

SAN LUIS OBISPO COUNTY
NUCLEAR POWER PLANT
EMERGENCY RESPONSE PLAN

STANDARD OPERATING PROCEDURE

III.06 HP-11

EMERGENCY WORKER EXPOSURE CONTROL

Revised

April 1990

April 1993

PROPRIETARY INFORMATION REMOVED

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

4/14/93
Date

PREFACE

This SOP comprises Section III.06 HP-11 of the San Luis Obispo County Cities 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.

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

REVISION PAGE

DESCRIPTION	DATE
Original Document	Unknown
Complete Revision	April 90
Complete Revision	Apr. 93
(1) Editorial Update	
(2) Addition of Rev., Dist, X Ref Sheets	
(3) Addition of Table of Contents	
(4) More clearly define EWEC Desk Staff	
(5) Define coordination with IPZ EWEC	
(6) Addition of Glossary	
(7) Addition of sections on FACILITIES, EQUIPMENT, COMMUNICATIONS, EWEC SUPPLIES, TRAINING, PROCEDURE MAINTENANCE	
(8) Add Forms ECD-5 & 6, Fire Agency Lists	
(9) Add wording to EWEC-1 to ensure CHO PARs are in writing	
(10) Add wording to EWEC-11 regarding frequency of reports from department/agency command centers.	
(11) Modified Form ECD-2 & CC-1 to reflect the reporting of TOTAL ACCUMULATED EXPOSURE vs SRD readings.	
(12) Appropriate changes made to EWEC-3 to reflect (10) and (11)	
(13) Field Exposure Log cards added to EWEC-3 as Form 1 and 2	
(14) Form ECD-4 update as to phone numbers, etc.	
(15) Phone numbers added to Form ECD-5	
(16) Tables 1 & 2, Figure 1 repeated in EWEC 1, 2, and 3	
(17) EWEC-2 modified to show ranges of SRD	
(18) EWEC-2 modified to require EWEC tracking beyond 1250 mR total accumulated exposure after the CHO authorizes additional exposure.	
(19) EWEC-3 modified to reflect concept of summation of NET exposures to get TOTAL ACCUMULATED EXPOSURE. Additional column added to LOG CARD to facilitate this sum.	

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

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SOP NO. III.06-HP-11 TITLE Emergency Worker Exposure Control REV. DATE Apr. 93

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Working Copy	1	OES File	
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	1	D & C File Cabinet	
	1	Master Binder, County Room	
PG&E	2	To Sanitize and Distribute	
Dept./Agency	1	UDAC-UDAC Coord Binder	
	2	EOC-EWEC Desks	
	1	CA OES REP NPP	
	1	CA DHS RHB	
	1	FEOC	
	1	IPZ DISPATCH	
	1	FRMAC	
	1	DCPP-EP	
	1	SOP-02 - Sheriff	
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	1	32 - City of Pismo Beach	
	1	33 - City of Arroyo Grande	
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	1	40 - Avila Beach FD	
	1	41 - Cayucos FD	
	1	42 - Oceano FD	
	1	43 - South Bay FD	
	1	44 - Port San Luis Harbor Dist	
	1	50 - County Supt. of Schools	
	1	51 - San Luis Coastal Schools	
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NUREG 0654 CROSS REFERENCE

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EMERGENCY WORKERS EXPOSURE CONTROL (EWEC)**I. PURPOSE AND SCOPE**

The purpose of this procedure is to establish the policy for controlling emergency worker exposure to ionizing radiation. This procedure is applicable to all off-site emergency workers under direction of the county involved in response to radiological emergencies.

II. RESPONSIBILITIES**A. County Health Officer**

The County Health Officer (CHO) will:

1. Alert, notify, and mobilize EWEC Desk personnel at an ALERT or higher classification.
2. Provide overall supervision and direction of exposure control activities through the Emergency Worker Exposure Control (EWEC) Desk Coordinator.
3. Provide directives for protective actions for emergency workers to minimize exposure to radiation, including use of Potassium Iodine (KI).
4. Authorize, as appropriate, emergency worker exposure in excess of the initial exposure guidelines.
5. Provide direction in the establishment of decontamination center(s) for emergency workers.
6. Ensure provisions for a 24-hour capability for exposure control activities.
7. Assign County Health Agency personnel to staff the EWEC Desk and ensure they are trained.
8. Ensure the coordination of the EWEC function during IPZ/Recovery between the County EWEC Desk for County supported personnel and State EWEC at the DHS Dispatch facility (upon the activation of the FEOC).

B. Emergency Worker Exposure Control Desk Coordinator

The EWEC Desk Coordinator will:

1. Supervise and coordinate the EWEC desk activities.
2. Review and follow the guidance provided in the EWEC Desk Checklist (EWEC-1).

3. Obtain an incoming FAX phone number from the Emergency Services Coordinator.
4. Ensure provisions for a 24-hour capability for exposure control activities.

C. Local Agency/Organization Command Centers

Command Centers will:

1. Follow the directives given by the EWEC Coordinator.
2. Review and follow the guidance provided in the Command Center Checklist (EWEC-2).
3. Ensure provisions for 24-hour capability are made for exposure control.

D. Emergency Workers

Emergency Workers (including volunteers) will:

1. Follow the directives given by their Command Center(s).
2. Review and follow the guidance provided in the Emergency Worker Exposure Control Checklist (EWEC-3).

III. CONCEPT OF OPERATIONS

Exposure control of emergency workers is a multi-faceted activity. The primary responsibility for monitoring exposure lies with each individual emergency worker.

If an emergency of an ALERT or higher classification occurs, three groups will be directly involved in ensuring exposure control is established. The three groups are:

- The CHO and EWEC Desk,
- The Command Centers of the individual County Departments and allied agencies (i.e., Cities, Fire Districts).
- The emergency workers, themselves.

The EWEC Control Desk is the focal point for communications between emergency worker Command Centers and the CHO for exposure control purposes. The EWEC Desk is located at the County Emergency Operations Center in the Technical Support Room. The EWEC Desk will establish and maintain communications with the Command Centers of agencies with emergency workers. The CHO will provide directives to emergency workers, based upon the information from the Unified Dose Assessment Center (UDAC).

The EWEC Desk will document and maintain emergency worker exposure information called in by the Emergency Worker Command Centers. The EWEC Desk will inform the

CHO of exposure trends and of exposures that approach the administrative and emergency exposure guidelines. The CHO will ascertain protective measures and exposure authorizations for emergency workers and direct the EWEC Desk to communicate protective actions and exposure authorization to the Command Centers.

Each agency that has been assigned exposure control equipment will activate a Command Center (CC). The Command Centers will issue radiation monitoring equipment and supplies to emergency workers. They will be the principal communication link between emergency workers and the EWEC Desk.

The Command Centers will record emergency worker exposures and report the exposures, if any, to the EWEC Desk. Additionally, they will also inform emergency workers of the protective actions and exposure authorizations issued by the CHO.

Emergency workers will monitor and record their exposure while in the field. They will relay exposure readings to their respective Command Centers. When their exposure reading approaches any of the exposure guidelines, they will also contact their Command Centers. They should NOT exceed the exposure guidelines UNTIL CHO authorization is given. They will contact the Command Center to report lost TLDs and non-operative SRDs.

Refer to FIGURE 1, Information Flow Diagram, for a depiction of how information will flow in emergency worker exposure control activities.

IV. EMERGENCY WORKER EXPOSURE GUIDELINES

A. General

Exposure guidelines have been established by the County based on State and Federal guidance. All possible measures should be taken to maintain exposure as low as reasonably achievable (ALARA).

Whole body exposure guidelines can be determined in the field while thyroid doses cannot. The UDAC will determine projected adult thyroid doses and inform the CHO of field conditions and when the potential exists for emergency workers to exceed the established adult thyroid exposure guidelines.

Guidance for the CHO to follow in authorizing emergency exposures can be found in Attachment 4 of Checklist 2 of the CHO SOP. (III.05)

B. Exposure Guidelines

Emergency exposure guidelines established by the County are based on State and Federal guidance. Exposure to radiation will be controlled and limited through procedures and policies contained in the County Emergency Plan.

1. Administrative Exposure Guideline:

The County has an administrative exposure guideline of 1 Rem (1000 mRem) whole body exposure for emergency workers. This guideline is 250 mRem below the lowest limit of the Emergency Exposure Guidelines (See Section 2 of Table 1). This administrative exposure guideline (limit) has been established to assure that emergency workers do not exceed the Emergency Exposure Guidelines without proper CHO approval.

If emergency worker exposures approach or exceed this administrative guideline of 1 Rem, the EWEC Desk will inform the CHO. The CHO will assess the need to remove emergency workers from areas where they could be exposed, or if the situation warrants, approve emergency workers to exceed the Emergency Exposure Guidelines listed in Section 2.

2. Emergency Exposure Guidelines

Three categories of emergency exposure control guidelines, each with specific limits, are used to control emergency worker exposures. The Emergency Exposure Guidelines are as follows:

a. Emergency Operations (Initial Exposure Guidelines)

- The initial guideline is 1.25 Rem, however, to ensure emergency workers do not approach this limit, CHO approval will be required to exceed 1 Rem.
- Up to 1.00 Rem - Whole Body (without CHO authorization)
- 1 Rem to 1.25 Rem - Whole Body (with CHO authorization)
- 1.25 Rem - 5.0 Rem - Whole Body (with CHO authorization)

This guideline is within those established for the general public (0.5 Rem - 5.0 Rem). Emergency workers are authorized to receive up to 1.00 Rem without CHO authorization. Exposure anticipated to be above 1.00 Rem must be authorized by the CHO.

The EWEC Desk Coordinator will inform the CHO when emergency worker exposures approach this guideline. The CHO will evaluate current emergency conditions and authorize exposures in excess of this limit, as necessary. With authorization, emergency workers may subsequently receive up to 5.0 Rem. Exposures above 5.0 Rem require further CHO consideration.

b. Extraordinary Emergency Operations (Corrective and Protective Actions)

- 5.0 - 25 Rem (Whole Body)

This guideline is established for extraordinary circumstances where there is the potential need for rescue operations, or when it is necessary to enter or remain in a known hazard area to mitigate the consequences of the emergency.

The CHO must authorize exposures above 5.0 Rem. Further authorization is required above 25 Rem. Exposures to emergency workers above the 5.0 Rem guideline will be on a volunteer basis.

c. Lifesaving Operations

- up to 75 Rem (Whole Body)

This guideline has been established for situations involving the need to perform lifesaving activities. The CHO must authorize exposures above 25 Rem and planned exposures shall not exceed 75 Rem. This authorization is granted for lifesaving actions only and emergency workers performing such actions will do so on a volunteer basis.

Refer to Table 1, Emergency Worker Exposure Control Guidelines, for a listing in table format.

V. PROTECTIVE ACTION RECOMMENDATIONS FOR EMERGENCY WORKERS

A. First Level Action: Protective Response

At such time that anticipated or actual levels of exposure exceed 1.25 REM, the CHO will consider recommending protective actions to emergency workers. The specific actions which will be considered include:

- Donning protective clothing
- Donning respiratory protection
- Administration of KI
- Recall/relocation

Consideration will be given to taking protective actions under any one of the following conditions:

1. Emergency workers self reading dosimeter (SRD) logs indicate an accumulated dose of 1 Rem or greater.
2. Detected and confirmed airborne or particulate radioactivity
3. Survey meter readings by field teams in excess of 25 mR/hr.

B. Second Level Action: CHO Authorization to Exceed Required

The CHO must evaluate and authorize exposures in excess of the limits shown in Table 1, Emergency Worker Exposure Control Guidelines.

VI. FACILITIES, EQUIPMENT, AND COMMUNICATIONS

A. Facilities

The EWEC Desk is located in the San Luis Obispo County EOC, 1525 Kansas Avenue, San Luis Obispo. Two desks are provided in the County Technical Support Room.



B. Equipment

San Luis Obispo County Field Monitoring Teams are provided with radiation monitoring equipment in accordance with HP-13. The results of their monitoring activities are reported to the UDAC, who provides the CHO with information on the radiological status of the emergency.

C. Communications

Emergency workers will communicate with their individual Command Centers in accordance with their Department or agency procedures.

The Command Centers will communicate with the EWEC Desk on conventional telephone lines. Two lines are provided at the EWEC desk. The primary number

 If this number is busy, incoming calls will automatically "roll over" to  Both lines can be used by EWEC personnel for outgoing calls.

Existing EWEC communications can be augmented with ARES/RACES voice and hard copy resources, at the request of the CHO.

VII. SUPPLIES

A. EWEC KITS - Contents

EWEC kits consist of the following items:

- | | | |
|----|--------|--|
| 1. | 1 each | CDV 138 Dosimeter, 0-200 mR, or equivalent |
| 2. | 1 each | CDV 730 Dosimeter, 0-20 R, or equivalent |
| 3. | 1 each | Field Exposure Log card for each dosimeter |
| 4. | 1 each | Plastic bag for the above |
| 5. | 1 each | Thermoluminescent Dosimeter (TLD) |
| 6. | 1 vial | Potassium Iodide tablets (KI) |
| 7. | 1 copy | EWEC-3 Checklist |

Deviation from the above is at the discretion of the County Office of Emergency Services.

B. EWEC KITS - Distribution

Most agencies have their EWEC kit supplies located at a central point, for distribution at the time of need. Supplies for some Departments/agencies are maintained by the County Office of Emergency Services at the County EOC.

C. EWEC Kits - Inventory and Update

The County OES will annually, or as needed, inventory supplies and replace those items needing exchange.

D. EWEC Kits - Responsibility for supplying items.

TLDs and KI are supplied by Pacific Gas & Electric Company (PG&E).

SRDs and chargers are supplied by the CA OES.

Forms and checklists are provided by the County OES.

Kits are maintained by the County OES.

VIII. TRAINING**A. EWEC DESK**

EWEC Desk staff will be trained by the County OES.

B. COMMAND CENTER AND EMERGENCY WORKERS

Command Center staff and Emergency Workers will be trained as part of their ongoing NPP training by the County OES.

IX. PROCEDURE MAINTENANCE

This procedure will be maintained by the County OES in cooperation with the County Health Agency Environmental Health Division. Advice will be sought from PG&E and CA OES.

X. TABLES AND FIGURES

TABLE 1 - Exposure Control Guidelines

TABLE 2 - Glossary

FIGURE 1 - Information Flow Diagram

XI. CHECKLISTS

EWEC -1, Exposure Control Desk Checklist

EWEC -2, Command Center Checklist

EWEC -3, Emergency Worker Exposure Control Checklist

TABLE 1

EMERGENCY WORKER EXPOSURE CONTROL GUIDELINES

1. Administrative Guideline

Whole Body - 1 Rem

1. CHO informed of such exposure.
2. CHO considers need to authorize exposure above Initial Exposure Guideline below.

2. Emergency Exposure Guidelines

a. Initial Exposure Guideline¹

Whole Body:

1. Up to 1.00 Rem without CHO authorization
2. Up to 1.25 Rem with CHO authorization
3. Between 1.25-5.0 Rem with CHO authorization

Adult Thyroid: 25 Rem with CHO authorization

b. Extraordinary Emergency Operations³ (Volunteers only)

Whole Body: up to 25 Rem (with CHO authorization)
Extremities²: up to 100 Rem (with CHO authorization)
Adult Thyroid: up to 125 Rem (with CHO authorization)

c. Lifesaving Actions³ (Volunteers only)

Whole Body: up to 75 Rem (with CHO authorization)
Extremities²: up to 200 Rem (with CHO authorization)
Adult Thyroid: no limit⁴ (with CHO authorization)

-
1. Source: U.S. EPA
 2. Indicated extremity dosage is in addition to whole body limit.
 3. Source: U.S. EPA
 4. No specific upper limit is given for thyroid exposure since in the extreme case complete thyroid loss might be an acceptable penalty for a life saved. However, this should not be necessary if respirators and/or thyroid protection for rescue personnel are available as a result of adequate planning.

TABLE 2

GLOSSARY

ACRONYM

DEFINITION

ALARA	As low as reasonably achievable
ARES/RACES	Amateur Radio Emergency Services/Radio Amateur Civil Emergency Service
CA	State of California
CC	Command Center (of County Department or allied agency)
CHO	County Health Officer
DHS	State Department of Health Services
ECD	(Emergency Worker) Exposure Control Desk
EOC	Emergency Operations Center
EWEC	Emergency Worker Exposure Control
FEMA	Federal Emergency Management Agency
IPZ	Ingestion Pathway Zone
KI	Potassium Iodine
m	Milli (1/1000)
NPP	Nuclear Power Plant
OES	Office of Emergency Services
PG&E	Pacific Gas & Electric Company
REM	Radiation Exposure Man
SRD	Self Reading Dosimeter (also "Pocket Dosimeter")
TLD	ThermoLuminescent Dosimeter
UDAC	Unified Dose Assessment Center

EMERGENCY WORKER EXPOSURE CONTROL INFORMATION FLOW DIAGRAM


$$\bigcirc - \bigcirc - \bigcirc - \bigcirc -$$

San Luis Obispo County/Cities
Nuclear Power Plant Emergency Response Plan
Standard Operating Procedure

EMERGENCY WORKER EXPOSURE CONTROL (EWEC) DESK CHECKLIST

EWEC-1

EWEC DESK

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EWEC-1, EWEC Desk CHECKLIST

The purpose of this checklist is to provide guidance to personnel assigned to operate the EWEC Desk.

UNUSUAL EVENT - NO ACTION REQUIRED

ALERT or HIGHER EMERGENCY CLASSIFICATION

1. PREPARATORY ACTIONS

When notified of the emergency, EWEC Desk personnel will report to the County EOC as directed by the CHO. They will prepare for EWEC Desk operations using the guidance provided below.

- ___ Report to the CHO to receive briefing.
- ___ Check operation of telephones in EWEC Desk work area; if problems are found, request assistance from County OES.
- ___ Establish ARES/RACES contact with Command Center if phones are not available.
- ___ Obtain supplies and procedures as needed. Ask Emergency Services Coordinator for assistance if needed.
- ___ Obtain an incoming FAX number from the Emergency Services Coordinator.
- ___ Obtain and, if necessary, make copies of the following forms:
 - ___ ECD-1, Agency Reporting Log
 - ___ ECD-2, Agency Personnel Exposure Log
 - ___ ECD-3, Emergency Exposure Authorization Form
 - ___ ECD-4, Agency Call List (Command Centers)
 - ___ ECD-5, Fire Agency List
 - ___ ECD-6, Fire Agency Map
- ___ Organize work area.
- ___ Request current information concerning radiological conditions from the CHO; record information for future reference.
- ___ Identify Command Centers of the potentially affected areas downwind from the plant.
- ___ Establish a shift schedule to ensure EWEC Desk capability for 24-hour operations.
- ___ Refer to Figure 1, Information Flow Diagram, for information flow guidance.
- ___ Refer to ECD-4, Agency Call List (Command Center) for phone numbers and alternate contacts for Departments and agencies.

REV 1.0; THU 02 SEP 93

2. COMMAND CENTERS COMMUNICATIONS AND EXPOSURE TRACKING

- ___ Log all exposure reports from Command Centers on Form ECD-1, Agency Reporting Log. Reports are due at the end of each shift or at accumulated doses of 250 mR increments.
 - ___ Enter other communications on EOC Log.
 - ___ Use Form ECD-2, Agency Exposure Log, if and when Command Centers call in exposure readings. Call Command Centers if they fail to call in (See Form ECD -1).
 - ___ As the Command Centers first call in, verify that they have adequate EWEC kits and ensure they are knowledgeable of the following:
 - The difference between the terms mRem and Rem is understood; ask that the units be repeated each time a reading is called in.
 - Emergency workers are NOT to take potassium iodide (KI) unless directed by the CHO.
 - Report any exposures approaching the administrative and emergency exposure guidelines as specified in their SOP.
 - Ensure Command Centers have adequate EWEC supplies. Resolve problems with Emergency Services Coordinator.
 - Backup radio communication links (fire, police, ARES/RACES, etc.).
 - EWEC Desk incoming FAX number.
 - ___ Monitor and document exposure trends; inform the CHO of unexpected increases in exposures.
 - ___ Inform the CHO, in writing, if any emergency worker loses their TLD or has a non-operative SRD.
 - ___ Document and resolve inquiries from the Command Centers and EOC staff; request assistance from the Emergency Services Coordinators for technical inquiries or inquiries outside your area of expertise; forward copies of the inquiries to the CHO in writing on a EOC Message Form for information and review.
- ## 3. PROTECTIVE ACTION RECOMMENDATIONS AND EMERGENCY EXPOSURE AUTHORIZATIONS
- ___ When emergency worker exposure readings approach the limits listed in Table 1, Emergency Worker Exposure Control Guidelines, immediately inform the CHO in writing on an EOC Message Form.

Communicate this authorization to the involved Command Center for the information of the affected Emergency Worker.

- _____ When directed by the CHO in writing on an EOC Message Form, communicate emergency worker protective action recommendations to the Command Centers and direct them to inform their emergency workers of the CHO recommendations (e.g. KI administration, relocation of emergency workers, decontamination, respiratory protection, etc.).

FORM ECD-1

EWEC Desk Staff Name

[illegible]

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Phone _____
FAX Phone _____

Date / / [illegible]

FORM ECD-3

EMERGENCY EXPOSURE AUTHORIZATION FORM

A. Date: ____/____/____ Time: _____

EWEC Desk Staff Name _____

B. PERSONAL DATA:

Emergency Workers Name: _____

Verified to be a volunteer for exposures greater than 5 Rem Yes No

Agency/Organization: _____

Age: _____ Social Security Number: _____ - _____ - _____

C. DESCRIPTION OF EMERGENCY OPERATION:

D. RADIOLOGICAL CONDITIONS IN AREA:

E. STAY TIME:

F. DOSIMETRY REQUIREMENTS:

G. PROTECTIVE CLOTHING AND RESPIRATORY PROTECTION REQUIREMENTS:

H. POTASSIUM IODINE NEEDED: YES () NO () ADMINISTERED: YES () NO ()

I. SPECIAL PRECAUTIONS:

J. EXPOSURE LIMIT AUTHORIZED (See Table 1 for Guidance)

Whole Body Dose: ____ Rem Extremity Dose: ____ Rem Thyroid Dose: ____ Rem

K. CHO SIGNATURE: _____

L. TIME COMMUNICATED TO COMMAND CENTER _____

FORM ECD-4

AGENCY CALL LIST (COMMAND CENTERS) (PAGE 1)

Agency	Dispatch Contact	Alt. Hardline Phone System	Avail Radio Net in EOC	Contract Person Avail. in EOC	Other Radio Backup
County Sheriff			Comm. Center	Fire & Law	
County Env. Health			UHF Brown Net	UDAC Coord.	
CA Highway Patrol			Red Net	Fire & Law	CHP Net
County Fire Dept.			Fire Net	Fire & Law	
County Engineer			VHF Black Net	Co. Engineer	
CO. School Superintend				Superintendent	ARES
CA Dept. Parks Recreation/SLO Coast District				Fire & Law	
Caltrans District				Fire & Law	ARES
Cal Poly Police			Yellow Net	Cities Liaison	CPU PD
Cal Mens Colony				Fire & Law	ARES
City of SLO			Yellow Net	Cities Liaison	
City of Morro Bay			Yellow Net	Cities Liaison	
City of Pismo Beach			Yellow Net	Cities Liaison	
City of Grover Beach			Yellow Net	Cities Liaison	
City of Arroyo Grande			Yellow Net	Cities Liaison	
Oceano Fire District			Co. Fire Net	Fire & Law	

FORM ECD-4

AGENCY CALL LIST (COMMAND CENTERS) (PAGE 2)

Agency	Dispatch Contact	Alt. Hardline Phone System	Avail Radio Net in EOC	Contract Person Avail. in EOC	Other Radio Backup
So. Bay Fire District			Local Fire Net	Comm. Center	
Avila Beach Fire District			Co. Fire Net	Fire & Law	
Cayucos Fire District			Co. Fire Net	Fire & Law	
Lucia Mar School District				Superintendent	ARES
San Luis Coastal School District				Superintendent	ARES
San Luis Ambulance			MedCom	Med Liaison Fire & Law	
Five Cities Ambulance			MedCom	Med Liaison Fire & Law	

FORM ECD-5

FIRE AGENCY LIST (Page 1)

Map No.	Community	Station No.	CDF Engine	Co. Fire	Other	Dispatch	Phone Numbers
1	Cambria	10	3466	E-10, S-10		CDF	
1	Cambria	Cambria FD			Cambria FD	CDF	
2	Cayucos	11	3476			CDF	
2	Cayucos	Cayucos FD			Cayucos FD	CDF	
1	Hwy 41	14		E-14		CDF	
-	Morro Bay	Morro Bay FD (2 stations)			Morro Bay FD	MBFD	
-	Los Osos	So. Bay FD			So. Bay FD	Sheriff	
3	Las Tablas	35	3480	S-35		CDF	
4	Heritage Ranch	33		E-33, S-33		CDF	
5	Oak Shores	34		E-34, S-34		CDF	
7	Nipomo	20	3473 3463	E-20, S-20		CDF	
7	Nipomo Mesa	22		E-22		CDF	
8	SLO Airport	21		E-21, R-21, C-21		CDF	
8	SLO City	SLO City Fd (4 stations)			SLO City FD	SLO	
9	Avila Valley	13		E-13		CDF	
9	Avila Valley	Avila Beach FD			ABFD	CDF	
-	Pismo Beach	Pismo Beach FD (2 Stations)			PBFD	PBPD	
-	Arroyo Grande	Arroyo Grande FD			AGFD	AGFD	

FORM ECD-5

FIRE AGENCY LIST (Page 2)

Map No.	Community	Station No.	CDF Engine	Co. Fire	Other	Dispatch	Phone Numbers
-	Grover Beach	Grover Beach FD			GBFD	GBFD	
-	Oceano	Oceano FD			OCFD	GBFD	
10	San Luis Obispo	12	3474 3464 Dozer 40			CDF	
11	Cuesta Camp	Camp	3989			CDF	
12	Park Hill	40	3475 3465 Dozer 41	E-40		CDF	
13	La Panza	41	3481			CDF	
4	Carrisa Plains	42		E-42		CDF	
15	Paso Robles	30	3472 3462 Dozer 42				
-	Paso Robles	Paso Robles FD (2 Stations)			PRFD	PRFD	
-	Paso Robles	Air Attack Base				CDF	
-	Templeton	32		E-32		CDF	
-	Templeton	Templeton FD			TFD	CDF	
-	Atascadero	Atascadero FD (2 Stations)			AFD	AFD	
18	Shandon	31	3461	E-31, S-31		CDF	
-	Creston	43		E-43, WT-43		CDF	

- Notes:
1. Black areas are population centers and National Forest
 2. E=Engine, S=Squad, R=Rescue, C=Crash

FORM ECD-6

FIRE AGENCY MAP

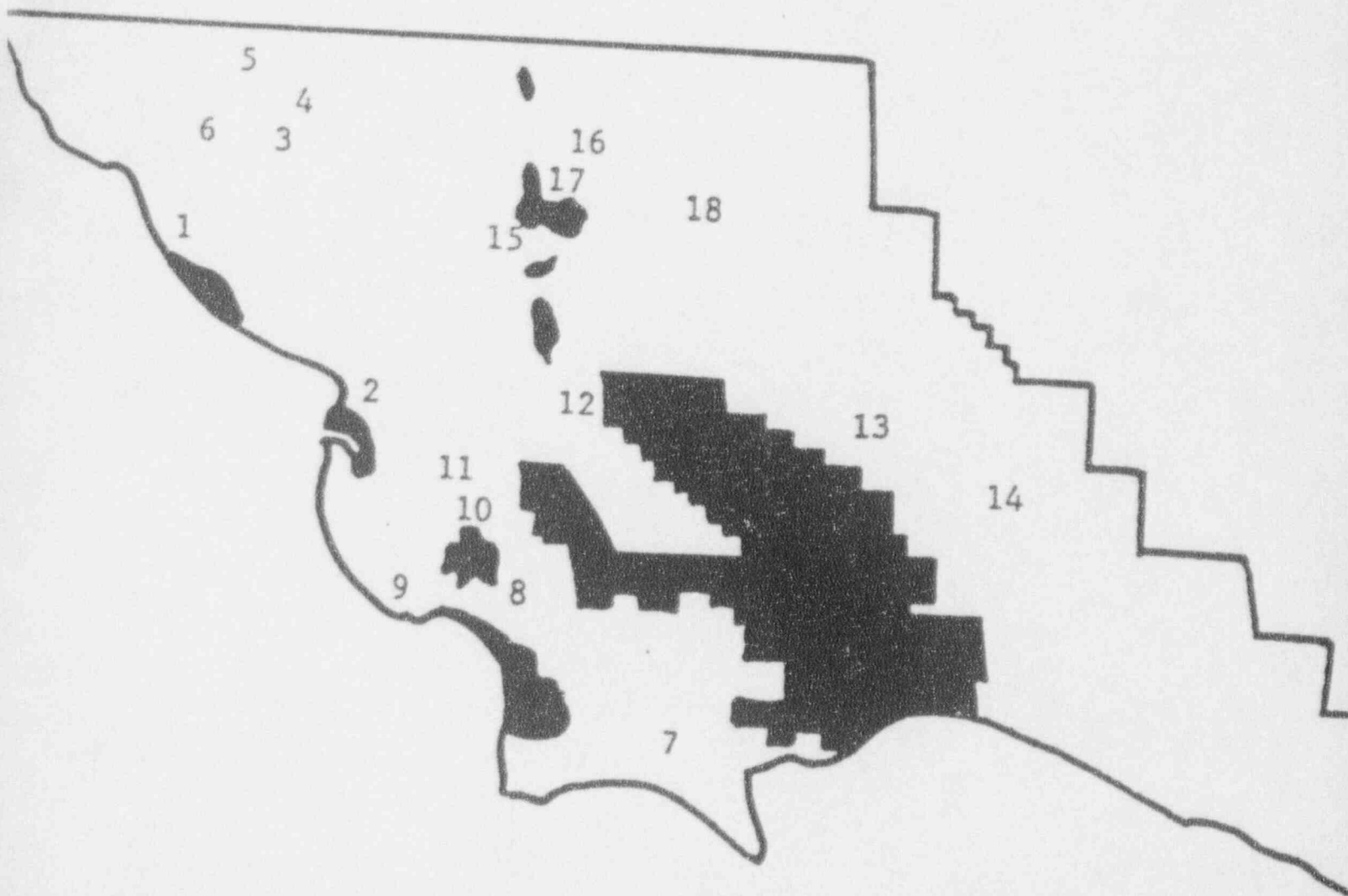


TABLE 1

EMERGENCY WORKER EXPOSURE CONTROL GUIDELINES

1. Administrative Guideline

Whole Body - 1 Rem

1. CHO informed of such exposure.
2. CHO considers need to authorize exposure above Initial Exposure Guideline below.

2. Emergency Exposure Guidelines

a. Initial Exposure Guideline¹

Whole Body:

1. Up to 1.25 Rem without CHO authorization
2. Between 1.25-5.0 Rem with CHO authorization

Adult Thyroid: 25 Rem with CHO authorization

b. Extraordinary Emergency Operations³ (Volunteers only)

Whole Body: up to 25 Rem (with CHO authorization)
Extremities²: up to 100 Rem (with CHO authorization)
Adult Thyroid: up to 125 Rem (with CHO authorization)

c. Lifesaving Actions³ (Volunteers only)

Whole Body: up to 75 Rem (with CHO authorization)
Extremities²: up to 200 Rem (with CHO authorization)
Adult Thyroid: no limit⁴ (with CHO authorization)

-
1. Source: U.S. EPA
 2. Indicated extremity dosage is in addition to whole body limit.
 3. Source: U.S. EPA
 4. No specific upper limit is given for thyroid exposure since in the extreme case complete thyroid loss might be an acceptable penalty for a life saved. However, this should not be necessary if respirators and/or thyroid protection for rescue personnel are available as a result of adequate planning.

TABLE 2

GLOSSARY

ACRONYM

DEFINITION

ALARA	As low as reasonably achievable
ARES/RACES	Amateur Radio Emergency Services/Radio Amateur Civil Emergency Service
CA	State of California
CC	Command Center (of County Department or allied agency)
CHO	County Health Officer
DHS	State Department of Health Services
ECD	(Emergency Worker) Exposure Control Desk
EOC	Emergency Operations Center
EWEC	Emergency Worker Exposure Control
FEMA	Federal Emergency Management Agency
IPZ	Ingestion Pathway Zone
KI	Potassium Iodine
m	Milli (1/1000)
NPP	Nuclear Power Plant
OES	Office of Emergency Services
PG&E	Pacific Gas & Electric Company
REM	Radiation Exposure Man
SRD	Self Reading Dosimeter (also "Pocket Dosimeter")
TLD	ThermoLuminescent Dosimeter
UDAC	Unified Dose Assessment Center

EMERGENCY WORKER EXPOSURE CONTROL INFORMATION FLOW DIAGRAM



San Luis Obispo County/Cities
Nuclear Power Plant Emergency Response Plan
Standard Operating Procedure

EMERGENCY WORKER EXPOSURE CONTROL (EWEC)

COMMAND CENTER

CHECKLIST

EWEC-2

EWEC COMMAND CENTER

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B. Emergency Worker Exposure Control Kit Assembly	1
C. Logging Procedures, Briefing and Emergency Kit Issue	1
D. Communication with the Emergency Workers and the EWEC Desk	1
Form CC-1 - Personnel Roster/Exposure Log	3
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Figure 1 - Emergency Worker Exposure Control Information Flow Diagram	6

EWEC-2
COMMAND CENTER CHECKLIST

The purpose of this checklist is to provide guidance to personnel involved in the issuance and tracking of emergency worker exposure to radiation.

UNUSUAL EVENT - NO ACTION REQUIRED

ALERT OR HIGHER EMERGENCY CLASSIFICATION

A. Self-Reading Dosimeter Charging and Zeroing

___ Charge and zero the self-reading dosimeters using the following guidance:

1. Place one D cell battery in the CDV-750 Charger.
2. Place the self-reading dosimeter on the charging coupler and hold down firmly.
3. Turn the zeroing knob slowly (either direction) until the hairline comes into view, then slowly move the hairline on or very close to the right of the zero on the scale.
4. Remove the dosimeter from the coupler and look into it and see if it is still on or near the right of the zero. If not, repeat steps 2 and 3.

B. Emergency Worker Exposure Control Kit Assembly

___ After the self-reading dosimeters are charged and zeroed, assemble emergency kits consisting of the following items.

<u>Quantity</u>	<u>Item</u>
1	Thermoluminescent Dosimeter (TLD)
1	Low-range self-reading dosimeter (CDV-138), 0-200 mR or equivalent
1	High-range self-reading dosimeter (CDV-730), 0-20 R or equivalent
2	Field Exposure Logs; one blue for low-range and one yellow for high-range dosimeters
1	Vial Potassium Iodide (KI) tablets and the KI Instructions
1	EWEC-3, Emergency Worker Exposure Control Checklist
1	Plastic bag for above

C. Logging Procedures, Briefing, and Emergency Kit Issue

___ After Emergency kits are assembled, log and issue the kits to emergency workers using Form CC-1, Personnel Roster/Exposure Log. (NOTE: The TLD number is the large 3 or 4 digit number on the lower right hand corner of the label.)

___ Brief emergency workers using EWEC-3, Emergency Worker Exposure Control Checklist. Inform them to report readings in the proper units. Low-range dosimeters read in milliroentgen (mR) and high-range dosimeters read in roentgen (R).

D. Communications with the Emergency Workers and the EWEC Desk

- ___ Refer to Figure 1, Information Flow Diagram, for information flow guidance.
 - ___ After emergency worker information has been logged and kits are issued, call the EWEC Desk at (781-4454) (or use alternate communication method, if necessary), and provide the following information from Personnel Roster/Exposure Log, CC-1:
 1. Department/Agency Name
 2. Department/Agency Phone Number
 3. Date
 4. Names of Workers Issued Kits
 5. Social Security Numbers of Workers
 6. TLD Numbers Issued to Workers
 - ___ Review and, as necessary, refer to the exposure guidelines found in Table 1. DO NOT ALLOW EMERGENCY WORKERS TO EXCEED THE RADIATION EXPOSURE LIMITS IN TABLE 1 WITHOUT CHO APPROVAL VIA THE EWEC Desk.
 - ___ Maintain contact with emergency workers in the field at least hourly.
 - ___ Record emergency worker exposure readings on Form CC-1. BE SURE TO RECORD THE READINGS IN THE PROPER UNITS (mR or R).
 - ___ Provide emergency workers with information obtained from the EWEC Desk and/or the Cities Liaison concerning radiological conditions.
 - ___ Report total accumulated exposures to the EWEC Desk when the exposures are 250 mR, 500 mR, 750 mR, 1000 mR, and 1250 mR and at the end of each shift. If authorization to exceed limits granted by the CHO, continue to report TOTAL EXPOSURE at 250 mR steps to the EWEC Desk.
 - ___ If an emergency worker's reading approaches 1000 mR (1 R), contact the EWEC Desk and request authorization for worker to exceed the 1250 mR PAG. If authorization is not granted, recall emergency workers from the field.
- Do not allow emergency workers to exceed 1000 mRem or any other exposure limits listed in Table 1 without CHO authorization via the EWEC Desk.***
- ___ Report any rapid increases or unexpected changes in exposures readings to the EWEC Desk.
 - ___ Report any loss of TLD or non-operating SRDs to the EWEC Desk.
 - ___ Relay protective actions issued by the EWEC Desk for emergency workers. These protective actions will be issued through the EWEC Desk, Cities Liaison, and other official channels. POTASSIUM IODIDE TABLETS SHOULD NOT BE TAKEN UNLESS AUTHORIZED BY THE CHO AND DIRECTED BY THE EWEC DESK.
 - ___ Request additional equipment/supplies through your agency's emergency organization.

PERSONNEL ROSTER/EXPOSURE LOG

[illegible]

TABLE 1

EMERGENCY WORKER EXPOSURE CONTROL GUIDELINES

1. Administrative Guideline

Whole Body - 1 Rem

1. CHO informed of such exposure.
2. CHO considers need to authorize exposure above Initial Exposure Guideline below.

2. Emergency Exposure Guidelines

a. Initial Exposure Guideline¹

Whole Body:

1. Up to 1.25 Rem without CHO authorization
2. Between 1.25-5.0 Rem with CHO authorization

Adult Thyroid: 25 Rem with CHO authorization

b. Extraordinary Emergency Operations³ (Volunteers only)

Whole Body: up to 25 Rem (with CHO authorization)
Extremities²: up to 100 Rem (with CHO authorization)
Adult Thyroid: up to 125 Rem (with CHO authorization)

c. Lifesaving Actions³ (Volunteers only)

Whole Body: up to 75 Rem (with CHO authorization)
Extremities²: up to 200 Rem (with CHO authorization)
Adult Thyroid: no limit⁴ (with CHO authorization)

-
1. Source: U.S. EPA
 2. Indicated extremity dosage is in addition to whole body limit.
 3. Source: U.S. EPA
 4. No specific upper limit is given for thyroid exposure since in the extreme case complete thyroid loss might be an acceptable penalty for a life saved. However, this should not be necessary if respirators and/or thyroid protection for rescue personnel are available as a result of adequate planning.

TABLE 2

GLOSSARY

ACRONYM

DEFINITION

ALARA
ARES/RACES

As low as reasonably achievable
Amateur Radio Emergency Services/Radio Amateur
Civil Emergency Service

CA
CC

State of California
Command Center (of County Department or allied
agency)

CHO
DHS
ECD
EOC
EWEC
FEMA

County Health Officer
State Department of Health Services
(Emergency Worker) Exposure Control Desk
Emergency Operations Center
Emergency Worker Exposure Control
Federal Emergency Management Agency

IPZ
KI

Ingestion Pathway Zone
Potassium Iodine

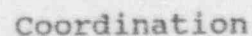
m

Milli (1/1000)

NPP
OES
PG&E
REM
SRD
TLD
UDAC

Nuclear Power Plant
Office of Emergency Services
Pacific Gas & Electric Company
Radiation Exposure Man
Self Reading Dosimeter (also "Pocket Dosimeter")
ThermoLuminescent Dosimeter
Unified Dose Assessment Center

EMERGENCY WORKER EXPOSURE CONTROL INFORMATION FLOW DIAGRAM



San Luis Obispo County/Cities
Nuclear Power Plant Emergency Response Plan
Standard Operating Procedure

EMERGENCY WORKER EXPOSURE CONTROL CHECKLIST (EWEC)

EWEC-3

EWEC EXPOSURE CONTROL

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B. Pre-Field Checklist and Precautions	1
C. Radiation Exposure Tracking	2
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Form 1 - Field Exposure Log for Low-Range Dosimeter (CDV-138)	6
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EWEC-3
EMERGENCY WORKER EXPOSURE CONTROL CHECKLIST

SECTION A - EMERGENCY WORKER EXPOSURE CONTROL KIT ASSEMBLY AND CHARGING OF DOSIMETERS

1. OBTAIN AN EMERGENCY WORKER EXPOSURE CONTROL KIT CONTAINING THE FOLLOWING:

- ☐ a. Copy of this checklist
- ☐ b. Thermoluminescent Dosimeter (TLD)
- ☐ c. Low-Range Self-Reading Dosimeter (CDV-138), 0-200 mR, or equivalent
- ☐ d. High-Range Self-Reading Dosimeter (CDV-730), 0-20 R, or equivalent
- ☐ e. Field Exposure Logs; one blue for low-range and one yellow for high-range dosimeters
- ☐ f. Potassium Iodide (KI) Tablets with Precaution Leaflet
- ☐ g. Plastic Bag for above

2. IF SELF-READING DOSIMETERS NEED TO BE CHARGED, USE THE FOLLOWING GUIDANCE:

- ☐ a. Obtain a CDV-750 Dosimeter Charger and install a D-cell battery.
- ☐ b. Place dosimeter on the charging coupler and hold down firmly.
- ☐ c. Look into dosimeter and turn the knob slowly until the hairline comes into view. Then turn knob until the hairline is on or as near as possible to the right of zero.
- ☐ d. Remove dosimeter and verify the hairline is on or near the zero. If not, repeat steps b & c.

SECTION B - PRE-FIELD CHECKLIST AND PRECAUTIONS

- ☐ 1. Ensure dosimeters are charged and the initial "START" readings are written on the Field Exposure Logs.
- ☐ 2. Ensure your name, address, agency, Social Security Number and TLD number (large number on bottom right of stick-on tab) are written on Logs.
- ☐ 3. Ensure self-reading dosimeters and TLD are clipped between neck and waist on the front of the body.
- ☐ 4. Ensure you are briefed on radiological conditions and communication methods by your Command Center, before going on an assignment.
- ☐ 5. Remember -- 1000 milliRems are equal to 1 Rem (1 Rem = 1 Roentgen).
- ☐ 6. Handle dosimeters with care and keep them **DRY**. Rough handling, dropping, and moisture can cause them to discharge and/or give inaccurate readings.
- ☐ 7. Follow protective action recommendations issued for emergency workers by the County Health Officer (CHO). (Most recommendations and advisories will be communicated to your Command Center and then to you.)
- ☐ 8. Do not take the Potassium Iodide tablets unless directed to do so by the CHO. Read the leaflet provided in the kit if recommended to take the tablets.

Record additional information provided by your command center here: _____

SECTION C - RADIATION EXPOSURE TRACKING

Read self-reading dosimeters often, but at least hourly. If the hairline begins to move up the scale, track your exposure as follows:

- ____ 1. Ensure the initial start reading is recorded in the "START" column.
- ____ 2. Record the "TIME" and "DATE" of each "ENDING" reading in the proper columns.
- ____ 3. Record each reading in the "ENDING" column. DO NOT RECORD ZERO READINGS.
- ____ 4. Record the "ENDING" reading in the next "START" reading column. This number becomes your new "START" reading. (NOTE: If dosimeter has been recharged, be sure to record the new reading in the next "START" column.)
- ____ 5. Subtract the "START" reading from the "ENDING" reading, and record the difference in the "NET" column.
- ____ 6. ADD the "Net" to the previous TOTAL to get your new TOTAL exposure.
- ____ 7. Inform your Command Center when your TOTAL is 250 mR, 500 mR, 750 mR, and 1000 mR. DO NOT EXCEED EXPOSURE LIMITS LISTED BELOW WITHOUT COUNTY HEALTH OFFICER (CHO) AUTHORIZATION. Inform your Command Center if you approach the limits.
- ____ 8. Recharge your dosimeters if the hairline reaches three-fourths scale and at the beginning of each shift. Record the new "START" reading on the Log.
- ____ 9. If your dosimeter hairline goes off-scale (cannot be seen), ask other workers in your area if their dosimeters are on-scale. If their dosimeters are on-scale, your dosimeter is most likely malfunctioning and needs to be recharged or replaced. If other workers' dosimeters are also off-scale, immediately contact your Command Center for instructions.
- ____ 10. If you lose any dosimeter or your SRD is non-operable, notify your Command Center IMMEDIATELY.
- ____ 11. If you use all the spaces on a Field Exposure Log, get a new log from your Command Center. On the new Log, record your last total in the space with the asterisk(*). Your next NET reading will be added to this.
- ____ 12. Turn in self-reading dosimeters at the end of each shift for use by others. Keep your TLD and all Exposure Record Logs until directed to turn them in.
- ____ 13. Periodically compare your exposure recorded on your Logs with the exposure recorded by your Command Center. Resolve any discrepancies.

EMERGENCY WORKER EXPOSURE GUIDELINES

Remember -- 1 Rem = 1000 mRems (1 Rem = 1 Roentgen)

Category	Whole Body Exposure Limit	Comments
1. County Administrative Limit	1 Rem	Inform your Command Center if you approach this limit. The County Health Officer (CHO) will be informed and consider the need for authorization above the County limit of 1.00 Rem Whole Body. Your Command Center will inform you of the CHO recommendations.
2. Emergency Exposure Limits		
a. Initial Exposure Limit	1.25 Rem	The CHO must authorize exposure in excess of 1.25 Rem. If authorized, you may receive up to 5.0 Rem without further authorization.
b. Extraordinary Emergency Operations	25 Rem	With CHO authorization, up to 25 Rem may be authorized for extraordinary emergency operations. <u>Volunteers Only.</u>
c. Life-Saving Actions	75 Rem	With CHO authorization, up to 75 Rem may be authorized for the purpose of saving lives. <u>Volunteers Only.</u>

TABLE 1

EMERGENCY WORKER EXPOSURE CONTROL GUIDELINES

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Whole Body - 1 Rem

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2. CHO considers need to authorize exposure above Initial Exposure Guideline below.

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Whole Body: up to 25 Rem (with CHO authorization)
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Whole Body: up to 75 Rem (with CHO authorization)
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-
1. Source: U.S. EPA
 2. Indicated extremity dosage is in addition to whole body limit.
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 4. No specific upper limit is given for thyroid exposure since in the extreme case complete thyroid loss might be an acceptable penalty for a life saved. However, this should not be necessary if respirators and/or thyroid protection for rescue personnel are available as a result of adequate planning.

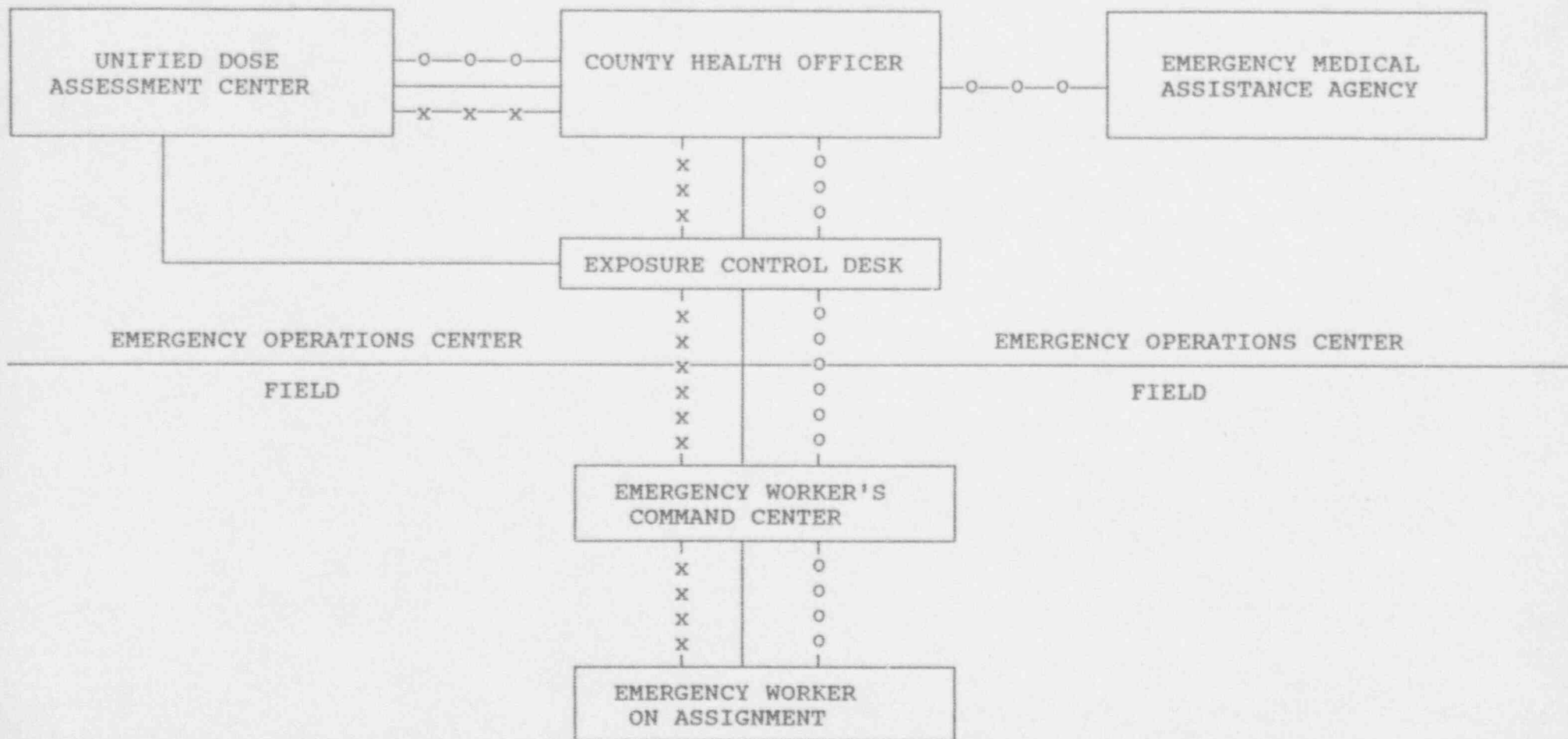
TABLE 2

GLOSSARY

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KI	Potassium Iodine
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NPP	Nuclear Power Plant
OES	Office of Emergency Services
PG&E	Pacific Gas & Electric Company
REM	Radiation Exposure Man
SRD	Self Reading Dosimeter (also "Pocket Dosimeter")
TLD	ThermoLuminescent Dosimeter
UDAC	Unified Dose Assessment Center

FIGURE 1

EMERGENCY WORKER EXPOSURE CONTROL
 INFORMATION FLOW DIAGRAM



Direction of Data Flow

x-x-x-x- Direction of Protective Action Recommendations

o-o-o-o- Coordination

FORM 1

FIELD EXPOSURE LOG
FOR
LOW-RANGE DOSIMETER (CDV-138)

0-200 mR

[illegible]

*Previous Log Total if Any

NOTE: Prints on BLUE stock

III.06, HP-11 - EMERGENCY WORKER EXPOSURE CONTROL (EWEC)
EWEC-3 - Emergency Worker Exposure Control Checklist

FORM 1
(BACK PAGE)

FILL IN THE INFORMATION REQUEST BELOW

(Please Print)

NAME _____

STREET OR P.O. BOX #. _____

CITY: _____

STATE AND ZIP: _____

AGENCY AFFILIATION _____

SOCIAL SECURITY #: _____ - _____ - _____

TLD #: _____

III.06, HP-11 - EMERGENCY WORKER EXPOSURE CONTROL (EWEC)
EWEC-3 - Emergency Worker Exposure Control Checklist

FORM 2

FIELD EXPOSURE LOG
FOR
LOW-RANGE DOSIMETER (CDV-730)

0-20 R

DATE	TIME	START (R)	ENDING (R)	NET	TOTAL EXP. *

*Previous Log Total if Any

NOTE: Prints on YELLOW stock

III.06, HP-11 - EMERGENCY WORKER EXPOSURE CONTROL (EWEC)
EWEC-3 - Emergency Worker Exposure Control Checklist

FORM 2
(BACK PAGE)

FILL IN THE INFORMATION REQUEST BELOW

(Please Print)

NAME _____

STREET OR P.O. BOX #: _____

CITY: _____

STATE AND ZIP: _____

AGENCY AFFILIATION _____

SOCIAL SECURITY #: _____ - _____ - _____

TLD #: _____