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NATIONAL CLIMATIC DATA CENTER

TD-9691
TOWER OBSERVATIONS - CAPE KENNEDY

Documentation Manual



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

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SHEET NUMBER 1.
CAPE KENNEDY TOWER DATA

5-22-82
AIR FORCE

DATA SHEET FOR EACH FILE IN LIBRARY TDX# 9691

I. DOCUMENTATION ATTACHED? YES ☒ NO ☐

YES, LEVEL OF DOCUMENTATION

FORMAT ONLY ☒ (CD reference manual)

LETTER ONLY ☐

COMPLETE ☐

NO. NONE AVAILABLE ☐

STILL SEARCHING ☐

II. HOW MANY UNIQUE ELEMENTS IN THIS FILE? 4

III. GEOGRAPHIC COVERAGE CAPE KENNEDY AFS, FLORIDA

IV. PERIOD OF RECORD DEC 1965-MAR 1970

V. IS THIS ORIGINAL OBSERVED DATA? ☒
OR COMPUTED STATISTICAL DATA ☐

VI. NUMBER OF TIMES USED DURING PERIOD 7-1-73 THRU 12-2-81 1

VII. IMPORTANCE OF USE? LIMITED ☒ MODERATE ☐ VERY ☐

VIII. COST TO REPRODUCE DATA SET? TAPE COPY ☒ *
* WOULD HAVE TO BE REPLACED FROM THE AIR FORCE, IF POSSIBLE. ☐ RE-RUN ☐

IX. NUMBER OF TAPES IN DATA SET AT PRESENT 8 (1600 BPI)

X. DATA SET SIZE? NO UPDATE/MERGE ☒ UPDATE/MERGE ☐

1. 6

2. 3

3. 6

4. 9

5. 6

6. 6

7. 1

8. 3

9. 9

10. 3

11. 3
55

COLUMNS AND ELEMENTS PUNCHED:

<u>Card No.</u>	<u>Cols.</u>	<u>Elements</u>	<u>Pages</u>
1	1-75	Wind Speed and Direction ✓ Min Mean Max	4-5
2	1-78	✓ Delta Temperature between Levels	6-7
3&4	1-60	Temperature	8
5&6	1-60	Pressure	9
7	1-50	Radiation	10
8	1-78	Dewpoint	11-12
89&90	1-60	Precipitation	13
91	1-24	✓ Stability Index and Precipitable Water	14
92	1-59	✓ Vertical Winds	15-16

CORRECTIONS: Any errors detected in this manual should be called to the attention of the Director, National Climatic Center, Environmental Data Service, NOAA; or Chief, Data Processing Division, Environmental Technical Applications Center, USAF. Please give specific instances of error and correct information if available.

REFERENCE MANUAL

Card No. 7, Radiation

Card No. 8, Dewpoint

Cards Nos. 89 and 90, Precipitation

Card No. 92, Vertical Wind

Issued: August 1971

REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				<u>WINDS</u>	
1-5	Station Number		12868	W9AN Station Number	Cape Kennedy Air Force Station (AFS) Florida
6	Card Number		1	Winds Card	12 cards per day.
7-8	Year		65-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of month	
13-14	Hour		00-22	Hour LST	Time of first period of hourly data on card. 00, 02, 04, 06, 08, 10, 12, 14, 16, 18, 20, and 22 observations.
15	Tower Level		0 1 2 3 4 5 6 7 8	3 meters 18 m tower 10 meters " " 18 meters " " 18 meters 150 m tower 30 meters " " 60 meters " " 90 meters " " 120 meters " " 150 meters " "	10 m began 19 Apr 68
16	Tower Side		1 2	Northeast Southwest	Boom orientation
17-19 20-22 23-25	Min Direction Mean Direction Max Direction		000-360	0° - 360° (N is 360°)	Cols. 17-37 contain data for one hour. Min, Mean, and Max Wind Direction and Speed are for the ten minute interval plus or minus 5 minutes either side of hour.
26-28 29-31 32-34	Min Speed Mean Speed Max Speed		000-999	00.0 (Calm) - 99.9 mph or mps and tenths	Miles per Hour Dec 65 thru Jul 66; Meters per Second Aug 66 -
35-37	Hourly Max Speed				Hourly Max Wind Speed is for the interval of plus or minus 30 minutes either side of hour. Cols 38-61 contain data for one hour; there are 2 hours of data on a card, 12 cards per day per level.

REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
36-38	Hour		01-23	Hour Local Standard Time	01, 03, 05, 07, 09, 11, 13, 15, 17, 19, 21, 23 obs. NOTES: (1) When data are partially missing Max Speeds are not read. (2) Directions with missing speeds are not read. (3) Speed with missing Directions are read. (4) Direction range is ascertained in such a manner that clockwise rotation from Min to Max defined that direction range within which the wind blew. (5) When any portion of the ten minute interval is traversed more than once by the pen because of crossover effect, the Min and Max Directions are omitted and only the mean read. (6) Direction is considered accurate to the nearest whole degree
40	Tower Side		1, 2	NE, NW	
41-43	Min Direction		000-360	0° - 360° (N is 360°)	
44-46	Mean Direction				
47-49	Max Direction				
50-52	Min Speed		000-999	00.0 (Calm) - 99.9 mps	
53-55	Mean Speed			(mph prior to 1 Aug 66)	
56-58	Max Speed				
59-61	Hourly Max Speed				
62-64	Daily Max Speed		000-999	Code above	
65-67	Daily Max Dir.		000-360	" " "	Daily Max Speed for the local calendar day and corresponding Instantaneous Direction Time of Occurrence (punched on 23 Hour card) Punching of Cols. 72-75 began 1 Jan 68. Logs kept Dec 65 - Dec 67.
68-71	Time of Occurrence		0000-2359	Hour and Minutes	
72	Dir. Code (First Hour)		0	Calibration	
			1	Recorder Malfunction	
			2	Power Failure	
			3	Instrument Malfunction (Sensor)	Trace dropping to zero, intermittent sensor.
			4	Maintenance	
			5	Tower Side Switch	Causing an obvious jump in trace (may or may not require correction)
			6	Gap between Roll Changes	
			7	Doubtful Data	Uncertain about zero, spikes which may or may not be good, Crossover not operating properly, etc.
			8	Data Missing	Usually a short skip during hour with no apparent time lost.
			9	Miscellaneous	Requires an explanation on Log Sheet.
73	Speed Code (First Hour)			Code Col. 72	Data for First Hour is in Cols. 17-37.
74	Dir. Code (Second Hour)			" " "	
75	Speed Code (Second Hour)			" " "	
76-80	Not used.				Data for Second Hour is in Cols. 38-61.

REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				DELTA TEMP. CARDS	
1-5	Station Number		12868	WBAN Station Number	Cape Kennedy AFS, Florida
6	Card Number		2	Delta Temp. Card	
7-8	Year		65-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
13-14	Hour		00-21	Hour of Obs. LST	00, 03, 06, 09, 12, 15, 18, and 21 obs. are punched in Cols. 15-34.
15-18	Delta Temp. 18m (S)- 3m (S) S= 18 meter tower L= 150m tower		0000-0999 E000-E999 X001-X199	0.0°F - 099.9°F to tenths (Temp. warmer with height) -0.1°F - -19.9°F (Temp. colder with height)	0 in high order position indicated plus from Dec 65 - 31 Aug 66. Beginning 1 Sep 66 blank in high order position indicated plus. X in high order position indicates minus.
19-22	18m (L)- 3m (S) 30m (L)- 3m (S)			Same Code as Cols. 15-18 " " " "	This height difference used from Dec 65 thru 7 Sept 67. This height difference began 8 Sep 67. (18 meter level on large tower (L) was changed to 30 meters.
23-26	60m (L)- 3m (S)			" " " "	NOTES: Readings from Dec 65 thru Dec 67 were instantaneous temperature difference every hour on the hour. From Jan 68 to present: mean temperature difference for the ten minute time interval plus or minus 5 minutes either side of the hour. Chart speed from Dec 65 thru 18 Mar 68 was 6" per hour; from 19 Mar 68 to present: 12" per hour. The 3 m height on small (S) 18m tower is the reference point. When temperatures are warmer at higher elevations than at this point, they are positive values, when colder they are minus values.
27-30	120m (L)- 3m (S)			" " " "	
31-34	150m (L)- 3m (S)			" " " "	
35-36	Hour		01-22	Hour of Obs. LST	01, 04, 07, 10, 13, 16, 19, and 22 obs. are punched in Cols. 37-56.
37-40	Delta Temp. 18m (S)- 3m (S)			Same Code as Cols. 15-18	
41-44	18m (L)-3m (S) 30m (L)-3m (S)			" " " "	Refer to Remarks for Cols. 19-22.

REFERENCE MANUAL

CARD CONTENT

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REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				TEMPERATURE CARDS	
1-5	Station Number		12868	WBAN Station Number	Cape Kennedy AFS, Florida
6	Card Number		3	Temp. Card, Hours 00-11 LST	00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, and 11 obs.
			4	Temp. Card, Hours 12-23 LST	12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23 obs.
7-8	Year		65-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
	Temperature Card 3 Card 4 Hour Hour				
1-16	00 12		0000-0999	0.0°F - 99.9°F (Fahrenheit) Degrees and tenths	0 in high order position indicates plus from Dec 65 - 31 Aug 66.
			E000-E999		Beginning 1 Sep 66 B (blank) in high order position indicates plus.
			X001-X199	-0.1°F - -19.9°F	X in high order position indicates minus.
17-20	01 13			Same Code for all hours.	
21-24	02 14				
25-28	03 15				
29-32	04 16				
33-36	05 17				
37-40	06 18				
41-44	07 19				
45-48	08 20				
49-52	09 21				
53-56	10 22				
57-60	11 23				
61-80	Not used.				
					Notes: Level of observation is 3 meters on the 18 m tower from Dec 65 to present. Chart speed is 6 in. per hour from Dec 65 to present. Readings: Dec 65 thru Dec 67, instantaneous temperature every hour on the hour. Jan 68 to present, mean temperature for the ten minute time interval plus or minus either side of the hour. Missing and erroneous data logs maintained Dec 65 to present.

REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				PRESSURE CARDS	
1-5	Station Number		12868	WEAN Station Number	Cape Kennedy AFS, Florida
6	Card Number		5	Pressure Card Hours 00-11 LST	00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, and 11 obs.
			6	Pressure Card Hours 12-23 LST	12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23 obs.
7-8	Year		66-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
	Pressure Card 5 Card 6 Hour Hour				
13-16	00 12		0000-9999	Millibars and Tenths	Ex. 0146 is 1014.6 mb, 9945 is 994.5 mb (thousands digit is not punched).
17-20	01 13			Same Code for all hours	
21-24	02 14				
25-28	03 15				
29-32	04 16				
33-36	05 17				
37-40	06 18				
41-44	07 19				
45-48	08 20				
49-52	09 21				
53-56	10 22				
57-60	11 23				
61-60	Not used.				

Notes: 24 Jun 66 to present. Instantaneous pressure values are read to the nearest tenth millibar every hour on the hour.

Missing and erroneous data logs maintained from 24 Jun 66 to present.

Pressure observations began 2000 LST 24 June 66.

REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				RADIATION CARD	
1-5	Station Number		12868	WEAN Station Number	Cape Kennedy AFS, Florida
6	Card Number		7	Radiation Card	
7-8	Year		67-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
13-14	Hour		05-20	Hour LST	
	Radiation Cal cm ⁻² min ⁻¹ Min. After Hour				
15-17	0 - 5		000-999	0.00 - 9.99 Calories cm ⁻² min ⁻¹	
18-20	5 - 10				
21-23	10 - 15				
24-26	15 - 20			Same Card Code for all hours	
27-29	20 - 25				
30-32	25 - 30				
33-35	30 - 35				
36-38	35 - 40				
39-41	40 - 45				
42-44	45 - 50				
45-47	50 - 55				
48-50	55 - 60				
51-60	Not used.				

Notes: Readings from 1 Oct 67 to present are 12 five minute means per hour to the nearest .01 Cal cm⁻² min⁻¹

Readings from 19 Aug 67 thru 30 Sep 67 were not used. These were two readings per hour, mean for the time interval plus or minus 30 minutes either side of the hour.

Missing and erroneous data logs maintained 19 Aug 67 to present.

DEWCELL DEWPOINT CARD

DEWCELL DEWPOINT CARD

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				DEWCELL DEWPOINT CARD	
1-5	Station Number		12868	WBAN Station Number	Cape Kennedy AFS, Florida
6	Card Number		8	Dewcell Dewpoint Card	
7-8	Year		68-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
13-14	Hour		00-18	Hour LST	00, 06, 12, and 18 obs. punched in Cols. 15-23.
15-17	Dewpoint at 3 Meters		000-999	0.0°F - 99.9°F (Fahrenheit)	
18-20	60 Meters			Same Code all levels	
21-23	150 Meters				
24-25	Hour		01-19	Hour LST	01, 07, 13, and 19 obs. punched in Cols. 26-34.
26-28	Dewpoint at 3 Meters		000-999	0.0°F - 99.9°F	
29-31	60 Meters				
32-34	150 Meters				
35-36	Hour		02-20	Hour LST	02, 08, 14, and 20 obs. punched in Cols. 37-45.
37-39	Dewpoint at 3 Meters		000-999	0.0°F - 99.9°F	
40-42	60 Meters				
43-45	150 Meters				
46-47	Hour		03-21	Hour LST	03, 09, 15, and 21 obs. punched in Cols. 48-56.
48-50	Dewpoint at 3 Meters		000-999	0.0°F - 99.9°F	
51-53	60 Meters				
54-56	150 Meters				

REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				DEWPOINT CARD (continued)	
57-58	Hour		04-22	Hour LST	04, 10, 16, and 22 obs. punched in Cols. 59-67.
59-61	Dewpoint at 3 Meters		000-999	0.0°F - 99.9°F	
62-64	60 Meters				
65-67	150 Meters				
68-69	Hour		05-23	Hour LST	05, 11, 17, and 23 obs. punched in Cols. 70-78.
70-72	Dewpoint at 3 Meters		000-999	0.0°F - 99.9°F	
73-75	60 Meters				
76-78	150 Meters				
79-80	Not used.				
					Notes: Readings are taken at 3 levels, 3 meters on the 16 m tower, 60 and 120 meters on the 150 m tower. Readings from 16 Feb 68 to present - MEAN Dewpoint for the ten minute time interval plus or minus 5 minutes either side of the hour to the nearest tenth degree Fahrenheit. Missing and erroneous data logs maintained from 16 Feb 68 to present.

REFERENCE MANUAL

CARD CONTENT

COLUMN	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
PRECIPITATION CARDS					
1-4	Station Number		1286	Cape Kennedy AFS, Florida	In these cards Col. 5 is used for first digit of 2 digit card no.
5-6	Card Number		89	Precip. Card Hours 00-11 LST	00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, and 11 obs.
			90	Precip. Card Hours 12-23 LST	12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, and 23 obs.
7-8	Year		69-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
13	Indicator Code		Blank or 0	Good Data	
			1-6	Tens Digit Hourly Precip.	Col. 13 is used for tens digit of hourly precip. if needed.
			7	Trace of precip.	Current charts are not accurate enough to determine trace with any degree of confidence.
			8	Doubtful Data	Data may be somewhat doubtful because of recorder time malfunction or other malfunction.
			9	Missing Data	
Precipitation Hourly Amounts					
Card 89 Card 90					
Hour Hour					
13-16	00	12	001-999	0.01 - 9.99 inches	Indicator Code is in high order position of each field (Cols. 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57) refer to Col. 13.
17-20	01	13	Blank	0 or Trace; Missing Data	
				Same Code for all hours.	
21-24	02	14			
25-28	03	15			
29-32	04	16			
33-36	05	17			
37-40	06	18			
41-44	07	19			
45-48	08	20			
49-52	09	21			
53-56	10	22			
57-60	11	23			
61-90	Not used.				

REFERENCE MANUAL

CARD CONTENT

LINE	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
				STABILITY INDEX AND PRECIPITABLE WATER CARD	
1-4	Station Number		1286	Cape Kennedy AFS, Florida	In these cards Col. 5 is used for first digit of 2 digit card no.
5-6	Card Number		91	Stability Index and Precipitable Water Card	
7-8	Year		66	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
	99 GMT				
13-15	Stability Index		B00-B99	00°C - 99°C (whole degrees)	Blank (B) in Col. 13 indicates plus.
			X01-X99	- 01° - - 99°C	X in Col. 13 indicates minus.
			1 in Col. 13	Stability Index Missing	Cols. 14-15 are left blank.
16-18	Precipitable Water		000-999	Hundredths of Inches	Cols. 16-18 are left blank when data are missing.
	18 GMT				
19-21	Stability Index			Same as Cols. 13-15	
22-24	Precipitable Water			Same as Cols. 16-18	
25-80	Not used.				
					Stability Index indicates the degree of stability of the layer of air extending from a level near the surface of the earth to the 500 mb surface. The computations consist of finding the temperature a particle of air at a selected level would have if it were moved upward along a moist pseudo-adiabatic curve from its condensation level to the 500 mb surface, and then subtracting algebraically this temperature from the true temperature of the air at the 500 mb surface as indicated by the raob. The remainder, with appropriate algebraic sign, is the stability index. Positive values connote stable conditions, and negative values unstable. The degree of stability is indicated by the magnitude of the difference. Precipitable Water is the total atmospheric water vapor contained in a vertical column of unit cross sectional area extending between any two specified levels expressed as height that water would stand if completely condensed in a vessel of same unit cross section.

REFERENCE MANUAL

CARD CONTENT

COL. NO.	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
VERTICAL WIND CARD					
1-4	Station Number		1286	Cape Kennedy AFS, Florida	In these cards Col. 5 is used for first digit of 2 digit card no.
5-6	Card Number		92	Vertical Wind Card	
7-8	Year		69-	Last 2 digits of year	
9-10	Month		01-12	Jan - Dec	
11-12	Day		01-31	Day of Month	
13-14	Hour		00-22	Hour LST	00, 02, 04, 06, 08, 10, 12, 14, 16, 18, 20, and 22 obs.
15	Level on Tower		1	10 meters on 18 m tower	
			3	13 meters on 150 m tower	
			5	60 meters on " "	
			6	150 meters on " "	
16-18	Min Speed		2000-B999	Tenths of mps	Blank (B) in high order position indicates plus. (Upwards)
			X001-X999	- 001 - - 999 tenths of mps	X in high order position indicates minus. (Downwards)
20-23	Mean Speed			Same Code as Cols. 16-19	Min, Mean and Max Vertical Wind Speed are for the ten minute interval plus or minus 5 minutes either side of hour.
24-27	Max Speed			" " " "	
28-31	Hourly Min Speed			Same Code as Cols. 16-19	Hourly Min and Max Vertical Wind Speed are for the time interval of plus or minus 30 minutes either side of the hour.
32-35	Hourly Max Speed			" " " "	
36	Code		0	Calibration	
			1	Recorder Malfunction	Pen not inking, chart paper jammed, chart drive stoppages, etc.
			2	Power Failure	
			3	Instrument Malfunction (Sensor)	Trace dropping to zero, intermittent sensor.
			4	Maintenance	
			6	Gap between Roll Changes	
			7	Doubtfull Data	Uncertain about zero, spikes which may or may not be good, Crossover not operating properly, etc.
			8	Data Missing	Usually a short skip during hour with no apparent time lost.
			9	Miscellaneous	Requires an explanation on Log Sheet.

REFERENCE MANUAL

CARD CONTENT

COLUMNS	ITEM OR ELEMENT	SYMBOLIC LETTER	CARD CODE	CARD CODE DEFINITION	REMARKS
01-23	Hour		01-23	Hour LST	01, 03, 05, 07, 09, 11, 13, 15, 17, 19, 21, 23 obs.
39-42	Min Speed		B000-B999	001-999 Tenths of mps	Blank, (B) in high order position indicates plus.
			X001-X999	- 001 - - 999 Tenths of mps	X in high order position indicates minus.
43-45	Mean Speed			Same Code as Cols. 39-42	
47-50	Max Speed			" " " "	Min, Mean and Max Vertical Wind Speeds are for the time interval of ten minutes plus or minus 5 minutes either side of the hour.
51-54	Hourly Min Speed			Same Code as Cols. 39-42	Hourly Min and Max Vertical Wind Speeds are for the time interval of plus or minus 30 minutes either side of the hour.
55-58	Hourly Max Speed			" " " "	
59	Code			Same Code as Col. 36	
60-63	Not used.				