

ENCLOSURE 1

UPDATE TO THE SAN LUIS OBISPO COUNTY/CITIES
NUCLEAR POWER PLANT EMERGENCY RESPONSE PLAN

PART III: STANDARD OPERATING PROCEDURES

Location of Bracketed Privacy/Proprietary Information

Standard Operating Procedure:

III.06 HP-3

"Emergency Environmental Monitoring" dated March 1992,
page 8, 32 and 33 of 46.

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ENCLOSURE 2

UPDATE TO THE SAN LUIS OBISPO COUNTY/CITIES
NUCLEAR POWER PLANT EMERGENCY RESPONSE PLAN

PART III: STANDARD OPERATING PROCEDURES

*SOPs included in this submittal.

<u>COUNTY DEPARTMENT SOPs</u>	<u>Date</u>
III.01 Emergency Services Director	September 1990 Rev. 1(08/91)
III.02 County Sheriff's Department	July 1990 Rev. 1(02/91)
III.02 Appendix A, County Sheriff's Watch Commander Procedures	July 1990 Rev. 1(08/91)
III.03 CDF/County Fire Department	August 1991
III.04 County Engineer	April 1990
III.05 County Health Agency	November 1990
III.06 SLO County Environmental Health Department	March 1992
III.06 HP-1 Offsite Dose Assessment	August 1991
III.06 HP-2 Protective Action Guidelines	March 1992
III.06 HP-3* Emergency Environmental Monitoring	March 1992 Rev. 1(11/92)
III.06 HP-4 Instructions for Performing Basic Radiation Surveys	August 1991
III.06 HP-5 Stable Iodine Thyroid Blocking	May 1991
III.06 HP-6 Vehicle Monitoring	March 1992
III.06 HP-7 Evacuee Decontamination	March 1992
III.06 HP-8 Area and Equipment Decontamination	March 1992
III.06 HP-9 Emergency Worker Decontamination	March 1992

PART III: STANDARD OPERATING PROCEDURES (Continued)

III.06 HP-10	Environmental Health, Food Product Sampling	June 1992 (New)
III.06 HP-12	Unified Dose Assessment Center	May 1992
III.06 HP-13*	Emergency Equipment, Instrument, and Supplies	April 1992 Rev. 1(11/92)
III.07	Department of Social Services	August 1991
III.08	Public Information	August 1991
III.09	Co. Department of Technical Services	July 1990 Rev. 1(09/91)
III.10	General Services Department	July 1992
III.11	County Counsel	November 1990
III.12	Co. Agricultural Commissioner's Office	September 1988
III.13	County Air Pollution Control District	April 1992

LOCAL OFFICES OF STATE AGENCIES AND OTHER ORGANIZATIONS

Date

III.20	California Highway Patrol	August 1991
III.21	Caltrans	September 1990
III.22	Department of Parks and Recreation	August 1990
III.23	American Red Cross	March 1989
III.24	California Polytechnic State University	June 1989
III.25	California Men's Colony	June 1989

CITIES SOPs

III.30	City of Morro Bay Nuclear Emergency Plan	September 1990
III.31	City of San Luis Obispo Multihazard Emergency Response Plan	August 1991
III.32	City of Pismo Beach	June 1989

PART III: STANDARD OPERATING PROCEDURES (Continued)

III.33	City of Arroyo Grande	July 1989
III.34	City of Grover City	July 1989

FIRE DISTRICTS

III.40	Avila Beach Fire Protection District	March 1992
III.41	Cayucos Fire Protection District	October 1990
III.42	Oceano Fire District	October 1990

SCHOOLS

III.43	South Bay Fire Protection District	July 1990
III.44	Port San Luis Harbor District	June 1992
III.50	County Superintendent of Schools	July 1991
III.51	San Luis Coastal Unified School Dist.	February 1988
III.52	Atascadero Unified School District	July 1989
III.53	Cayucos Elementary School District	June 1989
III.54	Lucia Mar Unified School District	May 1992
III.55	Cuesta College	July 1989

OTHER AGENCIES

III.60	Amateur Radio Emergency Service - Radio Amateur Civil Emergency Service ARES/RACES	March 1992
III.61	Salvation Army	September 1991

SAN LUIS OBISPO COUNTY
NUCLEAR POWER PLANT
EMERGENCY RESPONSE PLAN

STANDARD OPERATING PROCEDURE

III.06 HP-3

EMERGENCY ENVIRONMENTAL MONITORING

May 1989

Revised

April 1990

May 1991

March 1992

AUTHENTICATION

This Standard Operating Procedure has been approved and is hereby incorporated as a department procedure:

Signed and Accepted:

Tim Maggiano
Name

DIRECTOR, ENVIRONMENTAL HEALTH
Title

MARCH 24, 1992
Date

This SOP comprises Section III.06 HP-3 of the San Luis Obispo County Nuclear Power Plant Emergency Response Plan. Detailed preparedness measures and emergency procedures concerning the operation of this organization are included herein. Part I of the Plan describes the overall County emergency organization and response, while Part II includes implementing instructions to be used by the County Direction and Control group and other key officials and the County Emergency Operations Center (EOC), in directing the emergency response activities.

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SAN LUIS OBISPO COUNTY
OFFICE OF EMERGENCY SERVICES

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COPY	QUANTITY	LOCATION	DATE
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Working Copy	1	OES File	
EOC	1	Agency Binder	
	1	D & C File Cabinet	
	1	Master Binder, County Room	
PG&E	2	To Sanitize and Distribute	
Dept./Agency	1	Director, Environmental Health	
	3	FMT Kits	
	9	FMT Members	
	1	County Staff Assigned to MEML	
	1	EOF - UDAC Coordinator Binder	
	1	EOF - UDC, Rad Monitoring Dir.	
	1	MEML	
	1	Santa Barbara County OES	
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I. OVERVIEW

A. INTRODUCTION

1. PURPOSE

This procedure describes the emergency offsite radiological environmental monitoring program which would be undertaken in the event of an airborne release of radioactive materials from the Diablo Canyon Power Plant. The procedure provides instruction for implementation of the program. Also provided are instructions to monitoring teams for locating sample points, collecting samples, and performing field analyses of samples.

2. OBJECTIVES

Operational objectives of this procedure are contained in the following checklists:

CHECKLIST 1 - MONITORING TEAM PRE-DEPARTURE PREPARATIONS

CHECKLIST 2 - COMMUNICATIONS PROTOCOL

CHECKLIST 3 - MONITORING INSTRUMENT PERFORMANCE TESTING

CHECKLIST 4 - DOSE AND COUNT RATE SURVEYS

CHECKLIST 5 - AIR SAMPLES

CHECKLIST 6 - SOIL AND VEGETATION SAMPLES

CHECKLIST 7 - LIQUID SAMPLES

CHECKLIST 8 - GROUND SURVEYS

CHECKLIST 9 - SMEAR SURVEYS

3. OVERVIEW

MONITORING TEAM COMPOSITION

Monitoring equipment will be issued from the San Luis Obispo County (SLOCO) Environmental Health Office.

Each team should have at least two members.

Teams should be comprised of as a minimum one PG&E Radiation Protection Technician as the team leader and at least one SLOCO Environmental Health

Officer. If PG&E personnel availability permits, an additional Radiation Protection Tech will accompany each field team.

One SLOCO Environmental Health Officer should also be assigned to support the Mobile Environmental Monitoring Laboratory (MEML), and MEML personnel will assist in organizing and dispatching the field teams from the MEML garage.

SLO County and/or PG&E field teams should wait for the other team members to arrive before departing the MEML garage (unless directed otherwise by the Radiological Monitoring Director (RMD) in the Unified Dose Assessment Center (UDAC) or Emergency Radiological Advisor (ERA) in the Technical Support Center (TSC)).

If personnel and vehicle/equipment availability permit, a "runner" may be used to transport samples from field monitoring locations back to the MEML for analysis.

COMMUNICATIONS

The primary communication links between the TSC, EOF, MEML, and field monitoring teams will be by radio communications on the PG&E Health Physics frequency. The field monitoring teams will use hand-held or mobile radios. An alternate radio communications link is the SLOCO UHF Local Government network (Purple Net).

For ease of communication with the radios, the offsite field monitoring teams will be given call names using the International Phonetic Alphabet:

A - Alpha	E - Echo	I - India
B - Bravo	F - Foxtrot	J - Juliett
C - Charlie	G - Golf	K - Kilo
D - Delta	H - Hotel	L - Lima

B. RESPONSIBILITIES

1. DIRECTOR, ENVIRONMENTAL HEALTH

Under this procedure, the San Luis Obispo County Director of Environmental Health has the responsibility to assign Deputy Health Officers to perform monitoring as described in this procedure, and to ensure that persons with responsibilities are trained in them.

2. DEPUTY HEALTH OFFICERS

Deputy Health Officers will perform field monitoring as described in this procedure, under the supervision of the Director, Environmental Health.

C. CONCEPT OF OPERATIONS

1. LOCATIONS TO MONITOR

Affected Sectors

The 360° of the compass have been divided into sixteen 22.5° sectors which are identified by the compass point of their centerline: i.e., N, NNE, NE, ENE, E, etc. In this procedure, all directions are referenced to true (not magnetic) north.

Distance Downwind

The areas to be surveyed will depend on such factors as the quantity of radioactivity released, wind speed, steadiness of wind direction, and the time elapsed since the release started. For initial positioning of the field teams, the EARS computer or meteorological information may be used to estimate the distance the plume has traveled downwind.

Identification of Emergency Monitoring Locations

Monitoring locations used in this procedure are identified in Figure 1, "Emergency Environmental Monitoring Locations". Table 1, "Description of Emergency Environmental Monitoring Locations" is included for reference.

Each monitoring location is identified by two coordinates as follows (e.g., NNE, 18):

NNE = Sector designation

18 = Radial distance in kilometers to the farthest sector element boundary (not true distance to plant).

In cases where samples are taken at locations other than those previously labeled, a short description of the location should be given.

2. RADIOLOGICAL PRECAUTIONS

The following radiological precautions shall be taken:

Team members should don protective coveralls before dispatch from the MEML garage and full anti-contamination clothing should be donned if contamination surveys indicate >1000 dpm/100 cm². This would result in a direct frisk of the surface within 1 cm or a smear covering 100 cm² (4" x 4" or 10" S motion) reading >100 cpm above background on an E140/E140N equipped with an HP 210/N-1002 probe.

Survey meter probes should be covered with plastic bags before performing surveys. This will prevent contamination of the probe.

When arriving at the monitoring location, first obtain the initial ground count rate by leaning out of the vehicle to survey the ground before stepping out. Deduct 60 cpm for nominal background from the gross reading and record the net count rate on the Field Data Sheet. If the contamination level exceeds 100 net cpm, remain in the vehicle and notify the EOF or TSC, which will direct you to either evacuate the area immediately or proceed with additional monitoring after donning additional protective clothing and/or respirators.

Team members should survey themselves, their equipment, and the exterior package of their samples if loose surface contamination is found during their surveys. Any detected skin contamination should be reported to the Radiological Monitoring Director. The Radiological Monitoring Director should then contact the UDAC Coordinator to arrange decontamination at the County's emergency worker decontamination facility.

Field monitoring personnel should read their pocket dosimeters at intervals not to exceed 30 minutes. Report the team members' dosimeter readings to the ERA or RMD when requested to do so.

Monitoring team personnel should leave any areas where the dose rate exceeds 500 mR/hr (25 mR/hr for an iodine release) and contact the EOF immediately (See Dose Rate below).

3. DOSE CONTROL

Emergency doses of field monitoring teams must be controlled to levels that reflect the benefit gained from performance of the monitoring. In most cases, field monitoring data is used to confirm the results of dose projections or to obtain environmental samples for analysis of residual activity following passage of a plume. Since in most cases these actions do not involve lifesaving or urgent emergency actions, the dose levels should be maintained under the guidance levels for protective actions for the general public. The State of California recognizes a whole body protective action guide value of 500 millirem and a thyroid gland value of 5 rem.

The dose control methods and calculations in this section should be used only for purposes of determining when protective actions, such as evacuation or thyroid prophylaxis should be taken by field teams.

Whole body doses

External whole body dose is monitored in the field using self-reading pocket ion chambers. This external dose will then be added to the calculated internal dose based on the gross activity measured on a particulate air sample in the field.

For field determination of internal dose, the Maximum Permissible Concentration (MPC) value for gross particulates is $3.0\text{E-}9$ microcurie/cc. Field monitoring team personnel will be assessed 2.5 millirem for each hour at this dose level, i.e., for each MPC-hour. This should be calculated using Attachment 2, Internal Dose Assessment Form, FORM HP-3.1. The sum of the external and internal dose components must be maintained less than 500 millirem. For qualified users, respirators may be used to reduce the internal component by a factor of 50, however, they are not recommended unless airborne concentrations are measured greater than 1 MPC ($3.0\text{E-}9$ microcurie/cc).

Thyroid dose

Thyroid dose can be estimated in the field from the results of gross radiiodine measurements. For field purposes, the MPC value for iodine-131, $9.0\text{E-}9$ microcurie/cc should be used. For thyroid doses based on gross iodine measurements, a thyroid dose of 15 millirem should be assessed for each MPC-hour. This should be calculated using Attachment 2. Total thyroid dose should be maintained less than 5 Rem. Potassium iodide may be recommended by the County Health Officer to reduce dose to monitoring team members, but no protection factor will be applied to iodine MPC-hours based on its use. The Radiological Monitoring Director should use Attachment 3, Monitoring Team Dose Tracking Log, FORM HP-3.2, to track dose of field monitoring teams and notify the team and the UDAC Coordinator if a limit is approached.

Dose rate

Dose rate "turnback values" should be used to prevent team members from exceeding their whole body and thyroid limits. Dose rates measured with the ASP-1 or RO-2 reflect only the whole body dose rate and may not accurately reflect the limiting dose for releases where radiiodine predominates. These "iodine releases" include steam generator tube rupture accidents where the steam generator level is flooded or empty and loss of coolant accidents (LOCA's) with releases directly from the containment or from the auxiliary building when there is no iodine filtration available.

For iodine releases, a dose rate to the thyroid of 5 Rem per hour is accompanied by approximately 25 mRem per hour whole body. Therefore 25 mRem/hr is used as the "turnback" dose rate for iodine releases.

500 mRem/hr should be used as a "turnback" dose rate for other releases where the whole body dose predominates.

4. RECORD KEEPING

All records generated by the utilization of this procedure for an exercise or emergency should be forwarded to the UDAC Coordinator.

Field data should be recorded on the Emergency Environmental Monitoring Field Data Sheets, Attachment 1 to this procedure. Each monitoring team shall maintain a notebook with the data sheets and other pertinent instructions.

Appendix 1, "Useful Conversion Factors" is included to assist in equivalent unit conversions.

Field samples will be labeled using the labels in FIGURE 6.

5. MONITORING PROGRAM

External dose rate measurement should be performed and an air sample collected at each offsite monitoring location unless otherwise directed by the Radiological Monitoring Director.

If the Pressurized Ion Chambers (PICs) are located in an affected sector, they should be read. Pressurized ion chamber locations are described in Table 2, and may be remotely interrogated using the EARS terminals.

Collection of any other types of samples (i.e., ground deposition measurements, vegetation, soil, water or milk samples) will be at the direction of the Radiological Monitoring Director, and are usually considered follow-up actions.

6. RESPIRATORY PROTECTION

LIMITATIONS

Respiratory protective equipment described in this procedure shall be used by persons medically qualified and trained as specified in this procedure and only in emergency activities in support of Diablo Canyon Power Plant for protection against airborne radionuclides. The respiratory protective equipment specified in this procedure may not be appropriate for other routine or emergency applications.

PRECAUTIONS

In this procedure, respiratory protective equipment use is described for the purposes of reducing the internal radiation dose to environmental monitoring team personnel from inhalation of airborne particulate radioactive material. Because respiratory equipment causes significant reduction in a person's vision and ability to communicate, and also increases fatigue, it should only be used when significant levels of airborne radioactivity have been verified by field measurements.

If a release of airborne radioactivity is known or has the potential to result in activity greater than or equal to $3.0\text{E-}9$ uCi/cc, monitoring teams should consist

only of persons who are trained and medically qualified to wear respiratory protective equipment.

Teams should don respirators during any evacuations from or work in areas where they have measured particulate airborne radioactivity greater than $3.0E-9$ uCi/cc (approximately 190 counts per minute for a 10 ft³ sample).

Equipment

Only Mine Safety Appliances Co. Ultra-Twin respirators may be used in connection with this procedure. All replacement parts for these respirators must be approved by NIOSH for the intended purpose. The approved part numbers are listed in Figure 4, Approved Respirators and Replacement Parts.

Training

The County Health Officer will ensure that all environmental monitoring team members receive training in the donning, fitting, sanitary care, limitations and precautions of the approved respirators. As part of this training, each user must initially pass a quantitative fit test to determine the adequacy of the seal, and a qualitative fit test annually thereafter. Anyone who fails to achieve an adequate seal shall not wear a respirator.

Maintenance and sanitation

The Director of Environmental Health will inspect or direct the inspection by a trained person, of all respirators on a monthly basis. Also, following each use of respirators for emergency response or training, each respirator will be sanitized and inspected. Records of these inspections will be attached to each respirator using the tag pictured in Figure 5, Respirator Inspection Tag.

Cleaning and sanitizing of respirators will be performed under the supervision of the Director of Environmental Health using cleaning agents approved by the manufacturer for this purpose. Each time a respirator is used, it shall not be used by another person until it has been properly sanitized and inspected.

When not in use, respirators must be bagged and stored at the county Environmental Health Office in the designated respirator storage area only. This area must be maintained so that the respirators are protected against dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Respirators should also be stored in accordance with the manufacturer's recommendations.

Medical and physical limitations

All environmental monitoring team personnel who are qualified to use respiratory protection must be physically able to perform the required monitoring tasks while using the equipment. This will be determined by a

licensed physician for each person initially, and thereafter by an annual review of each person's health status by the County Health Officer. Based on this review, if any health problems could potentially affect the person's ability to safely wear a respirator, he should be disqualified unless he is re-certified by a licensed physician.

Respirator wearers must be clean shaven so that no facial hair extends to the respirator sealing surface. This is a requirement for fit testing as well as emergency use.

D. COMMUNICATIONS, FACILITIES, EQUIPMENT AND SUPPLIES

1. FACILITIES

Field monitoring equipment is stored at the San Luis Obispo County Health Agency, Division of Environmental Health at 2156 Sierra Way, San Luis Obispo, CA 93406, [REDACTED]

During emergencies, the control of field monitoring activities is conducted from the Unified Dose Assessment Center, located at the county Emergency Operations Center at 1525 Kansas Avenue, off Highway 1 in San Luis Obispo; [REDACTED]

The Mobile Environmental Monitoring Laboratory (MEML) garage is located at the PG&E Service Center, 4325 S. Higuera St., San Luis Obispo, [REDACTED]

2. COMMUNICATIONS

Primary communications between the field monitoring teams and the UDAC is by two way radio. Hand held and mobile radios are available for use in County vehicles, and the UDAC has a base station which utilizes the SLO County UHF Local Government (Purple Net) frequency and PG&E Health Physics frequency. Telephone communications should be utilized if radios are not operational for any reason.

3. OPERATIONAL EQUIPMENT

Each SLO County Environmental Health field monitoring team will be issued an emergency kit prior to dispatch. Inventory, maintenance, and calibration schedule are described in Environmental Health emergency procedure SLO-HP-13, "Emergency Equipment, Instruments, and Supplies."

E. PROCEDURE MAINTENANCE

This procedure will be reviewed annually, and revised as necessary under the supervision and authority of the Director of Environmental Health in conjunction with the San Luis Obispo County Office of Emergency Services.

F. DRILLS AND TRAINING

1. TRAINING PROGRAMS

Training for field monitoring personnel will be offered on an annual basis on the following topics:

Use and care of survey meters and air samplers

Proper survey technique, and data recording

Water, soil, and vegetation sampling techniques

Radiation protection

Respirator fitting and use

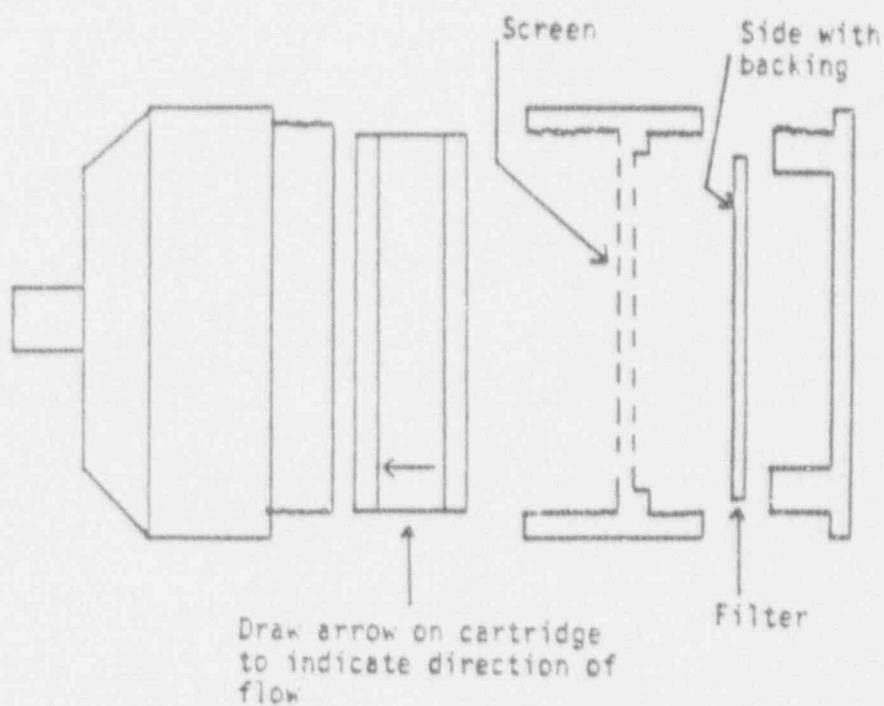
2. DRILLS AND EXERCISES

Field monitoring is exercised annually during several routinely scheduled exercises and drills. These include the Diablo Canyon Power Plant Annual and Dress Rehearsal Field Exercises, and a field monitoring drill, sometimes held in conjunction with a drill of the UDAC facility.

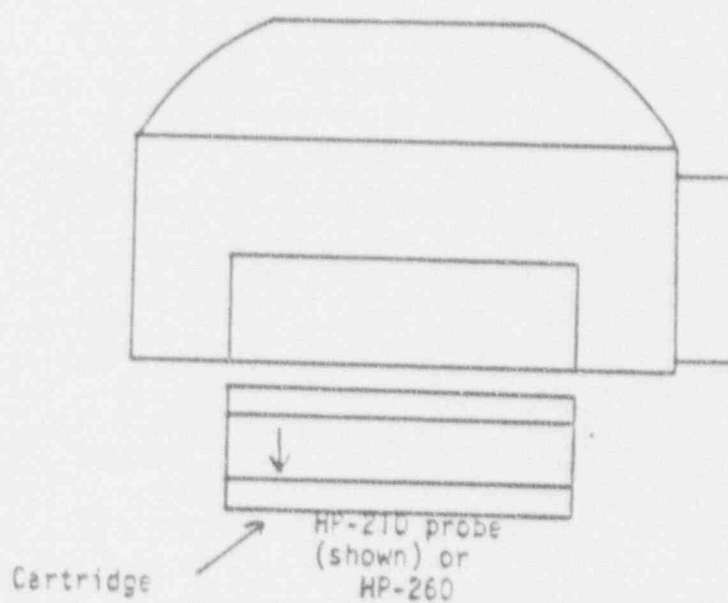
A. FIGURE 1 - EMERGENCY ENVIRONMENTAL MONITORING LOCATIONS



B. FIGURE 2 - HALOGEN CARTRIDGE AND PARTICULATE FILTER IN SAMPLING HEAD



C. FIGURE 3 - GM TUBE AND CARTRIDGE FOR GROSS IODINE DETERMINATION



Exploded view diagram of a 12-volt battery assembly. The diagram shows the following components and their part numbers:

- Recessed bolt:** 471504, 471505, 471507, 471508, 471509, 471510, 471511, 471512, 471513, 471514, 471515, 471516, 471517, 471518, 471519, 471520, 471521, 471522, 471523, 471524, 471525, 471526, 471527, 471528, 471529, 471530, 471531, 471532, 471533, 471534, 471535, 471536, 471537, 471538, 471539, 471540, 471541, 471542, 471543, 471544, 471545, 471546, 471547, 471548, 471549, 471550, 471551, 471552, 471553, 471554, 471555, 471556, 471557, 471558, 471559, 471560, 471561, 471562, 471563, 471564, 471565, 471566, 471567, 471568, 471569, 471570, 471571, 471572, 471573, 471574, 471575, 471576, 471577, 471578, 471579, 471580, 471581, 471582, 471583, 471584, 471585, 471586, 471587, 471588, 471589, 471590, 471591, 471592, 471593, 471594, 471595, 471596, 471597, 471598, 471599, 471600, 471601, 471602, 471603, 471604, 471605, 471606, 471607, 471608, 471609, 471610, 471611, 471612, 471613, 471614, 471615, 471616, 471617, 471618, 471619, 471620, 471621, 471622, 471623, 471624, 471625, 471626, 471627, 471628, 471629, 471630, 471631, 471632, 471633, 471634, 471635, 471636, 471637, 471638, 471639, 471640, 471641, 471642, 471643, 471644, 471645, 471646, 471647, 471648, 471649, 471650, 471651, 471652, 471653, 471654, 471655, 471656, 471657, 471658, 471659, 471660, 471661, 471662, 471663, 471664, 471665, 471666, 471667, 471668, 471669, 471670, 471671, 471672, 471673, 471674, 471675, 471676, 471677, 471678, 471679, 471680, 471681, 471682, 471683, 471684, 471685, 471686, 471687, 471688, 471689, 471690, 471691, 471692, 471693, 471694, 471695, 471696, 471697, 471698, 471699, 471700, 471701, 471702, 471703, 471704, 471705, 471706, 471707, 471708, 471709, 471710, 471711, 471712, 471713, 471714, 471715, 471716, 471717, 471718, 471719, 471720, 471721, 471722, 471723, 471724, 471725, 471726, 471727, 471728, 471729, 471730, 471731, 471732, 471733, 471734, 471735, 471736, 471737, 471738, 471739, 471740, 471741, 471742, 471743, 471744, 471745, 471746, 471747, 471748, 471749, 471750, 471751, 471752, 471753, 471754, 471755, 471756, 471757, 471758, 471759, 471760, 471761, 471762, 471763, 471764, 471765, 471766, 471767, 471768, 471769, 471770, 471771, 471772, 471773, 471774, 471775, 471776, 471777, 471778, 471779, 471780, 471781, 471782, 471783, 471784, 471785, 471786, 471787, 471788, 471789, 471790, 471791, 471792, 471793, 471794, 471795, 471796, 471797, 471798, 471799, 471800, 471801, 471802, 471803, 471804, 471805, 471806, 471807, 471808, 471809, 471810, 471811, 471812, 471813, 471814, 471815, 471816, 471817, 471818, 471819, 471820, 471821, 471822, 471823, 471824, 471825, 471826, 471827, 471828, 471829, 471830, 471831, 471832, 471833, 471834, 471835, 471836, 471837, 471838, 471839, 471840, 471841, 471842, 471843, 471844, 471845, 471846, 471847, 471848, 471849, 471850, 471851, 471852, 471853, 471854, 471855, 471856, 471857, 471858, 471859, 471860, 471861, 471862, 471863, 471864, 471865, 471866, 471867, 471868, 471869, 471870, 471871, 471872, 471873, 471874, 471875, 471876, 471877, 471878, 471879, 471880, 471881, 471882, 471883, 471884, 471885, 471886, 471887, 471888, 471889, 471890, 471891, 471892, 471893, 471894, 471895, 471896, 471897, 471898, 471899, 471900, 471901, 471902, 471903, 471904, 471905, 471906, 471907, 471908, 471909, 471910, 471911, 471912, 471913, 471914, 471915, 471916, 471917, 471918, 471919, 471920, 471921, 471922, 471923, 471924, 471925, 471926, 471927, 471928, 471929, 471930, 471931, 471932, 471933, 471934, 471935, 471936, 471937, 471938, 471939, 471940, 471941, 471942, 471943, 471944, 471945, 471946, 471947, 471948, 471949, 471950, 471951, 471952, 471953, 471954, 471955, 471956, 471957, 471958, 471959, 471960, 471961, 471962, 471963, 471964, 471965, 471966, 471967, 471968, 471969, 471970, 471971, 471972, 471973, 471974, 471975, 471976, 471977, 471978, 471979, 471980, 471981, 471982, 471983, 471984, 471985, 471986, 471987, 471988, 471989, 471990, 471991, 471992, 471993, 471994, 471995, 471996, 471997, 471998, 471999, 472000.
- Recessed bolt:** 471504, 471505, 471507, 471508, 471509, 4



Ultra-Twin®
Respirator

E. FIGURE 5 - RESPIRATOR INSPECTION TAG

Respirator ID # _____
Inspected by: _____
Date of inspection: _____

F. FIGURE 6 - SAMPLE LABEL

REV 1.0; THU 05 NOV 92

DEFENSAP

Smear No.

Date Time

Location

Technician

Count	ALPHA	BETA	GAMMA

Field Sample

☐ Filter Paper ☐ Charcoal ☐ Silver Zeolite ☐ Other

Team I.D.

Location

Sampler Average Flow Rate cfm

Date Time on Time off

Count Rate at 1/2" (HP-210/260) cpm (net)

☐ No radiation detectable in field (laboratory analysis suggested)

III.06 - HP-3 EMERGENCY ENVIRONMENTAL MONITORING
Section III - Tables

NPPERP
(03/92)

III. TABLES

A. TABLE 1 - DESCRIPTION OF EMERGENCY ENVIRONMENTAL MONITORING LOCATIONS

Coordinate	Straight Distance Plant (km)	Line from	Description	AC Power Available
NNW,6	7.5		Montana de Oro State Park. Parking lot near end of road at southern park boundary.	No
NNW,27	26.8		Cayucos Pier. Phone Available. Going north on Highway 1, take second Cayucos exit marked Cayucos Drive.	No
N,11	10.8		Baywood Fire Station. Turn south off of Los Osos Valley Road onto Bayview Heights Drive (up one block). Phone available.	Yes
N,12	10.8		Sea Pines Golf Course Clubhouse. Turn off Pecho Valley Road onto Monarch. Right on Del Norte. Right on Howard. Phone available at clubhouse.	Yes, during work hours. Otherwise at nearby residences
N,18	17.5		Morro Bay Power Plant. Phone available.	Yes
NNE,13	13.5		Los Osos Jr. High School on South Bay Blvd. at end of Access Road. Phone available during school hours.	Yes, during school hours.
NNE,18	17.8		0.3 miles north along San Bernardo Creek Road on the northeast side of Highway 1. Phone available at nearby residences.	Yes, available at nearby residences
NE,11	12.0		Intersection of Los Osos Valley Road and Turri Road. Phone available at nearby residences.	Yes, available at nearby residences

Coordinate	Straight Line Distance from Plant (km)	Description	AC Power Available
NE,17	16.8	EOF. 1525 Kansas Ave. North on Highway 1, turn left at sign indicating Sheriff's Operational Center. Phone available.	Yes
ENE,8	7.8	See Canyon Road at intersection with Coon Creek Road. (6.0 miles from San Luis Bay Drive on See Canyon Road.)	No
ENE,9	9.3	See Canyon Road, 4.2 miles up from San Luis Bay Drive intersection. (Intersection of See Canyon Road and Black Walnut Road). Phone available at residences. Rattlesnake hazard.	Yes. Available at nearby residences
ENE,15	15.3	Laguna Jr. High School at intersection of Los Osos Valley Road and Perfumo Canyon Road. Phone available during school hours, otherwise nearby residences.	Yes, during school hours, otherwise at nearby residences
ENE,20	20.8	PG&E Substation at corner of Orcutt and Johnson Streets.	No
ENE,21	20.8	Cuesta County Park. Highway 101 N, left on Grand, right on Loomis to Park. Phone in parking lot.	No
E,11	10.5	See Canyon Road, 1.7 miles up from San Luis Bay Drive intersection. Survey at intersection of See Canyon Road and Davis Canyon Road. Phone available at nearby residences.	Yes, available at nearby residences

Coordinate	Straight Line Distance from Plant (km)	Description	AC Power Available
E,15	14.0	PG&E Community Center. Ontario Rd., South of San Luis Bay Drive.	Yes
E,22	20.3	SLO Country Club. West of Highway 227, South of SLO Airport. East side of parking lot in the fairway. Phone available during working hours, otherwise at nearby residences.	Yes, during working hours, otherwise at nearby residences
E,23	21.5	Intersection of Price Canyon Road and Ormande.	No
E,24	24.5	Righetti Road at intersection of Coyote Canyon Road at metal gate.	No
*ESE,3	-	Turnout on access road, 1.6 miles from Security Bldg. Marked with red/white fence post. (At mile marker 5.8)	No
*ESE,4	-	Turnout on access road 2.8 miles from Security Bldg. Marked with red/white fence post. (Between mile markers 4.5 - 4.6)	No
*ESE,7	-	By Ranch Road, 4.3 miles from Security Bldg. along access road. Marked with red/white fence post. (Between mile markers 3.0 - 3.1)	No
*ESE,10	9.6	Access Road at gate, 6.2 miles from the Security Bldg. (Between mile markers 1.4 - 1.5) Marked with red/white fence post.	No

On Site Locations - PG&E FMT's responsible.

Coordinate	Straight Line Distance from Plant (km)	Description	AC Power Available
ESE,11	10.3	South and above DCPD front gate in boat storage lot. Phone at front gate.	No
ESE,13	13.0	Pirate's Cove parking lot	No
ESE,18	17.8	Shell Beach, Margo Dodd Park, Seaview and Ocean Blvd.	No
ESE,24	23.3	Pismo State Beach. Grand Ave. at Highway 1.	No
ESE,28	27.3	Nunez Market, corner of Halcyon and Highway 1 (Mesa View Drive) (intersection at top of hill)	No
ESE,29	30.0	Market parking lot at corner of Cecchetti and Lopez Lake Drive.	No
ESE,34	35.0	Intersection of Highway 101 S and Los Berros Road.	No
*SE,1	-	Turnout on access road, 0.8 miles from Security Bldg. near meteorological Tower A. Marked with red/white fence post. Between mile markers 6.5 - 6.6 Phone in tower building.	Yes
SE,30	29.8	Intersection at Highway 1 and Callender.	No

On Site Locations - PG&E FMT's responsible.

B. TABLE 2 - PRESSURIZED ION CHAMBER LOCATIONS

LOCATION	DESCRIPTION
*Site 1	DCPP North Gate Guard Post
*Site 2	SSW Corner of Target Range
Site 3	715 Harbor Street, Morro Bay. Small fenced yard on NE corner of Harbor Street and Piney Street intersection, near Fire Department
Site 4	Montana de Oro State Park. At the Park Ranger's residence, adjacent to the emergency siren.
Site 5	South Bay Fire Department, Los Osos
Site 6	EOF, 1525 Kansas Ave., SLO. Outside rear entrance to south side of Building
Site 7	SLO Police Department. Intersection of Santa Rosa Street and Walnut Street. Behind fence SW of Walnut Street driveway.
Site 8	SLO Service Center, 4325 So. Higuera St., SLO
Site 9	PG&E Community Center, Ontario Road, South of San Luis Bay Drive
Site 10	DCPP Front Gate
Site 11	Pismo Beach. From Bello Street go N.E., turn between Veterans's Memorial and St. Paul's Church and proceed up dirt road. Pressurized ion chamber is on top of hill north of pump house and west of water storage tank. The pressurized ion chamber is located inside a locked chain link fence. The lock's combination is 3408.
Site 12	SLO County Building. Grover City. 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.

* On Site - PG&E FMT responsible.

C. TABLE 3 - BACKGROUND DATA FOR DOSE AND/OR COUNT RATE MEASUREMENTS
 (3' ABOVE GROUND)

<u>INSTRUMENT (PROBE)</u>	<u>BACKGROUND DOSE RATE (mR/hr)</u>	
	<u>WINDOW CLOSED</u>	<u>WINDOW OPEN</u>
ASP-1 (HP-270)	0.01	0.01
RO-2 (N/A)	0	0

<u>INSTRUMENT (PROBE)</u>	<u>BACKGROUND COUNT RATE (cpm)</u>	
	<u>WINDOW CLOSED</u>	<u>WINDOW OPEN</u>
E-140 (N-1002)	NA	60
E-140 (HP-210)	NA	60

D. TABLE 4 - GM PROBE EFFICIENCY FACTORS, IODINE

e_2 FOR IODINE DETERMINATIONS

<u>GM PROBE</u>	<u>e_2 (counts/dis)</u>
N-1002	0.003
HP-210	0.003

E. TABLE 5 - GM PROBE EFFICIENCY FACTORS, PARTICULATE

e_3 FOR PARTICULATE DETERMINATIONS

<u>GM PROBE</u>	<u>e_3 (counts/dis)</u>
N-1002	0.10
HP-210	0.10

IV. APPENDICES

A. APPENDIX 1 - USEFUL CONVERSION FACTORS

<u>Multiply # of</u>	<u>by</u>	<u>to Obtain # of</u>
<u>LENGTH</u>		
in	2.54	cm
ft	30.48	cm
mi	1.609	km
<u>AREA</u>		
in ²	6.452	cm ²
ft ²	929.0	cm ²
ft ²	9.29×10^{-2}	m ²
mi ²	2.59×10^6	m ²
<u>FLOW RATE</u>		
ft ³ /min	472	cm ³ /sec
<u>MASS</u>		
lb	0.4536	Kg
lb	453.6	g
<u>PRESSURE</u>		
atm	14.7	lb/in ²
lb/in ²	27.7	in of H ₂ O
lb/in ²	51.72	mm of Hg
<u>RADIOLOGICAL</u>		
Ci	3.7×10^{10}	dps
Ci	2.220×10^{12}	dpm
Ci	10 ³	mCi
Ci	10 ⁶	uCi
uCi/cm ³	2.22×10^{12}	dpm/m ³
uCi/m ²	2.22×10^4	dpm/100cm ²

APPENDIX 1 (Continued)

USEFUL CONVERSION FACTORS

<u>Multiply # of</u>	<u>by</u>	<u>to Obtain # of</u>
<u>TIME</u>		
days	86,400	sec
days	1440	min
hour	3600	sec
<u>VELOCITY</u>		
mph	44.70	cm/sec
mph	1.467	ft/sec
mph	.447	m/sec
<u>VOLUME</u>		
in ³	16.39	cm ³
in ³	5.787×10^{-4}	ft ³
ft ³	2.832×10^2	m ³

B. APPENDIX 2 - QUALITATIVE FIT TEST PROCEDURE

The fit test should be conducted using irritant smoke from commercially available smoke tubes used for ventilation system testing (MSA part 5645). All testing should be conducted in a well-ventilated room to prevent a buildup of smoke in the room. The respirator wearer should keep his eyes closed during the test to prevent potential irritation if the fit is inadequate. The person conducting the test should use the smoke tube to direct smoke over the respirator and observe the reactions of the wearer. If the respirator wearer detects penetration of smoke, he should attempt to readjust the seal. If penetration of smoke is not detected, the test operator should move the smoke tube closer to the respirator and again observe the reactions of the wearer. When the smoke tube has been moved to within 6 inches of the respirator, and if the wearer still has not detected any penetration of smoke, the smoke should be directed at potential points of leakage, i.e., around the face seal area. If the wearer still does not detect penetration of the smoke, he should carry out a series of exercises such as deep breathing, turning head from side to side, nodding head up and down, and talking while smoke is directed at the respirator.

After these tests, if the respirator wearer is unable to detect the penetration of smoke into the respirator, the wearer has achieved a satisfactory fit with the respirator.

A. ATTACHMENT 1 - FIELD DATA SHEET (1 of 2)

Date: _____	Field Team: _____	A B C or _____	Leader: _____
		Members: _____	
CR Instrument: E-140/E-140N	RP# _____	Calib. Due: _____	
Probe: HP-210/N-1002	RP# _____		
DR Instrument: ASP-1/Other	RP# _____	Calib. Due: _____	
Air Sampler:	RP# _____	Calib. Due: _____	

OFF-SITE EMERGENCY MONITORING LOCATION:							
NNW,6	N,18	NE,17	ENE,20	E,22	ESE,4	ESE,13	ESE,29
NNW,27	NNE,13	ENE,8	ENE,21	E,23	ESE,7	ESE,18	ESE,34
N,11	NNE,18	ENE,9	E,11	E,24	ESE,10	ESE,24	SE,1
N,12	NE,11	ENE,15	E,15	ESE,3	ESE,11	ESE,28	SE,30
or (describe): _____							

INITIAL GROUND COUNT RATE:				(Note: Stay in vehicle; lean out to survey. Report data immediately to EOF if over 100 cpm net.)			
Initial,	Time: _____	_____ cpm gross	- 60 cpm bkgd	=	_____ cpm net		
Follow up,	Time: _____	_____ cpm gross	- 60 cpm bkgd	=	_____ cpm net		
Follow up,	Time: _____	_____ cpm gross	- 60 cpm bkgd	=	_____ cpm net		

COUNT RATE AT 3 FEET (SKYSHINE):			
	<u>Window Up</u>	<u>Window Down</u>	<u>Skyshine</u>
Time: _____	_____ cpm gross	- _____ cpm gross	= _____ cpm net
Time: _____	_____ cpm gross	- _____ cpm gross	= _____ cpm net
Time: _____	_____ cpm gross	- _____ cpm gross	= _____ cpm net
Time: _____	_____ cpm gross	- _____ cpm gross	= _____ cpm net

DOSE RATE AT 3 FEET:			
Time: _____	_____ mr/hr window open,	_____ mr/hr window closed	
Time: _____	_____ mr/hr window open,	_____ mr/hr window closed	
Time: _____	_____ mr/hr window open,	_____ mr/hr window closed	
Time: _____	_____ mr/hr window open,	_____ mr/hr window closed	

AIR SAMPLE:				
Time Stop	- Time Start	= Minutes Draw Time	X ft. ³ /min. avg. flow rate	= ft. ³ sample volume

PARTICULATE DETERMINATION: (Report data to EOF for calculation.)			
Time: _____	cpm gross - _____	cpm bkgd* = _____	cpm net
Time: _____	cpm gross - _____	cpm bkgd* = _____	cpm net
Time: _____	cpm gross - _____	cpm bkgd* = _____	cpm net
IODINE DETERMINATION: (Report data to EOF for calculation.)			
Time: _____	cpm gross - _____	cpm bkgd* = _____	cpm net
Time: _____	cpm gross - _____	cpm bkgd* = _____	cpm net
Time: _____	cpm gross - _____	cpm bkgd* = _____	cpm net
SMEARABLE CONTAMINATION:			
Time: _____	cpm gross - _____	cpm bkgd* = _____	cpm net
		x 10	
			net dpm/100 cm ²
PRESSURIZED ION CHAMBER:			
Time: _____	Dose Rate: _____ nmr/hr	PIC Number: _____	
VEGETATION SAMPLE:			
Time: _____	Sample Description: _____		
	_____ cpm contact	_____ cpm bkgd*	_____ cpm contact
	gross count rate		net count rate
LIQUID SAMPLE:			
Time: _____	Sample Description: (source) _____		
	_____ cpm contact	_____ cpm bkgd*	_____ cpm contact
	gross count rate		net count rate
	container surface		container surface
SOIL SAMPLE:			
Time: _____	Sample Description: _____		
	_____ cpm contact	_____ cpm bkgd*	_____ cpm contact
	gross count rate		net count rate

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B. ATTACHMENT 2 - FORM HP-3.1: INTERNAL DOSE ASSESSMENT FORM

Team ID _____ Location _____

Assessment Period _____

Particulates

<input type="text"/>	$\times \frac{1.6E-10}{\text{Vol. (cu ft.)}}$	=	<input type="text"/>	$\times 3.3E8$	=	<input type="text"/>
Net CPM HP-210 or HP-260			$\mu\text{Ci/cc}$			MPC

↓

<input type="text"/>	\times	<input type="text"/>	$\times 2.5$	=	<input type="text"/>
MPC		Exposure Duration (hr)			Internal Exposure (mRem)

Iodines

<input type="text"/>	$\times \frac{5.6E-9}{\text{Vol. (cu ft.)}}$	=	<input type="text"/>	$\times 1.1E8$	=	<input type="text"/>
Net CPM HP-210 or HP-260			$\mu\text{Ci/cc}$			MPC

↓

<input type="text"/>	\times	<input type="text"/>	$\times 15$	=	<input type="text"/>
MPC		Exposure Duration (hr)			Internal Exposure (mRem)

Notes _____

NOTE: For Information Purposes Only - Internal dose calculation will be performed by EOF staff.

C. ATTACHMENT 3 - FORM HP-3.2: MONITORING TEAM DOSE TRACKING LOG

Team ID _____ Rad. Monitoring Director _____

Date _____

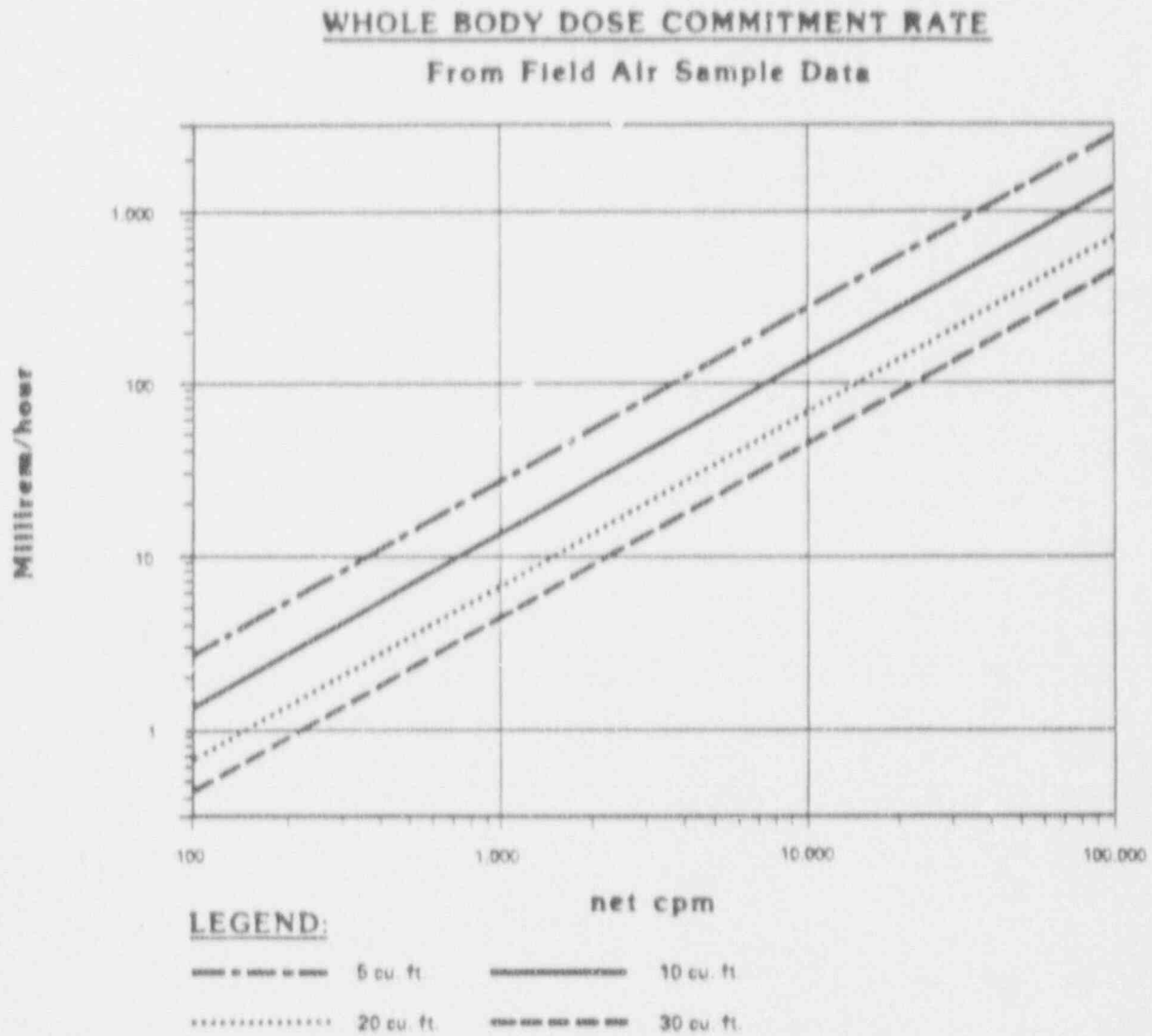
Complete one section of this form each time there is a significant change in external exposure or airborne radioactivity.

Exposure period: _____	Dose Rate (mRem/hr)	Duration (hours)	Dose (mRem) Increment	Total Dose (mRem)
Whole body external				
Whole body internal				
Thyroid internal				

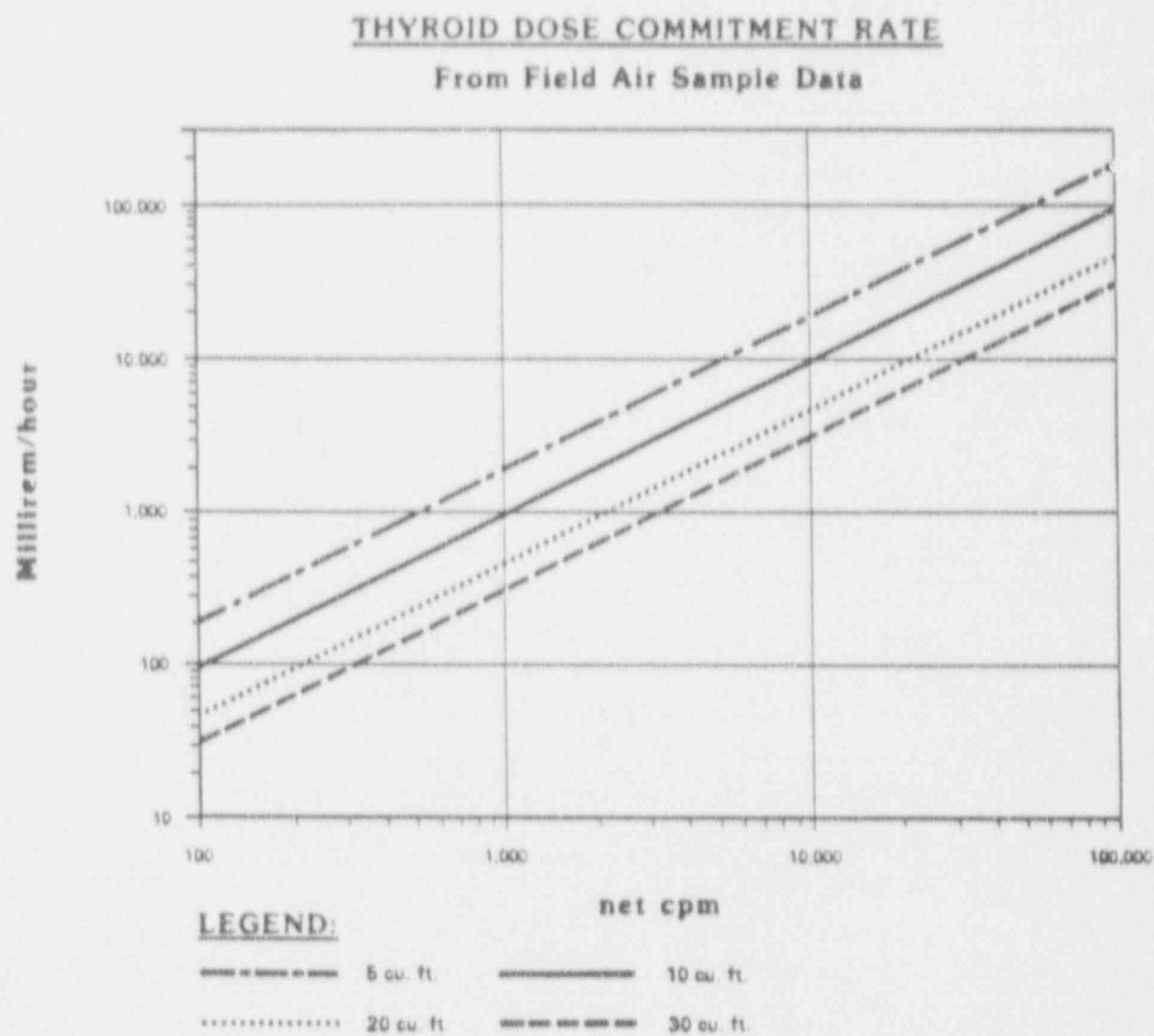
Exposure period: _____	Dose Rate (mRem/hr)	Duration (hours)	Dose (mRem) Increment	Total Dose (mRem)
Whole body external				
Whole body internal				
Thyroid internal				

Exposure period: _____	Dose Rate (mRem/hr)	Duration (hours)	Dose (mRem) Increment	Total Dose (mRem)
Whole body external				
Whole body internal				
Thyroid internal				

D. ATTACHMENT 4 - INTERNAL WHOLE BODY DOSE RATE FROM AIR SAMPLE DATA



E. ATTACHMENT 5 - INTERNAL THYROID DOSE RATE FROM AIR SAMPLE DATA



VI. CHECKLISTS

A. CHECKLIST 1 - MONITORING TEAM PRE-DEPARTURE PREPARATIONS

- MONITORING TEAM _____ TEAM LEADER _____ DATE & TIME _____
- _____ Obtain a field monitoring kit for team, and verify the following inventory: (report deficiencies to dispatcher or to EOC)
 - _____ Dosimetry for each team member, including TLD badge, 0-200 mR dosimeter, 0-5 R dosimeter, and 0-20 R dosimeter.
 - _____ Protective clothing for each team member, including coveralls, shoe covers, gloves, respirator, head cover.
 - _____ Dose rate survey meter (ASP-1, or equivalent)
 - _____ Count rate survey meter (E-140N or equivalent)
 - _____ Air sampler, filter papers, and iodine cartridges
 - _____ Liquid sampling equipment
 - _____ Soil sampling equipment
 - _____ Vegetation sampling equipment
 - _____ Bags/Envelopes for samples
 - _____ Sample labels
 - _____ Contaminated waste bags
 - _____ Distribute dosimetry to each team member, zero the dosimeters if necessary, and record any initial readings on the appropriate forms.
 - _____ Check operation of survey instruments and air sampler.
 - _____ Obtain a 2-way radio for the team vehicle, and perform a radio communications check on both County Local Government and PG&E Health Physics channels. Verify EOC telephone numbers for Radiological Monitoring Director [REDACTED] and UDAC Coordinator [REDACTED]
 - _____ Make sure vehicle has at least 3/4 tank of fuel. Obtain more if needed.
 - _____ Don coveralls before leaving the Service Center.
 - _____ Before leaving the dispatch point, make sure you understand the following:
 - _____ location of the initial designated monitoring point _____
 - _____ suggested route _____
 - _____ anticipated radiological conditions _____
 - _____ mission exposure dose limits _____
 - _____ turnback dose rates _____
 - _____ projected plume travel path or wind direction _____

B. CHECKLIST 2 - COMMUNICATIONS PROTOCOL

Radio Technique

- ___ Hold the microphone upright, directly in front of the mouth.
- ___ Before transmitting, make certain that someone else is not already transmitting on the frequency.
- ___ After pushing transmit button, wait two seconds to allow automatic radio encoding to occur.
- ___ If radio communications cannot be maintained for any reason, use the following telephone numbers (Rad. Monitoring Director is primary):
 - UDAC: Rad. Monitoring Director
 - UDAC Coordinator
- MEML:
- TSC: Emerg. Rad. Advisor
- ___ Each monitoring team leader and the MEML should contact the EOF or TSC under the following conditions:
 - ___ After obtaining radios to verify their operability and obtain initial instructions from the EOF or TSC.
 - ___ Upon arriving at a monitoring location, to report initial radiological conditions (dose rate, count rate).
 - ___ After completion of sampling at a monitoring location to report results or obtain additional instructions.
 - ___ At least once per hour to verify continued radio operability (if contact has not been made during that period).

C. CHECKLIST 3 - MONITORING INSTRUMENT PERFORMANCE TESTING

All portable monitoring instrumentation should be checked prior to entering the field. This check should include at least the following.

- ☐ The instrument should have no visible signs of damage.
- ☐ The instrument should be in calibration as verified by the calibration sticker attached to the instrument.
- ☐ The batteries should be good as verified by turning the instrument to the Battery Check position and ensuring proper meter indication.
- ☐ If the meter has an attached source the meter should be response checked by holding the probe to the source and monitoring for a response.
- ☐ If the meter is equipped with a zero adjust, it should be adjusted to read zero when the selector switch is in the zero adjust position.
- ☐ Ensure probes are covered with plastic bags to protect probes from contamination.

D. CHECKLIST 4 - DOSE AND COUNT RATE SURVEYS

EXTERNAL DOSE RATE AND/OR COUNT RATE INSTRUMENTS

Either of the following instruments can be used for external dose rate measurements:

Eberline ASP-1 with HP-270 probe

Eberline RO-2/RO-2A

For measuring an external count rate, use an Eberline E-140/N survey meter equipped with either an N-1002 pancake GM probe or an HP-210 shielded GM probe. (The HP-210 probe is preferred).

Cover the survey meter probe with a plastic bag before performing surveys.

Caution: probe cables for count rate (HP-210 and N-1002) probes and dose rate (HP-270) probes are not interchangeable.

DOSE OR COUNT RATE MEASUREMENTS

- _____ Make a dose rate or count rate measurement with the detector held about three feet off the ground (i.e., approximately at waist level). If the detector is so equipped, take the data with the beta window open and closed.

NOTE: When using the HP-210 or N-1002 probe, take both window up and window down readings. These readings may be required later to account for sky shine. Be sure to note the correct reading under the correct headings on the Data Sheet - cpm [window up] and cpm [window down].

- _____ Record the type of instrument (or probe) used, time survey was started, highest value obtained during the survey, and calibration due date of the instruments on the appropriate section of the Field Data Sheet.
- _____ Report the time of surveys, both the open and closed beta window net readings and the type of instrument used, to the EOF or TSC as is appropriate.

PRESSURIZED ION CHAMBER

- _____ The pressurized ion chambers may be read directly by pressing the "READ" pushbutton installed on the front panel face of the equipment. The pressurized ion chamber locations are described in Table 2.
- _____ Dose rate trending may be performed by reviewing the strip chart. One trace indicates the range. The second trace indicates the actual dose rate. It should correspond with that shown on the digital display. Readings in micro-R/hr should be divided by 1000 to obtain mR/hr.
- _____ Record data in the appropriate section of the Field Data Sheet. Report the reading to the EOF or TSC as is appropriate.

E. CHECKLIST 5 - AIR SAMPLES

COLLECTION OF AIR SAMPLES

- _____ Ensure that the following equipment is available:
- _____ One of the following air samplers, equipped with sample head for two-inch filters:
 - RADECO Model HD-28B (120V AC-powered).
 - RADECO Model H-809C (12V DC-powered, without battery).
- _____ Two-inch diameter absolute particulate filter paper
- _____ Coin envelope for retention of filter.
- _____ 2-1/4"-diameter charcoal cartridge or AgZ (Silver Zeolite) cartridge.
- _____ Plastic sandwich bag for retention of cartridge.
- _____ Labels for labeling samples, FIGURE 6.
- _____ Wristwatch or stopwatch.
- _____ Assemble the filter and halogen cartridge in the sampling head as shown in Figure 2. Draw an arrow on the cartridge to indicate the direction of flow. The particulate filter is mounted on the holder such that the side with the visible filaments is downstream (screen side) of the flow and the grid pattern faces out (sample side).
- _____ Place the filter head on the sampler.

For an HD-28B, proceed as follows:

- _____ Plug in the sampler, turn on the power, and simultaneously start a stopwatch (or reset the timer on the sampler itself, if a sampling time of several hours is contemplated).

For an H-809C, proceed as follows:

- _____ Attach the sampler to the car battery by attaching the red cable to the positive battery terminal and the black cable to a chassis ground.

NOTE: Try to position the air-sampler away from the vehicle's cooling fan, if possible.

- _____ Turn the vehicle engine on. Start the sampler. Note the airflow. Do not attempt to adjust the airflow by turning the setscrew on the top of the flowmeter.

NOTE: The maximum flow rate is approximately 1 cfm.

- ____ Periodically check the flow indicator to verify that the flow rate is being maintained. If the flow rate changes significantly during sample collection, note the value at the end of the sample period and determine the average value of the flow rate. This average value should be used to determine the size of the sample collected.
- ____ Allow the sampler to run until at least 10 ft³ (but preferably 30-50 ft³) is collected. The greater the volume sampled, the better.
- ____ Stop the sampler and remove the filter head. If using a vehicle as the power source, stop the vehicle's engine.
- ____ Make the halogen and particulate measurements discussed below, if desired.
- ____ If excessive dose rates make it necessary to leave the area prior to making the measurements below place the filter head in a plastic sandwich bag and label the bag.

Identification and Retention of Samples

- ____ Samples or filters which are collected in the field should be placed in a sealed plastic bag, envelope, or bottle, as appropriate, and identified with a firmly attached label which states the following information:
 - Date and time of start and end of sample collection. The time is expressed using military time (24 hour clock).
 - Sampler flow rate (air samples only).
 - Location of sample.
 - Name of person who collected the sample.
- ____ The exterior of the bag should be smear surveyed. If contamination is found, place the bag inside another bag and note contamination levels on the outside of the second bag.

DETERMINATION OF GROSS PARTICULATE (FIELD TECHNIQUE)

- ____ Ensure that the following equipment is available:
 - ____ Eberline E-140/N survey meter equipped with either an N-1002 pancake GM probe or an HP-210 shielded pancake GM probe. HP-210 probe is preferred.

NOTE: Field measurements should be performed in a low background location if possible, outside contaminated areas or plume (<100 cpm). Cover probe with plastic to prevent contamination.

NOTE: Field measurements should be performed in a low background location, if possible, outside contaminated areas or plume (<100 cpm). Cover probe with plastic to prevent contamination.

- _____ Plastic bags.
- _____ Forceps or tweezers
- _____ Remove the cartridge from the sample head and place the probe within one-half inch of the upstream side of the cartridge. See Figure 3. Wait for the meter to stabilize (about 20 seconds) and then record the type of probe and the gross counts in the appropriate section of the Field Data Sheet.
- _____ Report the sample time, flow rate, volume, type of probe used, and the initial gross sample counts to the EOF or TSC as appropriate.
- _____ Place the cartridge in a plastic sandwich bag. Attach an air sample label to the bag with the necessary information and then place this bag along with the particulate filter coin envelope in another bag. The outside of this package should be verified to be uncontaminated by either direct survey or smear survey (if the contamination level on the sample inside the package is too high). This package will be taken to the MEML in accordance with instructions from the EOF.
- _____ If it is necessary to calculate the activity of the sample in the field, use the following expression:

$$\text{uCi/cc} = \frac{(5.64 \times 10^{-6}) (\text{CR}_{\text{net}})}{(\text{V})}$$

where:

CR_{net} = net cpm on cartridge

V = volume of airborne sample (ft³)

- _____ Record the calculated data in the appropriate section of the Field Data Sheet
- _____ Check the appropriate box on the sample label if there is NO DETECTABLE RADIATION by field measurement methods.

- ____ Coin envelope and label.
- ____ Forceps or tweezers.
- ____ Find an area shielded from the wind or rain. The rear of the vehicle may be used if absolutely necessary. Attach a label to the coin envelope to be used for storage of the filter with the necessary information.
- ____ Remove the filter from the air sample head.
- ____ Place the probe face down within one-half inch to 1" upstream side of the filter in an analogous manner to the counting of halogen, as shown in Figure 2. Filters should be handled with forceps (or tweezers) and should not touch the filter, in order to avoid contamination of the filter.
- ____ Wait for the meter reading to stabilize (about 20 seconds) and the gross count rate in the appropriate section of the Field Data Sheet.
- ____ Place the filter in the labeled coin envelope.
- ____ Report the sample time, flow rate, volume, type of probe used, and the initial gross sample counts to the EOF or TSC, as appropriate.
- ____ If it is necessary to calculate the activity of the sample in the field, determine the net count rate and use it to calculate the gross particulate activity from the expression:

$$\mu\text{Ci/cc} = \frac{(1.61 \times 10^{-10}) (CR_{\text{net}})}{(V)}$$

where:

CR_{net} = net cpm on filter

V = volume of airborne sample (ft³)

- ____ Record the calculated data in the appropriate section of the Field Data Sheet.
- ____ Check the appropriate box on the sample label if there is NO DETECTABLE RADIATION by field measurement methods.

DETERMINATION OF GROSS IODINE (FIELD TECHNIQUE)

- ____ Ensure that the following equipment is available:
 - ____ Eberline E-140/N survey meter equipped with either an N-1002 pancake GM probe, or an HP-210 shielded pancake GM probe. The HP-210 probe is preferred.

F. CHECKLIST 6 - SOIL AND VEGETATION SAMPLES

SOIL AND VEGETATION SAMPLING

- ____ Ensure that the following equipment is available:
- ____ Trowel.
- ____ Grass cutters or knife.
- ____ 18" x 24" plastic bags.
- ____ Masking tape.
- ____ Labels, FIGURE 6.
- ____ Eberline E-140/N survey meter with HP-210/N-1002 pancake GM probe (probe covered in plastic to prevent contamination).
- ____ Protective clothing as determined by surveys.

Vegetation Sampling and Counting

- ____ Cut the vegetation cover from at least a 1 m² area of ground; the aim being to collect approximately one pound. Cut the vegetation at a height of 1-2 cm from base of vegetation to approximate what a grazing animal would consume. Avoid contaminating the sample with dirt.
- ____ Place the vegetation in the plastic bag, top end first. Slowly compress the air out of the bag and seal it with tape. One pound of material will normally fill the bag about half full.

WARNING: DO NOT PLACE BODY OVER BAG OPENING WHILE
COMPRESSING ITS CONTENTS.

- ____ Label the bag with the following information:

Location of sample

Date and time of sample. The time is expressed using the military (24 hour period) standard.

Name of person who took sample

- ____ Using Table 3, pick the standard background for the HP-210/N-1002 probe and record it in the appropriate section of the Field Data Sheet.

- _____ Perform a smear survey of the exterior of the bag. If contamination is found, place the sample bag inside another bag. Note the contamination levels on the label.
- _____ Flatten the bag and lay the probe (window down) on the center of the bag.
- _____ Report the type of vegetation samples and the activity level to the EOF or TSC as is appropriate.

Soil Sampling

- _____ Sample the soil from a 1 m² area. Remove only the top surface (to a depth of 1/4" or less) using the trowel. Stay upwind and wear appropriate protective clothing when scraping.
- _____ Place the sample in a bag, seal, and label.
- _____ Smear survey the exterior of the sample bag to make sure it is not contaminated, and place inside another clean bag if it is.
- _____ Obtain a contact gross count reading and deduct 60 cpm for nominal background to obtain a net contact count rate.
- _____ Record the sample information and count rate on the Field Data Sheet.

G. CHECKLIST 7 - LIQUID SAMPLING

LIQUID SAMPLING AND COUNTING

- ____ Ensure that the following equipment is available:
 - ____ Sample bottle (1 liter)
 - ____ Labels, FIGURE 6.
 - ____ Eberline E-140/N survey meter equipped with HP-210/N-1002 probe (probe covered in plastic to prevent contamination).
 - ____ Sheet plastic or plastic bag.
 - ____ Protective clothing as determined by surveys
- ____ Don rubber gloves and collect and label a 1-liter sample by immersing the bottle in the liquid, capping it tightly, and carefully drying it with a clean paper towel. Dispose of the paper towel as contaminated waste. Carefully place the 1-liter sample in a plastic bag and then tape the opening.

H. CHECKLIST 8 - GROUND SURVEYS

GROUND SURVEYS

____ Ensure that the following equipment is available:

- ____ Eberline ASP-1 or gamma survey meter (preferred) with HP-270 probe (probe covered with a plastic bag to prevent contamination) or
- ____ Eberline E-140 or E-140/N survey meter equipped with an HP-210/N-1002 probe (probe covered with a plastic bag to prevent contamination).

There are two methods which maybe used to estimate ground contamination as follows:

Gamma Exposure Rate Method (Preferred)

Note: This method should be used anytime that ground contamination is present in sufficient concentrations to be detected by gamma exposure rate measurements. To perform ground surveys using this method, hold the gamma survey instrument at approximately 1 meter (3 feet) above the ground and measure the exposure rate.

- ____ Report the net dose rate value and the background value given in Table 3 to the Radiological Monitoring Director.
- ____ UDAC will calculate the ground deposition from the following equation:

$$\text{Ground deposition (mCi/m}^2\text{)} = 238 \times \text{DR}_{\text{net}}$$

where:

$$238 = \text{Cs-137 ground deposition conversion factor} \\ (\text{mCi/m}^2/\text{mR/hr})$$

$$\text{DR}_{\text{net}} = \text{Net dose rate obtained at the 1 meter} \\ \text{level (mR/hr)}$$

Ground Count Rate Method

This method should be used to qualitatively determine if ground contamination is present. To perform ground surveys using this method, hold a GM probe approximately 2" above the ground and note the gross count rate.

- ____ Calculate the net count rate by subtracting the appropriate background value (for the GM probe being used) given in Table 3.

- _____ A net count rate value in excess of 100 CPM indicates that ground contamination is present. If ground contamination is detected obtain a smear sample using the guidance presented below.

The following precautions should be followed when performing ground survey measurements.

- _____ This section should only be performed after plume passage, since plume contributions to external exposure rates may invalidate the ground survey.
- _____ Make the measurement over short grass on undisturbed land (common grazing, permanent pasture).
- _____ Make the measurement at least 20 yards from any building, road, railway, bridge, or heaps of material such as gravel, rubble, or road-cut. These all contain varying amounts of naturally occurring radionuclides.
- _____ Haystacks or silos should be avoided because they may contain in a concentrated form the total deposition on grass which originally covered a large area. Trees and hedges also act as collectors of fallout which is washed out to a variable extent by rain.
- _____ Care must be taken to avoid any contamination of the instrument. If necessary, wrap the instrument (including probe) in a plastic bag prior to starting survey.
- _____ Enter the instrument type used and record the readings in the appropriate section of the Field Data Sheet. Include the time the survey was started and the calibration due date of the instrument.
- _____ Report location of measurement, ground contamination measurements, and the type of instrument used to the Radiological Monitoring Director inside the UDAC.

I. CHECKLIST 9 - SMEAR SURVEYS

DETERMINATION OF SMEARABLE CONTAMINATION

- _____ Ensure that the following equipment is available:
 - _____ Smear Pads with holders.
 - _____ Eberline E-140/N survey meter with an N-1002 pancake probe, or an HP-210 shielded pancake GM probe (probe covered with a plastic bag to prevent contamination).
- _____ Select a representative smooth horizontal surface to smear-test. Examples are tops of cars, store windows or sills, and walls of buildings.
- _____ Wipe the area with a smear pad using a uniform, moderate fingertip pressure. Cover approximately 1 dm² (100 cm²). This is an area 4" x 4" or a 10" S motion with a smear pad.
- _____ Identify the type of probe used and enter the data in the appropriate section of the Field Data Sheet. Include the time of the survey and the calibration due date of the instrument.
- _____ Place the probe face down within one-half inch of the used side of the smear pad (in the same manner as when counting particulate filters) and wait for the meter reading to stabilize (about 20 seconds). Record the reading obtained in the appropriate section of the Field Data Sheet in the Gross column.
- _____ Calculate the net count rate by subtracting the background value given in Table 3 from the gross count rate determined in the previous step.
- _____ Put the smear pad into a labeled holder and save it for later analysis in the MEML.
- _____ Calculate the smearable contamination as follows:

$$\text{dpm/dm}^2 = \frac{(\text{CR}_{\text{net}})}{(e_3)}$$

where:

CR_{net} = net cpm on smear pad

e₃ = probe efficiency factor from Table 5

NOTE: Ground contamination (mCi/m²) may be determined from a smear sample by multiplying the dpm/dm² value by 4.51 X 10⁻⁵. Record ground deposition values in the appropriate section of the Field Data Sheet.

- _____ Report the type of surface smeared, instrument used, and the smearable contamination level to the EOF or TSC as is appropriate.

J. CHECKLIST 10 FIELD MONITORING TEAM DECONTAMINATION

CRITERIA FOR DECONTAMINATION

Field Monitoring Teams should report for personnel and equipment/vehicle decontamination if:

____ Directed to report by UDAC/Rad Monitoring Director

OR

____ Self initiated surveys of individuals, equipment, or vehicles indicated a contamination level of 600 CPM greater than background on an E140N Instrument (equivalent to 200 CPM on a CDV-700).

LOCATION OF DECONTAMINATION FACILITIES

1. The primary Emergency Worker Decontamination Facility is located at El Chorro Regional Park on Highway 1 across from Camp San Luis Obispo.
2. Alternate facilities may be established at Camp San Luis Obispo, the PG&E Community Center on US 101, or the PG&E Service Center on South Higuera in San Luis Obispo, or as directed by the County Health Officer.

DECONTAMINATION PROCEDURES

Emergency Worker (including Field Monitoring Team) Decontamination will be conducted in accordance with HP-9.

Vehicle and Equipment Decontamination will be conducted in accordance with HP-8.

SAN LUIS OBISPO COUNTY
NUCLEAR POWER PLANT
EMERGENCY RESPONSE PLAN

STANDARD OPERATING PROCEDURE

III.06, HP-13

Emergency Equipment, Instruments, and Supplies

SAN LUIS OBISPO COUNTY ENVIRONMENTAL HEALTH DEPARTMENT

APRIL 1982

REVISED:

MAY 1990

AUGUST 1991

APRIL 1992

AUTHENTICATION

This standard Operating Procedure has been approved and is hereby incorporated as a department procedure:

Signed and Accepted:

Tim Mazzacane
Name

Environmental Health Director
Title

5/14/92
Date

PREFACE

This SOP comprises Section III.06 HP-13 of the San Luis Obispo County Nuclear Power Plant Emergency Response Plan. Detailed preparedness measures and emergency procedures concerning the operation of this organization are included herein. Part I of the Plan describes the overall County emergency organization and response, while Part II includes Implementing Instructions to be used by the County Direction and Control group and other key officials and the County Emergency Operations Center (EOC), in directing the emergency response activities.

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**SAN LUIS OBISPO COUNTY
OFFICE OF EMERGENCY SERVICES**

SOP COPY DISTRIBUTION

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NUREG 0654 CROSS REFERENCE

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SECTION I - OVERVIEW

A. INTRODUCTION

1. PURPOSE

This procedure provides an inventory of emergency equipment, instruments, and supplies for the San Luis Obispo County Division of Environmental Health (SLOCOEH) Field Monitoring Teams (FMTs) with inspection frequencies and checklists.

2. OBJECTIVES

This procedure contains checklists which serve as inventory lists for the radiological emergency kits, communications equipment, and permanently fixed equipment.

3. OVERVIEW

Radiological emergency kits

Radiological emergency kits are stored at the San Luis Obispo County Health Agency, Environmental Health Division office 2156 Sierra Way, San Luis Obispo. The kits consist of two aluminum cases each. Each case is clearly identified as "instruments" or "supplies" and with the identifier of a field monitoring team, "Alpha," "Bravo," and "Charley." The contents of each emergency kit are listed on Checklist 1 attached to this procedure. Each kit also has a duffle bag of protective clothing and an air sampler.

Portable Communications equipment

Portable radio communications equipment is listed on Checklist 2.

Permanently fixed equipment

Important fixed equipment at the Environmental Health Office and the Unified Dose Assessment Center (UDAC) 1535 Kansas Avenue, San Luis Obispo is listed on Checklist 3.

B. RESPONSIBILITIES

1. DIRECTOR, ENVIRONMENTAL HEALTH

The Director, Environmental Health is responsible to ensure that emergency equipment is inventoried according to the method and frequency prescribed in this procedure.

2. DEPUTY HEALTH OFFICERS

Deputy Health Officers are responsible to perform the inventories prescribed in this procedure as directed by the Director, Environmental Health.

C. CONCEPT OF OPERATIONS

Radiological emergency kits and UDAC equipment will be inventoried by SLOCOEH using the applicable attachments on the first working day of each calendar quarter or after each use in an emergency or drill. Inventory forms will be retained by SLOCOEH. All items that are missing or damaged will immediately be reported in writing to the San Luis Obispo County Office of Emergency Services (OES). OES will ensure that replacement items are procured from PG&E and delivered to Environmental Health.

Radiological instruments will be replaced or recalibrated quarterly by PG&E Diablo Canyon. Since portable communications equipment is used on a routine basis, no special inventory is required. Dosimeter charger, calculator, and flashlight batteries will be replaced at a nominal quarterly frequency by PG&E, Diablo Canyon.

D. PROCEDURE MAINTENANCE

This procedure will be reviewed annually for accuracy, and will be revised as necessary to reflect changes in emergency equipment or supplies.

CHECKLIST 1 - Page 1 of 2

REV 1.0; THU 05 NOV 92

INVENTORY FORM

RADIOLOGICAL MONITORING KITS				
	QUANTITY	ALPHA	BRAVO	CHARLEY
1. <u>PROTECTIVE WEAR BAG</u>				
a. Coveralls, booties, caps	2			
b. Full face respirators	2			
c. Respirator filters	4			
d. Rubber gloves (pair)	6			
2. <u>AIR SAMPLER</u>				
a. Sampler pump (H-809C)	1			
3. <u>INSTRUMENT KIT</u>				
a. Dose rate meter ASP-1	1			
b. Count rate meter E-14ON	1			
c. Dose rate probe HP-270 (ASP-1)	1			
d. Count rate probe HP-210	1			
e. Count rate probe N-1002	1			
f. Meter cords (ASP-1)	2			
g. Meter cords (E-14ON)	2			
h. Dosimeter charger	1			
i. Air sampler head	1			
j. Batteries (C-Cell)	12			
k. Batteries (D-Cell)	6			
4. <u>SUPPLY KIT</u>				
<u>Form Binder/Box</u>				
a. Writing pens	4			
b. Marking pens	2			
c. County map	1			
d. Field data sheets	25			
e. Monitoring procedures (HP-3)	1			
f. Inventory forms (HP-13)	10			
g. Dose tracking logs	4			
<u>Dosimeters</u>				
a. Pocket dosimeter (0-200mR)	2			
b. Pocket dosimeter (0-5R)	2			
c. Pocket dosimeter (0-20R)	2			
d. TLD's	2			

III.06, HP-13 - EMERGENCY EQUIPMENT, INSTRUMENTS, AND SUPPLIES
Section I - Overview

NPPERP
(04/92)

CHECKLIST 1 - Page 2 of 2

	QUANTITY	ALPHA	BRAVO	CHARLEY
<u>Air Sample Equipment</u>				
a. Particulate filters (10-pk.)	4			
b. Iodine cartridge (charcoal)	10			
c. Iodine cartridge (Silver Z)	20			
d. Forceps (Tweezers)	2			
e. Stopwatch	1			
f. Sampler fuses (box of 5)	1			
g. Envelopes for particulate filters	25			
h. Plastic bags for iodine cartridges	25			
i. Gummed labels	25			
<u>Sampling/Decon Equipment</u>				
a. Smear pads	20			
b. Rubber gloves (pair)	6			
c. Trowel	1			
d. Grass shears	1			
e. Sample bottles (1 liter)	2			
f. Plastic bags (18" x 24")	15			
g. Decon soap (pt. bottle)	1			
h. Hand brush	1			
i. Contaminated waste bags	4			
<u>Miscellaneous Equipment</u>				
a. Pocket calculator	1			
b. KI tablets (bottle)	1			
c. First aid kit	1			
d. Masking tape (2" roll)	1			
e. "Kwik-Kold" packs	4			
f. Small flashlight	1			
g. Lantern (6V) with battery	1			
h. Battery powered lamp	1			
i. Batteries (C-Cell)	6			
j. Batteries (D-Cell)	12			
k. Constant Geometry Jig				
l. "Radiological" stickers	100			

NAME _____

DATE _____

CHECKLIST 2 - Page 1 of 1

PORTABLE COMMUNICATIONS EQUIPMENT

- ___ 11 portable handi-talkies
- ___ 10 in-vehicle convertacoms
- ___ 3 battery chargers

CHECKLIST 3 - Page 1 of 1

PERMANENTLY FIXED EQUIPMENT

- Radio communications base station, UHF Local Government Net (Environmental Health Office)
- Radio communications base station, PG&E Health Physics and UHF Local Government Net (Unified Dose Assessment Center)
- Emergency planning zone maps (UDAC)
- 7 meteorological map overlays
- Relevant emergency plans and procedures