### 7.5.5 Radiological Counting Room

The plant has extensive counting room equipment that is used for routine radiochemical determinations. This equipment could also be used during emergencies.

#### 7.5.5.1 Location and Availability

The counting room is located on the +85' elevation of the Auxiliary Building. Although this area would be expected to be available during most emergency conditions, it should be noted that operation of residual heat exchanger 1-1 in the post LOCA recirculation mode (assuming a Regulatory Guide 1.4 source term in the reactor coolant system) produces a gamma background in the facility, which would make it unusable. The TSC also has the capability to accomplish radiochemical analyses.

#### 7.5.5.2 Counting Room Equipment

1) Multi-channel gamma analysis capability

   The counting room has a gamma spectroscopy system that utilizes high purity germanium detectors with high-resolution quality. The data is analyzed (peak search, peak fit, peak identification, peak quantification, etc.) by a host computer.

   Analysis data from the counting room can be transmitted to the on-site Technical Support Center.

2) Liquid Scintillation Spectroscopy

   The counting room employs liquid scintillation spectroscopy. This analyzer is microprocessor controlled. The analyzer is primarily used for tritium (hydrogen - 3) analysis.

3) Proportional Counting Systems

   The counting room has a gas flow proportional counting system that is used for alpha and beta measurements.

### 7.5.6 Analytical Facilities Associated with On-Site Technical Support Center

One compartment adjacent to the Technical Support Center is set aside for analytical work. The principal purpose of this facility is to provide necessary on-site analytical capability in the event that the normal facilities in and around access control are unavailable. A germanium gamma spectroscopy system similar to those in the counting room is provided for isotopic analysis.

### 7.5.6.1 Emergency Assessment and Response System (EARS)/Meteorological Information Display Assessment System (MIDAS)

EARS receives and transfers input data from a variety of off-site and on-site monitors to a central computer for performing dispersion dose calculations using MIDAS. MIDAS includes a region specific meteorology input atmospheric dispersion model which accounts for nonlinear plume transport due to meteorology differences created by sea breeze, hill and valley influences. MIDAS provides plume projection maps and other assessment related information to centers both on-site and off-site. Overall system design seeks to optimize the diagnostic ability of operators and emergency response groups, maximizing the ability of system operators to understand events as they unfold.

EARS is interfaced to selected channels of the on-site meteorological towers, the off-site supplemental, region-specific meteorology towers, and plant radiation monitoring system. MIDAS calculates doses for off-site locations based on data received from EARS. These computed plume displays, along with input data, source terms, and meteorological parameters, are transmitted via data links to UDAC.

Each EARS/MIDAS workstation has the capability to graphically display plume projection maps and data, and to provide hard copy to the user. Displays at the TSC, EOF, and Alternate Facility are capable of accessing files generated at any other EARS/MIDAS workstation for the purpose of response planning and coordination between the facilities. Displayed information may be selected from several forms of calculated data and map presentations. Mapping capabilities are provided to superimpose plume boundaries, dose rates, airborne concentrations, population centers, and evacuation routes. Color graphics and printouts are used to increase the information content and readability of information.

### 7.5.6.2 System Description

EARS/MIDAS consists of three functional subsystems:

1) Input Data Subsystem

   The data acquisition subsystem provides live-time radiological and meteorological data needed by the central computer as input parameters for the dose projection models. The specific input data systems are described below.

2) Central Computer Subsystem

   The servers, PCs, peripherals, and software needed to manage input and output communications, and to maintain live-time and historical databases. The central computer subsystem is the main data storage and distribution point for EARS/MIDAS. It is located in the Technical Support Center (TSC).

3) EARS/MIDAS Workstations

These are the dedicated PC workstations; with color graphics display monitors, color printers, and the EARS/MIDAS software for execution of the dose projection model, and transmission of results to the central computer and other EARS/MIDAS workstations.

EARS/MIDAS workstations are distributed at the following locations:

- Control Room (DCPP)
- TSC (DCPP)
- EOF (San Luis Obispo)
- Alternate Facility (San Luis Obispo)

All EARS/MIDAS workstations are control enabled stations, capable of performing dose projections. Data transmission and software execution rates provide for updating the graphics display at intervals of not more than fifteen minutes.

4) Input Data Systems

a) Off-Site Radiation Monitors

The off-site monitoring system consists of a "ring" of low-level gamma dose-rate monitors installed at selected locations at distances of 6-17 miles from the Diablo Canyon Power Plant site. These fixed locations have been chosen with a dual purpose of providing measurement stations at population centers, and of including the largest practical number of land-based sectors from the site.

b) Meteorological Towers

Meteorological data are provided from the primary on-site meteorological tower, and a secondary (backup) meteorological tower located on-site equipped with similar instrumentation at two levels, the meteorological data from either on-site tower, and the 7 off-site supplemental towers is accessible from any DCPP network PC.

EARS automatically receives and transmits to MIDAS the necessary data from the primary tower, with auto-failover to backup tower data for any missing parameters. EARS also automatically receives and transmits to MIDAS the necessary data from the off-site supplemental, region-specific meteorology towers with auto-failover to the next most appropriate region meteorology tower data if any region meteorology tower input is indicated as bad data. Manual entry of current data from the primary, backup and supplemental meteorological towers is possible in the event of some problem with automatic input or data reduction.

c) On-Site Radiation Monitors and Plant Process Instruments

Parameters from fixed radiation monitoring and process instruments are available to any network PC. EARS automatically receives and transmits to MIDAS the radiation monitor and flow element readings necessary for performing dose projections.

| No. of Monitors | Monitor Channel | Monitor Function |
|---|---|---|
| 2 | R-02 | Containment Area Monitor |
| 2 | R-11 | Containment Air Particulate Monitor |
| 2 | R-12 | Containment Noble Gas Monitor |
| 2 | R-14 | Plant Vent Noble Gas Monitor |
| 2 | R-14R | Plant Vent Noble Gas Monitor, redundant |
| 2 | R-15 | Condenser Air Ejector Gas Monitor |
| 2 | R-15R | Condenser Air Ejector Gas Monitor, redundant |
| 2 | R-22 | Gas Decay Tank Discharge Monitor |
| 2 | R-24 | Plant Vent Iodine Monitor |
| 2 | R-24R | Plant Vent Iodine Monitor, redundant |
| 2 | R-28 | Plant Vent Air Particulate Monitor |
| 2 | R-28R | Plant Vent Air Particulate Monitor, redundant |
| 2 | R-29 | Plant Vent Gross Gamma Monitor |
| 2 | R-30 | Containment High Range Area Monitor |
| 2 | R-31 | Containment High Range Area Monitor |
| 2 | R-87 | Extended Range Plant Vent Noble Gas Monitor |
| 2 | FM-12 | Plant Vent Flow Rate |
| 2 | FM-700 | Containment Purge Flow Rate |
| 2 | FIT-81 | Condenser Air Ejector Flow Rate |
| 2 | R-44A | Containment Purge Exhaust and CVI |
| 2 | R-44B | Containment Purge Exhaust and CVI, redundant |
| 2 | RE-71 | Main Steam Line Monitor |
| 2 | RE-72 | Main Steam Line Monitor |
| 2 | RE-73 | Main Steam Line Monitor |
| 2 | RE-74 | Main Steam Line Monitor |

### 7.5.7 Portable Survey and Dose Rate Instruments

A variety of portable survey instruments (count rate and dose rate) are available at the plant for routine as well as emergency radiological monitoring. The general equipment types are summarized below. It should be noted that this list is intended only to be illustrative of the plant's capabilities. Precise quantities and models of specific equipment may vary from time to time as conditions change; new products appear on the market, etc. Portable survey instruments are normally located at Access Control when not in use.

**Typical Portable Count and Dose Rate Meters Used**

| Instrument (Model No. or equivalent) | Detector Type | Radiation Measured | Range | Primary Use |
|---|---|---|---|---|
| Beta-Gamma count rate meter, with the following detectors: | | | 0-600 CPM<br>0-6,000 CPM<br>0-60,000 CPM | General contamination surveys |
| Hand probe (HP-260) | GM | Beta, Gamma | | |
| Shielded hand probe, (HP-210) | GM | Beta, Gamma | | |
| Count rate meter (RM-15) for use with GM probes listed above, and: | | | 0-500 CPM<br>0-5,000 CPM<br>0-50,000 CPM<br>0-500,000 CPM | Personnel contamination surveys |
| Alpha scintillation probe (AC-3B-7) | ZnS ($Ag_2$), 59 cm sensitive area | Alpha | | |
| Gamma scintillation probe (SPA-3) | NaI (T1) 2" x 2" | Gamma | | |
| Count rate meter (PRM-6) for use with GM probes listed above AC-3B-7 and SPA-3 probes | See above | See above | 0-500 CPM<br>0-5,000 CPM<br>0-50,000 CPM<br>0-500,000 CPM | General contamination surveys |
| Beta-Gamma dose rate meter (HP 270 shielded hand probe) | GM | Beta, Gamma | 0.1-10,000 mR/hr<br><br>0-3000 mR/hr (HP-270 probe) | General environmental radiation surveys |
| Portable REM Counter (PNR-4) | $BF_3$ | Neutron, thermal to 10 MeV | 0-5 mR/hr<br>0-50 mR/hr<br>0-500 mR/hr<br>0-5000 mR/hr | Neutron dose rate |
| Teletector 6112<br>OR<br>Equivalent (Johnson Extender, Telescan) | Twin G-M tubes 30 mg/cm beta window | Beta, Gamma | 0-2 mR/hr<br>0-50 mR/hr<br>0-2 R/hr<br>0-50 R/hr<br>0-1000 R/hr | Beta, gamma dose rate |
| RO-2 or equivalent | Ion chamber 3.5 mg/cm beta window air fill gas | Beta, Gamma | 0-5 mR/hr<br>0-50 mR/hr<br>0-500 mR/hr<br>0-5 R/hr | Dose rate |
| RO-2A or equivalent | Ion chamber 3.5 mg/cm beta window air fill gas | Beta, Gamma | 0-50 mR/hr<br>0-500 mR/hr<br>0-5 R/hr<br>0-50 R/hr | Dose rate |

### 7.5.8 Field Monitoring and Evacuation Kits

1) Field Monitoring Kits

Field Monitoring Kits are stored on-site at Warehouse B (bldg. 113) and off-site at the EOF. Miscellaneous equipment is stored at a location near the EOF. The purpose of Field Monitoring Kits is to provide Field Monitoring Teams (FMTs) with the portable supplies in convenient locations for quickly dispatching teams to the field. These kits contain equipment and supplies that allow assessment of ambient exposure rate, airborne, particulate concentration, airborne radioiodine concentration, and ground deposition.

| Radiological Emergency Kits Contents | |
|---|---|
| 12VDC Air Sampler, sample head | Allen Key for Environmental TLD Holders |
| Constant Geometry Holder | Decon Center Key |
| Extra Sample Head | Corporate 909 Key |
| Air Sample Particulate Filters | Fuses for Air Sampler |
| AgZ and/or TEDA Impregnated Cartridges | Electronic Personal Dosimeters (0-1000R) |
| Paper Envelopes for Particulate Filters | Count Rate Instrument |
| Small Ziploc Bags | Dose Rate Instrument |
| Forceps | Pancake GM probe HP-210/260 (or equivalent) |
| Smears | Extra Batteries for instruments |
| Timepiece | Instruction Binder containing procedures, forms and maps |
| Marking Pens | Protective Clothing |
| Tape | Calculator |
| Flashlight | KI Tablets |
| Plastic Bags | |

| The following miscellaneous equipment is located with the on-site kits. |
|---|
| 2-way radios, cell phones, and satellite telephones |
| Bolt Cutters |

| The following miscellaneous equipment is located with the off-site kits. | |
|---|---|
| Trowel | Radiation Signs w/Inserts |
| Grass Shears | Radiation Barrier Tape |
| Liter Bottles | Air Sample Particulate Filters |
| Coveralls | AgZ and/or TEDA Impregnated Cartridges |
| Skin Decon. Soap | Paper Envelopes for Particulate Filters |
| Scrub Brush | Small Ziploc Bags |
| Flashlight | Surgical Gloves |
| Paper Towels | Smears |
| Plastic Bags | Extra Batteries |
| Tape | 2-way radios, cell phones, and satellite phones |

2) Evacuation Kits

Evacuation Kits are available for the purpose of providing Evacuation Teams with the necessary portable supplies for performing contamination surveys of evacuated site personnel and their vehicles. The Evacuation Kits are stored at Warehouse B (bldg. 113).

If the Site Emergency Coordinator recommends evacuating non-essential personnel on-site, the Evacuation Kits will be obtained by the Evacuation Coordinator and their monitoring staff prior to the evacuation.

| Evacuation Kits Contents | |
|---|---|
| Barricade Tape | Decon Center Key |
| Batteries | Dose rate instrument |
| Instruction Binder containing procedures, forms and maps | Electronic Personal Dosimeters (0-1000R) |
| Bullhorn | Flashlight |
| Calculator | GM Probe, HP-210/260 |
| Corporate 909 Key | Pens |
| Count rate instrument | Plastic Bags |
| Protective Clothing | Smears |

3) Hospital Kit

Hospital kits containing portable instrumentation, protective clothing and rad protection supplies are stored at French Hospital in San Luis Obispo and Marian Medical Center in Santa Maria.

| Hospital Kit Contents | |
|---|---|
| Barricade Tape | Electronic Personal Dosimeters (0-1000R) |
| Batteries | Rad Sign - 6 pocket |
| Count Rate Instrument | Rad trash tags |
| Disposable Coveralls | Radiation and Contamination Survey Sheet (Form 69-20786) |
| Dose rate instrument | Shoe Covers |
| Duct Tape | Smears |
| GM probe, HP 210/260 (or equivalent) | Yellow/Magenta Tape, 2" width |
| Latex Gloves | Ziploc bags |
| Markers | |

4) Clothing

Clean overalls and shoe covers are stored with the evacuation kits on-site, at the PG&E Energy Education Center, and at the TSC for use in the event emergency worker evacuee clothing is contaminated.

### 7.5.9 Fire Detection and Trouble Alarm System

The Fire Detection and Trouble Alarm System uses heat detectors, flame detectors, and smoke detectors to provide the Control Room with an early warning of the existence and location of a fire or potential fire and in certain instances, initiates fire suppression systems.

In addition to the smoke and flame detection system, a vital equipment room temperature monitoring system provides indication of abnormally high compartment temperatures which may result from fire, ventilation system malfunction, or other equipment malfunctions. Individual components are equipped with the usual complement of trouble alarms, some of which (e.g., high temperature bearing alarm) can provide the operators with early warning of fire or potential fires.

### 7.5.10 Sampling and Analysis Capability

1) Reactor Coolant Sampling

   If emergency conditions require sampling of reactor coolant, sampling may be performed by sampling of the reactor coolant system and containment sump sampling systems. In addition to the normal plant laboratory facilities, the TSC has instrumentation for radiological analysis of the samples.

2) Containment Atmosphere Sampling

   If emergency conditions require sampling of the containment atmosphere, the CASP containment atmospheric sampling system may be used. Equipment is provided to determine containment hydrogen. Dilute samples can be collected and prepared for counting. Radiological analyses are performed in either the normal plant laboratory facility or the TSC laboratory.

### 7.5.11 Miscellaneous Post Accident Assessment Instruments

1) Containment Interior Radiation Monitoring

   These detectors are part of the area and process monitoring systems and include two high range gamma radiation-monitoring instruments that have been provided to monitor post-accident radiation levels inside of the containment. They utilize ion chamber detectors and have a range of 1.0 to $10^7$ R/hr. The units read out and alarm in the Control Room. These units are supplied from emergency AC, are seismic design Class I, and are qualified for post-accident containment conditions.

   The radiation level inside the containment can also be estimated from outside the containment using hand held instruments.

2) Containment Water Level

   Two wide range and one narrow range containment water level recorders can be used to indicate water level from the bottom of the reactor cavity (elevation 64 feet) to elevation 98 feet. The volume of water these recorders will represent is greater than 600,000 gallons. The indicators are located in the Control Room.

3) RCS Subcooling Monitor

RCS subcooling instrumentation is provided to determine margins to saturation pressure and temperature using reactor coolant system pressure and temperature instruments and incore thermocouples. A calculating microprocessor module powered from a vital bus is provided. A digital readout is provided on the main control board. The margin, in either degrees Fahrenheit or pounds per square inch, is displayed on a continuous basis. Low and low-low main annunciator inputs are provided.

4) RCS Pressure Indication

Reactor coolant pressure transmitters on loop 4 and loop 3 of the RCS are provided. One transmitter has an indicator in the Control Room with a range of 0 to 3,000 psig. The other transmitter has a recorder with a range of 0 to 3,000 psig and an indicator with a range of 0 to 600 psig.

5) RCS Temperature Indication

RCS temperature is monitored with both narrow and wide range instruments. Each RCS loop has one wide range hot leg RTD and one wide range cold leg RTD. The wide range RTDs are in the main loops and have a temperature range of 0-700F. The narrow range RTDs are in thermowells that protrude into the legs and have a temperature range of 530-630F. The RTDs have Control Room readouts.

Also originally installed is a redundant, two train incore thermocouple system with readout on SPDS monitors in the Control Room, TSC and EOF. The number of operable thermocouples required per core quadrant is governed by the requirements given in the Technical Specifications. The incore thermocouple system is designed to Class IE electrical requirements and uses microprocessor equipment to calculate and readout on the Post Accident Monitoring System (PAMS) monitors. Readout is also available on the plant computer and SPDS monitors.

6) Containment Pressure Indication

Seven containment pressure indications are available in the Control Room (each uses its own transmitter):

a) During normal operation a single recorder with a range of -1 to +1.5 psig is utilized.

b) Four indicators are available with a range of -5 to +55 psig.

c) To indicate higher containment pressure two recorders with a range of -5 to 200 psig are available.

d) The instruments described in 2) and 3) are powered from vital electrical power supplies.

## 7.6 OFF-SITE MONITORING EQUIPMENT

### 7.6.1 Off-Site Geophysical Monitors

Off-site seismic observation and monitoring facilities in the coastal region are located at the University of California (Berkeley), California Polytechnic University (San Luis Obispo), California Institute of Technology (Pasadena), California Department of Water Resources (Sacramento), the U.S. Geological Survey (Menlo Park), and PG&E Geosciences Department (San Francisco).

### 7.6.2 Off-Site Meteorological Data

Data from off-site supplemental meteorological sites surrounding Diablo Canyon are available at the Emergency Operations Facility (EOF) and through the EARS central processing computer. The sites include seven surface meteorological sites located at Pt. Buchon, Los Osos, Foothill Blvd., Davis Peak, Energy Education Center, Grover Beach, and PG&E Service Center. Additional meteorological information that may be obtained on the PG&E Wide Area Network are: other PG&E power plants, off-site National Weather Service (NWS) data including upper air soundings at Vandenberg AFB, Oakland, San Diego, Las Vegas, Winnemucca and Medford, Oregon, and surface sites located in Monterey, Salinas, Paso Robles, Santa Maria, Santa Barbara, San Luis Obispo and Buoys EB11 and EB23. There are also additional surface meteorological sites available from central and southern California as well as the latest infrared and visual satellite images available at the EOF. Weather forecasts during Emergency Plan activation are available from the EOF, PG&E forecast office, NWS Los Angeles and Monterey.

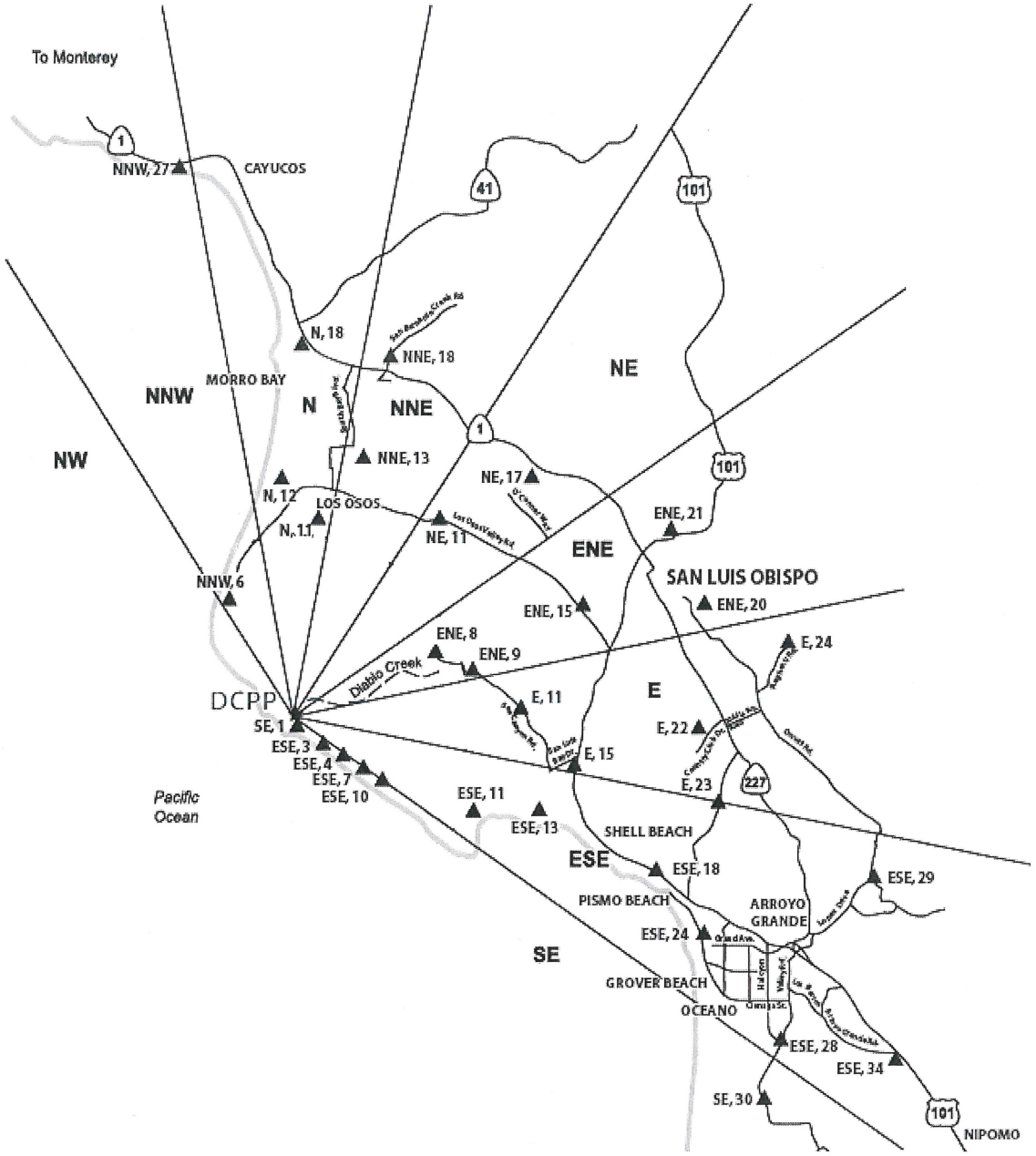
### 7.6.3 Environmental Direct Radiation Monitors and Air Sampling Devices

The Company has approximately thirty-five (35) direct radiation monitoring stations in the vicinity of the plant which are part of its ongoing environmental monitoring program. Each station is equipped with a thermoluminescent dosimeter. Fifteen (15) of these stations are located on-site and twenty (20) are located off-site.

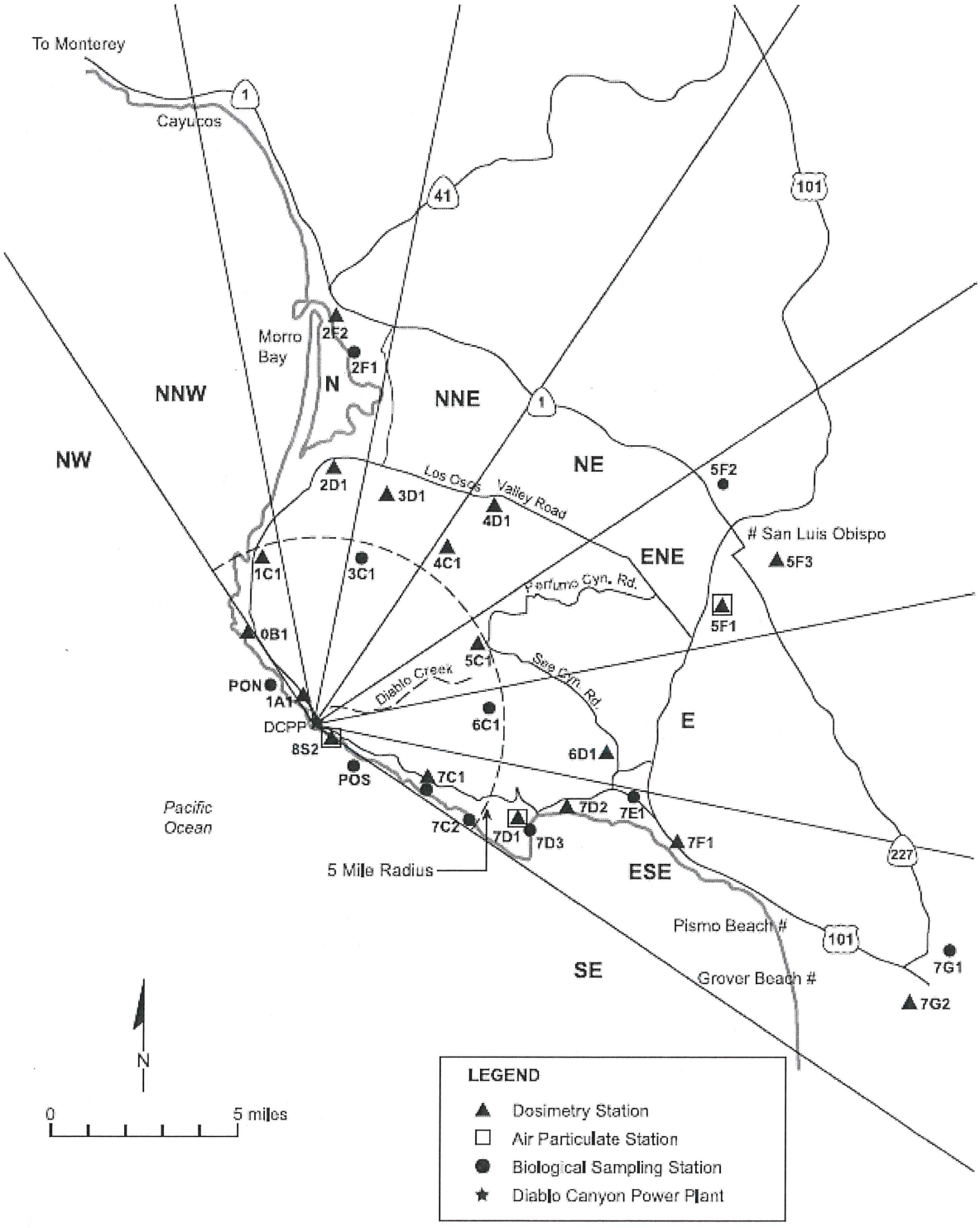
Twenty (20) of the stations are located in order to provide an inner ring of stations in the general area of the site boundary and an outer ring in the 4-5 mile range from the site with a station in each land sector of each ring. Since the site is on the coast surrounded by a hilly, generally inaccessible area, some areas of the site boundary and in the range of 4-5 miles are inaccessible. However, a monitoring station has been placed to the closest accessible location to the stated criteria. Some of the above monitoring locations are also equipped with an air sampler fitted with a particulate filter and iodine cartridge.

Maps of monitoring locations are shown below. Radiation monitoring stations located in Santa Barbara County in the cities of Orcutt, Lompoc, and Solvang are not shown on the map.

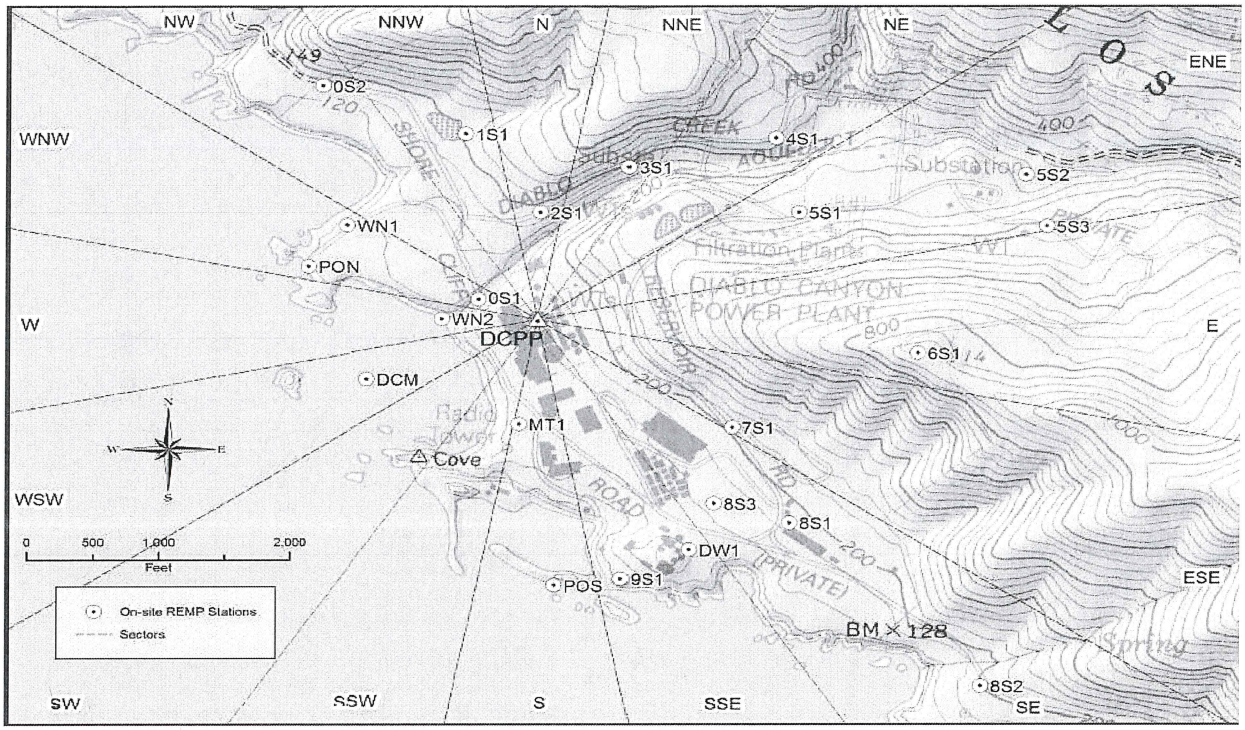
### 7.6.3.1 Emergency Off-Site Monitoring Locations

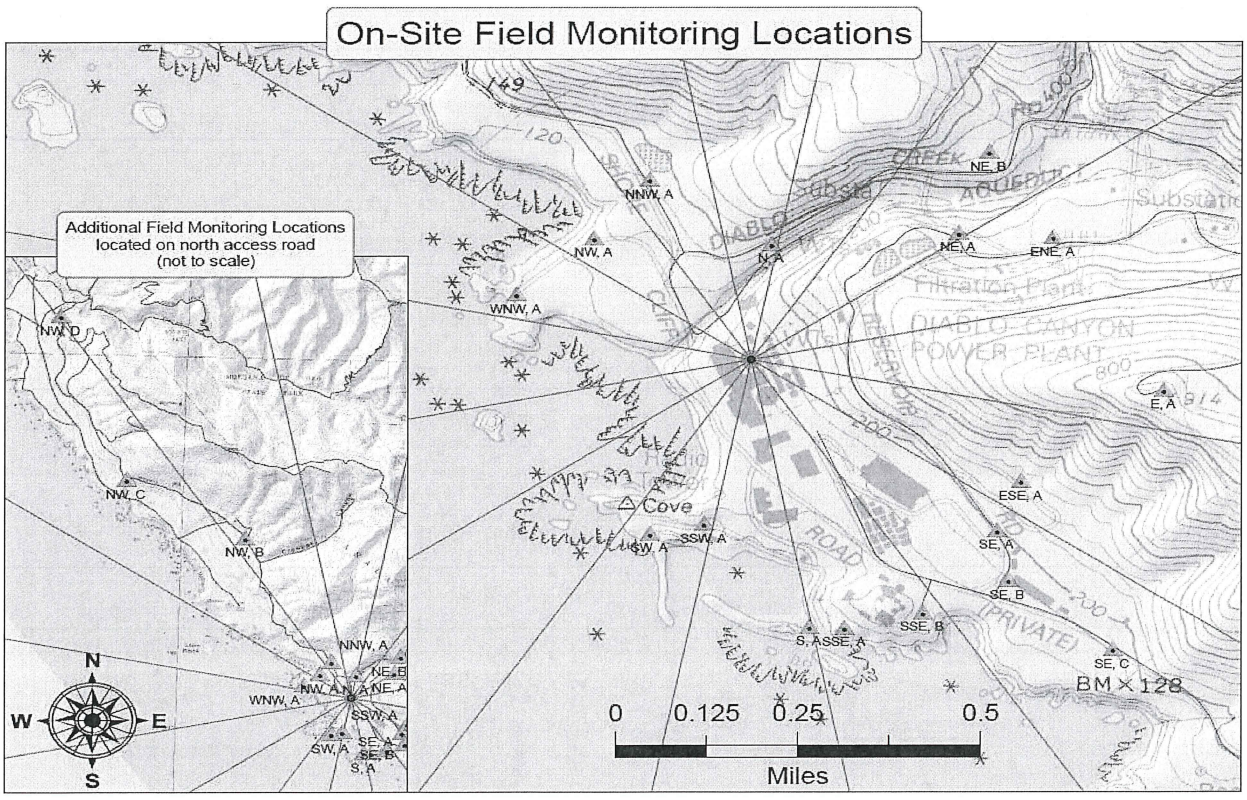


### 7.6.3.2 Off-Site Environmental Monitoring Stations



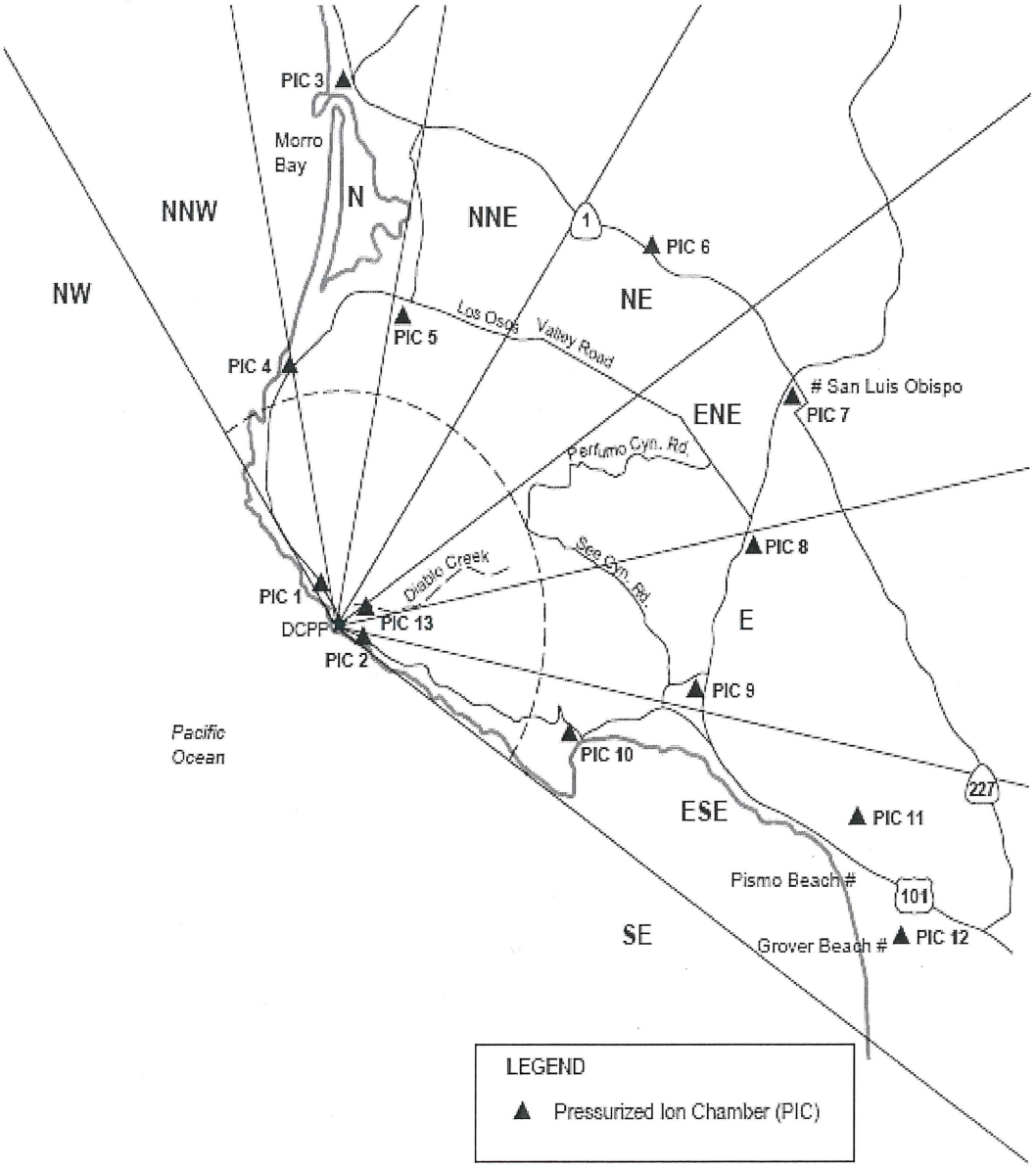
### 7.6.3.3 On-Site Monitoring Stations



### 7.6.4 Off-Site Radiation Monitoring System

The real-time radiation dose-rate monitoring system consists of thirteen low-level gamma radiation dose-rate monitors; ten are installed at the various population centers in the vicinity of Diablo Canyon Power Plant, and three located on the power plant site as shown and listed below.



| PIC # | Description |
|---|---|
| 1 | DCPP North Gate Guard Post |
| 2 | DCPP SSW Corner of Target Range (near on-site field monitoring location, SE, B) |
| 3 | Morro Bay Switchyard |
| 4 | Montana de Oro State Park. At the Park Ranger's residence, adjacent to the siren |
| 5 | South Bay Fire Department |
| 6 | Outside rear entrance to EOF (south side of building) (NE, 17) |
| 7 | SLO Police Department. Intersection of Santa Rosa Street and Walnut Street Behind fence SW of Walnut Street driveway. |
| 8 | SLO Service Center, 4325 So. Higuera St., SLO (OEL Garage). |
| 9 | PG&E Energy Education Center (E,15). |
| 10 | DCPP Front Gate |
| 11 | Pismo Beach at the PG&E Pismo Warehouse on Price Canyon Road, about 0.5 miles NE of the Price Street intersection. PIC is located in the upper parking lot. |
| 12 | SLO County Building, Grover Beach. Exit Hwy 101 at 4th street. Take 4th to Longbranch and proceed NE on Longbranch. County Social Services Building is on corner of 16th and Longbranch. |
| 13 | DCPP ENE near the Old Steam Generator Storage Facility and Fleet Garage |

These monitors employ a pressurized ion chamber (PIC) detector for accurate measurement of low-level gamma radiation ranging from background readings up to 10R/hr. Real-time PIC data can be read locally on a graphic display. In addition, PICs are polled by the EARS data acquisition subsystem in the TSC and 1-minute averaged data is made available on the display computers in the emergency response facilities.

The purpose of the PIC system is to provide continuous measurement and reporting to PG&E, local and state agencies of gamma radiation dose rates in the environment around Diablo Canyon Power Plant so that informed decisions to protect the public can be made. The technical description of the real-time radiation dose-rate monitoring includes:

1) Detector Type and Operating Range

   a) Type: PIC Environmental Radiation Monitoring Station

   b) Range: 0 micro R/hr to 10 R/hr

**NOTE:** Other detector specifications such as accuracy, sensitivity and operating temperature range can be found in the applicable detector vendor technical manual.

2) Data Transmitted to EOF

   The data is taken from the real-time monitors by the EARS central computer at the TSC and this data is available on display computers in the TSC and EOF. The Radiation Monitor Data Display Terminal (RMDDT) application on these computers is able to display map locations with all PIC station readings.

   Monitor data will be stored in a database on the EARS central computer. Instantaneous readings are available within the previous 2 hours and one-hour averages are available on an annual basis.

Each monitor has a unique location number which is coded to prepared maps of different scales indicating exact locations of all monitoring stations. Each map can be displayed on the station's CRT's with monitor numbers overlaid at their respective locations and monitor data on one side of the map. The displayed map can also be transformed to hard copy on printer.

3) Detector Locations

The real-time radiation monitors locations were selected on the basis of three criteria. The first is the need to obtain radiation levels in the population centers surrounding Diablo Canyon. The data received from the real-time monitors would not only provide routine background gamma radiation dose rate data but also gamma radiation dose rate in the event of a significant airborne release from Diablo Canyon to augment radiation data obtained by field monitoring teams. The second is the need to distribute the monitors over as many of the land based compass sectors as possible. The final criterion relates to the prevailing wind direction, wind speed and the topography in the area of the Diablo Canyon Power Plant.

### 7.6.5 Off-Site Laboratories

Either of the following two off-site radiological laboratories may be used in the event of an emergency.

1) PG&E's Off-Site Emergency Laboratory (OEL) at the PG&E Service Center in San Luis Obispo
   a) Location:
      (1) PG&E San Luis Obispo Service Center, 4325 Higuera Street, San Luis Obispo, California.
   b) Capabilities:
      (1) Gamma Spectrum Analysis: 35 samples per 24-hour day; samples may be in the form of filters, cartridges, liquids and solids.
   c) Equipment:
      (1) Intrinsic germanium and/or sodium iodide detectors with associated electronics and desk top computer.
      (2) Radio communications link with the Technical Support Center for voice transmission or analyses results.
      (3) Portable health physics instrumentation.
   d) Response Time:
      (1) During normal hours - two hours following notification.
      (2) During off-normal hours - two hours following notification.

2) Commercial Radiological Laboratory

a) Location:

(1) Charleston, SC.

b) Capabilities:

(1) Gamma Spectrum Analysis - 50 samples per 24-hour day; samples may be in the form of food, milk, water, air filters and iodine cartridges.

(2) Gross Alpha/Beta Analysis: 50 samples per 24-hour day; samples may be in the form of air filters and water.

c) Equipment:

(1) Intrinsic germanium detector with associated electronics and computer system.

(2) Liquid scintillation detectors.

(3) Gas proportional detector.

d) Response Time:

(1) During normal hours - staff existing at facility.

(2) During off-normal hours - two hours following notification.

### 7.6.6 Off-Site Emergency Laboratory (OEL)

Off-site field sample analysis equipment is stored at the PG&E Service Center in San Luis Obispo. The OEL analytical equipment is equipped with a gamma spectroscopy analysis and detection system, portable health physics survey equipment; communications equipment; and independent power supplies.

## 7.7 MISCELLANEOUS PROTECTIVE FACILITIES AND EQUIPMENT

### 7.7.1 Installed Smoke, Flame & Heat Detectors

Smoke, flame and heat detectors, which are located throughout the plant, are designed to give early warning of possible fire conditions. These detectors are annunciated on alarm panels in the Control Room.

When an alarm is received in the Control Room, a plant operator will be sent to investigate the cause of the alarm. If a fire condition exists, it should be reported by calling telephone extension 779. Fire suppression system alarms (i.e., sprinkler, deluge, CO2 or Halon) also annunciate in the Control Room. These alarms could indicate a potential fire condition and shall be investigated in the same manner as any fire detection alarm.

### 7.7.2 Fire Detection by Personnel

Reporting of fires takes precedence over fighting a fire. Only personnel trained in firefighting equipment use should attempt to suppress a fire. The fire alarm signal system is the normal way to report a fire. The fire signal is initiated by dialing from any telephone on the plant site. The call goes to a Control Room Operator who receives information from the caller on a conference line. The fire alarm is sounded by a 30-second monotone sound. The alarm is followed by a public address system message with details about the fire.

The fire signal is a 30-second blast on the fire sirens.

When a fire alarm is sounded, the typical response is to perform the following duties immediately: The Fire Brigade can be made up of IFOs (i.e., Fire Captains and Fire Fighters) and Operations personnel. The Fire Brigade Leader can be a Fire Captain or a licensed operator that is Fire Brigade Leader qualified. A qualified nuclear operator or licensed operator will accompany the Fire Brigade Leader unless the Fire Brigade Leader is the qualified nuclear operator or Licensed Operator. (See FSAR 9.5H.) The Industrial Fire Officers (IFOs) are professional fire fighters and makeup the rest of the Shift Fire Brigade for Fire, Rescue and Hazardous Material Emergencies. The Fire Captain is trained as a Fire Brigade Leader and has the primary role to support the Fire Brigade as an "Operations Officer" in the Incident Command System (ICS). The IFOs will be part of the 5 man Fire Brigade required by the FSAR.

The designated Shift Brigade Members will don protective equipment, pick up radios, proceed to the fire and maintain communication with the Control Room while fighting the fire.

The Security Department will upon notification of a fire, send a security officer to report to the Fire Brigade Leader.

Security will assist with access and the staging of off-site fire response personnel including providing dosimetry and escorts as necessary. Security will also assist the fire brigade with security barriers and ensure that plant security is not compromised during the emergency response.

The SM/SEC will notify CAL FIRE, San Luis Obispo County Fire (CDF/SLO). If the telephone lines are unavailable, the CDF/SLO radio will be used.

Notification shall be made for any of the following conditions:

- All structure fires or any fire that presents a threat to personnel or plant systems.
- Report of smoke within a structure with no known source for the smoke.
- Any wild land fire.
- Any non-fire emergency that would require a CAL FIRE / County Fire rescue or hazardous materials response.
- Any time the Fire Brigade Leader or SM/SEC recommends additional assistance.

Diablo Canyon control room staff will cancel or modify the original request by contacting the CAL FIRE Emergency Command Center using their 24-hour emergency phone line.

### 7.7.3 Plant Fire Detection and Suppression and Respiratory Protection

Plant fire detection and suppression systems and respiratory protection equipment are described in the FSAR.

### 7.7.4 Halon 1301 Systems

Halon 1301 Systems are present in but not exclusive to the following:

1) Learning Center Building - There are Halon 1301 cylinders of various sizes set up to protect six different areas within the building. The areas are activated through either a manual pull-station or smoke detectors (photo-electric and ionization) that are cross zoned for automatic release. Full detector activation on the simulator area will open main power breakers for the simulator and the computer, close ventilation dampers and will delay a Halon release for 30 seconds after an alarm. Two different alarms will sound prior to discharge. The first is a ringing bell that is caused from an activated detector. The second alarm is a flashing strobe light and a horn that has been activated from a second detector. The second alarm will bring a discharge of Halon within 30 seconds.

2) The Administration Building - Halon system protects microfiches and sixth floor PC Network rooms and the 1st floor Telecommunication room. The discharging of halon is caused by detector activation in the same way as the Learning Services Building.

3) The I&C/Tele Com/Medical Building - The Halon system protects the second floor telecommunication room. Halon discharge is caused by detector activation in the same way as the Training Building.

4) Document Storage Building (Building 603) - Halon discharge is caused by detector activation.

### 7.7.5 Mobile Fire Fighting Equipment

Mobile fire suppression equipment is provided to support a fire brigade response to areas outside of the main plant structures including construction areas and surrounding wildland. This equipment meets or exceeds what is required by NFPA 600 to include fire engine pumper with water tank, hoses, foam, etc.

### 7.7.6 Respiratory Protection Equipment

Respiratory protection equipment as described in the FSAR (Table 12.3-3) is available for emergencies involving fires and airborne radioactive materials.

### 7.7.7 Self-Contained Breathing Apparatus[T03689]

Pressure demand Self-Contained Breathing Apparatus units (SCBA) are available at the site. Locations and numbers are as follows:

| Location | SCBA | Extra 30-Minute Tanks |
|---|---|---|
| TSC | 10 | 0 |
| Control Room | 10 | 0 |
| Fire Brigade (various locations) | 18 | 16 |
| Access Control | 20 | 20 |
| Storage (various locations) | 50* | 64* |
| Total | 108 | 100 |

***NOTE:** Up to one-half of this number may be removed for servicing.

At a minimum, there are at least two locations on-site where SCBA bottles can be refilled. The capability to refill bottles inside and outside of the RCA is available. A portable air compressor capable of refilling exhausted breathing air bottles is also available.

### 7.7.8 Constant Flow Air Line Respirators

The plant employs oil-free air compressors. As a result, the plant service air system can be used to supply breathing air. Approximately 20 MSA "clearvue" full facemasks outfitted as constant flow airline respirators are available. Duo-flow regulators allow the respirators to be used with HEPA filtration or as a constant flow system.

The regulators of these facemasks require a supply pressure of 35 to 40 psig. Since plant air supplies are at a higher pressure than this, pressure regulator boxes are used between the supply and the facemask. These boxes have manifolds where up to four separate air hoses can be plugged into the pressure regulated air. Approximately 10 of these regulator boxes are available at the site. Low pressure alarms are available to let the monitor know when pressure drops below the setpoint.

### 7.7.9 Radiological Protective Clothing

The plant is stocked with a considerable supply of protective clothing for normal personnel use when working in radiologically controlled areas of the plant. Typically, sufficient clothing is available for about 500 people.

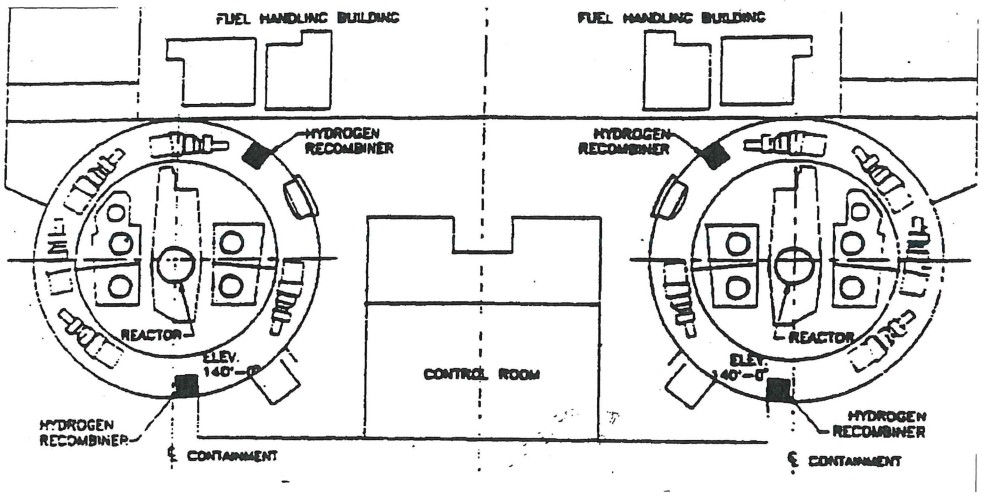
### 7.7.10 Containment Hydrogen Recombiners

The electric hydrogen recombiner system consists of two completely independent subsystems. Each subsystem is capable of providing the required hydrogen removal capacity.

Each subsystem consists of a recombiner unit, which is located in the plant containment building at elevation 140', and a control panel and power supply. The latter two components are located outside the containment in the Auxiliary Building which is an accessible structure following a loss-of-coolant accident (LOCA). Connections external to the containment for removal of hydrogen gas from inside containment by portable recombiner units are provided on the post-accident hydrogen purge system containment penetrations.

Each recombiner unit is a constant volume device with a flow of 100 cfm. It has a minimum hydrogen removal rate equivalent to a removal efficiency of 98 percent with a process gas hydrogen concentration of 4 percent.

The recombiner unit consists of an inlet preheater, a heater-recombination, and an exhaust chamber. The unit is completely enclosed and the internals are protected from impingement by containment spray. The inlet and outlet ports are louvered to minimize moisture entering the unit.



### 7.7.11 Permanent Lighting Systems

The plant is provided with independent lighting systems:

1) Normal AC Lighting

   Normal lighting is operated at 208/120 volts supplied from the 480-volt system. The DC emergency lighting is supplied at 125 volts from two of the station batteries and is limited to a period of approximately two hours. This lighting is located principally in control and electrical equipment rooms, stairways, exits and entrances, corridors, and passageways.

2) Emergency AC Lighting

   The AC emergency lighting is supplied from two vital 480-volt buses. It is located throughout the plant to provide minimum lighting. The AC emergency lighting is routed in separate conduits from the normal AC lighting.

3) Emergency DC Lighting

   The DC lights are also in separate conduits in vital operating areas of the auxiliary building.

   After the diesel generators start and the single phase AC emergency transformers receive power, the DC emergency lights are automatically relayed off. An overlapping time delay keeps the DC lights operating while the AC emergency lights return to service.

   Lighting panels and circuits breakers were tested by the supplier to satisfy seismic requirements. Lighting panel wall attachments have been calculated to be adequate for seismic loads. Conduit supports have adequate seismic supports. The standard fixtures for DC lights are direct mounted to building surfaces, and are therefore subject to building seismic forces. The fixtures will not experience appreciable amplification of seismic forces.

### 7.7.12 Portable Lighting

Numerous battery-powered lanterns and flashlights are maintained at various locations for normal and emergency use. Additional units are maintained as stock items in the warehouse.

### 7.7.13 Transportation

#### 7.7.13.1 Plant Vehicles

There are several types of vehicles at the plant site, which can be used to provide emergency transportation. These include:

1) Two-wheel drive vehicles

   There is a variety of two-wheel drive vehicles, including pickup trucks, at the plant site for general use and may be made available for use during an emergency.

2) Four-Wheel Drive Vehicles

   Four-wheel drive vehicles are provided for use at the plant site. These vehicles may be used by the radiological monitoring teams to obtain field measurements in rugged terrain.

#### 7.7.13.2 Ambulance

Prior arrangements exist with local ambulance services in San Luis Obispo for on-site service. The agreements include transportation of contaminated victims if required.

#### 7.7.13.3 Off-Site Company Vehicles

The Company has a fleet of automobiles and trucks in its San Luis Obispo service area which can be mobilized in an emergency if required.

#### 7.7.13.4 Air Transportation

The Company has air transportation capability which is normally based in Oakland, California, and available for emergency use.

The Company also has access to a variety of charter aircraft and helicopter companies for emergency use, including transportation of contaminated victims using an enclosed type litter.

#### 7.7.13.5 Other Modes of Transportation

The Company owns and maintains two marine crafts at the Diablo Canyon Power Plant. These vessels may be available for personnel transport in the event road access is unavailable.

### 7.7.14 Alternative Facilities

Alternative facilities are established to function as a staging area for augmentation of emergency response staff. The facilities are accessible even if the site is under threat of or experiencing hostile action. The facilities have the capability for communication with the Emergency Operations Facility, Control Room, and plant security; the capability to perform offsite notifications; and the capability for engineering assessment activities, including damage control team planning and preparation, for use when onsite emergency facilities cannot be safely accessed during hostile action.

The alternative facilities are located a safe distance from DCPP. This distance supports rapid response to the plant when accessibility is restored.

## 7.8 FIRST AID AND MEDICAL FACILITIES

The facilities for medical attention and personnel decontamination are located in the Building 102 Medical Facility immediately to the west side of the Unit 1 Turbine Building. Access to the Radiological Controls Areas (RCA) of the plant can be accomplished on foot or with the site emergency vehicle. Off-site ambulances can also readily access the Medical Facility or the RCA. Decontamination effluent generated at the Medical Facility is contained for proper disposal.

The DCPP Medical Facility provides routine occupational medical care as well as emergency care for sick or injured personnel. During normal business hours, a physician's assistant is in charge.

Emergency medical service is available 24 hours a day, seven days a week by registered nurses or trained EMTs.

### 7.8.1 Personnel Decontamination Facilities

A decontamination room is provided at Access Control on elevation +85' of the Auxiliary Building, which has a sink and shower that drain to the liquid radwaste laundry collection tanks. Various decontamination aids are provided, such as brushes, skin decontamination soaps, rubber gloves, creams, wiping tissues, towels, etc. Monitoring instrumentation is readily available from the access control instrument storage.

### 7.8.2 First Aid Kits and Stretchers

Standard Company first aid kits and basket stretchers are placed at various locations throughout the plant.

### 7.8.3 Whole Body Counters

The plant maintains at least two computer-based whole body counters. Models may include a vertical counter with a NaI detector or an IGE bed counter, which if circumstances require, can be configured as a NaI bed counter.

## 7.9 CROSS REFERENCE TO NUREG-0654

| NUREG-0654 | DCPP Emergency Plan | NUREG-0654 | DCPP Emergency Plan |
|---|---|---|---|
| C.1.a to c | N/A | H.6.b | 7.6.3, 7.6.4, 7.6.52)d)(2) |
| C.3 | 7.5.5, 7.6.52)d)(2) | H.6.c | 7.5.5, 7.5.8, 7.6.5, 7.6.6 |
| C.4 | N/A | H.7 | 7.5.6.1, 7.5.8, 7.6.3, 7.6.4 |
| E.6 | 7.4 | H.8 | 7.5.2 |
| F.1.a | 7.2.4, 7.2.5, 7.2.7, 7.2.11 | H.9 | 7.1.5 |
| F.1.b | 7.2.4, 7.2.5, 7.2.6, 7.2.7, 7.2.10, 7.2.11, 7.2.12 | H.10 | N/A |
| F.1.c | 7.2.4, 7.2.5, 7.2.7, 7.2.9 | H.11 | 7.5.7, 7.5.8, 7.6.52)d)(2), 7.7.3, 7.7.5, 7.7.9, 7.8.1, 7.8.2 |
| F.1.d | 7.2.1, 7.2.2, 7.2.4, 7.2.5, 7.2.6, 7.2.7, 7.2.10, 7.2.11 | H.12 | 7.1.4, 7.1.6, 7.6.52)d)(2) |
| F.1.e | 7.2, 7.3.1 | I.2 | 7.5.2, 7.5.3, 7.5.4, 7.5.7, 7.5.10 |
| F.1.f | 7.2.7, 7.2.9 | I.3.b | 7.5.3, 7.5.4, 7.5.6, 7.5.6.1 |
| F.2 | 7.2.1, 7.2.11 | I.4 | 7.5.6.1 |
| F.3 | N/A | I.5 | 7.5.2, 7.5.6.1 |
| G.3.b | 7.1.6.1 | I.7 | 7.5.8, 7.6.3, 7.6.4 |
| H.1 | 7.1.4, 7.1.5 | I.9 | 7.5.8, 7.6.3 |
| H.2 | 7.1.6 | I.10 | 7.5.6.1, 7.6.6 |
| H.5 | 7.5 | J.10.a | 7.5.6.1, 7.6.3, 7.6.4 |
| H.5.a | 7.5 | J.10.c | 7.4 |
| H.5.b | 7.5.3, 7.5.4, 7.5.5, 7.5.6, 7.5.6.1, 7.5.8, 7.5.10 | K.5.a and b | 7.5.8, 7.8.1 |
| H.5.c | 7.5.4, 7.5.10, 7.5.11 | K.7 | 7.1.7, 7.8.1 |
| H.5.d | 7.5.9 | L.2 | 7.8.2 |
| H.6.a | 7.6.1, 7.6.2 | L.4 | 7.7.13 |