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CRANE,P.A. Pacific Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
MIRAGLIA,F.J. Licensing Branch 3

SUBJECT: Forwards discussion of site specific meteorological factors submitted in response to NRC request for info re upgraded meterological program for emergency preparedness per criterial in NUREG-0654,App 2.Acknowledgement requested.

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ATTORNEYS

March 27, 1981

Mr. Frank J. Miraglia, Jr., Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket No. 50-275
Docket No. 50-323
Diablo Canyon Units 1 & 2

Dear Mr. Miraglia:

The enclosed discussion of site specific meteorological factors is submitted in response to a request for supplemental information concerning the Upgraded Meteorological Program for Emergency Preparedness per criteria in NUREG-0654, Appendix 2.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it to me in the enclosed addressed envelope.

Very truly yours,

Philip A. Crane, Jr.

Attachment
CC w/attachment: Service List

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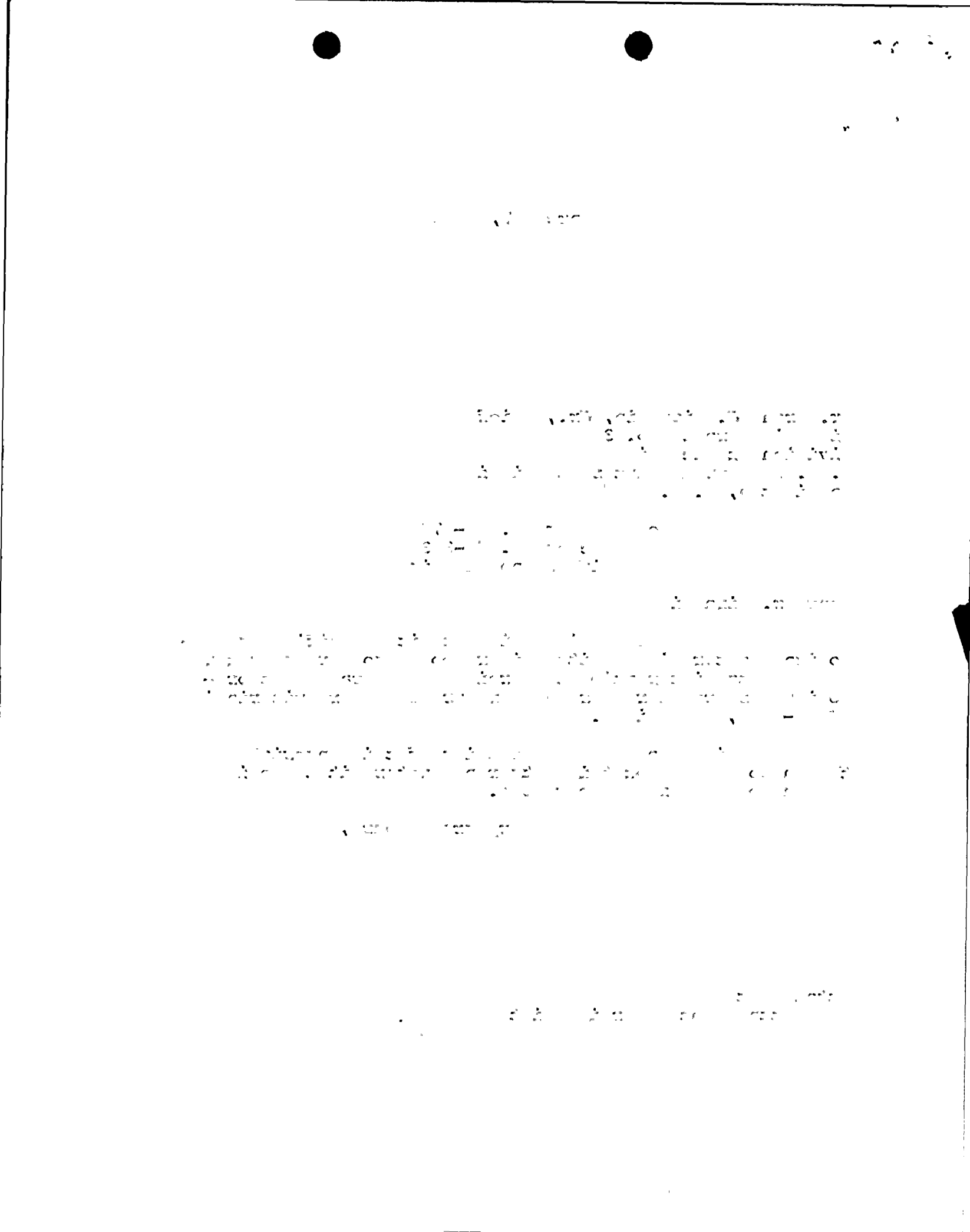

Supplemental Discussion of Site Specific Meteorological Factors at Diablo Canyon

In its submittal to the NRC on February 25, 1980, PGandE discussed the treatment of site specific physiographic and meteorological factors when modeling dispersion at the Diablo Canyon Power Plant (DCPP) site. Tracer studies conducted at the site have indicated that meteorological measurements at the primary and backup tower sites reflect the complex influence of site specific factors. Measurements of wind direction properly represent the actual direction of plume transport under the channeling influence of the nearby elevated terrain. Estimates of X/Q based on tower measurements are expected to be conservative (overestimates) based on the tracer results, due most likely to the dispersive influence of the rugged terrain on the traveling plume. PGandE concluded that use of the Class A model as outlined in the FSAR, without explicit adjustment for site specific influence, would be a reasonable approach to calculate dose estimates in the initial stages of an emergency. PGandE further indicated that beyond the initial stages, when data interpretation and forecast assistance would be provided by PGandE's professional meteorological staff, ad hoc site specific adjustments could be made to the Class A model.

Further amplification is necessary regarding the specific case of onshore winds roughly normal to the facade of the elevated coastal terrain. Figure 1 serves to illustrate the special situation involving onshore flow normal to the terrain. In the event of an emergency, the Class A model assumes a ground level plume transported along a straight line path indicated by the wind direction measured at the primary or backup meteorological tower. When the tower indicates a wind direction within the terrain shelter zone indicated in Figure 1, a transport path directly across the rugged and elevated terrain will be assumed by the model In reality, the onshore flow will be blocked and steered by the intervening terrain. Consequently, the plume centerline is unlikely to move very far in cohesive form along the path indicated by the measured wind direction. Portions of the plume at low level may be transported into Diablo Canyon and other coastal canyons, but transit of the terrain crest is unlikely under meteorological conditions typically associated with onshore flow at the plant site.

Prior to formulating an approach to model adjustment under conditions of onshore flow, a brief statistical evaluation was performed on the data record from the primary meteorological tower. Table 1 indicates that onshore flow in critical directions (SSW, SW, WSW) occurs rather infrequently and Table 2 indicates that when it does occur, it does not persist for very long. Finally, Figures 2 and 3 indicate that critical onshore flow is predominantly a stable, low-speed flow. As such it is likely associated primarily with local circulations and reasonably represented by the subset of tracer experiments performed under conditions of light and variable wind as described in the FSAR, Appendix 2.3B. Under such conditions, the tracer material was highly diluted by the meandering flow pattern and largely confined within a few miles of the release site.

In view of the above, PGandE does not feel that initial actions based on unadjusted model output will be adversely impacted by terrain influence under conditions of onshore flow. Tower winds should adequately represent the direction of plume transport within the first hour. The remoteness of the DCPP site should allow sufficient time for the involvement of PGandE's meteorological staff prior to critical decision making beyond the first hour. Adjustments to the model can then be made by assigning the plume centerline to alternate transport paths in successive hours based on a consideration of terrain influence under existing meteorological conditions.

Table 1

Percentage Frequency of Occurrence for Onshore Flow in the SSW through WSW Sector, 25 ft. level, July 1967-October 1972

Wind Direction	SSW	SW	WSW	All Other Directions
Frequency of Occurrence (%)	1.4	1.2	1.3	96.1

Table 2

Persistence of Wind Flow Within the SSW through WSW Sector, 1972-1980

Number of Consecutive Hours	Percentage* of Cases by Direction			
	SSW	SW	WSW	SSW through WSW
1	91.1	93.8	94.3	78.2
2	7.6	5.0	5.4	16.1
3	0.9	0.5	0.3	3.4
4	0.0	0.0	0.2	1.1
5	0.1	0.2	0.0	0.3
6	0.1	0.2	0.0	0.3
7	0.1	0.0	0.0	0.2
8	0.0	0.2	0.0	0.0
9	0.0	0.0	0.0	0.1
10	0.0	0.2	0.0	0.1
11-15	0.0	0.0	0.0	0.0
16-20	0.0	0.0	0.0	0.0
21-24	0.0	0.0	0.0	0.0

*percentages do not total exactly 100% because of rounding

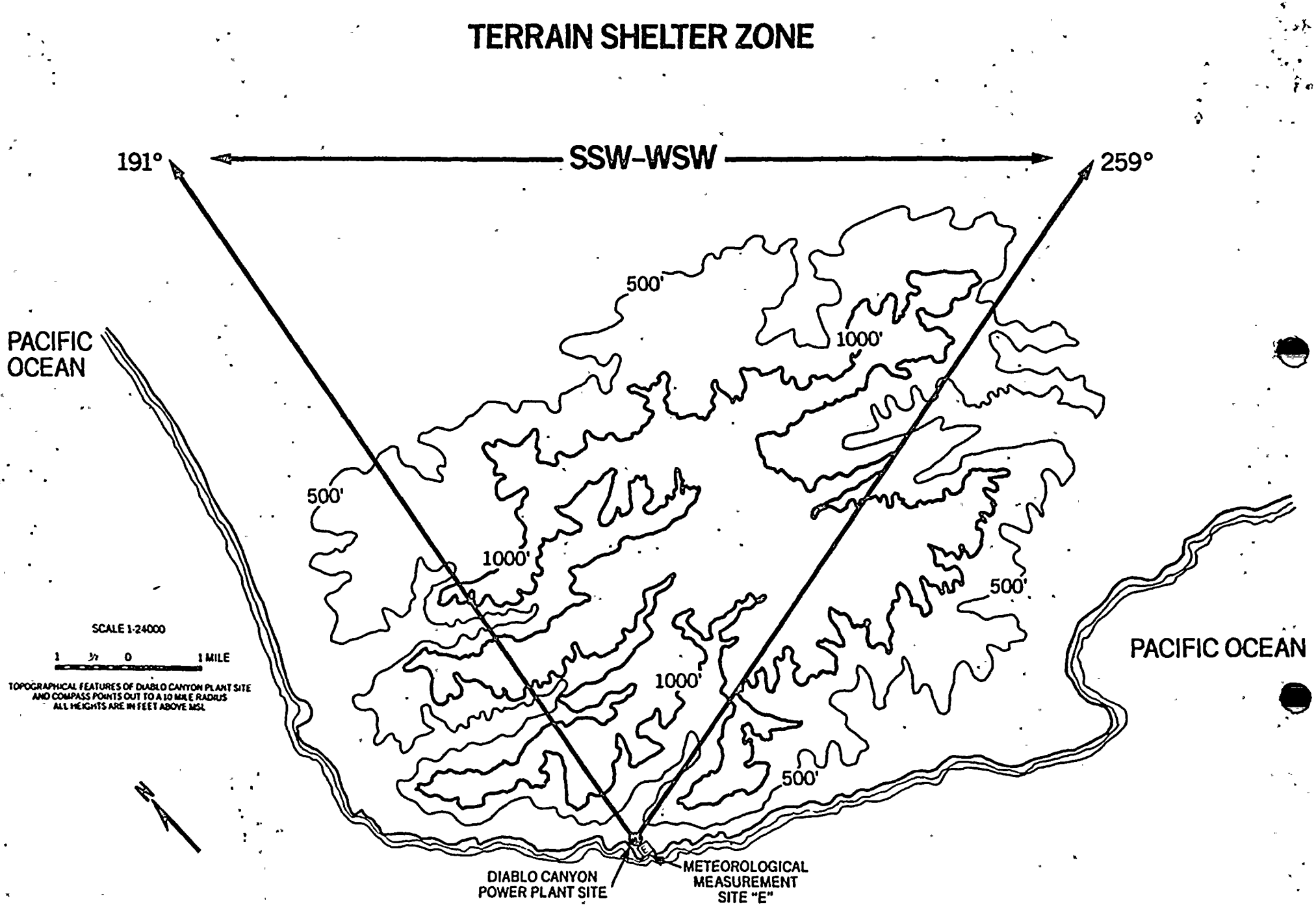

Figure 1. Terrain Configuration in the Vicinity of Diablo Canyon Power Plant Indicating Assumed Zone of Shelter from Low Level Plume Transport

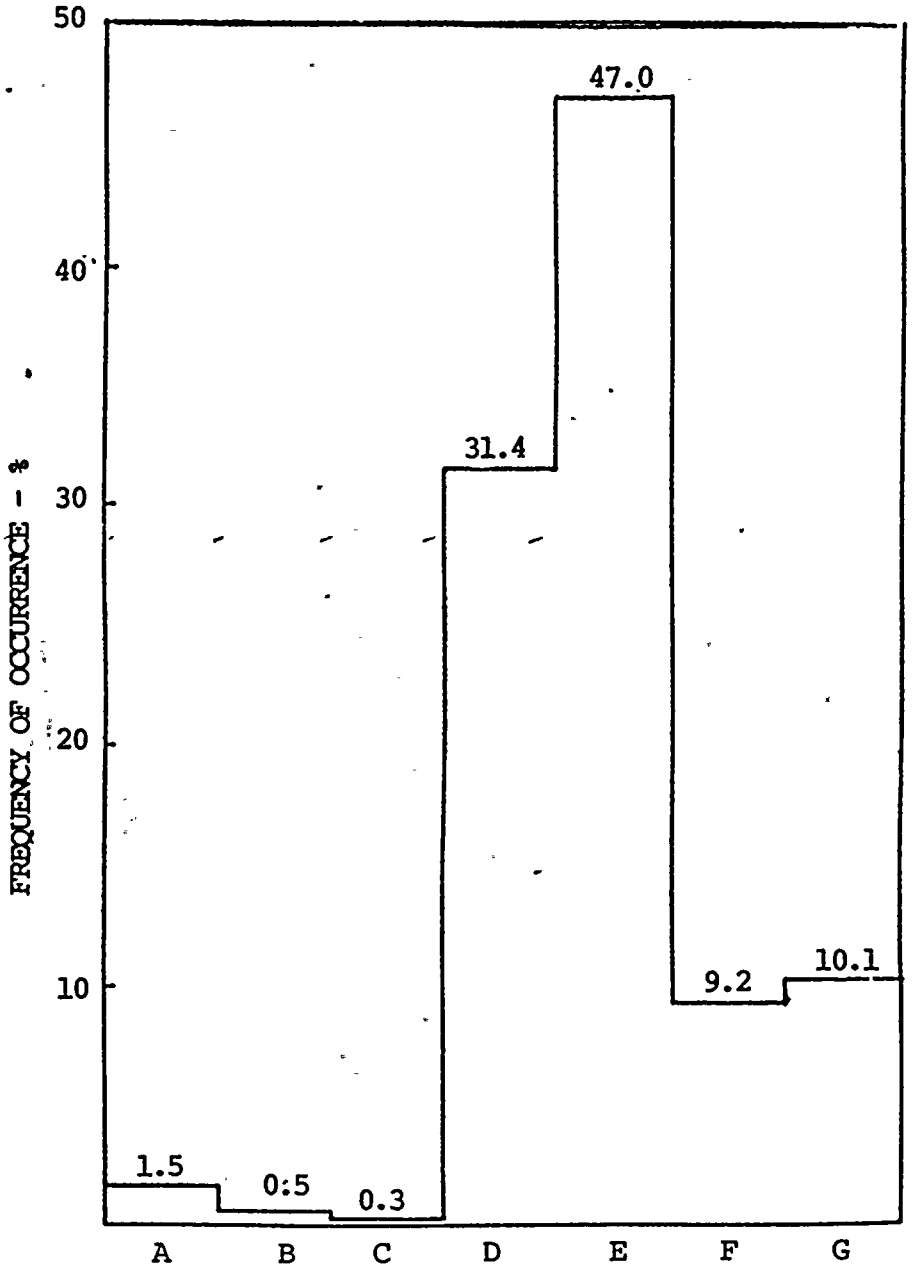

Figure 2. Distribution of on-shore wind direction occurrences by stability category based on ΔT; 7/67-10/72, 25 ft level

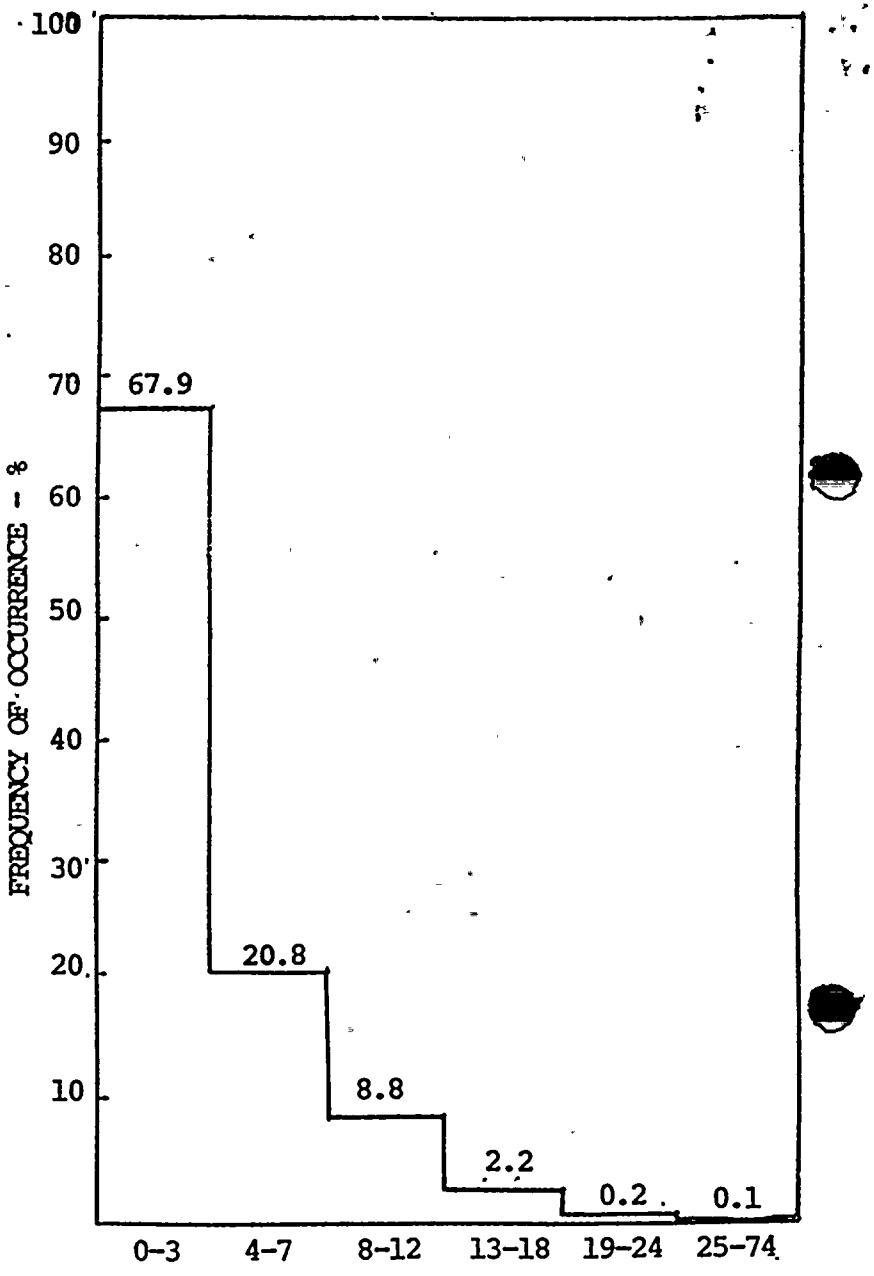

Figure 3. Distribution of on-shore wind direction occurrences by wind-speed class; 7/67-10/72, 25 ft level