

BANGKOK/DON MUANG TH

Latitude = 13.92 N

WMO No. 484560

Longitude = 100.60 E

Elevation = 39 feet

Period of Record = 1973 to 1996

Average Pressure = 29.74 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	102	81	129	8.9	S
0.4% Occurrence	99	80	126	9.2	S
1.0% Occurrence	97	80	126	9.0	S
2.0% Occurrence	95	79	123	8.6	S
Mean Daily Range	15	-	-	-	-
97.5% Occurrence	70	65	87	3.5	N
99.0% Occurrence	66	62	76	3.0	N
99.6% Occurrence	64	59	70	2.9	N
Median of Extreme Lows	60	56	61	2.8	N
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	86	95	171	7.4	S
0.4% Occurrence	84	92	162	7.0	S
1.0% Occurrence	83	90	156	6.9	S
2.0% Occurrence	82	89	152	6.7	S
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	181	89	1.19	3.9	S
0.4% Occurrence	170	89	1.12	5.6	S
1.0% Occurrence	161	87	1.06	6.0	S
2.0% Occurrence	160	87	1.06	5.8	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		591	5884	6896	8168

Other Site Data

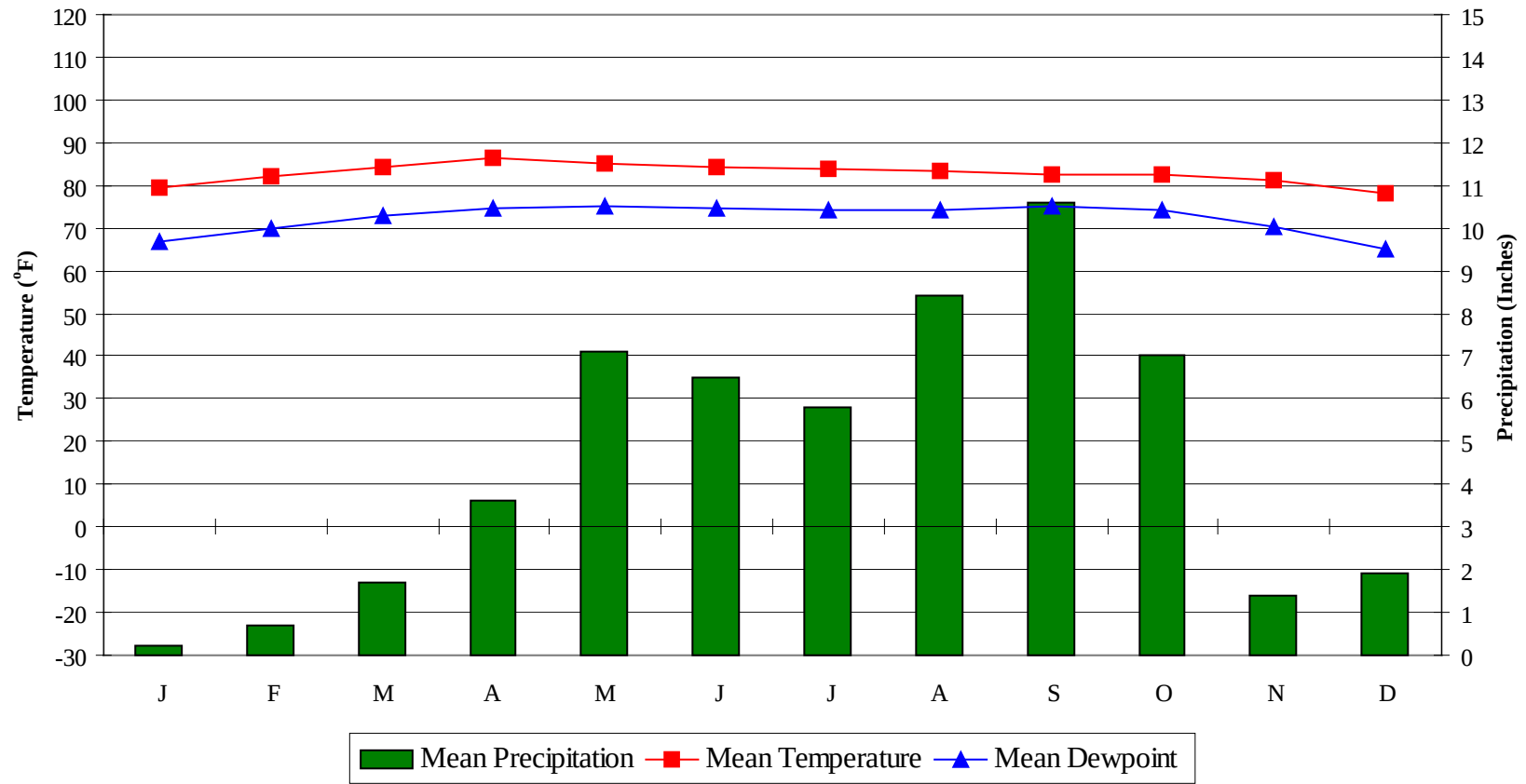
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
10	N/A	N/A	19.1 + 6.4
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
85.2	N/A	N/A	0

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

BANGKOK/DON MUANG TH

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Average Annual Climate

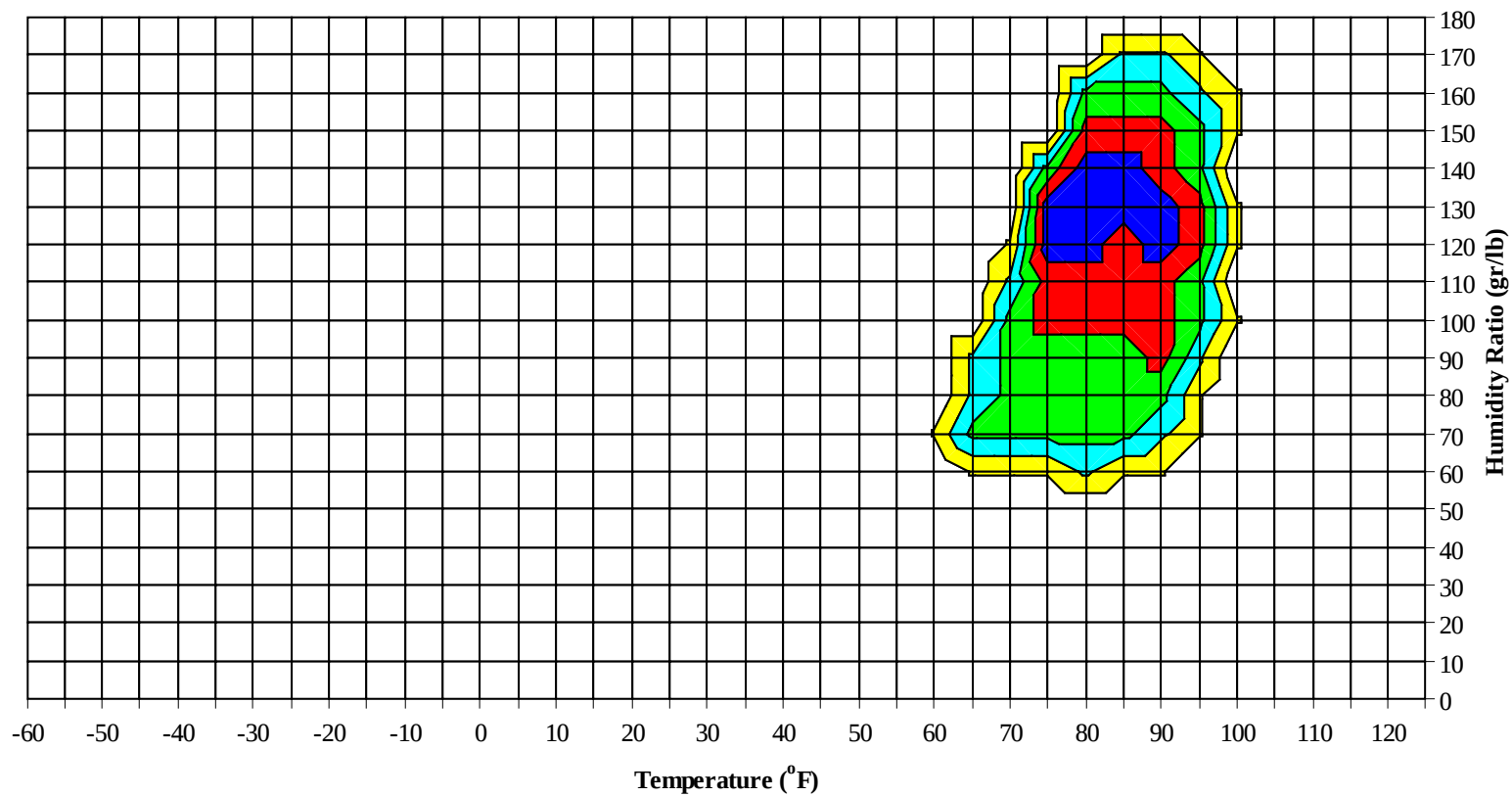


BANGKOK/DON MUANG

TH

WMO No. 484560

Long Term Psychrometric Summary

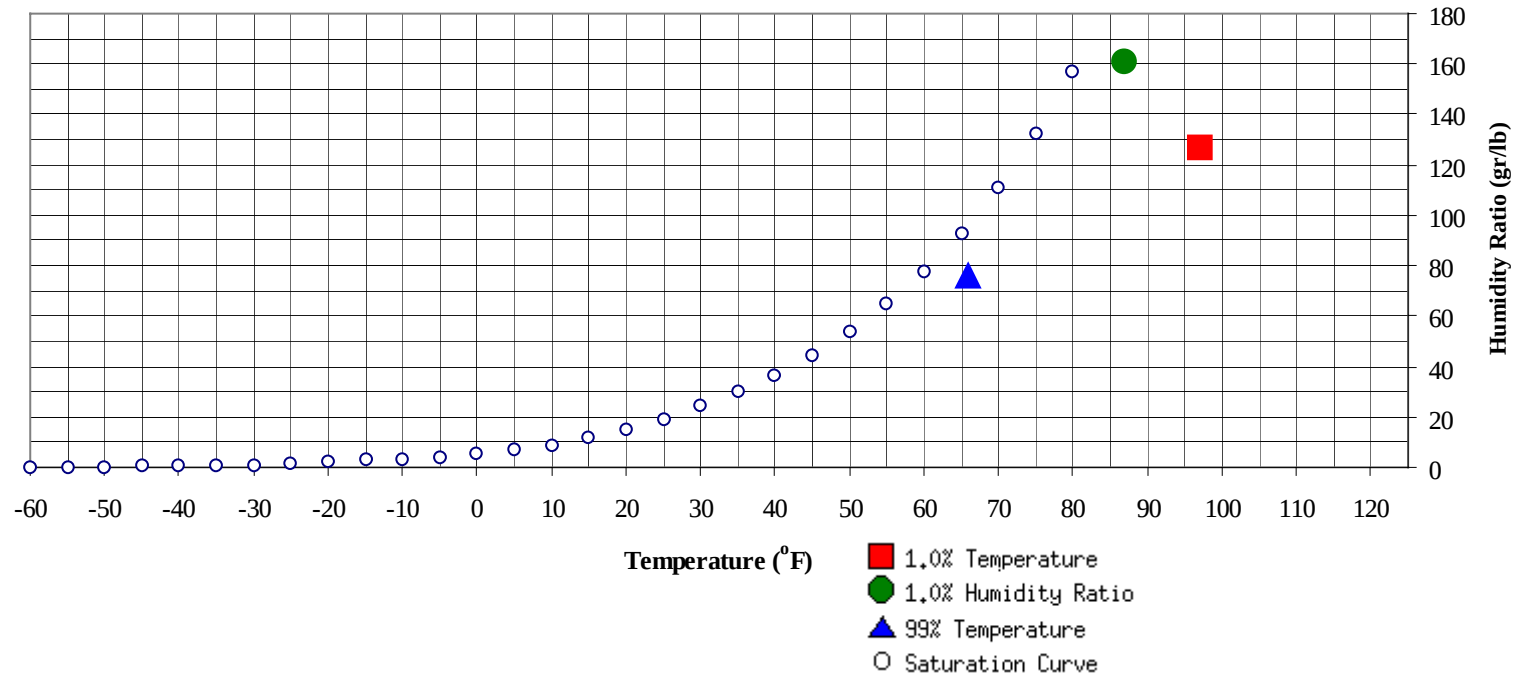


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

BANGKOK/DON MUANG TH

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
99% Dry Bulb	66	76.3	27.7		161	87	82.3	80.6	46.2

	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
1.0% Dry Bulb	97	126.9	79.7	43.3

BANGKOK/DON MUANG TH WMO No. 484560
Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)
Period of Record = 1973 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109															
100 / 104							0		0	80.4		2		2	80.5
95 / 99		4	0	4	75.0		15	1	16	75.6	0	48	2	50	78.3
90 / 94		70	11	81	74.0		92	17	109	75.3	0	117	29	146	77.1
85 / 89	0	74	37	111	72.8	0	58	38	96	74.0	3	48	53	104	77.0
80 / 84	12	61	94	167	72.7	34	44	107	185	75.0	90	25	134	248	76.9
75 / 79	91	29	77	197	71.5	116	14	53	182	73.3	133	7	26	166	74.5
70 / 74	95	9	21	125	67.8	61	2	8	71	68.6	19	1	3	23	69.4
65 / 69	32	2	5	39	63.2	11	0	1	12	63.2	2	0	1	3	60.7
60 / 64	13	1	2	16	58.9	2	0	0	2	59.4	1	0	0	1	54.1
55 / 59	5			5	54.1	0			0	55.9	0			0	53.0
50 / 54															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

BANGKOK/DON MUANG TH

WMO No. 484560

Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)**Period of Record = 1973 to 1996**

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109															
100 / 104		10	0	11	79.7		6	0	6	82.9		0	0	0	82.9
95 / 99	0	87	9	96	79.4	0	54	5	60	80.2		22	1	23	80.2
90 / 94	2	88	41	131	78.6	2	95	32	129	79.1	1	104	19	125	78.7
85 / 89	22	35	80	138	78.7	24	55	68	147	78.7	11	78	59	147	78.0
80 / 84	131	15	90	236	77.9	123	31	105	258	77.6	136	33	121	290	77.3
75 / 79	81	4	17	102	75.1	93	9	34	136	75.4	89	5	36	130	75.3
70 / 74	5	1	1	7	71.2	5	1	2	7	71.4	2	0	1	4	71.6
65 / 69	0			0		0		0	0	67.3		0		0	68.0
60 / 64															
55 / 59															
50 / 54															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

BANGKOK/DON MUANG TH

WMO No. 484560

Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)**Period of Record = 1973 to 1996**

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109															
100 / 104		0		0	86.7							0		0	82.0
95 / 99	0	16	2	18	79.8	0	8	1	9	80.7		6	0	6	80.3
90 / 94	0	98	19	117	78.2	1	97	14	112	78.4	0	81	10	91	78.7
85 / 89	6	86	50	141	77.5	4	92	42	138	77.4	2	88	38	128	78.0
80 / 84	122	41	123	286	76.9	111	43	126	280	76.7	86	56	117	259	77.4
75 / 79	116	7	49	172	75.1	133	6	62	201	75.1	146	9	74	229	75.5
70 / 74	6	0	4	10	72.0	2	0	2	4	71.9	4	0	2	6	71.9
65 / 69								0	0	65.0					
60 / 64															
55 / 59															
50 / 54															

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

BANGKOK/DON MUANG TH

WMO No. 484560

Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)**Period of Record = 1973 to 1996**

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
105 / 109		0		0	83.0										
100 / 104		0		0	81.0										
95 / 99		4	0	4	82.7		4	0	4	77.7		1		1	75.1
90 / 94	1	70	8	78	78.8	0	52	7	59	76.8	0	45	4	50	74.2
85 / 89	4	94	41	139	77.5	1	84	33	117	75.6	0	72	23	96	72.8
80 / 84	82	68	130	280	77.0	49	76	115	240	74.8	10	78	90	178	71.8
75 / 79	149	13	65	228	74.9	127	20	70	217	72.8	76	36	81	193	70.2
70 / 74	13	1	2	16	70.0	49	4	12	65	67.7	94	13	37	143	66.4
65 / 69	0			0	67.0	11	0	2	13	63.2	46	2	7	55	62.9
60 / 64						4		0	4	60.5	17	1	3	21	58.9
55 / 59						0			0	58.0	5	0	1	6	54.4
50 / 54											1		0	1	52.0

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

BANGKOK/DON MUANG TH WMO No. 484560
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)
Period of Record = 1973 to 1996

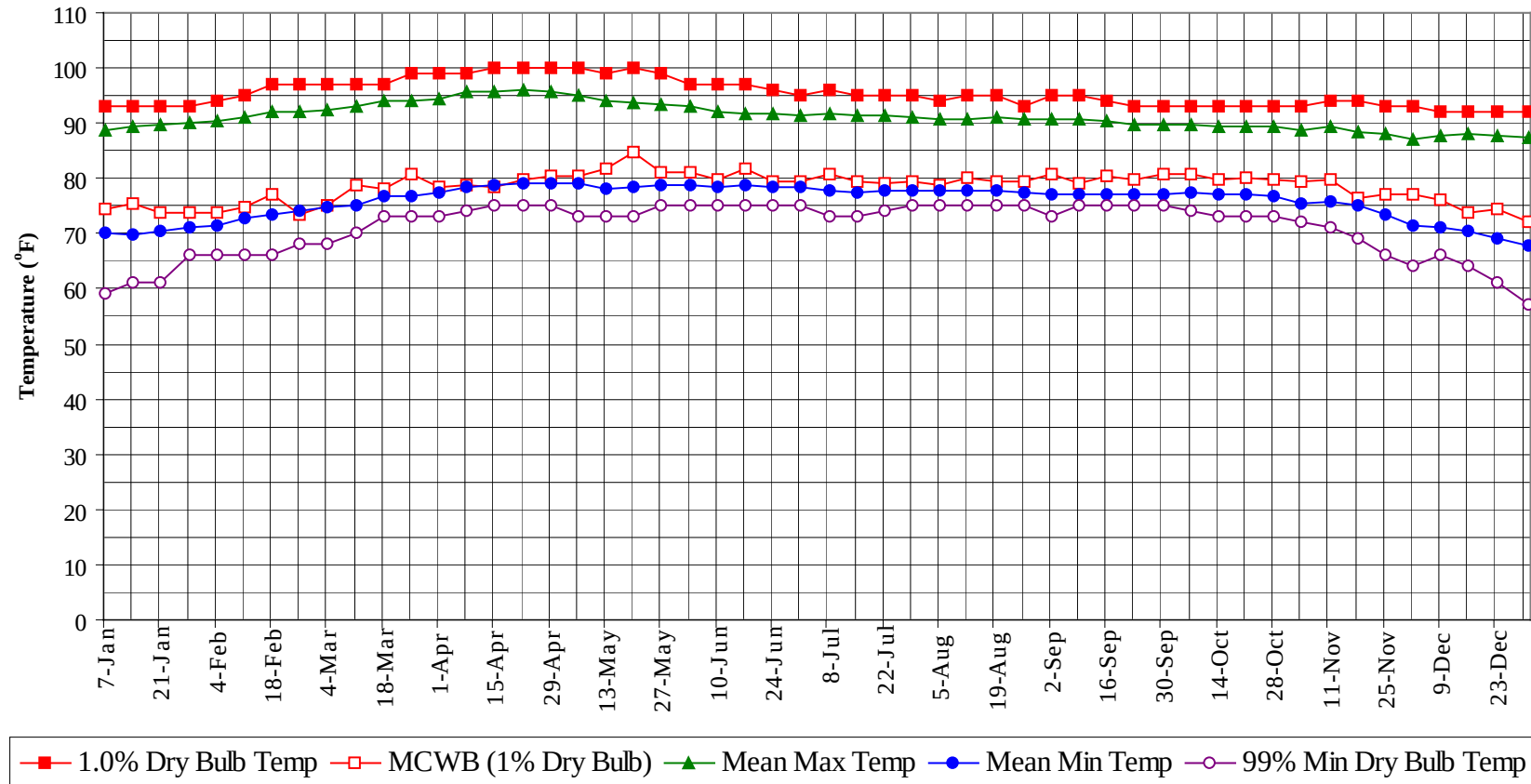
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
105 / 109		0		0	83.0
100 / 104		20	1	20	80.9
95 / 99	0	270	21	291	79.2
90 / 94	8	1008	211	1227	77.6
85 / 89	77	863	561	1501	76.7
80 / 84	981	571	1351	2903	76.3
75 / 79	1349	161	643	2153	73.9
70 / 74	357	33	95	485	67.9
65 / 69	104	5	16	125	63.0
60 / 64	37	2	5	45	59.0
55 / 59	10	0	1	11	54.3
50 / 54	1		0	1	52.0

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

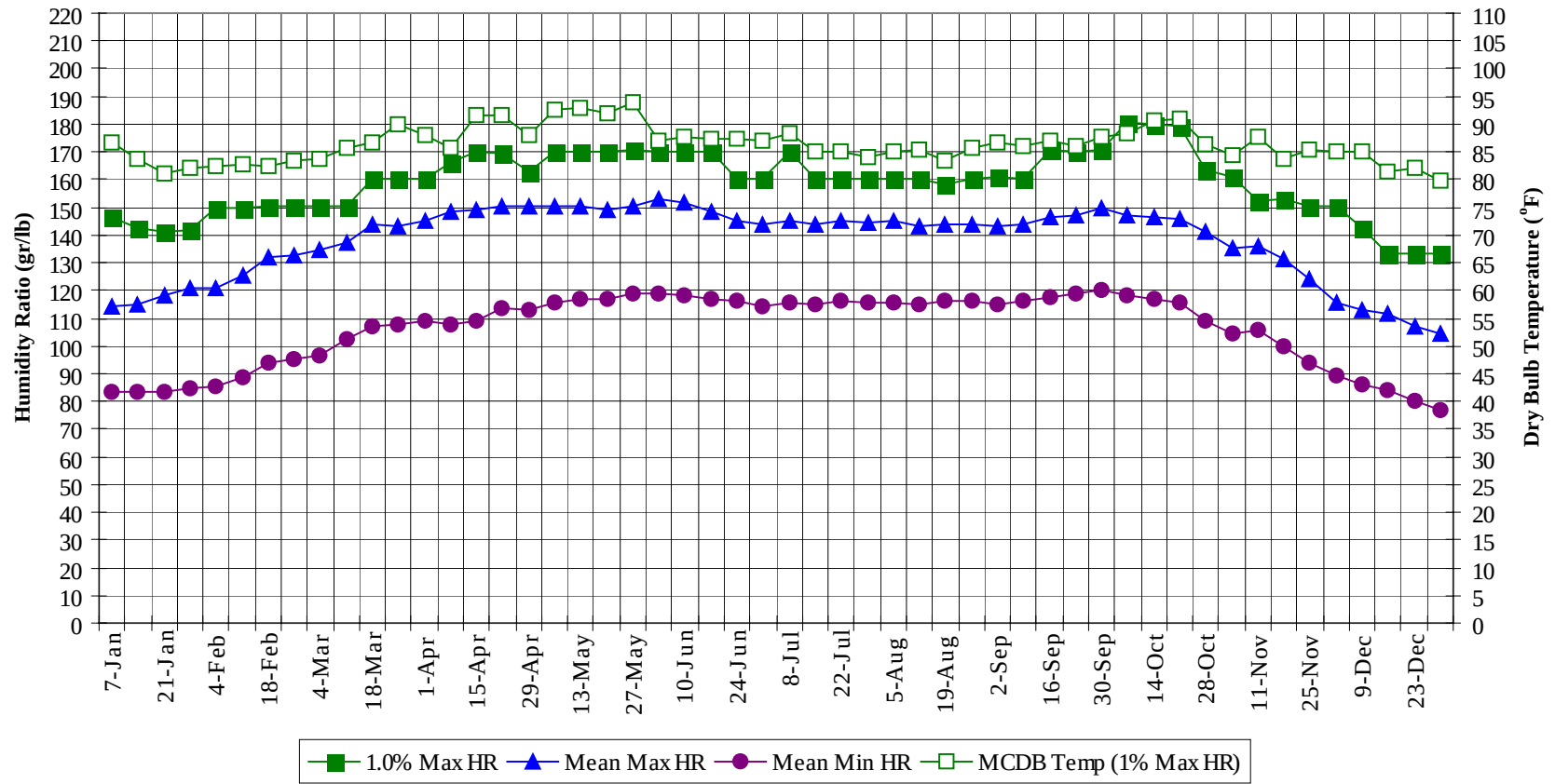
BANGKOK/DON MUANG TH

WMO No. 484560

Annual Summary of Temperatures



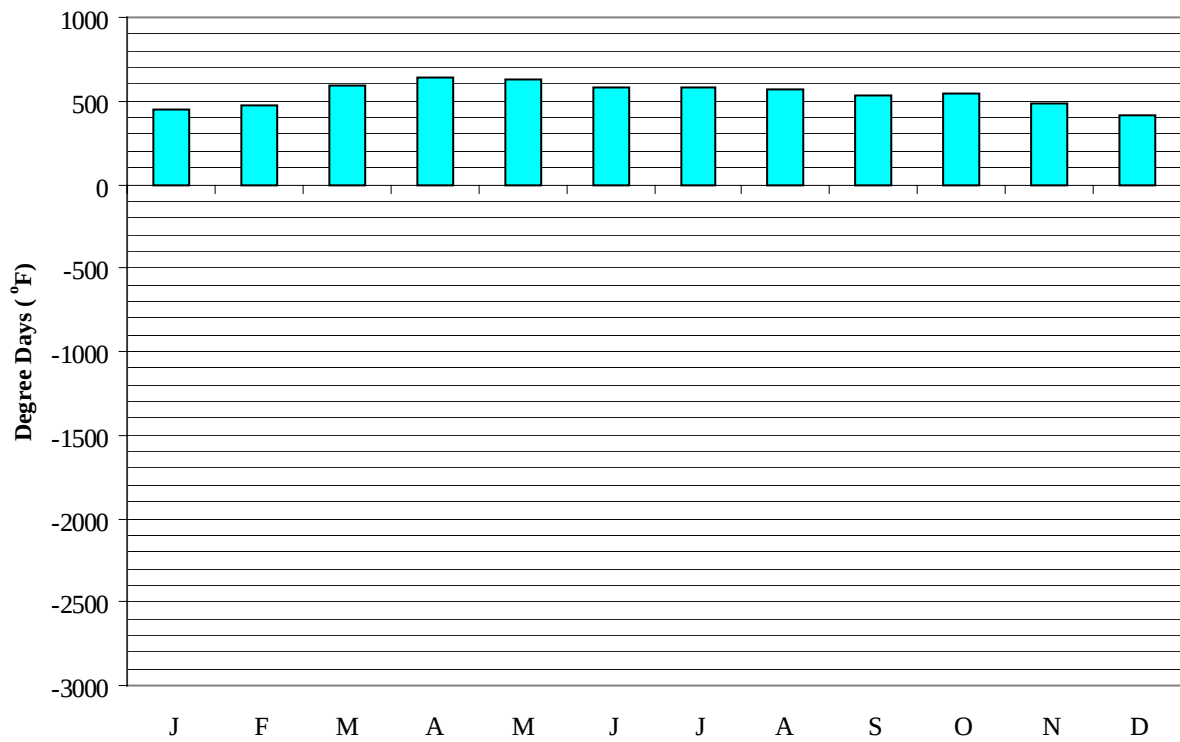
Long Term Humidity and Dry Bulb Temperature Summary



BANGKOK/DON MUANG TH WMO No. 484560
Long Term Dry Bulb Temperature and Humidity Summary

Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	93.0	74.6	88.6	70.1	59.0	146.3	86.7	114.2	83.4
14-Jan	93.0	75.4	89.3	69.8	61.0	142.8	83.6	115.2	83.6
21-Jan	93.0	73.7	89.8	70.4	61.0	141.4	81.0	118.2	83.7
28-Jan	93.0	73.8	89.9	71.2	66.0	142.1	81.9	121.1	84.8
4-Feb	94.0	73.6	90.4	71.5	66.0	149.8	82.4	120.9	85.3
11-Feb	95.0	74.9	91.0	72.7	66.0	149.8	82.6	125.7	88.8
18-Feb	97.0	77.3	91.9	73.6	66.0	150.5	82.3	132.1	93.7
25-Feb	97.0	73.5	92.1	74.0	68.0	150.5	83.5	132.7	95.1
4-Mar	97.0	75.1	92.5	74.8	68.0	150.5	83.8	134.5	96.8
11-Mar	97.0	78.7	93.1	75.2	70.0	150.5	85.5	137.3	102.4
18-Mar	97.0	78.1	94.1	76.6	73.0	160.3	86.6	144.0	107.3
25-Mar	99.0	80.8	94.1	76.9	73.0	160.3	90.0	143.4	107.5
1-Apr	99.0	78.5	94.3	77.4	73.0	160.3	88.1	145.4	108.9
8-Apr	99.0	78.7	95.7	78.4	74.0	165.9	85.7	148.3	107.9
15-Apr	100.0	78.4	95.8	78.7	75.0	170.1	91.6	148.8	109.2
22-Apr	100.0	79.8	96.0	79.0	75.0	169.4	91.6	150.3	113.4
29-Apr	100.0	80.5	95.6	79.0	75.0	163.1	88.0	150.5	112.9
6-May	100.0	80.3	94.9	79.1	73.0	170.1	92.7	150.6	115.3
13-May	99.0	81.7	94.1	78.2	73.0	170.1	93.0	150.1	116.8
20-May	100.0	84.6	93.7	78.3	73.0	170.1	92.1	149.3	117.0
27-May	99.0	81.1	93.3	78.6	75.0	170.8	93.9	150.2	118.7
3-Jun	97.0	81.1	93.1	78.7	75.0	170.1	87.2	152.7	118.8
10-Jun	97.0	79.7	92.1	78.4	75.0	170.1	87.6	152.0	118.4
17-Jun	97.0	81.8	91.8	78.7	75.0	170.1	87.5	148.1	116.7
24-Jun	96.0	79.5	91.8	78.3	75.0	160.3	87.3	145.1	115.9
1-Jul	95.0	79.5	91.5	78.4	75.0	160.3	87.0	143.8	114.3
8-Jul	96.0	80.9	91.6	77.9	73.0	170.1	88.2	145.4	115.5
15-Jul	95.0	79.3	91.3	77.5	73.0	160.3	85.2	143.9	115.0
22-Jul	95.0	78.9	91.4	77.9	74.0	160.3	85.0	144.8	116.0
29-Jul	95.0	79.4	91.0	77.7	75.0	160.3	84.0	144.5	115.6
5-Aug	94.0	78.9	90.6	77.6	75.0	160.3	84.9	145.1	115.4
12-Aug	95.0	80.1	90.7	77.6	75.0	160.3	85.2	142.8	115.1
19-Aug	95.0	79.4	91.0	77.9	75.0	158.2	83.3	144.0	116.4
26-Aug	93.0	79.5	90.7	77.6	75.0	160.3	85.8	143.9	116.0
2-Sep	95.0	80.7	90.6	77.2	73.0	161.0	86.7	143.3	115.2
9-Sep	95.0	79.2	90.6	77.3	75.0	160.3	86.1	143.8	116.2
16-Sep	94.0	80.6	90.5	77.2	75.0	170.8	87.0	146.2	117.7
23-Sep	93.0	79.9	89.9	77.1	75.0	170.1	86.1	147.1	119.0
30-Sep	93.0	80.6	89.8	77.2	75.0	170.8	87.7	149.9	120.4
7-Oct	93.0	80.8	89.6	77.3	74.0	180.6	88.3	147.2	118.1
14-Oct	93.0	79.7	89.4	77.2	73.0	179.9	90.7	146.3	116.9
21-Oct	93.0	80.3	89.4	77.0	73.0	179.2	91.0	145.6	115.9
28-Oct	93.0	79.7	89.3	76.7	73.0	163.8	86.3	141.4	109.3
4-Nov	93.0	79.4	88.6	75.6	72.0	161.0	84.5	135.3	104.3
11-Nov	94.0	79.9	89.4	75.9	71.0	152.6	87.7	136.1	105.5
18-Nov	94.0	76.4	88.5	75.1	69.0	153.3	83.8	131.1	100.1
25-Nov	93.0	77.2	88.0	73.3	66.0	150.5	85.2	124.0	93.7
2-Dec	93.0	77.2	87.0	71.4	64.0	150.5	85.1	115.9	89.1
9-Dec	92.0	76.1	87.7	71.0	66.0	142.8	85.2	113.1	86.0
16-Dec	92.0	73.9	88.1	70.4	64.0	133.0	81.6	111.5	84.2
23-Dec	92.0	74.4	87.7	69.0	61.0	133.0	82.1	106.8	80.0
31-Dec	92.0	72.2	87.3	67.8	57.0	133.0	79.9	104.7	76.6

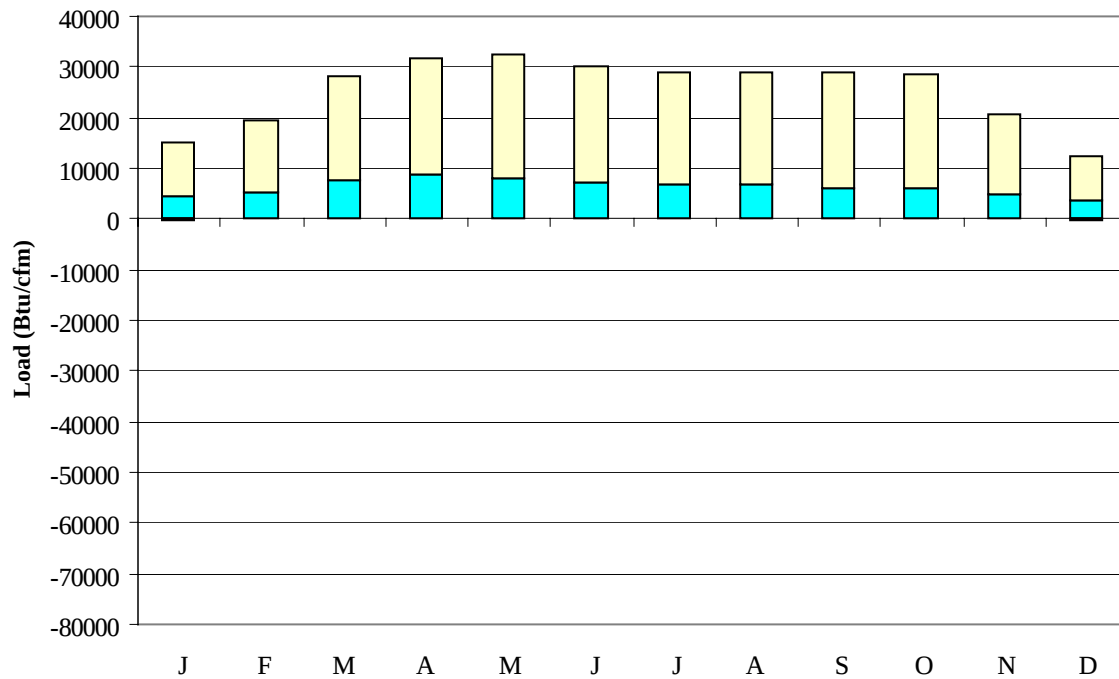
Degree Days, Heating and Cooling
(Base 65°F)



Mean Cooling Degree Days Mean Heating Degree Days

	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	453	2
FEB	479	0
MAR	597	0
APR	638	0
MAY	626	0
JUN	582	0
JUL	579	0
AUG	567	0
SEP	533	0
OCT	542	0
NOV	481	0
DEC	414	3
ANN	6489	5

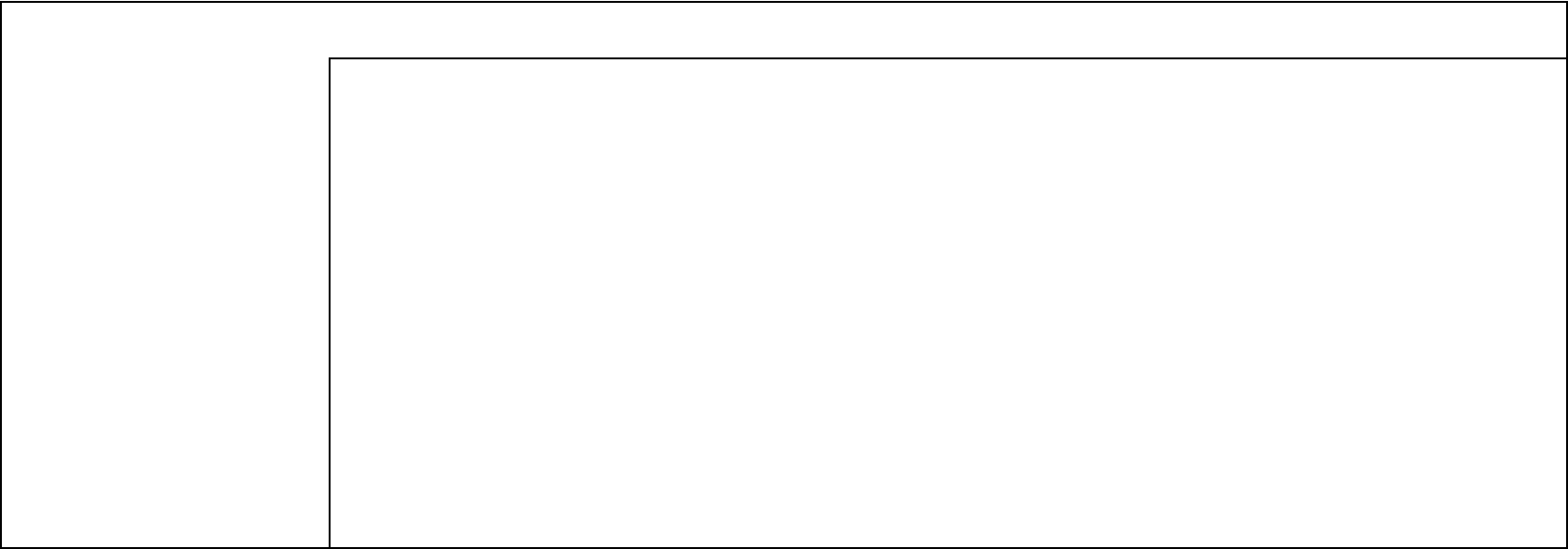
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load (Btu/cfm)	Average Sensible Heating Load (Btu/cfm)	Average Latent Cooling Load (Btu/cfm)	Average Latent Heating Load (Btu/cfm)
JAN	4604	-155	10635	0
FEB	5404	-19	14062	0
MAR	7554	-7	20592	0
APR	8815	0	22888	0
MAY	8222	0	24385	0
JUN	7312	0	22883	0
JUL	7005	0	21979	0
AUG	6696	0	22345	0
SEP	6060	0	22986	0
OCT	6058	0	22358	0
NOV	5014	-29	15480	0
DEC	3859	-212	8420	0
ANN	76603	-422	229013	0

Average Annual Solar Radiation – Nearest Available Site
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

No Solar Radiation
Data Available

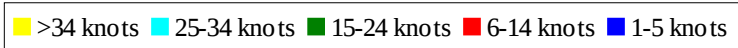
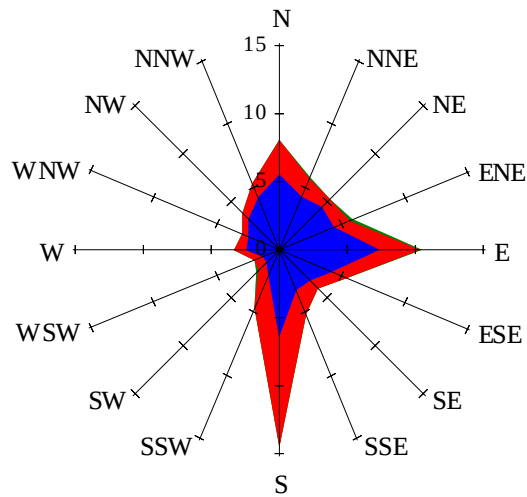


Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

Wind Summary - December, January, and February

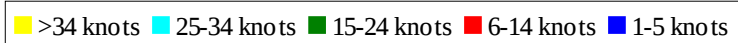
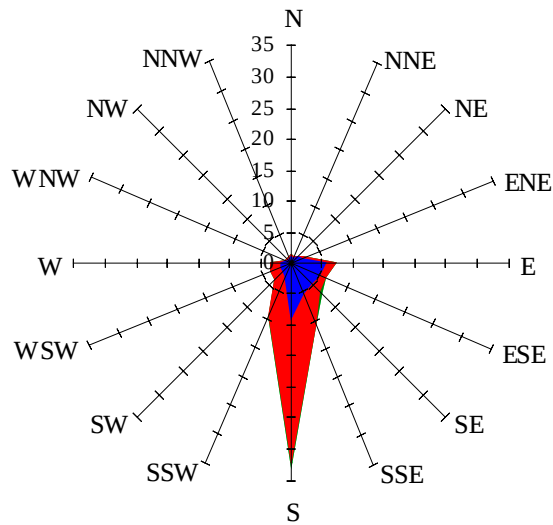
Labels of Percent Frequency on North Axis



Percent Calm = 13.70

Wind Summary - March, April, and May

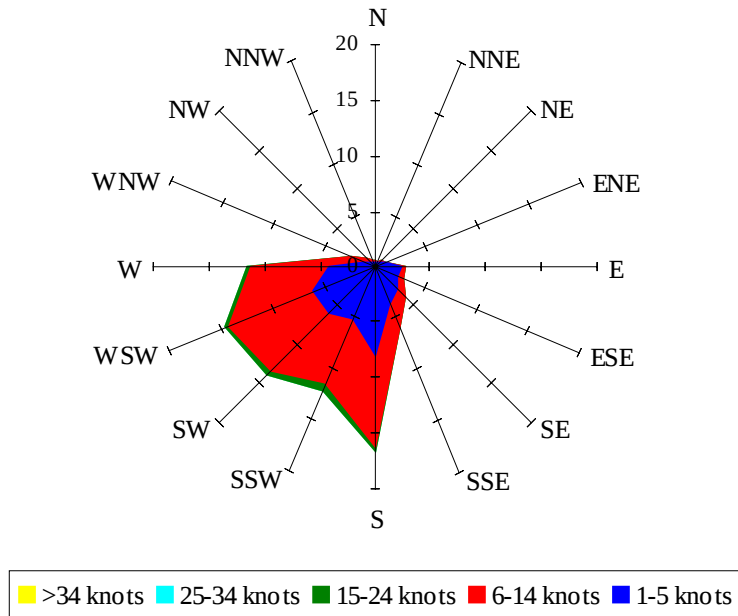
Labels of Percent Frequency on North Axis



Percent Calm = 8.43

Wind Summary - June, July, and August

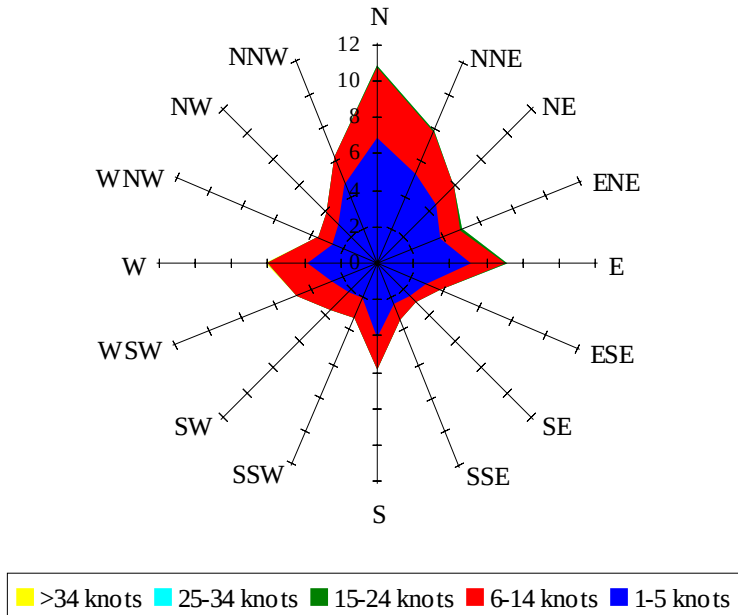
Labels of Percent Frequency on North Axis



Percent Calm = 10.07

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 17.36