the computer with an uninterruptable supply of regulated power. The CFMS CRTs in the TSC are also powered from an uninterruptable power supply such that a loss of power to the TSC will not degrade the capability of the CFMS in the TSC. The CPU itself has a battery backup power supply which enables it to perform automatic restarts after power failures.

The approximately 400 channel I/O system shares data points with the Plant Monitoring System computer. Although the data points are shared with the Plant Monitoring System computer, the loss of one (CFMS or Plant Monitoring computer) will not cause a corresponding loss of the other. All data points are isolated from any safety systems they monitor to prevent degrading the capabilities of that system in the event of a problem with input signal lines. These 400 data points are scanned every second.

The computer operator's console in the computer room allows more flexibility in the operation of the CFMS than the keyboards present in the control room or TSC, however, the software of the program cannot be manipulated by unauthorized personnel.

Prior to the CFMS being classified as operational, extensive verification and validation tests were performed. The system was operationally tested and safety function data was verified against calibrated instruments. Since the system has been declared operational, all changes to the CFMS are thoroughly tested and documented. Weekly data is taken on CFMS availability, and results to date satisfy the requirement of an unavailability of less than 1%.

A Health Physics computer is located in the Dose Assessment Area of the TSC, consisting of a Hewlett-Packard terminal and CRT. At present computer has the capability to collect and store information from the onsite meteorological tower. The Health Physics computer capabilities will be greatly expanded by the installation of a Hewlett-Packard 1000 central processing unit (Figure 8). It is to be installed in the Radiochemistry Lab on the 70-foot elevation of the Auxiliary Building, and the scheduled installation date is 5/21/82. It will receive data from the Nuclear Data 6685 analyzation unit in the Radiochemistry Lab, and a duplicate unit in the Health Physics Counting Room. The system will have terminals in the Unit 1 TSC, and information from the Unit 1 data acquisition units will be available for display at the Unit 2/3 terminal.

An "Apple II" microcomputer normally located in the Control Room is relocated to the Dose Assessment Area of Room 238 during emergency situations. The unit is made up of a keyboard and CRT, printer, and two disc drives. It is used for source term and dose assessment and offsite dose projections. Based on manual inputs, it will also provide guidance from which protective action recommendations can be made.

The analysis of liquid or airborne samples is performed in the normal plant laboratory facilities. The Turbine Plant Lab, located behind the control room, is used for secondary system analysis (although "hot" samples can be drawn in the event of a primary-to-secondary leak).

The Radiochemistry Lab on the 70-foot elevation of the Auxiliary Building is used for primary system analysis and radwaste liquid analysis. It is equipped with an Ion Chromatograph and a Microprocessor Analyzer used for trace analysis of ion electrodes. It also houses a Liquid Scintillation Counter that analyzes tritium, and the previously discussed ND 6685 gamma spectrometer computer system. The Health Physics Counting Room (also located on the 70-foot elevation of the Auxiliary building) is equipped with an ND 6685 computer using a germanium-lithium (Ge-Li) detector for the radioisotopic analysis of contamination smears and air samples obtained by the radiological monitoring teams. Finally, there is a separate Post Accident Sampling System (PASS) Lab on the 9-foot level of the Radwaste Building. This sample system uses the regular primary system sample lines, but it has the capability of diluting "hot" samples for analysis, or allows drawing the hot samples into a cask for transportation to an offsite facility for analysis.

Most of the power to the TSC used for lighting and outlets is supplied by a non-regulated, non-emergency, lighting panel. However, the equipment in the TSC that requires regulated, uninterruptable power (the CFMS system, the Health Physics computer, and emergency lighting) comprises an electrical load that will not degrade any plant emergency power supplies.

H. Records Availability and Management

A complete and up-to-date set of plant records, procedures, Technical Specifications, Final Safety Analysis Report, and various drawings and schematics is kept in bookshelves and lockers in the Technical Assessment Area of Room 248A. The procedures include Chemistry and Health Physics procedures, as well as Units 2/3 Normal and Emergency Operating procedures. For a list of typical documents and records kept in the Technical Support Center, refer to Appendix 1, Technical Support Center Inventory.

III. Operational Support Center

A. Function

The Operational Support Center (OSC) serves as the onsite area for personnel to assemble in support of the emergency effort. It provides a location where plant personnel can be coordinated during emergencies, and aids in restricting control room access to those persons requested by the Watch Engineer. It is activated during Alert, Site Emergency and General Emergency events. However, the Watch Engineer has the option of activating the TSC during an emergency classified as an Unusual Event. Operations from the OSC are directed by the Emergency Group Leader. He coordinates the personnel available for emergency activities.

The personnel reporting to the Emergency Group Leader include personnel from maintenance (who perform damage control and corrective maintenance), operations (who serve as Fire Brigade and Rescue team members), and health physics (who perform onsite and offsite radiological surveys.) Actually present in the activated OSC is the Emergency Group Leader, a recorder who maintains status boards and keeps the OSC log, a communicator who handles the telephone communications, and the various team leaders. The team members themselves gather in the hallway just outside the OSC to receive assignments from their respective team leaders.

B. Habitability (Figures 9 and 10)

The OSC is located on the 70-foot elevation of the Auxiliary Building, in Room 403. During non-emergency periods, this room serves as the Health Physics Radiation Exposure Permit Office. The characteristics of the Auxiliary Building are discussed in section II.D.

The OSC consists of two rooms, one 10' x 20', the other 20' x 20', for a total area of 600 square feet (Figure 9). The staffing level of the

OSC varies with the emergency classification with approximately 10 persons being the maximum number present. At this staffing level, there is 60 square feet of working space for each person present in the OSC.

In the west room of the OSC is a cabinet with anti-contamination clothing, maslin cloths, and sheet plastic. Also in this room are 3 large "Emergency Kit" lockers. The following is a list of typical key items contained in the lockers:

- o 24 sets of anti-contamination cloths
- o 4 Biomarine closed-circuit rebreathers
- o 12 particulate masks with spare cannisters
- o 50 dosimeters and finger rings
- o 10 alarming dosimeters
- o 24 film badges
- o 1 box of potassium-iodine (KI) thyroid-blocking tablets

For an Operational Support Center Inventory List, refer to Appendix 2 for a list of typical equipment. The Maintenance Group insures an "Emergency Tool" Locker in this room is adequately provisioned. This locker contains various hand tools to be used for damage control and corrective maintenance during the emergency effort. Representative items in this locker are a "porta-power" hydraulic ram, screwdrivers, and manila rope. Typical emergency equipment inventory lists for other equipment lockers are provided in Appendix 4.

Other items kept in the "Emergency Kit" lockers are portable radiation monitoring devices designated for use in the OSC or by the mobile radiological monitoring teams. Typical equipment includes:

- o CP-6s-low range (0-100 R/hr on their highest scale) beta-gamma ion chamber detectors
- o Teletectors-high range (0-1,000 R/hr on their highest scale) beta-gamma ion chamber detectors

- o Friskers (SML-2/PUG or equivalent)-beta-gamma contamination Geiger-Mueller detectors and
- o Radeco air samplers, with particulate, charcoal and silver zeolite cartridges.

In the east room of the OSC are the status boards and communications devices. These items are discussed in section III.C.

The OSC is a Radiation Zone 1 facility. Background radiation in the OSC during operation (with 1% defective fuel cladding) is less than .25 mR/hr. The OSC utilizes the Auxiliary Building Normal Ventilation System (Figure 10). This system is comprised of prefilters, cooling coils, and fans. There are no provisions for emergency ventilation of the OSC. Should the OSC become uninhabitable, provisions have been made for the performance of OSC functions at an alternate location (Lobby Area, 30 Foot Level, below the TSC), which is within the Control Room environmental envelope.

C. Communications and Information Handling (Figure 5)

The telephone communications currently available in the OSC are the Edison PAX system and a Plant Emergency Response Telephone (providing a direct, dedicated link to the TSC and Control Room). For more details on the emergency communications system, see Appendix 5 and Figure 5. There are two-way, walkie-talkie radios in the "Emergency Kit". These radios provide the communications link between the mobile radiological monitoring teams, the OSC, and the Health Physics Dose Assessment Team in the Technical Support Center.

A means of disseminating information in the OSC is through the use of the facility floor plans hung on the walls of the east OSC room. These floor plans show the various elevations of the Fuel Handling Building, the Auxiliary Building, Containment Building, and the Safety Equipment Building. All floor plans are acetate covered to allow them to be written on. There are also two "white boards" for recording miscellaneous information.

The west office of the OSC contains a bookshelf for various documents necessary for the emergency effort. Typical of the documents in these bookshelves are the SONGS Emergency Plan and Procedures, Health Physics Radiation Protection Procedures, survey maps, and a stick file of P&IDs. For a complete list of documents found in the OSC, refer to Appendix 2.

IV. Emergency Operations Facility

A. Function

The Emergency Operations Facility (EOF) is the facility designated by SCE to coordinate the offsite emergency responses of SCE and the various local and State agencies for the protection of the general public. Space is provided for local, State and Federal government representatives. The EOF serves as the coordination center for radiological and environmental assessments, and the place where recommendations for public protective actions are made.

At present, the functions of the EOF are satisfied by an Interim EOF, composed of the near-site San Clemente EOF and an onsite Emergency Support Center (ESC). However, upon completion of the EOF/Training facility, the San Clemente EOF and the ESC will no longer function as emergency facilities. The EOF portion of the EOF/Training facility will perform all of the functions presently performed in the interim facilities.

The EOF is staffed by Emergency Support Organization personnel and is activated during Alert, Site Emergency, and General Emergency events. It is in this facility that space is allocated for local, State and Federal representatives and, as such, is the point for face-to-face communications between SCE and offsite agencies. This interface between agencies facilitates coordination of offsite emergency actions, including public alert and notification. The EOF also serves as the

coordination center for the collection and assessment of radiological monitoring data, meteorological data, dose assessments and projections, and making protective action recommendations. It provides the space for Corporate engineering backup, administrative and logistical support. In addition, it is also used during the recovery effort.

B. Location, Structure, and Habitability (Figure 11)

The EOF will be located approximately one kilometer from the San Onofre Nuclear Generating Station (SONGS) at Japanese Mesa on The Camp Pendleton Marine Base. Access to SONGS is provided by existing roads.

Two entrances to the site are provided. In the event of an emergency, security personnel can restrict entry to the EOF at the frontage road. The heliport is located within the security area in close proximity to the security entrance to the EOF. The entire site will have security fencing and lighting.

The design of the EOF satisfies the habitability criteria that specifies that the facility shall be engineered for the design life of the plant. Ventilation protection of the EOF is accomplished by the use of HEPA filters. The EOF has a radiological protection factor greater than five.

For the use of personnel in the EOF, at least 25 sets of anticontamination clothing are available. There are also 70 dosimeters (low and high range), and 25 face masks with spare particulate and charcoal cannisters.

C. Staffing

The EOF is activated during Alert, Site Emergency, and General Emergency events. It will be staffed to provide overall management of licensee resources and the continuous evaluation and coordination of licensee

activities during and after these events. The EOF consists of a Coordination Center, Technical Assessment Area, Health Physics Area, Chemistry Area, Medical/Decontamination Facilities, Security Area, Telecommunications Area, Support Facilities, and Storage. The Technical Assessment Area is separated into the Plant Parameters Area, the NRC Area, and the Offsite Dose Assessment Center (ODAC).

The Coordination Center (decision-making area) includes space for the following 55 personnel:

- EOF Director
- City of San Clemente (3)
- Orange County (3)
- Orange County Sheriff (2)
- San Diego County Health (2)
- Marine Corp-Camp Pendleton (3)
- California Parks and Recreation (2)
- California Radiological Department (2)
- USEPA (3)
- SCE Communications Staff (5)
- City of San Juan Capistrano (3)
- Orange County Health Department (2)
- San Diego County (3)
- San Diego County Sheriff (2)
- California OES (2)
- California Highway Patrol (2)
- U.S. Department of Energy (3)
- USNRC (5)
- NSSS (Reactor Supplier) (2)
- FEMA (1)
- Riverside County (1)
- San Bernadino County (1)
- Los Angeles County (1)
- Other (1)

An emergency locker is also provided in the EOF. For a typical inventory of the EOF emergency locker, see Appendix 3.

Space is provided in the Technical Assessment Area (Data Gathering and Distribution Center) for 23 people, including executive, technical and clerical personnel as follows:

- o SCE Engineers (5)
- o SCE Systems Tech (3)
- o SCE Clerical (1)
- o Bechtel Engineers (4)
- o Bechtel Systems Tech (2)
- o NRC Engineers (2)
- o NRC Systems Tech (2)
- o NRC Clerical (1)
- o NSSS Engineer (1)
- o NSSS Systems Tech (1)
- o Other (1)

For an Alert condition, SCE personnel in the Coordination Center include the Supervisor of Operations Support, the Nuclear Engineer for Emergency Planning, and a Corporate Communications Representative.

For Site Emergency or General Emergency conditions, the Vice President, Nuclear Engineering and Operations reports to the Coordination Center. He is assisted by the following:

- o Manager of Nuclear Engineering, Safety, and Licensing
- o Manager of Nuclear Engineering and Safety
- o Manager of Nuclear Affairs
- o Manager of Corporate Communications.

These personnel perform the following functions:

- o Authorize expenditures and utilization of manpower to mitigate the emergency condition.

- Assist in the coordination of all emergency response actions taken onsite and in the local communities.
- Assess the effects of the corrective actions taken to mitigate the accident.
- Support the station staff in informing local agencies by communications at the Senior Management level.
- Review and approve news releases prepared by Corporate Communications.
- Help the station staff to keep NRC and State OES informed of current status.
- Authorize services from the NSSS, AE, or other contract agency to support the Station Emergency Organization.
- Provide Senior Management level support to the Health Physics Leader and Emergency Coordinator in coordinating recommendations regarding public health.
- Act as official SCE Spokesman to the News Media.

The Offsite Dose Assessment Center (ODAC), along with the coordination center, is staffed to provide onsite and offsite radiological evaluations and to interface with offsite officials. The ODAC is staffed by the ODAC Coordinator (Orange County Public Health Physicist). He has the overall responsibility for the activities in the ODAC Area and is assisted by the following:

- The SCE Health Physicist, who assesses and interprets the radiological data received by the site and the radiological monitoring field team,
- The Technical Chartist, who maintains the displays on the status boards,
- The Situation Illustrator, who maintains displays on the 20 and 50-mile situation maps,
- An SCE Communicator, who forwards information received on the ODAC telephones,

- The State of California, Office of Emergency Services representative and Radiation Health Services representative, who provides technical support for offsite analyses, and
- The SCE Meteorologist, who receives and interprets meteorological data. The Meteorologist receives meteorological data hourly from the TSC and the National Oceanographic and Atmospheric Administration and, when requested, from the National Weather Service, Camp Pendleton Base Weather Service and local airports.

The remaining EOF staff includes secretarial support personnel, as necessary. The total number of personnel present varies with the emergency classification level, but at least 35 persons will be present upon EOF activation. In addition, a security staff is provided to man the EOF 24 hours per day and to allow access control for the EOF.

The EOF Director has overall command of the EOF and coordinates the activities of those present at the EOF.

D. Size (Figures 13, 14, 15)

The planned size of the EOF is 13,403 square feet and is subdivided into nine areas:

- Coordination Center
- Technical Assessment
- Health Physics
- Chemistry
- Medical/Decontamination
- Security
- Telecommunications
- Support Facilities
- Storage

When the EOF if fully staffed with a total of 55 people in the Coordination Center and 23 people in the Technical Assessment Area, each person is provided with a work space of at least 75 square feet. The size of the subdivided areas are as listed below:

o	Coordination Center	-	4,219 SF*
	55 people x 75 SF	-	4,125 SF
	Additional Allowance	-	94 SF
o	Technical Assessment Area	-	2,080 SF
	23 people x 75 SF	-	1,725 SF
	Additional Allowance	-	355 SF
o	Health Physics	-	833 SF
	-Laboratory	-	490 SF
	-Storage	-	343 SF
o	Chemistry	-	905 SF
	-Laboratory	-	663 SF
	-Storage & Instrumentation	-	242 SF
o	Medical Office/Treatment Room	-	450 SF
o	Security	-	2,255 SF
o	Telecommunications	-	426 SF
	-Communications Battery Room	-	180 SF
	-Communications Cable Room	-	246 SF
o	Support Facilities	-	625 SF

* SF - Square Feet

The Telecommunications Equipment Room provides space for the communications equipment. Batteries for eight hours of backup communications are contained in the Telecommunications Battery Room.

The size of the EOF and the arrangement of tables and desks in the areas allow sufficient space for EOF data system equipment needed to transmit data to other locations. Sufficient space is also available to perform repair, maintenance, and service of equipment, displays, and instrumentation. This space also provides ready access to functional displays of EOF data.

E. Radiological Monitoring

Radiological Monitoring instruments are provided for the protection of EOF personnel and are kept in the Chemistry Lab (Storage Room) until the EOF is activated. The dedicated, portable monitoring equipment will continuously indicate radiation dose rates and airborne radioactivity concentrations inside the EOF while it is in use during an emergency. The instruments available in the storage room of the EOF include the following:

- o Xetex Teletector #302B
- o Technical Associates Cutie Pie #CP-6M (2)
- o Technical Associates Frisker Monitor #SML-2 (2)
- o Radeco Air Sampler #H-809V1
- o Eberline Probe #HP-210T
- o Eberline Neutron Survey Instrument #PRS-2P/NRD (1)
- o Technical Associates Alarming Dosimeter #PDR-18 (10)
- o Dosimeter Corp. of America 0-200 MR Dosimeter #862 (100)
- o Dosimeter Corp. of America 0-1R Dosimeter #866 (10)
- o Dosimeter Corp. of America Dosimeter Charger #909 (2)
- o Iodine Air Monitors, Portable Radeco #H-809B2
- o Portable Alarming Area Radiation Monitors (7), Eberline, #RM16 & RD-17A Probe

The last instrument includes a local alarm to provide early warning to the EOF personnel of adverse conditions that may affect the habitability of the EOF.

F. Communications

The primary functions of EOF voice communications facilities will be:

- o EOF management communications with designated senior licensee manager in charge of the TSC

- o Communications to manage licensee emergency response resources
- o Communication to coordinate radiological monitoring
- o Communication to coordinate offsite emergency response facilities
- o Communications to disseminate information and recommend protective actions to responsible government agencies

The following paragraphs list the communications to be available in the planned EOF. For a detailed description of the Emergency Telephone System at SONGS, refer to Appendix 5.

ROLM CBX

The ROLM CBX (Computerized Branch Exchange) system is the primary means of communication within the EOF. The rotary dial telephone system has both internal and external capabilities. It directs telephone calls between internal extensions and through trunks, which are lines that connect a specific extension with an outside call.

The ROLM CBX system at the EOF includes 12 microwave trunks to the Santa Ana exchange. Redundant transmitters and receivers (both main and backup) are located at each end of the Santiago Peak relay station for a 99.99% reliability or one-half hour per year down time. A minimum of eight hour battery backup is available for the operation of the microwave transmitters and receivers. In the event that the microwave links are being utilized to 100% capacity, an additional 16 trunk lines are available to the San Clemente exchange. The Santa Ana exchange is the primary station utilized for external EOF communications. However, the microwave system automatically switches to the San Clemente exchange for the conditions described above. There are also forty-eight trunk lines between the EOF and the AWS available at all times. An external call can be made directly from most ROLM phones by dialing an access code, nine, and then the external number.

At least one CBX phone is located in the Chemistry Lab and in the HP Lab. One phone is provided at each desk in the Coordination Center, and in the ODAC and Plant Parameter Areas. A number of features of the ROLM CBX system can be utilized, as necessary, for multiple communications or convenience calling. A few of the most practical are listed below:

- o The flash function can be used to put your party on temporary hold. The ROLM flashphone has a separate flash key. The ROLM standard telephone uses the Switchhook to Flash.
- o Automatic Camp-On places your call to a busy extension into a waiting position so you don't have to place the call again. You are able to stay on the line until the co-worker is free at which time the call will be put through.
- o Camp-On Callback automatically calls you back when the extension of the party called is free.
- o Camp-On calls may also be used to alternate conversation between parties.
- o Conference Calls feature allows you to engage up to eight parties, including yourself, in one telephone conversation, but it is best to include no more than two other parties, for clarity.
- o Do Not Disturb feature temporarily blocks incoming calls and is initiated by first listening to the dial tone and dialing #5.
- o Executive override feature overrides a busy extension number, except for private calls.
- o A Force Route Override allows the CBX to automatically re-dial an external number over a different line.
- o Station Speed Calling allows you to establish a personal directory of telephone numbers for speed dialing.

SCE Specialty Phones (Figures 13, 14)

For a detailed description of the Edison-owned specialty phones, refer to Appendix 5. Specialty phones located in the EOF include the following:

- o Plant Emergency Response Telephone (PERT)
  - Coordination Center - Computer Area - 1
  - Communications Room - 1
  - Technical Assessment - Plant Parameter - 1
- o S.O.1 - Health Physics to ODAC - Beige Phone
  - Technical Assessment - ODAC Area - 1
- o S.O. 2/3 - Health Physics to ODAC - Beige Phone
  - Technical Assessment - ODAC Area - 1
- o State of O.E.S. Direct Line - Blue Phone (Future)
  - Coordination Center - Communications Area - 1
- o EDC - White Phone
  - Technical Assessment - Plant Parameter Area - 1
  - Coordination Center - Computer Area - 1
- o USMC Phone Exchange - Black Phone
  - Technical Assessment - ODAC Area - 1

Emergency Notification System (ENS) (Figures 13, 14)

Dedicated circuits are available to the NRC Operations Center via the ENS. One is located in the Technical Assessment-NRC Area. Another is located in the Coordination Center-Communications Area.

Health Physics Network (HPN) (Figures 13, 14)

HP networks (1 each) are located in the Technical Assessment-NRC Area, the Technical Assessment-ODAC area, and the Coordination Center-Communications Area.

Interagency Telephone System (ITS) (Figures 13, 14)

ITS phones (1 each) are located in the Technical Assessment-NRC Area and the Technical Assessment-ODAC Area and (2 each) in the Coordination Center-Computer Area.

Additional Communications

A four-channel radio control console is available for voice communications and includes a SCE health physics radio, ODAC radio, security radio, and a fire brigade radio. The ODAC radio provides communications to licensee mobile monitoring teams. A UHF/VHF radio and a voice frequency radio is available in the Dose Assessment Area. The EOF also contains an Orange County Teletype Message System including communications to the Communication Department of Orange County and the California Highway Patrol.

Other types of communications include a Unit 1 SPDS (TSC Computer), Unit 2 SPDS/CFMS, Unit 3 SPDS/CFMS, HP computers and a CIS terminal. These data systems will be discussed further in Section IV-G.

G. Instrumentation, Technical Data, Data System Equipment and Power Supplies

The currently operational Critical Function Monitoring System (CFMS) is described in section II-G. The Safety Parameter Display System (SPDS), which will be installed in the near future, is described in Section V. References to these sections should be made for a detailed discussion of current and planned instrumentation, data system equipment, power supplies and technical data.

A User's Guide will be available in the EOF describing the operation of the data systems. The Emergency Kit Inventory includes procedures for portable instrumentation.

Power supplies in the EOF include an Emergency Power Distribution Switchboard "EPPS" (120/208 VAC, 600A BUS), Emergency Power Switchboard "EPS" (277/480 VAC, 400 A BUS), and a minimum of two transformers. Emergency Lighting sources are found on Panel EP3 and Panel EL1.

The EOF contains the following Data System Equipment:

- o Unit 1 SPDS (TSC Computer)
  - Technical Assessment-Plant Parameter Area (1)
- o Unit 2 SPDS/CFMS

  Video Monitors, Display Generator and Keyboard
  - Technical Assessment-Plant Parameter Area (1)
  - Coordination Center-Computer Area (1)
- o Unit 3 SPDS/CFMS

  Video Monitor, Display Generator and Keyboard
  - Technical Assessment-Plant Parameter Area (1)
  - Coordination Center-Computers Area (1)
- o H.P. Computer

  CRT display
  - Technical Assessment-Plant Parameter Area (1)
  - Technical Assessment-ODAC Area (1)
  - Coordination Center-Computer Area (1)
- o CIS Terminal (Edison Computer)
  - Coordination Center-Administrative Area

*The Plant Parameter Area contains one display generator and keyboard only for Units 2 and 3.

H. Records Availability and Management

Records are stored and maintained in the EOF Resource Center, outside of the EOF envelope, in hard copy and/or microfiche. These are readily available and will be transferred to the EOF upon EOF activation.

The records include, as a minimum:

- o Technical Specifications
- o Operating Procedures
- o Emergency Operating Procedures

- o Emergency Plan
- o Emergency Plan Implementing Procedures
- o Final Safety Analysis Report
- o Offsite Population Distribution Data
- o Evacuation Analysis
- o Environs Radiological Monitoring Records
- o Employee Radiation Exposure Histories
- o Up-to-date records related to licensee, state, and local emergency response plans.
- o Up-to-date Drawings, Schematics, and Diagrams, including conditions of plant structures and systems down to the component level and in-plant locations of the systems.

V. SAFETY PARAMETER DISPLAY SYSTEM

A. Function

The Safety Parameter Display System (SPDS) is designed to monitor critical information associated with selected safety functions and to display that information as an aid to the reactor operator. The system is comprised of two independent display systems. One system is a non-qualified primary display, which is the current Critical Functions Monitoring System (CFMS). The other system is a Class 1E qualified back-up display, the Qualified Safety Parameters Display System (QSPDS). Both of these systems are designed and developed by Combustion Engineering, Inc.

These two combined data acquisition systems are able to display information required by the reactor operations personnel in the Control Room and also to support personnel in both the Technical Support Center (TSC) and Emergency Operations Facility (EOF). The information provided by the associated sensing equipment includes, but is not limited to, the following critical information:

- o Reactivity Control

- o Reactor Core cooling and heat removal from the Primary System
- o Reactor Coolant System Integrity
- o Radioactivity Control
- o Containment Integrity

This information will aid the reactor operator in the detection of any abnormal operating conditions. To provide this information during all normal and abnormal operating conditions, the system is designed to have a high operational availability.

B. Location (Figures 16)

As described, the SPDS is comprised of two independent yet integrated systems. The computer hardware and display capabilities for these two systems are located as follows:

- o The primary SPDS (CFMS) computer is located in the Unit 2 Computer Room behind the Unit 2 Control Room. The computer input is displayed at the following:
  - o One dislay in the Unit 2 Control Room
  - o Two displays in Room 238 of the TSC
  - o Displays in the EOF
- o The back-up SPDS (QSPDS) microcomputer and its display is located in the Unit 2 Control Room.

C. Size

Both computer display systems are sized to accommodate all required input data with ample capability for expansion.

D. Staffing

The systems are designed such that no additional staffing is required. Both systems will be available to the shift supervisor, the control room senior reactor operator, the shift technical advisor and at least one reactor operator.

E. Display Considerations

The Critical Function Monitoring System, the primary display system, is described in detail concerning its display considerations and display selection in an earlier section (refer to Section II.G.).

The Qualified Safety Parameter Display System (QSPDS), the back-up display system, utilizes a microprocessor-based design for the signal processing equipment in conjunction with a display having alphanumeric representation. The QSPDS displays the following:

- o Safety parameters according to safety function
- o Additional safety parameter information on other pages (such as sensor inputs needed to calculate safety parameter)
- o Alarm indication

The QSPDS provides a two channel, seismically qualified, Class 1E display of the safety parameters in the control room. Human factors engineering and man-machine interface considerations are integral to the QSPDS display design.

F. Design Criteria

The Safety Parameters Display System is designed to operate during all phases of the plant operations.

The CFMS takes appropriate plant data and structures it into a grouping which effectively defines a function critical to the safe operation of the nuclear power plant. It renders the operation of the nuclear power plant less subject to operator errors emanating from confusion or resulting from ambiguity of systems indications. The operator is able to call up displays, determine system and component status, receive, acknowledge and clear alarms, and determine the status of the functions determined to be critical to the safe operation of the plant.

The QSPDS is the safety grade processing and display system which is qualified to Class 1E standards. The design of the QSPDS addresses the NUREG-0696 seismic criteria for the SPDS, NUREG-0737 Inadequate Core Cooling (ICC) instrumentation processing and display, and processing and display for potential additional Regulatory Guide 1.97 parameters. In addition, the QSPDS satisfies criteria set forth in NUREG-0696 regarding uninterrupted performance during and subsequent to events expected to occur during the life of the plant including earthquakes.

Isolation and data linking of Class 1E signals from the QSPDS to the Critical Function Monitoring System allows the entire system to function without interruption of display. It is designed to be a reliable aid to reactor operations personnel.

The first three sections of this report provide a physical and functional description of the facilities that the San Onofre Nuclear Generating Station has designated as Emergency Response Facilities. They are described as they exist at the date of the report. As experience is gained in their operation, changes will be made to the facilities to incorporate this experience and other improvements in facility design. The final two sections discuss the EOF/Training Facility that is currently under construction, and the Qualified Safety Parameter Display System, to be installed in the near future. The facility and hardware described in these two sections may also be subject to changes before their completion.

TABLES

TABLE 1

ABBREVIATIONS & LEGEND

AWS	ADMINISTRATION, WAREHOUSE AND SHOP
BP	BLUE PHONE - CALIFORNIA OFFICE OF EMERGENCY SERVICES (Future)
CET	CORE EXIT TEMPERATURE
CFMS	CRITICAL FUNCTION MONITORING SYSTEM
CRT	CATHODE RAY TUBE
CVCS	COOLANT VOLUME CONTROL SYSTEM
EA	EMERGENCY ADVISOR
EC	EMERGENCY COORDINATOR
EDC	EDISON DECISION CIRCUIT - WHITE PHONE
ENS	EMERGENCY NOTIFICATION NETWORK - NRC DIRECT LINE, RED PHONE
EOF	EMERGENCY OPERATIONS FACILITY
ESF	ENGINEERED SAFETY FEATURES
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FIRE	USMC FIRE DEPARTMENT DEDICATED LINE, ORANGE PHONE
HEPA	HIGH EFFICIENCY PARTICULATE AIR
HJTC	HEATED JUNCTION THERMOCOUPLE SYSTEM
HP	HEALTH PHYSICS
HPL	HEALTH PHYSICS LEADER
HPN	HEALTH PHYSICS NETWORK - NRC DIRECT LINE, GREEN PHONE
HVAC	HEATING, VENTILATION, AND AIR CONDITIONING
ICC	INADEQUATE CORE COOLING
I/O	INPUT/OUTPUT
ITS	INTER AGENCY TELEPHONE SYSTEM - YELLOW PHONE
LOCA	LOSS OF COOLANT ACCIDENT
MNO	MANAGER NUCLEAR OPERATIONS
NRC	NUCLEAR REGULATORY COMMISSION
NSSS	NUCLEAR STEAM SUPPLY SYSTEM

ABBREVIATIONS & LEGEND (Continued)

ODAC	OFFSITE DOSE ASSESSMENT CENTER
OL	OPERATIONS LEADER
PASS	POST ACCIDENT SAMPLING SYSTEM
PAX	PRIVATE AUTOMATIC EXCHANGE
PB	PAX BELL COMBINATION PHONE
PERT	PLANT EMERGENCY RESPONSE TELEPHONE
P&ID	PIPING AND INSTRUMENTATION DIAGRAM
QSPDS	QUALIFIED SAFETY PARAMETER DISPLAY SYSTEM
RCS	REACTOR COOLANT SYSTEM
SC	SAN CLEMENTE
SCE	SOUTHERN CALIFORNIA EDISON
SONGS	SAN ONOFRE NUCLEAR GENERATING STATION
SPDS	SAFETY PARAMETER DISPLAY SYSTEM
TSC	TECHNICAL SUPPORT CENTER
USEPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
USMC	UNITED STATES MARINE CORPS
WP	WHITE PHONE - EDISON DECISION CIRCUIT

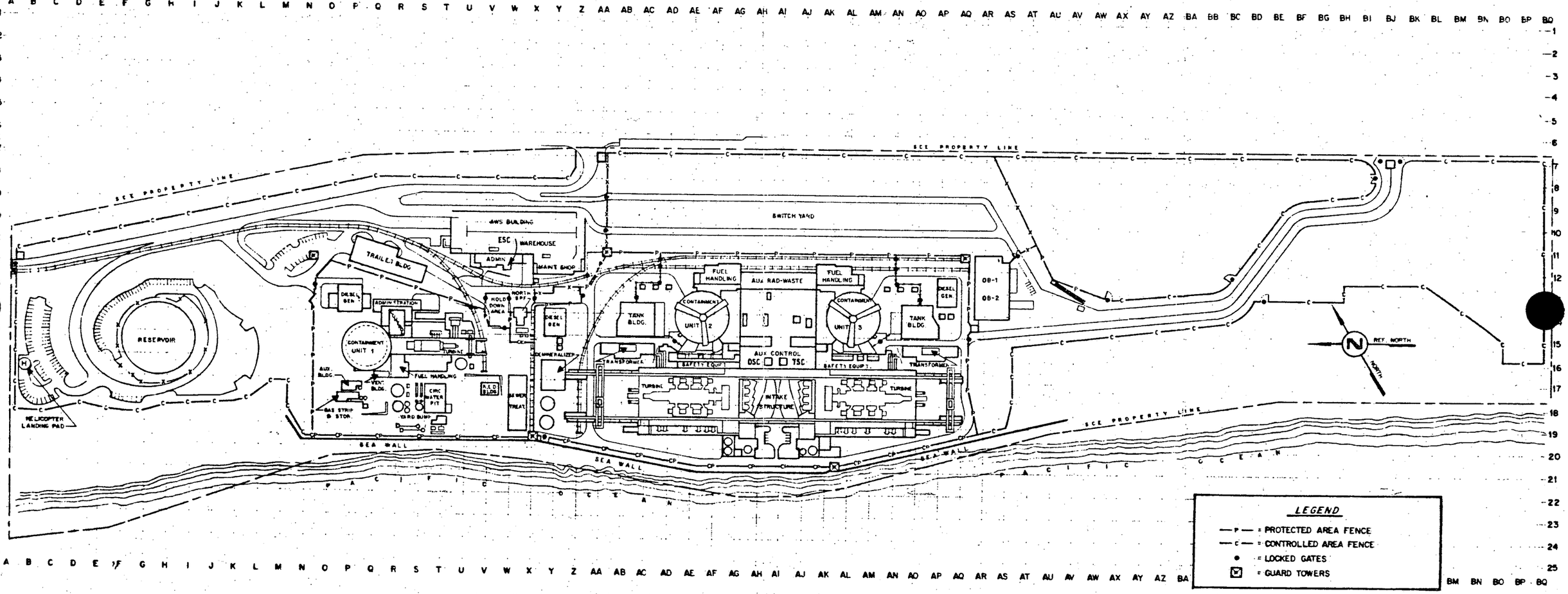
INDICATES DESK PHONE (PLAN)

INDICATES WALL MOUNTED PHONE (PLAN)

INDICATES WALL MOUNTED PHONE (ELEVATION)

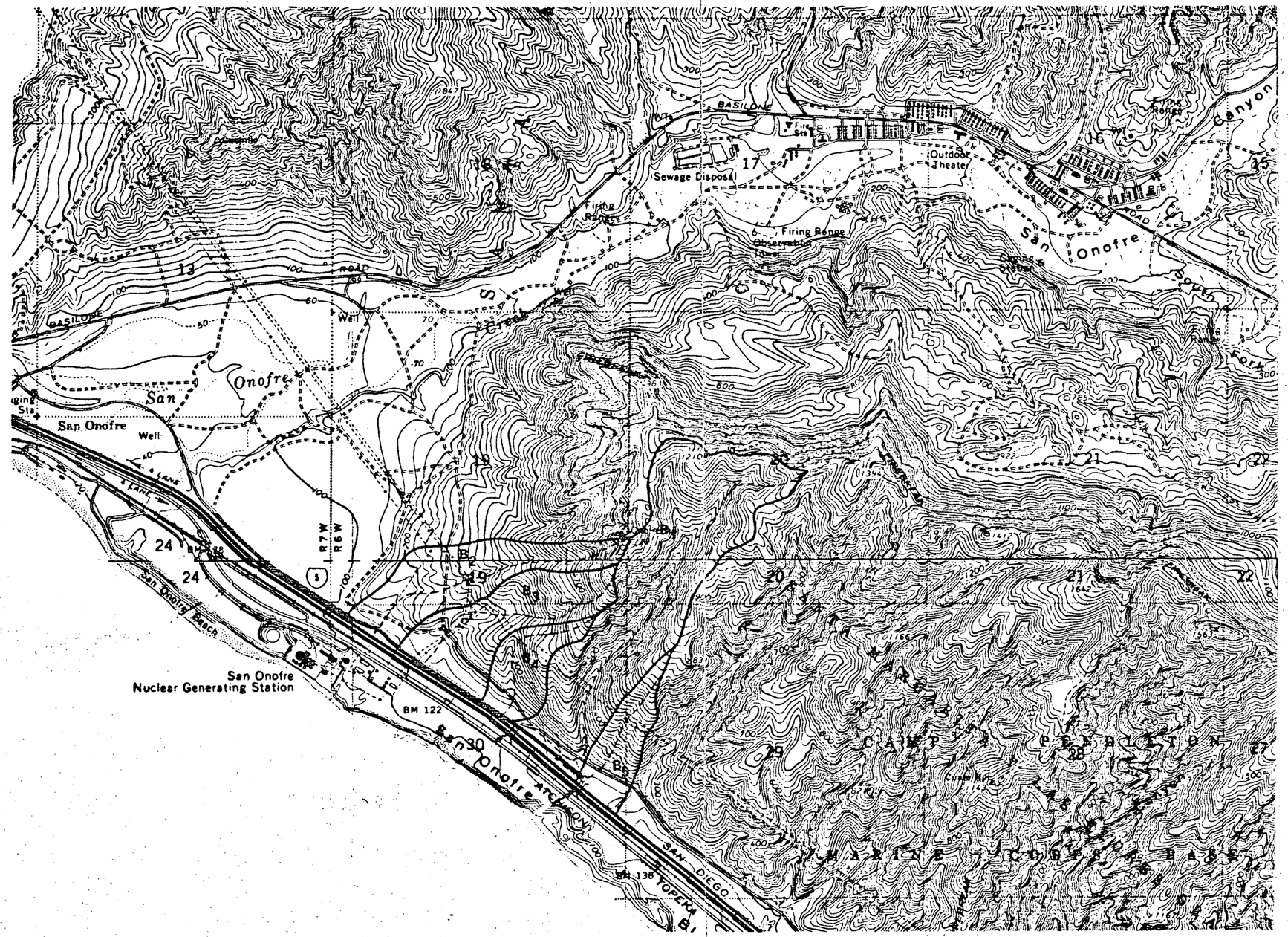
DOTTED SYMBOLS INDICATE DESK/WALL PHONE OPTION

FIGURES



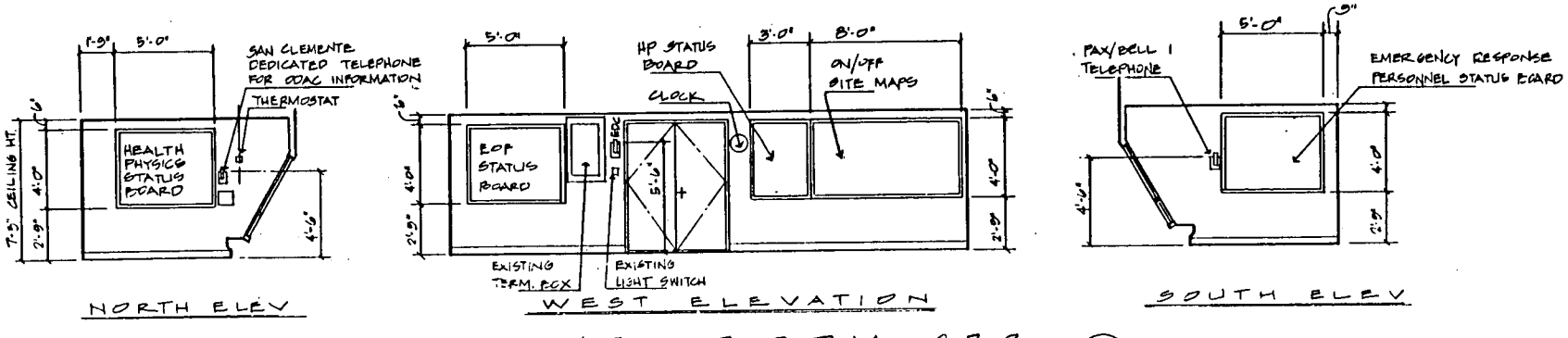
SAN ONOFRE NUCLEAR GENERATING STATION

FIGURE 2

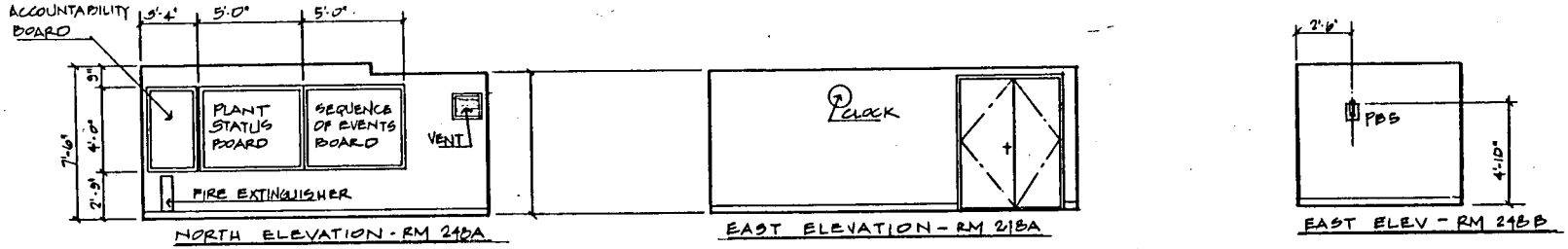


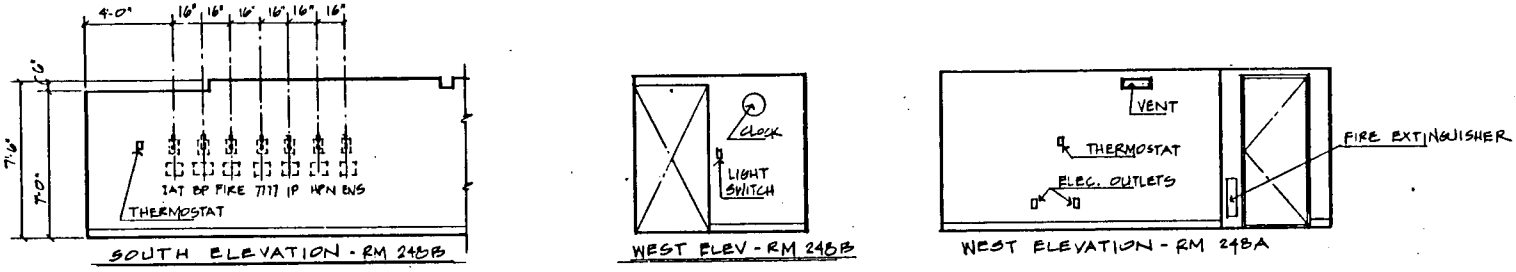
SAN ONOFRE NUCLEAR GENERATING STATION AREA MAP

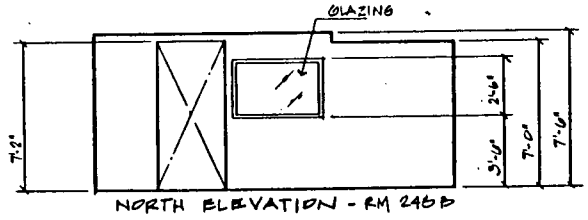
FIGURE 1



ELEVATIONS ROOM 238 (A)



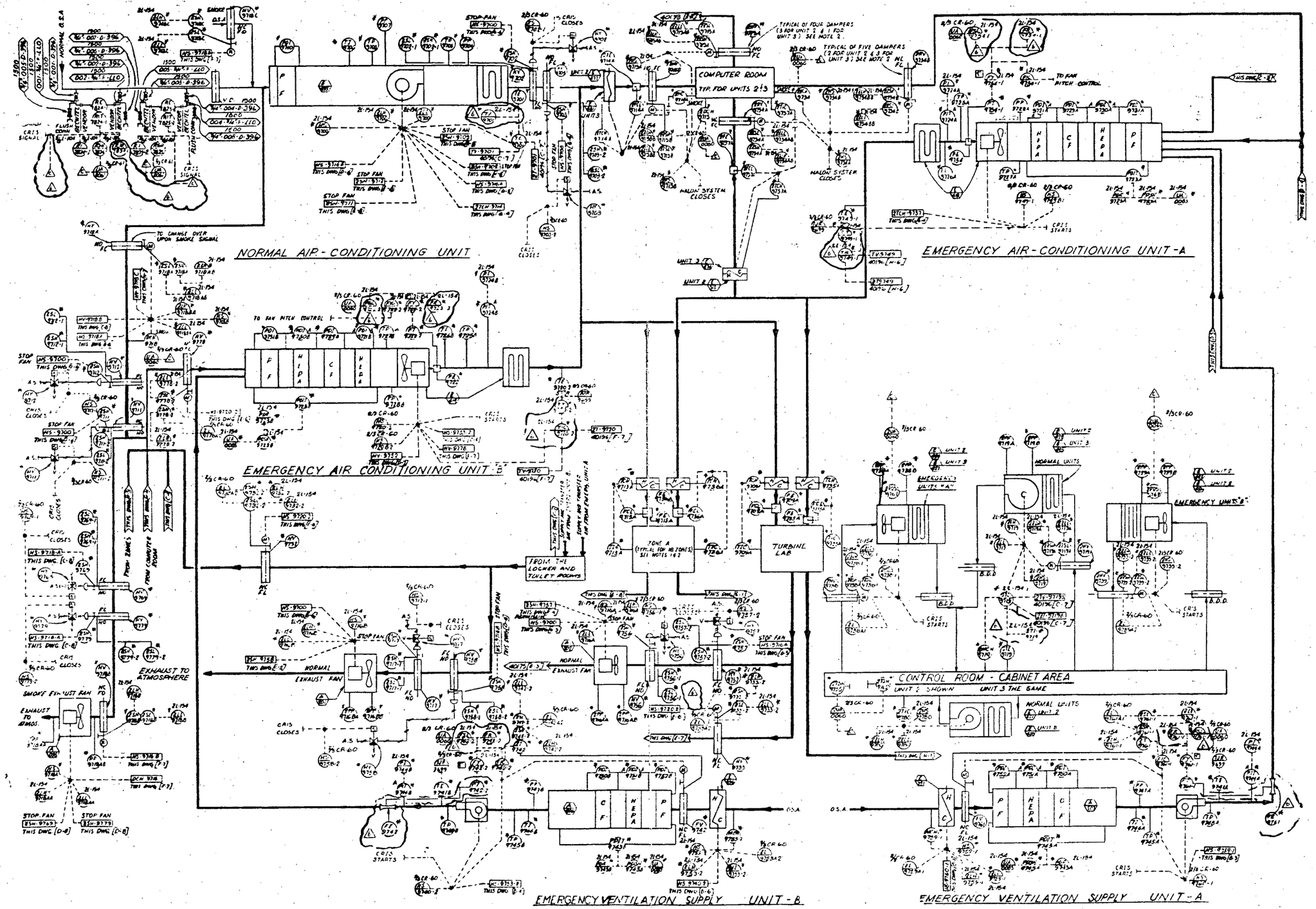




ELEVATIONS - ROOMS 248 A & B (B)

82-089

TECHNICAL SUPPORT CENTER ELEVATIONS FIGURE 3b



CONTROL ROOM COMPLEX

NORMAL AND EMERGENCY SYSTEMS

AUXILIARY BUILDING HVAC SYSTEM

FIGURE 4a

ELECTRIC DUCT HEATERS

EQUIPMENT NO	LOCATION	SYSTEM	SERVICE	QUALITY CLASS	SEISMIC CLASS	I.R.D RADS	DUCT SIZE IN	AIR CFM	AIR ENT °F	AIR LVG °F	AIR PRESS DROP MAX	ELECTRICAL DATA KW	VOLT	Φ	HZ	NO OF CIRCUIT	NO OF STAGES	DESIGN BASED ON AND REMARKS
E 1:7	AUXILIARY BLDG EL 9'	COMMUNICATION PUBLIC ADD RM	COMMUNICATION ROOM	IX	III	NEGLI-GIBLE	SEE NOTE No 1	520	57	78.7	0.1"	4.0	480	3	60	1	1	INDEECO - TYPE TFXU
E 1:6			PUBLIC ADDRESS ROOM					520	57	78.9		4.0						
E 1:5			BATTERY RM.					400	57	90.5		5.0						
E 1:11		CHILLER RMS.	CHILLER RMS.	III	II			9550	36	50		13.0						SUPPLIED WITH UNIT A-051
E 1:8	AUXILIARY BLDG EL 30'-0"	CONTROL RM COMPLEX	CONTROL RM UNIT 2					6100	54	72.1		15.0						INDEECO - TYPE TFXU
E 1:9 E 1:12			CONTROL RM UNIT 3					5815		72.2		13.5						
E 1:97			CABINET AREA UNIT 2					2110		92.5		25.6						
E 1:84								1425		92.3		17.2						
E 1:77 E 1:79			CABINET AREA UNIT 3					2110		92.3		25.6						
E 1:85 E 1:87								1425		92.3		17.2						
E 1:117 E 1:72			COMPUTER RM UNIT 2					4140		73.5		25.6						
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E 1:81 E 1:116			COMPUTER RM UNIT 3					4140		73.5		25.6						
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E 1:71 E 1:102			MEN LOCKER ROOM					570		81.5		5.8						
E 1:87 E 1:107			SPECIAL AGENT					220		77.1		1.6						
E 1:78			LOBBY 201					1370		78.7		10.7						
E 1:103 E 1:104			CONTROL GUARD					410		75.4		2.9						
E 1:83 E 1:109			VISITORS WAITING GALLERY					480		72		3.0						
E 1:111 E 1:111			ILLUSTRUMENT REPAIR (LOWER)					1460		78.0		11.1						
E 1:93 E 1:113			TURBINE LAB					1000		78.2		7.7						
E 1:88 —			AUXILIARY WEST 200' 201 (UPPER)					275		81.0		2.3						
E 1:115 E 1:108			KITCHEN					550		74.7		3.6						
E 1:1 —			WOMEN LOCKER RM (NORMAL)					300		77.1		2.2						
E 1:2 —			AUXILIARY LOCKER RM WEST 201 (NORMAL)					400		77.1		2.9						
E 1:14 E 1:106			WATCH ENG ROOM					300		78.2		2.3						
E 1:17 —			AUXILIARY WEST (LOBBY NORMAL)					860		72.0		4.9						
E 1:97			CABINET AREA UNIT 2					3535		92.3		42.8						
E 1:100 E 1:97			EMERGENCY VENTILATION UNIT	II	I	18.10		1000	36	46		3.2						
E 1:99 E 1:97			FOREMANS OFFICE	III	II	NEGLI-GIBLE		470	54	74.5		3.0						
E 1:118			ILLUSTRU REPAIR MAIL (UPPER)					715	54	74.7		4.7						
E 1:74			LOBBY 201 (NORMAL)					685		78.1		5.4						
E 1:117			ILLUSTRUMENT REPAIR MAIL					715		74.7		4.7						

CONTROL ROOM COMPLEX HVAC ZONES

FIGURE 4b

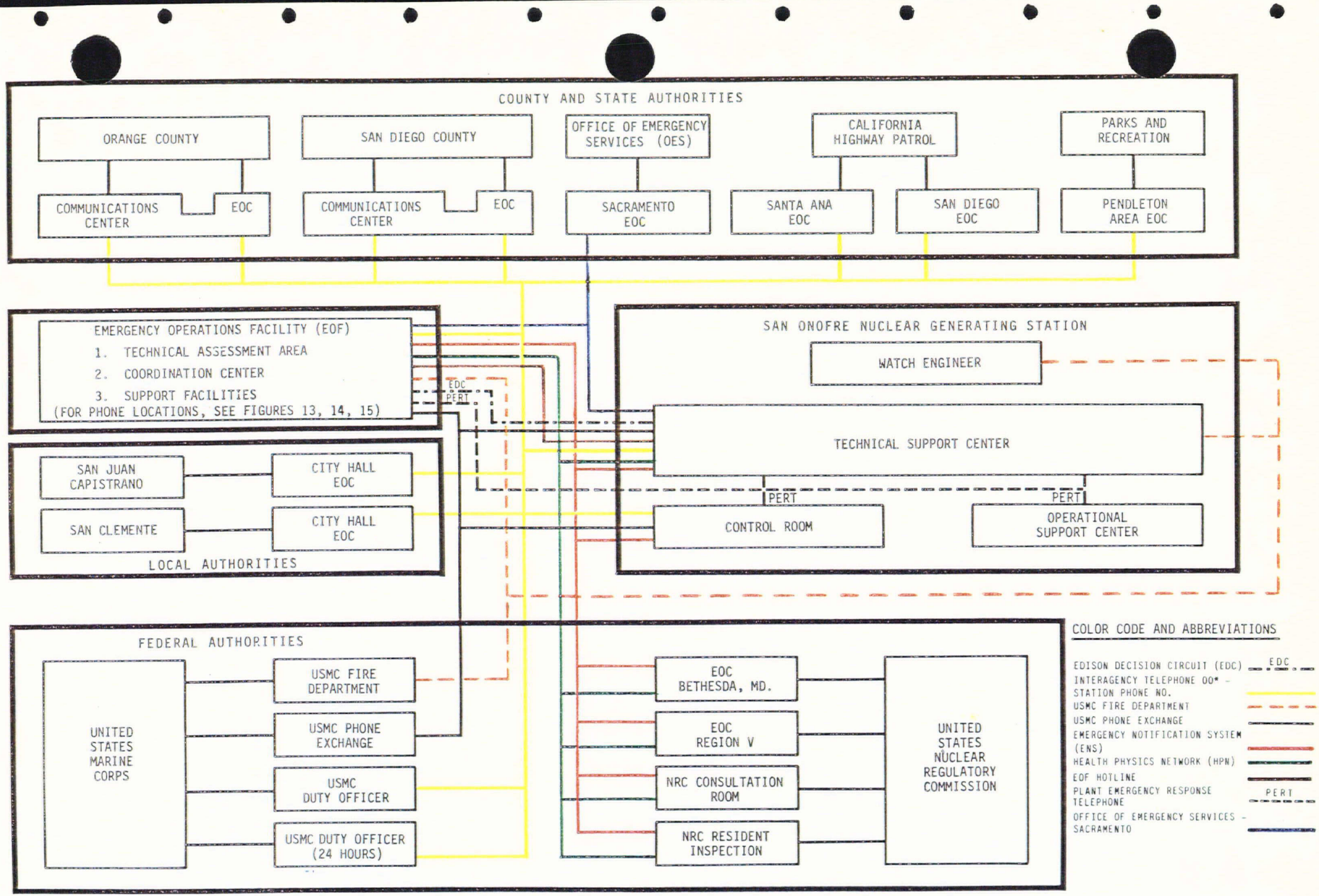
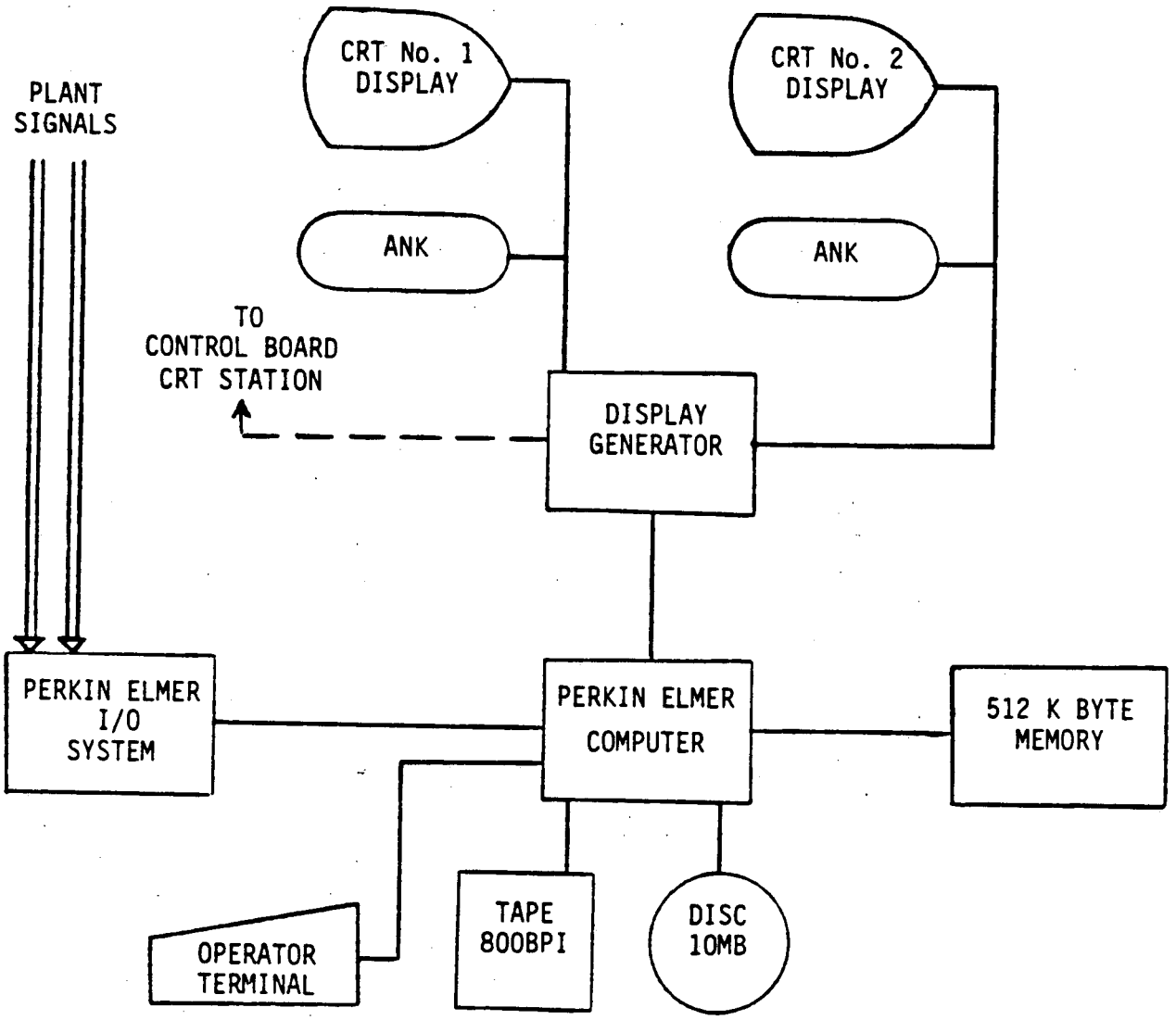
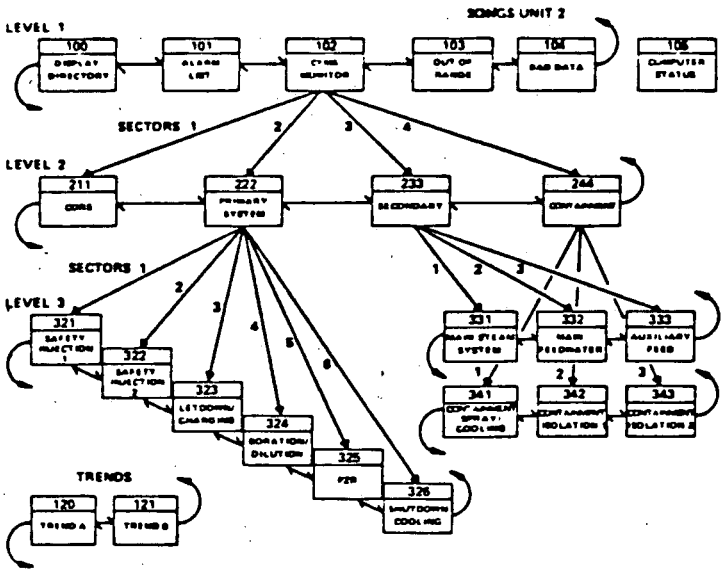


FIGURE 5 - EMERGENCY COMMUNICATIONS SYSTEM

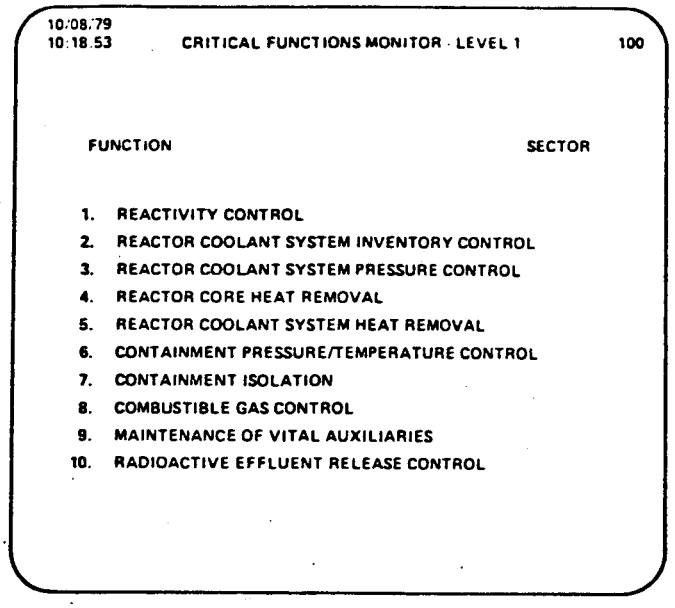


TYPICAL CRITICAL FUNCTION MONITORING SYSTEM

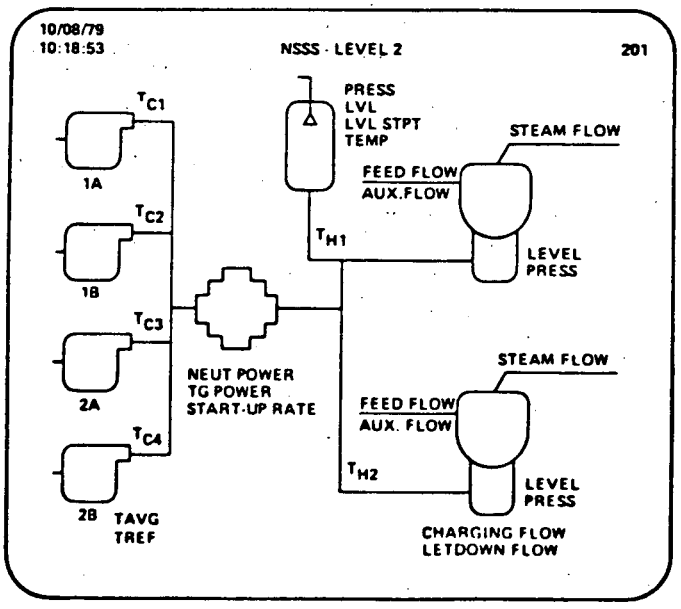
FIGURE 6



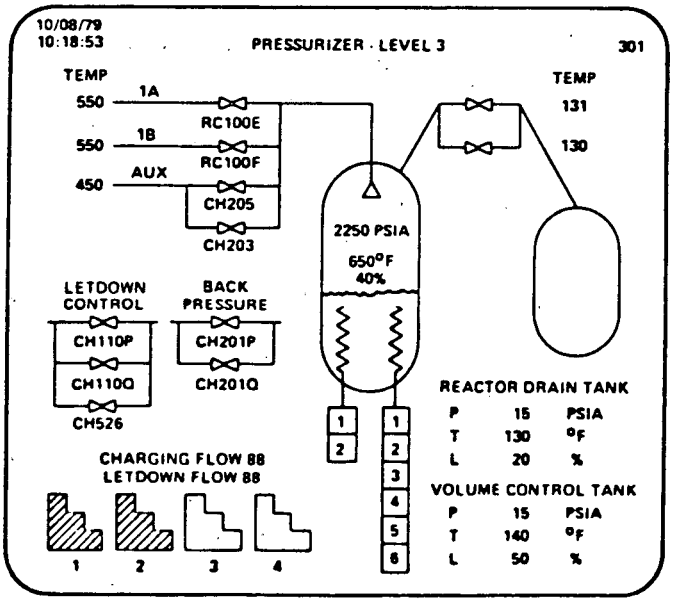
(a) Display Hierarchy



(b) Typical Level 1 Display



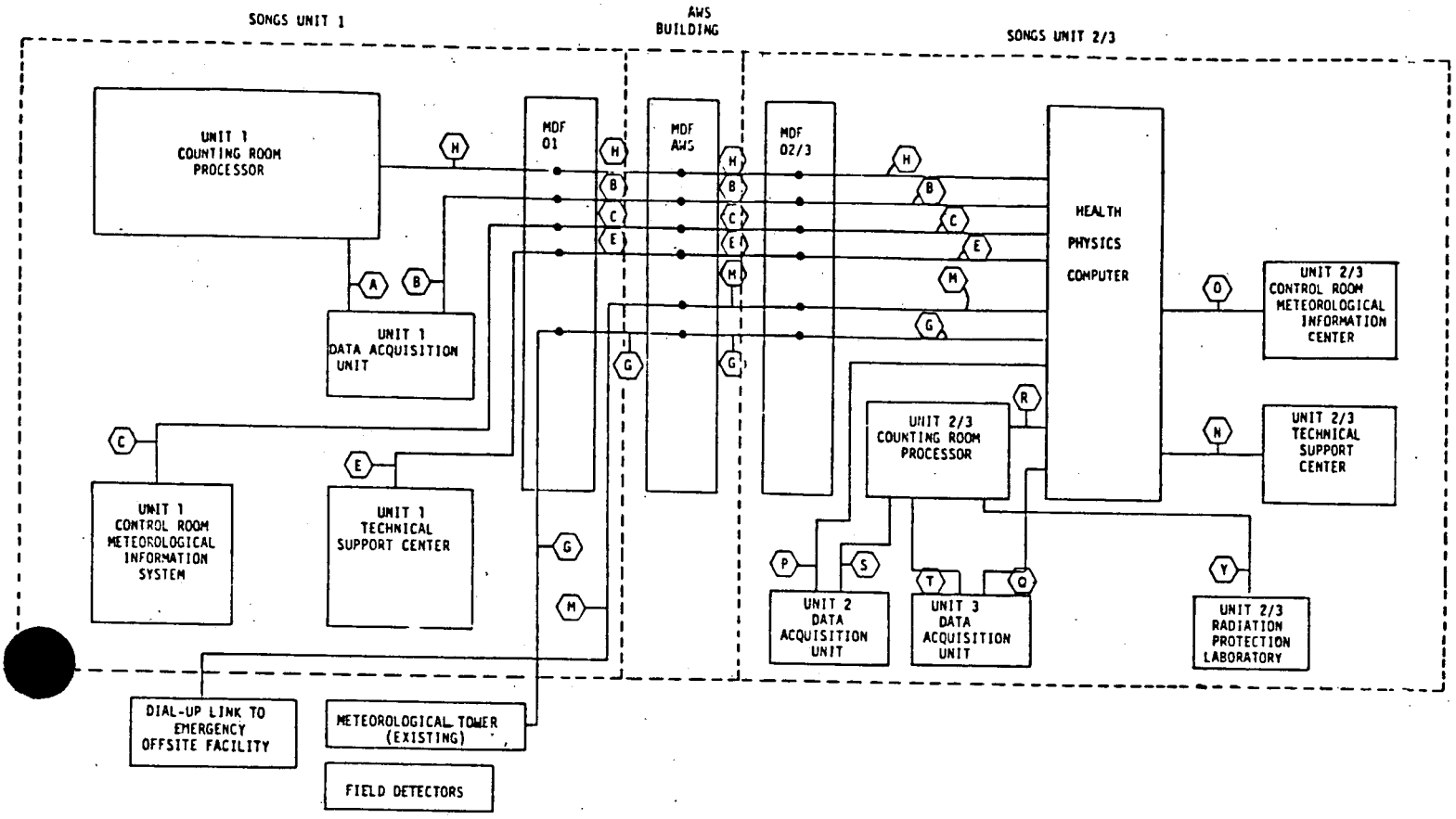
(c) Typical Level 2 Display



(d) Typical Level 3 Display

CFMS DISPLAY HIERARCHY

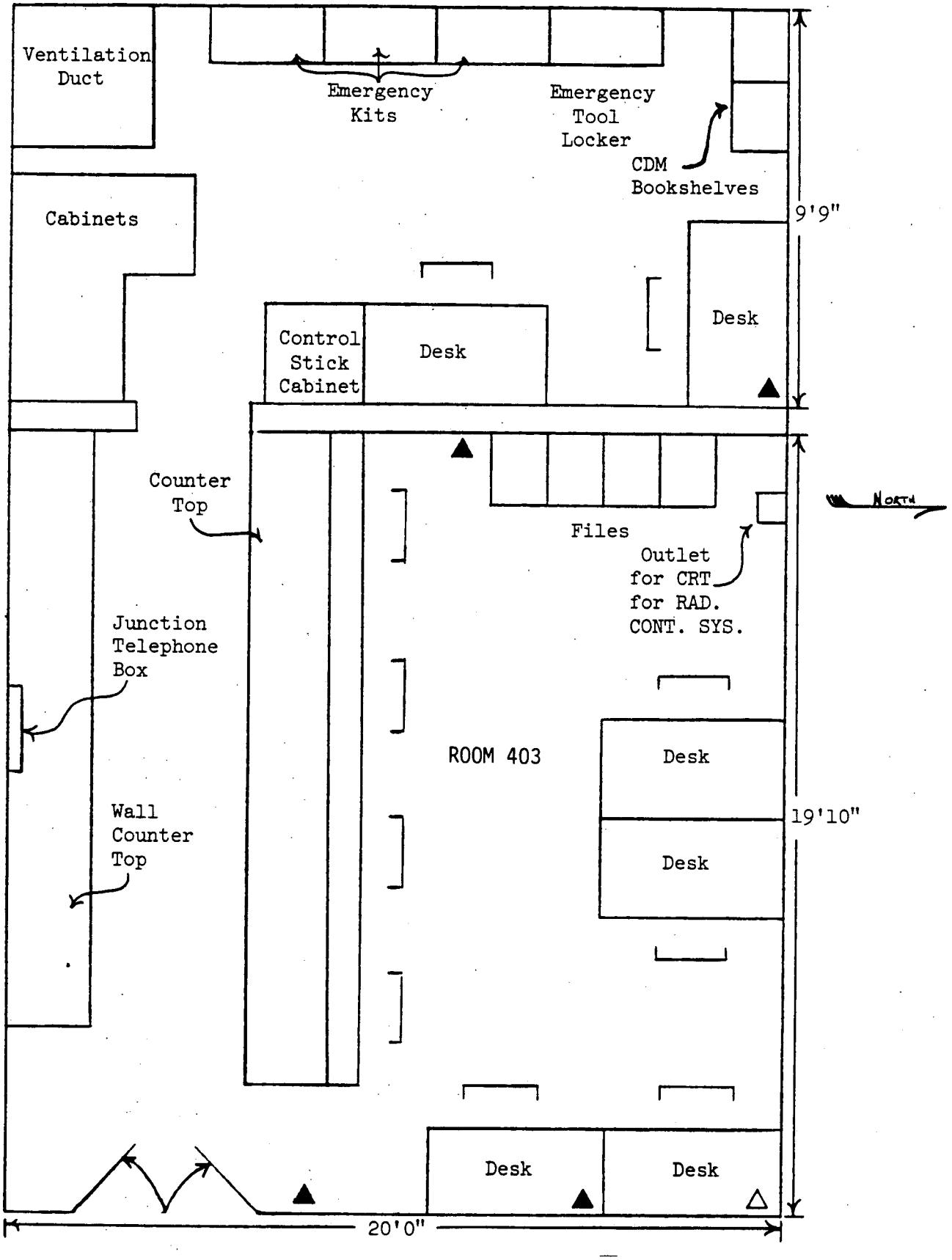
FIGURE 7



PROPOSED METEOROLOGICAL/RADIOLOGICAL

DATA ACQUISITION SYSTEM

FIGURE 8

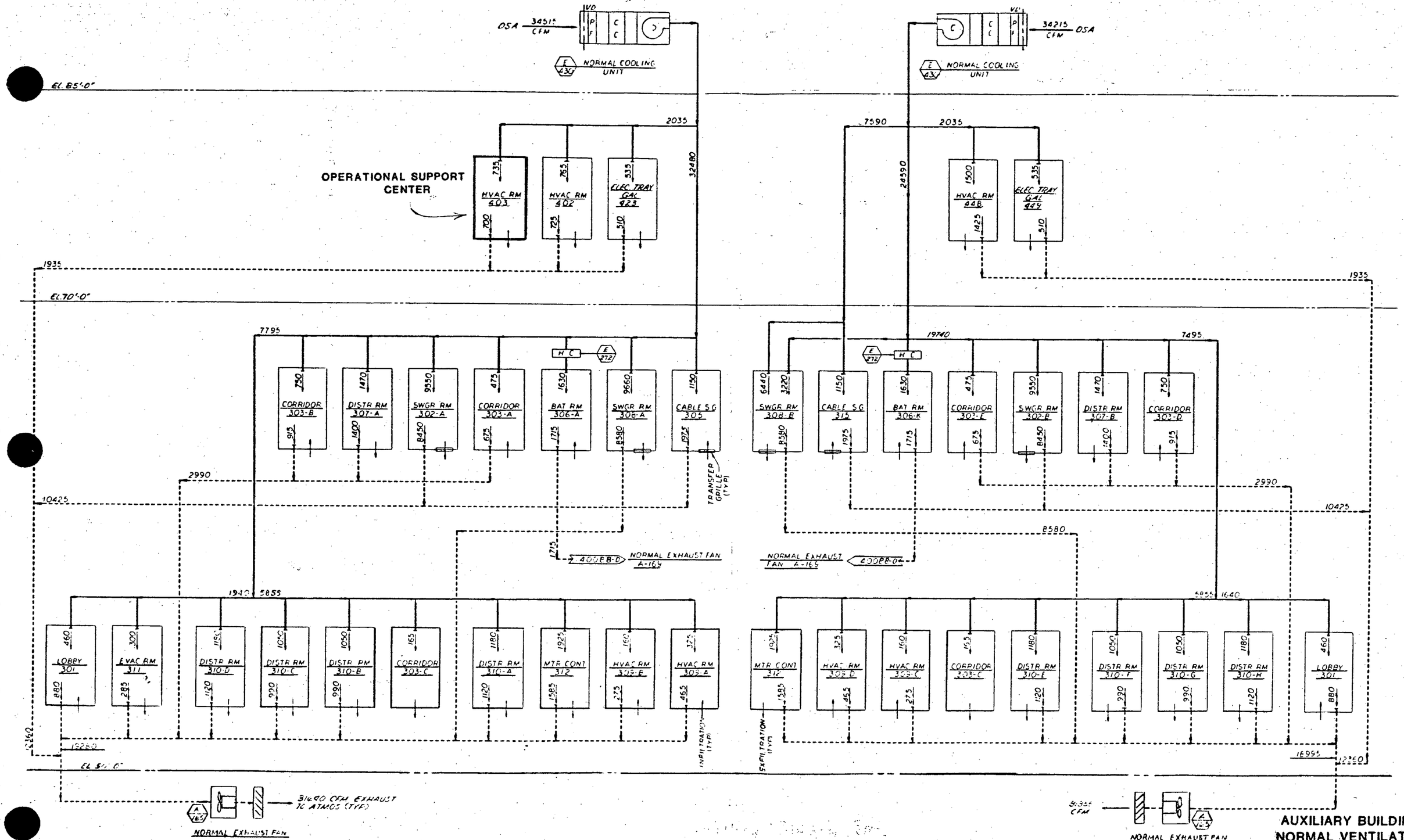


▲ PAX Phones

△ PERT Phones

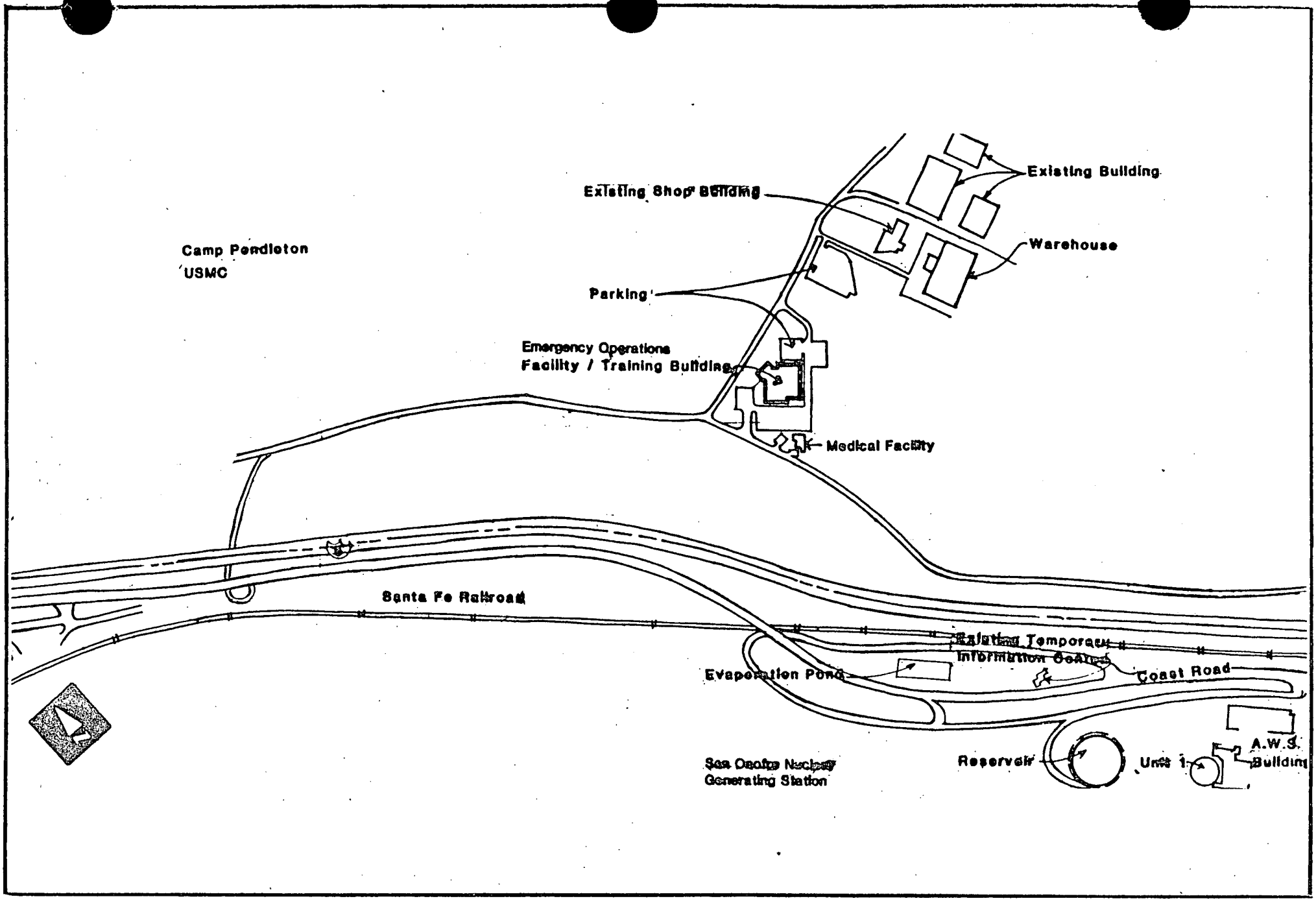
OPERATIONAL SUPPORT CENTER

FIGURE 9



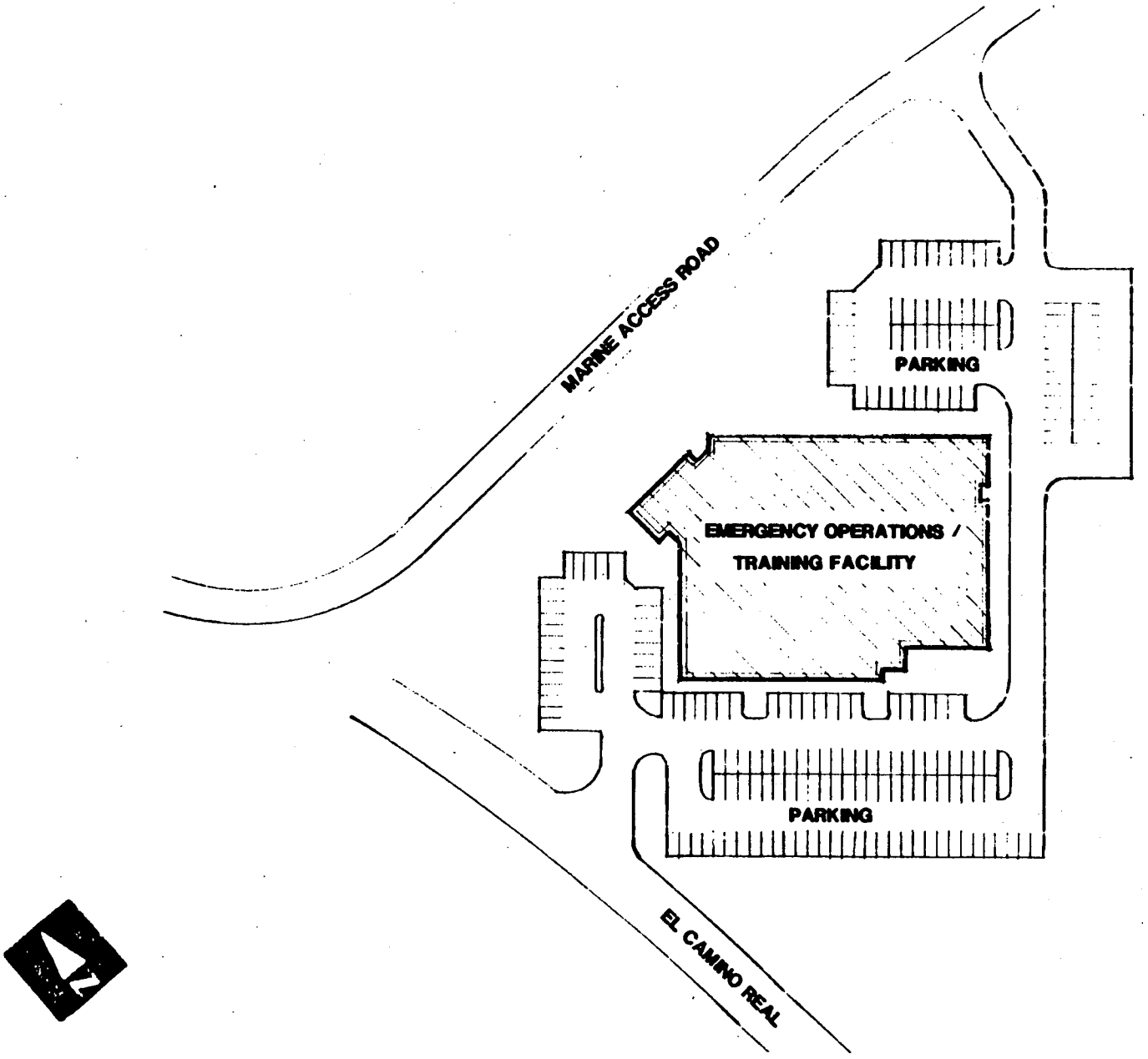
AUXILIARY BUILDING NORMAL VENTILATION

FIGURE 10



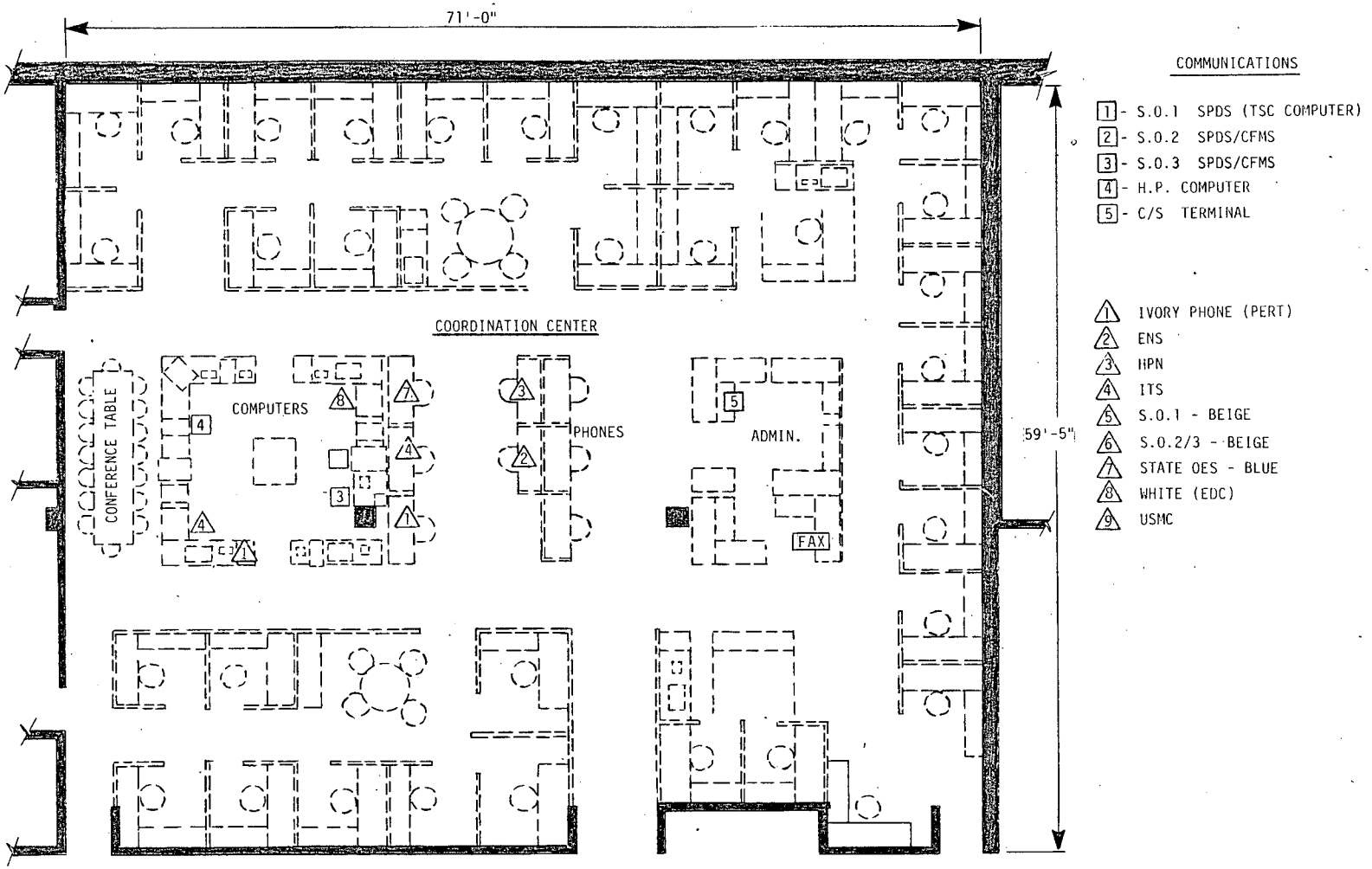
EMERGENCY OPERATIONS FACILITY SITE LOCATION

FIGURE 11



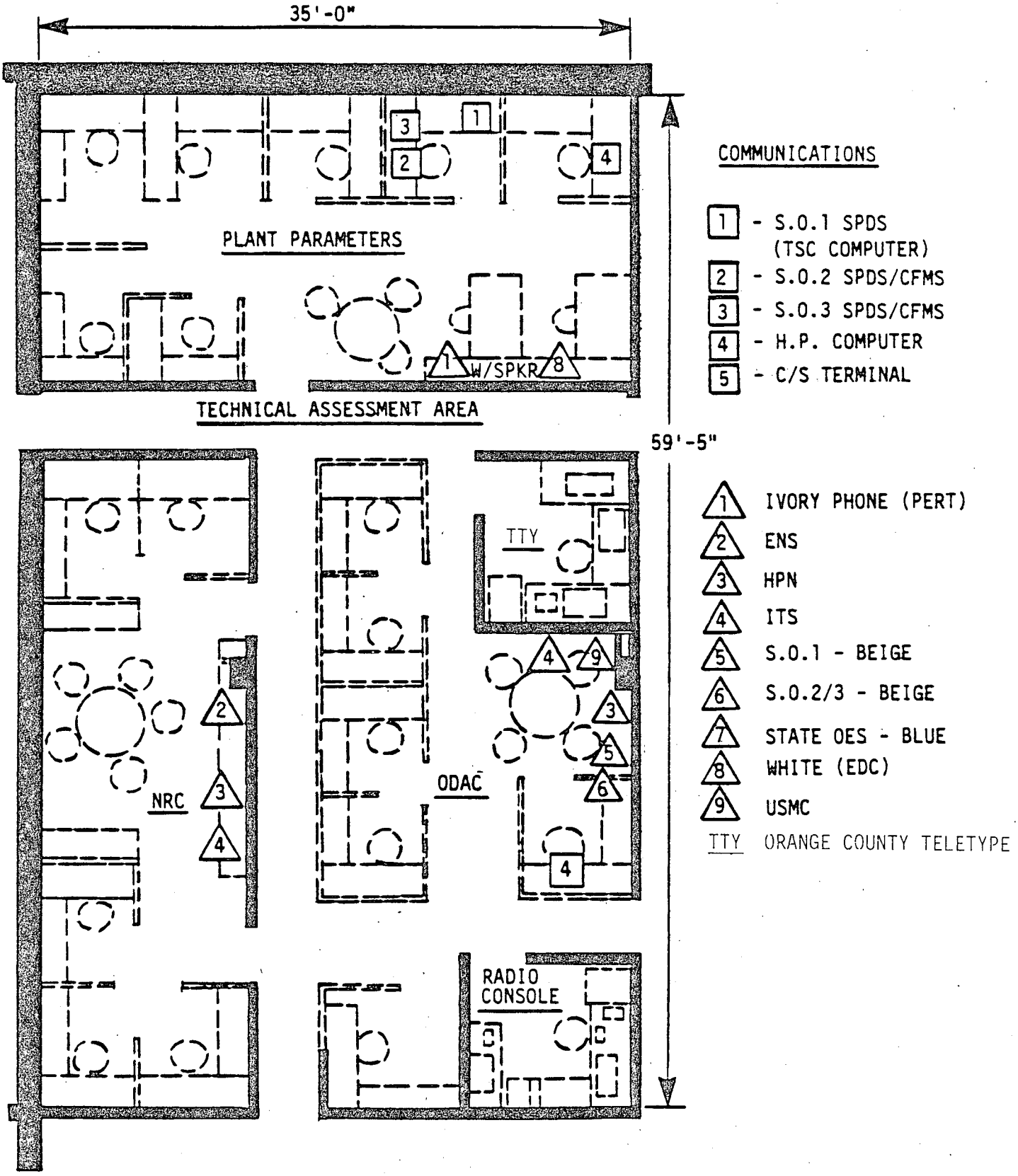
EOF/TRAINING FACILITY PLAN

FIGURE 12



EOF COORDINATION CENTER PLAN
(4219 SQ.FT.)

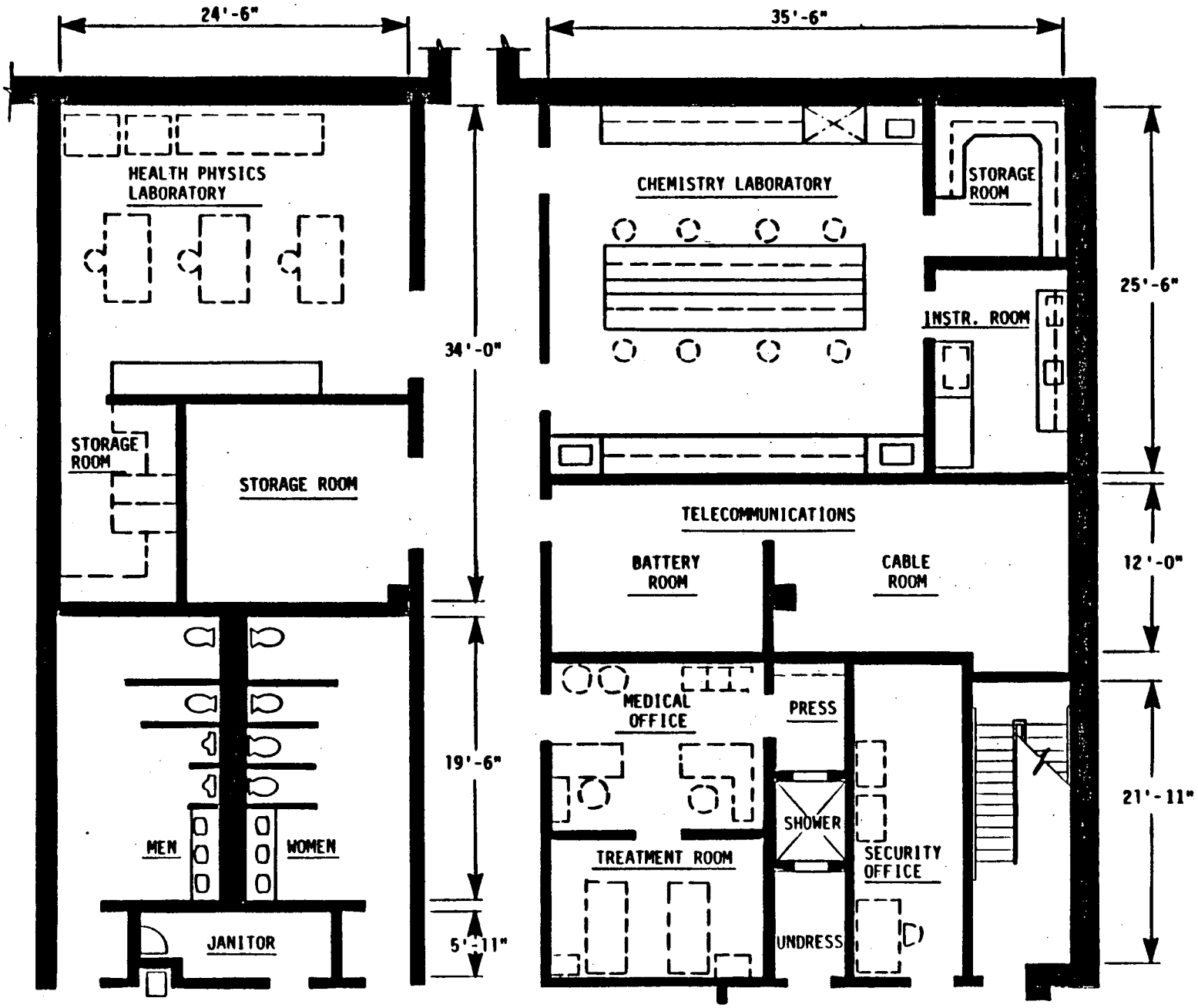
FIGURE 13



EOF TECHNICAL ASSESSMENT AREA

(2080 SQ.FT.)

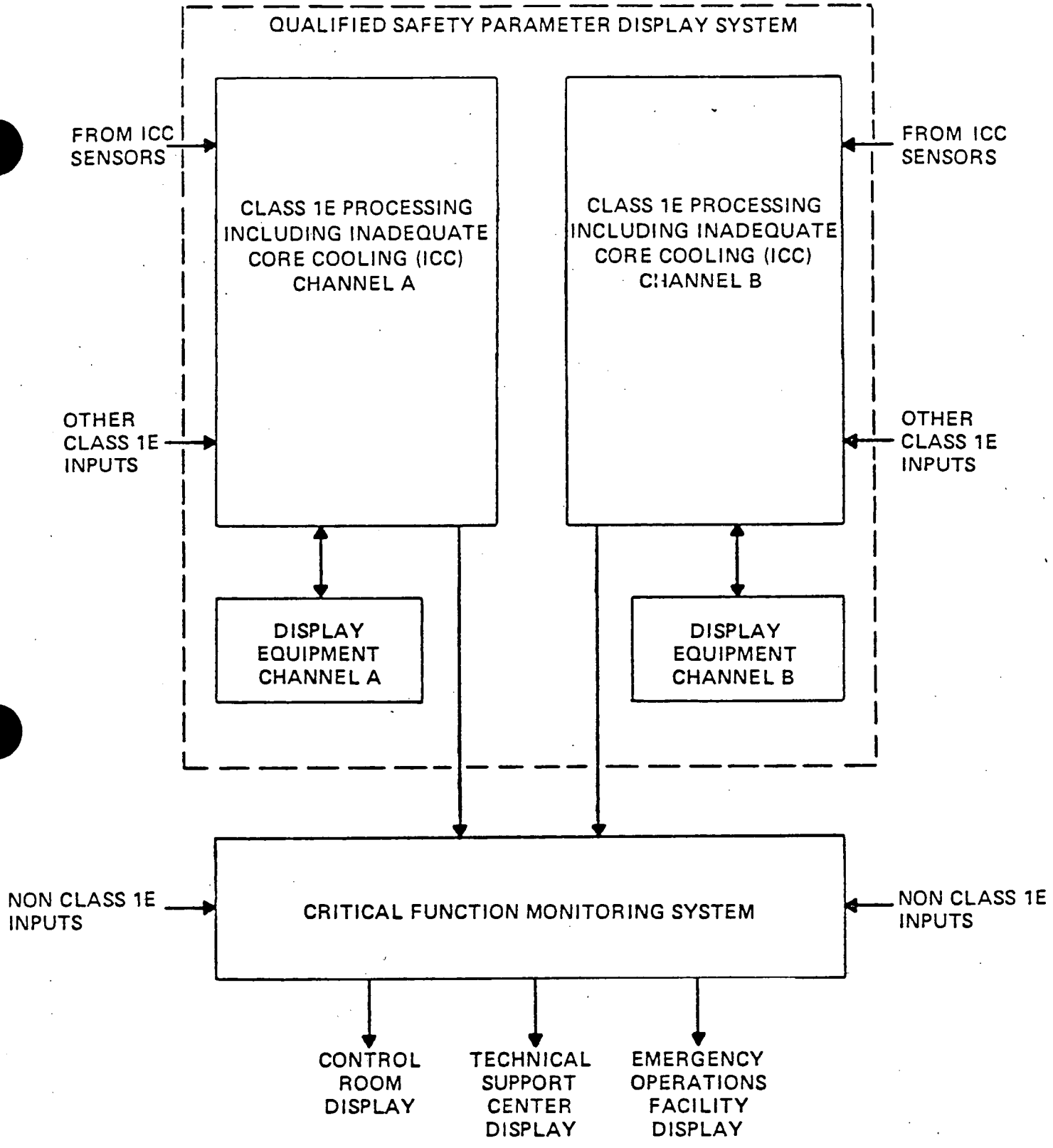
FIGURE 14



EOF HEALTH PHYSICS/CHEMISTRY LABORATORIES AND SUPPORT FACILITIES

(2109 SQ.FT.)

FIGURE 15



PROPOSED SAFETY PARAMETER DISPLAY SYSTEM

FIGURE 16

APPENDIX

SAN ONOFRE NUCLEAR GENERATING STATION
UNIT 2 and 3

EMERGENCY EQUIPMENT INVENTORY LIST

TECHNICAL SUPPORT CENTER

Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Emergency Response Kit	1							
Frisker (PUG/SML-2 or Equiv.)	1							
CP-6	1							
Alarming Dosimeters	5							
Dosimeters (0-200 mR)	35							
Dosimeters (0-1R or 0-5R)	15							
Dosimeter Charger	1							
Face Masks W/partic. filter	25							
Spare particulate filters	50							
Film badges	35							
KI Tablets (Amount pending)	1 box							
Paper Coveralls	25							
Paper Hoods	25							
Cloth Gloves	25 pair							
Green Gloves	25 pair							
Plastic booties	50 pair							
Masking Tape	5 rolls							
Rubber Overshoes	25 pair							
Hair Clippers	1							
Batteries AA (Alkaline)	4							
Batteries C (Alkaline)	16							
Batteries D (Alkaline)	2							
Check Source (9uCi; Cs-137)	1							
Spare Film Assignment Sheet	3							
Emergency Plan	1							
Chemistry Procedures	1 set in TSC							
Emergency Procedures	10 sets in TSC							
Engineering Procedures	1 set in TSC							
Environmental Procedures	1 set in TSC							
Health Physics Procedures	1 set in TSC							
Operational Procedures:Normal	1 set in TSC							
Security Procedures	1 set in TSC							
Tech Specs	1 set in TSC							
Manual of Emergency Events	1							
10 CFR Parts 0-199	1							
FSAR	1 in TSC							
P & ID's	1							
Building Floor Plan	1 in TSC							
General Arrangement Drawings	1 set in TSC							
Radiation Zone Drawing	1 set in TSC							
Station Orders	1 set in TSC							

SAN ONOFRE NUCLEAR GENERATING STATION
UNIT 2 and 3

EMERGENCY EQUIPMENT INVENTORY LIST

TECHNICAL SUPPORT CENTER

Frequency: Quarterly

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Plant Operating Records	1 set							
Onsite Review Committee Records and Reports	1 set							
INPO Resources Manual	1							
Environmental Monitoring Locs.	1							
Thomas Brothers Local Maps	1							
SCE Telephone Directory	1							
Local Phone Directory (Offsite)	1							
Emergency Coordinator's Log	1							
Isophleths for 0-20 mile	3							
NUREG 0654	1							
NUREG 0696	1							
ICRP #28	1							
EPA 520 "Manual of Protective Action Guides"	1							
NCRP Report #55	1							
STATUS BOARDS								
Plant Status on Reactor/Secondary Safety/Sequence	1							
Radiological Status Site Map	1							
Emergency Support Center	1							
Accountability	1							
Security	1							
Emergency Communications	1							
Books								
Piping Handbook, Crocker&King	1							
Standard Handbook for Electrical Engineers, Fink & Beaty	1							
Flow of Fluids	1							
Mark's Standard Handbook for Mechanical Engineers	1							
Transfer Processes	1							
ASME Steam Tables	1							
Power Handbook	1							
Pens	15							
Pencils	15							
Pencil Sharpener	1							
Paper	1 pack							
Log Books	10							
Stapler	2							
Staples	1 box							
3 Hole Punch	1							

SAN ONOFRE NUCLEAR GENERATING STATION
UNIT 2 and 3

EMERGENCY EQUIPMENT INVENTORY LIST

TECHNICAL SUPPORT CENTER

Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Dry Erase Markers	5							
3 ring binders	3							
Rulers	6							
Scotch Tape Dispenser	3							
Scotch Tape	3 rolls							
Paper Clips	6 boxes							
Scratch Pads	12							
Typing Paper	1 pkg.							
Inventory List for TSC	1							

Note: Instrument Procedures for instruments listed.

SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 2 and 3

EMERGENCY EQUIPMENT INVENTORY LIST

OPERATIONAL SUPPORT CENTER

Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Emergency Response Kit	4							
Frisker (PUG/SML-2 or Equiv.)	5							
CP-6	5							
Air Sampler, external/internal battery pack w/heads	5							
SAM-2	2							
SAM-2 Batteries	2							
Teletector	5							
RO-7	2							
FEMA	3							
Alarming Dosimeters	10							
Dosimeters (0-200 mR)	50							
Dosimeters (0-1R or 0-5R)	50							
Dosimeters (0-50R)	25							
Dosimeter Charger	2							
Air sample filters, partic.	200							
Air sample cartridges, charc.	10							
Air sample cartridges, silver zeolite	10							
Bio Packs	4							
Face masks w/particulate filters	25							
SA-4A	2							
Spare particulate filters	50							
Film badges	25							
Finger badges	50							
KI tablets (amound pending)	1 box							
Small clear plastic bags	1 box							
Large RAM control bags	1 box							
Radiation boundary rope	1 spool							
Radiation/Contamination Area signs	16							
First Aid Kit (6 person)	1							
Swabs	1 box							
Grid map	1							
Environmental Monitoring Locations	1							
Radiation Exposure Info Records	30							
Spare film assignment sheets	4							
Emergency Plan	1							
Emergency Procedures (EPIP's)	2 sets							
Chemistry Procedures	1 set in Chemistry							
Environmental Procedures	1 set							
Health Physics Procedures	1 set							
Tech Specs	1							

SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 2 AND 3

EMERGENCY EQUIPMENT INVENTORY LIST

OPERATIONAL SUPPORT CENTER

Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Check Source (9uCi;Cs-137)	1							
Resuscitator	1							
Stretcher	1							
Electrical Outlet Strip	1							
P & ID's	1							
Hair Clippers	1							
Dry Erase Markers	5							
Keys to Emergency Vehicle	1							
Paper Coveralls	24							
Paper Hoods	24							
Cloth Gloves	1 box							
Green gloves	1 box							
Latex gloves	24 pair							
Plastic booties	50 pair							
Rubber Overshoes	25 pair							
Masking tape	5 rolls							
Batteries AA (Alkaline)	4							
Batteries C (Alkaline)	24							
Batteries D (Alkaline)	24							
Flashlights	2							
2 way radios	10							
Extra radio batteries	10							
Radio charge unit	1							
OSC log book	1							
Pens	10							
Pencils	10							
Paper	5 packs							
Magic Marker	2							
Scissors	1							
Pencil Sharpener	1							
Stapler	1							
Staples	1 box							
Extension cords	2							
Inventory List for OSC	1							

Note: Instrument Procedures for instruments listed.

EMERGENCY OPERATIONS FACILITY

Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
CP-6	1							
CP-6 battery	1							
Air sampler, Radico H809-B2	1							
Frisker, SML-2	1							
Paper Coveralls	40							
Hoods	40							
Rubber gloves	40 pr							
Shoe covers	100 pr							
Green gloves	2 box							
Air sample filters, particulate	100							
Air sample cartridges, charcoal	10							
Air sample cartridges, silver zeolite	10							
Face masks with cannister	10							
Spare particulate cannisters	10							
Dosimeters (0-5 R)	10							
Dosimeters (0-200 mR)	30							
Film badges	40							
KI thyroid blocking pills	1 btl							
Dosimeter charger	2							
Dosimenter charger batteries (AA)	4							
Equipment Operating Instructions:								
CP - 6	1							
SML-2	1							
Radico air sampler	1							
Pencils	20							
Pens	20							
Portable AM/FM radio	1							
Applicable EPIPs (check lists)	5 sets							

EMERGENCY OPERATIONS FACILITY (continued) Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Emergency Plan	1							
EPIPs	1 set							
FSAR	1							
Pencil sharpener	1							
Stapler	10							
Staples	1 box							
Typing paper	2 pks							
Maps: Normal & Emergency Access routes	1							
Environmental Monitoring Location	1							
Surveys	1							
Vendor Data	1 set							
Acetate overlays for map	3							
INPO Resources Manual	1							
Engineering Procedures	1 set							
Manual of Emergency Events	1							
Title 10, Code of Fd Regulations	1							
NUREG 0654	1							
NUREG 0696	1							
ICRP Pub #28 "Principals & General Procedures for handling Emergency and Accidental Exposure of Workers	1							
EPA 520 " Manual of Protective Action Guides"	1							
NCRP Report "Protection of the Thyroid Gland"	1							
Radiation Emergency Mutual Assistance Agreement folder	1							

EMERGENCY OPERATIONS FACILITY (continued) Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
SML-2 Frisker batteries	1							
Technical specifications	1 set							
P&IDs and one lines	1 set							
Site floor plans	1 set							
Dictaphone	1							
Dictaphone tapes	10							
Three ring binders	3							
Rulers	6							
Scotch tape dispenser	3							
Scotch tape	3 rolls							
Paper clips	6 boxes							
Scratch pads	12							
Calibration & check sources	1							
Station orders	1 set							
Plant Operating records	1 set							
Masking tape	5 rolls							
Decontamination soap	1 btl							
Plastic beakers	5							
Detergent	1 btl							
Septisol	1 btl							
Lanolin	1 btl							
Swabs	1 box							
Radiation rope	50 ft							
Radiation area signs	4							
Contamination area signs	8							
Flashlights	4							

EMERGENCY OPERATIONS FACILITY (continued) Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Spare Flashligh batteries (D)	8							
1st Aid Kit	1							
Bio-packs	4							
Spare Oxygen bottles	4							
Operating Procedures:								
Normal	1 set							
Emergency	1 set							

EMERGENCY OPERATIONS FACILITY INVENTORY

APPENDIX 3

SAN ONOFRE NUCLEAR GENERATING STATION
Unit 2 and 3

EMERGENCY EQUIPMENT INVENTORY LIST

ASSEMBLY AREA EMERGENCY KIT

FREQUENCY: Quarterly

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Frisker (PUG/SML-2 or Equiv.)	3							
CP-6	1							
Bio Packs	2							
Air sampler, external/internal battery pack w/heads	1							
Dosimeters (0-200 mR)	10							
Dosimeter Charger	1							
Air sampler filters, partic.	50							
Air sampler cartridges, charc.	5							
Air sampler cartridges, silver zeolite	5							
Radiation Boundary Rope	1 spool							
Masslin cloths	2 pkgs.							
Radiation Area Signs	4							
Emergency Procedures 32,33 34 and 38	1 each							
Equipment Procedures:								
CP-6	1							
SML-2	1							
PUG	1							
Green Gloves	1 box							
Face Mask w/Particulate Filters	4							
Spare Particulate Filters	8							
Paper Coveralls	50							
Plastic Booties	50 pair							
Masking Tape	3 rolls							
Batteries AA (Alkaline)	4							
Batteries C (Alkaline)	16							
Batteries D (Alkaline)	13							
Flashlights	3							
Bullhorn	1							
Assembly Area Leader Hat	1							
Decontamination Soap	1 btl.							
Water	1 gal.							
Paper Towels	2 rolls							
Pencils	10							
Clipboard	1							
Paper	1 pkg.							
Inventory List for AAEK	1							

SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 1, 2 & 3

EMERGENCY EQUIPMENT INVENTORY LIST

AMBULANCE EMERGENCY KIT

Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Frisker (PUG/SML-2 or Equiv.)	1							
CP-6	1							
Dosimeters (0-200 mR)	10							
Dosimeter Charger	1							
Film Badges	10							
Face Mask w/Particulate Filter	10							
Spare Particulate Filters	20							
Nucon Smears	100							
Small clear plastic bags	10							
Large RAM control bags	5							
Poly Sheeting	1 roll							
Decontamination Soap	1 bottle							
Swabs	1 box							
Water	1 gallon							
Paper towels	1 roll							
Beakers (100 ml.)	2							
First Aid Kit (6 person)	1							
Emergency Procedure 18 "Contaminated Injury"	1							
Personnel Decontamination (VII 4.4)	1							
Bio packs	2							
Rubber Overshoes	10 pair							
Spare Film Assignment Sheet	1							
Radiation Exposure Info Record	10							
Paper Coveralls	10							
Paper hoods	10							
Cloth Gloves	30 pair							
Green Gloves	30 pair							
Masking Tape	2 rolls							
Plastic Booties	30 pair							
Batteries AA (Alkaline)	4							
Batteries C (Alkaline)	4							
Batteries D (Alkaline)	8							
Flashlights	2							
Pens	2							
Scissors	1							
Inventory List for AEK	1							

Note: Instrument Procedures for instruments listed.

SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 2 and 3

EMERGENCY EQUIPMENT INVENTORY LIST

CONTROL ROOM

Frequency: QUARTERLY

EQUIPMENT	Qty Required	Qty Found	Calib Date	Expiration Date	Recalib Required	Replaced	New Exp Date	Remarks
Frisker (PUG/SML-2 or Equiv.)	1							
CP-6	1							
Alarming Dosimeters	5							
Dosimeters (0-200 mR)	25							
Dosimeters (0-1R or 0-5R)	20							
Dosimeters (0-50R)	10							
Dosimeter Charger	1							
Air Sample Filters, particulate	50							
Air Sample Cartridges, charcoal	5							
Air Sample Cartridges, silver zeolite	5							
Bio packs	5							
Face mask w/particulate filters	20							
Spare particulate filters	40							
KI tablets (amound depending)	1 box							
Masslin cloths	1 pkg.							
Large RAM control bags	5							
RAM Stickers	10							
Emergency Plan	1							
Emergency Procedures (EPIP's)	2 sets							
Station and site floor plans	1 set(in CR)							
Station P & ID's	1 set(in CR)							
Emergency Coordinator's Log	1 (in CR)							
Paper coveralls	20							
Paper hoods	20							
Green gloves	40 pair							
Cloth gloves	20 pair							
Latex gloves	20 pair							
Rubber shoecovers	20 pair							
Masking Tape	3 rolls							
Batteries AA (Alkaline)	4							
Batteries C (Alkaline)	4							
Batteries D (Alkaline)	10							
Flashlight	2							
Plastic booties	20 pair							
Site phone directory	1							
Local Phone directory (offsite)	1							
Check source (9uCi; Cs-137)	1							
Inventory List for CR	1							

Note: Instrument Procedures for instruments listed.

APPENDIX 5
TELEPHONE SYSTEM DESCRIPTION

1. Edison Decision Circuit (EDC) - the "white" telephone. This circuit provides direct communications between the TSC and the Plant Parameter Area and Coordination Center in the EOF. This is a direct line with no dialing necessary. To contact the desired location, the circuit must either already be manned or a call must be made by some other circuit to have the EDC telephone manned, since the EDC has no ringing capability.

2. Plant Emergency Response Telephone (PERT) - the "ivory" telephone. This circuit provides direct communication links between onsite control centers during emergencies. Stations on this circuit include the Control Room, TSC, and the OSC. In addition, direct communication lines are provided between the EOF and the onsite Control Centers. To contact a desired location on this telephone, one must dial a 2-digit number. This line is primarily an administrative circuit, connecting the leaders of the respective emergency facilities.

3. Interagency Telephone (ITS) - the "yellow" telephone. This circuit allows for direct communications between SONGS emergency facilities and various local, State and Federal, and agencies to report emergency conditions and recommend offsite protective measures if required. Key centers where this phone is located include:

    - o TSC, Control Room, and EOF NRC Area and Coordination Center.
    - o City EOCs (San Clemente and San Juan Capistrano)
    - o County EOCs (Orange County and San Diego County)
    - o California Highway Patrol EOCs (Santa Ana and San Diego)
    - o U.S. Marine Corps

- o County Communications Center (Orange County and San Diego County)

To contact a desired location, one must dial a * and a 2-digit number. If the line is busy, a button on the side of the telephone may be pushed to override a busy circuit. The capability exists for contacting all stations simultaneously by dialing a * and a 2-digit number (*90 or *99).

4. USMC Fire Department - the "orange" telephone. This circuit allows the plant to request immediate firefighting assistance from the USMC fire station at Camp Pendleton. There are orange phones in the TSC, Watch Engineer's office and EOF. This system is an "auto ring-down" circuit. To contact the fire station, one lifts the receiver and the telephone will ring at the Camp Pendleton fire station.

5. Camp Pendleton Exchange - the "black" telphone. This circuit provides access to the USMC base support services via the USMC telephone exchange. This circuit also allows access to the Bell telephone system through the Oceanside exchange in the event of local damage to the San Clemente exchange. A black phone is located in the TSC, Control Room and the EOF ODAC Area. For on-base services, the last 4 digits of the telephone number are dialed. To access off-base, a 0 is dialed to access the base operator, then the desired telephone number is requested.

6. EOF Hotline - the "beige" telephone. This circuit consists of two independent lines allowing direct access from the ODAC area of the EOF to either the TSC of Unit 1 or the TSC of Units 2/3.

7. Health Physics Network (HPN) - the "green" telephone. The circuit is used to provide health physics information to the NRC when requested. There are two HPN telephones in the TSC, one in the Communications Area and the other in the NRC Consultation Room. Additionally, three HPN telephones are located in the EOF, one in the NRC Area, one in the ODAC Area, and one in the Coordination Center. To contact a desired location on the telephone, one must dial a 2-digit number.

8. Emergency Notification System (ENS) - the "red" telephone. This circuit is used to transmit reports to the NRC as required by Technical Specifications and the Emergency Plan Implementing Procedures. This circuit is also an "auto ring-down" system to the NRC Operations Center. Once the NRC has been notified, this telephone is continuously manned until released by the NRC. An ENS telephone is located in the NRC Consultation Room, the Communications Area of the TSC, the Control Room, the EOF NRC Area and the Coordination Center.

9. Edison Exchange (PAX) - This exchange is the normally used telephone system at Edison facilities. Most SCE facilities (SONGS, Corporate Headquarters at Rosemead and other offices) can be contacted by means of a 5 or 6 digit telephone number. The offsite Bell telephone system can be accessed by dialing 9, then the desired number. The telephones are placed at many locations on the site.

10. The ROLM CBX (Computerized Branch Exchange) System is the primary means of communication from the EOF. The rotary dial telephone has both internal and external capabilities. External calls from

the ROLM phones are made by dialing nine and then the external number. Internal calls are made by dialing the extension number. At least one CBX phone is located in the Chemistry Lab and in the HP Lab. One phone is provided at each desk in the Coordination Center and in the ODAC and Plant Parameter Area.

11. Office or Emergency Services - Sacramento - the "blue" telephone. This circuit provides a direct line of communications between the TSC, EOF, and the O.E.S. It will be installed in the SONGS Emergency Response Facilities prior to Unit 2 exceeding 50 Mwe.

12. Orange County Teletype - This system is a part of the County Law Enforcement Teletype system and provides both electronic information transmission via a CRT, or "hard copy" from a printer. This system is used to transmit hard copy information that is absolutely required to be received, or when an acknowledgement is required.

    The system utilizes a central computer with disc drive storage units located at the Orange County Communication Center. Terminals are connected via use of dedicated telephone circuits. The computer program provides two internal systems to enhance the transmission of information. The first is the ability to store on discs routine message formats. This gives the ability to any terminal to call up a formatted message form and simply fill in the blanks to complete the message. The second program allows multiple delivery from one transmission to any number of terminals by utilizing group address codes. For emergencies at SONGS, a special group address code is established to deliver messages to participating agencies.