

CURRENT  
EMERGENCY PLAN  
IMPLEMENTING PROCEDURES

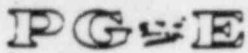
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02/04/85



Pacific Gas and Electric Company



DEPARTMENT OF NUCLEAR PLANT OPERATIONS

DIABLO CANYON POWER PLANT UNIT NO(S)

1 AND 2

TITLE: EMERGENCY PROCEDURE  
REACTOR TRIP RESPONSE

NUMBER EP OP-0.1  
REVISION 1  
DATE 12/7/84  
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APPROVED:

*R. C. Thompson*  
PLANT MANAGER

DATE

1-9-85

IMPORTANT  
TO  
SAFETY

SCOPE

This procedure provides the necessary instructions to stabilize and control the plant following a reactor trip without a safety injection. This procedure and changes thereto requires PSRC review.

SYMPTOM OR ENTRY CONDITIONS

This procedure is entered from EP OP-0, REACTOR TRIP OR SAFETY INJECTION, Step 4, when SI is neither actuated nor required.

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TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION: o If SI actuation occurs during this procedure, go to EP OP-0, REACTOR TRIP OR SAFETY INJECTION.

o If subcooling monitor becomes inoperable, determine subcooling by using WR RCS pressure and core exit TCs (Refer to APPENDIX C).

NOTE: Monitor the SPDS display.

1. CHECK RCS Average Temperature  
- STABLE AT OR TRENDING TO 547°F

IF temperature is greater than 547°F and increasing  
THEN dump steam to condenser  
OR  
dump steam using SG 10% steam dumps.

IF temperature is less than 547°F and decreasing,  
THEN verify ALL steam dumps closed.

IF cooldown continues,  
THEN check for excessive feedwater by reducing flow.

Feedwater flow can be reduced below 460 if level is GREATER THAN 4% in at least one(1) SG

IF cooldown continues,  
THEN simultaneously close MSIVs  
AND  
check bypass valves closed.



TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSERESPONSE NOT OBTAINED2. CHECK FW Status:

- a. Check RCS average temperature  
- LESS THAN 554°F

- a. WHEN less than 554°F,  
THEN do Steps 2b and 2c.

Continue with Step 3  
-----

- b. Verify MFW regulator valves  
closed on monitor light box C,  
SG level portion:

- b. Manually close SG MN FDWTR  
CONT valves:

- 1) Red activated light - ON  
2) White status lights - OFF

FCV 510 - CLOSED  
FCV 520 - CLOSED  
FCV 530 - CLOSED  
FCV 540 - CLOSED  
-----

- c. Total AFW flow  
- GREATER THAN 460 GPM  
- OR -  
Controlled with SG NR level at  
33%

- c. Start available AFW Pump and  
align LCVs to control level.

IF AFW NOT available,

THEN reset Feedwater  
Isolation and go to EP  
OP-8, LOSS OF SECONDARY  
HEAT SINK.  
-----

3. VERIFY All Control Rods Fully  
Inserted.

IF two or more control rods  
NOT fully inserted,

THEN emergency borate 100 ppm  
for each rod not fully  
inserted.

TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSE4. CHECK PZR Level Controls:

a. Level - GREATER THAN 17%

b. Verify charging and letdown  
- IN SERVICE

c. Level - TRENDING TO 22%

RESPONSE NOT OBTAINEDa. IF level less than 17%,THEN perform the following:

- o Ensure letdown isolation
  - o Ensure heaters off
  - o Control charging to restore PZR level to greater than 17%.
- 

b. To re-establish letdown:

- 1) Ensure charging in service
  - 2) Ensure ltdn orifice stop vlv 8149A, B and C closed
  - 3) Open LCV-459 and LCV-460.
  - 4) Check open 8152. Letdown ISO VLV O.C.
  - 5) Manually open Letdown Press Cont. PCV-135 to ~ 50%.
  - 6) Open one (1) 75 gpm orifice stop valve, 8149 B or C.
  - 7) Adjust PCV-135 for 350 psig and then place in AUTO.
- 

c. Adjust charging flow to maintain level ~ 22%.

TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSERESPONSE NOT OBTAINED5. CHECK PZR Pressure Control:

a. Pressure - GREATER THAN 1850 PSIG

a. IF less than 1850 psig,THEN manually actuate SI and  
go to EP OP-0, REACTOR  
TRIP OR SAFETY  
INJECTION, Step 5.  
-----b. Pressure - STABLE AT OR TRENDING  
TO 2235 PSIGb. IF less than 2235 psig and  
decreasing,  
THEN perform the following:

o Ensure PZR PORVs closed.

IF PORV can NOT be  
closed,THEN manually close its  
block valve.o Ensure PZR spray valves  
closed.IF spray valve(s) can  
NOT be closed,THEN stop RCP(s)  
supplying failed  
valve(s).RCP 1-1 for PCV 455A  
RCP 1-2 for PCV 455B

o Ensure PZR heaters on.

IF greater than 2235 psig  
and increasing,THEN perform the following:o Ensure PZR heaters  
off.o Control pressure  
using normal spray,  
auxiliary spray or  
PORV.

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TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

6. CHECK ALL SG NR Levels:

a. SG NR level - GREATER THAN 4%

a. Maintain total feed flow greater than 460 gpm until SG NR level is greater than 4% in at least one (1) SG.  
-----

b. Control feed flow to maintain SG NR level at 33%.

c. Shutdown steam driven AFW pump if not needed.

7. VERIFY Main Generator Trip After 30 Second Delay:

a. PK 14-1, Unit Trip - ON

b. Generator Voltage - ~ 0 volts.

b. Open Generator PCBs.

TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSERESPONSE NOT OBTAINED

NOTE: If the plant was backfeeding from the 500 KV system at the time of the reactor trip (i.e., prior to rolling off the turbine), an automatic transfer to startup power will not normally occur unless the 500 KV system becomes unavailable.

8. VERIFY All AC Busses  
- ENERGIZED BY OFFSITE POWER

IF offsite power NOT available,  
THEN verify diesel generators have assumed the following loads:

ASW pumps 1-1 and 1-2  
AFW pumps 1-2 and 1-3  
Charg. pumps 1-1 and 1-2  
CCW pumps 1-1, 1-2 & 1-3  
CFCUs 1-1, 1-2, 1-3, 1-4 & 1-5

Attempt to restore offsite power and, if possible, energize additional equipment from the vital busses (i.e., PZR heaters, TSC).

TSC  
OPEN 52-22J-40  
OPEN 52-2F-47  
OPEN 52-1F-67  
SWITCH EPTSN TO VITAL POWER  
SWITCH EPTSC TO U-1 (52-1F-67)  
CLOSE 52-1F-67  
-----



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TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

CAUTION: On natural circulation, loop lavg and associated interlocks will be inaccurate. Use WR temperature for control of plant.

NOTE: Running RCP No. 2 (preferred) or RCP No. 1 should be given priority for purpose of normal PZR spray.

9. VERIFY RCP Status  
- AT LEAST ONE RUNNING

Start an RCP per OP A-6:I, RCP  
- Place in Service

IF RCP can NOT be started,

THEN operate steam dump to ensure:

- 1) RCS subcooling GREATER THAN 20°F
  - 2) SG pressures STABLE OR DECREASING
  - 3) RCS hot leg temperatures STABLE OR DECREASING.
  - 4) Core exit TCs STABLE OR DECREASING
  - 5) RCS cold leg temperatures AT SATURATION TEMPERATURE FOR SG PRESSURE.
- 

10. CHECK Main Turbine Status During Coastdown:

- a. Verify turbine drain valves  
- OPEN.
- b. Implement Part B of OP C-3:III,  
Main Turbine Shutdown.



TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSERESPONSE NOT OBTAINED11. ALIGN MSRs:

- a. Press reset on MSR control panel.
- b. Refer to OP C-5, MSRs for desired alignment instructions.

12. CHECK If SR Detectors Should Be Energized:

- a. Check IR flux - LESS THAN  $10^{-10}$  AMPS

- a. Continue with Step 13.

WHEN flux is less than  $10^{-10}$  amps,

THEN complete Steps 12b,c,d, and e.

- b. Verify both SR detectors  
- ENERGIZED
- c. Select highest SR and IR detector on NR-45.
- d. Unblock high flux at S/D alarm when level is below setpoint and stable.
- e. If desired, place SR audio countrate circuit in operation.

- b. Manually reset and energize both SR detectors

13. SHUTDOWN MFW Pumps If Not Needed For Feedwater Control:

- a. Implement OP C-8:III, SHUTDOWN AND CLEARING OF A MAIN FEEDWATER PUMP.
- b. Open MFW turbine drain valves.

TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSERESPONSE NOT OBTAINED14. CHECK If Condenser Steam Dump  
Should Be In Pressure Control Mode:

- a. Check MSIVs - NOT ISOLATED
- b. Check C-9 status light - ON
- c. Check Tave at T-no load
- d. Check HC-507 set at 8.38 turns
- e. Check for 0% demand on HC-507
- f. Transfer to PRESSURE MODE

IF the condenser is NOT available,THEN use SG 10% steam dumps to maintain T-no load.IF demand on HC-507, remain in Tave at T-no load, and recheck Tave at T-no load.15. SHUTDOWN Unnecessary Plant  
Equipment As Desired:

- a. Stop No. 2 Heater Drip Pump per OP C-7B:II No. 2 HEATER DRIP PUMP SHUTDOWN AND CLEARING
- b. Shutdown all but one Condensate and Booster Pump sets.
- c. Reset 4KV bus auto transfer relay, if necessary.
- d. Stop all but one (1) ASW pumps.
- e. Restore CFCU operation to pre-reactor trip status.

16. ALIGN Auxiliary Steam As Desired:

- a. IMPLEMENT OP K-5, PACKAGE BOILER AND AUXILIARY STEAM SYSTEM

17. NOTIFY Rad/Chem Department Of  
Reactor Trip.

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TITLE: REACTOR TRIP RESPONSE

ACTION/EXPECTED RESPONSE

RESPONSE NOT OBTAINED

18. MAINTAIN Stable Plant Conditions:

- o PZR pressure - AT 2235 PSIG
- o PZR level - AT 22%
- o SG NR level - AT 33%
- o RCS average temperature  
- AT 547°F

19. COMPLETE Required Reports And Notifications:

- a. AP-100S1, REACTOR TRIP REPORT
- b. Refer to Appendix Z of this procedure.
- c. STP M-55, Recording of Cyclic Fatigue Transients.

20. GO To Applicable Plant Procedure:

- a. EP OP-0.2, NATURAL CIRCULATION COOLDOWN  
- OR -
- b. OP L-2, HOT STANDBY TO MINIMUM LOAD  
- OR -
- c. OP L-5, PLANT COOLDOWN FROM MINIMUM LOAD TO COLD SHUTDOWN

- END -

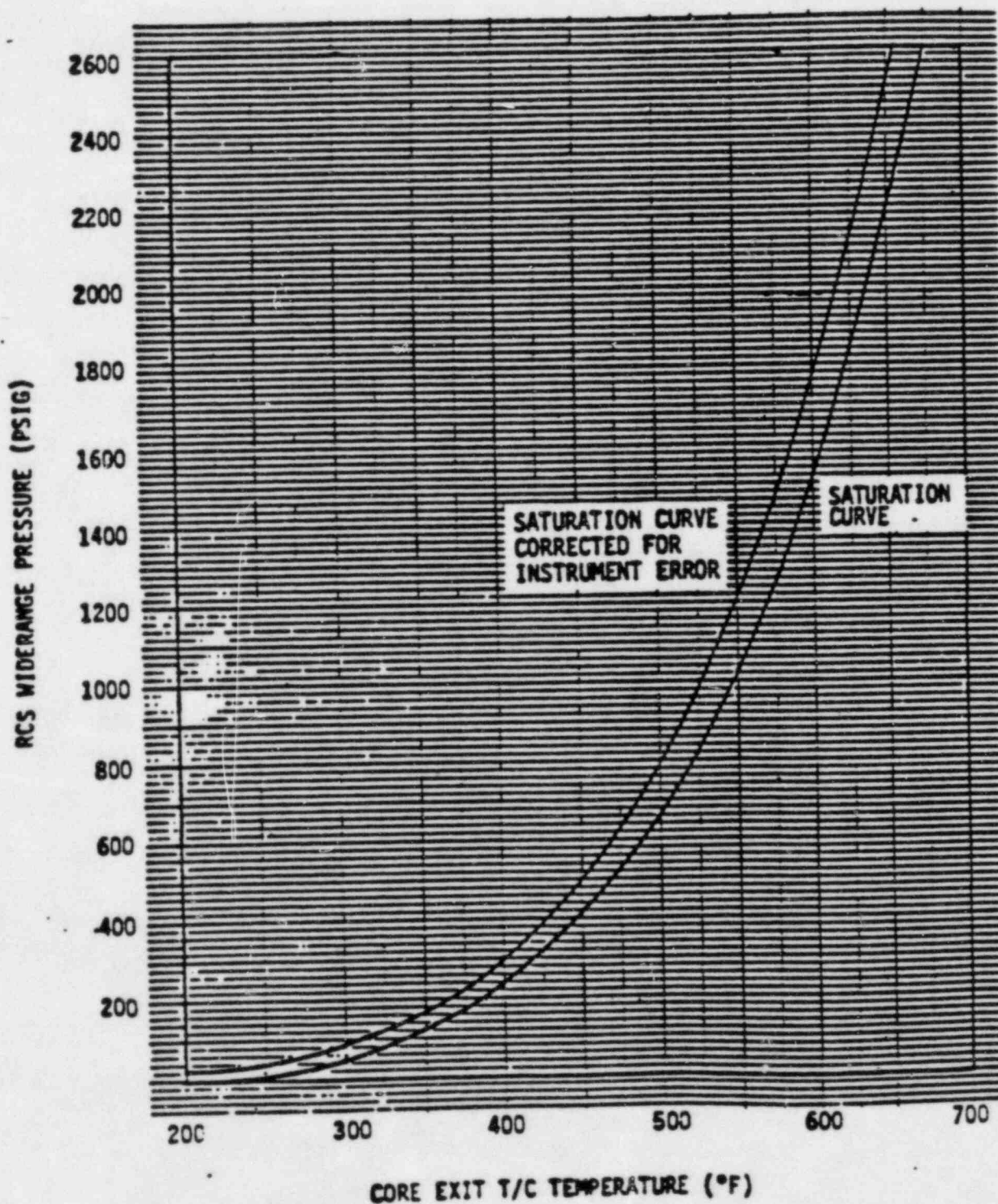
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TITLE: REACTOR TRIP RESPONSE

APPENDIX C





TITLE: REACTOR TRIP RESPONSE

## APPENDIX Z

EMERGENCY PROCEDURE NOTIFICATION INSTRUCTIONS

1. When the emergency procedure has been activated and upon direction from the Shift Foreman proceed as follows:
  - a. Notify the Plant Superintendent, Operations Manager, and Plant Manager of their designated alternates.
  - b. Within four hours notify the NRC Operations Center using the red phone in the Control Room. Gather sufficient information from all sources prior to calling so that the phone call is meaningful. Complete the "NRC Event Notification Form" contained in Administrative Procedure C-11, Supplement 2, "Supplement 2 to Non-Routine Notification and Reporting to the NRC and Other Governmental Agencies." Notify the NRC that your call is a four hour report pursuant to 10CFR Part 50.72, (Immediate Notification Requirements).
  - c. Review the circumstances causing the reactor trip against the criteria for reports to the NRC contained in Administrative Procedure C-11, Supplement 2. If circumstances warrant, designate the event in accordance with the criteria contained in Procedure C-11, Supplement 2.
  - d. When the cause of the reactor trip has been determined, this and the subsequent plant conditions should also be reviewed against the classification criteria in Emergency Procedure G-1 "Accident Classification and Emergency Plan Activation."
2. If plant conditions indicate the required conditions for reactor trip have occurred or the required coincidence of bistables have tripped, or trip is manually activated, and nuclear instrumentation indicates the reactor is not subcritical (e.g., non-negative startup rate) designate this event an Alert. Notify plant staff and response organizations required for this classification by implementing Procedures EP G-2 "Establishment of the On-Site Organization" and EP G-3 "Notification of Off-Site Organizations" in accordance with EP G-1 "Accident Classification and Emergency Plan Activation."

PACIFIC GAS AND ELECTRIC COMPANY  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2

TITLE: NEW/REVISED/RESCINDED OFFICIAL PROCEDURE INSTRUCTION SHEET

TO: \_\_\_\_\_ For Plant Manual Copy No: \_\_\_\_\_ Date: 1-11-85  
Responsible Person \_\_\_\_\_ E 1

NEW PROCEDURE

Proc No.	Rev No.	Vol No.	Section	Proc No.	Rev No.	Vol No.	Section
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

1. Remove the history sheet (for departmental use as determined by each dept head).
2. Insert the attached new procedure into the designated volume.
3. Enter the procedure title and revision on the Table of Contents.
4. Sign and return this instruction sheet as soon as you have completed above.

REVISED PROCEDURE

Proc No.	Rev No.	Vol No.	Section	Proc No.	Rev No.	Vol No.	Section
<u>m-1</u>	<u>12</u>	<u>3A</u>	<u>M.</u>	_____	_____	_____	_____
<u>Please file this attachment in the back of</u> <u>EP M-1. It was inadvertently missed in</u> <u>the latest issuance.</u>				_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

1. Remove the history sheet (for departmental use as determined by each dept head).
2. Insert the attached revised procedure into the designated volume.
3. Remove and return the out-of-date procedure and any on-the-spot procedure changes associated with the procedure.
4. Update the revision entry on the Table of Contents.
5. Sign and return this instruction sheet as soon as you have completed above.

RESCINDED PROCEDURE

Proc No.	Rev No.	Vol No.	Section	Proc No.	Rev No.	Vol No.	Section
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

1. Remove and return the cancelled procedure and any on-the-spot procedure changes associated with the procedure.
2. Line out the procedure entry on the Table of Contents.
3. Sign and return this instruction sheet once you completed the above.

REMARKS: \_\_\_\_\_

INSTRUCTIONS COMPLIED WITH: \_\_\_\_\_ Date: \_\_\_\_\_

RETURN SIGNED INSTRUCTION SHEET TO: Responsible Person  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT  
ATTENTION: Sharon Chan-Snyder (Document Control Clerk)



SEE REVERSE SIDE FOR INSTRUCTIONS

VOLUME NO 3A

COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO	COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO	COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO	COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO
1	RCThornberry	A3	41	MNoreen	N/A	81	WJKeyworth	F4	121	DUNger TSC Lab	B8
2	BGiffin	N/A	42	KBarulich	N/A	82	EGarcia/ DSchaefer	N/A	122		
3	JDSchiffer	N/A	43	TJMartin	G3	83	POlsen	K11	123		
4	MRC	M9	44	Shift Sec Suprv	K9	84	TBrake Electric Shop	I12 C9	124	DCramins	L11
5	Library	N/A	45	ACMoss	N/A	85	MAO'Hara	B4	125	DMalone	A15
6			46	VRFoster	M5	86			126	Clear Coord U2	D15
7	SFM	D8	47	KWallace	M7	87	DMalone	A14	127	Oper Ready Rm	D8
8	Control Rm	D8	48	WEvidalin	D8	88	JHubble	K11	128	Shift Manager	D8
9	Aux Bldg Cnt Bldg	D8	49	BWannings	C4	89	RCaciarelli	N/A			
10	Simulator Trng	G4	50	Ready Op Rm	D8	90	WDrake	K11			
11	Hot Shutdown Pnt	D8	51	Cold Shutdr. Pnt	D8	91	BADetman/THack/ JEnglish	N/A			
12	Cond Pol Sys	D8	52	GVJohnson	M8	92	Clearance Coord	D8			
13			53	Press Calib Shop	A14	93	I&C Trng	G13			
14	JMGiscion	M3	54	P250 Comp Rm	M8	94	MRgo11	A14			
15	RSSnyder	B8	55	Rad Calib Fac/ LMoret1	B11/ BB	95	DNorton	A14			
16	MAFerguson	B6	56	EMurphy	I6	96	JH111	I13			
17			57	JWarrick/ KRhodes	N/A	97	MKunde	N/A			
18	Counting Room	B11	58	PPKristensen	I11	98					
19	I&C Foreman	A14	59	WGCrockett	D9	99	--				
20	Electronics Lab	A14	60	JASexton	D3	100	LFisher	K12			
21	Calib Shop	A14	61	OSRG	M10	101	MLew	D11			
22			62	JVBoots	B3	102	DGreen	E6			
23	BWGiffin	A14	63	MHFujimoto	N/A	103	RLFisher	D10			
24	Net Tower	A14	64	MDJones	I14	104	OESundquist Vol 7 & 8	E3 E9			
25			65	MRRyan	C10	105	EOF	N/A			
26	Mechanical Frmn	C11	66	TSC / Vol 1 Hierzer	N/A	106	EOF	N/A			
27	Electrical Frmn	C9	67	TSC	N/A	107	MBMcLane	I9			
28	Cold Mach Shop	C11	68	Oper Trng/ Security Trng	G4 / K12	108	MPhanrahan	A14			
29	Hot Mach Shop	C11	69	Oper Trng/ Security Trng	G4 / K12	109	Combustion Engr	B12			
30	RGTodaro	K9	70			110	DWPierce	D12			
31	Avila Guard	K9	71			111	Ron Besser - PIMS	M12			
32	Cent Alarm Stn	K9	72			112	MFong	B5			
33	Sec Alarm Stn	K9	73	PSzelinski	N/A	113	Unit 2 Mech/Elec	C11			
34	Quality Control	L11	74	EOF	N/A	114	LFWomack	M4			
35	QA	M11	75	EOF	N/A	115	SGBanton	M7			
36	QA Library TGDeUriate	N/A	76	EOF	N/A	116	SKRoberts	A14			
37	C Lambert	J12	77	AccessContCoord LGLumsford	K13 K10	117	DMorton	A14			
38	Materials Fac	I14	78	DUNger	B8	118	AGMoore	A14			
39	CLEldridge	L9	79	TSC	N/A	119	C. Dyer	N/A			
				Vol 1 & 4	C11 CE	120	LGouveia	N/A			

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PACIFIC GAS AND ELECTRIC COMPANY  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2

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Safety, Health and Claims Personnel to be  
Contacted for Reporting of Injuries at Diablo Canyon<sup>1</sup>

EMPLOYEE INJURIES

In all cases of serious employee injuries (for example, injuries involving hospitalization, electric contact, hernia, amputation, fractures, or injuries expected to result in lost time from work beyond the day of injury) or death, which occur while on the job, report should be made as follows:

During Working Hours:

T. B. Honey

PGandE local

(If Mr. Honey is not available, the person answering the telephone will take the message and notify Mr. Honey or any other parties necessary in the Safety, Health and Claims Department).

Any Other Time:

Report to one of the persons on the following list, trying each in order until one is contacted:

- |                     |               |
|---------------------|---------------|
| 1. T. B. Honey      | Pinole        |
| 2. A. Thomas        | San Francisco |
| 3. C. B. Powell     | San Francisco |
| 4. P. S. Benitez    | San Rafael    |
| 5. T. G. Scott      | Oakland       |
| 6. L. Lasagna       | Albany        |
| 7. C. W. Allen      | San Francisco |
| 8. B. L. Wade       | Larkspur      |
| 9. J. A. Glimme     | Danville      |
| 10. J. C. Vocke     | Lafayette     |
| 11. W. A. Hutchison | San Carlos    |
| 12. C. C. Cooper    | Oakland       |
| 13. R. J. Zappelli  | Oakland       |
| 14. R. W. Hall      | Richmond      |
| 15. I. M. Crawford  | Hercules      |
| 16. R. G. Schumaker | El Granada    |
| 17. D. E. Harelson  | Orinda        |
| 18. P. C. Boettcher | Moraga        |
| 19. H. W. Reynolds  | Sunnyvale     |
| 20. B. P. Sadler    | Belmont       |
| 21. R. M. Petersen  | Walnut Creek  |

<sup>1</sup>This listing extracted from Safety, Health, and Claims memo regarding Personnel to be Contacted for Reporting of Accidents, dated 5/84.

Safety, Health and Claims Personnel to be  
Contacted for Reporting of Injuries at Diablo Canyon  
Page 2 of 2

Non-Employee Injuries

C. O. Schrell, San Luis Obispo,

If he cannot be reached, contact one of the following in order of preference:

During working hours:

1. John C. Echols
2. Doug G. Keeler
3. Scott P. Robinson (collection only)

[ ]

After working hours on Monday through 8:00 a.m. on Friday, except holidays:

- |   |               |
|---|---------------|
| 1. John C. Echols                         | Pleasant Hill |
| 2. Doug G. Keeler                         | Concord       |
| 3. John C. Vocke                          | Lafayette     |
| 4. Donald A. Rushton                      | San Mateo     |
| 5. William H. Bingaman                    | Novato        |
| 6. E. Anthony Giudici                     | San Carlos    |
| 7. J. Alec McCorquodale                   | Lafayette     |
| 8. Stanley W. Johnson                     | Fairfield     |
| 9. Scott P. Robinson<br>(collection only) | San Jose      |
| 10. Bruce P. Sadler                       | Belmont       |

[ ]

After 5:00 p.m. on Fridays to 8:00 a.m. on Mondays and holidays:

Contact the Investigator delegated to stay on call for all emergencies. He may be reached through the System Dispatcher. If he is not available, the Dispatcher will follow the procedures for "After Working Hours."

PACIFIC GAS AND ELECTRIC COMPANY  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2

TITLE: NEW/REVISED/RESCINDED OFFICIAL PROCEDURE INSTRUCTION SHEET

TO: \_\_\_\_\_ For Plant Manual Copy No: \_\_\_\_\_ Date: 1-10-85  
Responsible Person \_\_\_\_\_ @ 1

NEW PROCEDURE

Proc No.	Rev No.	Vol No.	Section	Proc No.	Rev No.	Vol No.	Section

1. Remove the history sheet (for departmental use as determined by each dept head).
2. Insert the attached new procedure into the designated volume.
3. Enter the procedure title and revision on the Table of Contents.
4. Sign and return this instruction sheet as soon as you have completed above.

REVISED PROCEDURE

Proc No.	Rev No.	Vol No.	Section	Proc No.	Rev No.	Vol No.	Section
EP 4-3	5	3A	6				
<i>Only the body of the procedure is revised</i> <i>Replace only pages 1 thru 5 of the procedure</i> <i>and keep the attachments.</i>							

1. Remove the history sheet (for departmental use as determined by each dept head).
2. Insert the attached revised procedure into the designated volume.
3. Remove and return the out-of-date procedure and any on-the-spot procedure changes associated with the procedure.
4. Update the revision entry on the Table of Contents.
5. Sign and return this instruction sheet as soon as you have completed above.

RESCINDED PROCEDURE

Proc No.	Rev No.	Vol No.	Section	Proc No.	Rev No.	Vol No.	Section

1. Remove and return the cancelled procedure and any on-the-spot procedure changes associated with the procedure.
2. Line out the procedure entry on the Table of Contents.
3. Sign and return this instruction sheet once you completed the above.

REMARKS: \_\_\_\_\_

INSTRUCTIONS COMPLIED WITH: \_\_\_\_\_ Date: \_\_\_\_\_

RETURN SIGNED INSTRUCTION SHEET TO: Responsible Person  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT  
ATTENTION: Sharon Chan-Snyder (Document Control Clerk)



SEE REVERSE SIDE FOR INSTRUCTIONS

VOLUME No 3A

COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO	COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO	COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO	COPY HOLDER NO	RESPONSIBLE PERSON	BOX NO
1	BCThornberry	A3	41	MNorem	N/A	81	WJKeyworth	F4	121	DUNger TSC Lab	BB
2	BGiffin	N/A	42	KBarulich	N/A	82	EGarcia/ DSchaefer	N/A	122		
3	JDSiffer	N/A	43	TJMartin	G3	83	POlsen	K11	123		
4	WRC	H9	44	Shift Sec Suprv	K9	84	TBrake Electric Shop	112 C9	124	DCramins	L11
5	Library	N/A	45	ADMoss	N/A	85	WAO'Hara	B4	125	DMalone	A15
6			46	VRFoster	H5	86			126	Clear Coord U2	D15
7	SFM	DB	47	IDWallace	H7	87	DMalone	A14	127	Oper Ready Rm	DB
8	Control Rm	DB	48	WEVidalin	DB	88	JHubble	K11	128	Shift Manager	DB
9	Aux Bldg Cnt Bro	DB	49	RMannings	C4	89	WJactare111	N/A			
10	Simulator Trng	G4	50	Ready Op Rm	DB	90	WDDrake	K11			
11	Hot Shutdown Pnl	DB	51	Cold Shutdn Pnl	DB	91	BADEttman/TMack/ JEnglish	N/A			
12	Cond Pol Sys	DB	52	GVJohnson	HB	92	Clearance Coord	DB			
13			53	Presc Calib Shop	A14	93	I&C Trng	G13			
14	JMGiscion	H3	54	P250 Comp Rm	HB	94	NRogoll	A14			
15	RSSnyder	BB	55	Rad Calib Fac/ LMoretti	B11/ BB	95	DNorton	A14			
16	MAFerguson	B6	56	EMurphy	I6	96	JH111	I13			
17			57	JWarrick/ KRhodes	N/A	97	MKunde	N/A			
18	Counting Room	B11	58	PPKristensen	I11	98					
19	I&C Foreman	A14	59	WGCrockett	D9	99	--				
20	Electronics Lab	A14	60	JASexton	D3	100	LFisher	112			
21	Calib Shop	A14	61	OSRG	M10	101	NLiew	D11			
22			62	JVBoots	B3	102	DGreen	E6			
23	BWGiffin	A14	63	WHFujimoto	N/A	103	RLFisher	D10			
24	Net Tower	A14	64	MDJones	I14	104	OESundquist Vol 7 & 8	E3 F9			
25			65	WRRyan	C10	105	EOF	N/A			
26	Mechanical Frmn	C11	66	TSC / Vol 1 Hierz	N/A	106	EOF	N/A			
27	Electrical Frmn	C9	67	TSC	N/A	107	WBMCLane	I9			
28	Cold Mach Shop	C11	68	Oper Trng/ Security Trng	G4 / K12	108	MPHanrahan	A14			
29	Hot Mach Shop	C11	69	Oper Trng/ Security Trng	G4 / K12	109	Combustion Engr	B12			
30	RGTodaro	K9	70			110	DWPierce	D12			
31	Avila Guard	K9	71			111	Ron Besser - PIMS	H12			
32	Cent Alarm Stn	K9	72			112	HFong	B5			
33	Sec Alarm Stn	K9	73	PSzelinski	N/A	113	Unit 2 Mech/Elec	C11			
34	Quality Control	L11	74	EOF	N/A	114	LFWomack	H4			
35	QA	M11	75	EOF	N/A	115	SGBanton	H7			
36	QA Library TGDeUriate	N/A	76	EOF	N/A	116	SKRoberts	A14			
37	C Lambert	J12	77	AccessContCoord LGLunsford	K13 K10	117	DMNorton	A14			
38	Materials Fac	I14	78	DUNger	BB	118	AGMoore	A14			
39	CLEldridge	L9	79	TSC	N/A	119	C. Dyer	N/A			
40			80	Vol 1 & 4 Mech Engrs	C11 F5	120	LGouy's	N/A			

**PG&E****Pacific Gas and Electric Company**

NUMBER EP G-3

REVISION 5

DATE 12/19/84

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DEPARTMENT OF NUCLEAR PLANT OPERATIONS

DIABLO CANYON POWER PLANT UNIT NO(S) 1 AND 2

TITLE: EMERGENCY PROCEDURE  
NOTIFICATION OF OFFSITE ORGANIZATIONS

APPROVED: \_\_\_\_\_

*R. E. Thibault*  
PLANT MANAGER

1-10-85

DATE

IMPORTANT  
TO  
SAFETYSCOPE

This procedure describes the steps to be taken to provide both the initial and follow-up notifications to Federal, State, Local, and Company off-site emergency organizations following the initiation of one of the four classes of Emergency Action Levels as described in EP G-1 "Accident Classification and Emergency Plan Activation."

Notification of off-site organizations which would respond on-site to specific emergency situations, (security threat, personal injury or fire) are discussed in the individual procedures dealing with those specific types of emergencies. If required, requests for this assistance receive priority over notification calls. This procedure and changes thereto requires PSRC review.

GENERAL

1. Notification of San Luis Obispo County should be made within 15 minutes for the Unusual Event classification and sooner (consistent with the need for other emergency actions) for other classes. This time is measured from the time at which the Shift Foreman recognizes that events have occurred which make declaration of an emergency appropriate.
2. Offsite emergency organizations which require prompt notification in an emergency situation are listed on Form 69-10298 "Required Offsite Organization Call List. The agencies are listed in the order in which the notifications should be performed. The initial contact with an off-site agency should provide as much information concerning the state of the emergency as is available at the time the notification is made. Form 69-10581 "Initial Emergency Notification Form" is provided as a guide to be used in providing the initial notification of an emergency. All available information on Form 69-10581 should be provided the organizations.



## TITLE: NOTIFICATION OF OFFSITE ORGANIZATIONS

It is important that the initial notification of off-site support organizations be made promptly and with as much pertinent information as is available. It should not be delayed if all the information contained on Form 69-10581 is not immediately available. Complete the required initial notifications even if the information provided is changed during the notification process. Provide the updated information as soon as initial notification is complete.

Figure 1 "San Luis Obispo County Protective Action Zones and Sectors from Plant" and Table 1 "PGandE Recommended Initial General Public Protective Action Criteria" are provided to assist in determining appropriate protective actions to recommend for the general public. Refer to EP R-2 "Release of Airborne Radioactive Materials" for additional protective action exposure criteria.

3. Follow-up status reports from the Control Room should also use Form 69-10581. Reports from the TSC should include the information that is appropriate on Form 69-10262 "Radiological Emergency Status Form, Form 69-10295 "Plant Status Emergency Form" and Form 69-10296 Onsite/Offsite Radiological Field Monitoring and PIC Emergency Status Form," where such information is requested and not available to the organization by electronic data transmission.
4. All notifications and contacts with off-site emergency organizations made throughout the course of the emergency should be recorded on Form 69-10298 "Required Offsite Organization Call List" or use Form 69-9221 "Emergency Notification Record" or similar log.
5. Primary position holders of certain emergency response positions are provided with VHF radio-equipped company vehicles. Because these persons are essentially on-call at all times, use of these vehicles is warranted in off hours to ensure rapid communication and response. These personnel are identified in Attachment 3 and in the call list for on-site personnel in G-2.
6. Per Administrative Procedure AP C-11S2, "Supplement 2 to Non-Routine Notification and Reporting to the NRC and Other Governmental Agencies", use of any emergency procedure which results in declaration of any emergency classification requires an "Immediate Notification" and must be reported to NRC headquarters within one hour.

## TITLE: NOTIFICATION OF OFFSITE ORGANIZATIONS

The Shift Foreman will follow Administrative Procedure AP C-1152 and its "Significant Event Notification Form" for Unusual Events. The Site Emergency Coordinator will assure that the required reporting is accomplished for Alert or higher conditions.

INITIATING CONDITIONS

Notification of off-site emergency organizations shall be initiated by the Shift Foreman when he declares an Unusual Event, Alert, Site Area Emergency, or General Emergency in accordance with EP G-1, "Accident Classification and Emergency Plan Activation."

IMMEDIATE ACTIONS

1. Upon declaration of an Unusual Event, the Shift Foreman, or his designated representative, shall man a telephone in the Control Room and proceed to contact off-site organizations.
2. Upon declaration of an Alert, Site Area Emergency, or General Emergency, the Shift Foreman acting as the interim Site Emergency Coordinator shall appoint an interim Emergency Liaison Coordinator to perform the initial contact of off-site organizations initially from the Control Room and then from the Technical Support Center (TSC).
3. The San Luis Obispo County Emergency Plan provides that the Sheriff will make notifications to the United States Coast Guard (USCG). If the situation at the plant requires immediate protective actions on the part of the general public, and the County Emergency Organization has not had time to be activated, the plant should notify the USCG to place them on standby.

In the event a Site Area Emergency (with recommendation for evacuation) or General Emergency is declared,

and

the recommendation for protective action is made within 30 minutes of the initial notification of the emergency condition,

the

Shift Foreman or the Interim Emergency Liaison Coordinator will call the 24-hour USCG (Marine Safety Office) phone 415/437-3073 and alert them to PGandE's recommendations for protection actions. The USCG should also be informed that San Luis Obispo County has been informed of the recommendations and will be calling with a request for assistance with the offshore areas in the vicinity of the plant.

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1 AND 2

NUMBER EP G-3  
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TITLE: NOTIFICATION OF OFFSITE ORGANIZATIONS

#### SUBSEQUENT ACTIONS

1. A verbal summary of actions taken to close out an Unusual Event shall be provided each organization notified by the Site Emergency Coordinator or his designated representative.
2. Immediate notification of an increase in emergency classification or increase in the potential for a release shall be made to San Luis Obispo County. Status updates should be provided approximately every 30 minutes to each organization, for an Alert or higher classification, until the EOF and TSC are manned.
3. When personnel are available the TSC will be activated for an Alert or higher classification according to EP EF-1, "Activation of the Technical Support Center." The Emergency Liaison Coordinator shall man his post in the TSC Operations Center and assume responsibility for contact with off-site emergency organizations from the person in the Control Room.
4. Status updates to San Luis Obispo County will be provided by the EOF once it is manned in accordance with Emergency Procedure EF-3 "Activation of the Emergency Operations Facility." Updates to California OES and NRC will continue from the TSC until these organizations establish their own communication channels and no longer need status reports.

NOTE: Changes in emergency classification or information on the estimated potential for time of or extent of a release will be immediately provided to offsite organizations when authorized.

5. Status reports to other organizations on Form 69-10298 are only required as determined necessary by the Site Emergency Coordinator for the organization to provide their support function.

#### RECORDKEEPING

All records generated by the utilization of this procedure for an exercise or emergency shall be forwarded the next working day to the Assistant Plant Manager/Support Services for review and retention.

- 1) Records generated from exercises will be categorized as non-permanent and retained for a minimum of five years.

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TITLE: NOTIFICATION OF OFFSITE ORGANIZATIONS

- 2) Records generated from actual emergency events will be categorized as lifetime and placed into lifetime storage in accordance with procedure "Requirements for Retention and Extended Storage of Operation Phase Activity Records. (AP E-1S1)."

#### ATTACHMENTS

1. Table 1 - Initial General Public Protective Action Criteria.
- 1a. Figure 1 "San Luis Obispo County Protective Action Zones and Sectors from Plant"
2. Form 69-10298 "Emergency Offsite Organization Call List"
3. Mobile Phone and Pager Instructions
4. Form 69-10581 "Initial Emergency Notification Form"
5. Form 69-9221 "Emergency Notification Record"
6. Form 69-10262 "Radiological Release Status"
7. Form 69-10295 "Plant Status Emergency Form"
8. Form 69-10296 "Onsite/Offsite Radiological Field Monitoring and PIC Emergency Status Form"

#### SUPPORTING PROCEDURES

1. EP G-1, "Accident Classification and Emergency Plant Activation"
2. EP EF-1, "Activation of the Technical Support Center"
3. EP EF-3, "Activation of the Emergency Operations Facility".
4. EP R-2, "Release of Airborne Radioactive Materials"
5. AP C-11S2, "Supplement 2 to Non-Routine Notification and Reporting to the NRC and Other Governmental Agencies"



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RB-15D	SPASS Gas Chromatographic Hydrogen Analysis	1
RB-15E	SPASS RCS Liquid and Gas Sample Handling	1
RB-15F	SPASS Data Analysis	0
RB-15G	SPASS Sample Storage and Disposal	1
RB-16	SPASS Subsequent Sampling	0
RB-16A	SPASS Initial Actions During An Emergency (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16B1	SPASS Diluted Liquid Sampling From Reactor Coolant (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16B2	SPASS Undiluted Liquid Sampling From Reactor Coolant (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16B3	SPASS Reactor Coolant Stripped Gas Sampling (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16B4	SPASS Diluted Liquid Sampling From Radwaste (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16B5	SPASS Undiluted Liquid Sampling From Radwaste (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16C	SPASS Containment Air Sampling (Not Intended to Meet the 3-Hour Time Limit)	1
RB-16D	SPASS Gas Chromatographic Hydrogen Analysis (Not Intended to Meet the 3-Hour Time Limit)	1
RB-16E	SPASS Liquid and Gas Sample Handling (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16F	SPASS Data Analysis (Not Intended to Meet The 3-Hour Time Limit)	0
RB-16G	SPASS Ion Chromatographic Chloride Analysis (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16H	SPASS Ph/Conductivity Dissolved Oxygen (Not Intended to Meet The 3-Hour Time Limit)	1
RB-16I	SPASS Undiluted Containment Air Sampling (Not Intended to Meet The 3-Hour Time Limit)	0
RB-16J	SPASS Sample Storage and Disposal (Not Intended to Meet The 3-Hour Time Limit)	0

02/04/85





DEPARTMENT OF NUCLEAR PLANT OPERATIONS

DIABLO CANYON POWER PLANT UNIT NO(S) 1 AND 2

TITLE: EMERGENCY PROCEDURE  
ACTIVATION OF THE MOBILE ENVIRONMENTAL  
MONITORING LABORATORY

APPROVED: \_\_\_\_\_

*R. C. Thompson*  
PLANT MANAGER1-3-85  
DATEIMPORTANT  
TO  
SAFETYSCOPE

This procedure delineates the requirements and actions to be taken to activate the Mobile Environmental Monitoring Lab (MEML).

This procedure and changes thereto requires PSRC review.

GENERAL

The MEML will be used to measure radiation levels in the environment at various offsite locations for use in offsite assessment activities. The unit is equipped with an intrinsic germanium (IGe) detector; a sodium iodide (NaI) detector; a multichannel analyzer; a Hewlett-Packard 9845C computer with mass storage discs; a high volume air sampler; one pressurized ion chamber; emergency instrumentation and equipment kits; thermoluminescent dosimeter (TLD) reader and TLD's; communications equipment for contacting the onsite Technical Support Center (TSC) and the Emergency Operations Facility (EOF); and its own electric generators. Figure 1 shows the MEML's floor plan.



The MEML garage also serves as the storage area for offsite monitoring team equipment and as a staging area for field monitoring activities. It also serves as the office, shop, and staging area for the Normal offsite radiological monitoring program.

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1 AND 2

NUMBER EP EF-4  
REVISION 6  
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TITLE:

ACTIVATION OF THE MOBILE ENVIRONMENTAL  
MONITORING LABORATORY

Access to a PGandE telephone system can be found in the division office area across from the MEML garage (see Figure 2). The doors into the division lunch room are keyed to accept the corporate "3A90909" key. Telephones are located in offices across from the kitchen.

#### INITIATING CONDITIONS

##### 1. Emergency Conditions

- a. The Site Emergency Coordinator declares that the plant is in an Alert, Site Emergency, or General Emergency status as defined in Emergency Procedure G-1 "Accident Classification and Emergency Plan Activation," and initiates the emergency organization in accordance with Emergency Procedure G-2 "Establishment Of The Onsite Emergency Organization."

#### SUBSEQUENT ACTIONS

1. The staging point for the field monitoring teams and storage area for the radiological emergency kits is the MEML garage located in the San Luis Obispo Service Center, the personnel dispatched to the MEML garage will generally consist of Chemistry and Radiation Protection Technicians (C&RP), the MEML Operators from PGandE Department of Engineering Research, and San Luis Obispo County Environmental Health Department Personnel.

## TITLE:

ACTIVATION OF THE MOBILE ENVIRONMENTAL  
MONITORING LABORATORY

2. a. When PGandE personnel have reached the MEML garage, establish telephone contact with the Radiological Emergency Recovery Manager (RERM) at the Emergency Operations Facility (EOF) (see Attachment 1). If the MEML garage is locked and access cannot be obtained from the DER personnel assigned to the van, then use the telephone in the division office building (see Figure 2).

NOTE: If the RERM cannot be reached at the EOF, then contact the Emergency Radiological Advisor (ERA) at the onsite Technical Support Center (see Attachment 1).

- b. If the RERM or the ERA require immediate deployment of the MEML and/or the field monitoring teams, and access to the garage is still not available, inform the RERM/ERA that access is not available and request the Cypher Pad Code that will open the door. Also request the ERA to dispatch an individual from the plant to reset the alarm.

c. [ ]

NOTE: When the alarm is actuated a loud electronic warbler will sound locally.

3. Activation of the MEML:

NOTE: In the event that the MEML is unavailable, MEML personnel will perform the tasks shown on Attachment 4 and report to the Cal Poly Environmental Laboratory.

- a. Switch the radiological monitoring equipment over from house power to the Onan electric power source by disconnecting the umbilical cord for the house power. For delineation of steps required for this operation, refer to the MEML Equipment Operations Manual. Disconnect all other shore leads (as per placard on steering wheel).
- b. Start the van and immediately drive van outside garage - Close & Lock Garage Door.

NOTE: If van is kept in garage with engine or generators running the fire alarm system will be actuated in a very short period of time.

TITLE: ACTIVATION OF THE MOBILE ENVIRONMENTAL  
MONITORING LABORATORY

- c. Check the operability of the portable high pressure ion chambers (PIC), including their response to check source and battery levels.
- d. Start the two (2) Onan electric generators.
- e. Verify the operation and calibration of the multichannel analyzer (MCA) following the calibration procedure in the MEML Equipment Operations Manual.
- f. Establish verbal contact with the TSC and the EOF via the van's radio and the radio telephone systems.

#### RADIOLOGICAL MONITORING EQUIPMENT OPERATING INSTRUCTIONS

Detailed operating instructions for the radiological monitoring equipment is provided in the van as the MEML Equipment Operations Manual.

#### COMMUNICATIONS

Radio communications includes two-way voice transmission via radio to the TSC, the EOF and field monitoring teams, and radio telephone to any location served by Pacific Telephone. The radio telephone is the preferred communication means for the van.

#### FIGURE

1. Floor Plan of the Mobile Environmental Monitoring Laboratory
  - 1.a. Left Side View of the Mobile Environmental Monitoring Laboratory
  - 1.b. Right Side View of the Mobile Environmental Monitoring Laboratory
2. Garage Layout and Phone Access

#### ATTACHMENTS

1. Phone Numbers
2. Contamination Control for the Mobile Environmental Monitoring Laboratory
3. Mobile Environmental Monitoring Laboratory Sample Log-in Sheet Form #69-11533 5/84 (25)
4. Cal Poly Environmental Laboratory Activation.

#### SUPPORTING PROCEDURES

RB-8 Emergency Offsite Radiological Environmental Monitoring Program



1 AND 2

TITLE: ACTIVATION OF THE MOBILE ENVIRONMENTAL MONITORING LABORATORY

STORAGE CABINET

WORK SURFACE

CABINET FOR ELECTRICAL PANELS AND REFRIGERATOR

WORK SURFACE

DRAIN TO 8 GALLON STORAGE

NAIL SHELVE

WORK SURFACE

COMMUNICATIONS CABINET

INTRINSIC GERMANIUM DETECTOR

WORK SURFACE

MAP TABLE

NAIL SHELVE

UPPER SHELVEING REMOVED FOR CLARITY

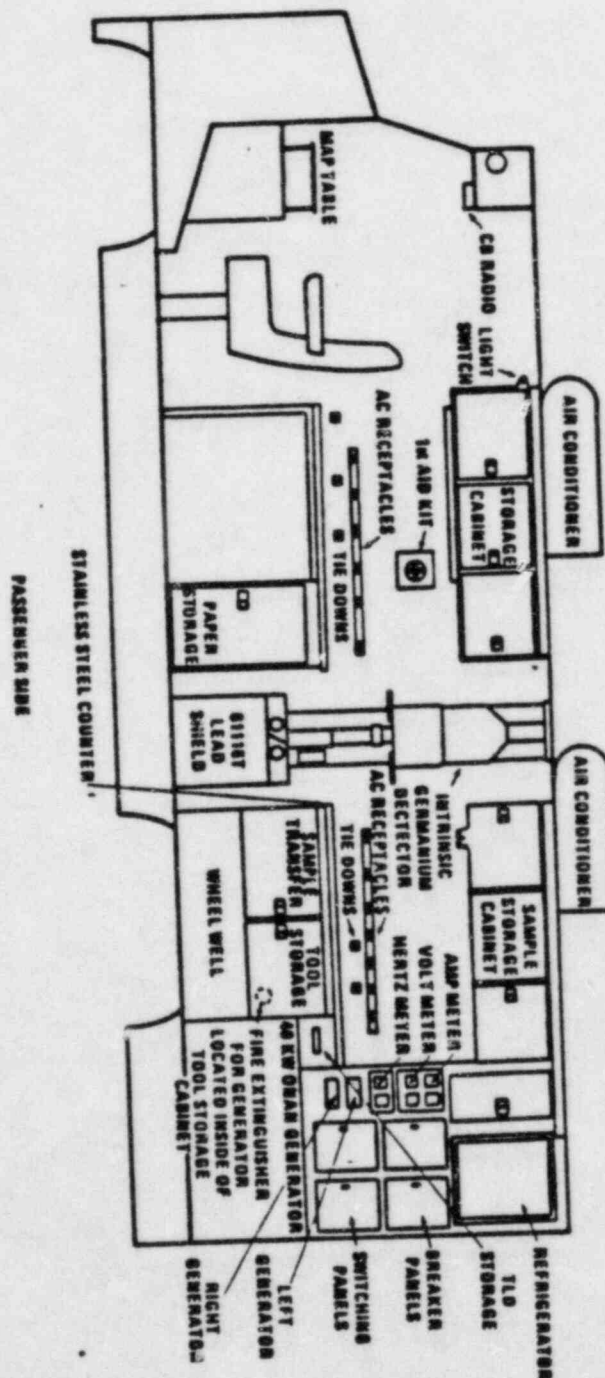
DIABLO CANYON POWER PLANT UNIT NO(S)

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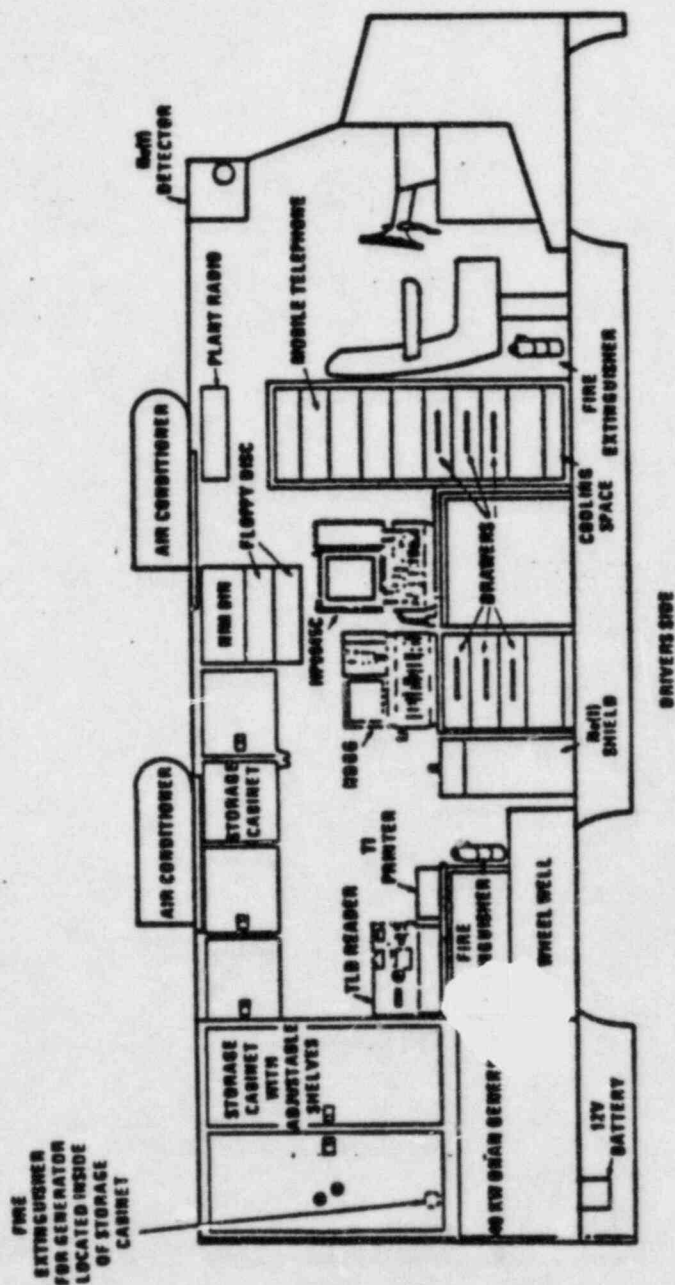
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MONITORING LABORATORY

FIGURE 1.a.  
LEFT SIDE VIEW OF THE MOBILE ENVIRONMENTAL MONITORING LABORATORY



TITLE: ACTIVATION OF THE MOBILE ENVIRONMENTAL  
 MONITORING LABORATORY

 FIGURE 1.b.  
 RIGHT SIDE VIEW OF THE MOBILE ENVIRONMENTAL MONITORING LABORATORY


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TITLE:

ACTIVATION OF THE MOBILE ENVIRONMENTAL  
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PACIFIC GAS AND ELECTRIC COMPANY  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2

TITLE: EMERGENCY FACILITY PHONE NUMBER (ATTACHMENT #1)

1. EMERGENCY OPERATIONS FACILITY:

Radiological Emergency Recovery Manager

Call Operator  
ask for  
or PT&T

Radiological Monitoring Director

or PT&T

UDAC

or PT&T

2. TECHNICAL SUPPORT CENTER

Emergency Radiological Advisor

Call Operator  
ask for  
or PT&T

3. DCCP SECURITY

Security Shift Supervisor

or PT&T

Central Alarm System

Secondary Alarm System

PACIFIC GAS AND ELECTRIC COMPANY  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2

TITLE: CONTAMINATION CONTROL FOR THE MOBILE ENVIRONMENTAL MONITORING  
LABORATORY (MEML) (ATTACHMENT #2)

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I. Sample Handling - MEML Personnel

- A. Securely affix a double layer cover on all appropriate work surfaces (i.e., work surfaces used to prepare potentially contaminated samples for analysis).
- B. Gloves should be worn when handling potentially contaminated samples (e.g., air sampler filter heads and vegetation and soil samples).
- C. Perform smear surveys on the sample bags to determine if the outsides of the sample bags are contaminated.
  - 1. If a sample bag is contaminated, place it in another non-contaminated sample bag, stored in the van.
  - 2. Use good contamination control and ALARA techniques throughout the sample analysis.
- D. When purging iodine cartridges, avoid contamination by venting the effluent directly to the outside of the lab. A purge vent is located over the sample handling bench and is so marked.
- E. Upon completion of sample analysis, store the samples in a large plastic bag. Label the bag.

II. Sample Delivery and Transfer - Offsite Monitoring Teams Personnel

- A. Field monitoring team personnel should pass samples into the van through the sample transfer door located towards the rear of the van, on the passengers' side.
- B. If the sample transfer door is inoperable, the samples may be passed through the backdoor.
  - 1. If possible, field monitoring personnel should remain outside so as not to track contamination into the van.
  - 2. If field personnel must enter the van, a step-off area should be established just inside the van entrance.

TITLE: CONTAMINATION CONTROL FOR THE MOBILE ENVIRONMENTAL MONITORING  
LABORATORY (MEML) (ATTACHMENT #2)

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3. Field monitoring personnel should frisk their hands, feet, and any other potentially contaminated area, before entering the clean step-off area.
4. Shoe covers and gloves should be available so that personnel may leave the van and enter contaminated areas, if necessary.

NOTE: Contaminated personnel should not enter the MEML under any circumstances.

- III. A. When analysis is complete, and samples stored, carefully remove the covering from the work surface(s). Rubber gloves should be worn and care should be taken to ensure the containment of any contaminants present. Dispose of the covering, gloves, etc. in a labeled plastic bag.
- B. Upon completion of all MEML activities, perform smear surveys on the inside of the van to ensure that no contamination exists. If contamination is found to exist, decontaminate as appropriate.
- C. If the van was near the plume and the potential for contamination exists, perform smear surveys on the outside of the van. If contamination is found to exist, decontaminate as appropriate.
- D. When van is determined to be free of contamination, return to garage.

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PACIFIC GAS AND ELECTRIC COMPANY  
DEPARTMENT OF NUCLEAR PLANT OPERATIONS  
DIABLO CANYON POWER PLANT UNIT NOS. 1 AND 2

TITLE: CAL POLY ENVIRONMENTAL LABORATORY ACTIVATION (ATTACHMENT #4)

1. Initial Actions (Check) - Perform before departing for Cal Poly
  - ☐ a. Unlock the garage doors/deactivate the garage alarm to allow PGandE field monitoring teams to access field monitoring equipment.
  - ☐ b. Obtain the following items (as a minimum) to be transported to the Cal Poly lab.
    - 1) Current MEML software (floppy disks)
    - 2) GM Survey Equipment
      - a) E-140/N or equivalent
      - b) HP-210/260 or 240 probe
      - c) Smear paper
    - 3) Standard Gamma Check Source
    - 4) Logs/Log Sheets
    - 5) Hand Held Radio
    - 6) Radioisotope Reference Material
    - 7) Surgical Gloves
  - ☐ c. Notify the following organizations of anticipated departure time:
    - 1) TSC (ERA-See Attachment #1)
    - 2) EOF (RERM- See Attachment #1)
    - 3) Cal Poly Campus Police
  - ☐ d. Depart for Cal Poly Environmental Laboratory
1. Subsequent Actions (Check) - Perform after arriving at Cal Poly.
  - ☐ a. Notify the following organizations of arrival at Cal Poly:
    - 1) TSC (ERA-See Attachment #1)
    - 2) EOF (RERM-See Attachment #1)
  - ☐ b. Power up equipment and perform a daily calibration per DER procedure.
  - ☐ c. Exercise sample/personnel contamination control and ALARA considerations as in the MEML (See Attachment #2).



DEPARTMENT OF NUCLEAR PLANT OPERATIONS

DIABLO CANYON POWER PLANT UNIT NO(S) 1 AND 2

TITLE: EMERGENCY PROCEDURE  
PROTECTIVE ACTION GUIDELINES

APPROVED: \_\_\_\_\_

*R. C. Thompson*  
PLANT MANAGER1-8-85  
DATEIMPORTANT  
TO  
SAFETYSCOPE

This procedure describes the mechanism for recommending protective actions to the appropriate state and county authorities after the occurrence of a radiological event. Also included, are the bases for the choice of the recommended protective actions for the plume exposure pathway and ingestion exposure pathway during emergency conditions. This procedure and changes thereto require PSRC review.

DISCUSSION

In a nuclear emergency, an estimate is made of the radiation dose which affected population groups may potentially receive. The dose estimate is called the projected dose. A protective action is an action taken to avoid or reduce this projected dose when the benefits derived from such action are sufficient to offset any undesirable features of the protective action. The Protective Action Guide (PAG) is the projected dose to individuals in the population which warrants taking protective action. A PAG under no circumstance implies an acceptable dose.

AUTHORITIES AND RESPONSIBILITIES

## 1. DCCP Site Emergency Coordinator

- a. The authority and responsibility for the decision to notify and to recommend protective actions to offsite authorities belongs solely to the Site Emergency Coordinator.

NOTE: The Recovery Manager assumes this responsibility upon arrival at the EOF (EP G-2 "Establishment of the On-site Emergency Organization").

- b. The Emergency Evaluations and Recovery Coordinator is responsible for determining the projected dose which affected population groups may potentially receive and the

## TITLE: PROTECTIVE ACTION GUIDELINES

appropriate protective actions to avoid or reduce the projected dose. The Emergency Radiological Advisor will assist the Emergency Evaluations and Recovery Coordinator with this assessment.

- c. The Emergency Evaluations and Recovery Coordinator will provide the Site Emergency Coordinator with the assessment information.
- d. The recommendations of the Site Emergency Coordinator will be conveyed to the appropriate local and state authorities by the Advisor to the County Emergency Organization located at the EOF/EOC.
- e. The responsibility for implementation of protective actions belongs to county and state authorities, as does the final decision on which protective action to implement.

## 2. Recovery Manager

- a. After arrival at, and full manning and activation of, the EOF, the Recovery Manager will assume responsibility for the coordination of all offsite emergency response activities. This shall include sole authority and responsibility for the decision to notify and recommend protective actions to the appropriate county and state authorities.
- b. The Radiological Emergency Recovery Manager (RERM) is responsible for determining the projected dose which affected populations groups may potentially receive and the appropriate protective actions to avoid or reduce the projected dose. The Emergency Supervising Engineer (ESE) will assist the RERM with this assessment. The Unified Dose Assessment Committee (UDAC), comprised of PGandE, county, state, and federal personnel, will provide the central point of radiological data assessment.
- c. The RERM will provide the Recovery Manager with the assessment information.
- d. The recommendations of the Recovery Manager will be conveyed to the appropriate local and state authorities by the

TITLE:

PROTECTIVE ACTION GUIDELINES

Advisor to the County Emergency Organization located at the EOF/EOC.

- e. The responsibility for implementation of protective actions belongs to county and state authorities, as does the final decision on which protective actions to implement.

#### PROTECTIVE ACTION GUIDES AND PROTECTIVE ACTIONS

1. Automatically recommended protective actions based on emergency action levels and initial assessment are contained in procedure EP R-2 (see also procedure EP G-3)

2. PAGs for the Plume Exposure Pathway

- a. PAGs for the general population for whole body external gamma radiation and for thyroid dose from inhalation of radioactive material in an airborne plume are as follows:

- Projected Whole Body Gamma Dose      0.5 - 5 Rem
- Projected Thyroid Dose                      5 - 25 Rem

PAG's for the general public are given in ranges. The lowest values should be used if there are no major local constraints in providing protection at this level. Local constraints may, however, make the lower values impractical to use, but in no case should the higher value be exceeded in determining a need for protective action.

- b. The projected doses are calculated (using EARS or procedure EP RB-11) at the following distances: site boundary (800 meters (0.5 miles)); 2 miles (3.2 km); 5 miles (8.1 km); 10 miles (16.1 km); 15 miles (24 km); 20 miles (32.2 km); the point of maximum exposure; and the furthest distance where exposure may occur.
- c. For purposes of recommending protective actions, the minimum area affected shall be assumed to be the plume centerline sector and a 22.5° sector on either side of the plume centerline sector, moving radially away from the release point.



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## 2. Protective Actions for the Plume Exposure Pathway

- a. Table 1 lists the PAGs and recommended protective actions for the plume exposure pathway. The protective actions are classed according to the projected radiation dose which could be received by the affected population if no protective actions are implemented.

## b. Evacuation Effectiveness

The effectiveness of evacuation in limiting radiation dose is a function of the time required to evacuate. If a radioactive plume is present, the dose will increase with the time of exposure; if evacuation is completed before the plume arrives, then evacuation is 100 percent effective. The evacuation routes are shown in figure 3 "Evacuation Routes".

- 1) Evacuation time,  $T(EV)$  is expressed as:

$$T(EV) = T_D + T_N + T_M + T_T$$

where:

$T_D$  = time delay after occurrence of the incident associated with notification of responsible officials, interpretation of data, and the decision to evacuate as a protective action.

$T_N$  = time required by officials to notify people to evacuate.  $T_N = 45 \text{ min.}^*$

$T_M$  = time required for people to mobilize and get under way.  $T_M = \sim 1\frac{1}{2} \text{ hours.}^*$

$T_T$  = travel time required to leave the affected areas.  $T_T = 2\text{-}3\frac{3}{4} \text{ to } 7\frac{1}{2} \text{ hours}^*$  for 12-18 mile boundary including San Luis Obispo, Morro Bay and the Five Cities area.

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- 2) Plume arrival time,  $t(\text{PA})$  is expressed as:

$$T(\text{PA}) = T_B + T_T$$

where:

$T_B$  = time projected before release begins.

$T_T$  = time projected for plume travel for given windspeed and downwind distances from the start of release.

NOTE: Use Figure 1, "Plume Travel Time vs. Windspeed as a Function of Distance Downwind" to determine  $T_T$ .

- 3) Compare the estimated evacuation time,  $T(\text{EV})$ , with the estimated plume arrival time,  $T(\text{PA})$ , to determine if there are constraints against evacuation. If there are constraints against evacuation use Section 2.c. Sheltering Effectiveness.

c. Sheltering Effectiveness

In cases where there is no time to evacuate prior to arrival of the plume, or where the projected evacuation time and time before plume arrival are nearly equal, evaluate the benefits of sheltering vs. evacuating and being overtaken by the passing plume.

If evacuation cannot be carried out in sufficient time to offer significant dose avoidance, recommend that officials warn the affected population to seek shelter, close windows, seal cracks in doors with wet rags, and turn off ventilation systems. Recommend that access be controlled to any area where either sheltering or evacuation has been implemented.

After the plume has passed, ground deposition will be evaluated to determine whether dose rates are sufficient to warrant subsequent evacuation.

- 1) Shielding factors for external whole body gamma dose are presented in Table 2. Shielding factors from.

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external gamma rays for individuals in various types of structures vary widely. To be conservative assume a shielding factor of 0.9 for residences and 1.0 (no shielding) for a closed vehicle.

Multiply the projected dose by the external shielding factor to determine the reduction in external gamma dose from the plume. Compare the revised projected dose to the PAG for whole body gamma dose.

- 2) Shielding factors for an inhalation dose are presented in Figure 2. Shielding factors are for a sealed, wood-frame house.

Multiply the projected dose by the inhalation shielding factor to determine the reduction in inhalation dose from the plume. Compare the projected dose to the PAG for thyroid dose.

- 3) For final evaluation of sheltering effectiveness, determine whether the whole body or thyroid is the critical organ of concern.

The gaseous portion of a radioactive plume may consist of noble gases and/or vapors such as radioiodines. The noble gases will not cause as much dose from inhalation as from whole body external exposure and therefore need not be considered as a separate contributor to inhalation exposure.

### 3. PAGs for the Ingestion Exposure Pathway

- a. PAGs for the general population for the ingestion exposure pathway are for two levels of response.

- 1) Preventive PAG - applicable to situations where protective actions causing minimal impact on the food supply are appropriate. A preventive PAG establishes a level at which responsible officials should take protective action to prevent or reduce the concentration of radioactivity in food or animal feed.

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- 2) Emergency PAG - applicable to situations where protective actions of great impact on the food supply are justified because of the projected health hazards. An emergency PAG establishes a level at which responsible officials should isolate food containing radioactivity to prevent its introduction into commerce, and at which the responsible officials must determine whether condemnation or another disposition is appropriate.

- b. PAGs for the Ingestion Pathway are as follows:

Preventive	Whole Body	0.5 rem
	Thyroid <sup>(a)</sup>	1.5 rem
Emergency	Whole Body	5 rem
	Thyroid <sup>(a)</sup>	

- (a) Infant thyroid

- c. Although the basic PAG recommendations are given in terms of projected dose equivalent, it is often more convenient to utilize specific radionuclide concentrations upon which to initiate protective actions. Table 3 shows derived response levels equivalent to the PAGs for radionuclides of interest.

### CONCLUSIONS

For foregoing represents considerations and methodology to guide the Site Emergency Coordinator and Recovery Manager in determination of recommended protective actions. The actual selection of protective actions must be considered subjectively, as many factors beyond the scope of the procedure may exist which, in the judgment of the Site Emergency Coordinator or Recovery Manager, override the criteria contained herein.

### REFERENCES

1. "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents", U.S. EPA, September 1975 (Revised June, 1980).



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2. "Reactor Safety Study", Appendix VI, WASH-1400, October 1975.
3. "State of California Nuclear Power Plant Response Plan", April 1983.
4. "Evacuation Times Assessment for the Diablo Canyon Nuclear Power Plant", Alan M. Voorhees & Associates, September 1980.
5. "Accidental Radioactive Contamination of Human Food and Animal Feeds", US FDA, Federal Register, Vol 47, No. 205, October 22, 1982.

#### SUPPORTING PROCEDURES

- R-2, "Release of Airborne Radioactive Material"
- RB-9, Determination of Release Rates
- RB-11, Emergency Offsite Dose Calculations
- RB-8, Emergency Offsite Radiological Environmental Monitoring
- G-3, Notification of Offsite Organizations

#### TABLES

1. Recommended Protective Actions to Reduce Whole Body and Thyroid Dose from Exposure to a Gaseous Plume.
2. Reduction in External Gamma Dose from Passing Cloud.
3. Radionuclide Response Levels Equivalent to Ingestion Pathway PAGs.

#### FIGURES

1. Plume Travel Time vs. Windspeed as a Function of Distance downwind.
2. Inhalation Shielding Factors for a Wood House, Snug Doors, Closed Windows.
3. Evacuation Routes
4. Population Within 10 Miles

TABLE 1

RECOMMENDED PROTECTIVE ACTIONS TO REDUCE WHOLE BODY AND THYROID DOSE  
FROM EXPOSURE TO A GASEOUS PLUME

Projected Dose (rem to the Population)	Recommended Actions <sup>(a)</sup>	Comments
Whole Body - less than 0.5 <sup>(b)</sup> Thyroid - less than 5	No planned protective actions <sup>(c)</sup> . Offsite authorities may issue an advisory to seek shelter and await further instructions. Monitor environmental radiation levels.	Previously recommended protective actions may be reconsidered or terminated.
Whole Body - 0.5 to 5 Thyroid - 5 to 25	Seek shelter as a minimum. Consider evacuation/unless constraints make it impractical. Monitor environmental radiation levels. Control access to affected areas.	If constraints exist to prevent full-scale evacuation, special consideration should be given for evacuation of children and pregnant women.
Whole body - 5 and above Thyroid - 25 and above	Conduct mandatory evacuation. Monitor environmental radiation levels and adjust area for mandatory evacuation based on these levels. Control access to affected areas.	Sheltering is an alternative if evacuation can not be promptly accomplished.

- (a) These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration (e.g., weather, plume arrival time).
- (b) The value of 0.5 rem whole body is based upon guidance from the State of California (see reference 3).
- (c) At the time of the incident, officials may implement low-impact protective actions in keeping with the principle of maintaining radiation exposures as low as reasonably achievable (ALARA).

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TABLE 2

REDUCTION IN EXTERNAL GAMMA DOSE FROM PASSING CLOUD

STRUCTURE OR LOCATION	SHIELDING FACTOR <sup>(a)</sup>	
	AVERAGE	RANGE
a. Outside	1.0	--
b. Vehicles	1.0	--
c. Wood frame house (no basement) <sup>(b)</sup>	0.9	--
d. Basement of wood house	0.6	0.1 to 0.7 <sup>(c)</sup>
e. Masonry house (no basement)	0.6	0.4 to 0.7 <sup>(c)</sup>
f. Basement of masonry house	0.4	0.1 to 0.5 <sup>(c)</sup>
g. Large office or industrial building	0.2	0.1 to 0.3 <sup>(c,d)</sup>

NOTES:

- (a) The ratio of the interior dose to the exterior dose
- (b) A wood frame house with brick or stone veneer is approximately equivalent to a masonry house for shielding purposes.
- (c) This range is mainly due to different wall materials and different geometries.
- (d) The reduction factor depends on where the personnel are located within the building (e.g., the basement or an inside room).

"Reactor Safety Study", Appendix VI, WASH-1400, October 1975

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TABLE 3

RADIONUCLIDE RESPONSE LEVELS EQUIVALENT TO INGESTION PATHWAY PAG

## Response Level for Preventive PAG

	<u>I-131</u>	<u>Cs-134</u>	<u>Cs-137</u>	<u>Sr-90</u>	<u>Sr-89</u>
Initial Deposition ( $\mu\text{Ci}/\text{m}^2$ )	0.13	2	3.0	0.5	8
Forage Conc ( $\mu\text{Ci}/\text{kg}$ )	0.05	0.8	1.3	0.18	3
Peak Milk Activity ( $\mu\text{Ci}/\text{l}$ )	0.015	0.15	0.24	0.009	0.14
Total Intake ( $\mu\text{Ci}$ )	0.09	4.0	7	0.2	2.6

## Response Level for Emergency PAG

	<u>I-131</u>		<u>Cs-137</u>		<u>Cs-134</u>	
	<u>Infant</u>	<u>Adult</u>	<u>Infant</u>	<u>Adult</u>	<u>Infant</u>	<u>Adult</u>
Initial Deposition ( $\mu\text{Ci}/\text{m}^2$ )	1.3	18	30	50	20	40
Forage Conc ( $\mu\text{Ci}/\text{kg}$ )	.5	7.0	13	19	8	17
Peak Milk Activity ( $\mu\text{Ci}/\text{l}$ )	.15	2.0	2.4	4	1.5	3
Total Intake ( $\mu\text{Ci}$ )	0.9	10	70	80	40	70

	<u>Sr-90</u>		<u>Sr-89</u>	
	<u>Infant</u>	<u>Adult</u>	<u>Infant</u>	<u>Adult</u>
Initial Deposition ( $\mu\text{Ci}/\text{m}^2$ )	5.0	20	80	1600
Forage Conc ( $\mu\text{Ci}/\text{kg}$ )	1.8	8	30	700
Peak Milk Activity ( $\mu\text{Ci}/\text{l}$ )	0.09	0.4	1.4	30
Total Intake ( $\mu\text{Ci}$ )	2	7	26	400

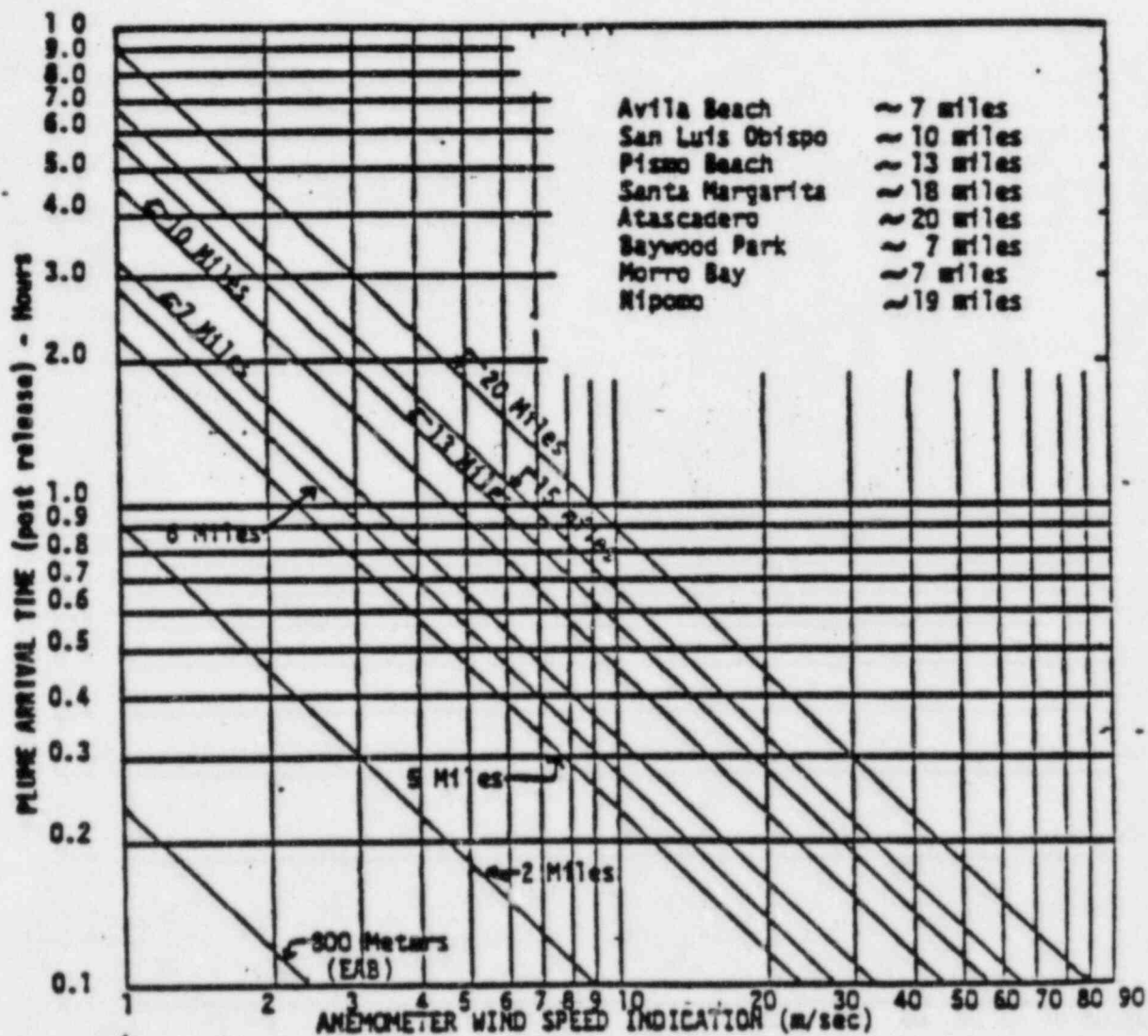
"Accidental Radioactive Contamination of Human Food and Animal Feeds", US FDA, Federal Register, Vol. 47, No. 205, October 22, 1982.



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FIGURE 1

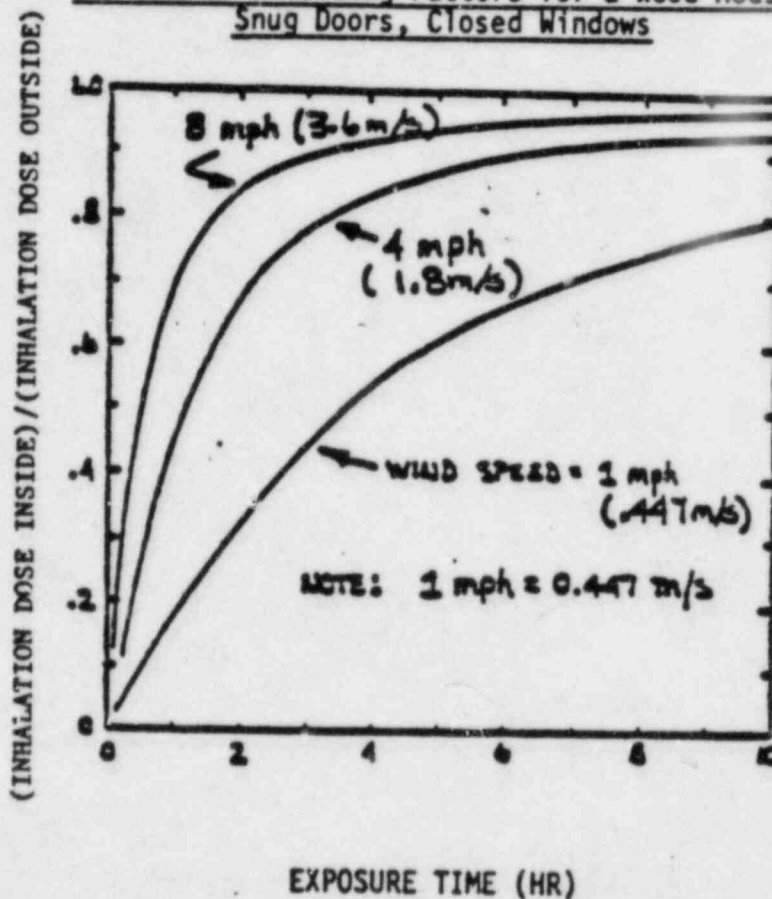
Plume Travel Time vs. Windspeed as a  
Function of Distance Downwind



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FIGURE 2

Inhalation Shielding Factors for a Wood House,  
Snug Doors, Closed Windows

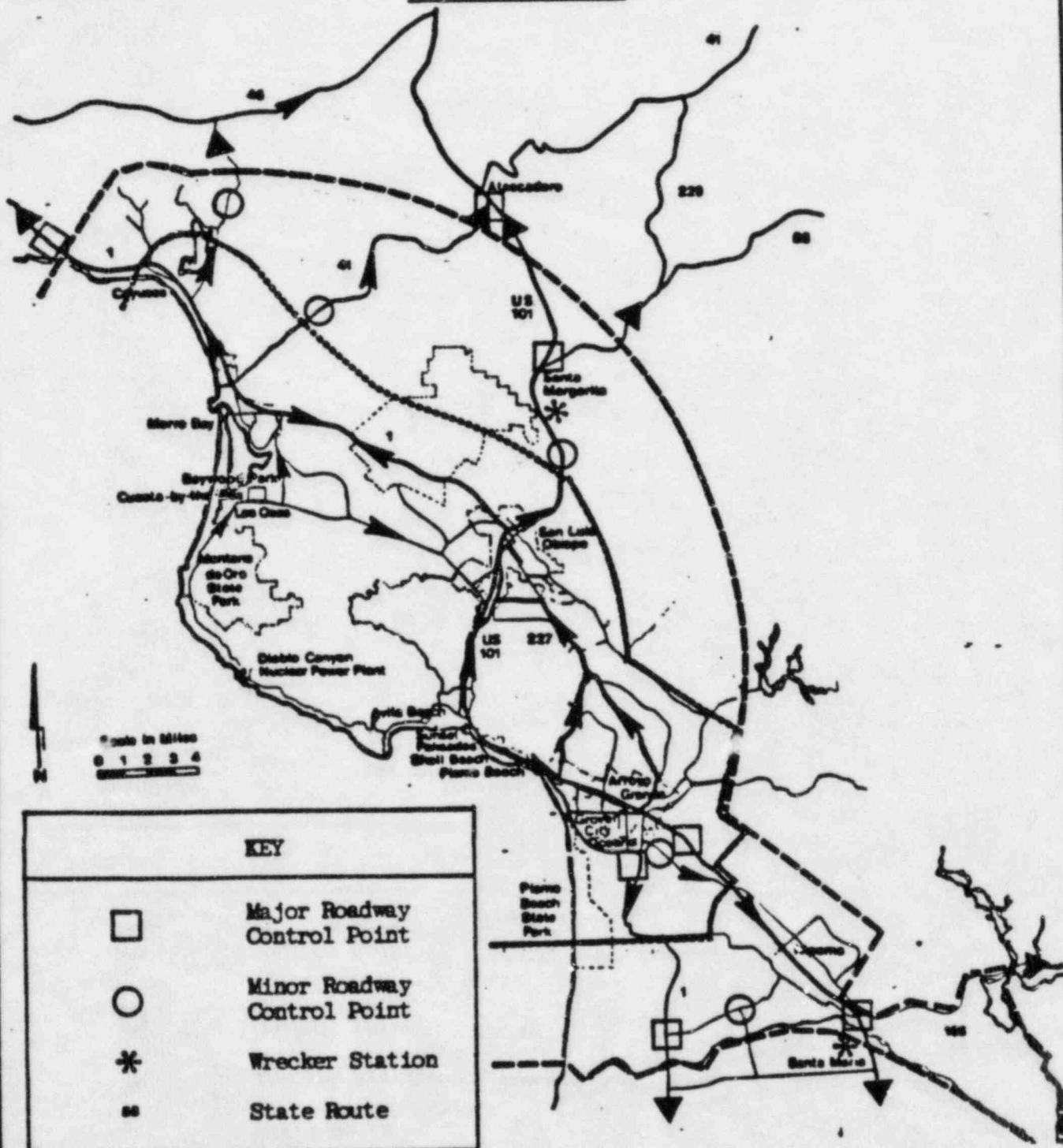


The above curve assumes the house remains closed up for the duration. Actually the dose inside the house can be further reduced by opening the doors and windows after the cloud has passed and purging the house with fresh air.

"Reactor Safety Study," Appendix VI, WASH-1400, October 1975

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FIGURE 3

Evacuation Routes

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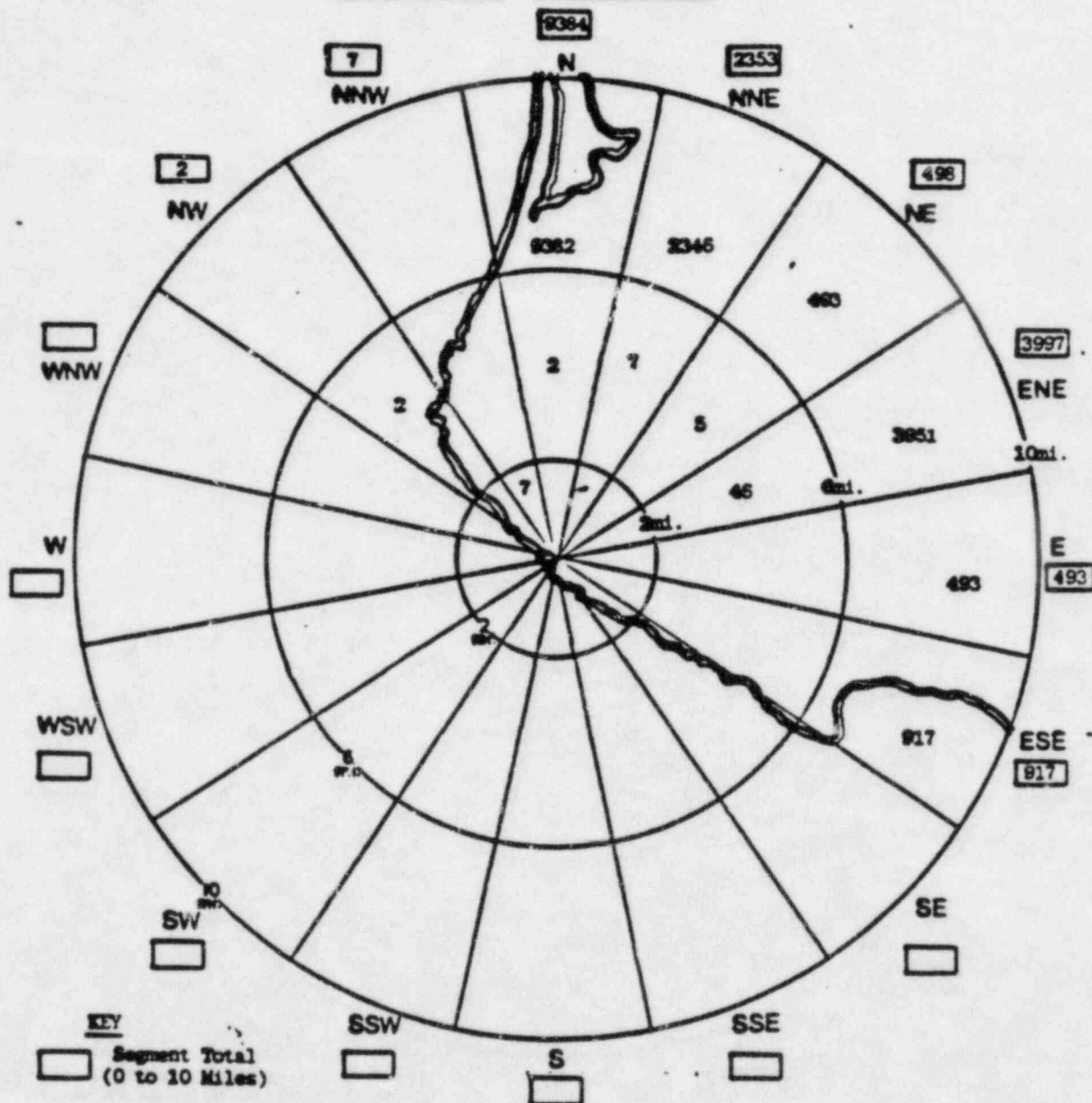
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FIGURE 4

Population Within 10 Miles



POPULATION TOTALS			
Ring, Miles	Ring Population	Total Miles	Cumulative Population
0-2	7	0-2	7
2-6	82	0-6	89
6-10	17,582	0-10	17,671