

Appendix 2A
Supplement

Docket 50-312
Amendment 2
April, 15, 1968

to

SACRAMENTO MUNICIPAL
UTILITY DISTRICT (SMUD)
METEOROLOGICAL INVESTIGATION

Prepared for

Bechtel Corporation
4620 Seville Avenue
Vernon, California

Bechtel Job Number 6292

by

Meteorology Research, Inc.
464 West Woodbury Road
Altadena, California 91001

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4 March 1968

MRI68 FR-718

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INTRODUCTION

The following summary has been prepared as a supplement to the Final Report dated 1 September 1967 which discussed the meteorological conditions at the Rancho Seco site. The summary is based on a reduction and analysis of wind data at the site for the period from September 1967 through January 1968. Copies of these data, reduced at three-hourly intervals, have been furnished to Bechtel Corporation.

In addition to the data recorded at the site, routine airport observations at Stockton were collected for the same period for comparison with concurrent data at the site. Stockton data were also used to obtain frequencies of occurrence of various diffusion categories at Stockton for the period when wind records were available at the site.

Purpose of the summary has been to utilize the site data recorded since 1 September 1967 to update the earlier report and to definitize the appropriate diffusion model criteria on the basis of all currently available data.

SUMMARY OF RESULTS

1. Wind speed occurrences for the site, Sacramento and Stockton are shown on the attached sheet. The differences between Stockton (SCK) and Sacramento (SAC) are attributable to height of the instrument (Stockton is 20 feet; Sacramento, 77 feet). Poor response of the instruments is shown at the low speeds by flat curves at velocities below 3 mph.

The site (53 feet) is intermediate between Sacramento and Stockton in the important range of 5 mph and less. The response of the instrument to low speeds is somewhat better. Some of this is due to the measurements being hourly wind averages rather than five-minute averages.

A second attached sheet shows a comparison between Stockton data and more recent Sacramento data taken after the observing location had been moved to a height of 20 feet. The two curves are brought more nearly into coincidence if corresponding heights are compared. The Sacramento data are from a relatively short period of record and should not be used in preference to the long-period Stockton data.

2. Over the period of measurement record at the site, there were only two hours with calm winds recorded for the hour. Neither of these occurred with an F or G category. Thus, the worst case of calm winds for a two-hour period with moderately stable conditions did not occur.
3. Diffusion categories have been listed on the attached sheet in terms of increasing dilution. The list refers to short releases and does not take account of the increased dilution for the F and G categories which arises from hourly releases. The values for the site have been estimated by decreasing the wind speed at SAC to correspond to a 53-foot height and by increasing the wind speed at SCK to adjust the 20-foot values to a higher level.
4. On the basis of this table, I would recommend the use of category F and 2.0 m/s for the SMUD site. More than 80 per cent of the expected diffusion conditions at the site will show better dispersion than represented by these values. The selection of these values is thereby in accordance with the guidelines laid down by TID-14844. The wind speed of interest has been assumed to be the 53-foot level which should correspond closely to the cloud transport speed for a cloud 100 feet deep released from the site. If the cloud is released initially with this depth, there is no reason to consider a wind speed representative of a lower level for the purposes of obtaining realistic diffusion estimates.
5. The conservative aspects of this selection can be expressed as:
 - a. Conditions corresponding to F and 2.0 m/s (or worse) occur only 15 per cent of the time at Sacramento and are estimated at less than 20 per cent at the site.

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- b. A uni-directional wind has been assumed.
- c. No account has been taken of a meandering effluent cloud. Dispersion data used in the calculations correspond to a 5 to 15 minute release period. An additional dilution factor of 1.5 to 2 can be expected to result from two-hourly releases and the associated meandering under moderately stable conditions.
- d. Published experimental data have indicated that F and 1 m/s calculations tend to underestimate the dispersion for moderately stable conditions, even for short-term releases.
- e. Transport wind speeds associated with a volume source resulting from a hypothetical accident should move with a wind speed characteristic of a higher level than 53 feet. The values measured at 53 feet should represent a conservative estimate of the appropriate wind speed to use for diffusion calculations.

TABLE XVIII
Diffusion Categories in Order of Increasing Dilution

<u>Category</u>	<u>Wind Speed</u> (knots)	<u>SAC</u>	<u>Site*</u>	<u>SCK</u>
F and G	calm	1.4%	3%	10.4%
G	1	1.6	3	10.5
G	2	3.4	5	11.3
F	1	3.4	5	11.3
G	3	10.6	13	26.3
F	2	10.8	13	26.4
F	3	11.5	14.5	27.3
F	4	15.0	19.5	31.0
F	5	19.1	25	34.4

* Estimated for 53-foot level

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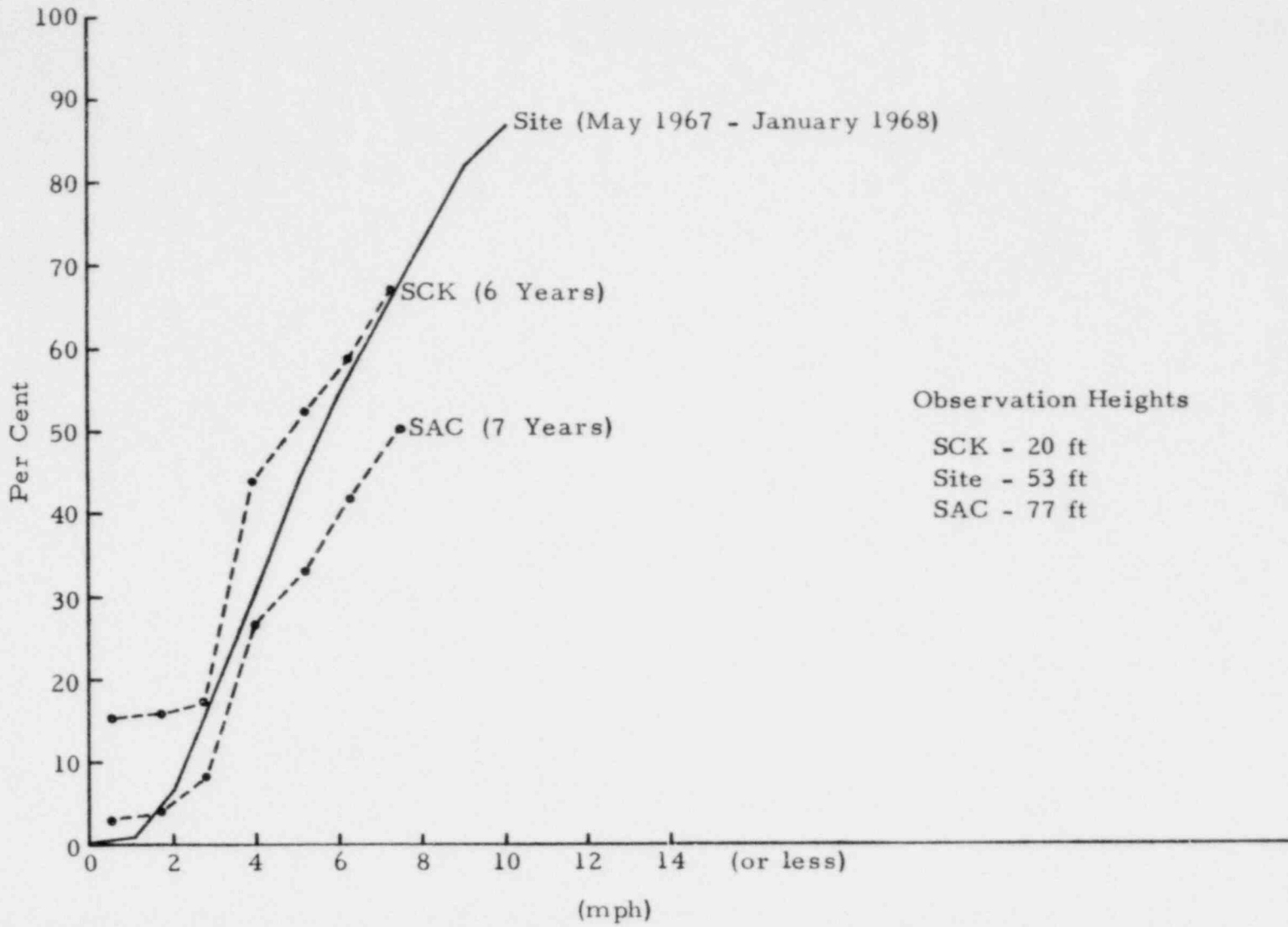


FIGURE 23
WIND SPEED OCCURRENCE - ALL CATEGORIES

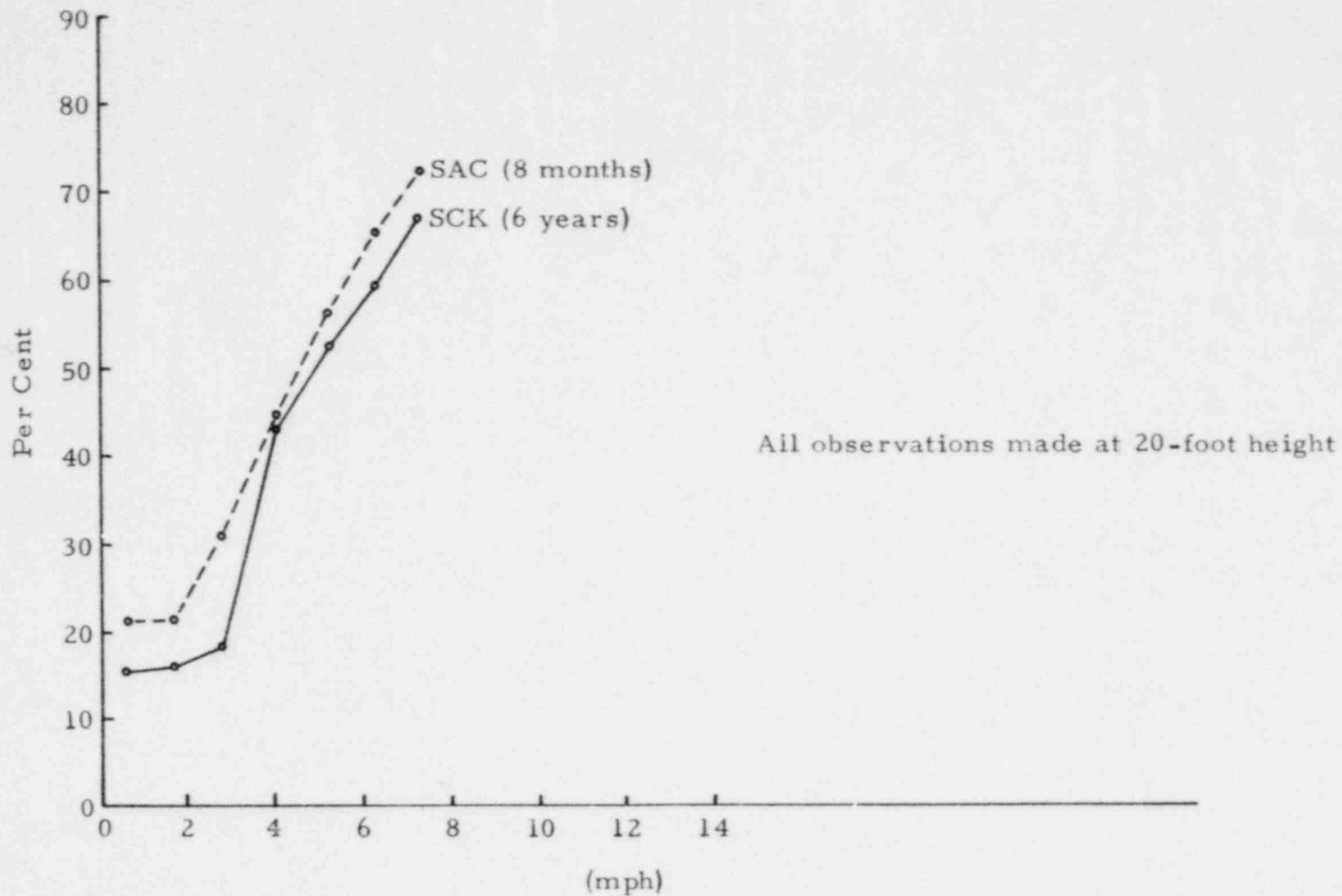


FIGURE 24
WIND SPEED OCCURRENCE - ALL CATEGORIES

TABLE XIX

SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 NOVEMBER, 1967 *** = NOT AVAILABLE

DAY	0000 PST				0300 PST				0600 PST				0900 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB
1	140	3.3	*****	*****	135	5.3	*****	*****	125	6.9	*****	*****	195	2.0	*****	*****
2	175	7.0	*****	*****	155	9.0	*****	*****	125	0.8	*****	*****	125	3.5	*****	*****
3	175	8.6	*****	*****	175	11.1	*****	*****	180	9.5	*****	*****	160	5.8	*****	*****
4	330	2.2	*****	*****	005	2.5	*****	*****	175	2.0	*****	*****	345	3.4	*****	*****
5	240	3.1	*****	*****	245	2.1	*****	*****	235	1.9	*****	*****	190	1.9	*****	*****
6	040	0.5	*****	*****	185	5.2	*****	*****	165	4.5	*****	*****	150	2.2	*****	*****
7	200	4.2	*****	*****	140	6.5	*****	*****	105	1.1	*****	*****	180	2.9	*****	*****
8	310	4.6	*****	*****	075	2.7	*****	*****	110	8.7	*****	*****	110	6.8	*****	*****
9	240	2.3	*****	*****	210	4.2	*****	*****	170	2.4	*****	*****	255	4.3	*****	*****
10	250	0.7	*****	*****	130	2.4	*****	*****	165	2.8	*****	*****	180	3.7	*****	*****
11	160	6.0	*****	*****	120	4.2	*****	*****	110	4.0	*****	*****	165	4.7	*****	*****
12	335	1.5	*****	*****	060	1.7	*****	*****	100	1.1	*****	*****	100	4.3	*****	*****
13	340	2.9	*****	*****	095	4.3	*****	*****	250	3.7	*****	*****	060	4.7	*****	*****
14	315	3.0	*****	*****	330	6.6	*****	*****	140	14.8	*****	*****	215	9.1	*****	*****
15	060	4.8	*****	*****	055	3.2	*****	*****	045	1.7	*****	*****	262	1.9	*****	*****
16	350	6.5	*****	*****	298	5.3	*****	*****	318	3.6	*****	*****	149	2.6	*****	*****
17	078	3.0	*****	*****	191	1.8	*****	*****	222	1.9	*****	*****	126	2.6	*****	*****
18	287	3.9	*****	*****	188	7.7	*****	*****	214	9.1	*****	*****	174	3.2	*****	*****
19	210	6.5	*****	*****	264	16.7	*****	*****	256	9.3	*****	*****	165	8.1	*****	*****
20	128	2.1	*****	*****	226	6.9	*****	*****	197	7.0	*****	*****	206	6.8	*****	*****
21	082	2.8	*****	*****	171	7.4	*****	*****	132	2.7	*****	*****	079	5.4	*****	*****
22	089	4.7	*****	*****	164	6.2	*****	*****	274	5.2	*****	*****	117	3.2	*****	*****
23	142	4.5	*****	*****	191	12.4	*****	*****	180	7.4	*****	*****	163	3.2	*****	*****
24	219	9.2	*****	*****	169	9.3	*****	*****	182	7.4	*****	*****	100	8.0	*****	*****
25	196	6.8	*****	*****	210	4.7	*****	*****	225	1.3	*****	*****	112	1.0	*****	*****
26	185	8.5	*****	*****	183	7.5	*****	*****	144	3.7	*****	*****	202	1.0	*****	*****
27	195	9.5	*****	*****	227	8.2	*****	*****	192	10.5	*****	*****	170	8.0	*****	*****
28	214	11.3	*****	*****	225	7.0	*****	*****	233	6.2	*****	*****	202	3.9	*****	*****
29	250	3.3	*****	*****	184	4.1	*****	*****	203	10.7	*****	*****	215	14.2	*****	*****
30	223	12.4	*****	*****	191	11.8	*****	*****	181	12.3	*****	*****	307	3.7 9.7	*****	*****

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SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 NOVEMBER, 1967 *** = NOT AVAILABLE

DAY	1200 PST				1500 PST				1800 PST				2100 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WR	WD	WS	TEMP	WR	WD	WS	TEMP	WB
1	115	1.6	*****	*****	335	4.3	*****	*****	305	4.5	*****	*****	240	2.0	*****	*****
2	315	1.5	*****	*****	315	4.0	*****	*****	335	3.8	*****	*****	215	5.3	*****	*****
3	240	2.7	*****	*****	265	5.1	*****	*****	275	3.7	*****	*****	340	5.6	*****	*****
4	120	4.1	*****	*****	310	5.0	*****	*****	325	3.7	*****	*****	315	6.3	*****	*****
5	240	4.1	*****	*****	315	7.6	*****	*****	285	2.5	*****	*****	300	5.0	*****	*****
6	280	2.1	*****	*****	230	2.0	*****	*****	020	2.7	*****	*****	345	3.8	*****	*****
7	125	3.1	*****	*****	220	3.5	*****	*****	270	6.1	*****	*****	020	3.5	*****	*****
8	100	4.2	*****	*****	340	6.2	*****	*****	320	11.1	*****	*****	310	5.0	*****	*****
9	290	9.5	*****	*****	245	5.6	*****	*****	330	4.5	*****	*****	015	5.0	*****	*****
10	150	4.6	*****	*****	015	5.0	*****	*****	010	5.5	*****	*****	030	4.4	*****	*****
11	150	0.7	*****	*****	275	2.4	*****	*****	350	4.3	*****	*****	060	3.8	*****	*****
12	030	2.2	*****	*****	360	3.1	*****	*****	300	2.3	*****	*****	295	1.7	*****	*****
13	300	3.9	*****	*****	145	5.7	*****	*****	020	2.9	*****	*****	145	9.6	*****	*****
14	090	8.8	*****	*****	020	3.6	*****	*****	010	9.4	*****	*****	015	8.6	*****	*****
15	309	1.6	*****	*****	340	1.6	*****	*****	025	6.0	*****	*****	049	5.6	*****	*****
16	318	3.5	*****	*****	341	5.4	*****	*****	032	7.4	*****	*****	044	5.8	*****	*****
17	110	2.5	*****	*****	326	4.1	*****	*****	357	1.4	*****	*****	316	6.1	*****	*****
18	215	2.7	*****	*****	152	13.6	*****	*****	340	3.1	*****	*****	267	3.4	*****	*****
19	179	8.1	*****	*****	229	3.4	*****	*****	078	5.2	*****	*****	070	8.1	*****	*****
20	***	*****	*****	*****	017	3.6	*****	*****	015	5.5	*****	*****	009	6.3	*****	*****
21	015	8.8	*****	*****	023	18.6	*****	*****	030	18.8	*****	*****	080	10.0	*****	*****
22	000	0.0	*****	*****	262	4.7	*****	*****	320	2.8	*****	*****	256	3.2	*****	*****
23	159	3.0	*****	*****	342	4.8	*****	*****	277	5.6	*****	*****	211	6.8	*****	*****
24	067	2.9	*****	*****	014	10.6	*****	*****	347	5.4	*****	*****	311	4.2	*****	*****
25	317	1.7	*****	*****	224	2.0	*****	*****	186	5.5	*****	*****	204	12.4	*****	*****
26	129	5.7	*****	*****	086	2.3	*****	*****	256	2.4	*****	*****	204	8.8	*****	*****
27	224	9.3	*****	*****	254	14.2	*****	*****	220	6.1	*****	*****	250	13.1	*****	*****
28	077	1.3	*****	*****	335	12.4	*****	*****	016	12.4	*****	*****	333	2.5	*****	*****
29	213	18.6	*****	*****	217	24.9	*****	*****	223	24.9	*****	*****	241	13.4	*****	*****
30	226	19.8	*****	*****	222	13.0	*****	*****	232	12.4	*****	*****	256	9.8	*****	*****

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SACRAMENTO MUNICIPAL UTILITY DISTRICT
RANCHO SFCO METEOROLOGICAL DATA
WIND DIRECTION IN DEGREES,
WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
NOVEMBER, 1967 *** = NOT AVAILABLE

MONTHLY MEAN TEMP 0.0 FOR 0 CASES
MONTHLY MEAN WET BULB TEMP 0.0 FOR 0 CASES
MONTHLY AVERAGE WIND SPEED 5.7 FOR 239 CASES
MONTHLY AVERAGE WIND SPEED WHEN WET BULB IS
GREATER THAN 68 IS 0.0 FOR 0 CASES

SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 DECEMBER, 1967 *** = NOT AVAILABLE

DAY	0000 PST				0300 PST				0600 PST				0900 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB
1	208	12.0	*****	*****	228	8.0	*****	*****	215	7.9	*****	*****	196	9.2	*****	*****
2	164	9.3	*****	*****	161	12.4	*****	*****	158	12.4	*****	*****	170	12.4	*****	*****
3	194	13.1	*****	*****	198	6.0	*****	*****	182	19.2	*****	*****	204	24.9	*****	*****
4	146	2.3	*****	*****	185	14.3	*****	*****	185	8.4	*****	*****	236	2.9	*****	*****
5	207	29.0	*****	*****	232	17.5	*****	*****	251	9.4	*****	*****	259	8.1	*****	*****
6	113	6.2	*****	*****	064	4.6	*****	*****	109	3.7	*****	*****	170	2.3	*****	*****
7	203	12.4	*****	*****	216	32.2	*****	*****	215	31.1	*****	*****	244	18.6	*****	*****
8	099	5.4	*****	*****	051	7.8	*****	*****	043	5.0	*****	*****	030	7.1	*****	*****
9	234	0.7	*****	*****	191	9.7	*****	*****	221	6.9	*****	*****	125	5.6	*****	*****
10	120	9.4	*****	*****	165	3.8	*****	*****	160	2.3	*****	*****	200	0.8	*****	*****
11	180	5.3	*****	*****	190	8.0	*****	*****	170	6.8	*****	*****	110	5.9	*****	*****
12	120	2.5	*****	*****	060	10.0	*****	*****	050	17.7	*****	*****	040	26.7	*****	*****
13	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****
14	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****
15	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****
16	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****
17	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****
18	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****
19	***	***	*****	*****	***	***	*****	*****	***	***	*****	*****	300	7.4	*****	*****
20	190	11.0	*****	*****	200	10.5	*****	*****	220	8.0	*****	*****	225	17.4	*****	*****
21	135	6.5	*****	*****	125	7.0	*****	*****	100	1.2	*****	*****	235	3.2	*****	*****
22	112	5.8	*****	*****	115	4.8	*****	*****	095	4.6	*****	*****	339	3.4	*****	*****
23	203	3.1	*****	*****	185	6.7	*****	*****	178	4.5	*****	*****	233	5.5	*****	*****
24	139	2.4	*****	*****	109	2.2	*****	*****	152	3.1	*****	*****	006	1.7	*****	*****
25	178	7.5	*****	*****	150	1.3	*****	*****	138	3.7	*****	*****	320	2.2	*****	*****
26	112	5.8	*****	*****	136	3.4	*****	*****	176	2.3	*****	*****	233	3.9	*****	*****
27	119	5.0	*****	*****	080	1.1	*****	*****	161	4.3	*****	*****	248	2.3	*****	*****
28	180	3.3	*****	*****	171	5.8	*****	*****	176	2.5	*****	*****	296	1.5	*****	*****
29	214	7.0	*****	*****	004	5.0	*****	*****	080	3.4	*****	*****	013	2.6	*****	*****
30	236	11.2	*****	*****	181	1.6	*****	*****	130	2.3	*****	*****	010	5.7	*****	*****
31	215	5.3	*****	*****	225	7.4	*****	*****	250	1.1	*****	*****	350	2.2	*****	*****

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SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 DECEMBER, 1967 *** = NOT AVAILABLE

DAY	1200 PST				1500 PST				1800 PST				2100 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB
1	188	5.9	*****	*****	263	4.6	*****	*****	342	1.9	*****	*****	353	2.5	*****	*****
2	220	5.0	*****	*****	211	18.6	*****	*****	235	10.5	*****	*****	194	6.5	*****	*****
3	210	27.7	*****	*****	197	21.1	*****	*****	191	13.1	*****	*****	163	8.8	*****	*****
4	215	11.8	*****	*****	217	22.2	*****	*****	218	24.9	*****	*****	223	31.1	*****	*****
5	287	7.2	*****	*****	269	8.1	*****	*****	313	6.1	*****	*****	287	0.7	*****	*****
6	240	3.1	*****	*****	262	5.0	*****	*****	337	1.2	*****	*****	182	8.0	*****	*****
7	224	21.1	*****	*****	257	11.8	*****	*****	321	6.2	*****	*****	348	1.3	*****	*****
8	038	8.4	*****	*****	028	19.7	*****	*****	038	11.3	*****	*****	359	5.2	*****	*****
9	060	2.8	*****	*****	260	3.2	*****	*****	275	3.1	*****	*****	110	2.8	*****	*****
10	350	1.2	*****	*****	350	5.8	*****	*****	325	4.6	*****	*****	360	0.6	*****	*****
11	360	3.8	*****	*****	340	8.2	*****	*****	325	5.3	*****	*****	230	1.3	*****	*****
12	040	42.8	*****	*****	040	33.2	*****	*****	070	20.5	*****	*****	***	*****	*****	*****
13	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****
14	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****
15	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****
16	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****
17	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****
18	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****
19	320	7.5	*****	*****	310	0.9	*****	*****	170	8.4	*****	*****	185	12.5	*****	*****
20	215	9.7	*****	*****	225	6.6	*****	*****	175	8.5	*****	*****	165	10.8	*****	*****
21	360	2.2	*****	*****	035	4.1	*****	*****	105	5.9	*****	*****	125	4.1	*****	*****
22	332	2.7	*****	*****	018	7.5	*****	*****	169	4.7	*****	*****	099	2.0	*****	*****
23	234	2.4	*****	*****	238	1.9	*****	*****	193	12.4	*****	*****	179	8.7	*****	*****
24	319	2.8	*****	*****	251	2.5	*****	*****	185	6.1	*****	*****	169	7.8	*****	*****
25	301	1.9	*****	*****	240	3.5	*****	*****	169	6.1	*****	*****	129	4.8	*****	*****
26	243	5.5	*****	*****	228	8.5	*****	*****	184	9.8	*****	*****	185	9.5	*****	*****
27	315	2.2	*****	*****	297	2.5	*****	*****	126	2.7	*****	*****	124	4.4	*****	*****
28	234	4.8	*****	*****	202	8.9	*****	*****	110	5.8	*****	*****	343	4.0	*****	*****
29	033	6.6	*****	*****	328	3.4	*****	*****	194	8.5	*****	*****	253	15.6	*****	*****
30	010	8.8	*****	*****	305	4.3	*****	*****	190	11.8	*****	*****	190	12.8	*****	*****
31	300	4.4	*****	*****	270	2.9	*****	*****	030	3.7	*****	*****	290	1.5	*****	*****

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SACRAMENTO MUNICIPAL UTILITY DISTRICT
RANCHO SECO METEOROLOGICAL DATA
WIND DIRECTION IN DEGREES,
WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
DECEMBER, 1967 *** = NOT AVAILABLE

MONTHLY MEAN TEMP 0.0 FOR 0 CASES
MONTHLY MEAN WET BULB TEMP 0.0 FOR 0 CASES
MONTHLY AVERAGE WIND SPEED 7.8 FOR 196 CASES
MONTHLY AVERAGE WIND SPEED WHEN WET BULB IS
GREATER THAN 68 IS 0.0 FOR 0 CASES

SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 JANUARY, 1968 *** = NOT AVAILABLE

DAY	0000 PST				0300 PST				0600 PST				0900 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB
1	005	3.1	*****	*****	235	8.5	*****	*****	215	6.2	*****	*****	185	4.5	*****	*****
2	025	4.5	*****	*****	045	1.8	*****	*****	240	5.0	*****	*****	265	2.5	*****	*****
3	075	2.8	*****	*****	180	2.1	*****	*****	225	5.8	*****	*****	240	6.2	*****	*****
4	135	5.7	*****	*****	140	4.6	*****	*****	105	1.0	*****	*****	020	2.3	*****	*****
5	155	3.6	*****	*****	185	1.7	*****	*****	195	4.3	*****	*****	255	5.0	*****	*****
6	225	7.1	*****	*****	230	7.3	*****	*****	190	3.7	*****	*****	350	1.8	*****	*****
7	245	2.5	*****	*****	255	2.6	*****	*****	210	1.6	*****	*****	355	2.4	*****	*****
8	225	8.0	*****	*****	215	4.6	*****	*****	225	3.4	*****	*****	180	2.6	*****	*****
9	190	5.6	*****	*****	225	4.4	*****	*****	185	3.9	*****	*****	225	10.0	*****	*****
10	215	28.4	*****	*****	210	36.8	*****	*****	240	24.8	*****	*****	285	13.6	*****	*****
11	115	7.5	*****	*****	050	5.1	*****	*****	045	5.6	*****	*****	030	11.0	*****	*****
12	165	6.7	*****	*****	125	8.0	*****	*****	160	4.3	*****	*****	360	3.3	*****	*****
13	100	5.2	*****	*****	125	12.6	*****	*****	025	7.4	*****	*****	030	2.1	*****	*****
14	340	3.5	*****	*****	180	5.1	*****	*****	265	5.4	*****	*****	175	4.0	*****	*****
15	195	13.9	*****	*****	225	13.0	*****	*****	230	14.1	*****	*****	235	13.2	*****	*****
16	300	2.2	*****	*****	160	6.2	*****	*****	175	7.4	*****	*****	***	***	*****	*****
17	090	2.8	*****	*****	070	4.8	*****	*****	040	5.5	*****	*****	020	4.0	*****	*****
18	135	5.6	*****	*****	150	3.7	*****	*****	330	0.9	*****	*****	190	4.7	*****	*****
19	195	1.7	*****	*****	120	4.0	*****	*****	110	6.3	*****	*****	240	2.5	*****	*****
20	180	7.1	*****	*****	170	8.4	*****	*****	140	4.3	*****	*****	240	1.3	*****	*****
21	125	3.5	*****	*****	130	1.3	*****	*****	170	3.6	*****	*****	330	1.9	*****	*****
22	045	1.9	*****	*****	230	5.0	*****	*****	190	10.7	*****	*****	225	3.4	*****	*****
23	190	11.2	*****	*****	115	6.6	*****	*****	130	6.9	*****	*****	145	4.5	*****	*****
24	090	4.3	*****	*****	060	0.5	*****	*****	110	3.7	*****	*****	225	4.4	*****	*****
25	150	5.7	*****	*****	090	5.5	*****	*****	085	4.3	*****	*****	050	3.2	*****	*****
26	190	11.9	*****	*****	220	8.1	*****	*****	210	11.2	*****	*****	225	9.3	*****	*****
27	210	10.6	*****	*****	180	10.6	*****	*****	180	11.8	*****	*****	175	8.6	*****	*****
28	225	14.3	*****	*****	225	14.9	*****	*****	225	16.7	*****	*****	180	17.1	*****	*****
29	210	28.5	*****	*****	210	34.2	*****	*****	210	34.2	*****	*****	210	35.7	*****	*****
30	210	42.9	*****	*****	215	29.5	*****	*****	255	11.8	*****	*****	215	23.9	*****	*****
31	285	3.8	*****	*****	185	7.3	*****	*****	185	7.9	*****	*****	180	10.2	*****	*****

SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 JANUARY, 1968 *** = NOT AVAILABLE

DAY	1200 PST				1500 PST				1800 PST				2100 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB
1	225	10.0	*****	*****	195	8.2	*****	*****	275	2.4	*****	*****	040	7.0	*****	*****
2	030	5.2	*****	*****	355	1.6	*****	*****	030	3.6	*****	*****	115	3.1	*****	*****
3	205	8.7	*****	*****	190	9.2	*****	*****	150	7.6	*****	*****	120	6.7	*****	*****
4	350	5.9	*****	*****	350	6.1	*****	*****	010	1.0	*****	*****	220	2.8	*****	*****
5	315	5.0	*****	*****	125	2.6	*****	*****	225	9.0	*****	*****	215	10.9	*****	*****
6	120	1.8	*****	*****	080	3.6	*****	*****	125	4.0	*****	*****	290	1.8	*****	*****
7	320	1.7	*****	*****	100	2.9	*****	*****	180	1.8	*****	*****	240	3.9	*****	*****
8	060	3.2	*****	*****	330	4.6	*****	*****	310	2.3	*****	*****	115	4.0	*****	*****
9	225	16.1	*****	*****	220	13.8	*****	*****	210	21.5	*****	*****	215	28.6	*****	*****
10	345	12.9	*****	*****	325	5.2	*****	*****	130	10.0	*****	*****	055	6.0	*****	*****
11	045	5.6	*****	*****	075	1.8	*****	*****	195	6.4	*****	*****	180	3.3	*****	*****
12	325	7.7	*****	*****	030	3.5	*****	*****	135	3.0	*****	*****	160	6.2	*****	*****
13	360	7.1	*****	*****	060	0.0	*****	*****	075	3.8	*****	*****	220	4.5	*****	*****
14	300	2.4	*****	*****	180	8.4	*****	*****	250	11.0	*****	*****	170	21.0	*****	*****
15	205	5.4	*****	*****	325	10.2	*****	*****	290	7.4	*****	*****	190	4.6	*****	*****
16	210	6.1	*****	*****	045	3.6	*****	*****	320	6.1	*****	*****	305	5.1	*****	*****
17	330	3.3	*****	*****	020	2.9	*****	*****	270	1.7	*****	*****	130	5.5	*****	*****
18	300	2.1	*****	*****	350	4.0	*****	*****	345	5.6	*****	*****	080	0.9	*****	*****
19	225	2.0	*****	*****	010	6.8	*****	*****	355	4.0	*****	*****	210	7.4	*****	*****
20	330	2.5	*****	*****	360	2.8	*****	*****	360	3.7	*****	*****	185	5.8	*****	*****
21	330	4.7	*****	*****	345	5.1	*****	*****	330	3.0	*****	*****	350	4.0	*****	*****
22	240	7.0	*****	*****	225	4.3	*****	*****	185	5.8	*****	*****	195	9.9	*****	*****
23	090	3.0	*****	*****	015	5.3	*****	*****	020	6.1	*****	*****	045	3.3	*****	*****
24	250	2.1	*****	*****	300	3.6	*****	*****	260	3.1	*****	*****	180	4.1	*****	*****
25	350	1.7	*****	*****	360	7.4	*****	*****	320	4.8	*****	*****	250	5.0	*****	*****
26	270	5.0	*****	*****	290	14.3	*****	*****	300	14.2	*****	*****	260	10.4	*****	*****
27	225	8.7	*****	*****	275	13.0	*****	*****	255	8.7	*****	*****	240	10.4	*****	*****
28	210	25.5	*****	*****	210	24.2	*****	*****	210	20.8	*****	*****	210	19.1	*****	*****
29	210	39.8	*****	*****	210	36.0	*****	*****	210	35.1	*****	*****	210	41.9	*****	*****
30	205	19.9	*****	*****	205	13.2	*****	*****	090	4.1	*****	*****	170	15.2	*****	*****
31	225	8.4	*****	*****	225	4.0	*****	*****	360	2.0	*****	*****	060	5.3	*****	*****

SACRAMENTO MUNICIPAL UTILITY DISTRICT
RANCHO SECO METEOROLOGICAL DATA
WIND DIRECTION IN DEGREES,
WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
JANUARY, 1968 *** = NOT AVAILABLE

MONTHLY MEAN TEMP 0.0 FOR 0 CASES
MONTHLY MEAN WET BULB TEMP 0.0 FOR 0 CASES
MONTHLY AVERAGE WIND SPEED 7.9 FOR 247 CASES
MONTHLY AVERAGE WIND SPEED WHEN WET BULB IS
GREATER THAN 68 IS 0.0 FOR 0 CASES

SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 FEBRUARY, 1968 *** = NOT AVAILABLE

DAY	0000 PST				0300 PST				0600 PST				0900 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB
1	135	8.3	*****	*****	150	2.0	*****	*****	170	9.3	*****	*****	110	4.7	*****	*****
2	165	6.2	*****	*****	195	1.5	*****	*****	045	1.3	*****	*****	115	3.3	*****	*****
3	250	2.5	*****	*****	040	5.5	*****	*****	110	3.3	*****	*****	040	8.3	*****	*****
4	290	3.2	*****	*****	235	6.5	*****	*****	170	2.8	*****	*****	210	4.6	*****	*****
5	245	2.1	*****	*****	220	2.1	*****	*****	300	2.2	*****	*****	050	1.6	*****	*****
6	130	5.5	*****	*****	050	5.6	*****	*****	200	6.9	*****	*****	220	8.7	*****	*****
7	290	4.2	*****	*****	290	3.4	*****	*****	320	6.8	*****	*****	130	0.9	*****	*****
8	270	2.3	*****	*****	210	3.6	*****	*****	270	3.4	*****	*****	200	1.1	*****	*****
9	070	5.4	*****	*****	180	4.7	*****	*****	230	4.8	*****	*****	210	3.2	*****	*****
10	310	3.1	*****	*****	205	3.4	*****	*****	170	3.4	*****	*****	245	2.3	*****	*****
11	250	5.6	*****	*****	180	5.5	*****	*****	130	3.2	*****	*****	280	1.4	*****	*****
12	140	5.5	*****	*****	140	3.2	*****	*****	150	5.0	*****	*****	100	2.7	*****	*****
13	270	2.9	*****	*****	185	5.5	*****	*****	185	1.2	*****	*****	290	5.5	*****	*****
14	185	8.5	*****	*****	150	6.1	*****	*****	140	4.8	*****	*****	185	6.5	*****	*****

SACRAMENTO MUNICIPAL UTILITY DISTRICT
 RANCHO SECO METEOROLOGICAL DATA
 WIND DIRECTION IN DEGREES,
 WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
 FEBRUARY, 1968 *** = NOT AVAILABLE

DAY	1200 PST				1500 PST				1800 PST				2100 PST			
	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB	WD	WS	TEMP	WB
1	070	4.1	*****	*****	045	1.2	*****	*****	340	3.8	*****	*****	145	8.6	*****	*****
2	225	5.2	*****	*****	250	8.0	*****	*****	270	2.5	*****	*****	230	3.1	*****	*****
3	020	11.1	*****	*****	360	13.0	*****	*****	300	4.1	*****	*****	330	4.6	*****	*****
4	210	6.5	*****	*****	225	2.3	*****	*****	120	2.1	*****	*****	140	1.3	*****	*****
5	050	3.2	*****	*****	020	5.3	*****	*****	340	6.8	*****	*****	230	4.6	*****	*****
6	135	3.5	*****	*****	215	3.1	*****	*****	315	2.0	*****	*****	070	6.5	*****	*****
7	270	2.4	*****	*****	320	3.0	*****	*****	315	4.5	*****	*****	350	2.8	*****	*****
8	265	3.8	*****	*****	360	1.5	*****	*****	165	3.1	*****	*****	320	7.4	*****	*****
9	210	2.3	*****	*****	290	3.4	*****	*****	170	6.6	*****	*****	230	3.2	*****	*****
10	260	3.6	*****	*****	290	5.0	*****	*****	320	5.5	*****	*****	015	1.2	*****	*****
11	315	1.9	*****	*****	015	4.2	*****	*****	330	4.2	*****	*****	300	1.1	*****	*****
12	340	4.0	*****	*****	360	5.3	*****	*****	340	3.1	*****	*****	210	5.1	*****	*****
13	225	9.3	*****	*****	280	6.1	*****	*****	185	4.5	*****	*****	210	4.3	*****	*****
14	200	10.6	*****	*****	***	*****	*****	*****	***	*****	*****	*****	***	*****	*****	*****

SACRAMENTO MUNICIPAL UTILITY DISTRICT
RANCHO SECO METEOROLOGICAL DATA
WIND DIRECTION IN DEGREES, -
WIND SPEED IN MILES PER HOUR, HOURLY AVERAGES
FEBRUARY, 1968 *** = NOT AVAILABLE

MONTHLY MEAN TEMP 0.0 FOR 0 CASES
MONTHLY MEAN WET BULB TEMP 0.0 FOR 0 CASES
MONTHLY AVERAGE WIND SPEED 4.4 FOR 109 CASES
MONTHLY AVERAGE WIND SPEED WHEN WET BULB IS
GREATER THAN 68 IS 0.0 FOR 0 CASES