Reference

NORTH AMERICAN AVIATION

Atomic Energy Research Department

COVER SHEET AND ROUTE-SLIP FOR CLASSIFIED DOCUMENTS

Do not remove this sheet

REPORT NO. NAA-SR-MEMO-643

This document contains 42 pages

This is copy 9 of 12 series A

Issued to Master File

UNCLASSIFIED

Classification

NAA-SR-MEMOS are working papers and may be expanded, modified, or withdrawn at any time, and are intended for internal use only. Further dissemination is not permitted and distribution to abstracting agencies is not authorized.

Each person who receives this document must sign the cover sheet in the space below.

Route to	Noted by	Date	Route to	Noted by	Date

Form No. 91-D Rev. 3/3/53

Issue Date:
March 24, 19[illegible]

TO: R. Chalfer

FROM: M. Neiburger, Associate Professor, Department of Meteorology, University of California, Los Angeles.

SUBJECT: Meteorological Conditions to be Expected at the Proposed Santa Susana Reactor Site.

ABSTRACT

The following report discusses meteorological conditions to be expected at the NAA Santa Susana Field Laboratory site, including the following:

1. All existing observed data at the site.
2. General area data (winds-surface and aloft-direction and duration, precipitation, fog, temperatures, humidity, and discuss reliability of transposing to site.
3. With regard to items 1 and 2, discussion of:
   a. Favorable conditions expected at the site; probability of occurrence; statistics.
   b. Unfavorable conditions expected at the site; probability of occurrence; statistics, and the possible effects on the general public if unfavorable conditions exist.
   c. Inversion conditions in the area and relation to the proposed site; probability of occurance; statistics.
4. Charts, figures, and photographs to substantiate text.
5. A conclusion based on observed data and knowledge of the general area concerning meteorological suitability of site for proposed installation.

I. INTRODUCTION

The proposed Santa Susana reactor site is about 30 miles northwest of downtown Los Angeles, in the Simi hills, which separate the San Fernando valley from the Simi valley to the north and west (see map, Fig. 1). It is 14 miles north of Santa Monica bay, being separated from the coast by the Santa Monica mountains, which are generally above 2000 feet, with 2800 foot peaks in this section. Thus, although the site is itself at an elevation of 1850 feet, it is effectively shielded from direct oceanic influence by the Santa Monica mountains, and it receives air from the ocean principally by way of the San Fernando valley or the Simi valley.

The weather in the Los Angeles area, in general, is dominated by the semi-permanent subtropical anticyclone (high pressure area) of the North Pacific ocean. In summer this anticyclone occupies a position northwest of Los Angeles and blocks the approach of any fronts or storms which might produce rain. The air circulating around the eastern end of it subsides, forming an inversion (temperature increasing with height) which prevents convective showers from taking place either. Thus the summer season is characterized by practically complete absence of rain. In winter, the high is occasionally displaced far enough south or west to allow fronts or low pressure areas to pass, bringing precipitation which may be heavy at times. In summer, stratus clouds are frequent below the inversion during the night and early morning. During the winter, similar conditions occur much less frequently. Surface fogs may occur occasionally throughout the year, but are most frequent near the shore in winter, and farther inland in the fall.

The temperature is mild, being kept from rising unduly in summer by the morning stratus and the sea breeze, and from falling in winter by the low latitude and the ocean influence. At higher elevations, of course, the temperature is lower in winter, and away from the shore it is somewhat higher in summer.

Winds tend to blow from ocean to land in the summer and during daylight hours, and out to sea from the continent in winter.

These general characteristics apply to the reactor site with only slight modifications. So far as details are concerned, and especially with respect to specific wind conditions, variations occur due to differences in terrain. There are three Weather Bureau stations at which detailed observations are made in the Los Angeles area. They are the City Office, in downtown Los Angeles, the International Airport, 11 miles southwest, and the Lockheed Air Terminal, in Burbank, 12 miles northwest (see Fig. 1). The Burbank station, at an elevation of 700 feet in the San Fernando valley, is the nearest to the proposed reactor site but has quite a different topographic exposure. Because of the differences in elevation and exposure, the meteorological data at the Weather Bureau stations cannot be applied to the site without making allowances for these differences.

The only observations which have been made at the proposed site are (a) wind observations during a special 2-week study in the summer of 1952, and (b) diffusion observations made during a few days in December, 1952. In addition, (c) temperature and wind observations were made on occasional days from April, 1951 to June, 1952 when jet engine tests were carried out at the NAA motor test area adjacent to the proposed site. Even the last-named set of data, however, cannot be regarded as representative of the site, because the motor test area is on the other side of a ridge from it.

Thus we are faced with the problem of deducing the climate and weather at the Santa Susana reactor site from a very small amount of data taken at the site and a large amount of data taken by stations at other elevations and in other relationships to the ocean and the topographic features. By use of meteorological principles, however, a fairly reliable estimate can be arrived at.

In the next section we shall summarize the observations which were made at the site, which are particularly significant with respect to the question of dispersal of exhaust products. In Section III a summary of the weather characteristics to be expected at the site will be presented. A discussion of the consequences of these data with respect to reactor location will be given in Section IV. The substantiation of the climatic summary of Section III will be given in Section V. The final section will be devoted to a summary and conclusions.

II. OBSERVATIONS MADE AT THE SITE

A. Trajectory Study

To find the probable trajectories of pollutants introduced into the atmosphere, a program of observations of constant-level balloons was carried out during 2 weeks in July and August, 1952. Such a short series of observations obviously cannot result in reliable averages or frequency distributions, but must be regarded as a sample which may or may not be representative either of the normal condition or the degree of variability about that normal. From the sequence of general weather patterns during this period, however, it was concluded that the sample gives a fair cross section of the trajectories to be expected in summer at the site.

The results of this study was reported in detail in NAA-SR-Memo-420, dated August 20, 1952, and NAA-SR-Memo-414, rev., dated October 1?, 1952. The trajectories (in a few typical cases) are shown in Plates 1-4. The principal conclusions were (1) the winds in all cases were light; (2) the directions of total displacement were variable, but there was a marked lack of movement to the south or southeast; (3) the night and early morning winds were lighter than the afternoon and early evening ones; (4) the initial movement showed a definite diurnal pattern, with northwest and west-northwest winds between 10 A. M. and midnight, and mostly southeast winds between midnight and 10 A. M. Plate 5 illustrates points (3) and (4) by bringing together on the same chart all the trajectories at approximately 3 A. M. (continuous lines) and 3 P. M. (dashed line). In spite of their diverse ultimate courses, all the continuous lines go in the same direction the first 5 or 10 minutes, and all of the dashed lines in more or less the opposite direction.

The meteorological interpretation is quite clear. The point of release was to the northwest of the main ridge. The winds observed at the release point are slope winds, northwest upslope in the afternoon and evening, and southeast downslope at night and in the forenoon. The upslope winds carry the balloon, even with zero lift, up into the upper current, where it then moves independently of, and frequently in the opposite direction to, the slope wind. The upper current was predominantly southerly, but was from the east on some days, and from the west on others, reflecting changes in the general weather situation.

B. Diffusion Studies

By generating smoke of high persistence and photographing at appropriate intervals the ensuing pattern, the nature and degree of diffusion was studied on 3 days in December 1952. The results are shown in six series of photographs. The table below gives the date and time of each series.

Series No.	Date	Time
I.	Dec. 11	6:30 A. M. (pre-sunrise)
II.	Dec. 11	6:30 A. M.
III.	Dec. 11	6:30 A. M.
IV.	Dec. 10	10:00 A. M.
V.	Dec. 9	2:00 P. M.
VI.	Dec. 10	2:00 P. M.

The general weather situation during the period was characterized by a large high pressure system over the Great Basin, resulting in dry easterly winds over Southern California. Only occasional high thin cirrus clouds were present. Wind speeds at the test site averaged 15 miles per hour during the day, and 5 to 10 miles per hour during the night.

In series I it is seen that the flow was quite steady, with little vertical turbulence (no "loops" or other indications of large vertical eddies). The diffusion, shown in the second and third pictures, was mainly in the horizontal, with the smoke tending to fill the gullies, ravines and depressions. The smoke persisted in the low spots for about 10 minutes.

Series II and Series III are close-ups of the same situation, showing minor eddy activity, but generally the tendency is for the smoke to diffuse slowly and settle.

Series IV shows that by 10 A. M. the insolation was sufficient to cause strong vertical currents. The smoke was carried practically straight up and rapidly diffused to invisible concentrations.

The afternoon sequences in Series V and VI likewise show the rapid vertical ascent and diffusion of the smoke

The sequence shows the behavior which may be assumed to be typical in wintertime, when there is no general inversion immediately above the elevation of the site. During the night and early morning, when radiational cooling produces a ground inversion, diffusion is predominantly lateral, with no upward diffusion and general downward drainage into hollows and ravines. After sunrise the heating quickly wipes out the ground inversion, and vertical convective currents carry the smoke upward rapidly and disperse it through a deep layer.

III. ESTIMATED METEOROLOGICAL CONDITIONS AT THE PROPOSED SANTA SUSANA REACTOR SITE

The following summary of the probable meteorological conditions at the site is based on the available data at the site and the data at other places, particularly the Weather Bureau stations. In Section V, the basis for these estimates will be discussed. Here they are set down in summary form to be readily usable.

A. Temperature

By adjusting the values observed at Burbank for the effect of elevation and difference in wind reaching the site, the following values were arrived at:

	January	July	Annual
Mean Daily Maximum Temp.	60° F	90° F	75° F
Mean Daily Minimum Temp.	36	60	50
Average	48	75	62

Number of days per year above 90° 50
Number of days per year below 32° 10

Highest temp. which may occur every year . . . . 96° F
Highest temp. which may occur once in 50 yrs. . . . . . 106° F
Lowest temp. which may occur every year . . . . 25° F
Lowest temp. which may occur once in 50 yrs . . . . . . 12° F

Both the daily range and the annual range of temperature should be slightly greater than at Burbank, and thus much greater than at the Los Angeles International Airport. Nevertheless, the temperatures are moderate throughout the year, with the slightly higher maximum temperatures in summer compensated so far as comfort is concerned by considerable lower humidity than at Burbank.

B. Precipitation

Being in the lee of the Santa Monica mountains, the site probably has a precipitation regime very near that at Burbank, in spite of the greater elevation. Because of the greater height, and correspondingly lower temperatures, during the periods of unstable air which bring the heavier precipitation in this area, snow amounts should be greater. The following estimates are considered highly probable:

Precipitation	Mean	Heaviest (50 yr prob.)
Annual	16.0 inches	40 inches
Summer half yr (May - Oct.)	1.0 inch	7 inches
Winter half yr (Nov. - Apr.)	15.0 inches	38 inches
Rainiest month (Feb.)	3.5 inches	15 inches
Rainiest 24 hrs		8.5 inches
Annual snow	1 inch	7 inches
Max. 24 hr snow		6 inches
Number of days with 0.01 in. or more		40

The precipitation is extremely variable, with many years having less than half the mean amount. Similarly, many years have no snowfall at all, the occasional year with a moderately heavy fall accounting for the measurable average.

C. Winds

The winds in the Los Angeles area are light, with the annual average at the Weather Bureau stations only 5 or 6 miles per hour at anemometer level. With such a small mean flow, the directions are controlled almost entirely by local topographic features. In the case of the site, the surface wind during the cooler hours of the day will be southeasterly, corresponding to the downward slope of the terrain toward Simi valley. The afternoon winds should tend to reflect the main ocean-continent effect, resulting in westerly winds in summer and northerly winds in winter. The few observations available at the site tend to corroborate the following estimates which are based principally on the above reasoning.

Surface Wind	Summer	Winter
Prevailing afternoon direction -	WNW	N(?)
Prevailing early morning direction -	SE	E
Average daytime speed	3 mph	6 mph
Average nighttime speed	2 mph	4 mph
Max. wind (1 min average)	30 mph at least once per yr	
	55 mph once in 50 yrs	

The winds at upper levels are less affected by the terrain. Thus the following data, for Burbank, are probably correct without change for the site. (See Figs. 4 and 5 for greater detail regarding the upper winds at Burbank.)

Upper Winds

	Summer			Winter		
	1000 M	3000 M	5000 M	1000 M	3000 M	5000 M
Prevailing direction	SSE	SW	SW	E	N	NNW
Average speed in prevailing direction (mph)	12	14	22	10	25	30

D. Upper Air Temperatures

Fig. 2 shows the average upper air temperatures at Santa Maria for the months of January and July, 1950. A line has been drawn at the elevation of the proposed site, and the portions of the curves above that elevation should approximate closely the average conditions above the site in those months, except that the January mean curve would show a slight surface inversion at the site, as it does at Santa Maria.

The subsidence inversion shown in the July curve is present almost every day during the summer months (June through September) and frequently in other months of the year. In addition, a ground inversion is produced by radiational cooling during clear nights in fall, winter and spring. As will be discussed in the next section, the presence of the subsidence inversion is actually very favorable from the standpoint of protection of populated areas from waste emissions, but the radiational ground inversions are not. As long as the base of the subsidence inversion is below the height of the site, effluents emitted at the site will tend to remain stratified near or above the level at which they are injected, with practically no tendency for vertical turbulence to carry them downward to the lower ground. Table I gives inversion statistics for the summer months for 4 years at Long Beach with the same data for 1950 at Santa Maria for comparison. Except for the morning soundings in June, the inversion base averages consistently below the elevation of the site. When it is higher than the site, the layer through which the effluents would be stirred to reach the ground at lower levels is enough to produce considerable dilution.

The nocturnal inversions produced on clear nights, particularly in winter, on the other hand, are associated with a tendency for the cooled air to drain downward from the slopes on which the site is located. Reasons to expect that even in these cases the lowlands may be protected from effluents emitted from the site will be presented subsequently.

During the day, even when the subsidence inversion over lower terrain is lower than the site, the diurnal heating tends to establish a stirred layer with adiabatic lapse rate immediately above the hills. This stirred layer is responsible for the upward convection and dispersal of the smoke in the late morning and afternoon cases in the diffusion study described in the preceding section.

E. Cloudiness

The cloud pattern in summer will be considerably different at the proposed site than at the lower stations, due to the fact that the inversion base, which is usually coincident with the top of the stratus cloud, is at a lower elevation. Thus the site experiences clear nights, as well as days, through most of the summer. In other seasons, particularly in spring, the stratus tends to reach greater heights when it occurs, and thus will be present over the site as well as over lower terrain. Spring and fall should likewise be the periods of greatest frequency of fog, with cold air drainage reducing its likelihood in winter. On the other hand, higher clouds, associated with fronts and storms, will be most frequent in winter.

The following gives a rough estimate of the average number of days per month which are clear, partly cloudy and cloudy during the daily hours at the Santa Susana proposed reactor site.

	Number of Days per Month		
	Clear	Partly Cloudy	Cloudy
January	15	8	8
March	14	9	8
May	13	11	7
July	25	5	1
September	22	7	1
November	19	7	4

IV. DISPERSAL OF ATMOSPHERIC POLLUTANTS AT PROPOSED SANTA SUSANA REACTOR SITE

Since a main concern in location of the reactor is the question of safety to surrounding populated areas both in normal operations and is case of a disaster, the question of dispersal of atmospheric contaminants in the paramount meteorological consideration. Some discussion of this question has already been presented in Section II and III. The present section will be devoted to a careful analysis of it.

The two factors which enter are (1) direction and strength of wind, which determine the horizontal transport, and (2) temperature structure in the vertical, which is the primary control of the upward and downward dispersal.* The question of downward dispersal enters because of the elevation of the site above nearly all populated areas.

Strong winds and rapid decrease of temperature with height are the most favorable conditions for rapid dispersal of contaminants by transport and turbulent diffusion. The low wind speeds and great frequency of inversions in the Los Angeles area might seem, at first sight, to make it a highly undesirable location. The fact is that the subsidence inversions are very favorable as a

* The discussion applies only to particles small enough to be effectively carried by the air, and not to particles having a considerable fall velocity relative to the air. In the latter case the downward dispersal is, of course, greatly influenced by the particle size.

protection against downward diffusion,* and the topographic control of the winds due to their lightness leads to movement generally a[illegible] in the case of the site.

Careful

The unusual cases of stormy winds and rainy w[illegible] sion, for in these cases it is obvious that the dispers[illegible] in stormy weather are usually southeast to southwest[illegible] pollutants rapidly away from the populated areas. W[illegible] the wind often goes around to west and northwest, an[illegible] port is toward the San Fernando valley and Los Ange[illegible] unstable and turbulent, and rapid dilution should be [illegible]

The normal weather, on the other hand, with [illegible] of temperature, needs to be examined in detail, sinc[illegible] mally favor maintenance of high concentrations of po[illegible] sider separately daytime and night conditions, and s[illegible] tions.

In summer the subsidence inversion is present both day and night over the coastal plain and valleys, at elevations near or lower than that of the site. The heating of the hills raises the inversion over them during the day, while at night the ground inversion produced by radiational cooling merges with the subsidence inversion. The daytime upslope winds would carry the heated air upward from the site, and at some higher level it would be transported, usually toward the north, but in any case into the middle or upper part of the inversion layer. If the air contained contaminants, these would be prevented by the inversion from diffusing up or down, but could only spread laterally. Thus the subsidence inversion acts in the daytime to protect the valleys and coastal plain from pollutants injected above the inversion base, even if the wind carries them in that direction. As has been stated, most of the time the transport would be from the south toward the desert.

At night, on the other hand, the ground inversion would tend to confine contaminants to the air near the surface, and the cold air would tend to drain downslope northwestward toward the relatively sparsely populated Simi valley.

---

* But not downward fall-out of larger particles

If the air on the slope were cooled sufficiently more than that in the valley, it would drain right down into the valley and might reach the populated areas there. However, since air is heated by compression as it descends, the slope air would have to cool considerably more than the surface air over the valley in order to be cold enough to displace it. The more likely thing is that the surface air in the valley is the colder potentially, and acts as a shield over which the air moving downslope must slide. This is indicated by the early morning observations in the diffusion study, in which it was observed that while the smoke tended to collect in the gulleys and ravines, it did not follow the ravines down into the valley, but tended to level off.

In winter the tendency for nighttime flow toward the Simi valley is augmented by the longer periods of darkness and the tendency for general northeasterly winds from continent to ocean. The above reasoning regarding the shielding layer of cold air at the bottom of the valley would apply more strongly, and it should be expected that contaminants would be kept at higher levels until after diurnal heating wiped out the inversion. At that time the contaminants would be diffused through a thick layer of air, although it might not be thick enough to produce the dilution of 10^{-8} which has been cited as the necessary dilution for safety in case of a disaster.

In the daytime in winter the subsidence inversion is absent much of the time and not very strong most of the remaining time. Thus it might be expected that it will not be present at all over the hills most days. In this situation, contaminants would be dispersed vertically, as in the daytime cases in the diffusion study.

Reviewing the possibilities, it is seen that the only likely dangerous situation is the nighttime drainage into the Simi valley, which is sparsely populated, and in this case as well as the others the probability is that the contaminated air will be prevented from reaching the surface until it has undergone considerable dilution.

There is also a possibility of nighttime drainage through Bell canyon toward the San Fernando valley. The length of this route is such that the pollutants leaving the site could not reach the valley before daytime heating reverses the flow and mixes the pollution by convection.

V. SUBSTANTIATION OF CLIMATOLOGICAL STATISTICS FOR THE SITE

A. Data Available

The U. S. Weather Bureau takes complete surface observations at three locations in the Los Angeles area, the City Office in downtown Los Angeles, the International Airport, 11 miles southwest, and the Lockheed Air Terminal in Burbank, 12 miles northwest. The Burbank station at an elevation of 700 feet in the San Fernando valley, is the nearest to the proposed reactor site. In addition, partial observations are made at a number of cooperative stations, including, in summer, fire lookouts having exposures similar to the reactor site. The data from the cooperative stations are less complete and, being made mostly by untrained personnel, less reliable than the Weather Bureau observations. Besides, they have not been summarized into readily available and useful form. Precipitation data are also available from a number of stations cooperating with the Los Angeles Flood Control District. These data have been summarized and are available in the form of maps.

Winds aloft observations have been made at Burbank and at the International Airport. Upper air temperatures and humidities (radiosonde observations) were obtained in this area only for short scattered periods previous to 1950. Since then, observations have been made regularly at Long Beach.

B. Surface Data

Tables II, III and IV give the weather summaries for the period of record at Los Angeles City Office, International Airport and Burbank, respectively.

1. Temperature - The readings at the International Airport and at Burbank give an idea of the moderating influence of proximity to the ocean.

The International Airport is, on the average, 5.5 degrees cooler than Burbank in summer and 0.6 degree warmer in winter. The average maximum temperature in the summer months is more than 10 degrees cooler at the International Airport, and the minimum temperature is about 3 degrees warmer in winter. At the International Airport the temperature goes above 90° only three times a year, on the average, and below freezing only once a year. Burbank has an average of 47 days above 90° and 6 days below 32° F.

The City Office readings are affected by the presence of large buildings. They are intermediate between those of Burbank and the International Airport, corresponding to intermediate distance from the ocean.

The effect of elevation on temperature in this region, as seen in Fig. 2, is more complicated in this region than in most areas, due to the subsidence inversion in summer. In winter the temperature at 1850 feet would be 4° F colder than at 700 feet. In summer, however, the inversion over the lowland has its base on the average somewhat lower than the site, and thus the site should be expected to have an average temperature which is higher than the stations at lower elevations. Allowing for the fact that radiational cooling should be greater due to the low humidities above the inversion base, the average minimum temperature was estimated to be the same as at Burbank. The average maximum temperature was estimated to be 4° F higher, and this may be a slight underestimate.

2. Precipitation - The average annual precipitation at the three Weather Bureau stations is less than 16 inches, with most of it from November to April. The increase as one approaches the mountains is shown in the difference between the International Airport and the other two stations. On the average it rains a measurable amount (0.01 inch or more) about 40 days a year.

It has snowed during the period of record at all three stations, but only Burbank has a measurable annual average amount (0.6 inch), although downtown Los Angeles has had a 2 inch snowfall. The International Airport has never had a measurable amount of snow during the period of record.

On the average, February is the rainiest month, with over 3 inches at all three stations, and July is the driest, being practically rainless. The rain is extremely variable, with as much falling in a single storm in some years as falls in the entire year in others. The greatest monthly total on record at the City Office is 15.80 inches, which exceeds the annual average. The other stations, with shorter periods of record, have not had as great amounts as that in any 1 month. At Burbank 7.76 inches has fallen in a single 24 hour period.

Fig. 3 shows the Los Angeles Flood Control District map of the average annual precipitation over Los Angeles County. The influence of the mountains in increasing the amounts due to forced ascent is evident. For instance, the Santa Monica mountains, to the south of the proposed reactor site, have amounts up to 25 inches near the crest, while the coastal plain has amounts down to less than 12 inches near the shore. In addition, at the higher elevations, more of the precipitation may occur as snow, although below 3000 feet snow is quite rare. The greatest 24 hour precipitation likely to occur (with probability of once in 50 years) is shown in Fig. 4. Here, too, the effect of topography is conspicuous, with 14 inch amounts at the crest of the Santa Monica mountains, compared with 6 inches or less at the shore, and less than 8 inches in their lee.

Application of the above data to estimate the precipitation at the reactor site involved offsetting the effect of elevation by the influence of the lee effect of the Santa Monica mountains. Fig. 2 suggests that the two just about balance each other at the reactor site. Amounts there should be slightly greater than at Burbank. The heaviest 24 hour amount to be expected in 50 years is probably somewhat higher than that suggested in Fig. 4, since here too the elevation should offset the lee effect.

The average annual snowfall and heaviest probable snow have been estimated by considering the probable occurrence of subfreezing temperatures at that elevation during storms.

3. Winds - The surface winds in the Los Angeles vicinity have a diurnal and a seasonal variation due to the influence of the ocean. In addition they are greatly influenced by topography. Thus the seasonal variation at the City Office shows in the wind prevailing from the northeast in winter, and the west in summer (Table II), while the channeling of the winds by the San Fernando valley gives, for the corresponding effect at Burbank, northwest in winter and south or southeast in summer. Table IV shows the duirnal as well as the seasonal variation at the International Airport and Burbank. In the summer at the International airport the wind is west-southwest all day and well into the night, shifting to east-southeast only for a short period before daybreak. In winter the easterly winds last through the morning, and westerly winds occur only briefly in the afternoon. A corresponding variation occurs at Burbank, but with the sea breeze coming up the valley from the south and southeast, and the land breeze having mostly a northwest component.

For some indication of the surface winds at higher elevations, data for the fire lookout stations nearest the site for a few selected days are shown in Tables VI through IX. The year 1942 was used because that was the latest during which winter as well as summer observations were made at these stations. Oat mountain, in the Santa Susana mountains, is nearest the site, but is quite a bit higher. It shows the seasonal variation, with northerly winds in winter and southerly in summer. The others also suggest this pattern, but with lighter speeds, and more variability of direction.

The wind speeds in summer, and in winter in the absence of storms, are light. Los Angeles City Office has an annual average of only 6 miles per hour, and Burbank and the International Airport have even lower values. While storm winds are not frequent, they occasionally may attain sufficient strength to do minor damage to trees, billboards, power lines, etc. Thus the fastest mile wind recorded at the City Office was 49 miles per hour, and at the International Airport, 62 miles per hour.

The winds at the site should also be expected to be light, the increase in elevation not being sufficient to make material difference in winter, while in summer the winds at moderate elevations may actually be higher than those near sea level, where the sea breeze is influential. Because of the location on a slope just below a divide, the wind is more likely to be variable than those at the International Airport or Burbank. However, much of the time it should be upslope (NW) during the day and downslope (SE) at night. The effect of the absence of low pressure over the continent in winter is likely to be to make the wind more northerly during the day and less southerly during the night.

Table X presents data obtained at the motor test area. Because it is over the divide from the reactor site, it is not representative of the site, but nevertheless it gives some idea of the lightness and variability of the wind, as well as the predominance of west and northwest winds in the afternoon.

4. Fog and Visibility - The occurrence of fog at the ground and other limitations to visibility is so strongly a function of elevation and location in this vicinity that there is little point of discussing the data shown in Tables II, III and IV. The foggiest station is the International Airport, due to its proximity to the ocean. However Burbank has more days with heavy fog than the

City Office, in spite of being farther from the ocean. This is due in part to the effect of the large buildings, but also due to the better radiative cooling conditions which are also reflected in the lower mean minimum temperature.

The proposed reactor site, being near the ridge of the Simi hills, will not be subject to local radiative fog at all, and in general will enjoy excellent visibility both summer and winter. Only when the inversion base is higher than site will there be a chance of fog or stratus cloud. Because of the cold air drainage, there will never be radiational fog in winter. Cloudiness will occur principally during the rainy season and in the spring, when inversions are high or absent.

C. Winds Aloft Data

At levels some distance above the ground the influence of the ground on the wind becomes unimportant, so that the wind at elevations of 5000 feet and higher are controlled almost entirely by the large-scale pressure systems and do not vary rapidly over a short distance. Thus the winds at Burbank, shown graphically in Figs. 5 and 6, may be applied, from 2000 meters up, to the reactor site with no correction. Below 2000 meters the effect of topography must be considered. The most frequent and strongest winds at 2000 meters are in the sector from the north-northwest to east; there is a backing with height until, at 5000 meters, the preponderance is in the sector from north to west. In summer the wind at all levels from 2000 meters is most frequently between west and south, with speeds and frequency from the southwest increasing with height.

VI. SUMMARY AND CONCLUSION

The proposed reactor site is characterized by clear dry weather with moderate to warm temperatures. From the standpoint of construction and operation it would seem an optimum location, with minimum delay of building due to weather, minimum requirements for heating of offices, etc. The light winds, practical absence of thunderstorms, and infrequency of heavy rains or any snows, minimize the danger of damage or requirements for upkeep due to weather.

With respect to safety, the trasport of heavier particles before settling will ordinarily be small, due to the light winds. On the other hand the presence of light winds and inversions serve to concentrate any contaminants capable of remaining suspended for long periods, but in these circumstances, as discussed in Section IV, the contaminants are likely to be confined to layers above the ground by the inversion. Only in case of drainage toward the sparsely inhabited Simi valley is it reasonable to expect that polluted air might reach the surface at all, and even in this case the expectation is that dilution would be considerable.

TABLE I

LONG BEACH INVERSION STATISTICS

Year & Month	Heights in Meters. Temperatures in °C.											
	Base						Top					
	7 A. M.			7 P. M.			7 P. M.			7 P. M.		
	No. Obs.	Av. Ht.	Av. Temp.	No. Obs.	Av. Ht.	Av. Temp.	No. Obs.	Av. Ht.	Av. Temp.	No. Obs.	Av. Ht.	Av. Temp.
1947												
June	21	827	10.9	19	56.3	14.1	21	1324	17.8	19	1255	19.6
July	29	291	16.2	27	264	19.5	29	1061	23.5	27	873	25.1
Aug.	29	492	15.1	26	383	18.9	29	1191	21.1	26	990	28.9
Sept.	25	437	15.6	29	359	18.6	25	1025	23.6	29	958	24.9
1948												
June	24	644	11.3	22	581	14.5	24	1349	16.9	22	1294	18.1
July	24	340	14.1	24	273	17.4	24	979	21.5	24	1041	23.8
Aug.	20	521	12.6	17	235	17.7	20	1282	21.4	17	1024	24.7
1949												
June	30	677	12.3	26	489	16.5	30	1335	20.4	26	1122	22.2
July	31	518	12.8	30	371	18.3	31	1129	21.1	30	982	23.6
Aug.	31	471	14.1	28	287	19.0	31	1111	21.4	28	903	24.1
Sept.	30	366	14.7	30	264	17.5	30	948	23.8	30	787	24.7
1950												
June	30	765	9.7	27	561	13.1	30	1470	17.5	27	1100	19.3
July	28	488	14.8	30	380	17.8	28	1105	24.3	30	980	24.6
Aug.	30	417	13.9	31	338	16.0	30	1061	24.2	31	978	25.0
Sept.	27	633	12.0	26	424	14.4	27	1202	19.7	26	1093	20.3
Santa Maria 1950												
June	27	639	9.6	29	590	10.5	27	1101	18.1	29	1153	18.2
July	29	541	12.4	29	413	14.1	29	1039	23.8	29	973	24.3
Aug.	31	417	10.5	31	415	12.9	31	957	24.4	31	1048	24.3
Sept.	27	587	10.8	26	419	14.0	27	1024	20.1	26	930	22.2

TABLE II

MEANS AND EXTREMES FOR PERIOD OF RECORD

Month	Temperature: Means: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	Mean degree days	Precipitation: Mean total	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Sleet, Hail: Mean total	Maximum monthly	Year	Maximum in 24 hrs.	Year
(a)	75	75	75	75		75		75	75	75		75		75		75	75		75	
J	64.7	46.1	55.4	90	1923	28	1949+	303	3.00	13.30	1916	T	1948	4.20	1916	T	2.0	1932	2.0	1932
F	65.5	47.1	56.3	92	1921	28	1883	252	3.19	13.37	1884	0.00	1933+	5.12	1913	T	T	1951+	T	1951+
M	67.3	48.6	58.0	99	1879	31	1893	230	2.73	12.36	1884	T	1931	6.28	1938	T	T	1952+	T	1952+
A	69.7	51.0	60.3	100	1910	36	1901	160	1.02	7.53	1926	T	1949+	3.14	1926	0.0	0.0		0.0	
M	71.9	53.7	62.8	103	1896	40	1883	97	0.35	3.57	1921	0.00	1938+	1.76	1892	0.0	0.0		0.0	
J	76.2	56.8	66.5	106	1890	46	1894	24	0.07	1.39	1884	0.00	1937+	0.87	1884	0.0	0.0		0.0	
J	81.3	60.1	70.7	109	1891	49	1888	1	0.01	0.27	1886	0.00	1947+	0.24	1886	0.0	0.0		0.0	
A	82.1	60.9	71.5	106	1885	49	1901	*	0.03	0.61	1889	0.00	1950+	0.61	1889	0.0	0.0		0.0	
S	80.7	59.1	69.9	108	1885	44	1880	6	0.20	5.67	1939	0.00	1951+	5.42	1939	0.0	0.0		0.0	
O	76.3	55.4	65.9	104	1950	40	1892	50	0.60	6.96	1889	0.00	1952+	3.62	1889	0.0	0.0		0.0	
N	72.7	51.2	62.0	96	1931+	34	1886	131	1.16	6.53	1900	0.00	1937+	3.79	1900	T	T	1919	T	1919
D	66.6	47.9	57.2	92	1938	30	1897+	248	2.87	15.80	1889	0.00	1930+	7.36	1933	T	T	1952+	T	1952+
Year	72.9	53.2	63.1	109	JUL. 1891	28	JAN. 1949+	1502	15.23	15.80	DEC. 1889	0.00	OCT. 1952+	7.36	DEC. 1933	T	2.0	JAN. 1932	2.0	JAN. 1932

Month	Relative humidity: 4:30 a. PST	12:00 p. PST	4:30 p. PST	Wind: Mean hourly speed	Prevailing direction #	Fastest mile: Speed	Direction	Year	Pct of poss sunshine	Average sky cover sunrise to sunset	Mean number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 inch or more	Thunderstorms	Heavy fog	Max. temp: 90° and above	32° and below	Min. temp: 32° and below	0° and below
(a)	62	37	45	75	75	75	75		56	75	75	75	75	75	75	69	75	75	75	75	75
J	65	45	58	6.4	NE	49	N	1946	70	4.0	15	8	8	6	*	*	1	*	0	*	0
F	72	49	59	6.6	NE	46	NW	1912	68	4.3	12	8	8	6	0	1	2	*	0	*	0
M	76	48	58	6.5	W	41	SW	1881	69	4.4	13	10	8	6	0	1	2	*	*	*	0
A	80	52	59	6.4	W	35	NW	1947+	67	4.4	12	11	7	4	0	1	2	*	0	0	0
M	85	55	62	6.2	W	36	SW	1945	65	4.4	11	13	7	2	0	*	2	1	0	0	0
J	87	56	61	6.0	W	32	N	1949	69	3.7	13	13	4	1	0	*	2	1	0	0	0
J	87	53	59	5.8	W	21	SW	1904	76	2.9	17	13	1	*	0	*	2	2	0	0	0
A	86	52	60	5.7	W	32	SE	1936	80	2.6	19	11	1	*	0	*	2	3	0	0	0
S	81	50	60	5.6	W	32	SE	1939	78	2.8	17	11	2	1	0	*	3	4	0	0	0
O	74	47	61	5.7	W	35	N	1941	76	3.1	17	10	4	2	0	*	3	2	0	0	0
N	60	38	55	6.0	NE	42	N	1946	79	3.0	18	8	4	3	0	*	2	1	0	0	0
D	61	44	57	6.4	NE	44	SE	1943	72	3.7	16	8	7	6	0	*	3	*	0	*	0
Year	76	49	59	6.1	W	49	N	JAN. 1946	73	3.6	180	124	61	39	*	5	24	14	0	*	0

(a) Length of record, years. # Wind direction to 8 compass points only.

TABLE III

MEANS AND EXTREMES FOR PERIOD OF RECORD

Month	Temperature – Means – Daily maximum	Daily minimum	Monthly	Extremes – Record highest	Year	Record lowest	Year	Mean degree days
(a)	17	17	17	17		17		17
J	63.1	42.7	52.9	86	1951	23	1937	373
F	63.2	44.6	53.9	86	1943	32	1942	314
M	61.8	46.7	55.7	87	1952	34	1939	288
A	66.6	50.4	58.5	90	1947+	39	1942+	200
M	68.9	53.7	61.3	92	1941	43	1938+	123
J	70.9	57.0	64.0	93	1949	48	1950+	47
J	73.9	60.2	67.1	92	1936	49	1942	10
A	74.8	60.7	67.8	90	1949	51	1948	5
S	75.0	59.2	67.1	104	1939	47	1948	33
O	72.4	54.8	63.6	97	1950+	41	1942	72
N	ø69.8	48.0	59.0	94	1950	34	1939	192
D	66.1	45.3	55.7	89	1940	33	1951+	288
Year	69.1	51.9	60.5	104	SEP. 1939	23	JAN. 1937	1925

Month	Precipitation – Mean total	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Sleet, Hail – Mean total	Maximum monthly	Year	Maximum in 24 hrs.	Year
(a)	17	17		17		17		17	17		17	
J	2.07	7.23	1952	0.09	1947	2.56	1932+	T	T	1949	T	1949
F	3.24	6.14	1937	0.44	1947	3.79	1937	T	T	1951+	T	1951+
M	2.31	5.98	1938	0.38	1951	2.03	1938	T	T	1932+	T	1952+
A	0.91	3.14	1941	T	1945	0.85	1942	T	T	1950	T	1950
M	0.07	0.43	1941	0.00	1943+	0.43	1941	0.0	0.0		0.0	
J	0.01	0.04	1948+	0.00	1941+	0.04	1936	0.0	0.0		0.0	
J	T	0.05	1936	0.00	1951+	0.05	1936	0.0	0.0		0.0	
A	0.01	0.06	1951	0.00	1946+	0.06	1951	0.0	0.0		0.0	
S	0.27	4.39	1939	0.00	1942+	4.20	1939	0.0	0.0		0.0	
O	0.47	2.34	1936	0.00	1937	1.21	1940	0.0	0.0		0.0	
N	1.11	7.92	1946	0.00	1938	2.91	1946	0.0	0.0		0.0	
D	3.02	6.57	1936	0.01	1950	3.01	1951	T	T	1952+	T	1952+
Year	13.39	8.14	FEB. 1937	0.00	JUL. 1951+	4.20	SEP. 1939	T	T	DEC. 1952+	T	DEC. 1952+

Month	Relative humidity – 4:30 a. PST	10:30 a. PST	4:30 p. PST	10:30 p. PST	Wind – Mean hourly speed	Prevailing direction	Fastest mile – Speed	Direction	Year	Per cent of possible sunshine	Average sky cover sunrise to sunset
(a)	10	10	10	10	4	17	3	3			6
J	#74	#55	#61	#74	6.0	W	48	SW	1951		4.9
F	78	59	64	78	5.6	W	49	NW	1952		5.2
M	82	58	63	79	6.6	W	62	W	1952		5.2
A	84	62	57	81	6.1	W	54	W	1951		6.2
M	84	65	67	81	6.1	W	37	W	1950		5.3
J	85	66	67	81	6.3	WSW	27	W	1952		4.6
J	85	67	69	83	5.7	WSW	24	W	1952		4.3
A	87	68	70	84	5.6	WSW	31	SW	1952		4.0
S	87	65	70	85	5.1	WSW	27	SW	1952		4.4
O	85	63	72	83	4.9	W	38	W	1951		4.1
N	75	52	65	77	4.5	W	43	W	1952		4.3
D	76	56	65	77	5.5	W	49	S	1952		4.7
Year	82	61	67	80	5.7	W	62	W	MAR. 1952		4.8

Month	Mean number of days – Sunrise to sunset – Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 inch or more	Thunderstorms	Heavy fog	Max. temp. – 90° and above	32° and below	Min. temp. – 32° and below	Zero and below
(a)	17	17	17	17	17	10	24	17	17	17	17
J	12	8	10	7	0	[illegible]	6	0	0	1	0
F	11	6	11	7	0	[illegible]	4	0	0	[illegible]	0
M	12	7	12	6	0	1	5	0	0	0	0
A	9	9	13	[illegible]	0	[illegible]	3	[illegible]	0	0	0
M	10	9	12	1	0	0	3	[illegible]	0	0	0
J	8	10	12	[illegible]	0	0	[illegible]	[illegible]	0	0	0
J	9	12	10	1	0	[illegible]	[illegible]	[illegible]	0	0	0
A	10	12	9	[illegible]	0	[illegible]	4	[illegible]	0	0	0
S	12	11	7	1	0	0	5	1	0	0	0
O	13	9	9	3	0	[illegible]	7	1	0	0	0
N	15	8	7	3	0	1	7	1	0	0	0
D	12	9	10	7	0	1	7	0	0	0	0
Year	134	110	121	38	0	4	55	3	0	1	0

(a) Length of record, years. ø 16 years only. # 9 years only. Data entered in the columns headed "Fastest Mile" in these tables are the peak speeds recorded.

TABLE IV

MEANS AND EXTREMES FOR PERIOD OF RECORD

Month	Temperature: Means: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	Mean degree days	Precipitation: Mean total	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year
(a)	21	21	21	21		21		6	21	21		21		21	
J	64.7	39.8	52.3	85	1951+	21	1937	430	2.98	13.42	1952	T	1948	7.76	1943
F	65.7	41.7	53.7	83	1943	25	1937	302	3.32	13.84	1941	T	1933	3.61	1944
M	68.9	44.3	56.6	90	1934	32	1945+	283	2.65	10.24	1941	T	1934+	4.74	1952
A	72.3	48.2	60.3	96	1948+	33	1933	136	0.80	3.38	1941	T	1934	1.20	1941
M	75.4	51.7	63.6	105	1943	35	1933	76	0.09	0.98	1949	T	1952+	0.71	1949
J	78.8	54.9	66.8	103	1937	43	1943	18	0.06	0.17	1934	T	1952+	0.25	1933
J	86.9	58.9	72.9	104	1943+	47	1937	0	T	0.03	1948+	0.00	1947+	0.03	1948+
A	87.5	59.0	73.3	111	1944	47	1943	1	0.06	0.72	1942	0.00	1952+	0.63	1942
S	85.8	56.9	71.4	110	1948	43	1941	5	0.36	6.63	1939	0.00	1943	4.97	1939
O	79.4	51.5	65.5	103	1950+	33	1935	44	0.53	2.10	1934	T	1937	1.55	1934
N	73.8	44.9	59.4	95	1933	28	1931	179	2.10	8.61	1946	0.00	1932	2.03	1952+
D	66.8	41.9	54.3	90	1940+	27	1948	352	3.36	8.07	1940	T	1950	3.12	1945
Year	75.5	49.5	62.5	111	AUG. 1944	21	JAN. 1937	1824	15.38	13.84	FEB. 1941	0.00	AUG. 1952+	7.76	JAN. 1943

Month	Snow, Sleet, Hail: Mean total	Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity: 4:30 a. PST	10:30 a. PST	4:30 p. PST	10:30 p. PST	Wind: Mean hourly speed	Prevailing direction	Fastest mile: Speed	Direction	Year	Pct of poss sunshine	Average sky cover sunrise to sunset
(a)	10	10		10		9	4	9	4	4	21	4	4			4
J	0.5	4.7	1949	4.7	1949	70	55	46	71	4.7	NW	40	NE	1949		5.1
F	T	T	1951+	T	1951+	77	53	48	71	4.1	SE	38	NW	1950		5.2
M	0.1	0.5	1950	0.5	1950	77	51	49	71	5.4	S	32	NW	1949		5.4
A	0.0	0.0		0.0		83	57	49	70	5.4	S	38	NNW	1951		5.7
M	0.0	0.0		0.0		84	53	50	77	5.8	S	25	NW	1951		4.4
J	0.0	0.0		0.0		85	57	51	76	5.8	S	25	NE	1949		3.8
J	0.0	0.0		0.0		84	52	42	77	5.9	SE	19	S	1940		2.9
A	0.0	0.0		0.0		80	48	41	75	5.4	SE	20	SE	1951		2.3
S	0.0	0.0		0.0		79	50	43	76	4.7	S	19	ESE	1952		2.8
O	0.0	0.0		0.0		80	46	51	71	4.2	S	24	NNW	1949		3.5
N	0.0	0.0		0.0		69	48	47	66	3.4	NW	29	NE	1952		4.0
D	T	T	1952+	T	1952+	73	50	50	67	4.2	NW	45	NE	1951		4.5
Year	0.8	4.7	JAN. 1949	4.7	JAN. 1949	78	52	48	73	4.9	S	45	NE	DEC. 1951		4.1

Month	Mean number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Sleet, Hail 1.0 inch or more	Thunderstorms	Heavy fog	Max. temp.: 90° and above	32° and below	Min. temp.: 32° and below	0° and below
(a)	21	21	21	21	10	12	10	10	10	12	10
J	17	8	6	7	*	0	2	0	0	4	0
F	11	7	10	7	0	*	4	0	0	1	0
M	13	9	9	6	0	1	3	0	0	*	0
A	12	10	8	4	0	*	2	1	0	0	0
M	13	11	7	2	0	*	2	2	0	0	0
J	13	10	5	1	0	*	3	3	0	0	0
J	20	9	2	*	0	*	2	11	0	0	0
A	21	8	2	1	0	*	4	13	0	0	0
S	19	9	2	1	0	*	4	12	0	0	0
O	18	8	5	2	0	1	5	4	0	0	0
N	17	8	5	3	0	1	4	1	0	0	0
D	13	8	10	7	0	1	3	0	0	1	0
Year	187	105	73	41	*	5	38	47	0	6	0

(a) Length of record, years.

Data entered in column headed "Fastest mile" in the above table are for the fastest mile observed. This station is not equipped with automatic recording wind instruments.

TABLE V

A - WIND DIRECTION AND SPEED
LOS ANGELES INTERNATIONAL AIRPORT

Mo/Hr	04	10	16	22
June 1951	ESE 3	WSW 5	WSW 11	WSW 3
July	ESE 2	WSW 6	WSW 10	SW 3
Aug.	W 3	WSW 6	WSW 10	W 3
Sept.	E 3	WSW 5	W 9	W 2
Oct.	ENE 2	WSW 4	WSW 8	ESE 3
Nov.	ENE 2	E 3	W 5	N 2
Dec.	NE 6	ESE 6	W 6	E 6
Jan. 1952	NE 6	ESE 6	W 9	ENE 5
Feb.	E 4	ESE 7	W 11	ENE 6
Mar.	ENE 5	SE 9	WSW 14	ESE 7
Apr.	E 4	WSW 7	WSW 10	ESE 5
May	ESE 2	WSW 8	WSW 11	W 3

B - WIND DIRECTION AND SPEED, BURBANK

Mo/Hr	04	10	16	22
June 1951	SE 3	SE 7	S 11	SE 6
July	NNW 2	S 6	S 10	SE 6
Aug.	S 2	S 7	S 10	SE 5
Sept.	WNW 2	SE 5	S 9	ESE 4
Oct.	WSW 2	S 5	S 8	SE 4
Nov.	NNW 2	SE 5	S 6	ESE 2
Dec.	NNW 6	S 5	S 7	NNW 5
Jan. 1952	NNW 3	SE 3	S 6	NW 4
Feb.	NW 2	S 4	S 8	NNW 3
Mar.	ENE 4	SSE 8	S 11	SE 4
Apr.	NW 2	S 6	S 9	ESE 4
May	SE 2	SE 5	S 9	ESE 4

TABLE Va

LECHUZA 6601
4867
MALIBU FOREST

SECTION 16 TWP 15 RANGE 15
MERIDIAN S BBM
LAT 34° 04' 50" LONG 18° 52' 33"

ELEVATION 1560
PRESSURE TABLE 29"

				WIND		CLOUDS					
	DRY	WET	RELATIVE HUMIDITY	DIRECTION FROM	VELOCITY	STATE OF WEATHER	AMOUNT (TENTHS)	KIND	DIRECTION (FROM)	VISIBILITY	PER CENT MOISTURE
Dec. 1, 1942											
0800	42	50	41	None	0	SC	1	070	W		7.5
1200	71	59	49	None	0	LH	-	-	-		6.5
1600	67	59	62	NW	2	LH	-	-	-		8
Dec. 10, 1942											
0800	56	48	31	N	2	OC	9	007	NW		8
1200	69	51	35	N	2	6	-	-	-		7
1600	67	49	43	N	2	C	-	-	-		7
Sept. 1, 1942											
0800	50	54	73	None	0	OC	0	300	S		16
1200	63	56	63	SW	5	OC	9	600	NW		15
1600	66	57	58	SW	7	SC	4	600	NW		11
Sept. 10, 1942											
0800	58	55	83	SE	2	OC	0	500	SE		16
1200	66	59	66	S	6	OH	9	500	SE		13
1600	67	60	71	SW	8	DH	5	400	NW		12
June 26, 1942											
0800	60	58	89	S	4	SC	-	2-0-0	S		14
1200	66	62	80	SW	8	BC	-	4-0-0	S		12
1600	67	61	71	W	6	C	-	-	-		10
June 30, 1942											
0800	57	56	94	SE	2	DF	-	-	-		23
1200	75	65	59	S	3	C	-	-	-		13
1600	66	61	76	S	2	C	-	-	-		12

SRP-310-N

TABLE VI

OAT MTN 6611
ANGELES FOREST

SECTION 17 TWP 3N RANGE 16W
MERIDIAN SAN BERNARDINO
LAT 39° 19' LONG 118° 36'

ELEVATION 3759
PRESSURE TABLE 27

				WIND			CLOUDS				
	DRY	WET	RELATIVE HUMIDITY	DIRECTION FROM	VELOCITY	STATE OF WEATHER	AMOUNT (TENTHS)	KIND	DIRECTION (FROM)	VISIBILITY	PER CENT MOISTURE
Dec. 1, 1942											
0800	63	46	24	NE	23	SC	04	050	V	15	4
1200	68	46	13	NE	16	SC	04	050	V	15	4
1600	68	49	33	NE	8	-	001	040	N	8	4
Dec. 10, 1942											
0800	44	39	17	NE	25	SC	006	050	NE	15	4
1200	56	40	20	NE	20	SC	1	001	V	15	-
1600	59	42	19	NE	12	BC	7	006	V	12	-
Sept. 1, 1942											
0800	53	53	100	S	5	TE	-	-	None	0	U
1200	63	56	63	S	16	UH	-	-	-	3	U
1600	64	58	71	S	16	LH	-	-	-	8	U
Sept. 10, 1942											
0800	55	51	77	NW	6	DH	-	-	-	3	U
1200	53	52	94	S	21	DF	-	-	-	1	U
1600	56	59	89	SW	28	DH	-	-	-	3	U

SRP-310-0

TABLE VII

TOPANGA 6603 | SECTION 18 TWP 15 RANGE 16 | ELEVATION 738

SM MTNS | MERIDIAN 5

LAT 34° LONG 18

	DRY	WET	RELATIVE HUMIDITY	WIND: DIRECTION FROM	WIND: VELOCITY	STATE OF WEATHER	CLOUDS: AMOUNT (TENTHS)	CLOUDS: KIND	CLOUDS: DIRECTION (FROM)	VISIBILITY	PER CENT MOISTURE
Dec. 1, 1942											
0800	57	51	66	O	0	BC	1	100	S		14
1200	62	57	74	S	2	C	0	000	None		14
1600	55	54	94	S	2	OC	10	500	None		15.5
Dec. 10, 1942											
0800	45	36	39	None	0	SC	.95	020	NW		15
1200	60	58	49	None	0	C	0	000	None		14
1600	60	50	99	None	0	C	0	000	None		12
Sept. 1, 1942											
0800	62	57	74	None	0	06	10	500	None		17
1200	61	59	84	None	0	C	10	500	None		14
1600	69	59	55	E	3	C	0	000	None		10.5
Sept. 10, 1942											
0800	56	55	94	None	0	00	0	000	None		20
1200	70	62	64	E	8	C	0	000	None		14
1600	67	60	67	E	8	C	0	000	None		13

TABLE VIII

TRIUNFO 16431
MALIBU FOREST

SECTION 6 TWP 15 RANGE 15W
MERIDIAN SB
LAT 34° 06' LONG 118° 54'

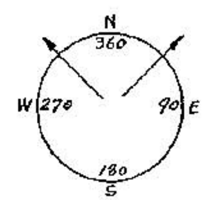
ELEVATION 2665
PRESSURE TABLE 27

	DRY	WET	RELATIVE HUMIDITY	WIND DIRECTION FROM	WIND VELOCITY	STATE OF WEATHER	CLOUDS AMOUNT (TENTHS)	CLOUDS KIND	CLOUDS DIRECTION (FROM)	VISIBILITY	PER CENT MOISTURE
Dec. 1, 1942											
0800	64	47	26	N	12	SC	-	010	N	10	1
1200	70	53	52	None	0	C	-	-	None	10	-
1600	68	50	26	SW	3	C	-	-	None	4	-
Dec. 10, 1942											
0800	55	42	31	N	15	BC	8	070	V	15	-
1200	61	45	26	S	5	SC	1	030	S	9	-
1600	63	46	24	S	5	SC	2	005	NE	9	-
Sept. 1, 1942											
0800	49	45	77	E	2	MF	2	222	E	1	-
1200	57	54	73	S	8	OC	9	600	S	4	-
1600	58	53	72	SW	7	LH	-	-	None	8	-
Sept. 10, 1942											
0800	57	55	89	SE	2	DF	-	-	None	0	-
1200	61	57	69	S	5	BC	100	500	W	2	-
1600	55	53	88	SW	8	OC	900	600	SW	3	-
June 21, 1942											
0800	81	54	14	NE	15	DH	-	-	None	2	-
1200	88	64	27	NW	1	LH	-	-	None	2	-
1600	75	60	21	SW	5	LH	-	-	None	4	-

TABLE IX

SANTA SUSANA
ALT - 1950
BAROMETER - 28.2 (Observed)
(Barometer Figures Below Corrected)
(0 - 10 MPH = C)

DATE	TEMPERATURE WET	TEMPERATURE DRY	BAROMETER	WIND						
5-1-51	52	61	27.7	4:09 3.5(C)	4:53 270(C)	4:57 310(C)	5:02 300(C)			
8-23-51	61	73	27.6	10:01 290(C)	10:17 100(C)	10:27 65(C)	1:59 310(C)	2:08 325(C)	2:18 305(C)	3:16 350(C)
11-2-51	52	74	27.9	12:16 75(14)	12:31 30(12)	12:35 20(12)	12:45 105(17)	3:17 35(C)	3:35 20(13)	3:51 10(C)
5-15-52		70	27.6	1:52 275(C)	2 43 325(12)					



SRP-310-R.

TABLE X

REFERENCE:

XA2J TEST STAND DATA

SANTA SUSANA FACILITY ALTITUDE 1910 FEET

July 24, 1952
Carpentier

Run No.	Date	Temperature of: Dry Bulb	Wet Bulb	Amb. Press Hg. Abs.	Time Hr/Min	Wind Vel. mph	Wind Direct.
1	4/27/51	64	-	-	16:21	0-3	300°
	4/28/51	55	-	-	11:27	0-3	200°
2	5/1/51	61	52	27.7	16:09	0-3	315°
					16:53	0-3	270°
					16:57	0-3	310°
					17:02	0-3	300°
4	5/8/51	71	54	28.6	16:15	0-3	285
					16:30	0-3	315
5C	5/23/51	71	54	28.2	15:23	9	240
					15:36	9	230
					15:46	9	300
8B	6/4/51	65	55	28.1			
10	6/19/51	61	57.5	28.2			
11	6/20/51	59	54	28.15	9:12	0-3	120
					9:15	0-3	160
					9:19	0-3	28
					9:22	0-3	45
12	6/20/51	66	57	28.2	-	-	-
14	6/25/51						
	1 P.M.	70	60	28.2	15:10	0-3	250
	4:30 P.M.	72	61		15:45	0-3	285
					16:25	10	340
15	6/27/51	78	63	28.1	14:49	6	330
					15:10	0-3	315
					15:36	10.5	315
					15:41	9.0	330

TABLE X (Continued)

Run No.	Date	Temperature of: Dry Bulb	Wet Bulb	Amb. Press Hg. Abs.	Time Hr/Min	Wind Vel. mph	Wind Direct.
16	6/29/51				9:42	0-3	62
					10:32	0-3	60
					11:42	0-3	95
					12:00	0-3	75°
18	8/1/51	93	61	28.11			
	8/2/51	86	68	28.10			
	8/3/51	79	65	28.10	15:36	0-3	290
					15:48	14.3	345
					16:05	12.0	330
					16:07	15.3	338
					16:08	0-3	325
19	8/8/51	86	76	28.2	-	-	-
21	8/15/51	90	66	28.25	14:16	0-3	55
					14:41	0-3	65
					14:51	0-3	60
22	8/23/51			28.07	10:01	0-3	290
	(A.M.)	67	60		10:17	0-3	100
					10:27	0-3	65
					13:59	0-3	310
	(P.M.)	79	62		14:18	0-3	305
					15:16	0-3	350
23	8/24/51	72	60	28.04	9:51	0-3	355
		76	60.5		11:18	0-3	55
24	8/31/51	82	-	28.10	-	-	-
25	9/7/51	88	65	28.20	13:06	0-3	5°
					13:58	0-3	5°
					14:27	6.5	5°
26	9/12/51	84	74	28.1	14:07	10.4	309
					14:15	11.0	335
					14:24	29.0	310

TABLE X (Continued)

Run No.	Date	Temperature of: Dry Bulb	Wet Bulb	Amb. Press Hg. Abs.	Time Hr/Min	Wind Vel. mph	Wind Direct.
27	9/14/51	95	64	28.11	11:38	8.8	315
					12:00	0-3	335
		96	67		16:40	5.8	330
28	9/18/51	92	66	28.10	11:42	0-3	80
					12:01	0-3	320
					13:56	6.9	350
					15:39	0-3	315
29	9/21/51	84	66	28.15	14:20	0-3	285
					14:40	6.4	300
30	9/26/51	85	-	28.10	13:52	0-3	5°
					14:08	0-3	5°
32	10/2/51	69	64	28.20	10:50	0-3	5°
					13:22	0-3	220°
		61	59	28.15	18:14	0-3	270°
33	10/30/51	77	58	28.16	13:53	0-3	60°
					14:28	0-3	240
34	11/2/51	74	52	28.40	12:16	14	75
					12:45	17	105
					15:51	0-3	10°
36	11/15/51	73	54	28.20	15:51	0-3	85
					16:15	15.5	15
					16:41	0-3	45
37	12/4/51	54	53	28.35	13:44	0-3	0
					14:47	0-3	0
38	12/10/51	55	38	28.45	12:00	20	70
					12:10	13.9	15
40	1/5/52	36	-	28.30	9:24	0-3	305
					10:15	0-3	5
41	1/8/52	43	-	28.4	11:38	0-3	120
					14:01	0-3	300
					15:16	0-3	330

TABLE X (Continued)

Run No.	Date	Temperature of: Dry Bulb	Wet Bulb	Amb. Press Hg. Abs.	Time Hr/Min	Wind Vel. mph	Wind Direct.
42	1/10/52	56	-	28.3	13:45	0-3	305
					14:00	0-3	320
					16:15	0-3	320
44	2/1/52	70	-	28.45	16:38	0-3	300
46	3/12/52	45	-	28.20	-	0-3	225
					-	0-3	300
					-	10	270
47	3/14/52	42	-	28.3	-	0-3	40
					-	0-3	95
						0-3	145
53	4/22/52	70	-	28.3	-	0-3	325
						9	320
55	5/15/52	70	-	28.12	13:52	0-3	275
					14:43	12	325
57	5/29/52	72		28.15	13:47	0-3	310
58	6/3/52	64	-	28.20	11:38	0-3	60

Note:

(a) Ambient pressure taken on a Kolsman manifold pressure gage. Range 0-200 inch Hg

(b) Engine test runs were conducted under the calmest wind conditions possible.