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16. ABSTRACT

An evaluation is made of the effects on carbon monoxide concentrations of transportation improvements incorporated in the Route 203 highway project. This includes a comparison of preconstruction and postconstruction field sampling studies. The performance of the CALINE4 air quality model is evaluated for use in complex terrain. The report describes the problems encountered in applying the model to mountainous locations, the tracer release study used for assessing model performance, and the model verification analysis.

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TRANSPORTATION
LABORATORY

THE MAMMOTH LAKES ROUTE 203 TRANSPORTATION PROJECT: A CASE STUDY IN AIR QUALITY MODELING AND MITIGATION

Caltrans

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
DIVISION OF FACILITIES CONSTRUCTION
OFFICE OF TRANSPORTATION LABORATORY

THE MAMMOTH LAKES ROUTE 203 TRANSPORTATION PROJECT: A CASE STUDY IN AIR QUALITY MODELING AND MITIGATION

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ESTIMATE OF RESEARCH PROJECT COST AND SAVINGS

PROJECT IDENT. NO. E83TL17

1. NAME OF PROJECT The Mammoth Lake Route 203 Transportation Project	5. EXP AUTH NUMBER(S) 57328-604218
2. OBJECTIVES (brief description) Evaluate the effectiveness of air quality mitigation measures. Test the validity of the CALINE4 air quality model for use in complex terrain.	6. REPORTING PERIOD July 1, 19 __ to June 30, 19 __ 7. STATUS [ ] continuing [X] closed	date closed 8. GROSS PROJECT EXPENDITURE

3. FINDINGS (brief description)

The implemented mitigation measures resulted in a significant improvement in air quality.

The CALINE4 model has limited applications when used for areas in mountainous terrain.

4. HAVE RESEARCH FINDINGS BEEN USED? YES [ ] Describe how NO [X] Describe why not

The findings of this study have not been distributed or used at this time.

9. METHOD OF IMPLEMENTATION (Examples: Special Provisions, Standard Specifications, Standard Plans, Change Order, Policy & Procedure Memo, Memo to Designers, Manual Change, New Test Method, New Computer Program, Change in Procedure, etc.)

The findings from this report can be used to evaluate planned air, quality mitigation measures. Changes in procedure for applying CALINE4 in complex terrain will be forthcoming

10. ESTIMATE OF SAVINGS (Show savings brought about as a direct result of the project for this period.) (Do not consider the cost of the project when arriving at these figures.)	cash savings none person year savings none

11. DESCRIBE HOW SAVINGS WERE DERIVED

12. OTHER BENEFITS: Did this project result in improved highway safety, convenience or aesthetics? YES [ ] NO [X] If Yes, explain how (estimate lives saved by fewer accidents number of accidents reduced, highway users savings, etc.)	lives saved accidents reduced user savings

NAME	DATE	RESPONSIBLE UNIT OR CONTRACTOR
Robert Cramer	June 14, 1985	

HPR 178 (Rev. 1/81)

USE REVERSE SIDE AS NEEDED

NOTICE

CONVERSION FACTORS

English to Metric System (SI) of Measurement

Quality	English unit	Multiply by	To get metric equivalent
Length	inches (in)or(")	25.40 .02540	millimetres (mm) metres (m)
	feet (ft)or(')	.3048	metres (m)
	miles (mi)	1.609	kilometres (km)
Area	square inches (in^2) square feet (ft^2) acres	6.432×10^{-4} .09290 .4047	square metres (m^2) square metres (m^2) hectares (ha)
Volume	gallons (gal) cubic feet (ft^3) cubic years (yd^3)	3.785 .02832 .7646	litre (1) cubic metres (m^3) cubic metres (m^3)
Volume/Time (Flow)	cubic feet per second (ft^3/s	28.317	litres per second 1/s)
	gallons per minute (gal/min)	.06309	litres per second (1/s)
Mass	pounds (1b)	.4536	kilograms (kg)
Velocity	miles per hour (mph) feet per second (fps)	.4470 .3048	metres per second (m/s) metres per second (m/s)
Acceleration	feet per second squared (ft/s^2)	.3048	metres per second squared (m/s^2)
	acceleration due to force of gravity (G) (ft/s^2)	9.807	metres per second squared (m/s^2)
Density	($1b/ft^3$)	16.02	kilograms per cubic metre (kg/m^3)
Force	pounds (1bs) (1000 1bs) kips	4.448 4448	newtons (N) newtons (N)
Thermal Energy	British termal unit (BTU)	1055	joules (J)
Mechanical Energy	foot-pounds (ft-1b) foot-kips (ft-k)	1.356 1356	joules (J) joules (J)
Bending Moment or Torque	inch-pounds (in-1bs) foot-pounds (ft-1bs)	.1130 1.356	newton-metres (Nm) newton-metres (Nm)
Pressure	pounds per square inch (psi)	6895	pascals (Pa)
	pounds per square foot (psf)	47.88	pascals (Pa)
Stress Intensity	kips per square inch square root inch ($ksi\sqrt{in}$)	1.0988	mega pascals$\sqrt{metre}$ ($MPa\sqrt{m}$)
	pounds per square inch square root inch ($psi\sqrt{in}$)	1.0988	kilo pascals$\sqrt{metre}$ ($KPa\sqrt{m}$)
Plane Angle	degrees (°)	0.0175	radians (rad)
Temperature	degrees fahrenheit (F)	$\frac{+F - 32}{1.8} = +C$	degrees celsius (°C)

ACKNOWLEDGEMENTS

We would like to express our appreciation to the personnel in District 9 who assisted in the field studies. We would also like to thank the Transportation Laboratory personnel who participated in the Route 203 tracer studies.

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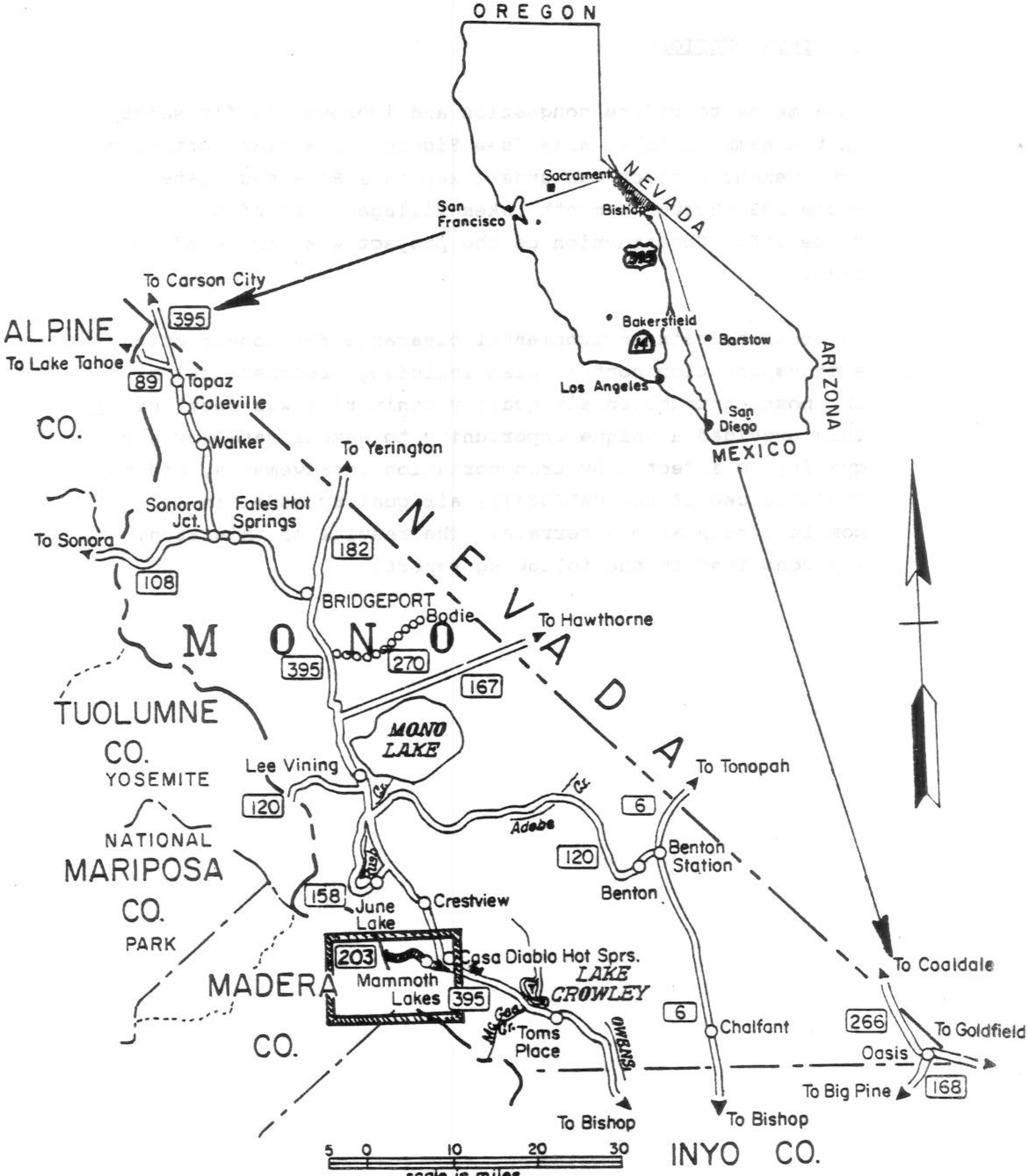
1. INTRODUCTION

As a means to reduce congestion and improve traffic safety in the Mammoth Lakes area (see Figure 1), a transportation improvement project was undertaken in 1981 along State Route 203 through Mammoth Lakes Village, west of State Route 395. Construction of the project was completed in 1982.

In order to gain environmental clearance for construction, a transportation control plan including preconstruction and postconstruction air quality monitoring was developed(1). This provided a unique opportunity to demonstrate how air quality is affected by transportation improvements, and to evaluate use of the CALINE4(2) air quality model in complex, mountainous terrain. The results of this study are contained in the following report.



LOCATION MAP
FIGURE 1

2. BACKGROUND

Mammoth Lakes, located in the Eastern Sierra Region at an elevation of 8,200 feet, is an area of burgeoning growth centered around the largest single ski resort operation in California. The combination of peak ski season traffic volumes, heavy reliance on wood-burning stoves and stagnant wintertime meteorology has led to a decline in air quality at this resort community in recent years. Traffic congestion during peak hours along Route 203, particularly at the Lake Mary Road intersection and through the business section of town, has been the main cause of the transportation-related air quality impacts in the region.

To reduce congestion and improve traffic safety on Route 203, a transportation improvement project was constructed in 1981-82. The route was widened to four lanes, delineation was improved, and several intersections, including Lake Mary Road, were upgraded with fully-actuated traffic signals. Bus stop shelters were constructed in an effort to promote the use of an existing bus service and further reduce traffic congestion within the corridor. The improvements were expected to double the capacity of the route and reduce carbon monoxide (CO) emissions by improving traffic flow. However, CO emissions would drop only if the added capacity did not induce substantial increases in traffic volume.

During the planning phase of the project, a transportation control plan was developed to mitigate any adverse air quality impacts brought about by the increased capacity of the route(1).

The plan contained strategies designed to increase use of public transit, improve traffic flow and control traffic volumes. The major components of the plan included parking restrictions, construction of transit amenities, and an expansion of the county road system to help relieve congestion on Route 203. Operational improvements such as staggered ski lift closing times, a "ski-back" trail and lighting of ski runs for night skiing were also included. Future expansion of ski facilities would only be permitted if peak traffic volumes on Route 203 did not increase. Transit service was to be required for any new facilities, but no expansion of parking capacity would be allowed.

To check the adequacy of the mitigation measures, the plan included a provision for preconstruction and postconstruction CO monitoring. The preconstruction aerometric survey was conducted as a joint effort between the California Department of Transportation (Caltrans) District 9 and the Transportation Laboratory (TransLab) during the winter of 1980-81. The purpose of this survey was to establish background CO concentrations and identify exceedances of the National Ambient Air Quality Standards (NAAQS).

Construction of the Route 203 transportation improvements was completed during 1982. Postconstruction monitoring for CO was conducted during the winter of 1982-83. This established a basis for evaluating the effectiveness of the transportation improvements at mitigating air quality impacts.

A tracer release experiment was carried out during the winter of 1983-84 following the postconstruction CO monitoring program. Data from this experiment were used to test the validity of the newly published CALINE4 air quality model(2) for complex terrain applications, and compare the performance of CALINE4 to the older CALINE3 model(3).

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Carbon Monoxide Studies

The following conclusions and recommendations were reached as a result of the 1980-81 and 1982-83 CO studies.

1. There were substantial improvements in air quality near the Route 203-Lake Mary Road intersection on days of low to medium ski lift ticket sales between the 1980-81 and 1982-83 seasons. These improvements were due in part to the increased capacity of the intersection and the responsiveness of the fully-actuated traffic signal. For traffic volumes approaching the capacity of the intersection, the observed improvements in air quality were mostly attributable to enhanced vehicle emission controls between the two seasons.

2. No significant improvements in ambient air quality were seen. It is possible that increased CO emissions from wood-burning stoves and fireplaces masked projected reductions in vehicle fleet emissions.

3. No evidence was found to indicate that the bus shelters increased transit ridership. It is likely that the increased capacity of the route actually made transit use less attractive. Fortunately, subsequent expansion did not exploit this increased capacity.

4. The majority of 1-hour and 8-hour exceedances of the NAAQS for CO occurred during the morning hours. Any additional mitigation measures aimed at reducing the number of exceedances in the Mammoth Lakes area should be designed around strategies to lessen morning

emissions in the corridor. Staggering ski lift opening times and providing additional incentives for transit ridership are examples of such measures.

5. Values of the persistence factor, defined as the ratio of the 8-hour peak CO concentration to the 1-hour value, were considerably lower than the nominal values of 0.6 to 0.7 recommended by the Environmental Protection Agency (EPA). These lower values, ranging from 0.3 to 0.4, are attributed to the more frequent changes in meteorological conditions that naturally occur in complex terrain.

3.2 CALINE4 Model Verification

The following conclusions and recommendations concerning the model performance of CALINE4 in complex terrain are based on an analysis of data from the Mammoth Lakes tracer study and a comparison of worst case predicted and measured CO concentrations for the 1982-83 CO study:

1. CALINE4 can be used to predict air quality impacts in complex terrain at receptors immediately adjacent to the primary source of emissions. For most project-level analyses, the restriction of adjacent receptors will not pose a problem since worst case receptor locations are normally chosen at the right-of-way line.

2. CALINE4 model performance for adjacent receptors in complex terrain is not as good as for modeling situations in flat terrain. However, the differences are not great when compared to the accuracy of many of the estimates that are used as inputs to the model.

3. CALINE4 predictions for more distant receptors in complex terrain are not reliable. Model performance clearly deteriorates with distance from the emissions source. The model assumptions of steady-state, quasi-homogeneous flow are obviously not satisfied for distant receptors in complex terrain.

4. Application of worst case meteorological assumptions, observed maximum ambient, and the CALINE4 intersection link option led to remarkably accurate estimates of highest measured CO concentrations for the 1982-83 season at the two monitoring sites closest to the intersection. This is a strong endorsement of CALINE4 and the modeling procedures used by Caltrans for assessing air quality impacts in complex terrain.

4. IMPLEMENTATION

The Transportation Laboratory will distribute copies of this report within the California Department of Transportation. The findings contained in this report will be incorporated into the Caltrans training class entitled "Air Quality Analysis for Transportation Systems". Copies of this report will be available through the Transportation Laboratory to all users of CALINE4.

5. CARBON MONOXIDE STUDY

5.1 Description of Field Studies

The junction of Route 203 and Lake Mary Road shown in Figure 2 carries traffic on three primary legs. The fourth (southerly) leg, planned for extension and widening by others, presently carries less than 1% of the traffic handled by the intersection. During the 1980-81 ski season, the intersection was controlled by a pretimed, two-phase signal with lights mounted at the corners. Roadway width limitations permitted only two approach lanes per leg with no room for channelization. Widening of the route made room for three approach lanes on eastbound Route 203 and Lake Mary Road, and four lanes on westbound Route 203. A fully-actuated, three-phase signal was also installed.

CO concentrations were measured at five sites before and after construction. Four of the sampling sites were clustered around the Route 203-Lake Mary Road intersection. The fifth sampling site (Site C) was located about one kilometer from the intersection. Samples from this site represented background CO concentrations for the area. A mechanical weather station located at the intersection recorded wind direction, wind speed and temperature on a continuous basis. A more elaborate meteorological tower was located about 1.5 kilometers to the east of the intersection, and provided wind speed, wind direction, temperature and lapse rate information.

Samples were collected in automatic bag samplers and returned to the District 9 Laboratory for analysis. CO concentrations were determined using non-dispersive infrared analyzers, with samples normally being tested

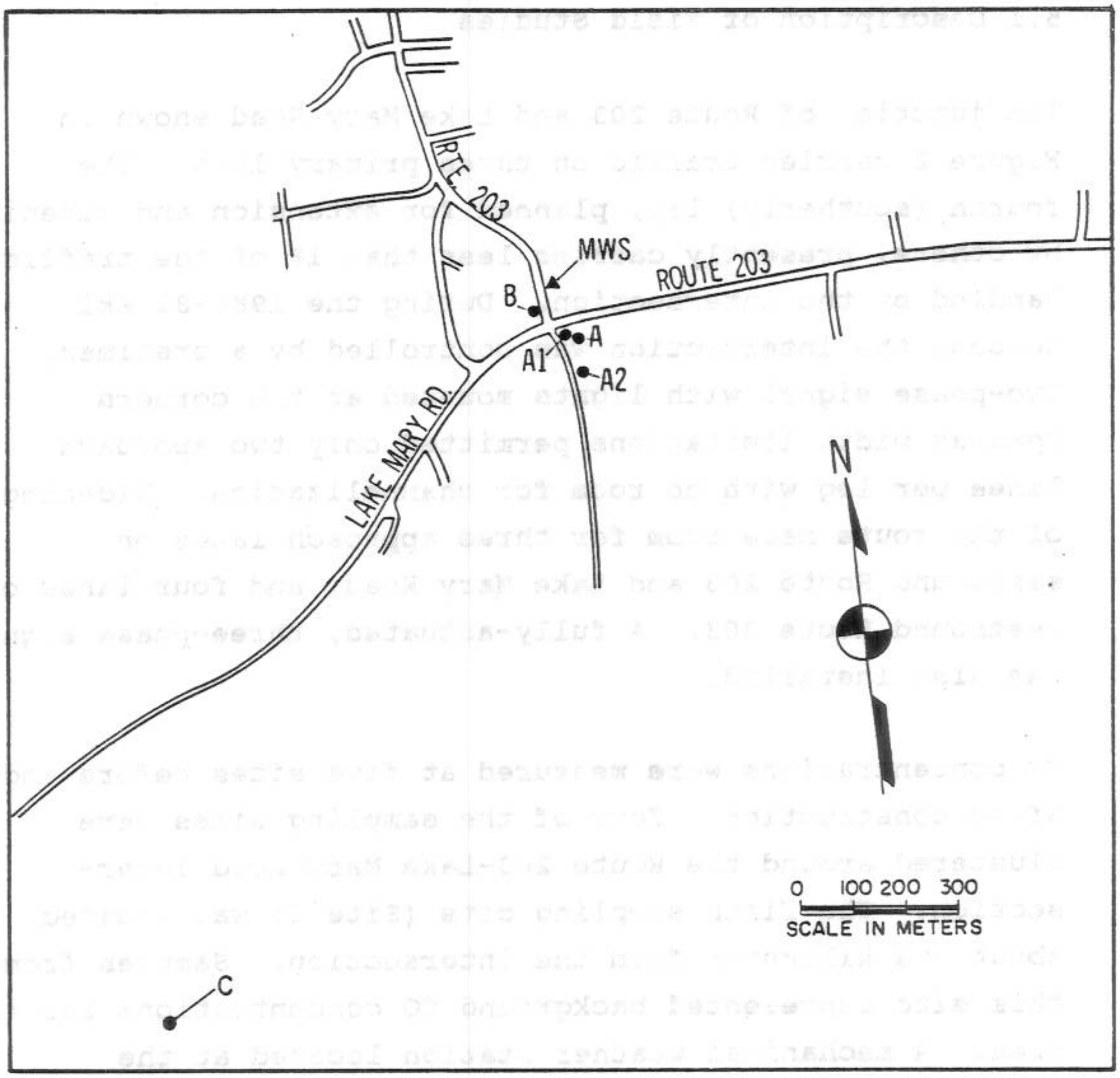


Fig. 2. Sampling locations for the 1980-81 and 1982-83 air quality monitoring programs at Mammoth Lakes, California

within 48 hours of their collection. Days that were favorable for skiing, particularly weekends and holidays, were monitored. In the 1980-81 season, samples were collected on 63 days from December through February. For the 1982-83 season, 45 days were sampled from November through February. All samples represented hourly averaged concentrations. While some 24-hour sampling was done, most sampling was conducted between the hours of 7 a.m. and 7 p.m. The mechanical weather station data were recorded on a continuous strip chart. Data from the meteorological tower were recorded directly onto cassette magnetic tape, edited and entered into the Caltrans Air Quality Data Handling System. Traffic counts were made at the intersection by District 9 personnel during the peak ski weekends for each season. For the 1980-81 season, counts were made in February on the weekend following Lincoln's Birthday. For the 1982-83 season, counts were made in December on the weekend before New Year's Day. The counts recorded 15-min volumes by direction and vehicle type from 7 a.m. to 7 p.m.

5.2 Data Analysis

The overall CO data base was edited for analysis by stratifying the data into three measures of air quality impact: 8-hour daily maximums, 1-hour morning maximums and 1-hour evening maximums. Morning and evening 1-hour maximums were taken from days with valid measurements at Sites A and B for the hours of 7 to 10 a.m. and 4 to 7 p.m. Daily 8-hour maximums were recorded when no more than two consecutive hours or three hours total were missing from Sites A and B in the 12-hour period from 7 a.m. to 7 p.m. Missing values on days satisfying these criteria were approximated by linear interpolation(4). The resulting number of days of data by season and averaging time is given in Table 1.

The two ski seasons involved in this analysis were far from similar in nature. The 1980-81 season started much later than normal, with most of the peak ski days occurring during February and March of 1981. By contrast, the 1982-83 season was much longer, with capacity crowds arriving by Thanksgiving of 1982, and actually tapering off in the spring of 1983 due to the unusual length of the season.

In order to compare air quality measurements for the two seasons, factors independent of the transportation improvements that might have an impact on air quality had to be accounted for. Improvements in vehicle emission controls and changes in traffic volume were considered first. Reductions in composite vehicle emissions were estimated at 18% using a California emission factor program(5). Since traffic counts were available for only two peak ski weekends, daily sales of ski lift tickets reported to the U. S. Forest Service by the ski operator were used as an indicator of traffic volume. Route 203 was the only road that served the main ski lift facility. Therefore, ticket sales offered the most direct measure of traffic volume available. The distribution of number of days analyzed by ticket sales category for each daily maximum is given in Figure 3 for both the 1980-81 and 1982-83 seasons. All three distributions show a substantially greater number of days with high ticket sales sampled in the 1982-83 season. Average daily ticket sales were 97% higher than the 1980-81 season. Ticket sales on peak ski days were very similar for both seasons, but there were many more peak days in the 1982-83 season.

TABLE 1 Number of Days Analyzed, By Averaging Time and Season

Averaging Time	Number of Days	
	Season	
	1980-81	1982-83
1-Hour (AM)	35	37
1-Hour (PM)	33	40
8-Hour	31	38

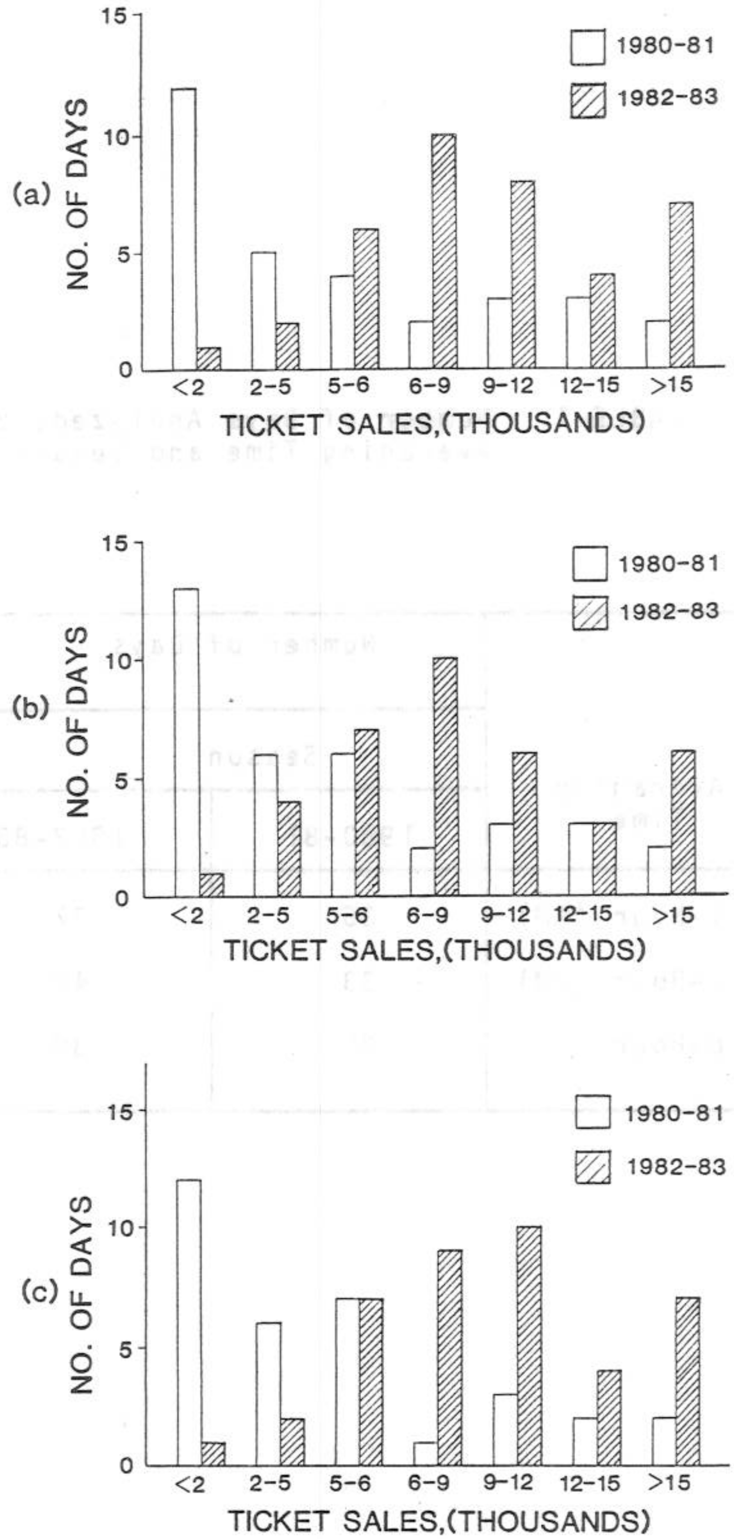


Figure 3. Number of days analyzed distributed by ski lift ticket sales category for: (a) 8-hour (b) 1-hour a.m. (c) 1-hour p.m.

An attempt to normalize the data using wind speed, temperature and stability measurements was also made. However, significant gaps in the meteorological data base and excessive scatter in the normalized results forced this approach to be abandoned. Average hourly wind speeds measured at the intersection from 7-10 a.m. and 4-7 p.m. were examined to see if there was a significant difference between the two seasons. Based on over 200 hours of available data, no significant difference was found between the seasonal means for either morning or evening conditions. Because of this and the fact that similar low wind speed weather conditions favorable for skiing were expected to coincide with peak CO concentrations regardless of which season was considered, the effects of meteorology were assumed to be approximately equal for the two seasons.

In order to use ticket sales as a valid basis of comparison, a correlation to air quality must be demonstrated. Plots of ticket sales versus 8-hour ambient daily maximums (Site C) and 8-hour daily maximums (all sites) are given in Figure 4. Least squares linear regression lines and the 95% confidence limits for these lines for the two seasons are also shown. While there is less scatter in the ambient data, there is also less sensitivity to ticket sales. The stronger sensitivity to ticket sales shown in Figure 4(b) can be attributed to the proximity of the four intersection samplers to the Route 203 traffic. The ambient measurements at Site C are not as strongly affected by the morning and evening ski traffic, and hence show less marked response to ticket sales. The additional scatter of the data from the intersection sites over the ambient data from Site C is due to the proximity of the intersection samplers to a strong, localized source of CO. Measurements made close

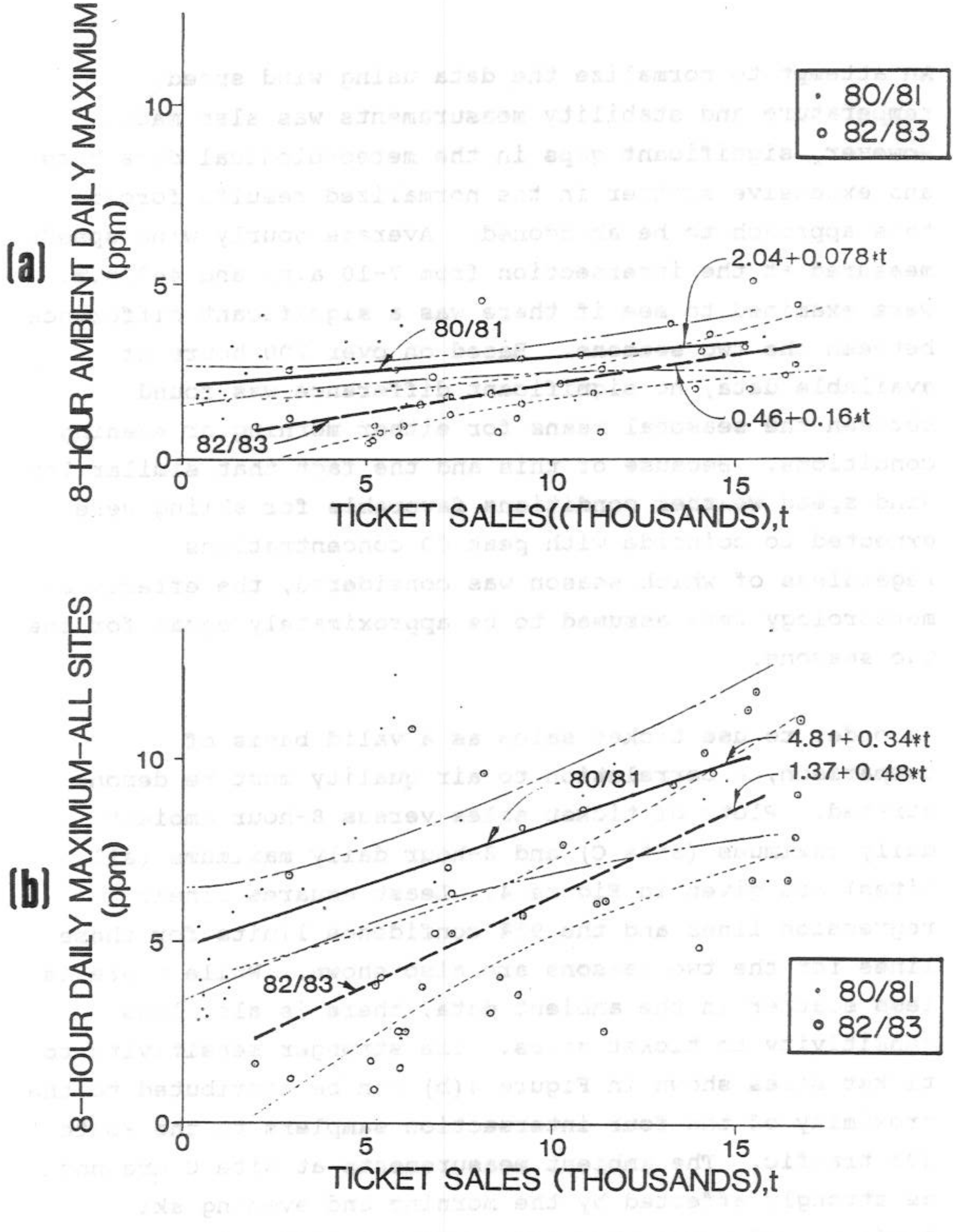


Figure 4 Daily maximum 8-hour CO concentration versus ticket sales for the 1980-81 and 1982-83 seasons:

(a) ambient (site C) (b) all sites

to a strong source fluctuate more radically because of the influence of meteorological variables such as wind direction.

The two regression lines in Figure 4(b) indicate an average reduction in 8-hour CO concentrations of about 50% for low to medium ticket sales days. For high ticket sales days (>10,000), the average reduction ranges from 13 to 25%, or about the amount expected from improved control technology alone. This suggests that the improvements to the intersection had a substantial positive effect on nearby air quality for low to medium traffic volumes, but were not effective in mitigating air quality impacts as volumes approached the capacity of the intersection.

The responsiveness of the fully-actuated signal is the probable reason for this discrepancy. CO emission rates for vehicles accelerating are much higher than during other modes of operation. By decreasing the number of vehicle-stops, the new signal reduced the number of accelerations at the intersection and therefore lowered CO emissions. As conditions approached the capacity of the intersection, more vehicles were forced to stop and the number of accelerations climbed to preconstruction levels.

Cumulative frequency distributions for the three daily maximums are given by season in Figure 5. For the lower half of the 8-hour daily maximum distributions in Figure 5(a), measurements from the 1980-81 season tend to be 0.5 to 1 ppm higher than equivalent 1982-83 values. The distribution of 1-hour evening maximums given in Figure 5(c) shows an average decrease in observed concentrations between the seasons of about 2.5 ppm over the range of results. The distribution of morning 1-hour maximums given in Figure 5(b) also shows about a 2.5 ppm improvement, but only for

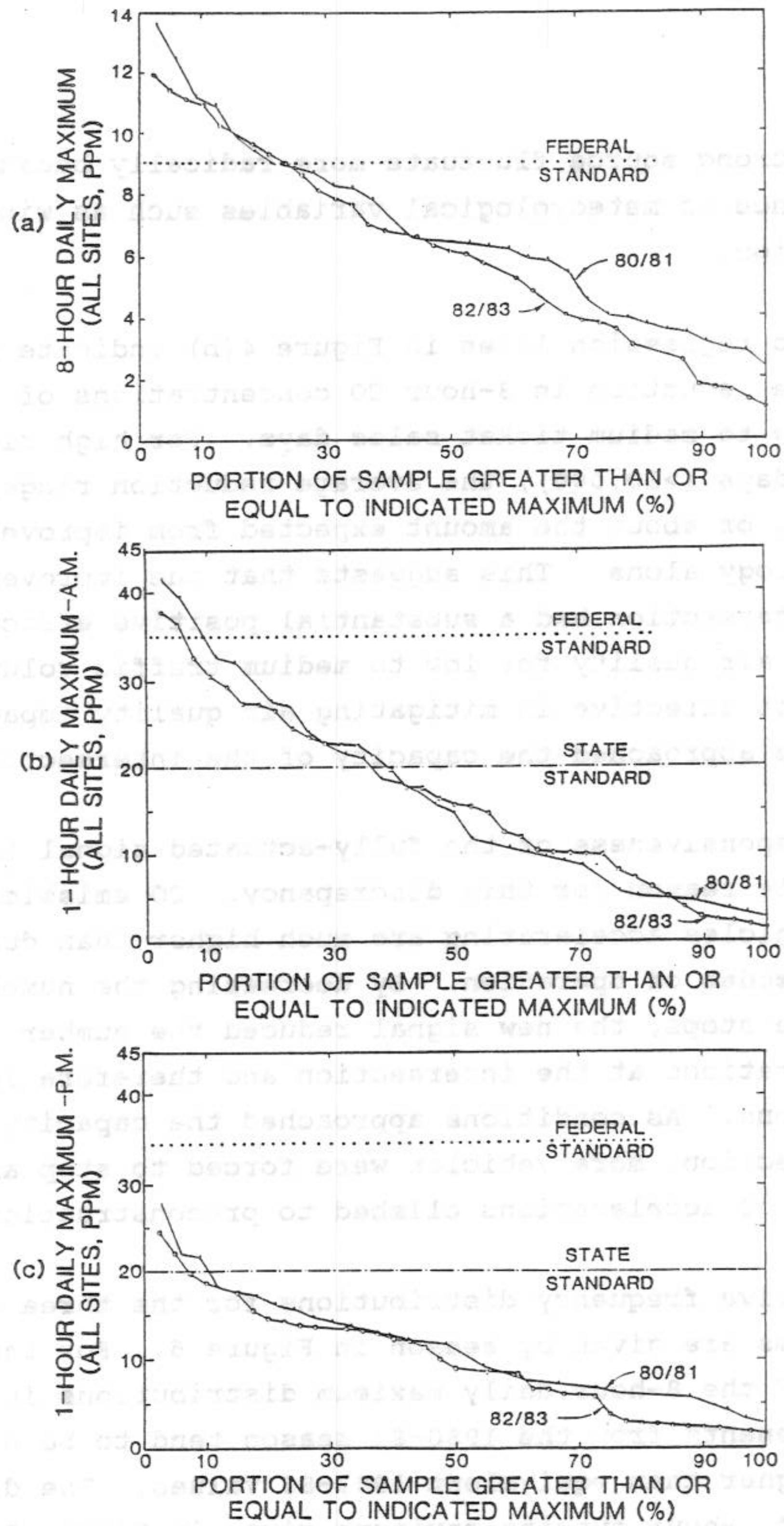


Figure 5. Cumulative frequency distributions of daily CO maximums for the 1980-81 and 1982-83 seasons:

(a) 8-hour (b) 1-hour a.m. (c) 1-hour p.m.

the upper 25%. Considering the far greater number of days sampled with high ticket sales during the 1982-83 season, these results indicate that the Route 203 project helped improve overall air quality in the vicinity of the corridor. However, the graphs also show that the maximum concentrations recorded still violated state and federal standards, though not by as great a margin.

Plots of the seasonal maximums (i.e. the highest daily maximums recorded during the season) stratified by ticket sales are given in Figure 6. For both the morning and evening 1-hour maximums, measurements made during the 1982-83 season were lower for five out of six ticket sales categories. For 8-hour maximums, four of the six categories showed improvement. On average, however, the improvements were no greater than the 18% reduction expected from newer vehicle emission controls.

In Figure 7, the range of concentrations for each daily maximum are plotted by site for days with ticket sales exceeding 10,000. Seasonal high measurements for 1-hour concentrations made during 1982-83 at the four intersection sites are lower than their respective 1980-81 values. Again, however, the average reductions are no better than the 18% expected for the 1982-83 vehicle fleet. Results for the 8-hour daily maximums in Figure 7(a) show improvements at Sites A and A1, but not at Sites A2 and B. Ambient concentrations measured at Site C show little or no improvement between the seasons.

The lack of significant reductions for ambient results and only moderate improvements for 8-hour seasonal maximums suggests that contributions from other pollutant sources may have masked reductions in vehicle emissions. CO

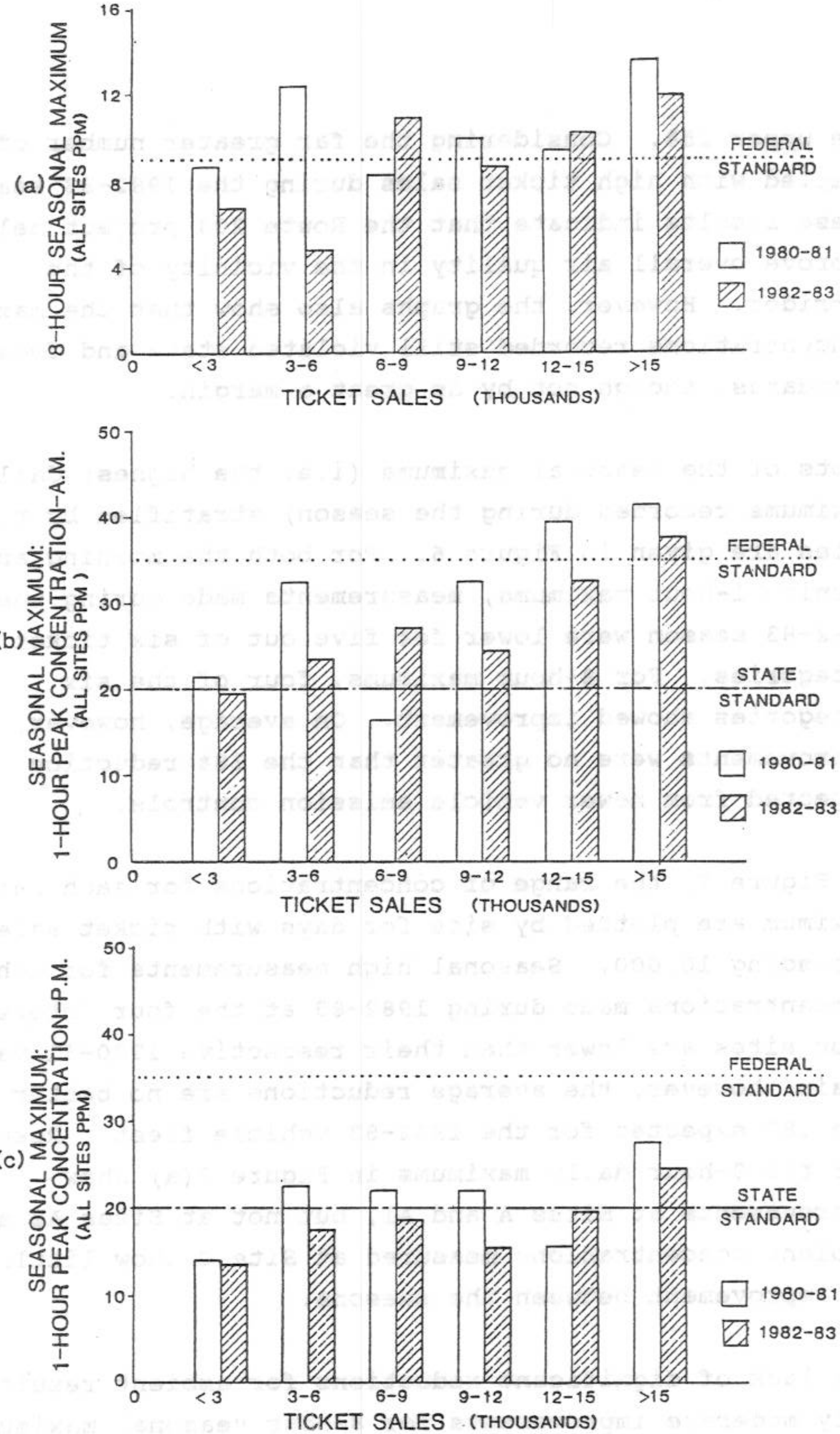


Figure 6. Seasonal maximum CO Concentrations taken from all sites and distributed by ticket sales category for:

(a) 8-Hour (b) 1-hour a.m. (c) 1-Hour p.m.

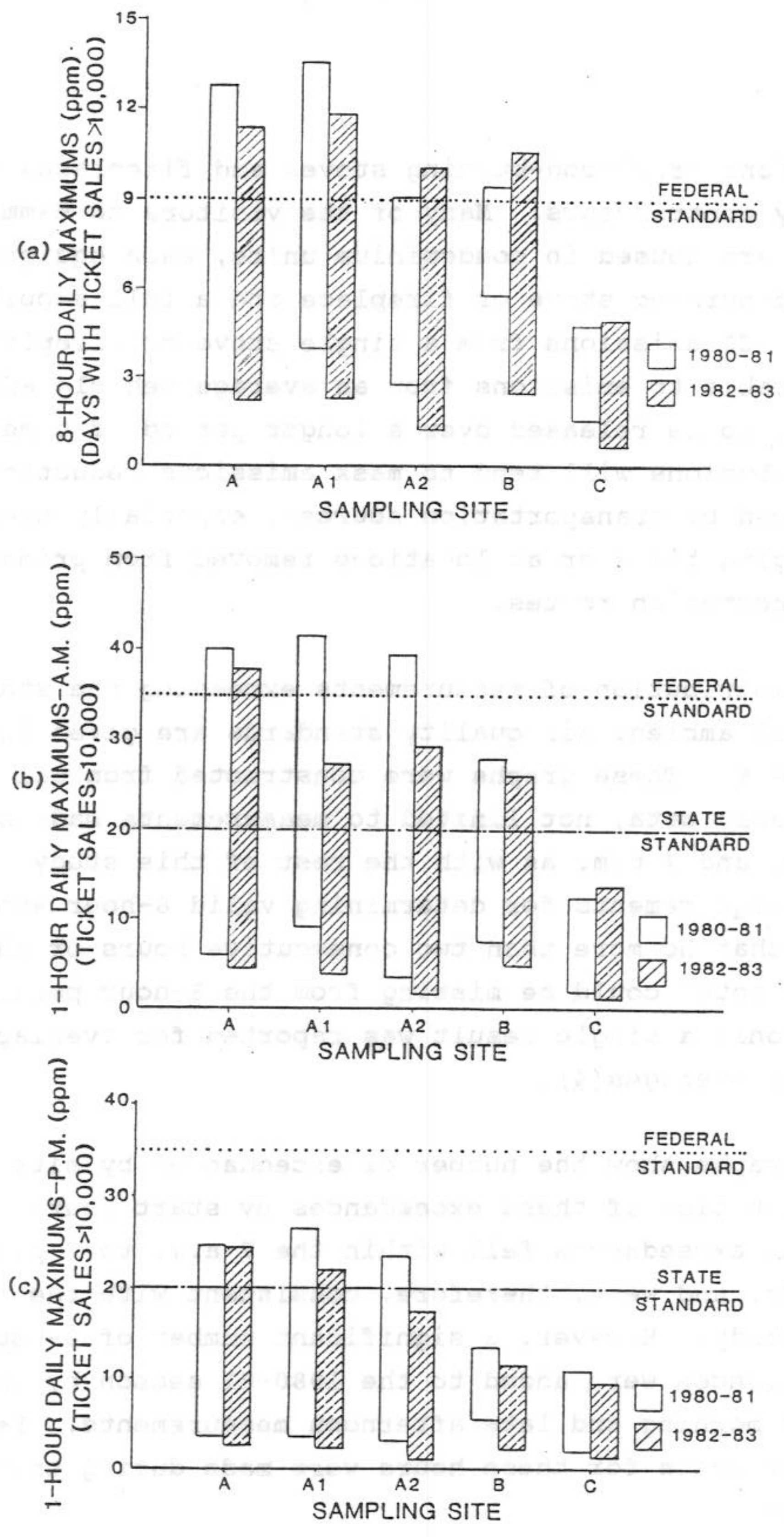


Figure 7. Range of daily maximum CO concentrations distributed by sampling site for:

(a) 8-Hour (b) 1-hour a.m. (c) 1-Hour p.m.

emissions from wood-burning stoves and fireplaces are the likely contributors. Many of the visitors to Mammoth Lakes are housed in condominium units, each equipped with a wood-burning stove or fireplace and a full supply of wood. CO emissions from a single stove or fireplace are comparable to emissions from an average vehicle and are likely to be released over a longer period of time. These contributions will tend to mask emissions reductions achieved by transportation sources, especially over longer averaging times or at locations removed from primary transportation routes.

The distribution of measurements exceeding the state and federal ambient air quality standards are given in Figure 8. These graphs were constructed from all available data, not limited to measurements made between 7 a.m. and 7 p.m. as with the rest of this study. The only requirements for determining valid 8-hour averages were that no more than two consecutive hours or three hours total could be missing from the 8-hour period, and that only a single result was reported for overlapping 8-hour averages(4).

The graphs show the number of exceedances by site and the distribution of these exceedances by start hour. All 1-hour exceedances fell within the 7 a.m. to 7 p.m. time limits, and were, therefore, consistent with the rest of the study. However, a significant number of 8-hour exceedances were added to the 1980-81 season by including early morning and late afternoon measurements. Few measurements for these hours were made during the 1982-83 season.

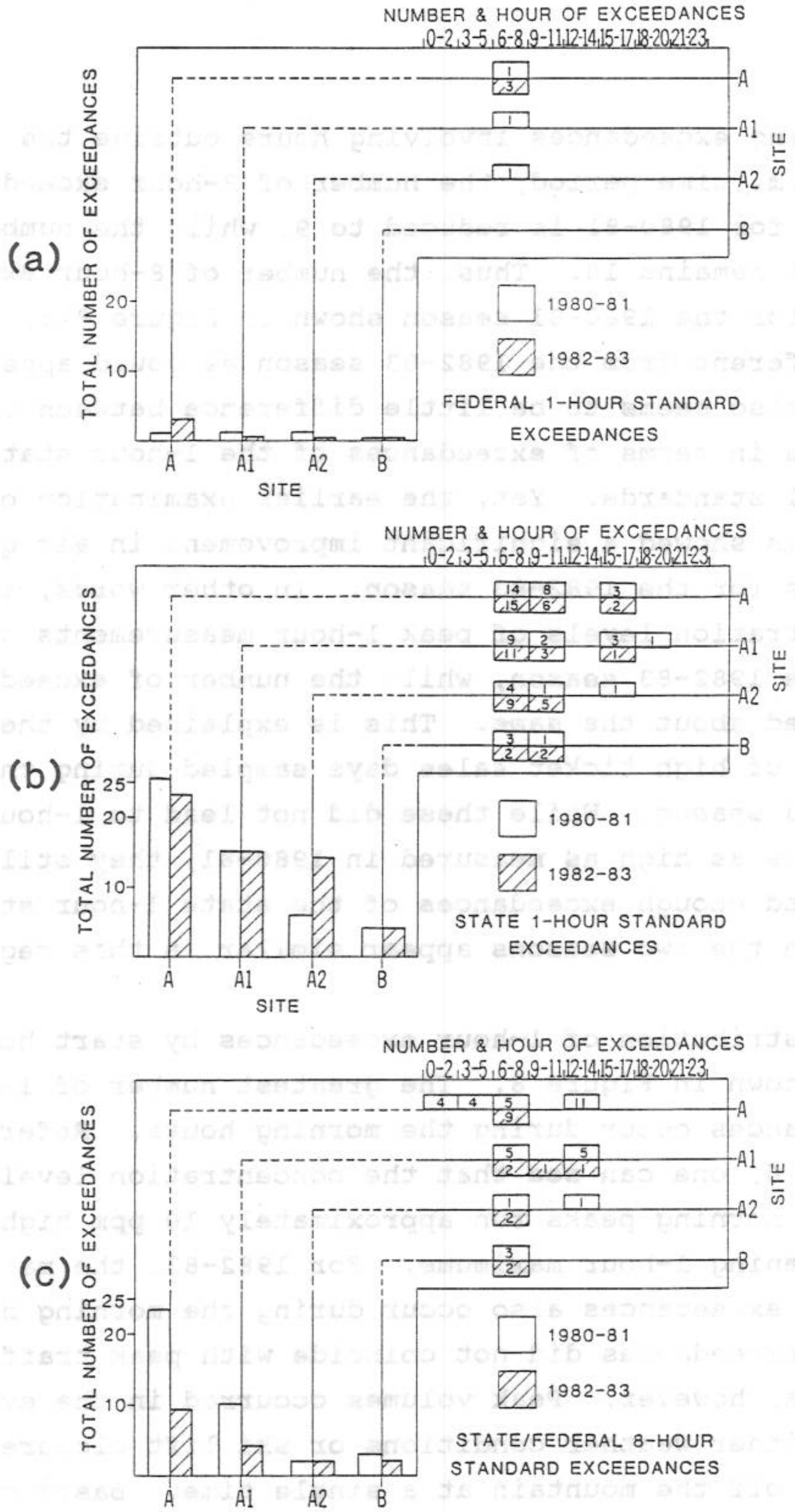


Figure 8. Number of exceedances of the CO standards distributed by sampling site and start hour

(a) Federal 1-hour (b) State 1-hour (c) State/Federal 8-hour

Excluding exceedances involving hours outside the 7 a.m. to 7 p.m. time period, the number of 8-hour exceedances at Site A for 1980-81 is reduced to 9, while the number at Site A1 remains 10. Thus, the number of 8-hour exceedances for the 1980-81 season shown in Figure 8(c) is not as different from the 1982-83 season as would appear. There also seems to be little difference between the seasons in terms of exceedances of the 1-hour state and federal standards. Yet, the earlier examination of 1-hour maximums showed a significant improvement in air quality impacts for the 1982-83 season. In other words, the concentration levels of peak 1-hour measurements decreased for the 1982-83 season, while the number of exceedances remained about the same. This is explained by the greater number of high ticket sales days sampled during the 1982-83 season. While these did not lead to 1-hour averages as high as measured in 1980-81, they still provided enough exceedances of the state 1-hour standard to make the two seasons appear similar in this regard.

The distribution of 1-hour exceedances by start hour are also shown in Figure 8. The greatest number of 1-hour exceedances occur during the morning hours. Referring to Figure 6, one can see that the concentration levels of the 1-hour morning peaks run approximately 10 ppm higher than the evening 1-hour maximums. For 1982-83, the majority of 8-hour exceedances also occur during the morning hours. These exceedances did not coincide with peak traffic volumes, however. Peak volumes occurred in the evening when either weather conditions or ski lift closure forced skiers off the mountain at a single time. Based on traffic counts made on the highest ticket sales days, evening 1-hour peak volumes were 35 to 55% higher than morning peaks.

There are several possible reasons why the highest CO concentrations did not coincide with the peak evening traffic volumes. Colder morning temperatures cause considerably higher emissions for vehicles in the cold-start phase (i.e. first 505 seconds). The proximity of many of the lodges and condominiums to the intersection meant that a large percentage of the morning ski traffic was in the cold-start phase. Fewer cold-start vehicles were expected in the evening because of the estimated 10 minute travel time between the main ski lift facility and the intersection. A second significant contributing factor was the average 4% grade of Route 203 near the intersection. Accelerations to 25 mph on a 4% grade can result in a fivefold increase in average vehicle emissions(2). In the morning, vehicles climbed this grade, often slowing down or stopping at the intersection. In the evening, the dominant downhill flow of traffic needed less effort to accelerate through the intersection and emissions decreased accordingly.

These findings indicate that further mitigation measures aimed at eliminating exceedances in the Route 203 corridor must be designed around reductions in morning emissions. This can be accomplished by providing additional incentives for transit ridership or reducing the number of ski lift tickets that can be sold at the areas served by the Route 203 corridor.

5.3 Effectiveness of the Transportation Control Plan (TCP)

By the 1982-83 ski season, construction of the bus stop shelters and staggering of ski lift closing times were the only elements of the TCP implemented. It was hoped that the shelters would help increase ridership on the existing bus line and thereby reduce the traffic volume on Route 203. District 9 personnel observed that the shelters were useful for indicating the location of bus stops otherwise obscured by roadside snowbanks. However, they also noted that patrons rarely used the shelters, preferring to wait outside. According to the owner of the bus line, weather was the only factor that had a significant influence on ridership. On days when chain controls were posted, ridership increased dramatically.

Daily passenger counts made by the bus operator for the 1981-82 and 1982-83 seasons were examined for evidence of increases in ridership. Since the shelters were not constructed until the summer of 1982, counts from the 1981-82 season were considered representative of pre-construction conditions. The daily passenger counts averaged about 7.5% of the ski lift ticket sales for both seasons. No evidence was found to indicate an increase in ridership.

A comparison of traffic volumes handled by the intersection on the peak ski lift ticket sales days for the 1980-81 and 1982-83 seasons was made to see whether fewer skiers were driving their own cars to the main ski lift facility. Ticket sales for the peak day in 1982-83 were only 6% higher than the 1980-81 peak, but the intersection carried approximately 20% more traffic during the 12-hour period from 7 a.m. to 7 p.m. If the shelters had a positive impact on bus ridership, that impact was apparently overshadowed by increases in private vehicle use motivated by the reduced traffic congestion.

The staggered closing of the ski lifts seemed to have no effect on evening peak-hour traffic volumes. Counts for the peak-hour of 4 to 5 p.m. were up 33% from 1980-81 levels on peak ski days. The added capacity of the route may have masked the positive effects of this operational improvement by accommodating residual demand not measured in the constrained 1980-81 peak volumes.

Since the 1982-83 ski season, several more elements of the TCP have been implemented. Caltrans has constructed a bus terminal at the main ski lift facility, descriptions of transit service have been incorporated into promotional literature, and bus fares have been reduced by 50%.

Implementation of other major elements have been delayed, however:

* Expansion of the local road system has not taken place. Mammoth Lakes has incorporated since adoption of the TCP so that the county no longer has responsibility for implementation of this element. Further delay is expected as a result of a law suit and shortage of funds.

* Additional parking restrictions along Route 203 have not been made. These restrictions were meant to maximize use of developing transit facilities. Future transit development is uncertain at this time, however, since the previous bus operator is no longer in business. For the interim, the ski operator is providing scheduled service. An integrated transit plan has just been completed and is likely to be implemented as growth continues in the area.

* No ski runs have been lighted for nighttime use. It was hoped that this measure would help relieve peak evening traffic congestion.

* Additional development of ski facilities along Route 203 has not yet taken place. This includes construction of a ski-back trail, tram and warming hut. Each of these access/egress points to the lift system were to be serviced by transit only.

Even though many elements of the TCP have not implemented, CO concentrations at Mammoth Lakes have stabilized at an acceptable level. Measurements by the local air pollution control district show no further violations of state or federal CO standards after 1982. Though not considered in the original TCP, a decision by the U. S. Forest Service and the ski operator to redirect expansion outside of the Route 203 corridor is probably responsible for this success. This was made possible by a fortuitous land purchase and cooperative trade arrangement between the Forest Service and a private sector concern. By assuming responsibility for transit operations, the ski operator has also been able to fully integrate bus and ski lift schedules. He has incorporated transit and walk-in access wherever facilities have been expanded, and has not created additional parking.

6. MODEL VERIFICATION

6.1 Description of Field Studies

A series of tracer gas release experiments was conducted by TransLab during the winter of 1983-84 along a 1.6 kilometer section of State Route 203 and Lake Mary Road (Figure 9). The nearby terrain is mountainous with the slope generally sloping downhill from the west. The surrounding area is characterized by strip commercial development along Route 203 and Lake Mary Road with residential property behind. The structures are built in mature conifer forest. Snow banks ranging from 1 to 6 meters in height were immediately adjacent to the tracer release route during the course of this study.

From the east boundary of the tracer release to the Lake Mary Road intersection, Route 203 has two lanes in each direction with a two-way left turn lane between. From the Lake Mary Road intersection to the north and west boundaries, there is one lane in each direction with no median. Average daily traffic in the study area is 15,700 vehicles with a peak hourly volume on Route 203 of 3,100 vehicles(6).

Sulfur hexafluoride (SF_6), was used as the tracer gas. It is a highly inert gas, detectable at extremely low concentrations. SF_6 does not occur naturally and its presence in ambient air samples is negligible(7).

The SF_6 was released from two specially equipped 1970 Matador sedans. Each sedan had an on/off flow control switch mounted on the dashboard and a strip chart recorder to monitor the flow status. The gas was contained in a cylinder housed in the trunk of the sedan, and was metered

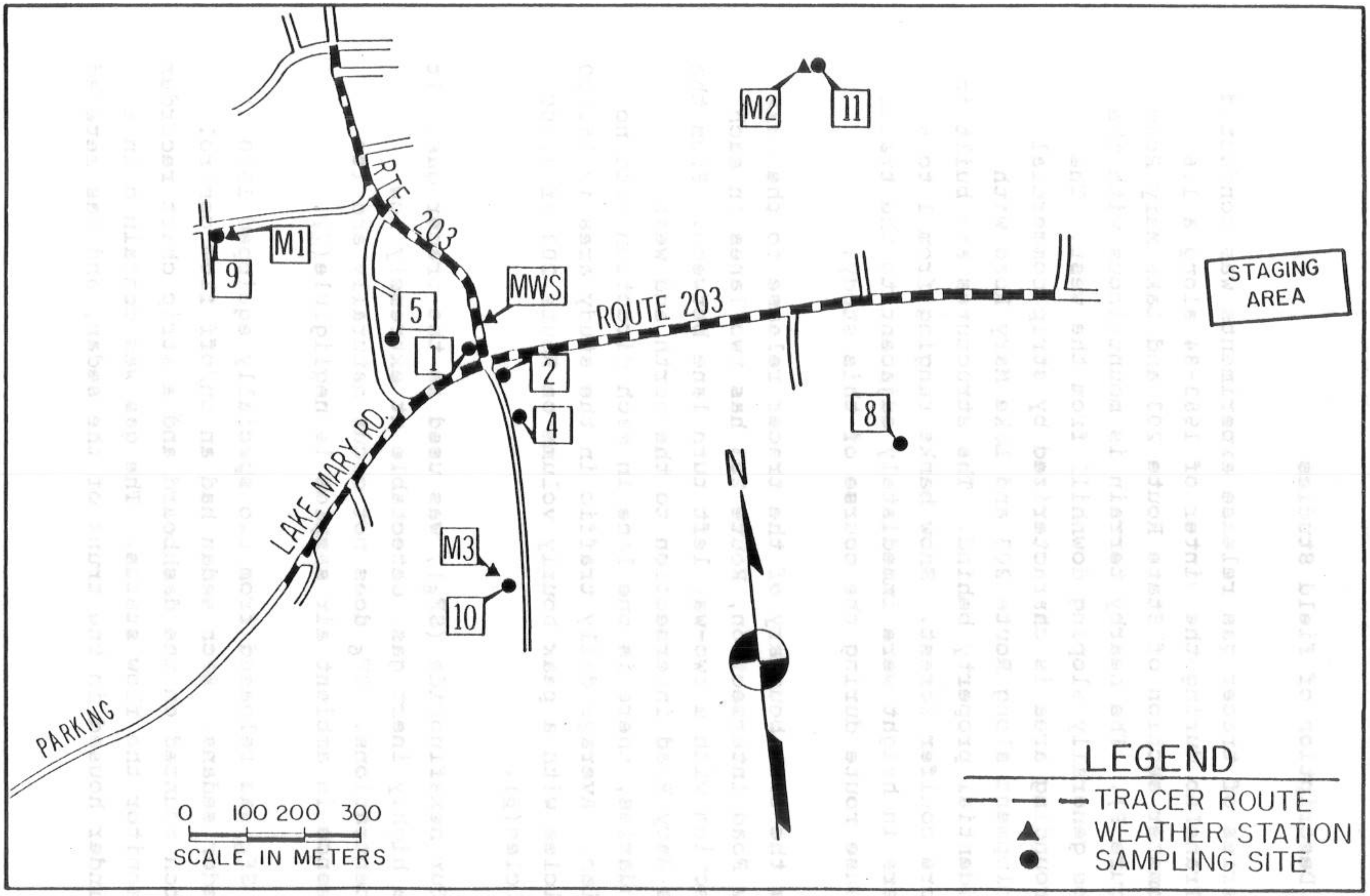


Fig. 9. Tracer Study Sampling Site Location Map

out by a preset Condyne precision needle valve. It was carried by copper tubing through the trunk floor and to the tailpipe where it was heated by looping the tubing around the tailpipe several times. The SF_6 was then released into the exhaust stream.

The tracer gas flow rates were checked before and after each test with a bubblemeter. These flow rates were corrected to standard temperature and pressure. The nominal flow rate was 0.5 liter per minute. The measured flow rates typically varied no more than 20% from the nominal value over the course of a test.

The tests were 2-1/2 hours in duration, with samples being taken only during the last 2 hours. The 1/2-hour delay was made to avoid sampling during the transient build-up phase of the release.

The tracer release vehicles were driven on a three-kilometer loop beginning at a staging area on Route 203 just beyond the east boundary of the tracer release. The vehicles proceeded west along Route 203 to the Lake Mary Road intersection then north (still on Route 203) to a turn-around point at Forest Trail and then south to the Lake Mary Road intersection. From the intersection the tracer vehicles proceeded west on Lake Mary Road to Lakeview Road, then back east through the intersection to the staging area. The vehicles released SF_6 along the test part of the course indicated in Figure 9. The SF_6 flow was turned off at each turn-around point as the vehicles left the test portion of the course.

Each vehicle was allowed 8 minutes to complete the course. The distribution of the vehicles was controlled at the staging area by spacing departures at 4 minute intervals.

One of the vehicles was driven in the outside lane and the other in the inside lane. The drivers were instructed to try to maintain a speed between 30 and 35 miles per hour. This resulted in a total running time through the course of about 7 to 7-1/2 minutes. Total time of SF_6 release was recorded on strip charts in each vehicle. Event markers recorded the distribution of emissions along the course.

Sampling sites were selected to represent three zones surrounding the Route 203-Lake Mary Road intersection (Figure 9):

1. Two sites were selected at the intersection (Zone I); Site 1 in the northwest quadrant representing upslope wind conditions and Site 2 in the southeast quadrant to intercept downslope flows. A third sampler was used to collect a replicate sample at either Site 1 or Site 2 depending on wind direction at the time of the test. Site 1 was located 13 meters west and 25 meters north of the center of the intersection. Site 2 was 32 meters east and 20 meters south.

2. Two sites were selected at a medium distance from the release route (Zone II). Site 4 located 40 meters east and 50 meters south and Site 5 located 135 meters west and 23 meters north of the intersection. Replicate samples were collected at either Site 4 or 5 depending on wind direction at the time of the test.

3. The most distant circle of influence (Zone III) was characterized with four sampling sites. Site 8, located 538 meters east and 83 meters south; Site 9, located 342 meters west and 147 meters north; Site 10, located 41 meters east and 275 meters south; and Site 11 located 395 meters east and 414 meters north of the intersection.

Site 12, located 610 meters west and 948 meters south of the intersection, was selected to represent background air quality. Site 12 is not shown in Figure 9 but was located close to site C in Figure 2.

All samples were taken at a height of 1 meter above the ground. The samples were collected in tedlar bags using EMI AQS III samplers equipped with positive displacement pulse pumps. The samples represented 30 minute integrated concentrations. They were analyzed on a Perkin-Elmer Sigma 2 gas chromatograph with electron capture detector. This instrument was calibrated using a Dasibi Model 1005 CE-2 flow dilution system and a National Bureau of Standards traceable cylinder of 5 ppm SF_6.

A 12 meter high meteorological tower was located approximately 1.6 kilometers east of the test course in an open area near the Mammoth Village water treatment plant. It was equipped with a horizontal wind vane, 2 low-threshold (0.3 m/s) cup anemometers and a pair of self-aspirated temperature sensors. Information from this tower was used to estimate atmospheric stability (stability class) using Golder's Method(8).

A mechanical weather station was located in the northeast quadrant of the Route 203-Lake Mary Road intersection at a height of 10 meters. Measurements were used as inputs to the CALINE4 model for wind direction (W/D) and directional variability (measured as the standard deviation of the wind direction, W/D SD).

Mechanical weather stations were also set up at Sites 9, 10 and 11, at a height of 1.5 meters to characterize surface winds during the tracer releases. These were designated M1 at Site 9, M2 at Site 11 and M3 at Site 10 (Figure 9). The wind speed used by the model was the average of the measurements taken at these three locations.

A total of 13 tracer release tests were made, with test times spread throughout the day between the hours of 5 a.m. and 8 p.m.

6.2 Methodology

Model verification using the tracer test results was undertaken to test the validity of CALINE4 in complex terrain. CALINE4 was chosen for evaluation because it will soon replace CALINE3 as the official line source air quality model used by CALTRANS(2). CALINE4 better describes the dispersion process near roadways and is more adaptable to special modeling situations than CALINE3.

CALINE4 predictions are better partly because the new model simulates horizontal dispersion based on direct measurements of wind directional variability. The new model also adjusts for increased thermal mixing over the roadway caused by vehicular waste heat. Such changes broaden the applicability of CALINE4. It was hoped that they would also lead to better performance by the model in complex terrain.

Verifying CALINE4 required pairing measured SF_6 concentrations with model predictions for equivalent meteorological conditions. A statistical method developed through the National Cooperative Highway Research Program was used for evaluating CALINE4 performance(9). The method involves computing an overall figure of merit (FOM) based on six separate statistics. These statistics are defined below:

S_1 - The ratio of the highest 5% of the measured concentrations to the highest 5% of the predicted concentrations;

S_2 - The difference between the predicted and measured proportion of exceedances of a concentration threshold or air quality standard;

S_3 - Pearson's correlation coefficient for paired measured and predicted concentrations;

S_4 - The temporal component of Pearson's correlation coefficient for paired concentrations;

S_5 - The spatial component of Pearsons's correlation coefficient for paired concentrations; and

S_6 - The root-mean-square of the difference between paired measured and predicted concentrations.

Statistic S_1 measures the model's ability to predict high concentrations. Statistic S_2 measures how well the model predicts the frequency of exceeding an air quality standard or threshold. Statistics S_3, S_4, and S_5 correlate the model's response to changing conditions with real-world response. Statistic S_4 considers changes over time (e.g., wind speed, atmospheric stability) while S_5 is associated with changes over space (e.g., source-receptor distance, topography). Statistic S_3 represents a combined measure of both factors. Statistic S_6 measures the overall error between the measured and predicted concentrations. This error term represents the combined effect of misassumptions, input variable errors and measurement errors.

Evaluating model performance with these six statistics requires converting them into individual figures of merit (F_1,F_2,F_3,etc.) based on a common scale from 0 to 10. An overall figure of merit (FOM) is computed by weighting and summing the individual values as follows:

$$FOM = [(F_1+F_2)/2 + (F_3+F_4+F_5)/3 + F_6]/3 .$$

The FOM is a relative measure of model accuracy and reliability. No standard value has been established to differentiate between "good" and "bad" model performance. The FOM is used as a relative measure of model accuracy and reliability. This report uses FOM to compare CALINE4 model performance in complex terrain with performance in flat terrain from previous studies.

Two graphical verification methods are also used to evaluate the model's performance. The first method is a scatterplot showing predicted versus measured concentrations. The second is a plot of relative error, E_r, by zone and by concentration. E_r is based on predicted (P) and measured (M) concentrations as follows:

$$E_r = [(P-M)/(P+M)] * 100\%.$$

E_r is a symmetric form of the residual error P-M normalized to 100%. It provides a convenient way to graph widely differing residual errors on a single scale(9).

6.3 Data Selection

Downslope and upslope wind regimes were selected as desirable conditions for testing because they are quasi-homogeneous, steady-state and potentially "worst case" conditions in complex terrain. Downslope drainage flows typically occur during evening and early morning hours. Upslope winds coincide with surface heating by the sun during the midmorning and afternoon hours. These flow regimes satisfied CALINE4's Gaussian assumptions of homogeneous, steady-state flow. However, accurately predicting the occurrence of stable, upslope and downslope flows was not always possible. Quick changes in atmospheric conditions occurred during many of the tracer releases. Some tests proceeded in less-than-ideal conditions because the rapidity of weather changes meant that conditions could (and sometimes did) turn favorable during the tracer release.

Examination of wind data from the various meteorological sites showed that unsteady and nonhomogeneous wind patterns were common despite precautions to avoid such conditions. Ground-level wind patterns correlated poorly with those at the 10 meter meteorological tower located at the intersection. Higher wind speeds were frequently measured at the intersection at times when ground-level winds were near calm. Wind direction often differed by more than 90 degrees between sites. In addition, several tests were unusable because snow, rain or high winds developed during the 2-1/2 hour tracer release. These problems left only a few of the tests useful as a verification data base.

Ultimately, four tests were chosen as a data base for model verification. Two of the tests were conducted during downslope wind conditions, and two during upslope conditions. These tests were selected because of their low wind speeds (usually below 2 m/s) and lack of major discontinuities in wind direction over the 2-1/2 hour release period. SF_6 concentrations for the tests omitted from the analysis were usually low because of prevailing high winds or unsteady wind direction. Data summaries for the four tests are shown in Tables 2 - 6. The link coordinates and SF_6 emission rates used as model inputs are given in Appendix B.

Results from the four sampling periods for each test were examined for anomalous values. SF_6 concentrations near the intersection for the first sampling period of Test 1 were abnormally high. Levels of 43 ppb at Site 2 and 20 ppb at Sites 1 and 4 were ten times higher than any other measurements made during the study. A review of 10-minute integrated samples revealed a significant drop in concentrations at these sites during the first hour of Test 1 (Figure 10). The change was most dramatic during the 6-6:30 a.m. sampling period. Records were checked to see whether an accidental release of SF_6 might have occurred during the initial flow calibration procedure or the preliminary release period. No indications of an accidental release were found. Strip charts from the ground-level weather stations were examined for stagnant conditions sometimes associated with drainage winds in forested terrain (10,11,12). This may have caused the heavier-than-air tracer to create a "puddle" of SF_6 near the intersection. While wind speeds were very low near

TABLE 2

TRACER TEST RESULTS
TEST 1
JANUARY 12, 1984

TIME	SITE	ZONE	SF_6 - PPB MEASURED	PREDICTED
6:00-6:30 am	1	I	20.442	3.046
	2	I	43.055	7.819
	4	II	19.875	5.361
	5	II	0.031	0.000
	8	III	4.200	0.532
	9	III	0.016	0.000
	10	III	4.208	0.497
	11	III	0.097	0.000
	12	III	0.010	0.000
6:30-7:00 am	1	I	5.452	3.423
	2	I	6.905	8.850
	4	II	4.825	6.016
	5	II	0.020	0.000
	8	III	10.177	0.709
	9	III	0.008	0.000
	10	III	4.433	0.420
	11	III	0.078	0.000
	12	III	0.012	0.000
7:00-7:30 am	1	I	3.517	3.331
	2	I	3.140	8.757
	4	II	2.890	6.093
	5	II	0.026	0.000
	8	III	4.841	0.612
	9	III	0.014	0.000
	10	III	0.692	0.596
	11	III	0.030	0.000
	12	III	0.008	0.000
7:30-8:00 am	1	I	2.144	3.345
	2	I	3.765	8.833
	4	II	3.325	6.099
	5	II	0.006	0.000
	8	III	1.747	0.640
	9	III	0.013	0.000
	10	III	0.211	0.564
	11	III	0.047	0.000
	12	III	0.007	0.000

TABLE 3

TRACER TEST RESULTS
TEST 2
JANUARY 12, 1984

TIME	SITE	ZONE	SF_6 - PPB MEASURED	SF_6 - PPB PREDICTED
12:00-12:30 pm	1	I	2.287	1.149
	2	I	0.140	0.026
	4	II	0.159	0.012
	5	II	0.260	0.048
	8	III	0.037	0.000
	9	III	0.005	0.000
	10	III	0.035	0.000
	11	III	0.060	0.095
	12	III	0.000	0.000
12:30-1:00 pm	1	I	0.608	1.150
	2	I	0.068	0.042
	4	II	0.198	0.022
	5	II	0.277	0.066
	8	III	0.077	0.000
	9	III	0.006	0.000
	10	III	0.030	0.000
	11	III	0.075	0.098
	12	III	0.006	0.000
1:00-1:30 pm	1	I	0.576	0.474
	2	I	0.155	0.245
	4	II	0.082	0.108
	5	II	0.174	0.000
	8	III	0.039	0.004
	9	III	0.005	0.000
	10	III	0.013	0.001
	11	III	0.079	0.086
	12	III	0.007	0.000
1:30-2:00 pm	1	I	0.522	1.089
	2	I	0.056	0.034
	4	II	0.055	0.016
	5	II	0.153	0.061
	8	III	0.024	0.000
	9	III	0.000	0.000
	10	III	0.010	0.000
	11	III	0.070	0.104
	12	III	0.015	0.000

TABLE 4

TRACER TEST RESULTS
TEST 3
FEBRUARY 7, 1984

TIME	SITE	ZONE	SF_6 - PPB MEASURED	PREDICTED
10:00-10:30 am	1	I	2.539	4.014
	2	I	0.485	0.012
	4	II	0.085	0.000
	5	II	0.327	0.668
	8	III	0.023	0.000
	9	III	0.078	0.278
	10	III	0.005	0.000
	11	III	0.015	0.037
	12	III	0.006	0.000
10:30-11:00 am	1	I	2.252	3.819
	2	I	0.139	0.308
	4	II	0.036	0.105
	5	II	0.183	0.855
	8	III	0.006	0.000
	9	III	0.050	0.269
	10	III	0.007	0.001
	11	III	0.008	0.000
	12	III	0.000	0.000
11:00-11:30 am	1	I	2.347	3.240
	2	I	0.090	0.000
	4	II	0.018	0.000
	5	II	0.122	0.399
	8	III	0.005	0.000
	9	III	0.025	0.111
	10	III	0.007	0.000
	11	III	0.011	0.066
	12	III	0.006	0.000
11:30-12:00 am	1	I	2.128	3.067
	2	I	0.158	0.000
	4	II	0.007	0.000
	5	II	0.139	0.524
	8	III	0.004	0.000
	9	III	0.016	0.218
	10	III	0.003	0.000
	11	III	0.011	0.026
	12	III	0.005	0.000

TABLE 5

TRACER TEST RESULTS
TEST 4
MARCH 22, 1984

TIME	SITE	ZONE	SF_6 - PPB MEASURED	PREDICTED
6:00-6:30 pm	1	I	1.232	0.809
	2	I	1.830	3.236
	4	II	0.627	1.785
	5	II	0.155	0.000
	8	III	0.032	0.315
	9	III	0.020	0.000
	10	III	0.496	0.222
	11	III	0.013	0.000
	12	III	0.025	0.000
6:30-7:00 pm	1	I	1.827	0.366
	2	I	2.405	2.583
	4	II	1.667	1.315
	5	II	0.091	0.000
	8	III	0.000	0.321
	9	III	0.024	0.000
	10	III	0.714	0.210
	11	III	0.029	0.000
	12	III	0.004	0.000
7:00-7:30 pm	1	I	2.936	0.115
	2	I	1.051	2.234
	4	II	1.023	1.586
	5	II	0.044	0.000
	8	III	0.379	1.311
	9	III	0.009	0.000
	10	III	0.273	0.447
	11	III	0.006	0.000
	12	III	0.042	0.000
7:30-8:00 pm	1	I	0.000	0.109
	2	I	1.833	1.988
	4	II	1.325	1.302
	5	II	0.034	0.000
	8	III	0.535	0.693
	9	III	0.008	0.000
	10	III	0.120	0.378
	11	III	0.025	0.000
	12	III	0.041	0.000

TABLE 6

METEOROLOGICAL DATA
TEST 1
JANUARY 12, 1984

TIME	SITE	W/S (M/S)	W/D (DEG)	W/D SD (DEG)	TEMP (C)	STAB. CLASS
6:00-6:30 am	MWS-INT.	1.1	330	5.0	-5.9	F
	M1	0.8	225	17.5	-5.9	F
	M2	0.4	240	0.0	-5.9	F
	M3	0.2	255	5.0	-5.9	F
6:30-7:00 am	MWS-INT.	1.1	330	5.0	-5.9	F
	M1	0.6	240	17.5	-5.9	F
	M2	0.3	240	0.0	-5.9	F
	M3	0.2	255	5.0	-5.9	F
7:00-7:30 am	MWS-INT.	1.8	330	5.0	-5.6	F
	M1	0.7	225	47.5	-5.6	F
	M2	0.3	240	0.0	-5.6	F
	M3	0.2	270	10.0	-5.6	F
7:30-8:00 am	MWS-INT.	1.3	330	5.0	-5.6	F
	M1	0.6	225	15.0	-5.6	F
	M2	0.4	240	0.0	-5.6	F
	M3	0.2	270	5.0	-5.6	F

TEST 2
JANUARY 12, 1984

TIME	SITE	W/S (M/S)	W/D (DEG)	W/D SD (DEG)	TEMP (C)	STAB. CLASS
12:00-12:30 pm	MWS-INT.	2.7	210	27.5	-0.4	C
	M1	2.2	210	30.0	-0.4	C
	M2	0.9	120	60.0	-0.4	C
	M3	1.3	210	57.5	-0.4	C
12:30-1:00 pm	MWS-INT.	2.2	210	32.5	-0.4	C
	M1	2.2	195	30.0	-0.4	C
	M2	0.9	135	60.0	-0.4	C
	M3	1.3	210	57.5	-0.4	C
1:00-1:30 pm	MWS-INT.	3.6	240	27.5	1.0	C
	M1	2.2	195	40.0	1.0	C
	M2	0.9	120	60.0	1.0	C
	M3	1.3	225	57.5	1.0	C
1:30-2:00 pm	MWS-INT.	3.1	210	28.3	1.0	C
	M1	2.2	195	29.1	1.0	C
	M2	0.9	120	60.0	1.0	C
	M3	1.8	180	45.0	1.0	C

TABLE 6 (cont.)

METEOROLOGICAL DATA
TEST 3
FEBRUARY 7, 1984

TIME	SITE	W/S (M/S)	W/D (DEG)	W/D SD (DEG)	TEMP (C)	STAB. CLASS
10:00-10:30 am	MWS-INT.	0.5	120	40.0	8.9	C
	M1	0.5	90	37.5	8.9	C
	M2	0.9	120	20.0	8.9	C
	M3	0.7	120	40.0	8.9	C
10:30-11:00 am	MWS-INT.	0.5	90	30.0	8.9	C
	M1	0.5	135	57.5	8.9	C
	M2	1.3	105	17.5	8.9	C
	M3	0.7	135	48.3	8.9	C
11:00-11:30 am	MWS-INT.	0.9	135	25.0	9.9	C
	M1	0.5	165	60.0	9.9	C
	M2	1.3	120	20.0	9.9	C
	M3	0.9	150	40.0	9.9	C
11:30-12:00 am	MWS-INT.	1.3	120	30.0	9.9	C
	M1	0.7	165	57.5	9.9	C
	M2	1.3	120	20.0	9.9	C
	M3	0.9	120	60.0	9.9	C

TEST 4
MARCH 22, 1984

TIME	SITE	W/S (M/S)	W/D (DEG)	W/D SD (DEG)	TEMP (C)	STAB. CLASS
6:00-6:30 pm	MWS-INT.	1.2	320	12.5	4.0	E
	M1	1.5	270	5.0	4.0	E
	M2	0.3	190	58.3	4.0	E
	M3	0.5	300	12.5	4.0	E
6:30-7:00 pm	MWS-INT.	1.3	315	12.5	4.0	E
	M1	0.5	285	5.0	4.0	E
	M2	1.1	300	10.0	4.0	E
	M3	0.5	300	15.0	4.0	E
7:00-7:30 pm	MWS-INT.	1.3	300	15.0	1.7	G
	M1	0.5	285	5.0	1.7	G
	M2	1.1	285	5.0	1.7	G
	M3	0.5	270	5.0	1.7	G
7:30-8:00 pm	MWS-INT.	1.5	310	7.5	1.7	G
	M1	1.0	285	5.0	1.7	G
	M2	0.9	300	5.0	1.7	G
	M3	0.5	330	2.5	1.7	G

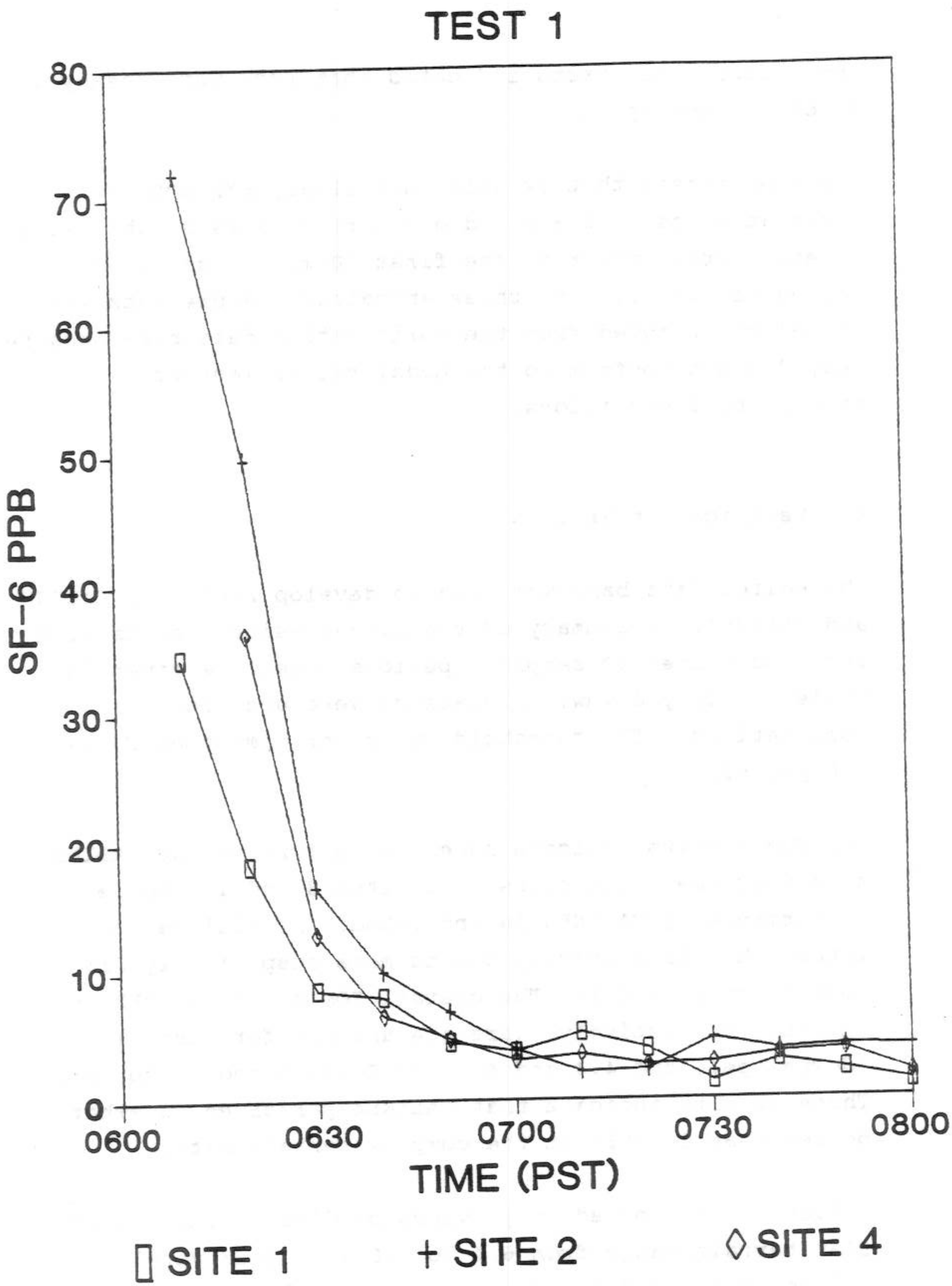


Fig. 10. 10 Minute Integrated Samples

the ground, the charts indicated that they were steady in direction and speed.

For some reason that is still not clear, SF_6 concentrations at Sites 1, 2 and 4 did not reach a reasonable state of equilibrium prior to the first 30-minute sampling period of Test 1. The three anomalous measurements were, therefore, removed from the verification data base because they did not conform to the model requirement of steady-state conditions.

6.4 Verification Results

The edited data base was used to develop FOM's for CALINE3 and CALINE4. A summary of the site-by-site results with zone and number of sampling periods noted are given in Table 7. Only downwind locations were used for computations. The threshold value for computing F_2 was 1.0 ppb SF_6.

The FOM results indicate superior performance by CALINE4 at six of the eight sites. At Sites 8 and 10, better performance by CALINE3 is indicated. As will be seen later, this is primarily due to more suspiciously high results from Test 1. The overall FOM's for CALINE3 and CALINE4, respectively, were 4.4 and 6.0 for Tests 1 and 4 (downslope), and 4.4 and 6.2 for Tests 2 and 3 (upslope). These results indicate that CALINE4 performed somewhat better than CALINE3 at the complex terrain site.

Values for FOM based on previous studies of CALINE4 in flat terrain range from 6.4 to 6.8(2). The overall values of 6.0 and 6.2 for this study fall just below that range. As indicated in Table 7, CALINE4 results for half

Table 7. SUMMARY OF CALINE3 (C3) AND CALINE4 (C4) FIGURES OF MERIT FOR THE MAMMOTH LAKES TRACER STUDY.

SITE NO.	ZONE	NO. OF PERIODS	MODEL	F_1	F_2	F_3	F_6	FOM
1	I	7	C3	1.6	9.0	8.0	0.1	4.5
			C4	6.3	9.3	8.0	4.2	6.7
2	I	8	C3	2.1	10.0	8.6	0.1	4.9
			C4	7.8	10.0	8.3	2.1	6.4
4	II	7	C3	2.0	9.6	8.5	0.1	4.8
			C4	7.9	9.6	8.2	3.1	6.7
5	II	8	C3	1.2	7.5	0.0	0.1	1.5
			C4	3.8	10.0	2.5	0.7	3.4
8	III	8	C3	3.2	8.6	5.2	1.7	4.3
			C4	1.3	8.3	2.9	1.2	2.9
9	III	8	C3	0.9	10.0	7.6	0.0	4.4
			C4	2.8	10.0	9.6	0.1	5.4
10	III	8	C3	8.2	7.9	4.7	1.5	4.8
			C4	1.3	8.2	0.6	1.2	2.2
11	III	8	C3	2.3	10.0	6.9	0.1	4.4
			C4	7.6	10.0	9.5	3.4	7.2

of the sites (1, 2, 4 and 11) meet or exceed model performance in flat terrain. Results from Sites 5, 8 and 10 indicate extremely poor performance. While there is not a clear trend, the average FOM by zone decreases with distance from the intersection.

Scatterplots of CALINE4 predictions versus measured SF_6 concentrations at downwind sites are shown by zone in Figures 11 through 14. CALINE3 results are included in the Zone I plot (Figure 11). A line of perfect agreement and factor-of-two envelope highlight the results. Points falling inside the envelope represent predictions within plus or minus a factor-of-two of the measured concentrations, a frequently used minimum criterion for judging model performance. The number of points (n), intercept (a), slope (b) and correlation coefficient (r) for a linear, least-squares regression are also given.

The number and magnitude of overpredictions by CALINE3 for Zone I sites indicate model performance inferior to CALINE4. Most of the overpredictions occur at wind speeds below the model's nominal limit of 1 m/s. CALINE4 is better able to handle these conditions because of its ability to address wind meander through an improved horizontal dispersion algorithm. Nevertheless, Figures 11 and 12 also indicate an excess of overpredictions by CALINE4. Considering measured values of 0.5 ppb SF_6 and above, all of the CALINE4 results that fall outside of the factor-of-two envelope, approximately 30% of the total, are overpredictions. This is somewhat higher than 13% and 22% reported for similar studies in flat terrain(2). The conservative pattern of overpredictions is similar, however.

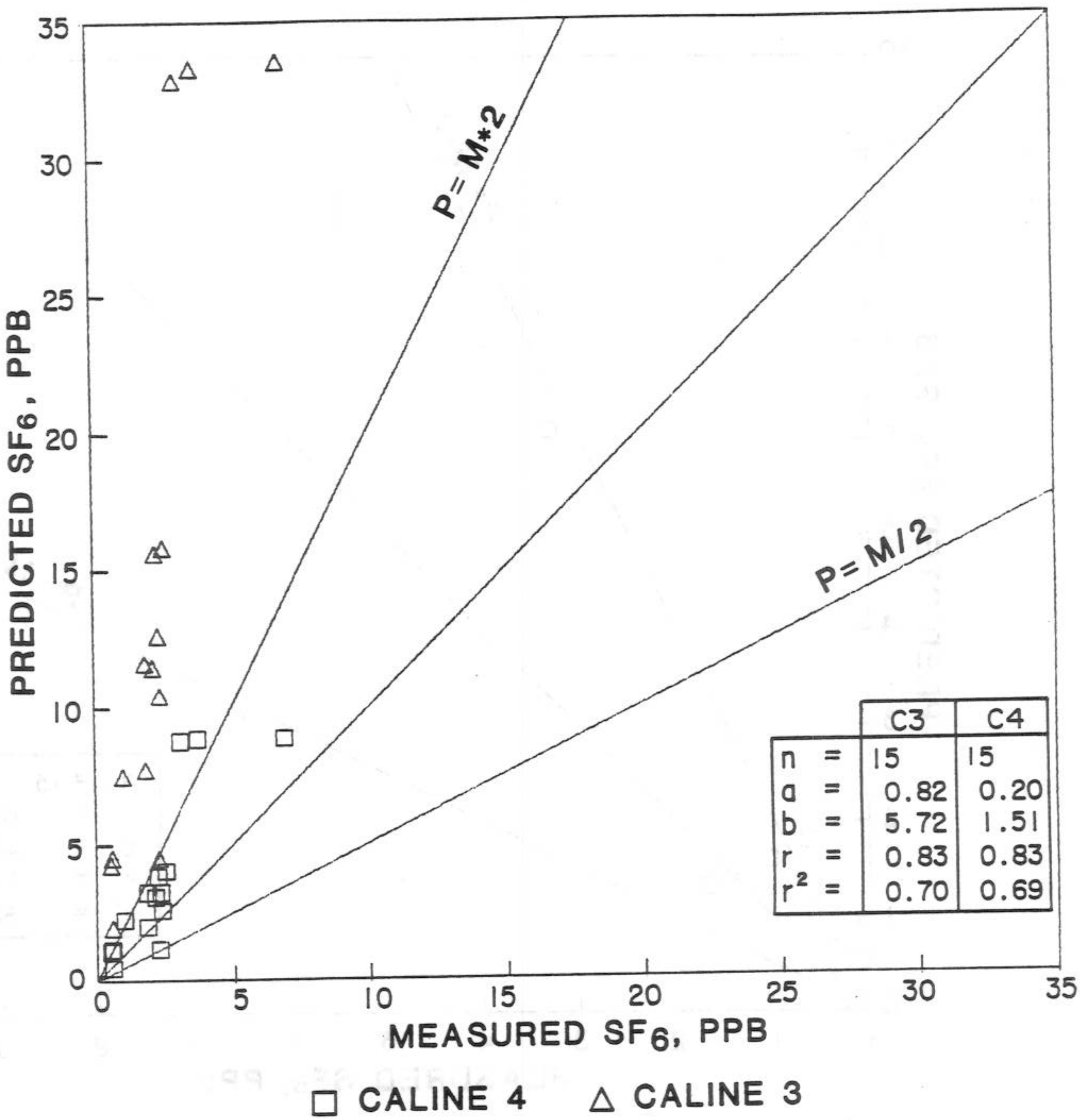


Fig. 11. Zone I Predicted vs Measured SF_6 Levels

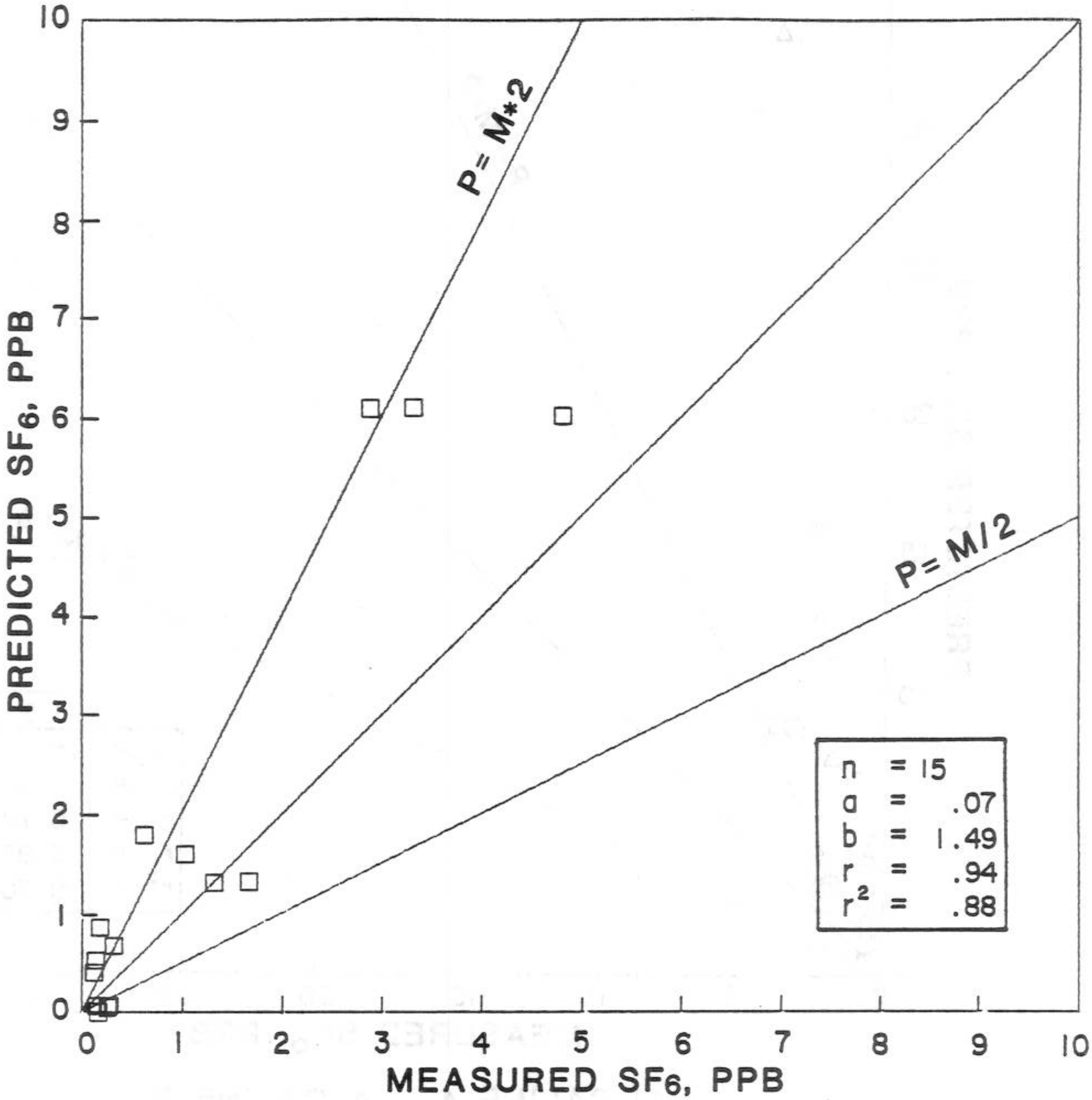


Fig. 12. Zone II Predicted vs Measured SF_6 Levels

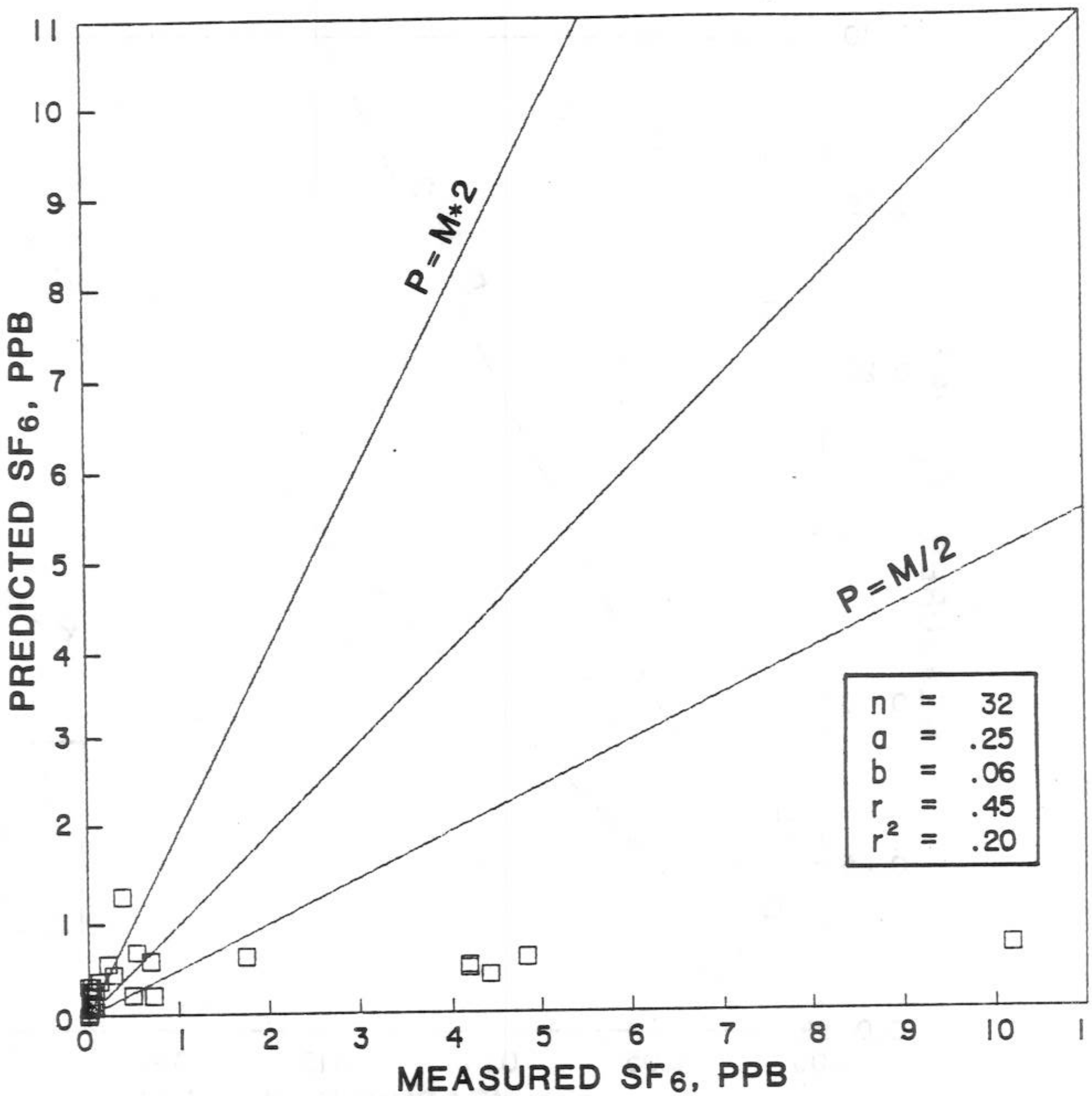


Fig. 13. Zone III Predicted vs Measured SF_6 Levels

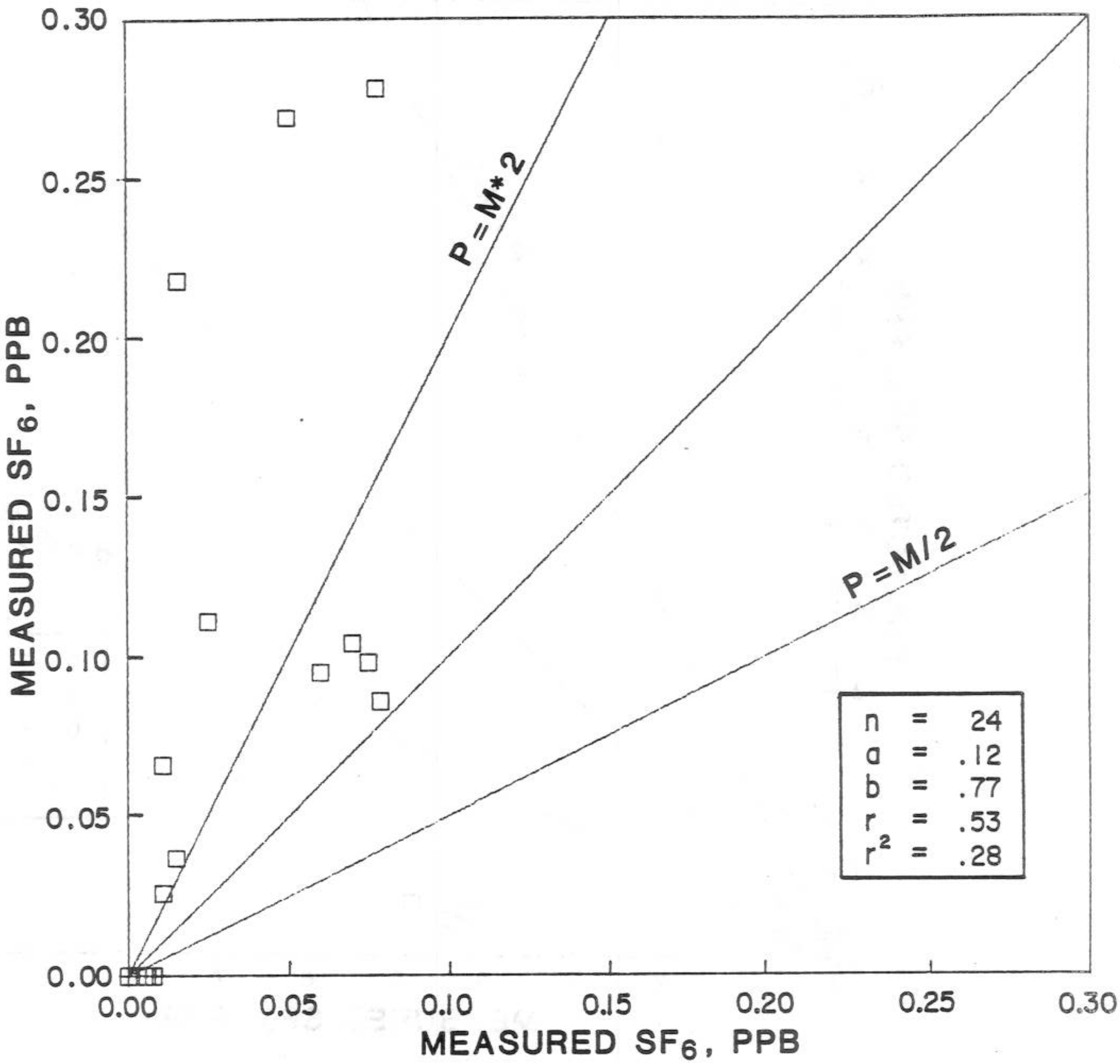


Fig. 14. Zone III Predicted vs Measured SF_6 Levels Excluding Sites 8 and 10 in Test 1

The results for Zone III shown in Figure 13 indicate that model performance in complex terrain deteriorates with distance from the source. Considering only measured values equalling or exceeding 0.5 ppb SF_6, 7 of the 9 values (78%) fall outside of the factor-of-two envelope, all of these are underpredictions. Model results for five measurements at Sites 8 and 10 during Test 1 underpredicted by an order-of-magnitude. This was the same test that contained the anomalous measurements at Sites 1, 2 and 4. It is possible that the dense concentration of SF_6 measured at the intersection was transported downwind to Sites 8 and 10 in later sampling periods. However, even if these results are omitted (Figure 14), nearly two-thirds of the CALINE4 predictions still fall outside of the factor-of-two envelope. The model is not able to predict concentrations at the distant Zone III sites with any reliability.

A plot of relative error versus zone (Figure 15) further dramatizes this point. The plot contains Test 1 results for Sites 8 and 10, but does not include any results for which either the predicted or measured values equalled zero. The differences in this latter case rarely exceeded 0.01 ppb. The factor-of-two envelope is represented by the two horizontal lines at $E_r = \pm 33$ percent. A progressive deterioration in model performance by zone is clearly evident.

Figure 16 shows the same results plotted against measured SF_6 concentrations. With the exception of the gross underpredictions for the Test 1 results at Sites 8 and 10 (where E_r is approximately $\pm 80\%$), the model performance improves at higher measured concentrations. These were values measured closer to the line source and represent

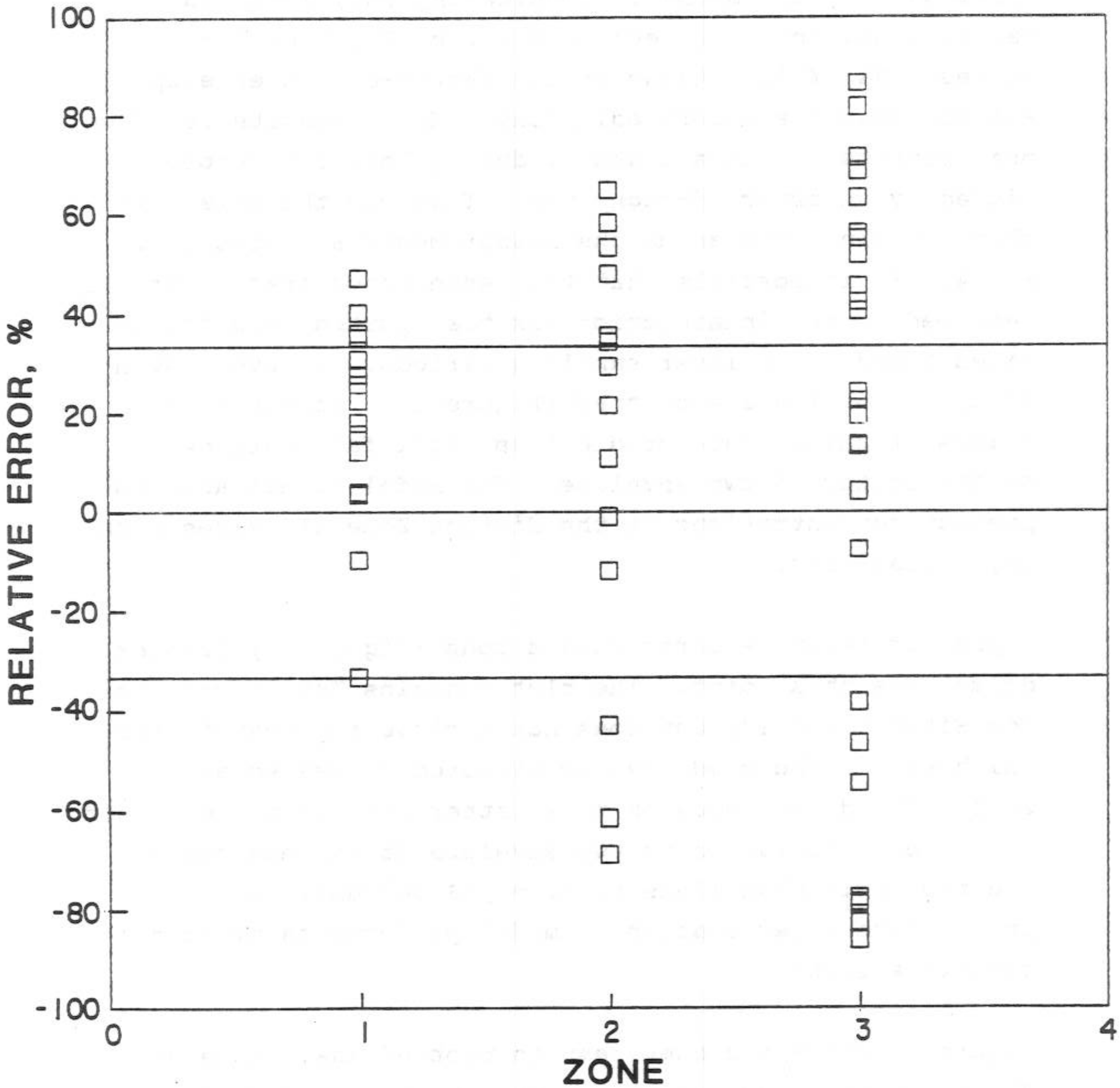


Fig. 15. Relative Error of Predicted <u>vs</u> Measured SF_6 Levels <u>vs</u> Zonal Locations

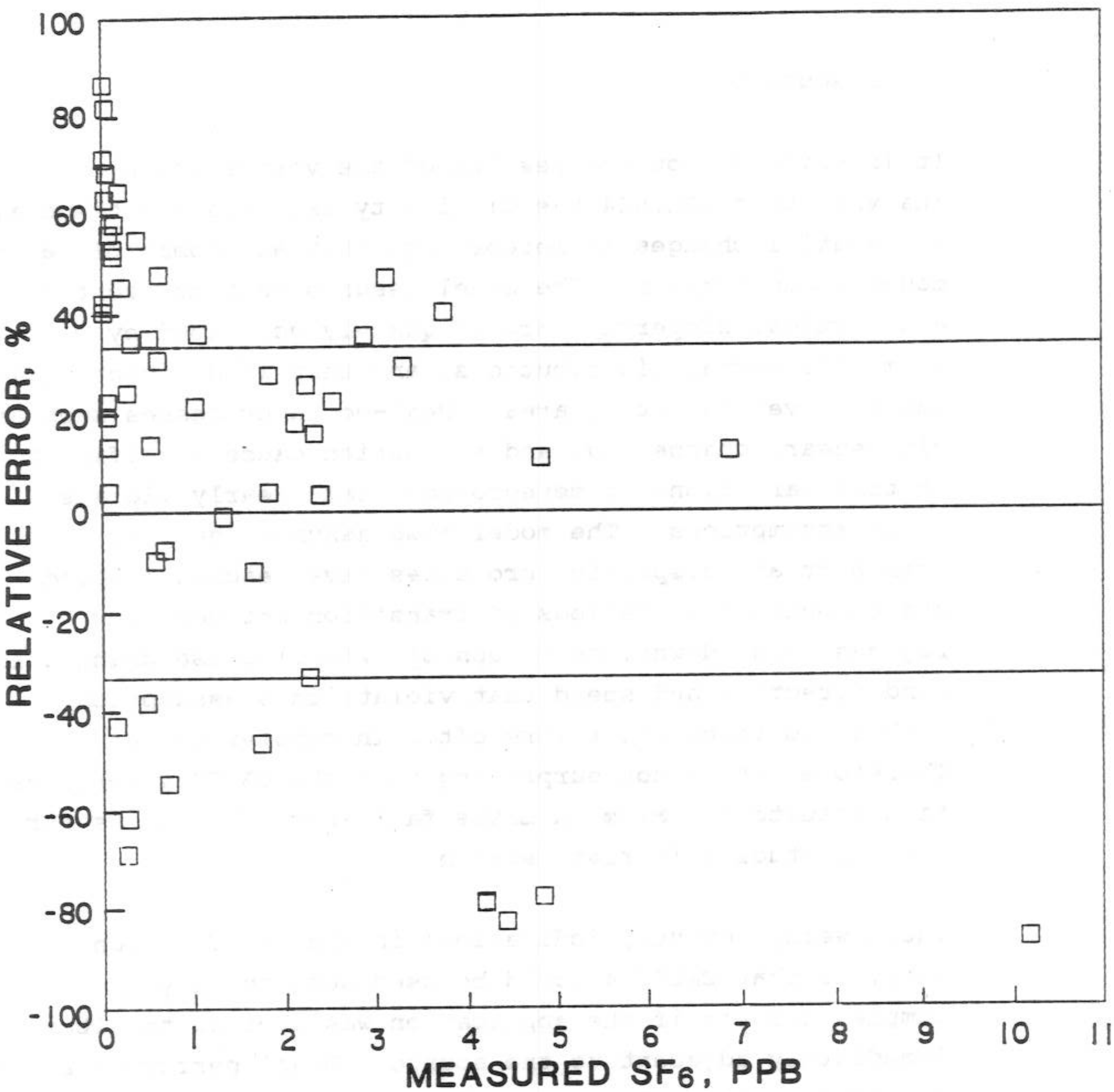


Fig. 16. Relative Error of Predicted vs Measured SF_6 Levels vs Measured Values

the type of worst case receptor locations typically chosen for air quality impact analysis.

6.5 Discussion

It is obvious from the results of the verification analysis that CALINE4 has difficulty handling the temporal and spatial changes in meteorology that are commonplace in mountainous terrain. The model assumes that horizontal and vertical dispersion are adequately described by unimodal, normal distributions, and that wind direction is uniform over the study area. Real-world processes such as wind shear, channeling, and stagnation cause significant spatial variations in meteorology that clearly violate these assumptions. The model also assumes that the transport and dispersion processes have reached a steady-state condition. Periods of transition between flow regimes (e.g. downslope to upslope winds) cause changes in wind direction and speed that violate this assumption. Such transitions occur more often in complex terrain. Therefore, it is not surprising that the CALINE4 verification results for Mammoth Lakes fall short of results for similar studies in flat terrain.

There were, however, indications in the verification analysis that CALINE4 could be used successfully in complex terrain if the application was limited to sites immediately adjacent to the source. Model performance for the Zone I sites was comparable to performance in flat terrain because spatial and temporal variations in meteorology were less critical. Tracer gas released near the intersection had little time to disperse before reaching the Zone I sites. Concentrations were, therefore, heavily dependent upon the emissions in the immediate vicinity of the intersection. Within this limited area, the effects of topography on meteorology were minimal. By restricting the analysis to a small area, CALINE4 performed better.

As a practical test of the model's ability to predict air quality impacts in complex terrain at sites near a principle line source, model predictions for worst case CO levels were made and compared to the highest levels recorded during the 1982-83 CO monitoring season. The predictions were made by following the normal procedures recommended by Caltrans for assessing project-level air quality impacts. Emission factors for CO were generated by running the EMFAC6D program (California's version of MOBILE2 still in use) and adjusting results to the 8,000 foot elevation of Mammoth Lakes using EPA methods(13). Vehicle type distributions and traffic volumes were based on actual counts made during peak ski season weekends. Percent hot and cold starts were estimated for each leg of the intersection based on observed travel patterns reported by District 9 personnel and a New Jersey field study(14). Once selected, these values were not changed. Meteorological inputs for the model were worst case values for mountainous terrain recommended by Caltrans, including the worst case wind direction for each receptor considered(15). The ambient CO concentration was determined by using observed maximums at the Site C background sampling location(4,16).

All estimates were made for the morning time period (all of the highest measurements at each site were recorded between 7 to 10 a.m.). The intersection geometry was modified to accommodate four CALINE4 intersection links. Each of these links include deceleration, idle, acceleration and cruise components. Traffic and signal parameters were based on surveys conducted during the traffic counts. The input parameters are shown in detail in Appendix A.

Predictions of 1-hour averaged concentrations for CO at Sites A, A_1, A_2 and B were made. These results and the highest measured values are summarized in Table 8. The measured 8-hour peak values are also included in the table. As can be seen, predictions for the sites closest to the intersection (Sites A_1 and B) agree quite well with the measured results. Underpredictions of approximately 10 ppm CO occur for the more distant sites A and A_2, however. The pattern of higher concentrations measured further from the intersection suggests the possibility of other significant contributing sources. Both Sites A and A_2 were located on the edge of a motel parking lot. It is possible that idling, cold-start vehicles could have contaminated these samples. Other possible explanations are "puddling" or entrapment effects likely at these sites (both of which were at least 20 feet below the intersection), or contamination by smoke from a nearby motel chimney. In any case, the performance of the model and the procedures for estimating the worst case inputs are certainly reasonable for the receptors closest to the intersection.

The 8-hour peak concentrations were included in Table 8 to give an idea of the kind of persistence factor to be expected in complex terrain near a roadway with a pronounced traffic peak. The persistence factor, which is defined as the ratio of the 8-hour peak CO concentration to the 1-hour peak, is normally assigned a value ranging from 0.6 to 0.7(15,17). Because of the more frequent changes in meteorology typical of complex terrain, it seems reasonable to expect a lower persistence factor in this type of setting. This is, in fact, what can be observed in Table 8. The persistence factors range from about 0.3 to 0.4. This sizable difference between the nominal and actual persistence factors is the primary reason Caltrans recommends the use of factors derived from local data whenever possible(15).

TABLE 8

SUMMARY OF MEASURED AND CALINE4 PREDICTED
WORST CASE CO CONCENTRATIONS
FOR THE 1982-83 MAMMOTH LAKES
AIR QUALITY MONITORING PROGRAM

SITE	1-HOUR CO CALINE4	1-HOUR CO MEASURED	8-HOUR CO MEASURED
A	24.1	36.4	11.4
A_1	29.4	30.5	11.0
A_2	19.4	29.3	10.7
B	27.5	26.1	10.2

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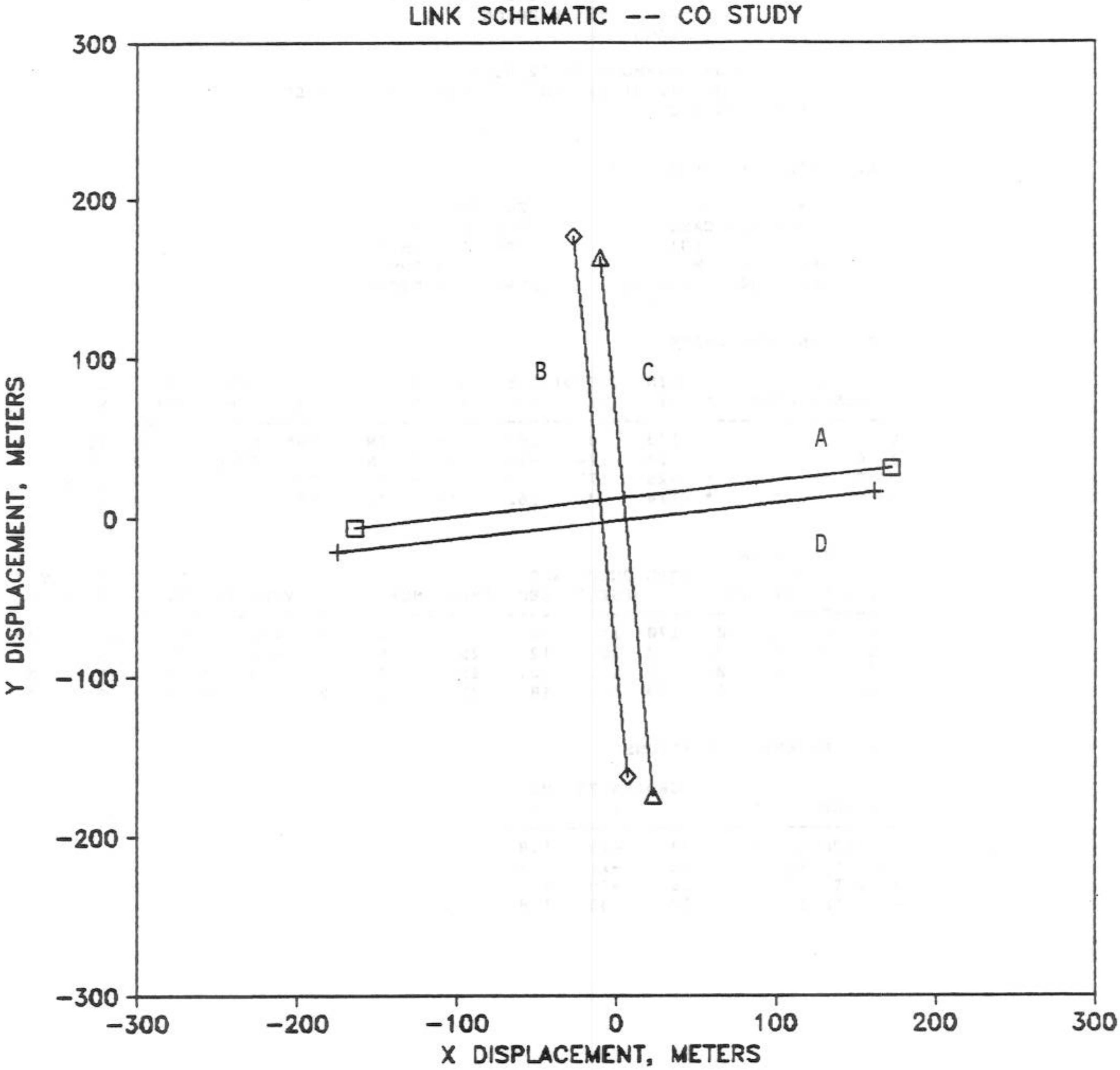
APPENDIX A


LINK SCHEMATIC -- CO STUDY
300
200
100
0
-100
-200
-300
Y DISPLACEMENT, METERS
-300
-200
-100
0
100
200
300
X DISPLACEMENT, METERS
A
B
C
D

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JULY 1985 VERSION
PAGE 1

JOB: MAMMOTH AM 12/31/82
RUN: 12/31/82 AM (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

```
    U=   Ø.5  M/S              ZØ= 3ØØ. CM
  BRG= WORST CASE              VD=  Ø.Ø CM/S
 CLAS=     7  (G)              VS=  Ø.Ø CM/S
 MIXH= 1ØØØ.  M               AMB= 13.8 PPM
SIGTH=   3Ø.  DEGREES         TEMP=  Ø.Ø DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. A	*	173	32	-163	-6	*	IN	895	97.1	Ø.Ø	11.Ø
B. B	*	24	-174	-1Ø	164	*	IN	7	127.Ø	Ø.Ø	11.Ø
C. C	*	-26	177	8	-162	*	IN	292	93.5	Ø.Ø	11.Ø
D. D	*	-174	-21	162	17	*	IN	277	7Ø.6	Ø.Ø	11.Ø

LINK	*	MIXW L (M)	R (M)	STPL (M)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	Ø.	Ø.	17Ø	14.	18.	35.	6	2	4Ø3	7.97	2Ø.	Ø.
B.	*	Ø.	Ø.	17Ø	1Ø.	12.	25.	6	2	626	7.97	25.	Ø.
C.	*	Ø.	Ø.	17Ø	1Ø.	12.	25.	3	2	3	7.97	25.	Ø.
D.	*	Ø.	Ø.	17Ø	14.	18.	35.	3	2	439	7.97	2Ø.	Ø.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. SITE A	*	38	-23	1.8
2. SITE A1	*	22	-12	1.8
3. SITE A2	*	28	-78	1.8
4. SITE B	*	-2Ø	35	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JULY 1985 VERSION
PAGE 2

JOB: MAMMOTH AM 12/31/82
RUN: 12/31/82 AM (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. SITE A	318.	24.1	3.3	3.1	1.Ø	2.9
2. SITE A1	321.	29.4	4.8	4.9	1.6	4.3
3. SITE A2	346.	19.4	1.5	1.9	Ø.5	1.6
4. SITE B	135.	27.5	4.1	3.2	3.8	2.6

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JULY 1985 VERSION
PAGE 1

JOB: MAMMOTH PM 12/31/82
RUN: 12/31/82 PM (WORST CASE ANGLE)
POLLUTANT: CO

I. SITE VARIABLES

U=	0.5 M/S	Z0=	300. CM
BRG=	WORST CASE	VD=	0.0 CM/S
CLAS=	7 (G)	VS=	0.0 CM/S
MIXH=	1000. M	AMB=	5.9 PPM
SIGTH=	30. DEGREES	TEMP=	0.0 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. A	*	173	32	-163	-6	*	IN	613	48.2	0.0	11.0
B. B	*	24	-174	-10	164	*	IN	3	65.2	0.0	11.0
C. C	*	-26	177	8	-162	*	IN	1082	63.2	0.0	11.0
D. D	*	-174	-21	162	17	*	IN	692	46.8	0.0	11.0

LINK	*	MIXW L (M)	MIXW R (M)	STPL (M)	DCLT (SEC)	ACCT (SEC)	SPD (MPH)	NCYC	NDLA	VPHO	EFI (G/MIN)	IDT1 (SEC)	IDT2 (SEC)
A.	*	0.	0.	170	14.	18.	35.	9	3	464	7.96	50.	0.
B.	*	0.	0.	170	10.	12.	25.	9	3	442	7.96	50.	0.
C.	*	0.	0.	170	10.	12.	25.	15	6	17	7.96	50.	0.
D.	*	0.	0.	170	14.	18.	35.	18	6	1467	7.96	50.	0.

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. SITE A	*	38	-23	1.8
2. SITE A1	*	22	-12	1.8
3. SITE A2	*	28	-78	1.8
4. SITE B	*	-20	35	1.8

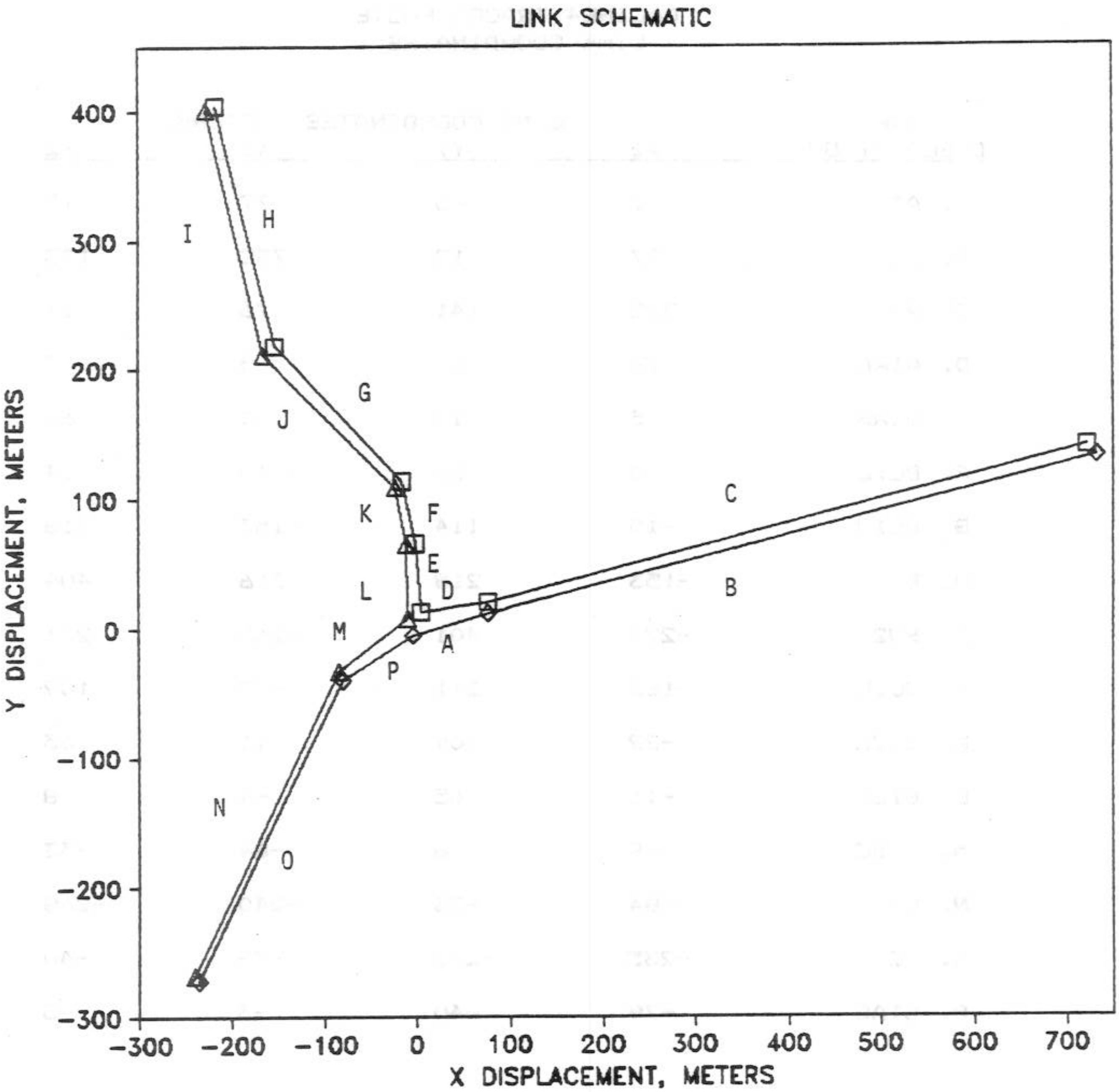
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JULY 1985 VERSION
PAGE 2

JOB: MAMMOTH PM 12/31/82
RUN: 12/31/82 PM (WORST CASE ANGLE)
POLLUTANT: CO

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. SITE A	314.	13.8	1.8	1.0	2.2	2.9
2. SITE A1	320.	17.5	2.6	1.7	3.3	4.0
3. SITE A2	342.	10.1	0.9	0.6	1.1	1.5
4. SITE B	129.	22.2	2.5	1.2	10.6	2.1

APPENDIX B



LINK SCHEMATIC
400
300
200
100
0
−100
−200
−300
Y DISPLACEMENT, METERS
−300
−200
−100
0
100
200
300
400
500
600
700
X DISPLACEMENT, METERS
I
H
G
J
K
F
E
L
D
M
A
P
C
B
N
O

CALINE4 TRACER ROUTE
LINK COORDINATES

LINK DESCRIPTION	LINK COORDINATES (METERS) X1	Y1	X2	Y2
A. AIAC	-3	-5	77	12
B. A1	77	12	732	133
C. A2	722	141	76	21
D. AIAB	76	21	5	13
E. BIAB	5	13	0	66
F. BL1L	0	66	-15	114
G. BL1U	-15	114	-153	218
H. BU1	-153	218	-216	404
I. BU2	-227	401	-165	211
J. BL2U	-165	211	-22	109
K. BL2L	-22	109	-11	65
L. BIBC	-11	65	-9	8
M. CIBC	-9	8	-84	-33
N. C1	-84	-33	-240	-268
O. C2	-235	-272	-79	-40
P. CIAC	-79	-40	-3	-5

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 1

JOB: TEST 1: 1/12/84 0600-0800
RUN: 600-630
POLLUTANT: SF6

I. SITE VARIABLES

U=	0.5	M/S	Z0=	300.	CM
BRG=	330.0	DEGREES	VD=	0.0	CM/S
CLAS=	6	(F)	VS=	0.0	CM/S
MIXH=	1000.	M	AMB=	0.0	PPT
SIGTH=	5.	DEGREES	TEMP=	-5.9	DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	14	6.7	0.0	8.0
B. A1	77	12	732	133	AG	16	5.2	0.0	8.0
C. A2	722	141	76	21	AG	14	5.4	0.0	8.0
D. AIAB	76	21	5	13	AG	16	8.0	0.0	8.0
E. BIAB	5	13	0	66	AG	16	12.3	0.0	8.0
F. BL1L	0	66	-15	114	AG	16	6.3	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	6.2	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	6.2	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	5.7	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	5.8	0.0	8.0
K. BL2L	-22	109	-11	65	AG	16	5.9	0.0	8.0
L. BIBC	-11	65	-9	8	AG	16	10.2	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	16	10.2	0.0	8.0
N. C1	-84	-33	-240	-268	AG	16	5.2	0.0	4.0
O. C2	-235	-272	-79	-40	AG	16	4.8	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	14	8.3	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 2

JOB: TEST 1: 1/12/84 0600-0800
RUN: 600-630
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	3046.	0.	0.	0.	0.	0.	0.	799.	837.	485.	763.
2. LOC - 2	7819.	784.	0.	0.	873.	****	4.	779.	401.	194.	731.
3. LOC - 4	5361.	543.	0.	0.	251.	904.	0.	712.	537.	306.	669.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	532.	0.	281.	251.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	497.	0.	0.	0.	0.	0.	0.	0.	1.	12.	1.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 3

JOB: TEST 1: 1/12/84 0600-0800
RUN: 600-630
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	*	0.	162.	0.	0.	0.	0.
2. LOC - 2	*	276.	****	0.	0.	0.	0.
3. LOC - 4	*	31.	****	0.	0.	0.	0.
4. LOC - 5	*	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	56.	201.	194.	33.
8. LOC - 11	*	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 4

JOB: TEST 1: 1/12/84 0600-0800
RUN: 630-700
POLLUTANT: SF6

I. SITE VARIABLES

U=	0.4	M/S	Z0=	300.	CM
BRG=	330.0	DEGREES	VD=	0.0	CM/S
CLAS=	6	(F)	VS=	0.0	CM/S
MIXH=	1000.	M	AMB=	0.0	PPT
SIGTH=	5.	DEGREES	TEMP=	-5.9	DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
	LINK COORDINATES (M)								
A. AIAC	-3	-5	77	12	AG	14	7.1	0.0	8.0
B. A1	77	12	732	133	AG	16	5.5	0.0	8.0
C. A2	722	141	76	21	AG	14	5.9	0.0	8.0
D. AIAB	76	21	5	13	AG	16	6.6	0.0	8.0
E. BIAB	5	13	0	66	AG	16	11.8	0.0	8.0
F. BL1L	0	66	-15	114	AG	16	5.7	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	5.7	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	5.8	0.0	8.0
I. BU2	-227	401	-165	211	AG	14	6.0	0.0	8.0
J. BL2U	-165	211	-22	109	AG	14	6.1	0.0	8.0
K. BL2L	-22	109	-11	65	AG	14	6.2	0.0	8.0
L. BIBC	-11	65	-9	8	AG	14	10.2	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	14	10.2	0.0	8.0
N. C1	-84	-33	-240	-268	AG	14	5.0	0.0	4.0
O. C2	-235	-272	-79	-40	AG	6	3.6	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	14	7.1	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 5

JOB: TEST 1: 1/12/84 0600-0800
RUN: 630-700
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. LOC - 1	*	-13	25	1.8
2. LOC - 2	*	32	-20	1.8
3. LOC - 4	*	40	-50	1.8
4. LOC - 5	*	-135	23	1.8
5. LOC - 8	*	538	-83	1.8
6. LOC - 9	*	-342	147	1.8
7. LOC - 10	*	41	-275	1.8
8. LOC - 11	*	395	414	1.8
9. LOC - 12	*	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	PRED CONC (PPT)	*	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	*	3423.	*	0.	0.	0.	0.	0.	0.	904.	935.	551.	863.
2. LOC - 2	*	8850.	*	****	0.	0.	877.	****	2.	896.	460.	229.	839.
3. LOC - 4	*	6016.	*	698.	0.	0.	250.	****	0.	788.	604.	356.	759.
4. LOC - 5	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	709.	*	0.	368.	340.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	420.	*	0.	0.	0.	0.	0.	0.	0.	4.	18.	2.
8. LOC - 11	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 6

JOB: TEST 1: 1/12/84 0600-0800
RUN: 630-700
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	0.	170.	0.	0.	0.	0.
2. LOC - 2	287.	****	0.	0.	0.	0.
3. LOC - 4	25.	****	0.	0.	0.	0.
4. LOC - 5	0.	0.	0.	0.	0.	0.
5. LOC - 8	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.
7. LOC - 10	0.	0.	69.	212.	73.	41.
8. LOC - 11	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 7

JOB: TEST 1: 1/12/84 0600-0800
RUN: 700-730
POLLUTANT: SF6

I. SITE VARIABLES

U= 0.4 M/S		Z0= 300. CM
BRG= 330.0 DEGREES		VD= 0.0 CM/S
CLAS= 6 (F)		VS= 0.0 CM/S
MIXH= 1000. M		AMB= 0.0 PPT
SIGTH= 5. DEGREES		TEMP= -5.6 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	16	6.8	0.0	8.0
B. A1	77	12	732	133	AG	14	5.2	0.0	8.0
C. A2	722	141	76	21	AG	16	5.5	0.0	8.0
D. AIAB	76	21	5	13	AG	14	8.1	0.0	8.0
E. BIAB	5	13	0	66	AG	14	13.4	0.0	8.0
F. BL1L	0	66	-15	114	AG	14	6.1	0.0	8.0
G. BL1U	-15	114	-153	218	AG	14	6.0	0.0	8.0
H. BU1	-153	218	-216	404	AG	14	6.8	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	5.9	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	6.0	0.0	8.0
K. BL2L	-22	109	-11	65	AG	16	6.1	0.0	8.0
L. BIBC	-11	65	-9	8	AG	16	11.0	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	16	10.1	0.0	8.0
N. C1	-84	-33	-240	-268	AG	16	4.9	0.0	4.0
O. C2	-235	-272	-79	-40	AG	16	5.4	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	16	7.3	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION

JOB: TEST 1: 1/12/84 0600-0800
RUN: 700-730
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	3331.	0.	0.	0.	0.	0.	0.	772.	907.	566.	889.
2. LOC - 2	8757.	****	0.	0.	877.	****	3.	766.	442.	232.	857.
3. LOC - 4	6093.	705.	0.	0.	251.	966.	0.	683.	585.	362.	789.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	612.	0.	284.	328.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	596.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	2.	17.	2.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 9

JOB: TEST 1: 1/12/84 0600-0800
RUN: 700-730
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	K	L	M	N	O	P
	*	CONC/LINK (PPM)					
1. LOC - 1	*	0.	197.	0.	0.	0.	0.
2. LOC - 2	*	306.	****	0.	0.	0.	0.
3. LOC - 4	*	30.	****	0.	0.	0.	0.
4. LOC - 5	*	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	69.	218.	248.	41.
8. LOC - 11	*	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 10

JOB: TEST 1: 1/12/84 0600-0800
RUN: 730-800
POLLUTANT: SF6

I. SITE VARIABLES

U= 0.4 M/S		Z0= 300. CM	
BRG= 330.0 DEGREES		VD= 0.0 CM/S	
CLAS= 6 (F)		VS= 0.0 CM/S	
MIXH= 1000. M		AMB= 0.0 PPT	
SIGTH= 5. DEGREES		TEMP= -5.6 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	*	-3	-5	77	12	*	AG	16	6.5	0.0	8.0
B. A1	*	77	12	732	133	*	AG	16	5.2	0.0	8.0
C. A2	*	722	141	76	21	*	AG	16	5.1	0.0	8.0
D. AIAB	*	76	21	5	13	*	AG	16	7.7	0.0	8.0
E. BIAB	*	5	13	0	66	*	AG	16	11.3	0.0	8.0
F. BL1L	*	0	66	-15	114	*	AG	16	6.0	0.0	8.0
G. BL1U	*	-15	114	-153	218	*	AG	16	6.0	0.0	8.0
H. BU1	*	-153	218	-216	404	*	AG	16	6.0	0.0	8.0
I. BU2	*	-227	401	-165	211	*	AG	14	6.0	0.0	8.0
J. BL2U	*	-165	211	-22	109	*	AG	14	6.1	0.0	8.0
K. BL2L	*	-22	109	-11	65	*	AG	14	6.2	0.0	8.0
L. BIBC	*	-11	65	-9	8	*	AG	14	12.1	0.0	8.0
M. CIBC	*	-9	8	-84	-33	*	AG	14	10.9	0.0	8.0
N. C1	*	-84	-33	-240	-268	*	AG	14	4.8	0.0	4.0
O. C2	*	-235	-272	-79	-40	*	AG	16	5.3	0.0	4.0
P. CIAC	*	-79	-40	-3	-5	*	AG	16	6.5	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 11

JOB: TEST 1: 1/12/84 0600-0800
RUN: 730-800
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	3345.	0.	0.	0.	0.	0.	0.	887.	927.	521.	817.
2. LOC - 2	8833.	981.	0.	0.	959.	****	3.	882.	453.	214.	789.
3. LOC - 4	6099.	680.	0.	0.	274.	976.	0.	782.	598.	334.	725.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	640.	0.	327.	313.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	564.	0.	0.	0.	0.	0.	0.	0.	3.	16.	2.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 12

JOB: TEST 1: 1/12/84 0600-0800
RUN: 730-800
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	K	L	M	N	O	P
	*	CONC/LINK (PPM)					
1. LOC - 1	*	0.	193.	0.	0.	0.	0.
2. LOC - 2	*	279.	****	0.	0.	0.	0.
3. LOC - 4	*	26.	****	0.	0.	0.	0.
4. LOC - 5	*	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	67.	193.	245.	38.
8. LOC - 11	*	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 1

JOB: TEST 2: 1/12/84 1200-1400
RUN: 12-1230
POLLUTANT: SF6

I. SITE VARIABLES

U=	1.5 M/S	Z0=	300. CM
BRG=	210.0 DEGREES	VD=	0.0 CM/S
CLAS=	3 (C)	VS=	0.0 CM/S
MIXH=	1000. M	AMB=	0.0 PPT
SIGTH=	28. DEGREES	TEMP=	-0.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	12	9.8	0.0	8.0
B. A1	77	12	732	133	AG	16	5.9	0.0	8.0
C. A2	722	141	76	21	AG	14	5.8	0.0	8.0
D. AIAB	76	21	5	13	AG	16	8.5	0.0	8.0
E. BIAB	5	13	0	66	AG	16	15.1	0.0	8.0
F. BL1L	0	66	-15	114	AG	16	6.5	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	6.5	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	6.5	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	6.0	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	6.1	0.0	8.0
K. BL2L	-22	109	-11	65	AG	16	6.2	0.0	8.0
L. BIBC	-11	65	-9	8	AG	16	11.6	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	16	11.6	0.0	8.0
N. C1	-84	-33	-240	-268	AG	14	5.4	0.0	4.0
O. C2	-235	-272	-79	-40	AG	14	5.1	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	12	12.1	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 2

JOB: TEST 2: 1/12/84 1200-1400
RUN: 12-1230
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	1149.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2. LOC - 2	26.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3. LOC - 4	12.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	48.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	95.	6.	27.	24.	6.	5.	1.	1.	0.	0.	1.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 3

JOB: TEST 2: 1/12/84 1200-1400
RUN: 12-1230
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	*	0.	209.	570.	53.	54.	264.
2. LOC - 2	*	0.	0.	0.	12.	14.	0.
3. LOC - 4	*	0.	0.	0.	5.	6.	0.
4. LOC - 5	*	0.	0.	0.	27.	21.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	0.	0.	0.	0.
8. LOC - 11	*	1.	4.	5.	4.	4.	4.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 4

JOB: TEST 2: 1/12/84 1200-1400
RUN: 1230-13
POLLUTANT: SF6

I. SITE VARIABLES

U= 1.5 M/S		Z0= 300. CM	
BRG= 210.0 DEGREES		VD= 0.0 CM/S	
CLAS= 3 (C)		VS= 0.0 CM/S	
MIXH= 1000. M		AMB= 0.0 PPT	
SIGTH= 33. DEGREES		TEMP= -0.4 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	*	-3	-5	77	12	*	AG	16	9.8	0.0	8.0
B. A1	*	77	12	732	133	*	AG	16	5.9	0.0	8.0
C. A2	*	722	141	76	21	*	AG	12	6.0	0.0	8.0
D. AIAB	*	76	21	5	13	*	AG	16	8.8	0.0	8,0
E. BIAB	*	5	13	0	66	*	AG	16	15.6	0.0	8.0
F. BL1L	*	0	66	-15	114	*	AG	16	6.6	0.0	8.0
G. BL1U	*	-15	114	-153	218	*	AG	16	6.5	0.0	8.0
H. BU1	*	-153	218	-216	404	*	AG	16	6.6	0.0	8.0
I. BU2	*	-227	401	-165	211	*	AG	14	6.8	0.0	8.0
J. BL2U	*	-165	211	-22	109	*	AG	14	6.9	0.0	8.0
K. BL2L	*	-22	109	-11	65	*	AG	14	7.0	0.0	8.0
L. BIBC	*	-11	65	-9	8	*	AG	14	11.2	0.0	8.0
M. CIBC	*	-9	8	-84	-33	*	AG	14	11.3	0.0	8.0
N. C1	*	-84	-33	-240	-268	*	AG	16	5.7	0.0	4.0
O. C2	*	-235	-272	-79	-40	*	AG	16	5.8	0.0	4.0
P. CIAC	*	-79	-40	-3	-5	*	AG	16	13.5	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 5

JOB: TEST 2: 1/12/84 1200-1400
RUN: 1230-13
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	1150.	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2. LOC - 2	42.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3. LOC - 4	22.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	66.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	98.	7.	26.	20.	5.	6.	2.	2.	0.	0.	2.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 6

JOB: TEST 2: 1/12/84 1200-1400
RUN: 1230-13
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	K	L	M	N	O	P
	*	CONC/LINK (PPM)					
1. LOC - 1	*	0.	218.	443.	59.	62.	366.
2. LOC - 2	*	0.	0.	0.	19.	22.	1.
3. LOC - 4	*	0.	0.	0.	10.	12.	0.
4. LOC - 5	*	0.	0.	0.	36.	31.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	0.	0.	0.	0.
8. LOC - 11	*	1.	4.	5.	6.	6.	7.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 7

JOB: TEST 2: 1/12/84 1200-1400
RUN: 13-1330
POLLUTANT: SF6

I. SITE VARIABLES

U=	1.5 M/S	Z0=	300. CM
BRG=	240.0 DEGREES	VD=	0.0 CM/S
CLAS=	3 (C)	VS=	0.0 CM/S
MIXH=	1000. M	AMB=	0.0 PPT
SIGTH=	28. DEGREES	TEMP=	-0.5 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	14	8.6	0.0	8.0
B. A1	77	12	732	133	AG	14	6.4	0.0	8.0
C. A2	722	141	76	21	AG	16	6.3	0.0	8.0
D. AIAB	76	21	5	13	AG	14	9.0	0.0	8.0
E. BIAB	5	13	0	66	AG	14	16.0	0.0	8.0
F. BL1L	0	66	-15	114	AG	14	6.5	0.0	8.0
G. BL1U	-15	114	-153	218	AG	14	6.4	0.0	8.0
H. BU1	-153	218	-216	404	AG	14	6.5	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	7.3	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	7.4	0.0	8.0
K. BL2L	-22	109	-11	65	AG	16	7.5	0.0	8.0
L. BIBC	-11	65	-9	8	AG	14	12.0	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	14	12.0	0.0	8.0
N. C1	-84	-33	-240	-268	AG	14	5.7	0.0	4.0
O. C2	-235	-272	-79	-40	AG	14	6.4	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	14	12.7	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 8

JOB: TEST 2: 1/12/84 1200-1400
RUN: 13-1330
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	474.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2. LOC - 2	245.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3. LOC - 4	108.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	4.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	86.	3.	2.	3.	3.	6.	3.	11.	5.	6.	15.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 9

JOB: TEST 2: 1/12/84 1200-1400
RUN: 13-1330
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	*	0.	34.	241.	47.	45.	107.
2. LOC - 2	*	0.	0.	37.	55.	64.	89.
3. LOC - 4	*	0.	0.	2.	45.	55.	6.
4. LOC - 5	*	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	0.	0.	0.	2.	2.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	0.	1.	1.	0.
8. LOC - 11	*	4.	5.	6.	5.	5.	5.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 10

JOB: TEST 2: 1/12/84 1200-1400
RUN: 1330-14
POLLUTANT: SF6

I. SITE VARIABLES

U=	1.6 M/S	Z0=	300. CM
BRG=	210.0 DEGREES	VD=	0.0 CM/S
CLAS=	3 (C)	VS=	0.0 CM/S
MIXH=	1000. M	AMB=	0.0 PPT
SIGTH=	28. DEGREES	TEMP=	-0.5 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	*	-3	-5	77	12	*	AG	16	9.0	0.0	8.0
B. A1	*	77	12	732	133	*	AG	16	6.5	0.0	8.0
C. A2	*	722	141	76	21	*	AG	16	6.3	0.0	8.0
D. AIAB	*	76	21	5	13	*	AG	16	10.3	0.0	8.0
E. BIAB	*	5	13	0	66	*	AG	16	18.3	0.0	8.0
F. BL1L	*	0	66	-15	114	*	AG	16	7.2	0.0	8.0
G. BL1U	*	-15	114	-153	218	*	AG	16	7.1	0.0	8.0
H. BU1	*	-153	218	-216	404	*	AG	16	7.2	0.0	8.0
I. BU2	*	-227	401	-165	211	*	AG	14	6.8	0.0	8.0
J. BL2U	*	-165	211	-22	109	*	AG	14	6.9	0.0	8.0
K. BL2L	*	-22	109	-11	65	*	AG	14	7.0	0.0	8.0
L. BIBC	*	-11	65	-9	8	*	AG	16	11.2	0.0	8.0
M. CIBC	*	-9	8	-84	-33	*	AG	16	11.2	0.0	8.0
N. C1	*	-84	-33	-240	-268	*	AG	16	5.9	0.0	4.0
O. C2	*	-235	-272	-79	-40	*	AG	16	6.2	0.0	4.0
P. CIAC	*	-79	-40	-3	-5	*	AG	16	9.3	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 11

JOB: TEST 2: 1/12/84 1200-1400
RUN: 1330-14
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	1089.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2. LOC - 2	34.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3. LOC - 4	16.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	61.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	104.	6.	27.	28.	6.	6.	2.	1.	0.	0.	1.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 12

JOB: TEST 2: 1/12/84 1200-1400
RUN: 1330-14
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	*	0.	199.	510.	61.	69.	250.
2. LOC - 2	*	0.	0.	0.	15.	19.	0.
3. LOC - 4	*	0.	0.	0.	7.	9.	0.
4. LOC - 5	*	0.	0.	0.	32.	29.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	0.	0.	0.	0.
8. LOC - 11	*	1.	4.	5.	5.	6.	4.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 1

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1000-1030
POLLUTANT: SF6

I. SITE VARIABLES

U=	0.7	M/S	Z0=	300.	CM
BRG=	120.0	DEGREES	VD=	0.0	CM/S
CLAS=	3	(C)	VS=	0.0	CM/S
MIXH=	1000.	M	AMB=	0.0	PPT
SIGTH=	40.	DEGREES	TEMP=	8.9	DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	14	8.1	0.0	8.0
B. A1	77	12	732	133	AG	14	5.4	0.0	8.0
C. A2	722	141	76	21	AG	14	5.5	0.0	8.0
D. AIAB	76	21	5	13	AG	14	8.9	0.0	8.0
E. BIAB	5	13	0	66	AG	14	15.9	0.0	8.0
F. BL1L	0	66	-15	114	AG	14	5.1	0.0	8.0
G. BL1U	-15	114	-153	218	AG	14	5.0	0.0	8.0
H. BU1	-153	218	-216	404	AG	14	5.1	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	4.2	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	4.4	0.0	8.0
K. BL2L	-22	109	-11	65	AG	16	4.5	0.0	8.0
L. BIBC	-11	65	-9	8	AG	16	12.1	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	16	12.1	0.0	8.0
N. C1	-84	-33	-240	-268	AG	14	5.4	0.0	4.0
O. C2	-235	-272	-79	-40	AG	14	5.5	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	14	8.5	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 2

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1000-1030
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	4014.	391.	64.	54.	441.	723.	0.	0.	0.	0.	0.
2. LOC - 2	12.	0.	9.	4.	0.	0.	0.	0.	0.	0.	0.
3. LOC - 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	668.	45.	21.	13.	32.	35.	0.	0.	0.	0.	0.
5. LOC - 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	278.	18.	24.	24.	16.	24.	6.	11.	0.	0.	13.
7. LOC - 10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	37.	0.	18.	19.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 3

JOB: TEST 3: 2/7/34 1000-1200
RUN: 1000-1030
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	0.	****	24.	0.	0.	12.
2. LOC - 2	0.	0.	0.	0.	0.	0.
3. LOC - 4	0.	0.	0.	0.	0.	0.
4. LOC - 5	0.	45.	266.	32.	28.	144.
5. LOC - 8	0.	0.	0.	0.	0.	0.
6. LOC - 9	6.	24.	45.	20.	20.	26.
7. LOC - 10	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1030-1100
POLLUTANT: SF6

I. SITE VARIABLES

U=	0.8	M/S	Z0=	300.	CM
BRG=	90.0	DEGREES	VD=	0.0	CM/S
CLAS=	3	(C)	VS=	0.0	CM/S
MIXH=	1000.	M	AMB=	0.0	PPT
SIGTH=	30.	DEGREES	TEMP=	8.9	DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	16	8.7	0.0	8.0
B. A1	77	12	732	133	AG	16	5.2	0.0	8.0
C. A2	722	141	76	21	AG	14	5.4	0.0	8.0
D. AIAB	76	21	5	13	AG	16	9.2	0.0	8.0
E. BIAB	5	13	0	66	AG	16	16.3	0.0	8.0
F. BL1L	0	66	-15	114	AG	16	4.6	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	4.6	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	4.6	0.0	8.0
I. BU2	-227	401	-165	211	AG	14	4.7	0.0	8.0
J. BL2U	-165	211	-22	109	AG	14	4.8	0.0	8.0
K. BL2L	-22	109	-11	65	AG	14	4.9	0.0	8.0
L. BIBC	-11	65	-9	8	AG	14	12.8	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	14	12.8	0.0	8.0
N. C1	-84	-33	-240	-268	AG	16	5.0	0.0	4.0
O. C2	-235	-272	-79	-40	AG	16	5.3	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	16	8.7	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 5

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1030-1100
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	3819.	211.	207.	186.	519.	****	0.	0.	0.	0.	0.
2. LOC - 2	308.	30.	164.	110.	4.	0.	0.	0.	0.	0.	0.
3. LOC - 4	105.	0.	62.	43.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	855.	89.	104.	92.	86.	130.	13.	1.	0.	0.	1.
5. LOC - 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	269.	9.	39.	37.	10.	18.	9.	50.	6.	6.	51.
7. LOC - 10	1.	0.	1.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1030-1100
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	0.	****	0.	0.	0.	0.
2. LOC - 2	0.	0.	0.	0.	0.	0.
3. LOC - 4	0.	0.	0.	0.	0.	0.
4. LOC - 5	11.	111.	143.	0.	0.	76.
5. LOC - 8	0.	0.	0.	0.	0.	0.
6. LOC - 9	7.	13.	7.	0.	0.	4.
7. LOC - 10	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 7

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1100-1130
POLLUTANT: SF6

I. SITE VARIABLES

```
    U=   0.9  M/S              Z0= 300. CM
  BRG= 135.0  DEGREES          VD=   0.0 CM/S
 CLAS=     3  (C)              VS=   0.0 CM/S
 MIXH= 1000.  M               AMB=   0.0 PPT
SIGTH=   25.  DEGREES         TEMP=  9.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	14	9.3	0.0	8.0
B. A1	77	12	732	133	AG	14	5.1	0.0	8.0
C. A2	722	141	76	21	AG	16	5.0	0.0	8.0
D. AIAB	76	21	5	13	AG	14	13.2	0.0	8.0
E. BIAB	5	13	0	66	AG	14	17.2	0.0	8.0
F. BL1L	0	66	-15	114	AG	14	4.3	0.0	8.0
G. BL1U	-15	114	-153	218	AG	14	4.3	0.0	8.0
H. BU1	-153	218	-216	404	AG	14	4.3	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	5.1	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	5.1	0.0	8.0
K. BL2L	-22	109	-11	65	AG	16	5.2	0.0	8.0
L. BIBC	-11	65	-9	8	AG	16	12.4	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	16	12.4	0.0	8.0
N. C1	-84	-33	-240	-268	AG	14	5.3	0.0	4.0
O. C2	-235	-272	-79	-40	AG	14	4.4	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	14	10.1	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 8

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1100-1130
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. LOC - 1	*	-13	25	1.8
2. LOC - 2	*	32	-20	1.8
3. LOC - 4	*	40	-50	1.8
4. LOC - 5	*	-135	23	1.8
5. LOC - 8	*	538	-83	1.8
6. LOC - 9	*	-342	147	1.8
7. LOC - 10	*	41	-275	1.8
8. LOC - 11	*	395	414	1.8
9. LOC - 12	*	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	PRED CONC (PPT)	*	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	*	3240.	*	391.	2.	1.	328.	358.	0.	0.	0.	0.	0.
2. LOC - 2	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3. LOC - 4	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	*	399.	*	3.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	111.	*	3.	0.	0.	3.	3.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	*	66.	*	0.	31.	35.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	*	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 9

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1100-1130
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	0.	****	31.	0.	0.	28.
2. LOC - 2	0.	0.	0.	0.	0.	0.
3. LOC - 4	0.	0.	0.	0.	0.	0.
4. LOC - 5	0.	0.	187.	46.	34.	129.
5. LOC - 8	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	3.	24.	31.	25.	17.
7. LOC - 10	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 10

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1130-1200
POLLUTANT: SF6

I. SITE VARIABLES

U=	0.9	M/S	Z0=	300.	CM
BRG=	120.0	DEGREES	VD=	0.0	CM/S
CLAS=	3	(C)	VS=	0.0	CM/S
MIXH=	1000.	M	AMB=	0.0	PPT
SIGTH=	30.	DEGREES	TEMP=	9.9	DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	16	10.3	0.0	8.0
B. A1	77	12	732	133	AG	16	5.3	0.0	8.0
C. A2	722	141	76	21	AG	16	5.2	0.0	8.0
D. AIAB	76	21	5	13	AG	16	9.2	0.0	8.0
E. BIAB	5	13	0	66	AG	16	16.3	0.0	8.0
F. BL1L	0	66	-15	114	AG	16	4.2	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	4.2	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	4.2	0.0	8.0
I. BU2	-227	401	-165	211	AG	14	4.5	0.0	8.0
J. BL2U	-165	211	-22	109	AG	14	4.6	0.0	8.0
K. BL2L	-22	109	-11	65	AG	14	4.6	0.0	8.0
L. BIBC	-11	65	-9	8	AG	14	11.1	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	14	11.0	0.0	8.0
N. C1	-84	-33	-240	-268	AG	16	4.8	0.0	4.0
O. C2	-235	-272	-79	-40	AG	16	4.9	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	16	10.4	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 11

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1130-1200
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	3067.	480.	41.	29.	454.	653.	0.	0.	0.	0.	0.
2. LOC - 2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3. LOC - 4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	524.	45.	9.	7.	22.	19.	0.	0.	0.	0.	0.
5. LOC - 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	218.	22.	17.	15.	16.	23.	4.	4.	0.	0.	5.
7. LOC - 10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	26.	0.	13.	13.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 12

JOB: TEST 3: 2/7/84 1000-1200
RUN: 1130-1200
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	K	L	M	N	O	P
	*	CONC/LINK (PPM)					
1. LOC - 1	*	0.	****	1.	0.	0.	1.
2. LOC - 2	*	0.	0.	0.	0.	0.	0.
3. LOC - 4	*	0.	0.	0.	0.	0.	0.
4. LOC - 5	*	0.	17.	188.	19.	16.	181.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	4.	16.	32.	14.	14.	33.
7. LOC - 10	*	0.	0.	0.	0.	0.	0.
8. LOC - 11	*	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 1

JOB: TEST 4: 3/22/84 1800-2000
RUN: 18-1830
POLLUTANT: SF6

I. SITE VARIABLES

U= 0.7 M/S		Z0= 300. CM	
BRG= 320.0 DEGREES		VD= 0.0 CM/S	
CLAS= 5 (E)		VS= 0.0 CM/S	
MIXH= 1000. M		AMB= 0.0 PPT	
SIGTH= 13. DEGREES		TEMP= 4.0 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	14	12.2	0.0	8.0
B. A1	77	12	732	133	AG	14	5.7	0.0	8.0
C. A2	722	141	76	21	AG	16	5.8	0.0	8.0
D. AIAB	76	21	5	13	AG	14	10.1	0.0	8.0
E. BIAB	5	13	-2	82	AG	14	10.0	0.0	8.0
F. BL1L	-2	82	-15	114	AG	14	10.2	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	5.8	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	5.8	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	6.2	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	6.2	0.0	8.0
K. BL2L	-22	109	-12	79	AG	16	9.4	0.0	8.0
L. BIBC	-12	79	-9	8	AG	16	9.5	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	16	9.7	0.0	8.0
N. C1	-84	-33	-240	-268	AG	16	5.7	0.0	4.0
O. C2	-235	-272	-79	-40	AG	14	5.3	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	14	13.4	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 2

JOB: TEST 4: 3/22/84 1800-2000
RUN: 18-1830
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	809.	0.	0.	0.	0.	0.	0.	128.	114.	175.	240.
2. LOC - 2	3236.	962.	0.	0.	296.	491.	5.	167.	123.	165.	260.
3. LOC - 4	1785.	407.	0.	0.	43.	98.	0.	95.	84.	122.	159.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	315.	0.	149.	166.	0.	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	222.	0.	0.	0.	0.	0.	0.	0.	0.	1.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 3

JOB: TEST 4: 3/22/84 1800-2000
RUN: 18-1830
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	0.	152.	0.	0.	0.	0.
2. LOC - 2	21.	729.	17.	0.	0.	0.
3. LOC - 4	7.	365.	209.	0.	0.	196.
4. LOC - 5	0.	0.	0.	0.	0.	0.
5. LOC - 8	0.	0.	0.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.
7. LOC - 10	0.	0.	4.	116.	96.	5.
8. LOC - 11	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION

JOB: TEST 4: 3/22/84 1800-2000
RUN: 1830-19
POLLUTANT: SF6

I. SITE VARIABLES

U=	0.7	M/S	Z0=	300.	CM
BRG=	315.0	DEGREES	VD=	0.0	CM/S
CLAS=	5	(E)	VS=	0.0	CM/S
MIXH=	1000.	M	AMB=	0.0	PPT
SIGTH=	13.	DEGREES	TEMP=	4.0	DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	14	12.4	0.0	8.0
B. A1	77	12	732	133	AG	16	5.0	0.0	8.0
C. A2	722	141	76	21	AG	14	5.7	0.0	8.0
D. AIAB	76	21	5	13	AG	16	10.1	0.0	8.0
E. BIAB	5	13	-2	82	AG	16	9.9	0.0	8.0
F. BL1L	-2	82	-15	114	AG	16	10.2	0.0	8.0
G. BL1U	-15	114	-153	218	AG	14	6.0	0.0	8.0
H. BU1	-153	218	-216	404	AG	14	6.0	0.0	8.0
I. BU2	-227	401	-165	211	AG	14	6.1	0.0	8.0
J. BL2U	-165	211	-22	109	AG	14	6.1	0.0	8.0
K. BL2L	-22	109	-12	79	AG	14	9.8	0.0	8.0
L. BIBC	-12	79	-9	8	AG	14	9.9	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	14	10.1	0.0	8.0
N. C1	-84	-33	-240	-268	AG	14	5.2	0.0	4.0
O. C2	-235	-272	-79	-40	AG	16	5.1	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	14	12.5	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 5

JOB: TEST 4: 3/22/84 1800-2000
RUN: 1830-19
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	366.	0.	0.	0.	0.	0.	0.	39.	32.	63.	95.
2. LOC - 2	2583.	****	0.	0.	210.	330.	0.	57.	41.	68.	111.
3. LOC - 4	1315.	310.	0.	0.	12.	29.	0.	23.	22.	39.	50.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	321.	0.	160.	155.	0.	0.	0.	0.	3.	3.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	210.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 6

JOB: TEST 4: 3/22/84 1800-2000
RUN: 1830-19
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	*	0.	136.	0.	0.	0.	0.
2. LOC - 2	*	3.	629.	59.	0.	0.	5.
3. LOC - 4	*	0.	194.	303.	0.	0.	334.
4. LOC - 5	*	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	0.	98.	112.	0.
8. LOC - 11	*	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 7

JOB: TEST 4: 3/22/84 1800-2000
RUN: 19-1930
POLLUTANT: SF6

I. SITE VARIABLES

U=	0.7 M/S	Z0=	300. CM
BRG=	300.0 DEGREES	VD=	0.0 CM/S
CLAS=	7 (G)	VS=	0.0 CM/S
MIXH=	1000. M	AMB=	0.0 PPT
SIGTH=	15. DEGREES	TEMP=	1.7 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	16	8.5	0.0	8.0
B. A1	77	12	732	133	AG	14	5.9	0.0	8.0
C. A2	722	141	76	21	AG	16	5.8	0.0	8.0
D. AIAB	76	21	5	13	AG	14	9.7	0.0	8.0
E. BIAB	5	13	-2	82	AG	14	9.5	0.0	8.0
F. BL1L	-2	82	-15	114	AG	14	9.8	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	6.3	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	6.2	0.0	8.0
I. BU2	-227	401	-165	211	AG	16	5.8	0.0	8.0
J. BL2U	-165	211	-22	109	AG	16	5.9	0.0	8.0
K. BL2L	-22	109	-12	79	AG	16	9.3	0.0	8.0
L. BIBC	-12	79	-9	8	AG	16	9.4	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	16	9.5	0.0	8.0
N. C1	-84	-33	-240	-268	AG	16	5.4	0.0	4.0
O. C2	-235	-272	-79	-40	AG	14	5.1	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	16	8.5	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 8

JOB: TEST 4: 3/22/84 1800-2000
RUN: 19-1930
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1. LOC - 1	115.	0.	0.	0.	0.	0.	0.	0.	0.	1.	2.
2. LOC - 2	2234.	901.	0.	0.	24.	42.	0.	0.	0.	1.	2.
3. LOC - 4	1586.	42.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	1311.	3.	397.	427.	5.	12.	18.	91.	133.	122.	77.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	447.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 9

JOB: TEST 4: 3/22/84 1800-2000
RUN: 19-1930
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	0.	113.	0.	0.	0.	0.
2. LOC - 2	0.	377.	615.	0.	0.	271.
3. LOC - 4	0.	23.	771.	1.	0.	751.
4. LOC - 5	0.	0.	0.	0.	0.	0.
5. LOC - 8	15.	11.	1.	0.	0.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.
7. LOC - 10	0.	0.	0.	242.	205.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 10

JOB: TEST 4: 3/22/84 1800-2000
RUN: 1930-20
POLLUTANT: SF6

I. SITE VARIABLES

U= 0.8 M/S		ZO= 300. CM	
BRG= 310.0 DEGREES		VD= 0.0 CM/S	
CLAS= 7 (G)		VS= 0.0 CM/S	
MIXH= 1000. M		AMB= 0.0 PPT	
SIGTH= 8. DEGREES		TEMP= 1.7 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. AIAC	-3	-5	77	12	AG	16	8.6	0.0	8.0
B. A1	77	12	732	133	AG	16	5.7	0.0	8.0
C. A2	722	141	76	21	AG	16	5.7	0.0	8.0
D. AIAB	76	21	5	13	AG	16	9.5	0.0	8.0
E. BIAB	5	13	-2	82	AG	16	9.3	0.0	8.0
F. BL1L	-2	82	-15	114	AG	16	9.6	0.0	8.0
G. BL1U	-15	114	-153	218	AG	16	6.3	0.0	8.0
H. BU1	-153	218	-216	404	AG	16	6.3	0.0	8.0
I. BU2	-227	401	-165	211	AG	14	6.1	0.0	8.0
J. BL2U	-165	211	-22	109	AG	14	6.1	0.0	8.0
K. BL2L	-22	109	-12	79	AG	14	9.9	0.0	8.0
L. BIBC	-12	79	-9	8	AG	14	10.1	0.0	8.0
M. CIBC	-9	8	-84	-33	AG	14	10.2	0.0	8.0
N. C1	-84	-33	-240	-268	AG	14	5.1	0.0	4.0
O. C2	-235	-272	-79	-40	AG	16	5.0	0.0	4.0
P. CIAC	-79	-40	-3	-5	AG	16	8.7	0.0	8.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 11

JOB: TEST 4: 3/22/84 1800-2000
RUN: 1930-20
POLLUTANT: SF6

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
	COORDINATES (M)		
1. LOC - 1	-13	25	1.8
2. LOC - 2	32	-20	1.8
3. LOC - 4	40	-50	1.8
4. LOC - 5	-135	23	1.8
5. LOC - 8	538	-83	1.8
6. LOC - 9	-342	147	1.8
7. LOC - 10	41	-275	1.8
8. LOC - 11	395	414	1.8
9. LOC - 12	-610	-948	1.8

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	PRED CONC (PPT)	A	B	C	D	E	F	G	H	I	J
		CONC/LINK (PPM)									
1. LOC - 1	109.	0.	0.	0.	0.	0.	0.	0.	0.	2.	2.
2. LOC - 2	1988.	****	0.	0.	31.	58.	0.	0.	0.	3.	4.
3. LOC - 4	1302.	87.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4. LOC - 5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5. LOC - 8	693.	0.	341.	335.	0.	0.	0.	0.	10.	6.	0.
6. LOC - 9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7. LOC - 10	378.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8. LOC - 11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
9. LOC - 12	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY 1985 VERSION
PAGE 12

JOB: TEST 4: 3/22/84 1800-2000
RUN: 1930-20
POLLUTANT: SF6

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) K	L	M	N	O	P
1. LOC - 1	*	0.	105.	0.	0.	0.	0.
2. LOC - 2	*	0.	779.	102.	0.	0.	0.
3. LOC - 4	*	0.	30.	607.	0.	0.	578.
4. LOC - 5	*	0.	0.	0.	0.	0.	0.
5. LOC - 8	*	0.	0.	0.	0.	0.	0.
6. LOC - 9	*	0.	0.	0.	0.	0.	0.
7. LOC - 10	*	0.	0.	0.	179.	199.	0.
8. LOC - 11	*	0.	0.	0.	0.	0.	0.
9. LOC - 12	*	0.	0.	0.	0.	0.	0.

APPENDIX C

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 1

JOB: CALINE3 1/12/84 0600-0800
FILE: MAMJ C3DATA
RUN: TEST 1 : 6-630

I. SITE VARIABLES

U =	0.5 M/S	ATIM =	60 MINUTES
BRG =	330 DEGREES	Z0 =	300 CM
CLAS =	6 (F)	VS =	0.0 CM/S
MIXH =	1000 M	VD =	0.0 CM/S
		AMB =	0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	14000	67.0	0	8
B	A1	77	12	732	133	AG	16000	52.0	0	8
C	A2	722	141	76	21	AG	14000	54.0	0	8
D	AIAB	76	21	5	13	AG	16000	80.0	0	8
E	BIAB	5	13	0	66	AG	16000	123.0	0	8
F	BL1L	0	66	-15	114	AG	16000	63.0	0	8
G	BL1U	-15	114	-153	218	AG	16000	62.0	0	8
H	BU1	-153	218	-216	404	AG	16000	62.0	0	8
I	BU2	-227	401	-165	211	AG	16000	57.0	0	8
J	BL2U	-165	211	-22	109	AG	16000	58.0	0	8
K	BL2L	-22	109	-11	65	AG	16000	59.0	0	8
L	BIBC	-11	65	-9	8	AG	16000	102.0	0	8
M	CIBC	-9	8	-84	-33	AG	16000	102.0	0	8
N	C1	-84	-33	-240	-268	AG	16000	52.0	0	8
O	C2	-235	-272	-79	-40	AG	16000	48.0	0	8
P	CIAC	-79	-40	-3	-5	AG	14000	83.0	0	8

III. RECEPTOR LOCATIONS

	RECEPTOR	* COORDINATES (M) X	Y	Z
1.	1	-13	25	2.0
2.	2	32	-20	2.0
3.	4	40	-50	2.0
4.	5	-136	23	2.0
5.	8	538	-83	2.0
6.	9	-342	147	2.0
7.	10	41	-275	2.0
8.	11	395	414	2.0
9.	12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	CONC./LINK (PPB x 10) A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
1	0.0	0.0	0.0	0.0	0.0	0.0	28.1	21.7	16.7	29.9	117.04
2	34.0	0.0	0.0	33.3	82.6	8.4	27.1	14.6	10.5	24.5	293.22
3	21.6	0.0	0.0	12.5	38.9	4.2	23.2	15.2	11.8	22.1	205.09
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.25
5	0.0	10.9	9.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.64
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.4	3.2	1.3	31.29
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	CONC./LINK (PPB x 10) K	L	M	N	O	P
1	0.1	20.6	0.0	0.0	0.0	0.0
2	14.9	43.3	0.0	0.0	0.0	0.0
3	7.8	44.2	2.6	0.0	0.0	0.9
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	5.9	7.0	6.7	4.1
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 2

JOB: CALINE3 1/12/84 0600-0800
FILE: MAMJ C3DATA
RUN: TEST 1 : 630-7

I. SITE VARIABLES

U = 0.4 M/S		ATIM = 60	MINUTES
BRG = 330	DEGREES	Z0 = 300	CM
CLAS = 6 (F)		VS = 0.0	CM/S
MIXH = 1000	M	VD = 0.0	CM/S
		AMB = 0.0	PPM

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	14000.	71.0	0	8
B	A1	77	12	732	133	AG	16000	55.0	0	8
C	A2	722	141	76	21	AG	14000	59.0	0	8
D	AIAB	76	21	5	13	AG	16000	66.0	0	8
E	BIAB	5	13	0	66	AG	16000	118.0	0	8
F	BL1L	0	66	-15	114	AG	16000	57.0	0	8
G	BL1U	-15	114	-153	218	AG	16000	57.0	0	8
H	BU1	-153	218	-216	404	AG	16000	58.0	0	8
I	BU2	-227	401	-165	211	AG	14000	60.0	0	8
J	BL2U	-165	211	-22	109	AG	14000	61.0	0	8
K	BL2L	-22	109	-11	65	AG	14000	62.0	0	8
L	BIBC	-11	65	-9	8	AG	14000	102.0	0	8
M	CIBC	-9	8	-84	-33	AG	14000	102.0	0	8
N	C1	-84	-33	-240	-268	AG	14000	50.0	0	8
O	C2	-235	-272	-79	-40	AG	16000	36.0	0	8
P	CIAC	-79	-40	-3	-5	AG	14000	71.0	0	8

III. RECEPTOR LOCATIONS

	RECEPTOR	* COORDINATES (M) X	Y	Z
1.	1	-13	25	2.0
2.	2	32	-20	2.0
3.	4	40	-50	2.0
4.	5	-136	23	2.0
5.	8	538	-83	2.0
6.	9	-342	147	2.0
7.	10	41	-275	2.0
8.	11	395	414	2.0
9.	12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	CONC./LINK (PPB x 10) A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
1	0.0	0.0	0.0	0.0	0.0	0.0	32.0	25.4	19.2	34.1	132.82
2	43.8	0.0	0.0	33.5	97.1	9.4	31.0	17.1	12.1	28.0	335.42
3	28.0	0.0	0.0	12.7	45.9	4.7	26.6	17.8	13.7	25.3	235.05
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.29
5	0.0	14.3	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.55
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.8	3.7	1.5	33.27
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	CONC./LINK (PPB x 10) K	L	M	N	O	P
1	0.1	22.0	0.0	0.0	0.0	0.0
2	16.9	46.5	0.0	0.0	0.0	0.0
3	8.9	47.6	2.8	0.0	0.0	0.9
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	6.4	7.3	6.3	4.3
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 3

JOB: CALINE3 1/12/84 0600-0800
FILE: MAMJ C3DATA
RUN: TEST 1 : 7-730

I. SITE VARIABLES

U = 0.4 M/S
BRG = 330 DEGREES
CLAS = 6 (F)
MIXH = 1000 M

ATIM = 60 MINUTES
Z0 = 300 CM
VS = 0.0 CM/S
VD = 0.0 CM/S
AMB = 0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	16000	68.0	0	8
B	A1	77	12	732	133	AG	14000	52.0	0	8
C	A2	722	141	76	21	AG	16000	54.0	0	8
D	AIAB	76	21	5	13	AG	14000	81.0	0	8
E	BIAB	5	13	0	66	AG	14000	134.0	0	8
F	BL1L	0	66	-15	114	AG	14000	60.0	0	8
G	BL1U	-15	114	-153	218	AG	14000	60.0	0	8
H	BU1	-153	218	-216	404	AG	14000	68.0	0	8
I	BU2	-227	401	-165	211	AG	16000	59.0	0	8
J	BL2U	-165	211	-22	109	AG	16000	60.0	0	8
K	BL2L	-22	109	-11	65	AG	16000	61.0	0	8
L	BIBC	-11	65	-9	8	AG	16000	110.0	0	8
M	CIBC	-9	8	-84	-33	AG	16000	101.0	0	8
N	C1	-84	-33	-240	-268	AG	16000	49.0	0	8
O	C2	-235	-272	-79	-40	AG	16000	54.0	0	8
P	CIAC	-79	-40	-3	-5	AG	16000	73.0	0	8

III. RECEPTOR LOCATIONS

	RECEPTOR	* COORDINATES (M) X	Y	Z
1.	1	-13	25	2.0
2.	2	32	-20	2.0
3.	4	40	-50	2.0
4.	5	-136	23	2.0
5.	8	538	-83	2.0
6.	9	-342	147	2.0
7.	10	41	-275	2.0
8.	11	395	414	2.0
9.	12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	CONC./LINK (PPB x 10) A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
1	0.0	0.0	0.0	0.0	0.0	0.0	27.1	23.8	19.8	35.2	131.22
2	44.5	0.0	0.0	33.3	89.2	8.0	26.2	16.1	12.5	28.9	329.00
3	28.4	0.0	0.0	12.6	42.1	4.0	22.5	16.7	14.1	26.1	233.71
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.30
5	0.0	10.9	12.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.59
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.6	3.8	1.5	36.22
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	CONC./LINK (PPB x 10) K	L	M	N	O	P
1	0.1	25.1	0.0	0.0	0.0	0.0
2	17.5	52.9	0.0	0.0	0.0	0.0
3	9.2	54.1	3.0	0.0	0.0	1.0
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	6.7	7.5	8.6	4.7
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 4

JOB: CALINE3 1/12/84 0600-0800
FILE: MAMJ C3DATA
RUN: TEST 1 : 730-8

I. SITE VARIABLES

U =	0.4 M/S	ATIM =	60 MINUTES
BRG =	330 DEGREES	Z0 =	300 CM
CLAS =	6 (F)	VS =	0.0 CM/S
MIXH =	1000 M	VD =	0.0 CM/S
		AMB =	0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	* -3	-5	77	12	* AG	16000	65.0	0	8
B	A1	* 77	12	732	133	* AG	16000	52.0	0	8
C	A2	* 722	141	76	21	* AG	16000	51.0	0	8
D	AIAB	* 76	21	5	13	* AG	16000	77.0	0	8
E	BIAB	* 5	13	0	66	* AG	16000	118.0	0	8
F	BL1L	* 0	66	-15	114	* AG	16000	60.0	0	8
G	BL1U	* -15	114	-153	218	* AG	16000	60.0	0	8
H	BU1	* -153	218	-216	404	* AG	16000	60.0	0	8
I	BU2	* -227	401	-165	211	* AG	14000	60.0	0	8
J	BL2U	* -165	211	-22	109	* AG	14000	61.0	0	8
K	BL2L	* -22	109	-11	65	* AG	14000	62.0	0	8
L	BIBC	* -11	65	-9	8	* AG	14000	121.0	0	8
M	CIBC	* -9	8	-84	-33	* AG	14000	109.0	0	8
N	C1	* -84	-33	-240	-268	* AG	14000	48.0	0	8
O	C2	* -235	-272	-79	-40	* AG	16000	52.0	0	8
P	CIAC	* -79	-40	-3	-5	* AG	16000	65.0	0	8

III. RECEPTOR LOCATIONS

	RECEPTOR	* COORDINATES (M) X	Y	Z
1.	1	* -13	25	2.0
2.	2	* 32	-20	2.0
3.	4	* 40	-50	2.0
4.	5	*-136	23	2.0
5.	8	* 538	-83	2.0
6.	9	*-342	147	2.0
7.	10	* 41	-275	2.0
8.	11	* 395	414	2.0
9.	12	*-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
	CONC./LINK (PPB x 10)										
1	0.0	0.0	0.0	0.0	0.0	0.0	31.7	24.6	18.0	32.0	130.90
2	43.3	0.0	0.0	36.8	91.5	9.3	30.5	16.5	11.4	26.3	333.44
3	27.6	0.0	0.0	13.9	43.2	4.6	26.3	17.2	12.8	23.7	234.63
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.27
5	0.0	12.7	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.95
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.7	3.5	1.4	34.20
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	K	L	M	N	O	P
	CONC./LINK (PPB x 10)					
1	0.1	24.6	0.0	0.0	0.0	0.0
2	15.9	51.9	0.0	0.0	0.0	0.0
3	8.4	53.1	2.9	0.0	0.0	0.9
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	6.4	6.6	8.5	4.2
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 1

JOB: TEST 2: 1/12/84 1200-1400
FILE: MAMJ2 C3DATA
RUN: 1230-13

I. SITE VARIABLES

U =	1.5 M/S	ATIM =	60 MINUTES
BRG =	210 DEGREES	Z0 =	300 CM
CLAS =	3 (C)	VS =	0.0 CM/S
MIXH =	1000 M	VD =	0.0 CM/S
		AMB =	0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
		LINK COORDINATES (M)								
A	AIAC	-3	-5	77	12	AG	12000	98.5	0	8
B	AI	77	12	732	133	AG	16000	58.8	0	8
C	A2	722	141	76	21	AG	14000	58.2	0	8
D	AIAB	76	21	5	13	AG	16000	85.1	0	8
E	BIAB	5	13	0	66	AG	16000	151.0	0	8
F	BL1L	0	66	-15	144	AG	16000	65.1	0	8
G	BL1U	-15	144	-153	218	AG	16000	64.7	0	8
H	BU1	-153	218	-216	404	AG	16000	65.2	0	8
I	BU2	-227	401	-165	211	AG	16000	60.4	0	8
J	BL2U	-165	211	-22	109	AG	16000	61.3	0	8
K	BL2L	-22	109	-11	65	AG	16000	62.3	0	8
L	BIBC	-11	65	-9	8	AG	16000	116.0	0	8
M	CIBC	-9	8	-84	-33	AG	16000	115.9	0	8
N	C1	-84	-33	-240	-268	AG	14000	53.6	0	8
O	C2	-235	-272	-79	-40	AG	14000	50.7	0	8
P	CIAC	-79	-40	-3	-5	AG	12000	121.2	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
	COORDINATES (M)		
1. LOC - 1	-13	25	2.0
2. LOC - 2	32	-20	2.0
3. LOC - 4	40	-50	2.0
4. LOC - 5	-135	23	2.0
5. LOC - 8	538	-83	2.0
6. LOC - 9	-342	147	2.0
7. LOC - 10	41	-275	2.0
8. LOC - 11	395	414	2.0
9. LOC - 12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
	CONC./LINK (PPB x 10)										
1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.73
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.33
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.65
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.12
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	0.2	0.8	0.8	0.2	0.2	0.1	0.0	0.0	0.0	0.1	3.19
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	K	L	M	N	O	P
	CONC./LINK (PPB x 10)					
1	0.0	13.9	18.1	2.0	2.0	8.6
2	0.0	0.0	0.0	0.6	0.7	0.1
3	0.0	0.0	0.0	0.3	0.3	0.0
4	0.0	0.0	0.0	1.2	0.9	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.1	0.2	0.2	0.2	0.1
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 2

JOB: TEST 2: 1/12/84 1200-1400
FILE: MAMJ2 C3DATA
RUN: 1230-13

I. SITE VARIABLES

U = 1.5 M/S	ATIM = 60 MINUTES
BRG = 210 DEGREES	Z0 = 300 CM
CLAS = 3 (C)	VS = 0.0 CM/S
MIXH = 1000 M	VD = 0.0 CM/S
	AMB = 0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	16000	98.0	0	8
B	AI	77	12	732	133	AG	16000	59.4	0	8
C	A2	722	141	76	21	AG	12000	60.1	0	8
D	AIAB	76	21	5	13	AG	16000	88.1	0	8
E	BIAB	5	13	0	66	AG	16000	156.0	0	8
F	BL1L	0	66	-15	144	AG	16000	66.1	0	8
G	BL1U	-15	144	-153	218	AG	16000	65.4	0	8
H	BU1	-153	218	-216	404	AG	16000	66.0	0	8
I	BU2	-227	401	-165	211	AG	14000	68.1	0	8
J	BL2U	-165	211	-22	109	AG	14000	69.1	0	8
K	BL2L	-22	109	-11	65	AG	14000	70.0	0	8
L	BIBC	-11	65	-9	8	AG	14000	112.3	0	8
M	CIBC	-9	8	-84	-33	AG	14000	112.6	0	8
N	C1	-84	-33	-240	-268	AG	16000	57.2	0	8
O	C2	-235	-272	-79	-40	AG	16000	57.6	0	8
P	CIAC	-79	-40	-3	-5	AG	16000	135.4	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	2.0
2. LOC - 2	32	-20	2.0
3. LOC - 4	40	-50	2.0
4. LOC - 5	-135	23	2.0
5. LOC - 8	538	-83	2.0
6. LOC - 9	-342	147	2.0
7. LOC - 10	41	-275	2.0
8. LOC - 11	395	414	2.0
9. LOC - 12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
	CONC./LINK (PPB x 10)										
1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.15
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.69
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.82
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.66
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	0.2	0.9	0.7	0.2	0.2	0.1	0.0	0.0	0.0	0.1	3.29
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	K	L	M	N	O	P
	CONC./LINK (PPB x 10)					
1	0.0	11.8	15.4	2.4	2.6	12.8
2	0.0	0.0	0.0	0.7	0.9	0.1
3	0.0	0.0	0.0	0.4	0.4	0.0
4	0.0	0.0	0.0	1.4	1.2	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.1	0.2	0.2	0.2	0.2
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 3

JOB: TEST 2: 1/12/84 1200-1400
FILE: MAMJZ C3DATA
RUN: 13-1330

I. SITE VARIABLES

U =	1.5 M/S	ATIM =	60 MINUTES
BRG =	240 DEGREES	Z0 =	300 CM
CLAS =	3 (C)	VS =	0.0 CM/S
MIXH =	1000 M	VD =	0.0 CM/S
		AMB =	0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	*	-3	-5	77	12	*	AG	14000	85.9	0	8
B	AI	*	77	12	732	133	*	AG	14000	63.7	0	8
C	A2	*	722	141	76	21	*	AG	16000	62.5	0	8
D	AIAB	*	76	21	5	13	*	AG	14000	89.9	0	8
E	BIAB	*	5	13	0	66	*	AG	14000	159.5	0	8
F	BL1L	*	0	66	-15	144	*	AG	14000	65.0	0	8
G	BL1U	*	-15	144	-153	218	*	AG	14000	64.4	0	8
H	BU1	*	-153	218	-216	404	*	AG	14000	64.9	0	8
I	BU2	*	-227	401	-165	211	*	AG	16000	73.2	0	8
J	BL2U	*	-165	211	-22	109	*	AG	16000	74.3	0	8
K	BL2L	*	-22	109	-11	65	*	AG	16000	75.1	0	8
L	BIBC	*	-11	65	-9	8	*	AG	14000	119.8	0	8
M	CIBC	*	-9	8	-84	-33	*	AG	14000	119.9	0	8
N	C1	*	-84	-33	-240	-268	*	AG	14000	56.8	0	8
O	C2	*	-235	-272	-79	-40	*	AG	14000	63.7	0	8
P	CIAC	*	-79	-40	-3	-5	*	AG	14000	126.6	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. LOC - 1	*	-13	25	2.0
2. LOC - 2	*	32	-20	2.0
3. LOC - 4	*	40	-50	2.0
4. LOC - 5	*	-135	23	2.0
5. LOC - 8	*	538	-83	2.0
6. LOC - 9	*	-342	147	2.0
7. LOC - 10	*	41	-275	2.0
8. LOC - 11	*	395	414	2.0
9. LOC - 12	*	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	*	A	B	C	D	E	F	G	H	I	J	*	TOTAL +AMB (PPB x 10)
	*					CONC./LINK (PPB x 10)						*	
1	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	19.44
2	*	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	9.74
3	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	4.33
4	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.06
5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.30
6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.00
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.10
8	*	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.4	*	2.96
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.00

RECEPTOR	*	K	L	M	N	O	P
	*			CONC./LINK (PPB x 10)			
1	*	0.0	2.5	9.1	1.8	1.8	4.2
2	*	0.0	0.0	1.7	2.0	2.3	3.7
3	*	0.0	0.0	0.2	1.7	2.1	0.4
4	*	0.0	0.0	0.0	0.0	0.0	0.0
5	*	0.0	0.0	0.0	0.1	0.1	0.0
6	*	0.0	0.0	0.0	0.0	0.0	0.0
7	*	0.0	0.0	0.0	0.0	0.1	0.0
8	*	0.1	0.2	0.2	0.2	0.2	0.2
9	*	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 4

JOB: TEST 2: 1/12/84 1200-1400
FILE: MAMJ2 C3DATA
RUN: 1330-14

I. SITE VARIABLES

U = 1.6 M/S	ATIM = 60 MINUTES
BRG = 210 DEGREES	Z0 = 300 CM
CLAS = 3 (C)	VS = 0.0 CM/S
MIXH = 1000 M	VD = 0.0 CM/S
	AMB = 0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	*	-3	-5	77	12	*	AG	16000	90.5	0	8
B	AI	*	77	12	732	133	*	AG	16000	64.8	0	8
C	A2	*	722	141	76	21	*	AG	16000	63.3	0	8
D	AIAB	*	76	21	5	13	*	AG	16000	103.1	0	8
E	BIAB	*	5	13	0	66	*	AG	16000	182.6	0	8
F	BL1L	*	0	66	-15	144	*	AG	16000	72.1	0	8
G	BL1U	*	-15	144	-153	218	*	AG	16000	71.5	0	8
H	BU1	*	-153	218	-216	404	*	AG	16000	72.0	0	8
I	BU2	*	-227	401	-165	211	*	AG	14000	68.9	0	8
J	BL2U	*	-165	211	-22	109	*	AG	14000	69.3	0	8
K	BL2L	*	-22	109	-11	65	*	AG	14000	70.3	0	8
L	BIBC	*	-11	65	-9	8	*	AG	16000	112.1	0	8
M	CIBC	*	-9	8	-84	-33	*	AG	16000	111.9	0	8
N	C1	*	-84	-33	-240	-268	*	AG	16000	58.6	0	8
O	C2	*	-235	-272	-79	-40	*	AG	16000	62.3	0	8
P	CIAC	*	-79	-40	-3	-5	*	AG	16000	92.6	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. LOC - 1	*	-13	25	2.0
2. LOC - 2	*	32	-20	2.0
3. LOC - 4	*	40	-50	2.0
4. LOC - 5	*	-135	23	2.0
5. LOC - 8	*	538	-83	2.0
6. LOC - 9	*	-342	147	2.0
7. LOC - 10	*	41	-275	2.0
8. LOC - 11	*	395	414	2.0
9. LOC - 12	*	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	CONC./LINK (PPB x 10) A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.52
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.65
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.82
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.63
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	0.2	0.9	0.9	0.2	0.2	0.1	0.1	0.0	0.0	0.1	3.48
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	CONC./LINK (PPB x 10) K	L	M	N	O	P
1	0.0	12.7	16.5	2.4	2.6	8.2
2	0.0	0.0	0.0	0.7	0.9	0.1
3	0.0	0.0	0.0	0.4	0.5	0.0
4	0.0	0.0	0.0	1.4	1.2	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.1	0.2	0.2	0.2	0.1
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 1

JOB: TEST 3: 2/ 7/84 1000-1200
FILE: MAMF C3DATA
RUN: 1000-1030

I. SITE VARIABLES

U = 0.7 M/S		ATIM = 60	MINUTES
BRG = 120	DEGREES	Z0 = 300	CM
CLAS = 3	(C)	VS = 0.0	CM/S
MIXH = 1000	M	VD = 0.0	CM/S
		AMB = 0.0	PPM

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	14000	81.4	0	8
B	AI	77	12	732	133	AG	14000	53.6	0	8
C	A2	722	141	76	21	AG	14000	54.6	0	8
D	AIAB	76	21	5	13	AG	14000	89.2	0	8
E	BIAB	5	13	0	66	AG	14000	159.0	0	8
F	BL1L	0	66	-15	144	AG	14000	50.6	0	8
G	BL1U	-15	144	-153	218	AG	14000	50.3	0	8
H	BU1	-153	218	-216	404	AG	14000	50.6	0	8
I	BU2	-227	401	-165	211	AG	16000	42.2	0	8
J	BL2U	-165	211	-22	109	AG	16000	43.9	0	8
K	BL2L	-22	109	-11	65	AG	16000	44.6	0	8
L	BIBC	-11	65	-9	8	AG	16000	120.9	0	8
M	CIBC	-9	8	-84	-33	AG	16000	120.9	0	8
N	C1	-84	-33	-240	-268	AG	14000	53.9	0	8
O	C2	-235	-272	-79	-40	AG	14000	54.7	0	8
P	CIAC	-79	-40	-3	-5	AG	14000	84.6	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	2.0
2. LOC - 2	32	-20	2.0
3. LOC - 4	40	-50	2.0
4. LOC - 5	-135	23	2.0
5. LOC - 8	538	-83	2.0
6. LOC - 9	-342	147	2.0
7. LOC - 10	41	-275	2.0
8. LOC - 11	395	414	2.0
9. LOC - 12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
	CONC./LINK (PPB x 10)										
1	14.1	2.0	1.6	16.0	28.2	0.0	0.0	0.0	0.0	0.0	158.33
2	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.30
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.04
4	1.5	0.6	0.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	23.59
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	0.6	0.7	0.6	0.5	0.8	0.3	0.2	0.0	0.0	0.4	9.15
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	0.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.21
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	K	L	M	N	O	P
	CONC./LINK (PPB x 10)					
1	0.0	95.1	1.0	0.0	0.0	0.5
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	1.3	10.0	1.3	1.1	5.4
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.2	0.8	1.6	0.8	0.8	0.9
7	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 2

JOB: TEST 3: 2/ 7/84 1000-1200
FILE: MAMF C3DATA
RUN: 1030-1100

I. SITE VARIABLES

U =	0.8 M/S	ATIM =	60 MINUTES
BRG =	90 DEGREES	Z0 =	300 CM
CLAS =	3 (C)	VS =	0.0 CM/S
MIXH =	1000 M	VD =	0.0 CM/S
		AMB =	0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	16000	87.0	.0	8
B	AI	77	12	732	133	AG	16000	52.3	0	.8
C	A2	722	141	76	21	AG	14000	53.8	0	8
D	AIAB	76	21	5	13	AG	16000	91.6	0	8
E	BIAB	5	13	0	66	AG	16000	162.8	0	8
F	BL1L	0	66	-15	144	AG	16000	46.4	0	8
G	BL1U	-15	144	-153	218	AG	16000	45.9	0	8
H	BU1	-153	218	-216	404	AG	16000	46.3	0	8
I	BU2	-227	401	-165	211	AG	14000	47.3	0	8
J	BL2U	-165	211	-22	109	AG	14000	48.1	0	8
K	BL2L	-22	109	-11	65	AG	14000	48.7	0	8
L	BIBC	-11	65	-9	8	AG	14000	127.5	0	8
M	CIBC	-9	8	-84	-33	AG	14000	127.5	0	8
N	C1	-84	-33	-240	-268	AG	16000	49.7	0	8
O	C2	-235	-272	-79	-40	AG	16000	53.3	0	8
P	CIAC	-79	-40	-3	-5	AG	16000	87.4	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	2.0
2. LOC - 2	32	-20	2.0
3. LOC - 4	40	-50	2.0
4. LOC - 5	-135	23	2.0
5. LOC - 8	538	-83	2.0
6. LOC - 9	-342	147	2.0
7. LOC - 10	41	-275	2.0
8. LOC - 11	395	414	2.0
9. LOC - 12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	*	A	B	C	D	E	F	G	H	I	J	* TOTAL +AMB (PPB x 10)
						CONC./LINK (PPB x 10)						
1	*	7.6	5.8	5.2	16.6	43.9	0.0	0.0	0.0	0.0	0.0	*156.40
2	*	1.9	5.6	4.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	* 11.90
3	*	0.0	2.5	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 4.33
4	*	2.6	2.9	2.5	2.4	4.1	0.6	0.0	0.0	0.0	0.1	* 27.01
5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.00
6	*	0.4	1.3	1.2	0.4	0.7	0.4	1.3	0.3	0.3	1.4	* 9.01
7	*	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.10
8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.02
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.00

RECEPTOR	*	K	L	M	N	O	P
				CONC./LINK (PPB x 10)			
1	*	0.0	77.2	0.0	0.0	0.0	0.0
2	*	0.0	0.0	0.0	0.0	0.0	0.0
3	*	0.0	0.0	0.0	0.0	0.0	0.0
4	*	0.5	3.5	5.0	0.0	0.0	2.8
5	*	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.2	0.5	0.4	0.0	0.0	0.2
7	*	0.0	0.0	0.0	0.0	0.0	0.0
8	*	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 3

JOB: TEST 3: 2/ 7/84 1000-1200
FILE: MAMF C3DATA
RUN: 1100-1130

I. SITE VARIABLES

U =	0.9 M/S	ATIM =	60 MINUTES
BRG =	135 DEGREES	Z0 =	300 CM
CLAS =	3 (C)	VS =	0.0 CM/S
MIXH =	1000 M	VD =	0.0 CM/S
		AMB =	0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	14000	92.9	0	8
B	AI	77	12	732	133	AG	14000	51.0	0	8
C	A2	722	141	76	21	AG	16000	50.0	0	8
D	AIAB	76	21	5	13	AG	14000	132.1	0	8
E	BIAB	5	13	0	66	AG	14000	171.5	0	8
F	BL1L	0	66	-15	144	AG	14000	43.4	0	8
G	BL1U	-15	144	-153	218	AG	14000	43.2	0	8
H	BU1	-153	218	-216	404	AG	14000	43.5	0	8
I	BU2	-227	401	-165	211	AG	16000	50.6	0	8
J	BL2U	-165	211	-22	109	AG	16000	51.4	0	8
K	BL2L	-22	109	-11	65	AG	16000	52.1	0	8
L	BIBC	-11	65	-9	8	AG	16000	124.3	0	8
M	CIBC	-9	8	-84	-33	AG	16000	124.1	0	8
N	C1	-84	-33	-240	-268	AG	14000	53.4	0	8
O	C2	-235	-272	-79	-40	AG	14000	43.6	0	8
P	CIAC	-79	-40	-3	-5	AG	14000	101.2	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	2.0
2. LOC - 2	32	-20	2.0
3. LOC - 4	40	-50	2.0
4. LOC - 5	-135	23	2.0
5. LOC - 8	538	-83	2.0
6. LOC - 9	-342	147	2.0
7. LOC - 10	41	-275	2.0
8. LOC - 11	395	414	2.0
9. LOC - 12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	*	A	B	C	D	E	F	G	H	I	J	*	TOTAL +AMB (PPB x 10)
		CONC./LINK (PPB x 10)											
1	*	12.2	0.4	0.3	12.6	15.9	0.0	0.0	0.0	0.0	0.0	*	126.16
2	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.01
3	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.00
4	*	0.4	0.1	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	*	15.00
5	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.00
6	*	0.2	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.0	*	4.85
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.00
8	*	0.0	0.9	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	1.98
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	*	0.00

RECEPTOR	*	K	L	M	N	O	P
		CONC./LINK (PPB x 10)					
1	*	0.0	79.5	3.1	0.0	0.0	2.2
2	*	0.0	0.0	0.0	0.0	0.0	0.0
3	*	0.0	0.0	0.0	0.0	0.0	0.0
4	*	0.0	0.2	6.2	2.1	1.5	4.2
5	*	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.0	0.3	0.9	1.1	0.9	0.6
7	*	0.0	0.0	0.0	0.0	0.0	0.0
8	*	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 4

JOB: TEST 3: 2/ 7/84 1000-1200
FILE: MAMF C3DATA
RUN: 1130-1200

I. SITE VARIABLES

U =	0.9 M/S	ATIM =	60 MINUTES
BRG =	120 DEGREES	Z0 =	300 CM
CLAS =	3 (C)	VS =	0.0 CM/S
MIXH =	1000 M	VD =	0.0 CM/S
		AMB =	0.0 PPM

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	16000	103.3	0	8
B	AI	77	12	732	133	AG	16000	53.1	0	8
C	A2	722	141	76	21	AG	16000	51.7	0	8
D	AIAB	76	21	5	13	AG	16000	91.7	0	8
E	BIAB	5	13	0	66	AG	16000	162.7	0	8
F	BL1L	0	66	-15	144	AG	16000	42.4	0	8
G	BL1U	-15	144	-153	218	AG	16000	42.1	0	8
H	BU1	-153	218	-216	404	AG	16000	42.3	0	8
I	BU2	-227	401	-165	211	AG	14000	45.0	0	8
J	BL2U	-165	211	-22	109	AG	14000	45.7	0	8
K	BL2L	-22	109	-11	65	AG	14000	46.2	0	8
L	BIBC	-11	65	-9	8	AG	14000	110.6	0	8
M	CIBC	-9	8	-84	-33	AG	14000	110.5	0	8
N	C1	-84	-33	-240	-268	AG	16000	48.1	0	8
O	C2	-235	-272	-79	-40	AG	16000	48.6	0	8
P	CIAC	-79	-40	-3	-5	AG	16000	103.9	0	8

III. RECEPTOR LOCATIONS

RECEPTOR	* COORDINATES (M) X	Y	Z
1. LOC - 1	-13	25	2.0
2. LOC - 2	32	-20	2.0
3. LOC - 4	40	-50	2.0
4. LOC - 5	-135	23	2.0
5. LOC - 8	538	-83	2.0
6. LOC - 9	-342	147	2.0
7. LOC - 10	41	-275	2.0
8. LOC - 11	395	414	2.0
9. LOC - 12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	CONC./LINK (PPB x 10) A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
1	15.3	1.6	1.3	14.0	24.8	0.0	0.0	0.0	0.0	0.0	114.51
2	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03
4	1.6	0.5	0.4	0.9	0.9	0.0	0.0	0.0	0.0	0.0	18.24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	0.6	0.6	0.5	0.5	0.7	0.2	0.1	0.0	0.0	0.2	7.03
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.98
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	CONC./LINK (PPB x 10) K	L	M	N	O	P
1	0.0	56.5	0.6	·0.0	0.0	0.5
2	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.7	5.9	1.0	0.8	5.6
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.1	0.5	0.9	0.6	0.6	0.9
7	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

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CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
         MAY, 1980 VERSION
         PAGE  1

    JOB: CALINE3 3/22/84 1800-2000
   FILE: MAMM C3DATA
    RUN:  TEST 4:18-1830
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I. SITE VARIABLES

```
   U =    0.7 M/S          ATIM =  60  MINUTES
 BRG =   320  DEGREES        Z0 = 300  CM
CLAS =      5 (E)            VS =  0.0 CM/S
MIXH = 1000   M              VD =  0.0 CM/S
                            AMB =  0.0 PPM
```

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	14000	122.0	0	8
B	A1	77	12	732	133	AG	14000	57.0	0	8
C	A2	722	141	76	21	AG	16000	58.0	0	8
D	AIAB	76	21	5	13	AG	14000	102.0	0	8
E	BIAB	5	13	0	66	AG	14000	100.0	0	8
F	BL1L	0	66	-15	114	AG	14000	102.0	0	8
G	BL1U	-15	114	-153	218	AG	16000	58.0	0	8
H	BU1	-153	218	-216	404	AG	16000	58.0	0	8
I	BU2	-227	401	-165	211	AG	16000	62.0	0	8
J	BL2U	-165	211	-22	109	AG	16000	62.0	0	8
K	BL2L	-22	109	-12	79	AG	16000	62.0	0	8
L	BIBC	-12	79	-9	8	AG	16000	94.0	0	8
M	CIBC	-9	8	-84	-33	AG	16000	95.0	0	8
N	C1	-84	-33	-240	-268	AG	16000	97.0	0	8
O	C2	-235	-272	-79	-40	AG	14000	53.0	0	8
P	CIAC	-79	-40	-3	-5	AG	14000	13.0	0	8

III. RECEPTOR LOCATIONS

	RECEPTOR	* COORDINATES (M) X	Y	Z
1.	1	-13	25	2.0
2.	2	32	-20	2.0
3.	4	40	-50	2.0
4.	5	-136	23	2.0
5.	8	538	-83	2.0
6.	9	-342	147	2.0
7.	10	41	-275	2.0
8.	11	395	414	2.0
9.	12	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
	CONC./LINK (PPB x 10)										
1	0.0	0.0	0.0	0.0	0.0	0.0	5.3	4.0	5.2	8.5	35.51
2	37.1	0.0	0.0	12.2	16.3	1.8	6.0	3.7	4.5	8.2	116.38
3	14.5	0.0	0.0	2.7	5.0	0.8	4.0	2.9	3.7	5.6	60.53
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.07
5	0.0	5.3	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.25
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	12.46
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	K	L	M	N	O	P
	CONC./LINK (PPB x 10)					
1	0.0	12.4	0.0	0.0	0.0	0.0
2	1.2	23.3	1.9	0.0	0.0	0.0
3	0.6	11.9	8.0	0.0	0.0	0.8
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.6	7.6	3.7	0.1
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 2

JOB: CALINE3 3/22/84 1800-2000
FILE: MAMM C3DATA
RUN: TEST 4:1830-19

I. SITE VARIABLES

U = 0.7 M/S		ATIM = 60	MINUTES
BRG = 315 DEGREES		Z0 = 300	CM
CLAS = 5 (E)		VS = 0.0	CM/S
MIXH = 1000 M		VD = 0.0	CM/S
		AMB = 0.0	PPM

II. LINK VARIABLES

	LINK DESCRIPTION	*	X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	*	-3	-5	77	12	*	AG	14000	124.0	0	8
B	A1	*	77	12	732	133	*	AG	16000	50.0	0	8
C	A2	*	722	141	76	21	*	AG	14000	57.0	0	8
D	AIAB	*	76	21	5	13	*	AG	16000	100.0	0	8
E	BIAB	*	5	13	0	66	*	AG	16000	99.0	0	8
F	BL1L	*	0	66	-15	114	*	AG	16000	102.0	0	8
G	BL1U	*	-15	114	-153	218	*	AG	14000	60.0	0	8
H	BU1	*	-153	218	-216	404	*	AG	14000	60.0	0	8
I	BU2	*	-227	401	-165	211	*	AG	14000	60.0	0	8
J	BL2U	*	-165	211	-22	109	*	AG	14000	61.0	0	8
K	BL2L	*	-22	109	-12	79	*	AG	14000	98.0	0	8
L	BIBC	*	-12	79	-9	8	*	AG	14000	99.0	0	8
M	CIBC	*	-9	8	-84	-33	*	AG	14000	101.0	0	8
N	C1	*	-84	-33	-240	-268	*	AG	14000	52.0	0	8
O	C2	*	-235	-272	-79	-40	*	AG	16000	51.0	0	8
P	CIAC	*	-79	-40	-3	-5	*	AG	14000	124.0	0	8

III. RECEPTOR LOCATIONS

	RECEPTOR	*	X	Y	Z
1.	1	*	-13	25	2.0
2.	2	*	32	-20	2.0
3.	4	*	40	-50	2.0
4.	5	*	-136	23	2.0
5.	8	*	538	-83	2.0
6.	9	*	-342	147	2.0
7.	10	*	41	-275	2.0
8.	11	*	395	414	2.0
9.	12	*	-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	*	A	B	C	D	E	F	G	H	I	J	* TOTAL +AMB (PPB x 10)
		CONC./LINK (PPB x 10)										
1	*	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.1	2.9	4.7	* 23.13
2	*	40.4	0.0	0.0	10.1	13.6	0.7	3.3	2.1	2.7	4.9	*104.41
3	*	11.5	0.0	0.0	1.4	3.0	0.3	1.9	1.5	1.9	2.9	* 55.43
4	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.01
5	*	0.0	5.7	5.5	0.0	0.0	0.0	0.0	0.2	0.1	0.0	* 11.45
6	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.00
7	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 8.97
8	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.00
9	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	* 0.00

RECEPTOR	*	K	L	M	N	O	P
		CONC./LINK (PPB x 10)					
1	*	0.0	10.7	0.0	0.0	0.0	0.0
2	*	0.7	20.6	4.0	0.0	0.0	1.4
3	*	0.3	7.8	10.7	0.0	0.0	12.2
4	*	0.0	0.0	0.0	0.0	0.0	0.0
5	*	0.0	0.0	0.0	0.0	0.0	0.0
6	*	0.0	0.0	0.0	0.0	0.0	0.0
7	*	0.0	0.0	0.2	4.0	4.5	0.2
8	*	0.0	0.0	0.0	0.0	0.0	0.0
9	*	0.0	0.0	0.0	0.0	0.0	0.0

CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
MAY, 1980 VERSION
PAGE 3

JOB: CALINE3 3/22/84 1800-2000
FILE: MAMM C3DATA
RUN: TEST 4:19-1930

I. SITE VARIABLES

U = 0.7 M/S		ATIM = 60	MINUTES
BRG = 300 DEGREES		Z0 = 300	CM
CLAS = 6 (F)		VS = 0.0	CM/S
MIXH = 1000 M		VD = 0.0	CM/S
		AMB = 0.0	PPM

II. LINK VARIABLES

	LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	-3	-5	77	12	AG	16000	85.0	0	8
B	A1	77	12	732	133	AG	14000	59.0	0	8
C	A2	722	141	76	21	AG	16000	58.0	0	8
D	AIAB	76	21	5	13	AG	14000	97.0	0	8
E	BIAB	5	13	0	66	AG	14000	95.0	0	8
F	BL1L	0	66	-15	114	AG	14000	98.0	0	8
G	BL1U	-15	114	-153	218	AG	16000	63.0	0	8
H	BU1	-153	218	-216	404	AG	16000	62.0	0	8
I	BU2	-227	401	-165	211	AG	16000	58.0	0	8
J	BL2U	-165	211	-22	109	AG	16000	58.0	0	8
K	BL2L	-22	109	-12	79	AG	16000	93.0	0	8
L	BIBC	-12	79	-9	8	AG	16000	94.0	0	8
M	CIBC	-9	8	-84	-33	AG	16000	95.0	0	8
N	C1	-84	-33	-240	-268	AG	16000	54.0	0	8
O	C2	-235	-272	-79	-40	AG	14000	51.0	0	8
P	CIAC	-79	-40	-3	-5	AG	16000	85.0	0	8

(LINK COORDINATES (M): X1, Y1, X2, Y2)

III. RECEPTOR LOCATIONS

	RECEPTOR	X	Y	Z
1.	1	-13	25	2.0
2.	2	32	-20	2.0
3.	4	40	-50	2.0
4.	5	-136	23	2.0
5.	8	538	-83	2.0
6.	9	-342	147	2.0
7.	10	41	-275	2.0
8.	11	395	414	2.0
9.	12	-610	-948	2.0

(COORDINATES (M): X, Y, Z)

IV. MODEL RESULTS

RECEPTOR	A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
	CONC./LINK (PPB x 10)										
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.60
2	36.8	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	74.90
3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.93
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
5	0.0	10.1	11.1	0.0	0.0	0.2	1.6	4.3	3.8	1.2	32.40
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.52
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	K	L	M	N	O	P
	CONC./LINK (PPB x 10)					
1	0.0	8.6	0.0	0.0	0.0	0.0
2	0.0	10.2	20.2	0.0	0.0	7.1
3	0.0	0.2	25.0	0.0	0.0	25.3
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.1	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	7.3	6.2	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0

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CALINE3: CALIFORNIA LINE SOURCE DISPERSION MODEL
         MAY, 1980 VERSION
         PAGE  4

    JOB: CALINE3 3/22/84 1800-2000
   FILE: MAMM C3DATA
    RUN:  TEST 4:1930-20
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I. SITE VARIABLES

```
     U =    0.8 M/S            ATIM =  60   MINUTES
   BRG =   310  DEGREES          Z0 = 300   CM
  CLAS =     6 (F)               VS =   0.0 CM/S
  MIXH = 1000   M                VD =   0.0 CM/S
                                AMB =   0.0 PPM
```

II. LINK VARIABLES

	LINK DESCRIPTION	* LINK COORDINATES (M) X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A	AIAC	* -3	-5	77	12	* AG	16000	86.0	0	8
B	A1	* 77	12	732	133	* AG	16000	57.0	0	8
C	A2	* 722	141	76	21	* AG	16000	57.0	0	8
D	AIAB	* 76	21	5	13	* AG	16000	95.0	0	8
E	BIAB	* 5	13	0	66	* AG	16000	93.0	0	8
F	BL1L	* 0	66	-15	114	* AG	16000	96.0	0	8
G	BL1U	* -15	114	-153	218	* AG	16000	63.0	0	8
H	BU1	* -153	218	-216	404	* AG	16000	62.0	0	8
I	BU2	* -227	401	-165	211	* AG	14000	61.0	0	8
J	BL2U	* -165	211	-22	109	* AG	14000	61.0	0	8
K	BL2L	* -22	109	-12	79	* AG	14000	99.0	0	8
L	BIBC	* -12	79	-9	8	* AG	14000	100.0	0	8
M	CIBC	* -9	8	-84	-33	* AG	14000	102.0	0	8
N	C1	* -84	-33	-240	-268	* AG	14000	51.0	0	8
O	C2	* -235	-272	-79	-40	* AG	16000	50.0	0	8
P	CIAC	* -79	-40	-3	-5	* AG	16000	87.0	0	8

III. RECEPTOR LOCATIONS

	RECEPTOR	* COORDINATES (M) X	Y	Z
1.	1	* -13	25	2.0
2.	2	* 32	-20	2.0
3.	4	* 40	-50	2.0
4.	5	*-136	23	2.0
5.	8	* 538	-83	2.0
6.	9	*-342	147	2.0
7.	10	* 41	-275	2.0
8.	11	* 395	414	2.0
9.	12	*-610	-948	2.0

IV. MODEL RESULTS

RECEPTOR	CONC./LINK (PPB x 10) A	B	C	D	E	F	G	H	I	J	TOTAL +AMB (PPB x 10)
1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.7	1.0	11.47
2	37.0	0.0	0.0	3.3	5.2	0.0	0.5	0.4	0.8	1.3	77.23
3	4.9	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.3	0.4	43.18
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
5	0.0	8.5	8.3	0.0	0.0	0.0	0.0	0.4	0.3	0.0	17.52
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.50
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

RECEPTOR	CONC./LINK (PPB x 10) K	L	M	N	O	P
1	0.0	9.2	0.0	0.0	0.0	0.0
2	0.0	22.3	5.7	0.0	0.0	0.8
3	0.0	2.9	17.5	0.0	0.0	16.7
4	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	5.4	6.1	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0