PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON UNIT 1
RADIATION SHIELDING REVIEW
SUPPLEMENT 2
01-0170-1172

Response to Part II.B.2 of NUREG 0737 Design Review of Plant Shielding and Environmental Qualification of Equipment for Spaces/Systems Which May Be Used in Post-Accident Operations

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1.0 INTRODUCTION

Pacific Gas and Electric Company (PGandE) is submitting this document as Supplement 2 to Revision 1 of the PGandE report "Diablo Canyon Unit 1 Radiation Shielding Review" (the "Report"). Pursuant to demonstrating full compliance with the requirements of Part II.B.2 of NUREG 0737, PGandE prepared and submitted to the NRC on March 19, 1981 Supplement 1 to the Report. Supplement 1 states the PGandE position in the areas of Part II.B.2 of NUREG 0737 which were not specifically addressed in the Report. Supplement 1 also outlined the additional information that PGandE would provide to the NRC to demonstrate compliance with NUREG 0737 requirements. This additional information is contained in Supplement 2.

Supplement 2 presents the results of PGandE's reevaluation of post-accident vital area access and occupancy. Diablo Canyon Unit 1 vital areas include:

- the Control Room,
- the Technical Support Center (TSC),
- the Unit 1 Emergency Sampling Compartment (ESC); and
- the Unit 1 Switchgear (SWGR) Room, including:
  - the Hot Shutdown (HSD) Panel,
  - the Hydrogen (H_2) Recombiner Units 1-1 and 1-2 Control and Power Supply Panels,
  - the Pressurizer Heater (Pzr. Htr.) Groups 12 and 13 normal and vital power supply breakers and transfer switches; and

- the normally de-energized ECCS motor-operated valve (MOV) circuit breakers.

An analysis of access and occupancy requirements was performed for each vital area. The frequency of vital area access, the times during the postulated post-accident period at which access may be required, and the duration of vital area occupancy were determined.

The route of the various interconnecting vital area access pathways and pathway transit times were determined at the site by an actual walkdown. Vital area access and occupancy requirements and corresponding frequency and time requirements are discussed in Section 2.0.

Dose rates were calculated for postulated post-accident conditions at points within the vital areas and along the vital area access pathways for post-accident times of 1, 8, 24, 240, and 720 hours. The point data was used to define radiation zones. Integrated doses were calculated based upon access and occupancy requirements. Frequency, time of access, and duration of occupancy, together with vital area zone dose rates, were used to calculate the post-accident vital area occupancy doses. Frequency and time of access, together with pathway zone dose rates and transit times, were used to calculate transit pathway doses. Methods and assumptions used for the dose rate and integrated dose calculations are discussed in Section 3.0. The analysis of results is presented in Section 4.0. Results are also graphically depicted and tabulated in Appendix A. Path-oriented vital area access maps, describing the access pathway route and tabulating projected doses, and zone-oriented dose rate maps, depicting the radiation zones

and tabulating dose rates as a function of time, have been provided.

PGandE has concluded from the results of the reevaluation of post-accident vital area access and occupancy, that the radiation environment caused by a postulated degraded core accident does not unduly limit personnel from executing necessary post-accident operations in any of the Unit 1 vital areas.

2.0 ACCESS AND OCCUPANCY REQUIREMENTS

2.1 Control Room and TSC

The Control Room and TSC are vital areas which require continuous post-accident occupancy. Part II.B.2 of NUREG 0737 states that "the dose rate (calculation) for these areas is based on the control room occupancy factors contained in SRP 6.4". The occupancy factors contained in SRP 6.4 are shown in the following table:

Time	Occupancy Factor
0 - 24 hrs	1.0
1 - 4 days	0.6
4 - 30 days	0.4

Here, time is measured relative to accident initiation. The occupancy factor is a dimensionless constant which is multiplied by the total integrated dose calculated for appropriate time intervals to obtain the "corrected" interval dose. The 30 day post-accident "continuous occupancy" dose is the sum of the three "corrected" interval doses.

For the purpose of the vital area reevaluation, it was assumed that access to the control room during the post-accident period would originate from the TSC. For personnel occupying the control room on a continuous basis during the post-accident period, it was further assumed that two round trips between the TSC and the Control Room would occur on a daily basis.

To simplify the dose calculations, a one-way trip was calculated for post-accident times of 1, 24, 48, 72 ... 720 hours. Thus, for example, the dose received as the result of two round trips during the first 24 hours was then calculated as the 1 hour one-way trip dose

multiplied by four; the dose received as the result of two round trips during the second 24 hours was calculated as the 24 hour one-way trip dose multiplied by four; and so on.

Access to the TSC was assumed to originate offsite and was therefore considered outside the scope of this evaluation.

During the site walkdown, two access pathways, P-3 and P-4, were defined. The pathways and corresponding transit times are tabulated along with calculated access and occupancy doses in Appendix A on drawings 038-003 and 038-004, respectively. Pathway P-3 is the most direct route between the TSC and Control Room, however it will not be available until a security barrier on the 104' elevation between Unit 1 and Unit 2 is removed. P-4 is an alternate pathway which is currently available.

2.2 Emergency Sampling Compartment

The ESC is a vital area which requires periodic access and occupancy for post-accident sampling and analysis. Sampling and chemical analysis facilities located in the ESC and the counting facilities located in the TSC laboratory have been specifically designed to meet requirements of part II.B.3 of NUREG 0737, titled "Post-Accident Sampling Capability". Part II.B.3 of NUREG 0737 requires that "the licensee shall have the capability to promptly obtain reactor coolant samples and containment atmosphere samples. The combined time allotted for sampling and analysis should be three hours or less from the time a decision is made to take a sample."

Based upon a review of the preliminary emergency sampling and analysis procedures, the required samples can be obtained and, with the exception of chlorides, analyzed within the required three hour time period. The duration of ESC occupancy required to obtain all the samples and perform all the required analyses,

including chloride, is 3.5 hours. It should be noted that Part II.B.3 of NUREG 0737 allows 24 hours to complete the chloride analysis.

The review of preliminary emergency sampling procedures indicated that more than one individual would be involved in the post-accident sampling operations; and furthermore, that the duration of ESC occupancy for any one individual could be limited to three hours. Therefore, the duration of ESC occupancy used in the occupancy dose calculations was three hours.

For equipment serving as a back-up to inline sampling and analytical capability, NUREG 0737 states that equipment "...shall be capable of providing at least one sample per day for seven days following onset of the accident and at least one sample per week until the accident condition no longer exists.

For the purpose of the vital area reevaluation, sampling and analysis operations were assumed to take place on a schedule consistent with back-up equipment capability requirements. That is, sampling and analysis operations were assumed to take place at one hour post-accident, and then daily for seven days, beginning at 24 hours post-accident, and then weekly for three weeks beginning at day 14 (i.e., t = 1, 24, 48, 72, 96, 120, 144, 168, 336, 504, and 672 hours). The duration of one individual's occupancy was assumed to be three hours for each sampling operation.

Access to the ESC was assumed to originate at either the control room or TSC. Each sampling operation was assumed to require one round trip (i.e., access and egress).

To simplify the dose calculations a one-way trip dose was calculated for each time of access. The round trip dose at access time

"t" was then calculated as the one-way trip dose multiplied by two.

During the site walkdown, three access pathways (P-5, which originates at the Control Room, and P-6 and P-7, which both originate at the TSC laboratory) were defined. The pathways and corresponding transit times are tabulated along with calculated access and occupancy doses in Appendix A on drawings 038-005, -006, and -007, respectively.

2.3 Switchgear Room

The Unit 1 Switchgear room is a vital area which may require periodic post-accident access and occupancy. The switchgear room equipment which could require access includes:

- the Hot Shutdown (HSD) panel;
- the Hydrogen Recombiner Units 1-1 and 1-2 Control and Power Supply Panels;
- the Pressurizer Heater (Pzr. Htr.) Groups 12 and 13 normal and vital power supply breakers and transfer switches; and
- the normally de-energized ECCS motor-operated valve (MOV) circuit breakers.

Post-accident access and occupancy requirements for this equipment were determined by the review of applicable plant emergency operating procedures. The review results are discussed in subsection 2.3.1 through 2.3.4.

During the site walkdown, four access pathways, (P-1 and P-2, which both originate at the Control Room, and P-8 and P-9, which both originate at the TSC) were defined. The pathways and corresponding transit times are tabulated along with calculated access and occupancy doses in Appendix A on drawings 038-001, 038-002, 038-008, and 038-009,

respectively. Pathway P-8 is the most direct route between the TSC and Switchgear Room; however, it will not be available until a security barrier on the 104' elevation between Unit 1 and Unit 2 is removed. P-9 is an alternate pathway which is currently available.

2.3.1 Hot Shutdown Panel

In the case of the Hot Shutdown (HSD) panel, the conclusion was drawn that access to the HSD panel would be needed only in the unlikely event that, concurrent with the postulated degraded core accident, the Control Room became temporarily uninhabitable. For the purpose of the vital area reevaluation, access was assumed to originate at either the Control Room or Technical Support Center.

Access was assumed to be required once at one hour post-accident for an eight hour duration of occupancy. To simplify calculations, the round trip transit dose was calculated as the one-way trip dose for one hour post-accident multiplied by two.

2.3.2 Hydrogen Recombiner

For the purpose of the vital area reevaluation, access to the H_2 Recombiner Control and Power Supply panels was assumed to originate at the Control Room. Initial access is required for the purpose of starting-up either Unit 1-1 or 1-2. Only one unit is started initially, with the second unit placed in a standby condition within ten days of post-accident initiation. In the dose calculations, the units were evaluated separately and were both assumed to be started up at one hour post-accident.

Review of post-LOCA H_2 recombiner operating procedures concluded that unit start-up would require a 5.5 hour duration of occupancy. Subsequent to start-up, H_2 recombiner temperature and power monitoring of each unit would require repeated access to the respective control panel at eight hours, and then daily for the remainder of the post-accident period

(i.e., t = 24, 48, 72, ...720). Duration of occupancy for monitoring was estimated to be two minutes. To simplify calculations, the round trip transit dose associated with access at post-accident time "t" was calculated as the one-way trip dose at time "t" multiplied by 2.

2.3.3 Pressurizer Heater Power Supplies

For the purpose of the vital area reevaluation, access to the Pressurizer Heater power supply circuit breakers and transfer switches was assumed to originate at the Control Room. A review of operating procedures concluded that access to the heater, breakers and transfer switches would be needed only in the unlikely event that, concurrent with the postulated degraded core accident, the plant experienced a loss of offsite power. Access to Pressurizer Heater normal and backup power supply breakers and the power supply transfer switches would be required to restore power to the heaters from a vital (diesel-generator backed) bus.

Back-up heater groups 12 and 13 can be supplied from opposite trains of vital power. According to the operating procedures, only one heater group is transferred to vital power. In the dose calculations, the operations required to place both heater groups on vital power were evaluated separately and assumed to be initiated at one hour post-accident.

The review of the operating procedures also concluded that the transfer of either heater group to vital power would require a maximum of 41 minutes. The analysis assumed that difficulty was encountered in racking vital and normal breakers in and out.

It was assumed that the pressurizer heaters, once transferred to vital power would remain on vital power; thus only single access to the power supply breakers would be required. To simplify calculations, the round trip transit

dose was calculated as the one-way trip dose for one hour post-accident multiplied by two.

2.3.4 ECCS Valve Breakers

For the purpose of the vital area reevaluation, access to the normally de-energized ECCS valve breakers was assumed to originate at the Control Room.

During normal plant operations, the control circuits for certain Emergency Core Cooling System motor-operated valves are de-energized to preclude inadvertent valve movement. During a loss of coolant accident, access to the MOV power supply circuit breakers is required to restore power.

Review of the operating procedures concluded that, prior to initiating containment cold-leg recirculation, access to two ECCS MOV circuit breakers was required. Prior to initiating containment hot-leg recirculation, access to another four breakers was required.

Access to the first two breakers could be required as early as 10 minutes post-accident. To complete the required operations, a four minute duration of occupancy is required. Access to the remaining four breakers is not needed until 19.5 hours post-accident but could occur as early as one hour post-accident. To complete the required operations at one hour post-accident a six minute duration of occupancy is required. Dose calculations were performed for these times: access at 10 minutes for a 4 minute duration, and access at 1 hour for a 6 minute duration. To simplify calculations, both round trip transit doses were calculated as the one-way trip dose for one hour post-accident multiplied by two.

3.0 METHODS AND ASSUMPTIONS

3.1 Dose Rate Calculations

Radiation dose rate calculations were performed by Radiation Research Associates, Inc. (RRA) to represent the Diablo Canyon Unit 1 post-accident radiation environment affecting personnel access to and occupancy of vital areas.

The calculations were performed using source term assumptions made in accordance with NUREG 0737, and limiting accident assumptions derived from the accident response evaluation discussed in Subsection 2.1 of the Diablo Canyon Unit 1 Radiation Shielding Review Report. The computer program ORIGEN was used to generate core fission product decay activities. The shielding programs QADMOD and G^3 were used to perform the dose rate calculations. Source terms, limiting accident assumptions, computer programs and geometric modeling are discussed in further detail in Subsection 2.2 of the Diablo Canyon Unit 1 Radiation Shielding Review Report.

The calculations performed for the vital area reevaluation were for the detector locations illustrated in the Appendix A drawings 038-010 through 038-021. In all cases, the selected detector location is three feet above the floor or grade elevation indicated by the corresponding drawing.

Sources considered in the calculations are as follows:

1. Reactor coolant activity in ECCS recirculation piping and equipment,

2. Activity in containment atmosphere,

3. Activity in an on-site radioactive cloud produced by containment leakage,

4. Activity in a main steam line produced by primary-to-secondary leakage; and

5. Reactor coolant activity in sample lines inside the ESC. (Potential contributions from samples or other sample-handling equipment were not considered.)

Calculation results are tabulated on Appendix A drawings 038-010 through 038-021 for the detectors illustrated on each drawing. The tabulated results include dose rates for post-accident times of 1, 8, 24, 240 and 720 hours for each individual source contribution and for the total contribution from all sources. Results are always given for the first source listed above. For the other sources, results are tabulated only if they make a contribution. For convenience, computed dose rates less than 0.001 mR/hr are indicated as zero. Dose rates in the range of 0.001 to 1.0 mR/hr are indicated as 1.0 mR/hr.

Regarding the various radiation sources, the dose rate calculations employed the following assumptions:

1. Reactor coolant activity is based on TID-14844 core release (100 percent noble gases, 50 percent halogens, and 1 percent solids) uniformly distributed into one primary coolant volume.

2. Containment atmosphere activity is based on 100 percent noble gases and 25 percent halogens uniformly distributed in the containment free air space.

3. Activity in a containment leakage cloud is based on a containment leakage rate of 0.1 percent per day (0.05 percent per day for post-accident times greater than 24 hours) with atmospheric dilution controlled by 25 percentile windspeed conditions.

4. Activity in a main steam line is based on a maximum primary-to-secondary leakage rate of 0.35 gpm.

Other pertinent assumptions employed in the dose rate calculations are as follows:

1. In all cases, no credit is taken for shielding by the Turbine Building or its internal structures.

2. Computed dose rates from containment direct shine at locations along access pathways outside the Auxiliary Building are based on minimal estimates of the reduction due to intermediate shadow shielding provided by the Auxiliary Building, Ventilation and Fuel Handling Buldings, and the Unit 2 Containment Building.

Regarding computed results from an assumed containment leakage cloud, it should be noted that dose rates presented in Appendix A drawings 038-010 through 038-021 include this contribution only in reference to cloud activity residing outside the Auxiliary Building. If the conservative assumption is made that leakage cloud activity should enter the Auxiliary Building through the heating and ventilation system intake and reach early equilibrium of similar concentration inside the building, then a potential additive contribution (for Auxiliary Building areas outside the Control Room) from airborne activity in a large room such as the Switchgear Room is calculated to be as follows:

Post-Accident Time (hrs)	Airborne Dose Rate Inside Auxiliary Building (mR/hr)
1	100
8	47
24	28
240	2.1
720	0.15

It should be noted that these results are based only on the assumed containment leakage cloud activity and do not include any postulated contribution from reactor coolant leakage inside the Auxiliary Building.

3.2 Integrated Dose Calculations

Integrated dose calculations were performed to estimate what radiation exposures would be received by individuals as the result of vital area access and occupancy during postulated degraded core accident conditions.

The calculations were performed using the results of the access and occupancy requirements analysis described in Section 2.0 of this supplement. The results of the dose rate calculations are discussed in Subsection 3.1, and presented on Appendix A drawings 038-010 through 038-021.

In order to perform integrated dose calculations, the detector-oriented dose rate data were used to define radiation zone boundaries. Zone boundaries are illustrated on Appendix A drawings 038-010 through 038-021. Zone boundaries were defined so that the dose rate data calculated for the detector would be conservatively representative of dose rates encountered anywhere within the zone.

Zones representing vital areas and transit pathways were assigned access and duration of occupancy times based on the analysis described in Section 2.0. In addition, for access

pathways, zone transit times were calculated on the basis of path length through the zone and the average access pathway walking rate (3.6 ft/sec), which was determined by an actual walkdown at the plant site.

Applying least-square regression techniques to the dose rate data calculated for the zone-identifying detector, the coefficients of a second-order polynomial were determined. The polynomial expression was used to approximate the functional relationship between the logarithm of calculated total dose rate and the logarithm of time. Conservative numerical integration techniques were then applied to calculated integrated doses for any zone access time between one and 720 hours post-accident, and for any duration of zone occupancy. In the few cases in which it was necessary to calculate doses for access times less than one hour post-accident, other approximation methods were used. The results of the integrated dose calculations are tabulated in Appendix A drawings 038-001 through 038-009.

4.0 ANALYSIS OF RESULTS

4.1 Control Room

The dose summaries for Control Room and TSC occupancy are presented in Appendix A drawings 038-003 and 038-004. The total 0-30 day post-accident dose for each of these vital areas is the sum of area occupancy doses tabulated on the drawings. For the Control Room, the occupancy dose assuming the occupancy factors contained in SRP 6.4, is calculated to be 547 mR, equivalent to continuous exposure (using the same occupancy factors) at an average dose rate of 1.7 mR/hr over the entire 0-30 day post-accident period. For the TSC, the occupancy dose is calculated to be 417 mR; equivalent to continuous exposure at an average dose rate of 1.3 mR/hr over the entire 0-30 day post-accident period.

Part II.B.2 of NUREG 0737 requires that, for vital areas requiring continuous occupancy, the equivalent 0-30 day average exposure rate should not exceed 15 mR/hr. The equivalent average Control Room and TSC dose rates are, respectively, only 11% and 9% of this not-to-exceed average. Thus, it is concluded that the Control Room and TSC meet post-accident vital area occupancy requirements.

The access dose summary for the Control Room is also presented on Appendix A drawings 038-003 and 038-004. The Access/Egress doses presented are one-way trip doses. Assuming, as was discussed in Section 2.1, that control room access will consist of two round trips daily, the total Control Room access dose will be approximately four times the sum of the access/egress doses tabulated. The total post-accident Control Room access dose is then 160 mR for P-3 and 604 mR for P-4. The combined control room access and occupancy dose for the entire 0-30 day post-accident period is 707 mR for P-3 and 1.15 R for P-4.,

By including these access doses in the calculation of the average 0-30 day exposure rates, the averages are increased to 2.2 mR/hr (P-3) and 3.6 mR/hr (P-4). On the basis of this result, it is concluded that adequate post-accident access is provided to the control room by both P-3 and P-4.

4.2 Emergency Sampling

The ESC occupancy dose summary is presented in Appendix A drawings 038-005, 038-006, and 038-007, with access doses calculated for access pathways P-5, P-6, and P-7, respectively. Total post-accident access and occupancy doses are given by the sum of the tabulated occupancy doses and two times the sum of the tabulated access/egress doses for a given pathway. Assuming the same individuals are involved in all the sampling and analysis operations taking place during the post-accident period, the total post-accident access and occupancy doses associated with ESC operations are given as follows:

Pathway	Total Post-Accident Access and Occupancy Dose
P-5	803 mR
P-6	1.24 R
P-7	907 mR

Part II.B.2 of NUREG 0737 requires that for vital areas that do not require continuous occupancy, the total access and occupancy doses should not exceed the limits of GDC 19, which, for comparison with the calculated results, is 5 R. The most limiting pathway, P-6, results in a total post-accident access and occupancy dose which is only 24% of this not-to-exceed limit. Assuming the individuals involved in the sampling operations also receive doses associated with worst case TSC or Control Room occupancy (see Subsection 4.1), the total combined post-accident access

and occupancy dose is still less than 50% of the not-to-exceed limit. (This assumes that one individual receives 1.15 R as a result of Control Room occupancy and access/egress along P-4 and that same individual receives the 1.24 R P-6/ESC dose.) On the basis of this result it is concluded that adequate post-accident access and occupancy is provided to the Emergency Sampling Compartment.

4.3 Switchgear Room

The switchgear room access and occupancy dose summaries are presented in Appendix A drawings 038-001, 038-002, 038-008, and 038-009. Total post-accident access and occupancy doses are given by the sum of the tabulated occupancy doses and two times the sum of tabulated access/egress doses for a given pathway and a given post-accident operation. Assuming the same individual is involved in all operations involving the same system or equipment, total post-accident access and occupancy doses associated with switchgear room operations are as follows:

Operation	Pathway	Total Post-Accident Access and Occupancy Dose
HSD Pnl	P-1	54 mR
	P-2	54 mR
	P-8	98 mR
	P-9	242 mR
H_2 Rec. 1-1	P-1	42 mR
	P-2	42 mR
H_2 Rec. 1-2	P-1	82 mR
	P-2	82 mR
Pzr. Htr. Group 12 or 13	P-1	142 mR
	P-2	142 mR
ECCS Valve Breakers	P-1	11 mR
	P-2	13 mR

Compared with the GDC 19 not-to-exceed limit

of 5R, Switchgear room doses associated with access and occupancy for any of the possible post-accident operations may be considered negligible. (The worst case dose is associated with the HSD Panel when accessed via pathway P-9, in which case the calculated dose is less than 5% of GDC 19 limit.)

4.4 Conclusions

The vital areas requiring post-accident access and occupancy at Diablo Canyon Unit 1 have all been identified, interconnecting access pathways have been defined, and vital area access and occupancy requirements have been determined. The results of dose calculations, which are documented in great detail by this supplement and by the drawings in Appendix A, have been analyzed. From the analysis of the results the following conclusion has been drawn:

The Diablo Canyon Unit 1 vital area reevaluation was performed in accordance with, and meets the requirements of, Part II.B.2 of NUREG 0737 relating to the evaluation of vital areas. The radiation environment caused by a postulated degraded core accident does not unduly limit personnel from executing necessary post-accident operations in any of the Unit 1 vital areas.

5.0 REFERENCES

1. PGandE Report "Diablo Canyon Unit 1 Radiation Shielding Review Report", Revision 1, February 20, 1981.

2. PGandE Report, "Diablo Canyon Unit 1 Radiation Shielding Review, Supplement 1, Revision 0, March 17, 1981.

3. NUREG 0737, "Clarification of TMI Action Plan Requirements".

4. EDS Nuclear, Inc., Project File 0170-038-371, June 3, 1981.

APPENDIX A

Vital Area Access and Dose Rate Maps

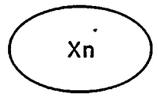
Drawing #	Title
038-000	Legend Post-Accident Vital Area Access/Occupancy
038-001	Post-Accident Vital Area Access Map Projected Doses Control Room To/From Unit 1 Switchgear Room
038-002	Post-Accident Vital Area Access Map Projected Doses Control Room To/From Unit 1 Switchgear Room (alternate path)
038-003	Post-Accident Vital Area Access Map Projected Doses Control Room To/From Technical Support Center
038-004	Post-Accident Vital Area Access Map Projected Doses Control Room To/From Technical Support Center (alternate path)
038-005	Post-Accident Vital Area Access Map Projected Doses Control Room To/From Emergency Sampling Compartment
038-006	Post-Accident Vital Area Access Map Projected Doses Technical Support Center To/From Emergency Sampling Compartment
038-007	Post-Accident Vital Area Access Map Projected Doses Technical Support Center To/From Emergency Sampling Compartment (alternate path)

038-008	Post-Accident Vital Area Access Map Projected Doses Technical Support Center To/From Unit 1 Switchgear Room
038-009	Post-Accident Vital Area Access Map Projected Doses Technical Support Center To/From Unit 1 Switchgear Room (alternate path)
038-010	Post-Accident Vital Area Dose Rates Control Room Detail Elevation 140'-0"
038-011	Post-Accident Vital Area Dose Rates Technical Support Center Detail Elevation 104'-0"
038-012	Post-Accident Vital Area Dose Rates Unit 1 Switchgear Room Detail Elevation 100'-0"
038-013	Post-Accident Vital Area Dose Rates Emergency Sampling Compartment Detail Elevation 85'-0"
038-014	Post-Accident Access Pathway Dose Rates Unit 2 Turbine Building Detail Elevation 140'-0"
038-015	Post-Accident Access Pathway Dose Rates Unit 2 Turbine Building Detail Elevation 119'-0"
038-016	Post-Accident Access Pathway Dose Rates Unit 2 Turbine Building Detail Elevation 119'-0"
038-017	Post-Accident Access Pathway Dose Rates Auxiliary Building Detail Elevation 114'-0"

038-018	Post-Accident Access Pathway Dose Rates Unit 1 Turbine Building Detail Elevation 85'-0"
038-019	Post-Accident Access Pathway Dose Rates Unit 2 Turbine Building Detail Elevation 85'-0"
038-020	Post-Accident Access Pathway Dose Rates Site Detail Elevation Ground
038-021	Post-Accident Access Pathway Dose Rates Control Room Stairway Sections A-A and B-B

SHEET 1 OF 1

038-000

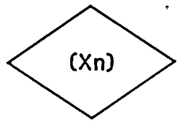


Zone Identifier

Dose rate calculated for detector location "Xn" considered representative of zone "Xn".

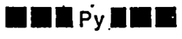
Point Identifier

Dose rate calculated for detector location "Xn-m" was used to establish zone "Xn" boundary definition.



Zone Identifier

Dose rate in this zone estimated to be conservatively represented by the dose rate calculated for detector location "Xn".



Pathway No. "y"

Zone Boundary

Zone Location Code	
C	Control Room
E	Emergency Sampling Room
S	Switchgear Room
T	Technical Support Center
	Transit Zone

Source Identification Code	
	(Sources omitted for given detector make negligible contribution)
1	Reactor Coolant Piping and Equipment During ECCS Recirculation
2	Containment Direct Shine
3	Containment Leakage Cloud
4	Main Steam Line 1-1
5	Reactor Coolant Sample Lines Inside ESC

Computed dose rates less than 0.001 mR/hr set to 0.0
Computed dose rates between 0.001 and 1.0 mR/hr set to 1.0

Pathway Identifier Code		Reference Dwg. 038-
P-1	Control Room to/from Switchgear	001
P-2	Control Room to/from Switchgear (alt)	002
P-3	Control Room to/from TSC	003
P-4	Control Room to /from TSC (alt)	004
P-5	Control Room to/from ESC	005
P-6	TSC to/from ESC	006
P-7	TSC to/from ESC (alt)	007
P-8	TSC to/from Switchgear	008
P-9	TSC to/from Switchgear (alt)	009

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

LEGEND
Post-Accident Vital Area Access/Occupancy
Diablo Canyon Unit 1
Pacific Gas & Electric Co.

eds nuclear

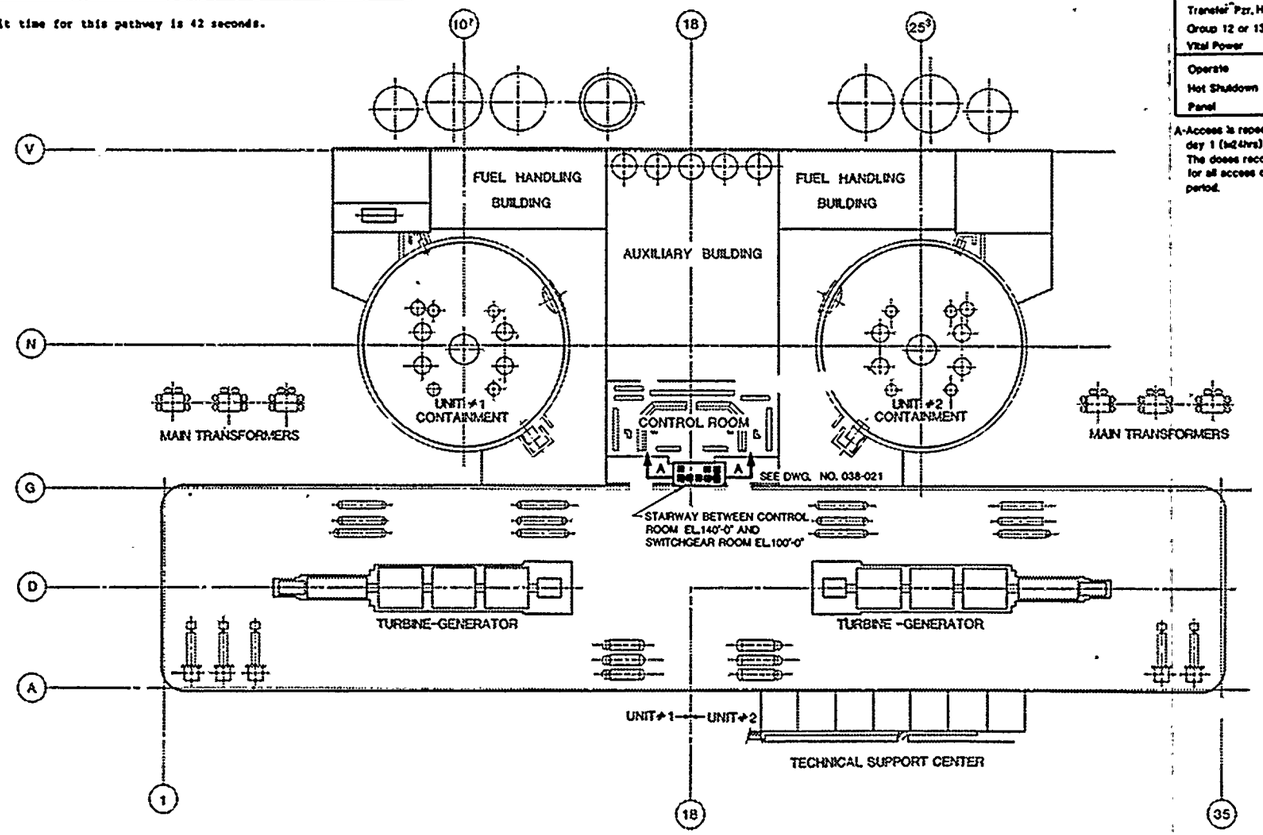
SCALE: NA
JOB NO.: 0170-038
DRAWING NO.: 038-000
REV.: 0
SHEET 1 OF 1

SHEET 1 OF 1

DRAWING NO. 038-001

PATHWAY P-1	
Route Description	Ref. Dwg. 038-
Depart Control Room (el. 140'1 via the west doorway, immediately turn left (south) and proceed down the stairway.	010
Continue down the stairway past the 115' elevation.	016 (021)
Continue down the stairway to the 100' elevation.	012 (021)
At the 100' elevation, enter the Unit 2 Switchgear Room, turn left (north), and proceed to the Unit 1 Switchgear Room (el. 100').	012

The total transit time for this pathway is 42 seconds.



SWITCHGEAR ROOM

DOSE SUMMARY

Post-Accident Operation	Time of Access	Access/Egress Dose (mr)	Duration of Occupancy	Occupancy Dose (mr)
Operate H2 Recombiner Unit 1-1	1hr 8hrs A	< 1 < 1 < 1	5.5hrs 2min. 2min./access	34 < 1 < 1
Operate H2 Recombiner Unit 1-2	1hrs 8hrs A	< 1 < 1 < 1	5.5hrs 2min. 2min./access	74 < 1 1
Energize ECCS MOV's	10min 1hr	< 1 < 1	4min. 6min.	3. 4
Transfer Pzr. Htr. Group 12 or 13 to Vital Power	1hr	< 1	41min.	140
Operate Hot Shutdown Panel	1hr	< 1	8hrs	52

A-Access is repeated daily between day 1 (to24hrs) and 30 (to720hrs) The doses recorded are cumulative for all access occuring during this period.

GENERAL NOTES:

1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
CTRL. RM. TO/FROM UNIT #1 SWITCHGEAR ROOM
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

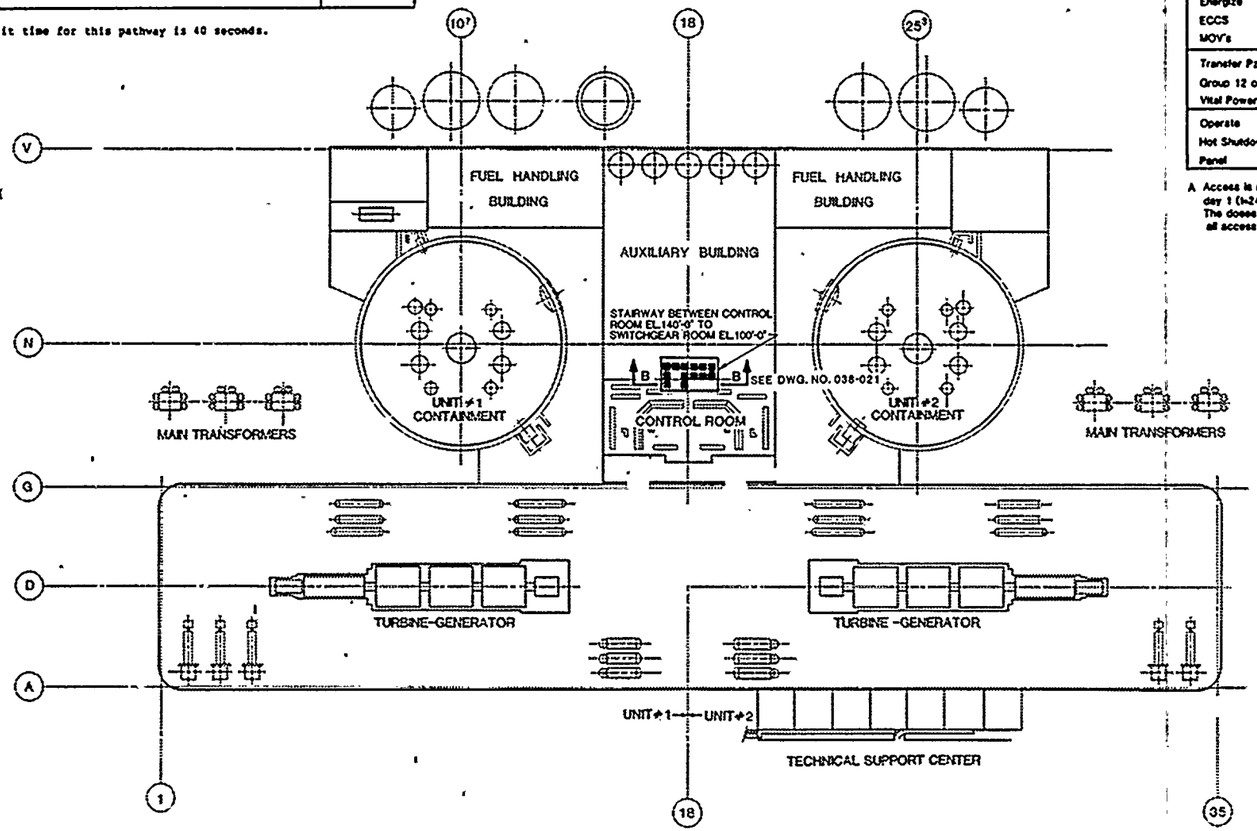
edsnuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO. 038-001
REV. 0
SHEET 1 OF 1

DRAWING NO. 038-002
SHEET 1 OF 1

PATHWAY P-2	
Route Description	Ref. Dwg. 038-
Depart Control Room (el. 140') via the east doorway, turn right (south) in the access vestibule and proceed down the stairway.	010
Continue down the stairway past the 115' elevation.	016 (021)
Continue down the stairway to the 100' elevation.	012 (021)
At the 100' elevation, enter the Unit 1 Switchgear Room (el. 100').	012

The total transit time for this pathway is 40 seconds.



SWITCHGEAR ROOM

DOSE SUMMARY

Post-Accident Operation	Time of access	Access/Egress Dose (mR)	Duration of Occupancy	Occupancy Dose (mR)
Operate H2 Recombiner Unit 1-1	1 hr 8 hrs A	< 1 < 1 < 1	5.5 hrs 2 min 2 min/access	34 < 1 1
Operate H2 Recombiner Unit 1-2	1 hr 8 hrs A	< 1 < 1 < 1	5.5 hrs 2 min 2 min/access	74 < 1 1
Energize ECCS MOV's	10 min 1 hr	< 1 < 1	4 min. 8 min.	4 5
Transfer Pzr Htr Group 12 or 13 to Vital Power	1 hr	< 1	41 min.	140
Operate Hot Shutdown Panel	1 hr	< 1	8 hrs	52

A Access is repeated daily between day 1 (t=24 hrs.) and day 30 (t=30 hrs.). The doses recorded are cumulative for all access occurring during this period.

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
CTRL. RM. TO/FROM UNIT#1 SWGR. RM.(ALT.)
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

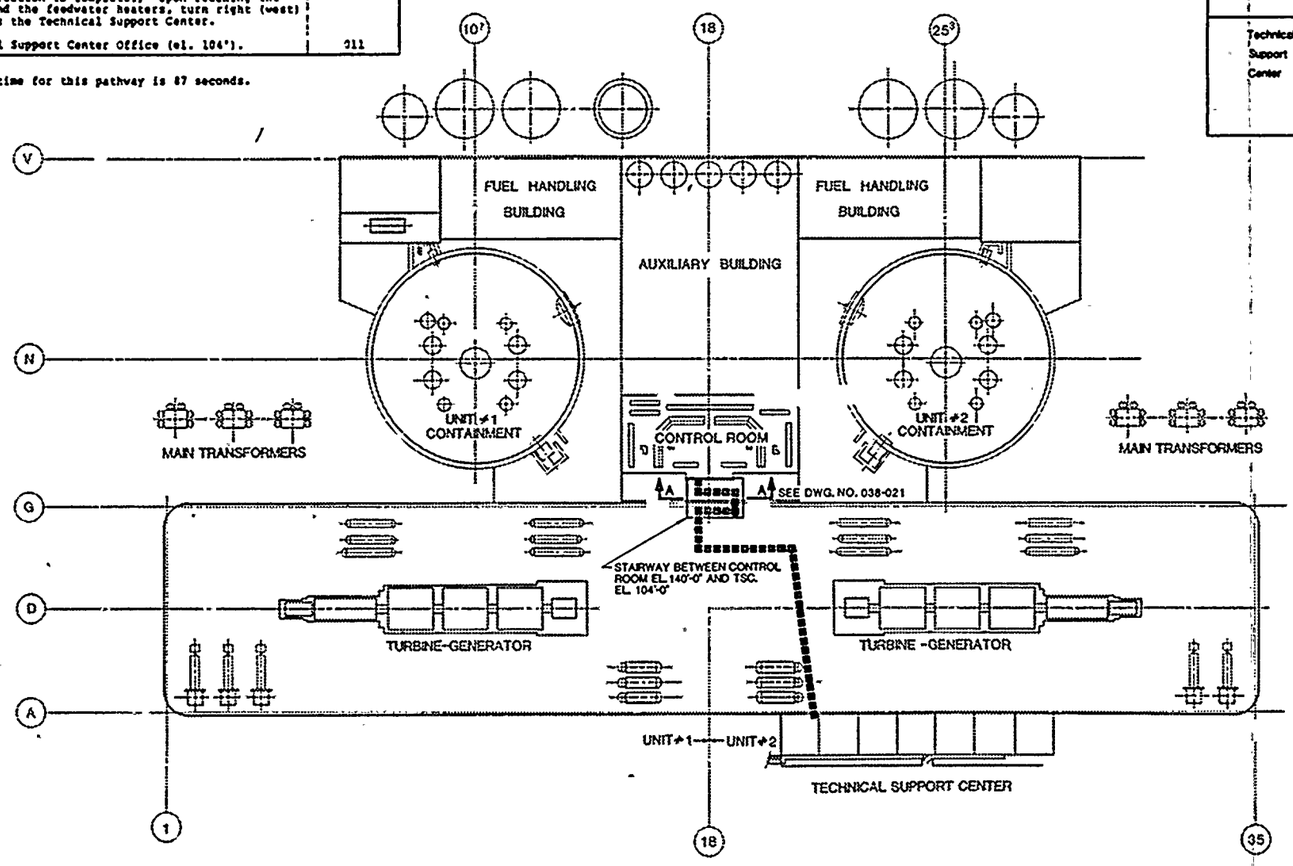
eds nuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-002
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038-003
SHEET 1 OF 1

PATHWAY 2-3	
Route Description	Ref. Dwg. 038-
Depart Control Room (el. 140') via the west doorway. Immediately turn left (south) and proceed down the stairway.	010
Continue down the stairway past the 115' elevation.	016 (021)
Continue down the stairway to the 104' elevation.	012 (021)
At the 104' elevation, enter the Turbine Building and proceed south through the doorway. (Note: The door is welded shut until Unit 2 construction is complete.) Upon reaching the main steam leads and the feedwater heaters, turn right (west) and proceed towards the Technical Support Center.	017
Enter the Technical Support Center Office (el. 104').	011

The total transit time for this pathway is 87 seconds.



CONTROL ROOM AND TECHNICAL SUPPORT CENTER OCCUPANCY DOSE SUMMARY

Area	Time of Access	Duration of Occupancy	Occupancy Factor	Occupancy Dose (mr)
Control Room	0hr	8hrs	1.0	77
	8hrs	8hrs	1.0	39
	16hrs	8hrs	1.0	31
	1day	3days	0.8	110
	4days	26days	0.4	290
Technical Support Center	0hr	8hrs	1.0	43
	8hrs	8hrs	1.0	23
	16hrs	8hrs	1.0	19
	1day	3days	0.8	72
	4days	26days	0.4	290

CONTROL ROOM ACCESS DOSE SUMMARY

Time of Access	Access Dose (mr)*
1hr	24
24hrs	5
A	11

A-Access is repeated daily between day 2 (t=48hrs) and day 30(t=720). The dose recorded is cumulative for all access occuring during this period

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
CTRL. RM. TO/FROM TECHNICAL SUPPORT CENTER
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-003
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038 004

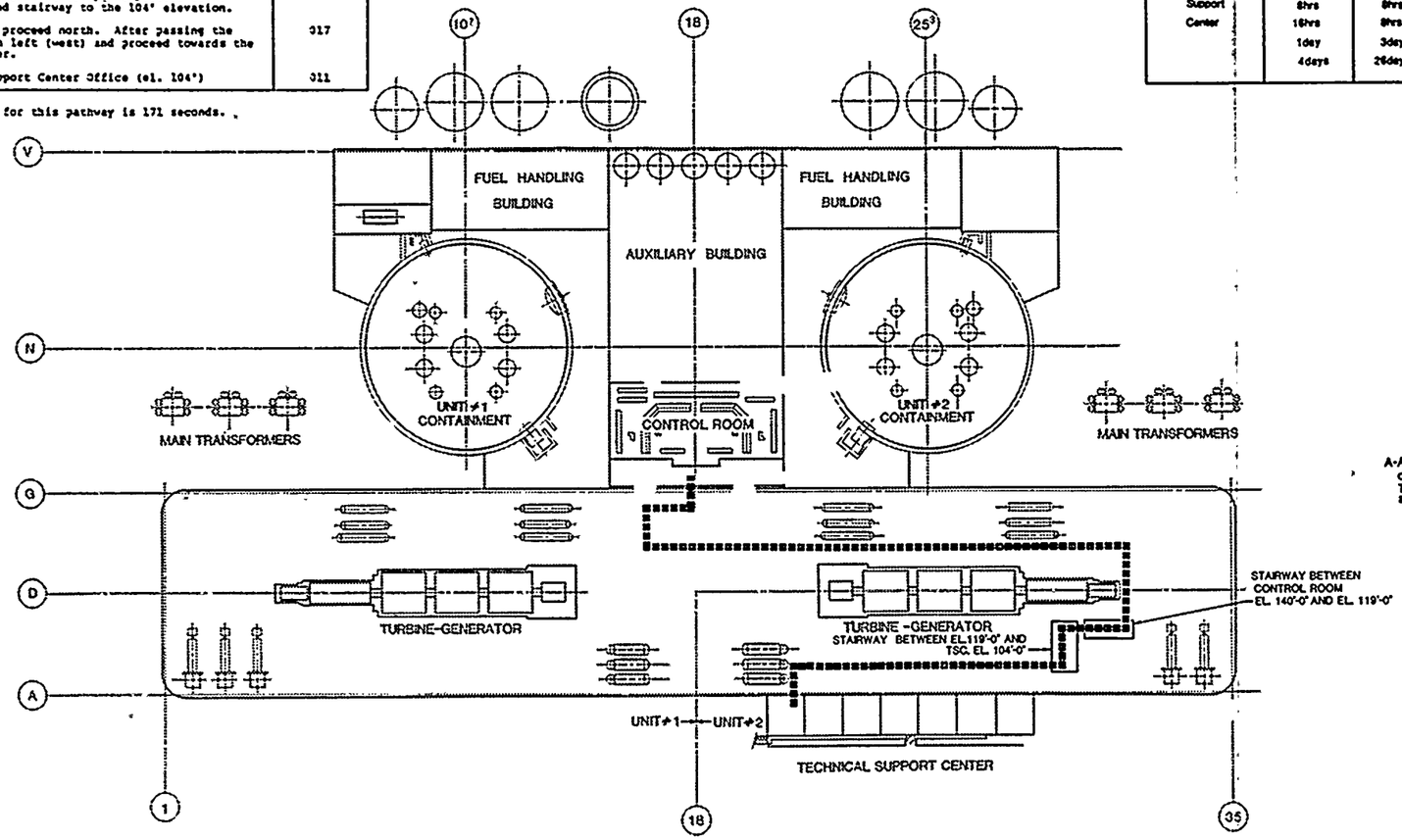
SHEET 1 OF 1

PATHWAY P-4	
Route Description	Ref. Dwg. 038-
Depart Control Room (el. 140') via the west doorway and proceed past the stairway through the second doorway into the Turbine Building.	010
Upon entering the Turbine Building, proceed to the right, following the temporary barrier north and then west to the opening in the barrier. Proceed south through the opening into the Unit 2 half of the Turbine Building. Continue south past the south end of the Unit 2 turbine generator and turn right (west). Continue west to the stairway and proceed down.	014
Continue down the stairway to the 119' level. At the the 119' level walk north to a second stairway and proceed down. Continue down the second stairway to the 104' elevation.	015
At the 104' elevation, proceed north. After passing the heater drain tank, turn left (west) and proceed towards the Technical Support Center.	017
Enter the Technical Support Center Office (el. 104')	011

The total transit time for this pathway is 171 seconds.

CONTROL ROOM AND TECHNICAL SUPPORT CENTER OCCUPANCY DOSE SUMMARY

Area	Time of Access	Duration of Occupancy	Occupancy Factor	Occupancy Dose (mr)
Control Room	0hr	8hrs	1.0	77
	8hrs	8hrs	1.0	39
	16hrs	8hrs	1.0	31
	1day	3days	0.8	110
	4days	26days	0.4	290
Technical Support Center	0hr	8hrs	1.0	43
	8hrs	8hrs	1.0	23
	16hrs	8hrs	1.0	19
	1day	3days	0.8	72
	4days	26days	0.4	290



CONTROL ROOM ACCESS DOSE SUMMARY

Time of Access	Access Dose (mr)
1hr	93
24hrs	19
A	39

A-Access is repeated daily between day 2 (t=48 hrs) and day 30 (t=720 hrs). The dose recorded is cumulative for all access occuring during this period.

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
CONTROL ROOM TO/FROM T.S.C. (ALT.)
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

edsnuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-004
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038-005

SHEET 1 OF 1

PATHWAY P-5

Route Description	Ref. Dwg. 038-
Depart the Control Room (el. 140') via the west doorway, immediately turn left (south) and proceed down the stairway.	010
Continue down the stairway past the 115' elevation.	016 (021)
Continue down the stairway past the 100' elevation.	012 (021)
Continue down the stairway to the 85' elevation.	018 (021)
At the 85' elevation, enter the Turbine Building and proceed north. Continue north through the first doorway, turn left (west) at the corridor, and proceed down the corridor to the first doorway. Turn right (north) and proceed north until passing the service cooling water heat exchangers. Turn right (east) and leave the Turbine Building through the roll top doorway. Immediately turn right (south) and proceed through the doorway into the Unit 1 Penetration Area towards the Emergency Sampling Compartment entrance.	018
Enter the Emergency Sampling Compartment (el. 85').	013

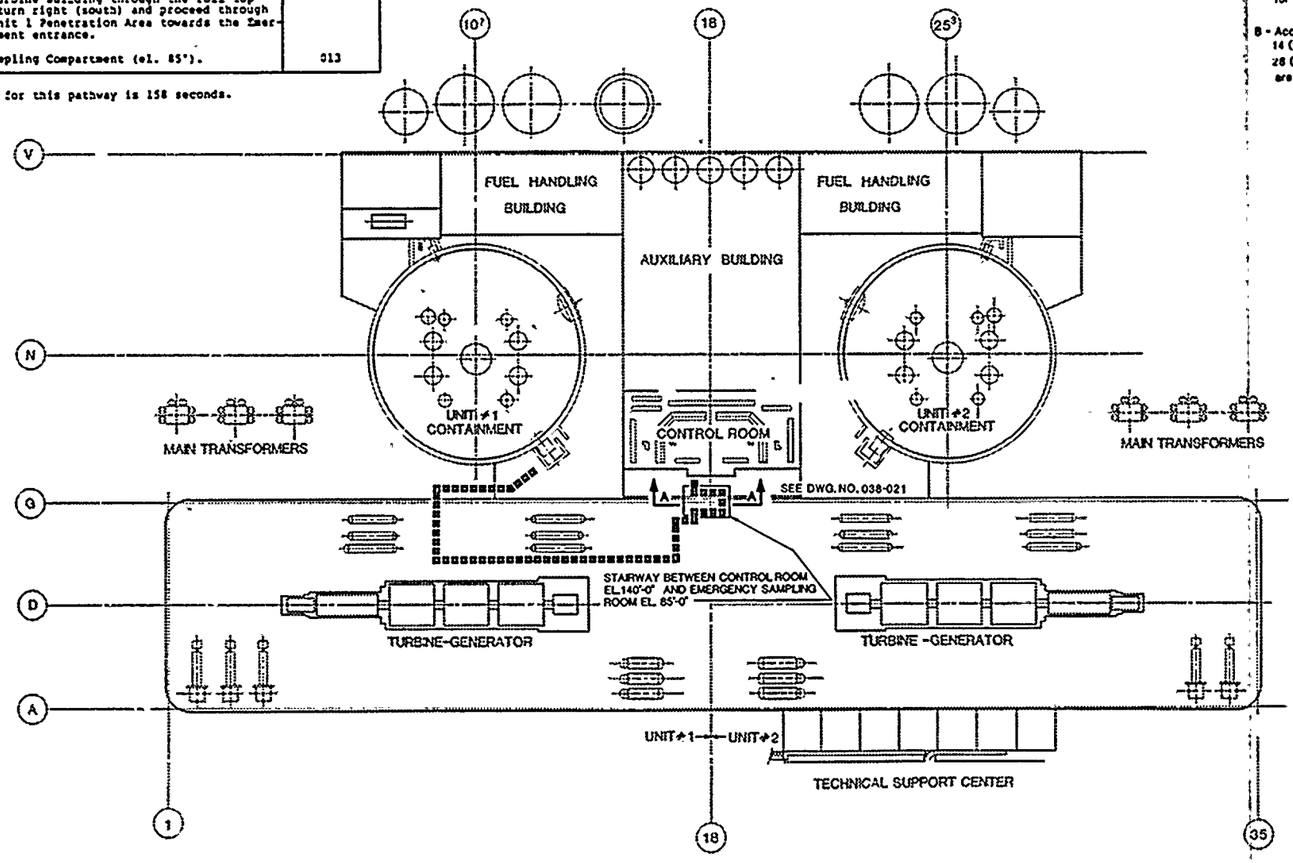
The total transit time for this pathway is 158 seconds.

EMERGENCY SAMPLING ROOM DOSE SUMMARY

Post-Accident Operation	Time of Access	Access/Egress Dose (mR)	Duration of Occupancy	Occupancy Dose (mR)
Reactor Coolant	1	105	3 hrs.	310
and	24	15	3 hrs.	58
Containment Air	A	20	3 hrs./access	134
Sampling/Analysis	B	< 1	3 hrs./access	22

A - Access is repeated daily between day 2 (t=48 hrs.) and day 7 (t=168 hrs.). The doses recorded are cumulative for all access occurring during this period.

B - Access is repeated weekly on days 14 (t=336 hrs.), 21 (t 504=hrs.), and 28 (t=672hrs). The doses recorded are cumulative for all 3 days.



GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
CTRL. RM. TO/FROM EMERGENCY SAMPLING COMP.
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

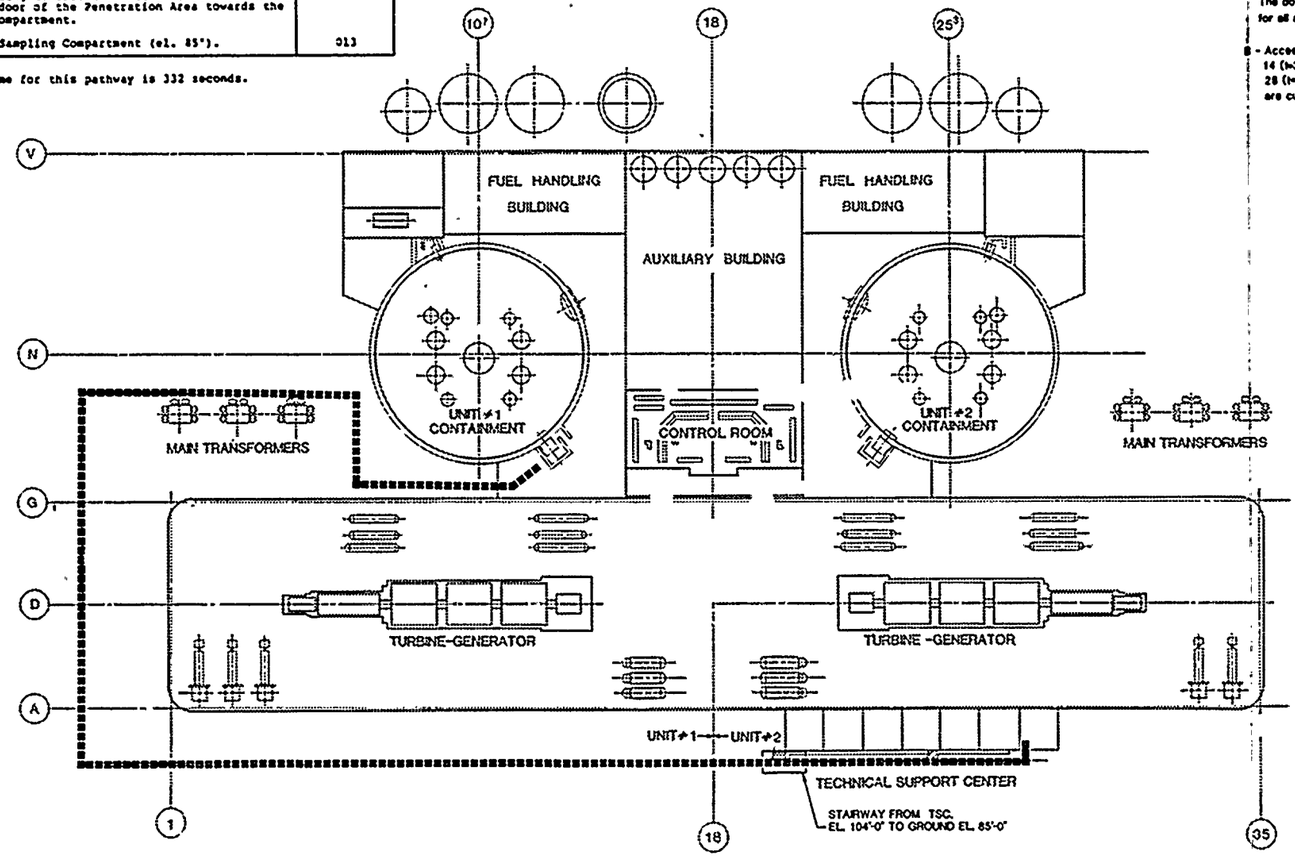
SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-005
REV.: 0
SHEET 1 OF 1

SHEET 1 OF 1

DRAWING NO. 038-006

PATHWAY P-6	
Route Description	Ref. Dwg. 038-
Depart Technical Support Center Laboratory (el. 104') via the west door, turn right (north) and proceed along the walkway to the stairway.	011
Proceed down the stairway to the ground elevation (85') and north to the north end of the Turbine Building. At the end of the Turbine Building turn right (east), proceeding east until reaching the Unit 1 main transformers. At the transformers, turn right (south) and proceed south.	020
Continue south along the driveway between Unit 1 Containment and the Turbine Building towards the Unit 1 Penetration Area. Proceed through the door of the Penetration Area towards the Emergency Sampling Compartment.	018
Enter the Emergency Sampling Compartment (el. 85').	013

The total transit time for this pathway is 332 seconds.



EMERGENCY SAMPLING ROOM
DOSE SUMMARY

Post-Accident Operation	Time of Access	Access/Egress Dose (mR)	Duration of Occupancy	Occupancy Dose (mR)
Reactor Coolant	1	256	3 hrs.	310
and	24	43	3 hrs.	55
Containment Air	A	58	3 hrs./access	134
Sampling/Analysis	B	2	3 hrs. /access	22

A - Access is repeated daily between day 2 (t 48 hrs.) and day 7 (t 168 hrs.). The doses recorded are cumulative for all access occurring during this period.

B - Access is repeated weekly on days 14 (t=336hrs), 21(t=504hrs), and 28 (t=672 hrs.). The doses recorded are cumulative for all 3 days.

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	8/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
T.S.C. TO/FROM EMERGENCY SAMPLING COMP.
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

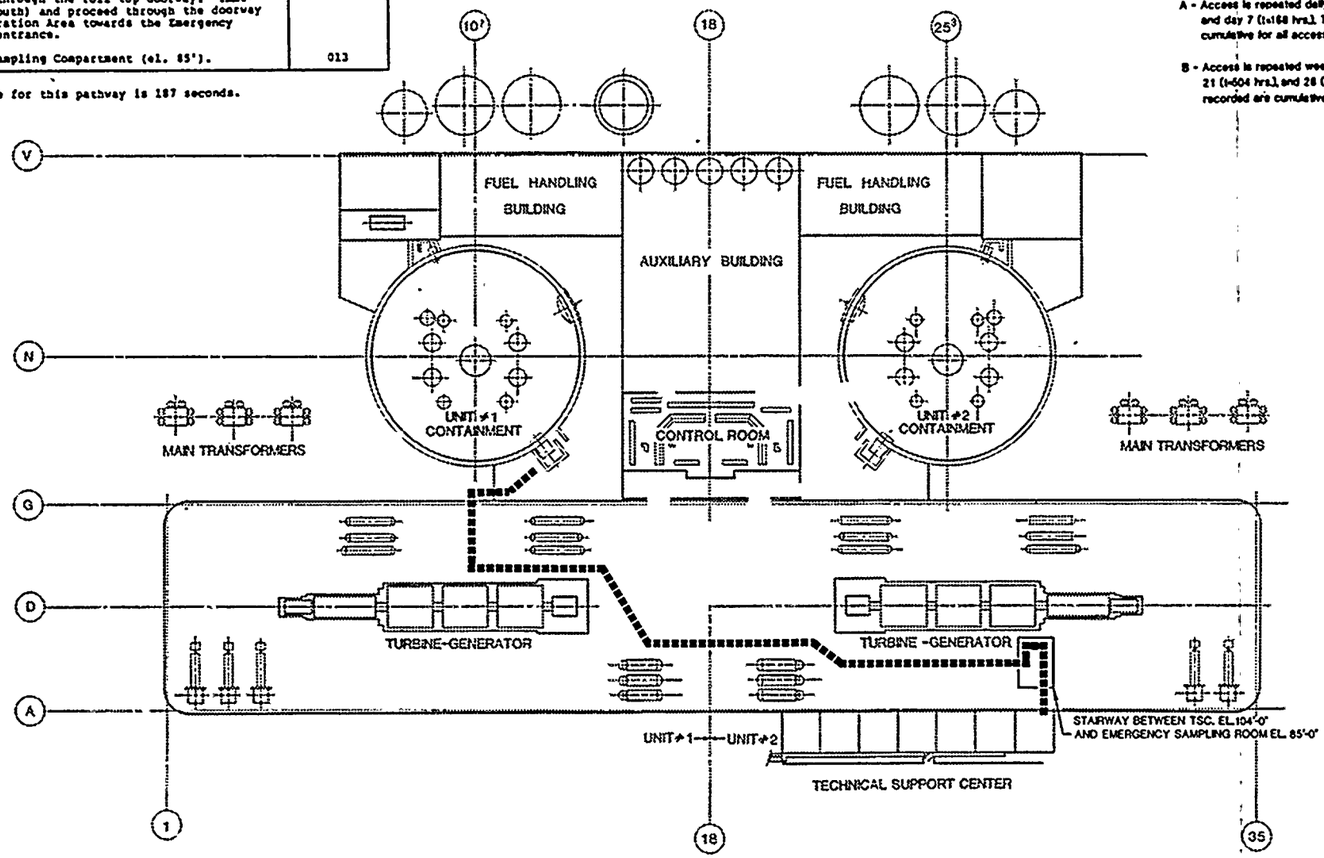
SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-006
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038-007

SHEET 1 OF 1

PATHWAY P-7	
Route Description	Ref. Dwg. 038-
Depart Technical Support Center Laboratory (el. 104') via the east door. Continue east to the first stairway and proceed down the stairway to the 85' elevation.	011
At the 85' level proceed north, passing the machine shop and entering the Unit 1 Turbine Building.	019
Continue north. After passing the condenser vacuum pump, turn right (east) and proceed east until reaching the component cooling water heat exchangers. At the CCW heat exchangers, turn left (north). Proceed north past the service cooling water heat exchangers. Turn right (east) and leave the Turbine Building through the roll top doorway. Immediately turn right (south) and proceed through the doorway into the Unit 1 Penetration Area towards the Emergency Sampling Compartment entrance.	018
Enter the Emergency Sampling Compartment (el. 85').	013

The total transit time for this pathway is 187 seconds.



EMERGENCY SAMPLING ROOM

DOSE SUMMARY

Post-Accident Operation	Time of Access	Access/Egress Dose (mR)	Duration of Occupancy	Occupancy Dose (mR)
Reactor Coolant	1	134	3 hrs.	310
and	24	25	3 hrs.	55
Containment Air	A	33	3 hrs/access	134
Sampling/Analysis	B	1	3 hrs/access	22

A - Access is repeated daily between day 2 (t=48 hrs.) and day 7 (t=168 hrs.). The doses recorded are cumulative for all access occurring during this period.

B - Access is repeated weekly on days 14 (t=336 hrs.), 21 (t=504 hrs.), and 28 (t=672 hrs.). The doses recorded are cumulative for all three days.

GENERAL NOTES:

1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
T.S.C.TO/FROM EMERGENCY SAMPLING COMP.(ALT.)
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-007
REV.: 0
SHEET 1 OF 1

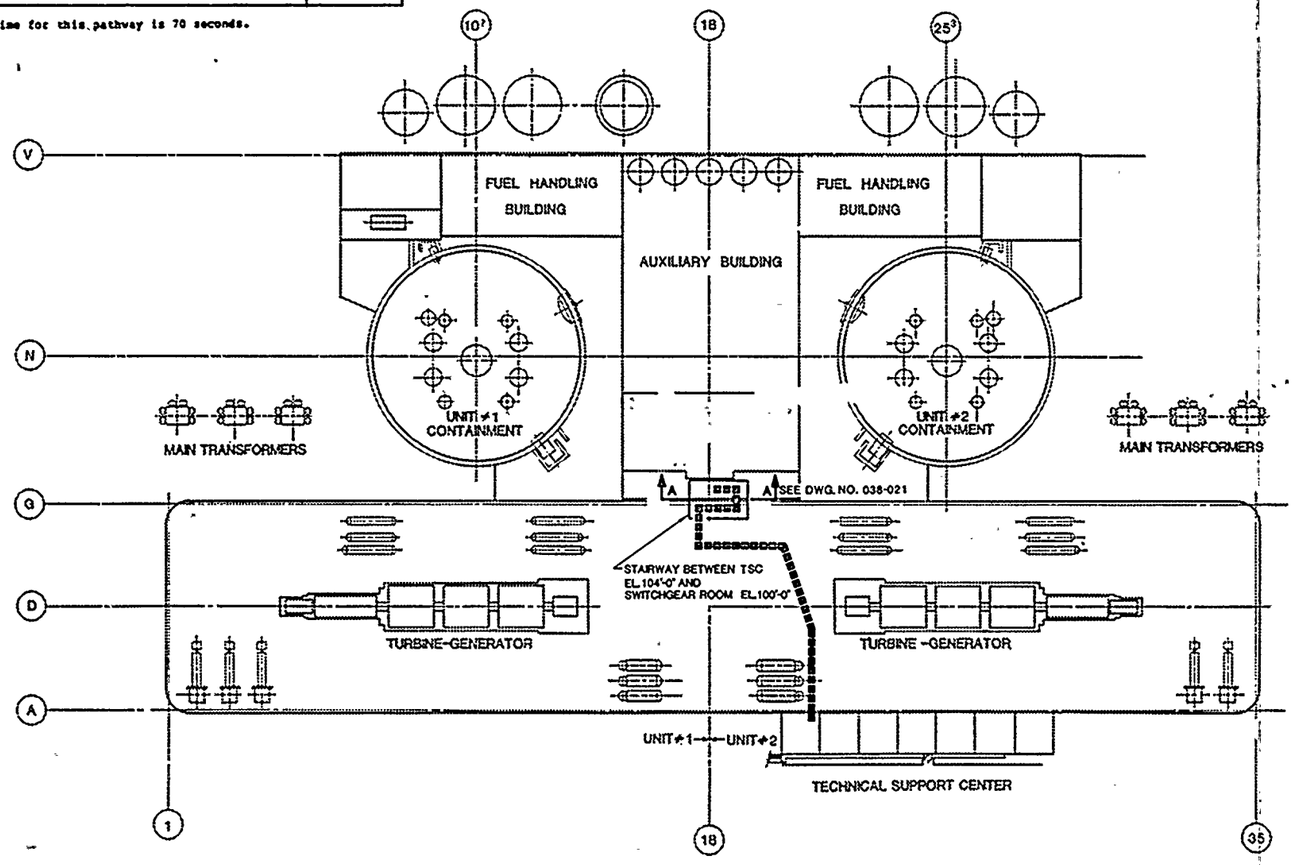
DRAWING NO. 038-008
SHEET 1 OF 1

PATHWAY 7-8	
Route Description	Ref. Dwg. 038-
Depart Technical Support Center Office (el. 104') via the east door and proceed east.	011
Continue east past the feedwater heaters to the east side of the Turbine Building, turn left (north) and proceed north through the doorway. (Note: The door is welded shut until Unit 2 construction is complete.) Turn right (east) at the stairway and proceed down.	017
Continue down the stairway to the 100' level.	012 (021)
At the 100' level, enter the Unit 2 Switchgear Room, turn left (north), and proceed to the Unit 1 Switchgear Room (el. 100').	012

The total transit time for this pathway is 70 seconds.

SWITCHGEAR ROOM
DOSE SUMMARY

Post-Accident Operation	Time of Access	Access/Egress Dose (mr)	Duration of Occupancy	Occupancy Dose (mr)
Operate Hot Shutdown Panel	1hr	23	8hrs	52



GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
T.S.C. TO/FROM UNIT#1 SWITCHGEAR ROOM
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-008
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038-009

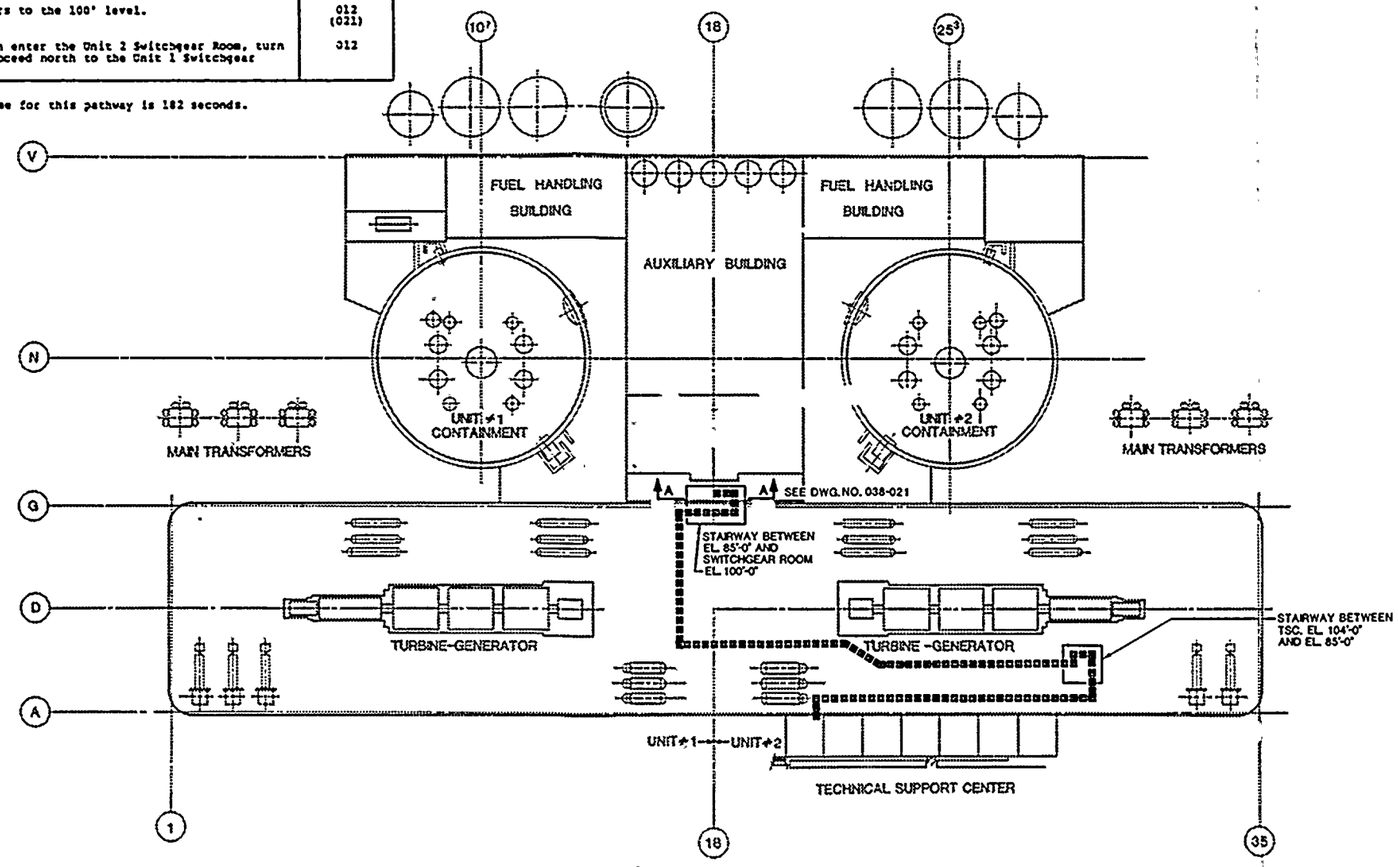
SHEET 1 OF 1

PATHWAY P-9	
Route Description	Ref. Dwg. 038-
Depart Technical Support Center Office (el. 104') via the east doorway.	011
Turn right (south) and proceed south past the gland steam condenser to the stairway near Heater Drain Tank No. 2-1. Proceed down the stairway to the 85' level.	017
At the 85' level proceed north past the machine shop into the Unit 1 half of the Turbine Building.	019
Turn right (east) upon entering the Unit 1 half of the Turbine Building and proceed to the end of the corridor. At the end of the corridor, turn right (south), proceed south past the elevator, and turn left (east) at the stairway. Proceed up the stairway.	018
Continue up the stairs to the 100' level.	012 (021)
At the 100' elevation enter the Unit 2 Switchgear Room, turn left (north), and proceed north to the Unit 1 Switchgear Room (el. 100').	012

The total transit time for this pathway is 182 seconds.

SWITCHGEAR ROOM
DOSE SUMMARY

Post-Accident Operation	Time of Access	Access/Egress Dose (mr)	Duration of Occupancy	Occupancy Dose (mr)
Operate Hot Shutdown Panel	1hr	95	8hrs	52



GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

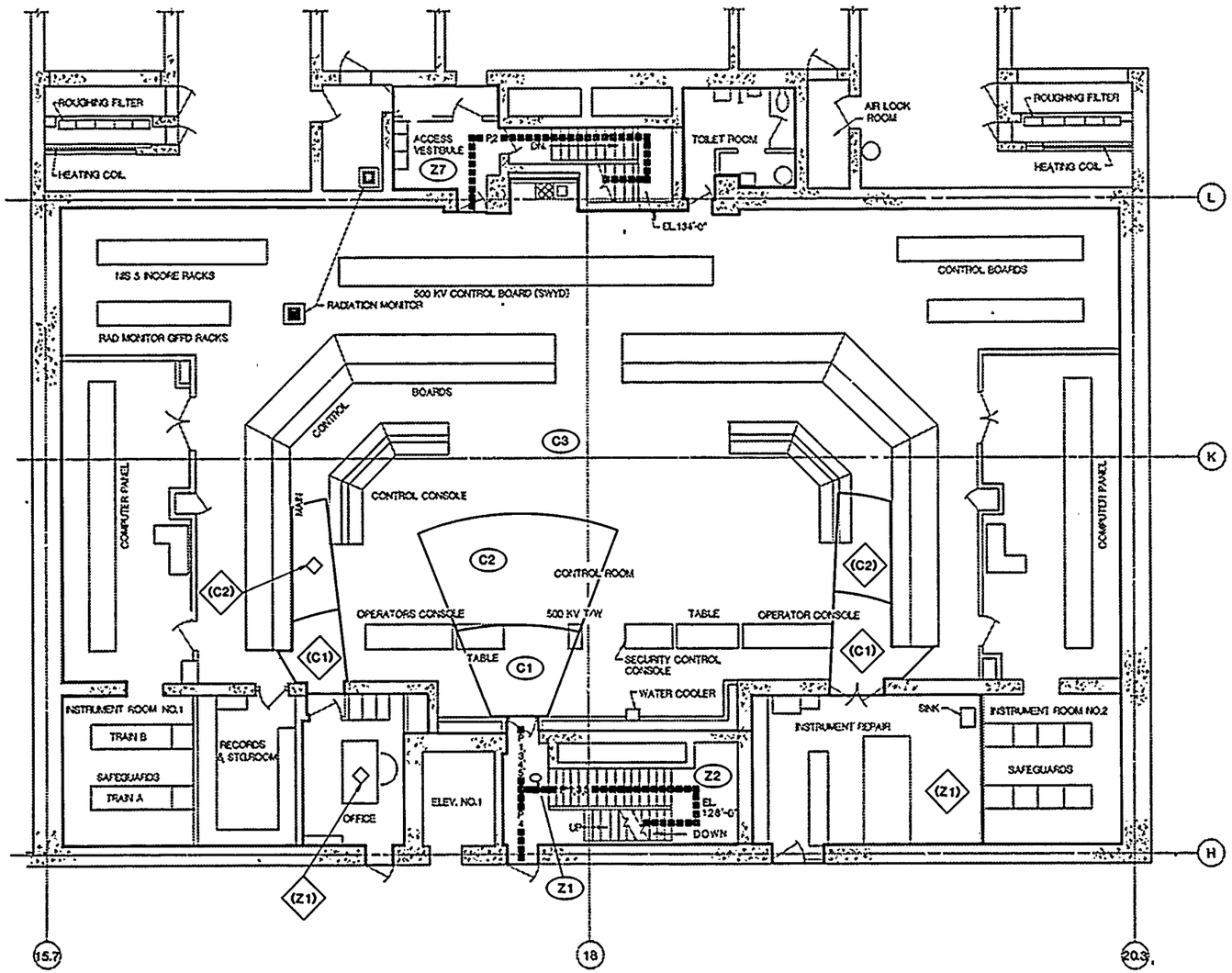
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA ACCESS MAP
PROJECTED DOSES
T.S.C TO/FROM UNIT #1 SWITCHGEAR ROOM (ALT.)
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-009
REV.: 0
SHEET 1 OF 1

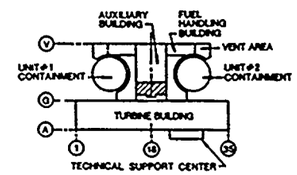
DRAWING NO. 038-010
SHEET 1 OF 1



CONTROL ROOM
DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
C1	C1	1	0	0	0	0	0
		3	14	6	4	1	1
		TOTAL	14	6	4	1	1
C2	C2	1	0	0	0	0	0
		3	8	4	2	1	1
		TOTAL	8	4	2	1	1
C3	C3	1	0	0	0	0	0
		3	3	1	1	1	1
		TOTAL	3	1	1	1	1
Z1	Z1	1	0	0	0	0	0
		3	86	39	23	2	1
		TOTAL	86	39	23	2	1
Z2	Z2	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
Z7	Z7	1	0	0	0	0	0

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND



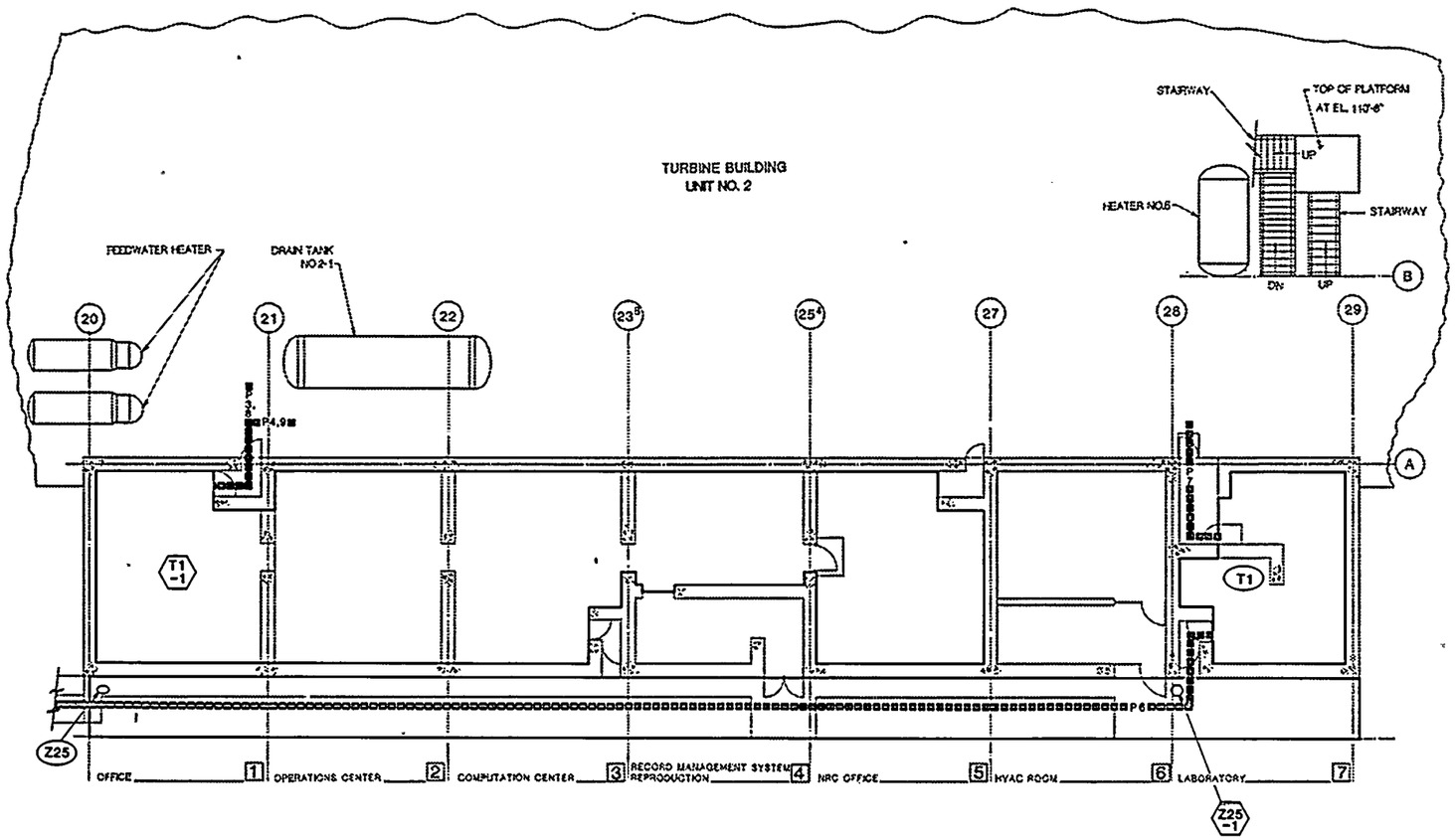
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA DOSE RATES
CONTROL ROOM DETAIL ELEVATION
ELEVATION 140'-0"
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-010 REV.: 0
SHEET 1 OF 1

eds nuclear

DRAWING NO. 038-011
SHEET 1 OF 1



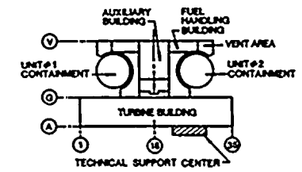
TECHNICAL SUPPORT CENTER

TECHNICAL SUPPORT CENTER
DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
T1	T1	1	0	0	0	0	0
		3	8	4	2	1	1
		TOTAL	8	4	2	1	1
	T1-1	1	0	0	0	0	0
		3	7	3	2	1	1
		TOTAL	7	3	2	1	1
225	225	1	0	0	0	0	0
		3	1700	770	420	26	1
		TOTAL	1700	770	420	26	1
	225-1	1	0	0	0	0	0
		3	1700	770	420	26	1
		TOTAL	1700	770	420	26	1

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH



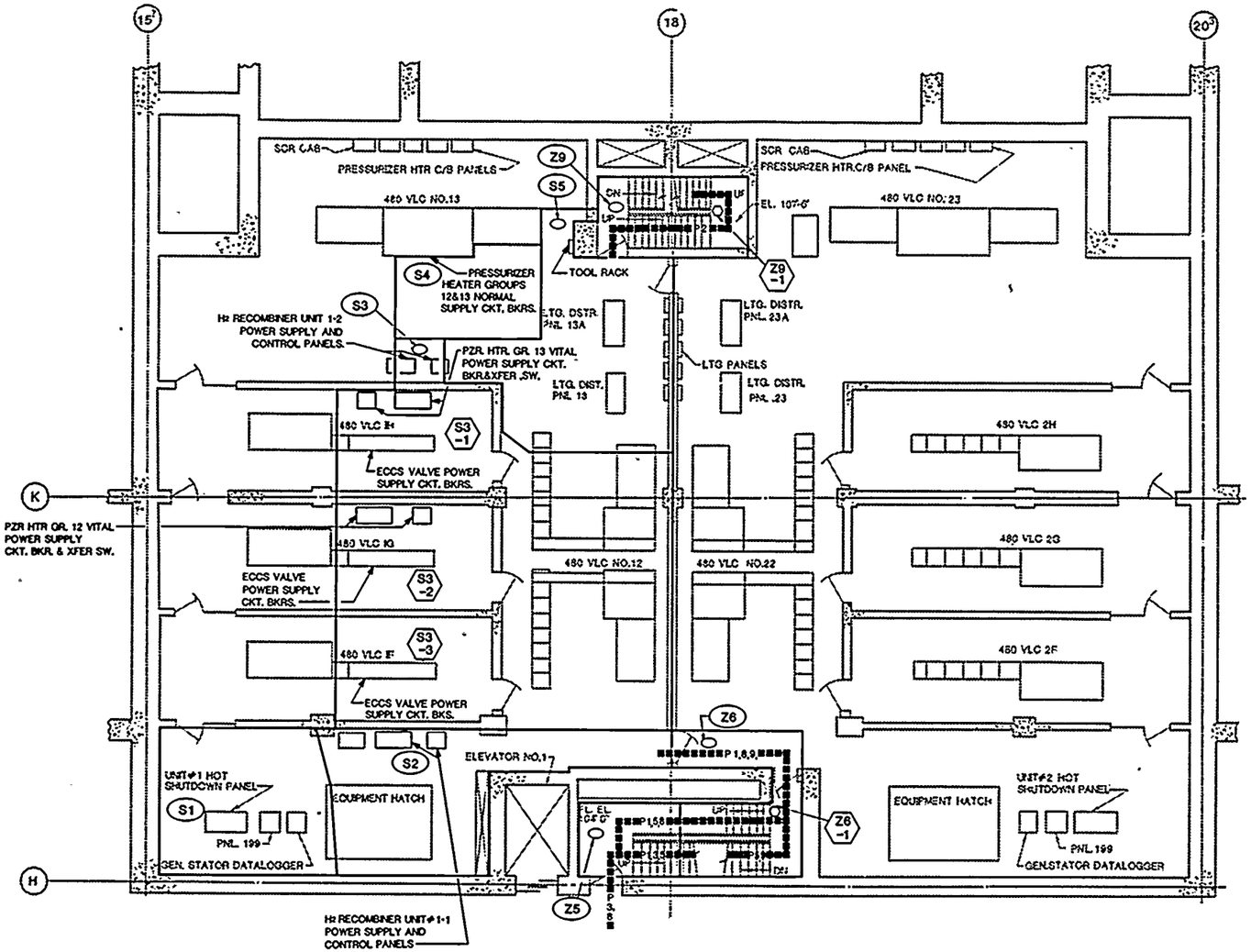
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT VITAL AREA DOSE RATES
TECHNICAL SUPPORT CENTER DETAIL
ELEVATION 104'-0"
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-011
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038-012
SHEET 1 OF 1

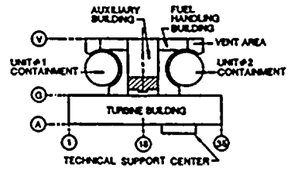


SWITCHGEAR ROOM
DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
S1	S1	1	19	3	1	1	1
S2	S2	1	16	3	1	1	1
S3	S3	1	37	6	1	1	1
	S3-1	1	5	1	1	1	1
	S3-2	1	1	1	1	1	1
	S3-3	1	4	1	1	1	1
S4	S4	1	360	67	19	3	1
S5	S5	1	230	47	15	2	1
S5	S5	1	0	0	0	0	0
		3	86	39	23	2	1
		TOTAL	86	39	23	2	1
S6	S6	1	2	1	1	1	1
		3	1	1	1	1	1
		TOTAL	3	2	2	2	2
	S6-1	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
S9	S9	1	11	2	1	1	1
	S9-1	1	8	1	1	1	1

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH



REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE	Rob Bianco	Ed Tello	Jim Fellers	Rob Wiley

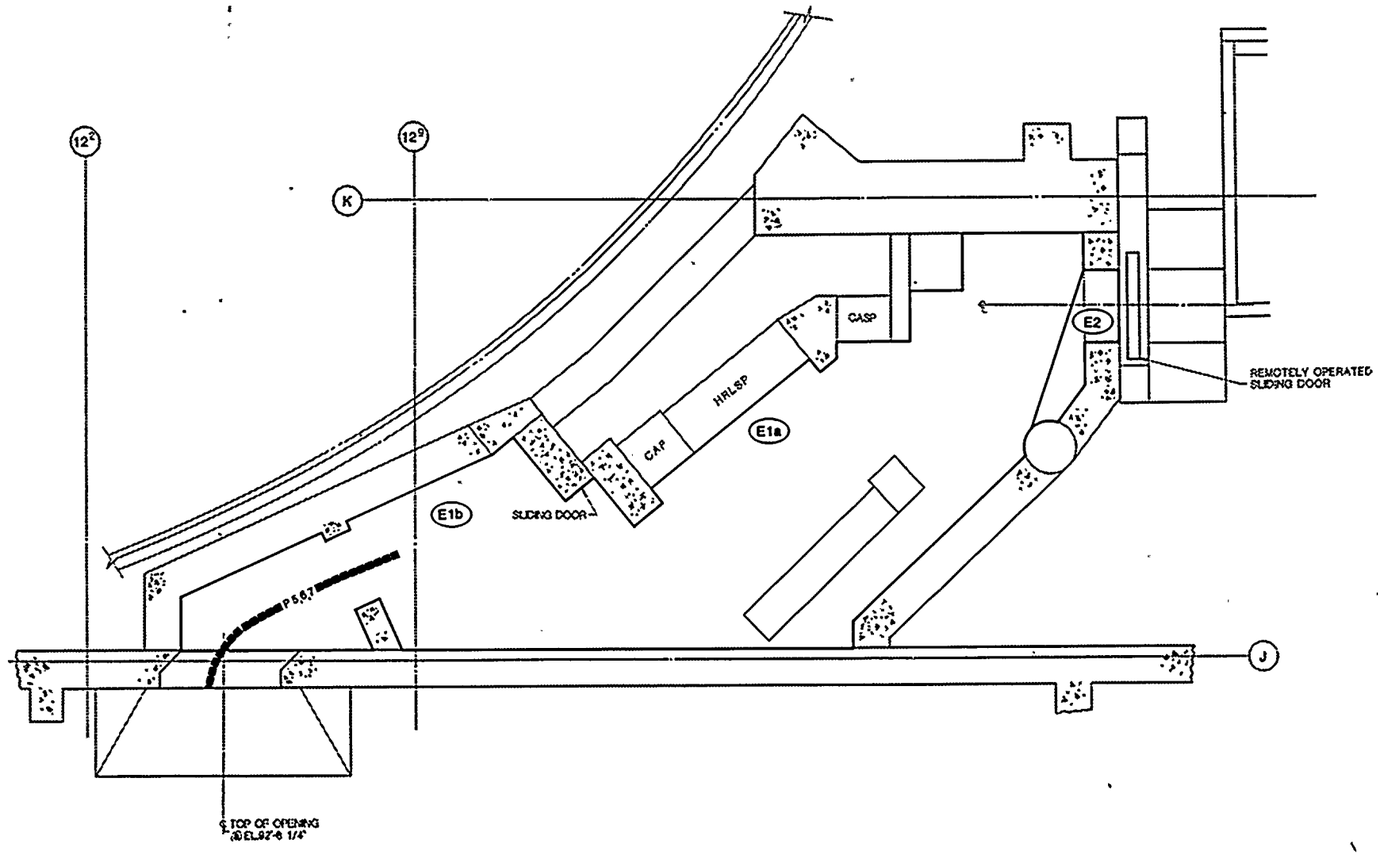
POST-ACCIDENT VITAL AREA DOSE RATES
UNIT #1 SWITCHGEAR ROOM DETAIL
ELEVATION 100'-0"
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO. 038-012
REV. 0
SHEET 1 OF 1

eds nuclear

DRAWING NO. 038-013

SHEET 1 OF 1



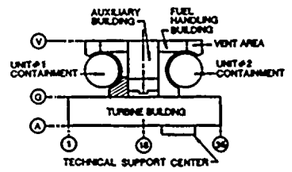
EMERGENCY SAMPLING ROOM
DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
E1a*	E1a	1	2	1	1	1	1
		5	160	46	17	3	1
		TOTAL	162	47	18	4	2
E1b	E1b	1	13	3	1	1	1
E2	E2	1	83	16	5	1	1

* E1a is the detector location considered representative of the entire Emergency Sampling Compartment (ESC) after sampling has begun (i.e. after the sample lines are filled with source fluid). E1b is the detector location considered representative of all parts of the ESC before sampling with the exception of zone E2. E2 is the detector location representing the small zone by the shielded doorway before sampling.

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH



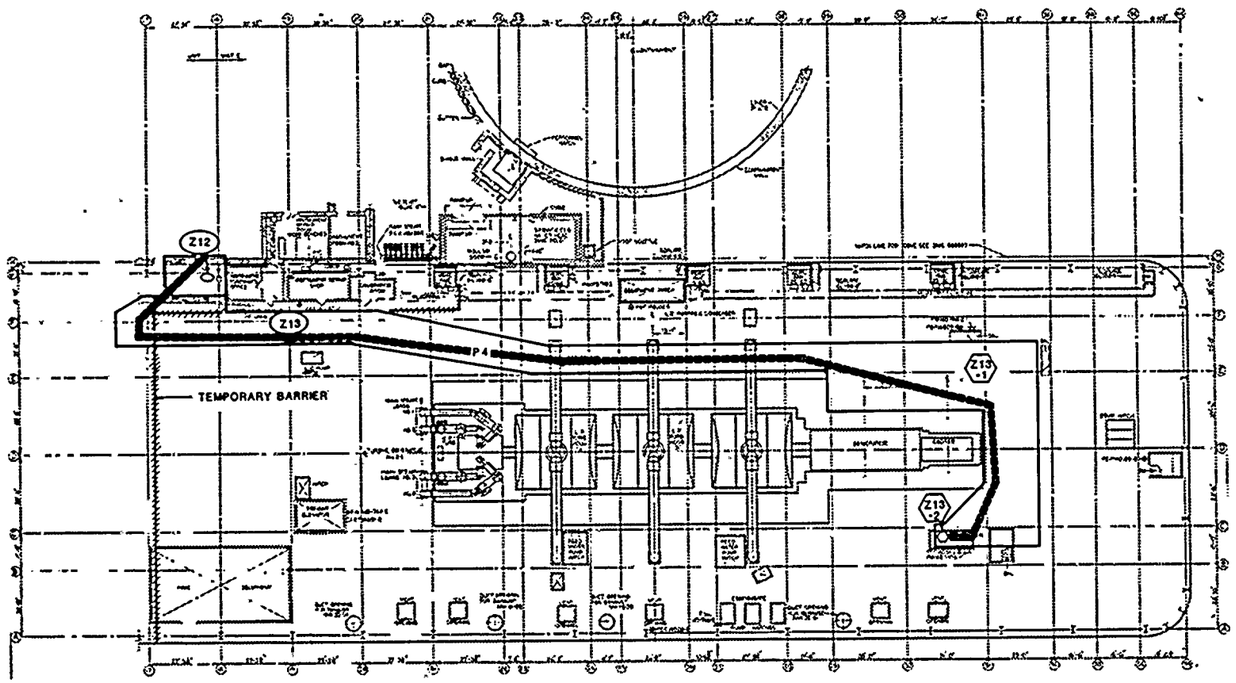
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/88	ORIGINAL ISSUE	Tab Brown	CR Smith	Jim Eells	M.E. Dick

POST-ACCIDENT VITAL AREA DOSE RATES
EMERGENCY SAMPALING COMPARTMENT DETAIL
ELEVATION 85'-0"
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

edsnuclear

SCALE: NONE
JOB NO.: 0170-038
DRAWING NO. 038-013
REV. 0
SHEET 1 OF 1

DRAWING NO. 038-014
SHEET 1 OF 1

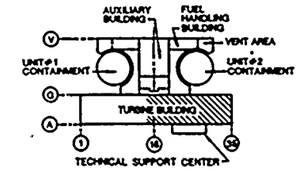


DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
Z12	Z12	1	0	0	0	0	0
		3	840	388	218	33	1
		4	80	24	10	1	1
		TOTAL	920	406	228	16	2
Z13	Z13	1	0	0	0	0	0
		2	440	61	9	1	1
		3	1700	778	428	26	1
		4	38	13	3	1	1
		TOTAL	2198	844	434	28	3
	Z13-1	1	0	0	0	0	0
		2	110	15	2	1	1
		3	1700	770	420	26	1
		TOTAL	1810	785	422	27	2
	Z13-2	1	0	0	0	0	0
		2	100	14	2	1	1
		3	1700	770	420	26	1
		TOTAL	1800	784	422	27	2

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH



REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT ACCESS PATHWAY DOSE RATES
UNIT 2 TURBINE BUILDING DETAIL
ELEVATION 140'-0"
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

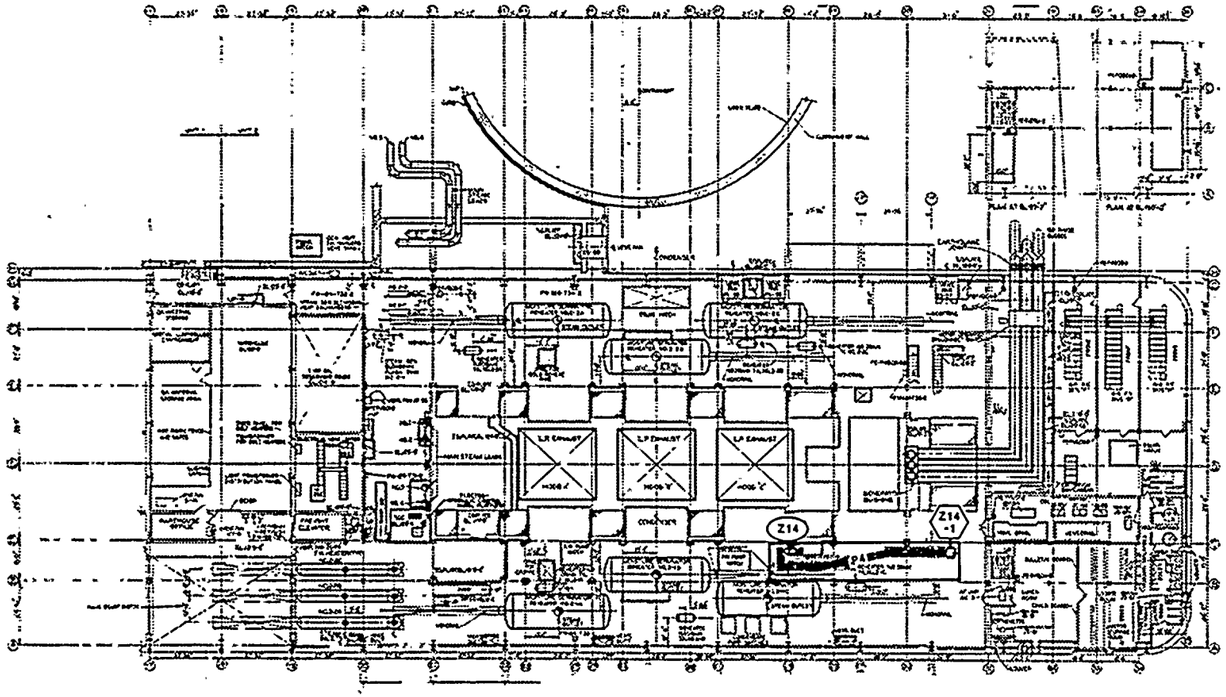
SCALE: 1": 20'- 0"
JOB NO.: 0170-038
DRAWING NO. 038-014
REV. 0
SHEET 1 OF 1

eds nuclear

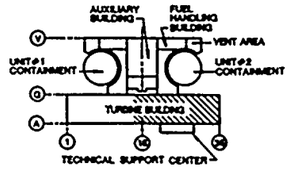
DRAWING NO. 038-015
SHEET 1 OF 1

DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
214	214	1	0	0	0	0	0
		2	140	18	3	1	1
		3	1700	770	420	26	1
		TOTAL	1840	788	423	27	2
	214-1	1	0	0	0	0	0
		2	160	16	2	1	1
		3	1700	770	420	26	1
		TOTAL	1800	784	422	27	2



GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND



CALLED NORTH

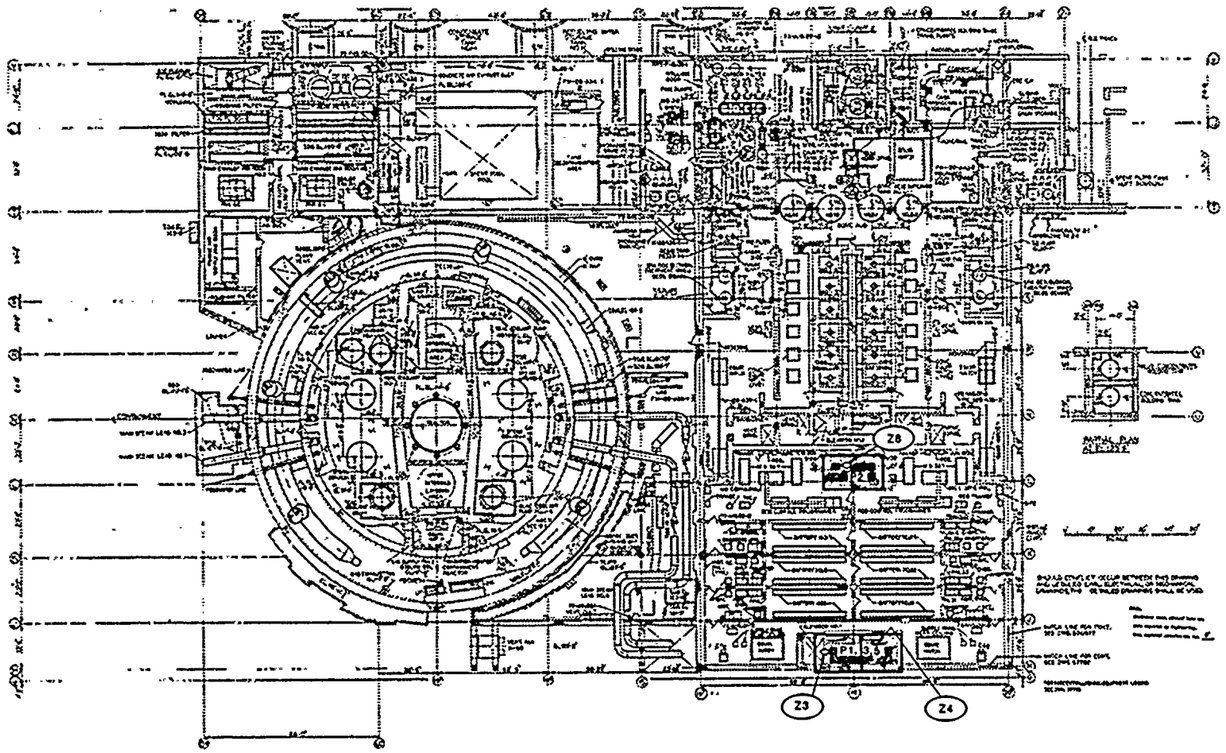
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	8/11/81	ORIGINAL ISSUE				

POST-ACCIDENT ACCESS PATHWAY DOSE RATES
UNIT#2 TURBINE BUILDING DETAIL
ELEVATION 119'-0"
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

SCALE: 1" = 20'-0"
JOB NO.: 0170-038
DRAWING NO.: 038-015
REV.: 0
SHEET 1 OF 1

eds nuclear

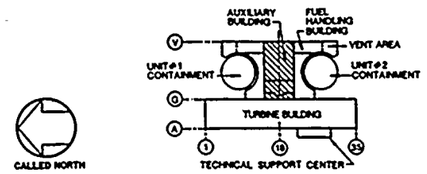
DRAWING NO. 038-016
SHEET 1 OF 1



DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
23	23	1	0	0	0	0	0
		2	86	29	23	2	1
		TOTAL	86	29	23	2	1
24	24	1	0	0	0	0	0
		2	1	1	1	1	1
		TOTAL	1	1	1	1	1
25	25	1	0	0	0	0	0

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND



CALLED NORTH

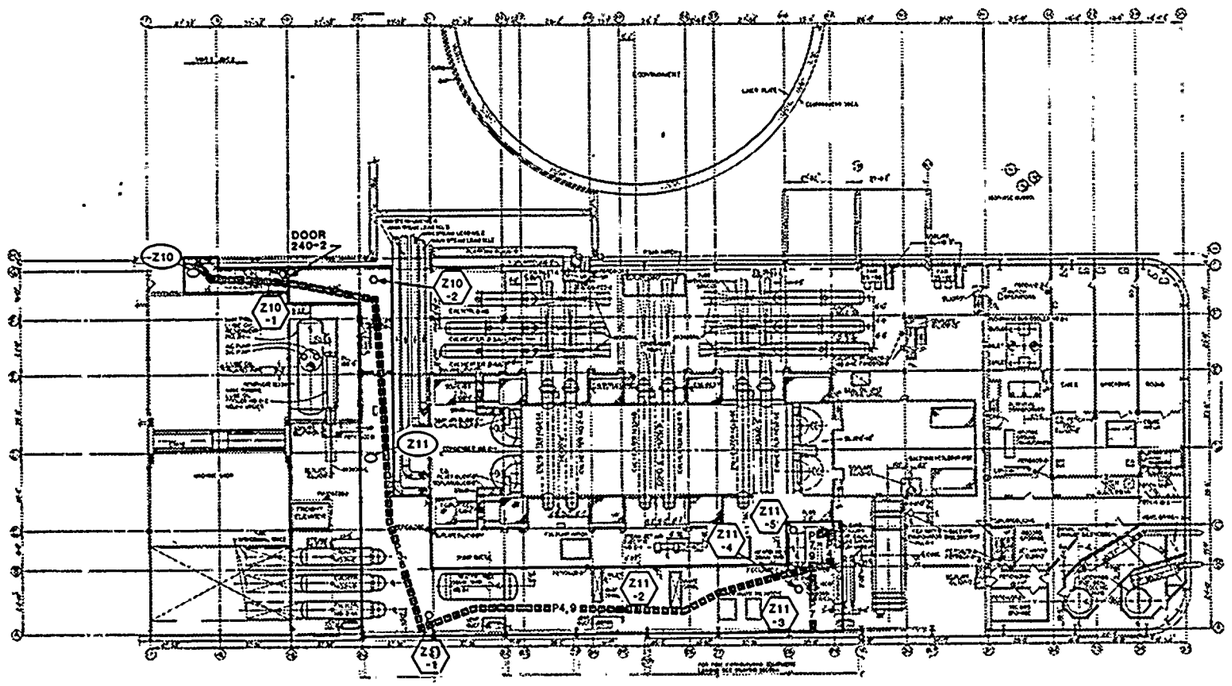
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE	R Jones	BR Hahn	J M Fulton	Nahid

POST-ACCIDENT ACCESS PATHWAY DOSE RATES
AUXILIARY BUILDING DETAIL
ELEVATION 115'-0"
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: 1"= 20'-0"
JOB NO.: 0170-038
DRAWING NO. 038-016
REV. 0
SHEET 1 OF 1

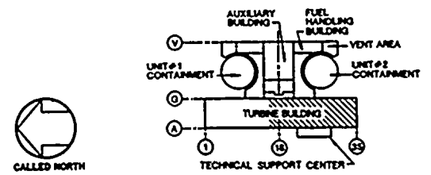
DRAWING NO. 038-017
SHEET 1 OF 1



GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
Z10	Z10	1	0	0	0	0	0
		3	840	380	210	13	1
		4	100	33	12	2	1
		TOTAL	.940	413	222	15	2
	Z10-1	1	0	0	0	0	0
		3	840	380	210	13	1
		4	41	14	5	1	1
		TOTAL	881	394	215	14	2
	Z10-2	1	0	0	0	0	0
		3	840	380	210	13	1
		4	20	7	3	1	1
		TOTAL	860	387	213	14	2
Z11	Z11	1	0	0	0	0	0
		2	336	43	6	1	1
		3	1700	770	420	26	1
		4	20	7	3	1	1
		TOTAL	2050	820	429	28	3
	Z11-1	1	0	0	0	0	0
		2	230	31	4	1	1
		3	1700	770	430	26	1
		TOTAL	1930	801	434	27	2
	Z11-2	1	0	0	0	0	0
		2	170	23	3	1	1
		3	1700	770	420	26	1
		TOTAL	1870	793	423	27	2
	Z11-3	1	0	0	0	0	0
		2	130	17	2	1	1
		3	1700	770	420	26	1
		TOTAL	1830	787	423	27	2
	Z11-4	1	0	0	0	0	0
		2	130	17	3	1	1
		3	1700	770	420	26	1
		TOTAL	1830	787	423	27	2
	Z11-5	1	0	0	0	0	0
		2	140	18	3	1	1
		3	1700	770	420	26	1
		TOTAL	1840	788	423	27	2



CALLED NORTH

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

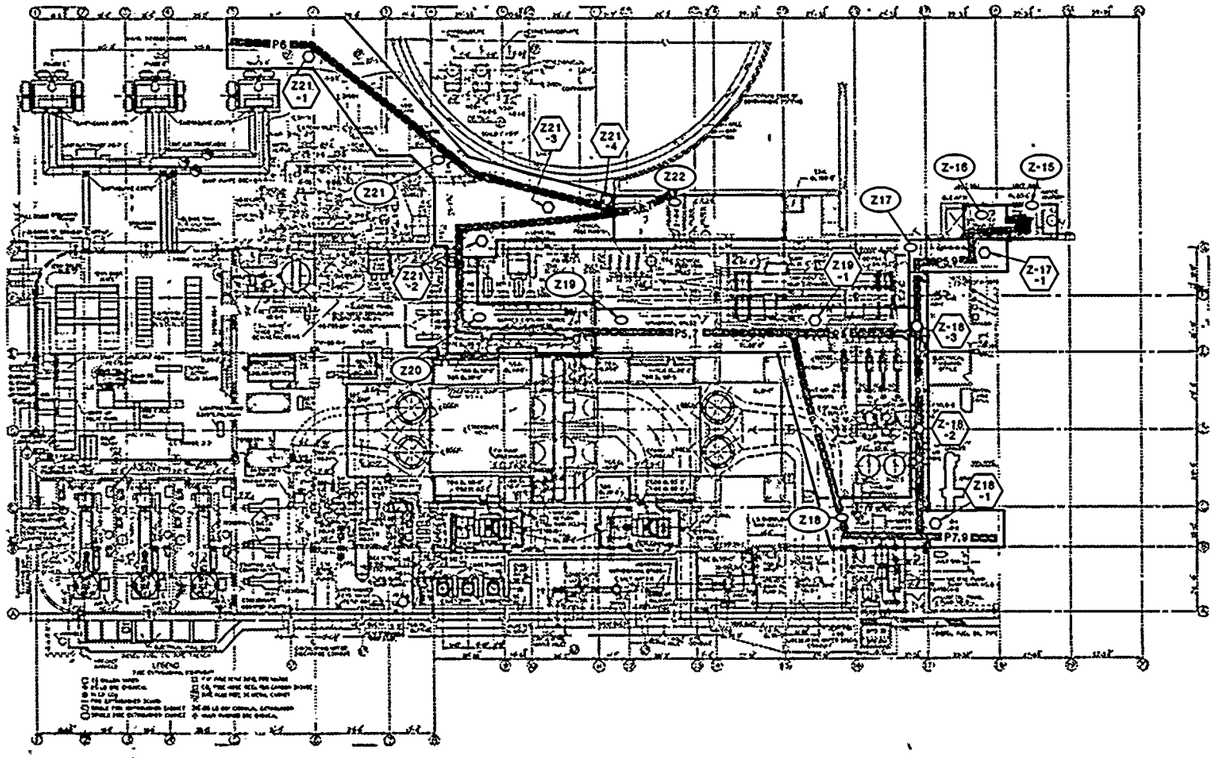
POST-ACCIDENT ACCESS PATHWAY DOSE RATES
UNIT #2 TURBINE BUILDING DETAIL
ELEVATION 104'-0"
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

SCALE: 1" : 20'-0"
JOB NO.: 0170-038
DRAWING NO.: 038-017
REV.: 0
SHEET 1 OF 1

eds nuclear

DRAWING NO. 038-018

SHEET 1 OF 1

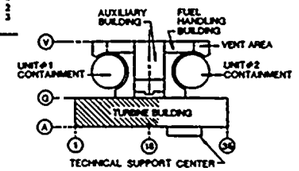


DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
Z15	Z15	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
Z16	Z16	1	0	0	0	0	0
		3	86	39	23	2	1
		TOTAL	86	39	23	2	1
Z17	Z17	1	0	0	0	0	0
		3	840	380	210	13	1
		4	190	65	25	4	1
		TOTAL	1030	445	235	17	2
	Z17-1	1	0	0	0	0	0
		3	840	380	210	13	1
		4	92	31	12	2	1
		TOTAL	932	411	222	15	2
Z18	Z18	1	0	0	0	0	0
		2	170	22	3	1	1
		3	1700	770	420	26	1
		4	530	200	80	11	1
		TOTAL	2430	992	503	38	3
	Z18-1	1	0	0	0	0	0
		2	170	22	3	1	1
		3	1700	770	420	26	1
		4	160	55	20	3	1
		TOTAL	2030	847	443	30	3
	Z18-2	1	0	0	0	0	0
		2	170	21	3	1	1
		3	1700	770	420	26	1
		4	180	60	23	3	1
		TOTAL	2050	851	446	30	3
	Z18-3	1	0	0	0	0	0
		3	1700	770	420	26	1
		4	380	110	49	7	1
		TOTAL	2080	900	469	33	2
Z19	Z19	1	0	0	0	0	0
		2	1300	178	25	2	1
		3	1700	770	420	26	1
		4	690	240	78	11	1
		TOTAL	3690	1180	523	39	3
	Z19-1	1	0	0	0	0	0
		3	1700	770	420	26	1
		4	1400	510	190	27	2
		TOTAL	3100	1280	610	53	3
Z20	Z20	1	0	0	0	0	0
		2	2300	310	46	5	1
		3	1700	770	420	26	1
		4	550	198	71	10	1
		TOTAL	4550	1278	537	41	3
Z21	Z21	1	0	0	0	0	0
		2	4000	540	80	8	1
		3	1700	770	420	26	1
		4	1400	500	190	27	2
		TOTAL	7100	1810	690	61	4
	Z21-1	1	0	0	0	0	0
		2	3200	430	65	6	1
		3	1700	770	420	26	1
		4	600	210	80	11	3
		TOTAL	5500	1410	565	43	5
	Z21-2	1	0	0	0	0	0
		2	2900	430	65	6	1
		3	1700	770	420	26	1
		4	1400	510	190	27	2
		TOTAL	6300	1710	675	59	4
	Z21-3	1	0	0	0	0	0
		2	2900	520	77	8	1
		3	1700	770	420	26	1
		4	1500	520	200	28	2
		TOTAL	7100	1810	697	62	4
	Z21-4	1	0	0	0	0	0
		2	3900	520	77	8	1
		3	840	380	210	13	1
		4	1500	530	200	29	2
		TOTAL	6240	1430	487	50	4
Z22	Z22	1	0	0	0	0	0
		3	840	380	210	13	1
		4	1600	560	210	30	2
		TOTAL	2440	940	420	43	3

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH



REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/11/81	ORIGINAL ISSUE				

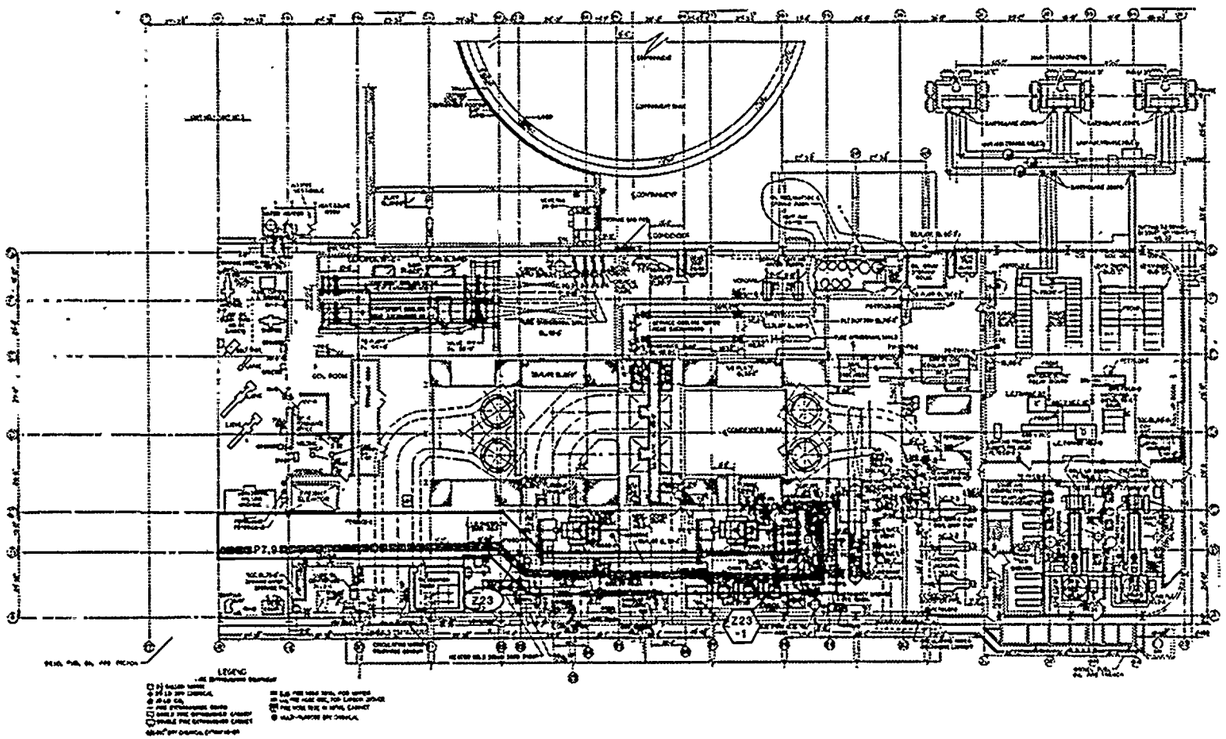
POST-ACCIDENT ACCESS PATHWAY DOSE RATES
UNIT#1 TURBINE BUILDING DETAIL
ELEVATION 85'-0"
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: 1"=20'-0"
JOB NO.: 0170-038
DRAWING NO.: 038-018
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038-019

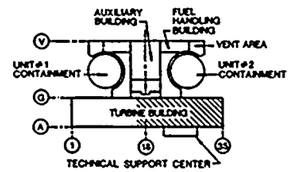
SHEET 1 OF 1



DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
S-23	223	1	0	0	0	0	0
		2	140	18	3	1	1
		3	1708	770	420	26	1
		TOTAL	1840	788	423	27	2
	223-1	1	0	0	0	0	0
		2	94	12	2	1	1
		3	1700	770	420	26	1
		TOTAL	1794	782	422	27	2

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND



CALLED NORTH

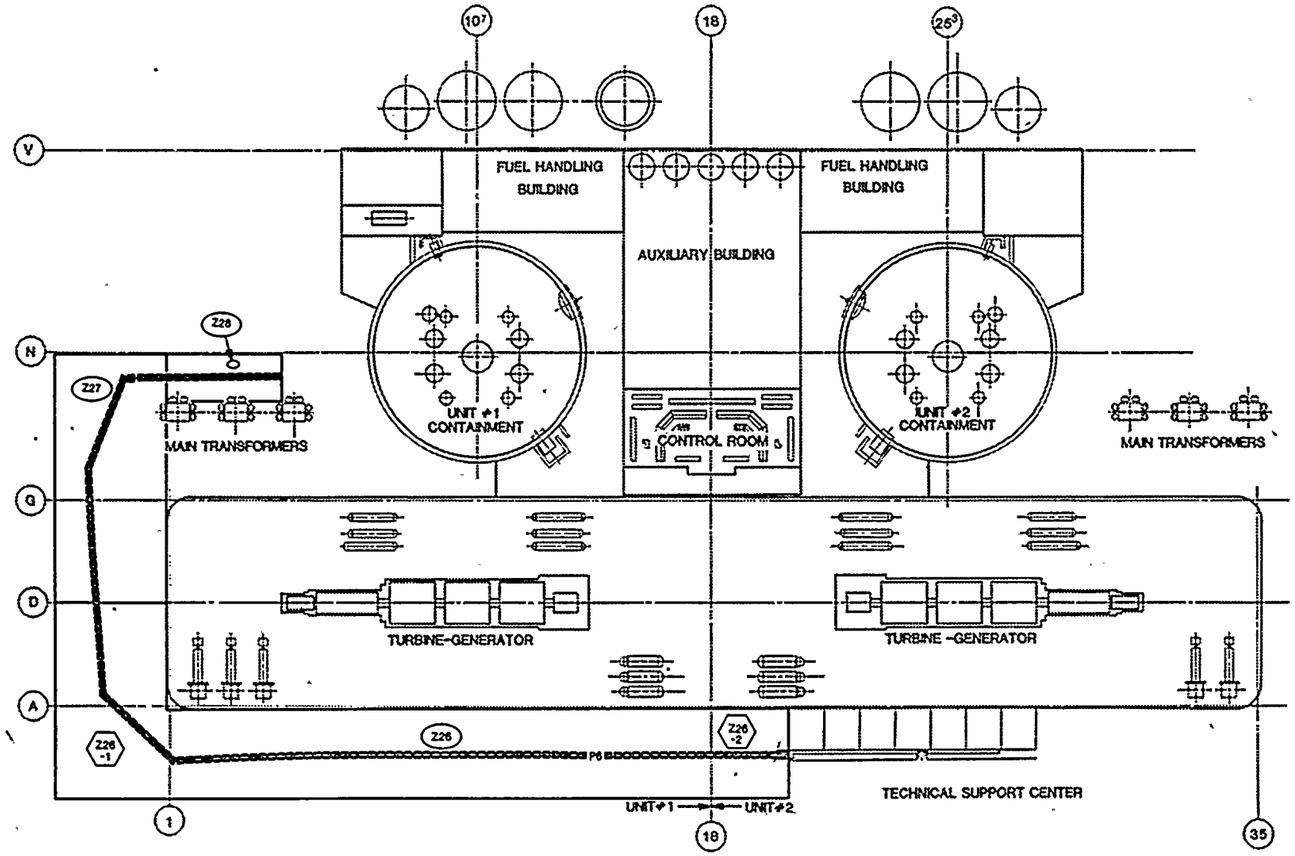
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	8/1/81	ORIGINAL ISSUE	R. Lawson	M. Nolis	M. Fuller	M. Nolis

POST-ACCIDENT ACCESS PATHWAY DOSE RATES
UNIT#2 TURBINE BUILDING DETAIL
ELEVATION 85'-0"
DIABLO CANYON UNIT#1
PACIFIC GAS AND ELECTRIC COMPANY

eds nuclear

SCALE: 1": 20'-0"
JOB NO.: 0170-038
DRAWING NO.: 038-019
REV.: 0
SHEET 1 OF 1

DRAWING NO. 038-020
SHEET 1 OF 1



DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
226	226	1	0	0	0	0	0
		2	448	59	9	1	1
		3	1708	779	420	26	1
		4	20	7	3	1	1
		TOTAL	2160	836	432	28	3
	226-1	1	0	0	0	0	0
		2	340	45	7	1	1
		3	1708	779	420	26	1
		4	5	3	1	1	1
		TOTAL	2045	817	428	28	3
	226-2	1	0	0	0	0	0
		2	150	18	3	1	1
		3	1700	770	420	26	1
		TOTAL	1850	788	423	27	2
227	227	1	0	0	0	0	0
		2	780	110	15	1	1
		3	1700	770	420	26	1
		4	13	5	2	1	1
		TOTAL	2493	885	437	28	3
228	228	1	0	0	0	0	0
		2	1800	250	34	4	1
		3	1700	775	420	24	1
		4	85	29	11	3	1
		TOTAL	3585	1049	467	32	3

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

CALLED NORTH

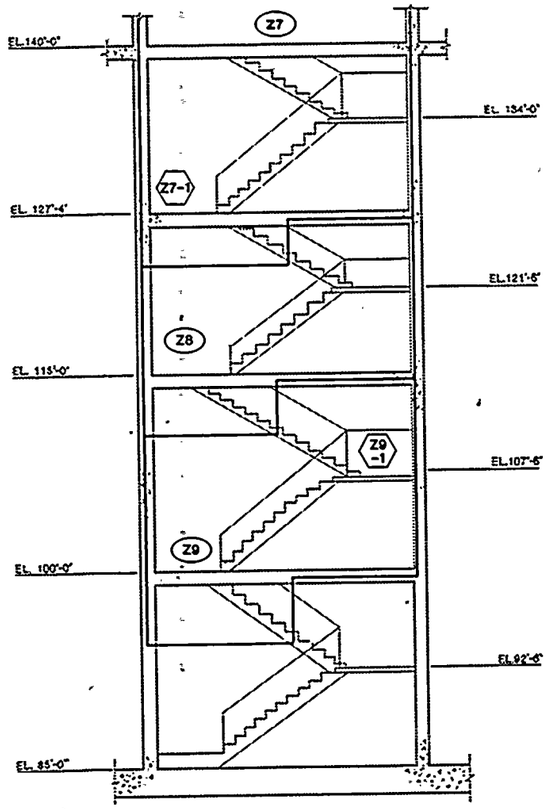
REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	8/1/81	ORIGINAL ISSUE				

POST-ACCIDENT ACCESS PATHWAY DOSE RATES
SITE DETAIL
ELEVATION GROUND
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

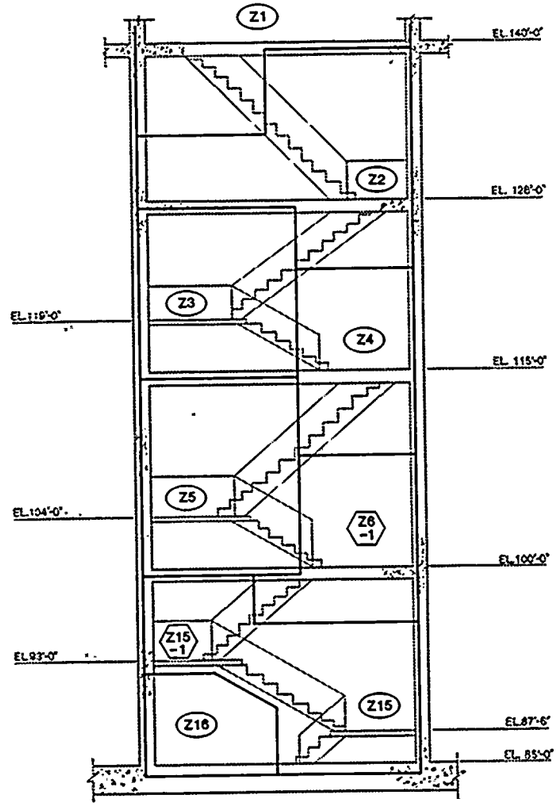
SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-020
REV.: 0
eds nuclear
SHEET 1 OF 1

DRAWING NO. 038-021

SHEET 1 OF 1



SECTION B-B'



SECTION A-A

DOSE RATE SUMMARY

ZONE	DETECTOR	SOURCE	At 1 hr (mR/hr)	At 8 hrs (mR/hr)	At 24 hrs (mR/hr)	At 240 hrs (mR/hr)	At 720 hrs (mR/hr)
Z1	Z1	1	0	0	0	0	0
		3	86	39	23	2	1
		TOTAL	86	39	23	2	1
Z2	Z2	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
Z3	Z3	1	0	0	0	0	0
		3	86	39	23	2	1
		TOTAL	86	39	23	2	1
Z4	Z4	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
Z5	Z5	1	0	0	0	0	0
		3	86	39	23	2	1
		TOTAL	86	39	23	2	1
Z6	Z6 (Not shown. See dwg 038-012)	1	2	1	1	1	1
		3	1	1	1	1	1
		TOTAL	3	2	2	2	2
	Z6-1	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
Z7	Z7	1	0	0	0	0	0
	Z7-1	1	0	0	0	0	0
Z8	Z8	1	0	0	0	0	0
Z9	Z9	1	11	2	1	1	1
	Z9-1	1	8	1	1	1	1
Z15	Z15	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
	Z15-1	1	0	0	0	0	0
		3	1	1	1	1	1
		TOTAL	1	1	1	1	1
Z16	Z16	1	0	0	0	0	0
		3	86	39	23	2	1
		TOTAL	86	39	23	2	1

GENERAL NOTES:
1. SEE DWG. 038-000 FOR LEGEND

REV	DATE	DESCRIPTION	DRAWN	PREPARED	CHECKED	APPROVED
0	6/1/81	ORIGINAL ISSUE				

POST-ACCIDENT ACCESS PATHWAY DOSE RATES
CONTROL ROOM STAIRWAY SECTIONS A-A AND B-B
ELEVATION 100'-0"
DIABLO CANYON UNIT #1
PACIFIC GAS AND ELECTRIC COMPANY

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SCALE: NONE
JOB NO.: 0170-038
DRAWING NO.: 038-021
REV.: 0
SHEET 1 OF 1