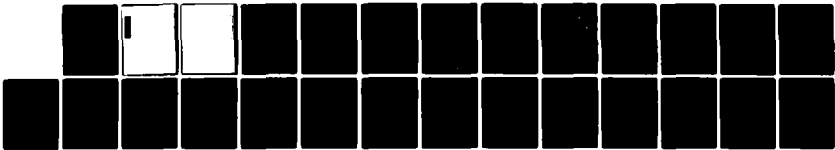


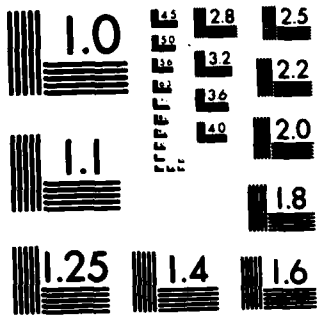
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19313AT MLRS MISSILE NUMBER 4748 4898 4747 4643 4935 1/1
5054 ROUND NUMBER 51 (U) ARMY ELECTRONICS RESEARCH AND
DEVELOPMENT COMMAND WSMR NM ATM. D C KELLER NOV 83
ERADCOM/ASL-DR-1324 F/G 4/2 NL

UNCLASSIFIED

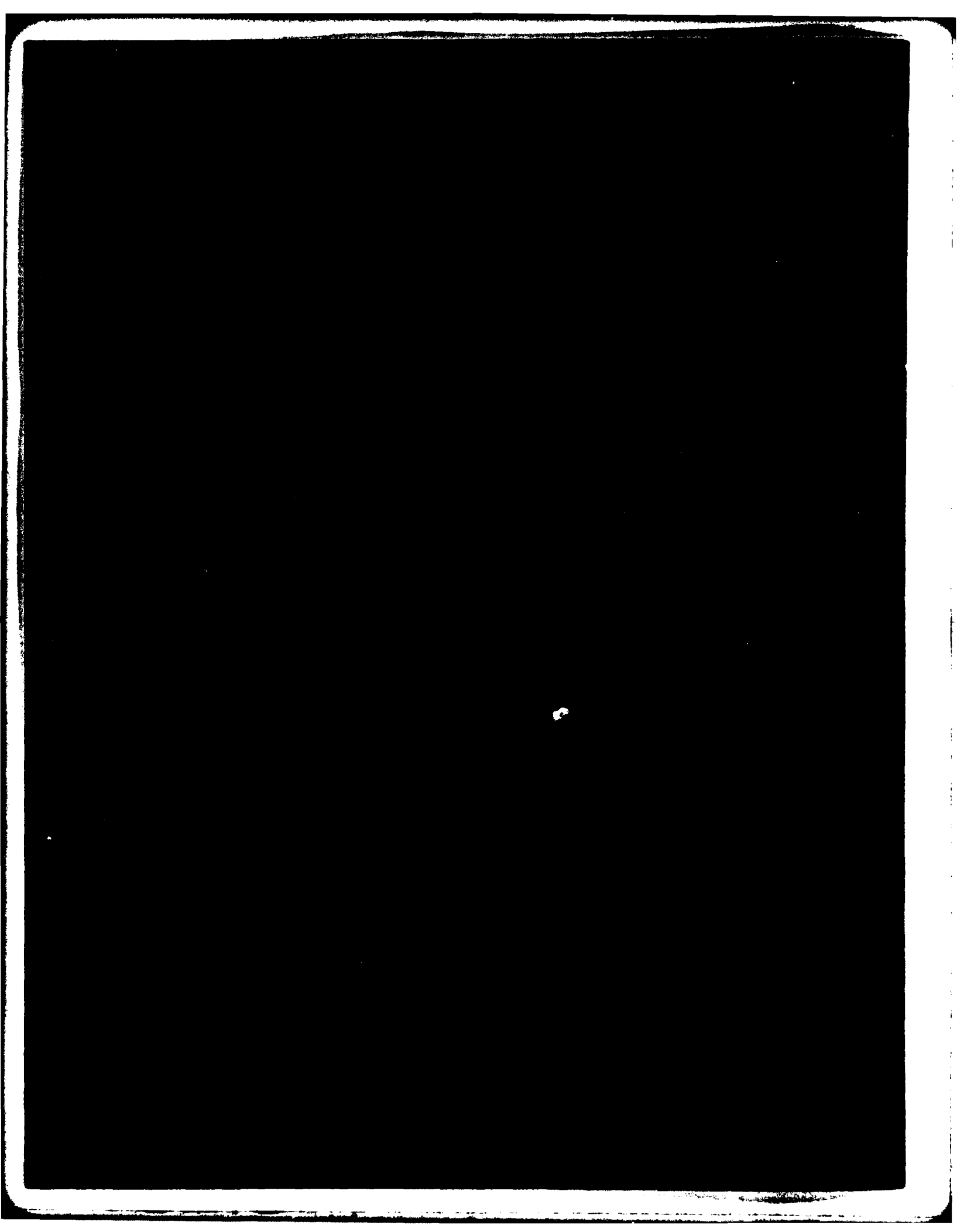


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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD A 137294



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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER DR 1324	2. GOVT ACCESSION NO. / RECIPIENT'S CATALOG NUMBER A137297	5. TYPE OF REPORT & PERIOD COVERED
4. TITLE (and Subtitle) 19313AT MLRS Missile Number 4748, 4898, 4747, 4643, 4935, 5054 Round Number 515 thru 520		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) White Sands Meteorological Team		8. CONTRACT OR GRANT NUMBER(s) DA Task 1F665702D127-02
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Electronics Research & Development Cmd Atmospheric Sciences Laboratory White Sands Missile Range, New Mexico 88002		12. REPORT DATE November 1983
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) US Army Electronics Research and Development Cmd Adelphi, MD 20783		13. NUMBER OF PAGES 24
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report)		
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Meteorological data gathered for the launching of the 9313AT MLRS, Missile Number 4748, 4898, 4747, 4643, 4935, 5054 Round Number 515 thru 520 are presented in tabular form.		

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INTRODUCTION

19313AT MLRS, Missile Numbers 4748, 4898, 4747, 4643, 4935, and 5054, Round Numbers 515 thru 520, were launched from Tula Gate, White Sands Missile Range (WSMR), New Mexico, at 1351:44, 1351:48, 1351:52, 1351:57, 1352:01, and 1352:06 MST, 9 Nov 83. The scheduled launch times were 1300 MST with a 4.5 second separation.

DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

1. Observations

a. Surface

(1) Standard surface observations to include pressure, temperature (°C), relative humidity, dew point (°C), density (gm/m³), wind direction and speed, and cloud cover were made at the Tula Gate Met Site at T-0 minutes.

(2) Anemometer data were provided from existing tower-mounted anemometers at Tula Gate. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

b. Upper Air

(1) Low level wind data were obtained from pilot-balloon observations at:

SITE AND ALTITUDE

Tula Gate 2 km
MAL 2 km

(2) Air structure data (rawinsonde) were collected at the following Met Sites.

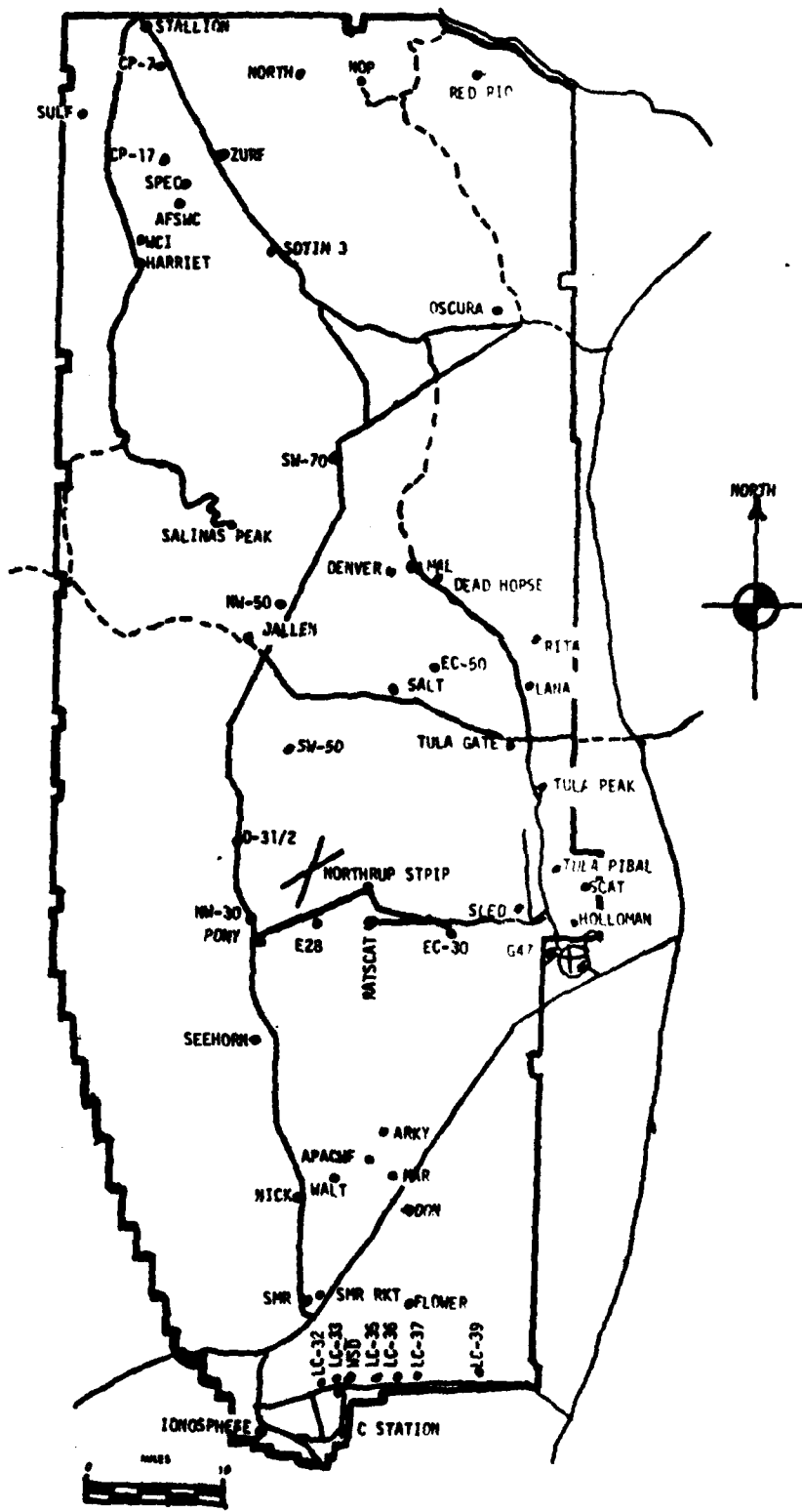
SITE AND TIME

RITA 0800 MST
RITA 1100 MST
RITA 1215 MST

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	23 C



WSMR METEOROLOGICAL SITES



**TULA GATE
NET SITES**

RHODES

Y436,000

X546,000

X548,000

NORTH

WEST

1 inch = 1000 ft

Y434,000

LINE OF FISH

Y432,000

6

L-597
30 meter
anemometer
tower

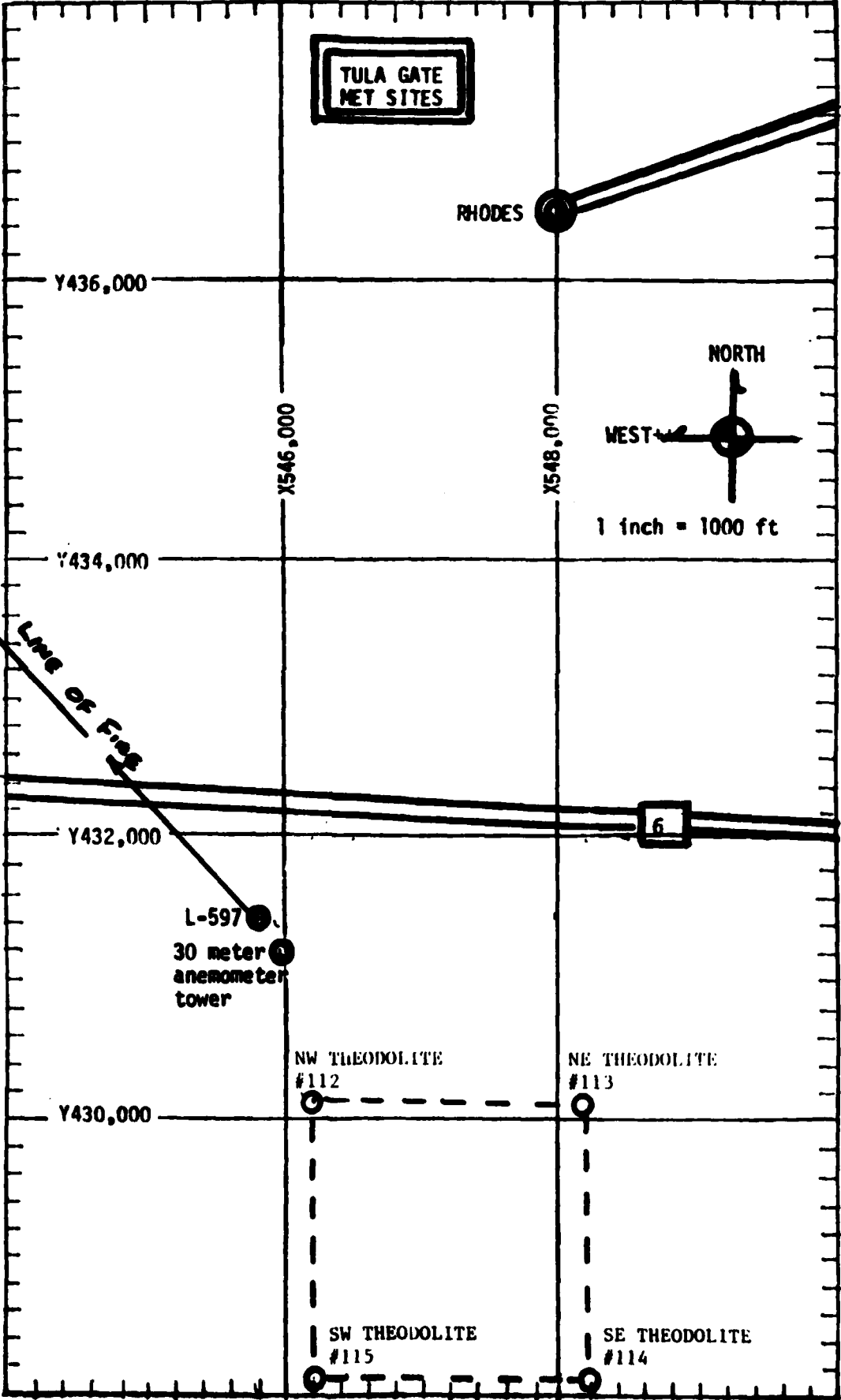
NW THEODOLITE
#112

NE THEODOLITE
#113

Y430,000

SW THEODOLITE
#115

SE THEODOLITE
#114



PROJECT SURFACE OBSERVATION

TABLE 1

STATION Tula Gate

DATE 09 11 83

X = 545,785.2 Y = 431,459.0 H = 4103.3

TIME M S I	PRESSURE mb	TEMPERATURE C	DEW POINT C	RELATIVE HUMIDITY %	DENSITY g/m ³	WIND		VISIBIL- ITY	
						DIRECTION degs Tn	SPEED kts		CHARACTER kts
1351	879.9	15.8	-2.6	28	1060.1	330	11	C 17	30

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS		
	1st LAYER		2nd LAYER		3rd LAYER				
	AMT	TYPE	HGT	AMT	TYPE	HGT	AMT	TYPE	HGT
	3	CL	25,000						

PSYCHROMETRIC COMPUTATION

TIME:	MST	1351	
DRY BULB TEMP.		15.8	
WET BULB TEMP.		7.0	
WET BULB DEPR.		8.8	
DEW POINT		-2.6	
RELATIVE HUMID.		28	

TABLE 2

ANEMOMETER DATA - 30 Ft Level of 30 Meter Tower

X= 545,944.89 Y= 431,158.70 H= 4102.47 (BASE)

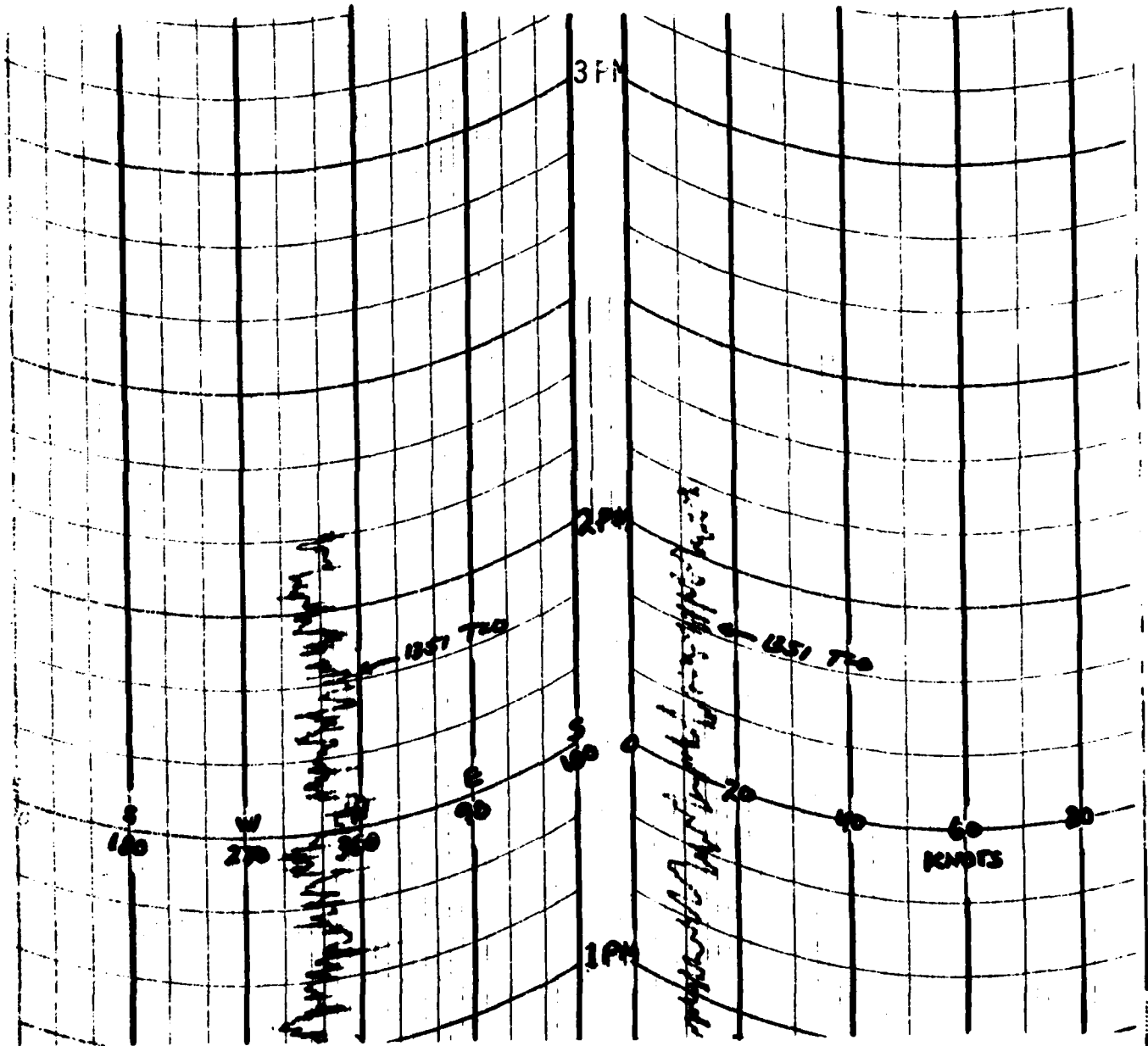


TABLE 3

ANEMOMETER DATA - 60 Ft Level of 30 Meter Tower
X= 545,944.89 Y= 431,158.70 H= 4102.47 (BASE)

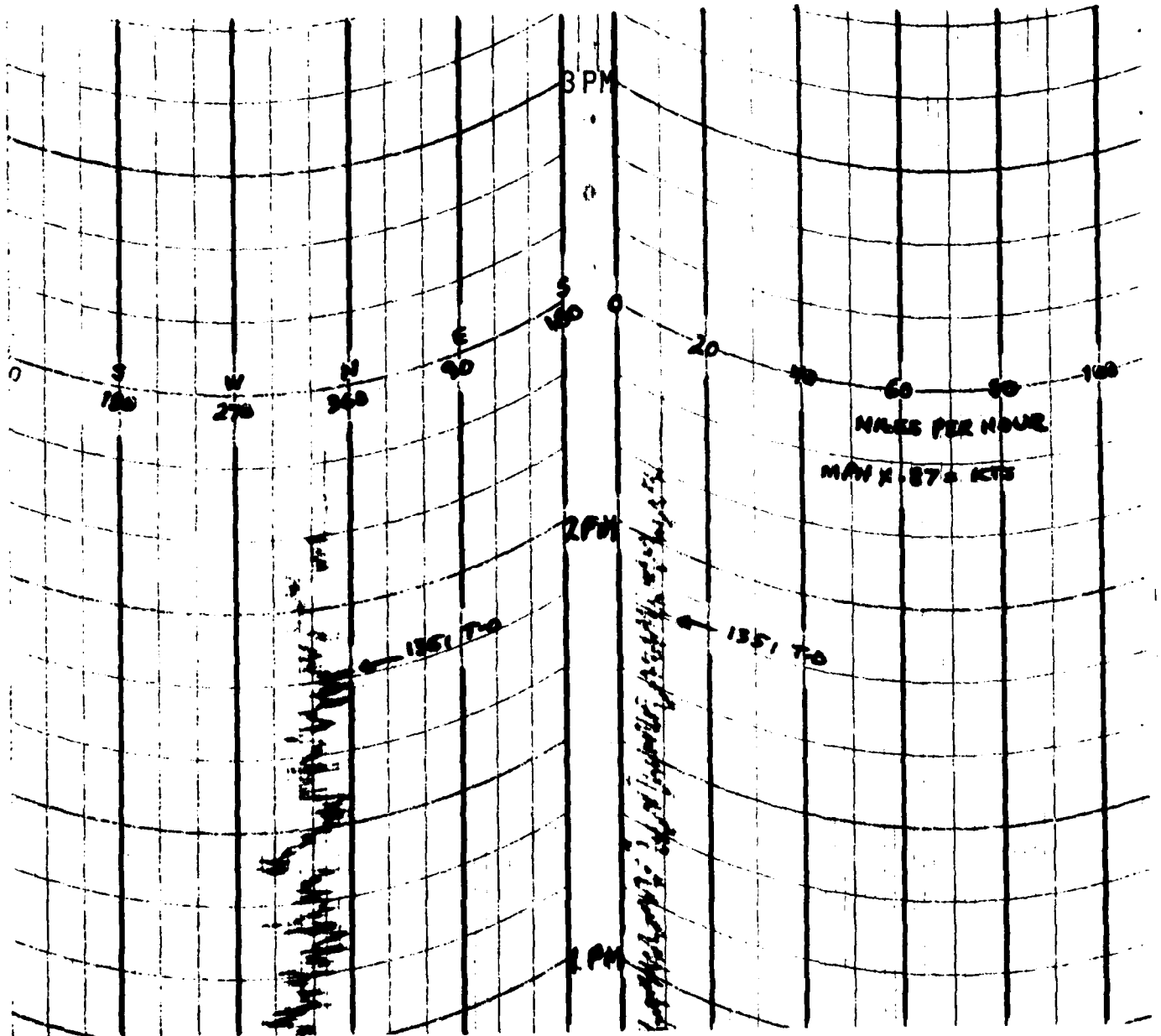
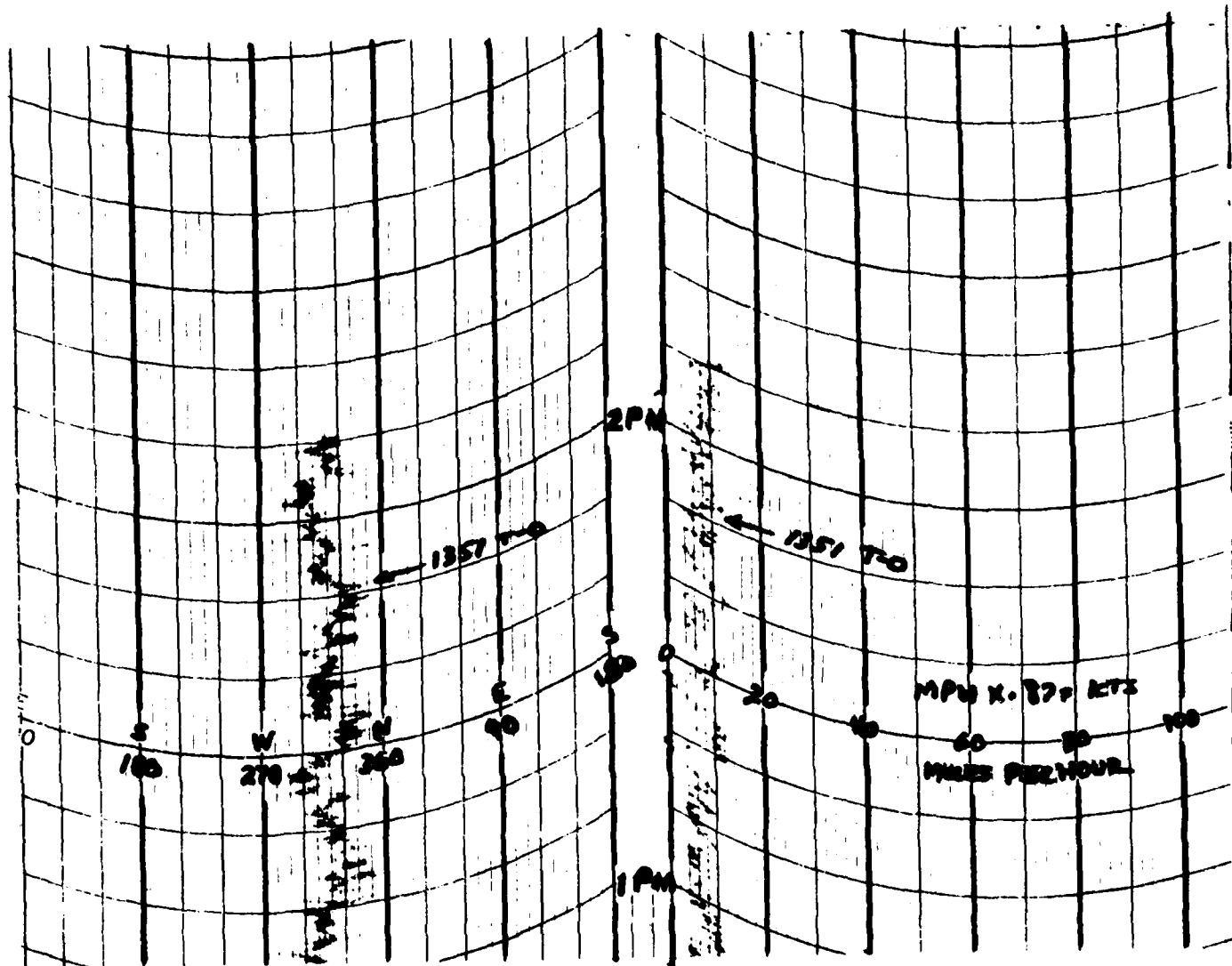


TABLE 4

ANEMOMETER DATA - 90 Ft Level of 30 Meter Tower

X= 545,944.89 Y= 431,158.70 H= 4102.47 (BASE)



T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 9 November 1983

SITE: Tula Gate
 TIME: 1351 MST
 WSTM COORDINATES:
 X= 548,204.58
 Y= 430,125.39
 H= 4,108.94

SITE: MAL
 TIME 1351 MST
 WSTM COORDINATES:
 X= 509,421.05
 Y= 497,563.78
 H= 4,133.09

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	330	11
150	335	12
210	336	12
270	332	12
330	334	11
390	339	10
500	351	08
650	340	09
800	309	03
950	313	02
1150	343	03
1350	330	08
1550	311	09
1750	288	21
2000	271	19

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	350	08
150	346	19
210	356	17
270	007	15
330	014	15
390	008	17
500	358	22
650	003	25
800	006	22
950	354	18
1150	344	15
1350	316	10
1550	302	14
1750	283	15
2000	287	14

Data obtained from a Double
 Theodolite Tracked pilot-balloon
 observation.

Data obtained from a Single
 Theodolite Tracked pilot-balloon
 observation.

TABLE 6

AIMING COMPUTER MET MESSAGE DATA
09 November 1983

RITA 0800 MST

METCM1332062
091500128880
00640015 28090880
01628020 28090870
02007022 27930843
03627018 27650803
04582018 27500755
05539012 27540710
06603020 27560667
07573025 27410627
08553033 27050589
09537028 26690553
10563028 26340518
11559032 25990486
12548032 25420440
13454034 24650384
14555035 23770333
15577040 22920288
16580033 22000248

RITA 1100 MST

METCM1332062
091800128882
00622009 28590882
01621012 28360872
02624012 28010846
03626011 27630805
04593012 27450757
05540013 27720712
06580016 27680669
07582025 27270629
08554029 26980591
09541028 26780554
10546026 26360520
11542028 25950487
12542032 25350441
13534030 24580385
14553029 23750334
15567034 22820289
16574037 21970248

RITA 1215 MST

METCM1332062
091930128881
00604006 28640881
01535010 28510870
02615005 28220844
03008009 27840804
04570009 27630756
05535016 27670711
06567017 27710669
07571026 27370629
08551028 27050590
09548027 26880554
10544027 26480520
11536028 26070487
12541032 25500441
13542036 24740385
14548032 23950335
15556035 23110290
16573034 22260250

GEOMETRIC COORDINATES
 33.18295 LAT DEG
 106.15114 LONG DEG

SIGNIFICANT LEVEL DATA
 3130210009
 RITA

STATION ALTITUDE 4186.74 FEET MSL
 9 NOV. 83
 ASCENSION NO. 9

TABLE 7

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	AIR TEMPERATURE DEGREES CENTIGRADE	DEWPOINT PERCENT	REL. HUM. PERCENT
847.2	7.0	-2.2	52.0
860.8	7.5	-3.4	49.0
850.0	5.9	-8.0	39.0
816.2	4.0	-9.3	37.0
786.6	1.9	-13.8	30.0
767.0	.8	-13.2	34.0
754.3	2.0	-12.2	34.0
700.0	2.0	-16.4	24.0
690.5	2.4	-10.1	24.0
644.6	2.1	-15.4	26.0
617.1	.3	-17.0	27.0
547.8	-6.9	-22.7	27.0
535.8	-8.3	-20.7	32.0
500.0	-11.9	-24.2	35.0
443.0	-18.7	-20.6	41.0
427.9	-20.5	-31.0	36.0
400.0	-25.1	-35.8	39.0
384.1	-26.4	-37.5	34.0
317.5	-38.9	-47.0	38.0
300.0	-41.7		
250.0	-52.8		
200.6	-62.5		
202.0	-62.8		
200.0	-64.9		

STATION ALTITUDE 4186.74 FEET MSL
 19 NOV. 45 0800 HRS MST
 ASCENDING 100.

WIND DATA
 3130210009
 PITA

GEOGRAPHIC COORDINATES
 33-1829' LAT LEG
 106-1511' LONG DEG

TABLE 8

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES (TR)	SPEED KNOTS	
4186.7	880.2	7.0	-2.2	52.0	1092.1	652.0	360.0	15.0	1.000268
4500.0	870.1	7.4	-3.2	46.7	1077.9	653.3	.3	15.6	1.000263
5000.0	854.1	6.2	-6.9	38.2	1063.2	651.7	.0	16.7	1.000254
5500.0	838.3	5.3	-8.5	36.3	1047.5	650.5	1.0	17.7	1.000249
6000.0	822.4	4.4	-9.1	36.8	1031.4	649.3	1.3	18.8	1.000245
6500.0	807.5	3.4	-10.0	35.0	1016.0	648.3	350.2	19.3	1.000240
7000.0	792.5	2.3	-12.9	31.4	1001.1	646.9	348.4	20.0	1.000234
7500.0	777.7	1.4	-13.5	31.8	985.7	645.9	340.5	19.7	1.000230
8000.0	763.0	1.2	-12.9	34.0	968.0	645.0	330.0	18.1	1.000227
8500.0	748.0	2.0	-12.5	33.0	947.0	645.0	320.6	16.7	1.000223
9000.0	734.0	2.0	-13.5	30.5	929.3	646.6	312.1	14.4	1.000218
9500.0	721.1	2.0	-14.0	28.0	912.0	646.6	307.3	13.0	1.000213
10000.0	707.0	2.0	-15.7	25.5	895.1	646.5	313.3	12.5	1.000208
10500.0	694.4	2.2	-16.2	24.0	877.0	646.6	320.7	12.9	1.000204
11000.0	681.4	2.3	-15.4	24.4	860.9	646.9	329.2	15.9	1.000201
11500.0	668.7	2.3	-15.7	24.9	845.0	646.9	334.9	17.1	1.000197
12000.0	656.2	2.2	-15.5	25.5	829.4	646.6	332.8	22.7	1.000194
12500.0	644.9	2.0	-15.4	26.0	814.3	646.6	330.5	26.4	1.000191
13000.0	631.9	1.0	-16.1	26.5	802.1	645.4	325.6	28.5	1.000187
13500.0	620.1	-1.0	-16.8	26.9	790.1	644.1	319.1	29.7	1.000184
14000.0	608.3	-1.1	-17.7	27.0	778.2	642.9	314.0	30.5	1.000181
14500.0	596.7	-2.2	-18.6	27.0	766.4	641.0	309.8	30.2	1.000178
15000.0	585.3	-3.2	-19.5	27.0	754.8	640.3	306.4	29.8	1.000175
15500.0	574.1	-4.3	-20.4	27.0	743.4	639.0	304.8	28.7	1.000172
16000.0	563.2	-5.4	-21.4	27.0	732.1	637.7	303.5	27.7	1.000169
16500.0	552.5	-6.4	-22.3	27.0	721.1	636.5	305.5	27.0	1.000166
17000.0	541.8	-7.7	-21.5	31.9	710.4	635.0	307.0	26.4	1.000164
17500.0	531.3	-8.8	-21.2	35.9	699.7	633.6	310.6	27.5	1.000162
18000.0	520.9	-9.8	-22.2	35.6	688.0	632.4	313.8	28.7	1.000159
18500.0	510.8	-10.8	-23.1	35.3	677.8	631.2	315.1	30.0	1.000156
19000.0	500.0	-11.8	-24.1	35.0	667.1	630.0	315.4	31.2	1.000153
19500.0	490.0	-12.9	-24.9	35.9	656.7	628.6	315.3	32.2	1.000151
20000.0	481.0	-14.1	-25.0	36.9	646.4	627.2	314.4	32.7	1.000148
20500.0	471.5	-15.2	-26.3	37.0	636.4	625.9	313.4	33.1	1.000146
21000.0	462.1	-16.3	-27.0	38.0	626.5	624.5	311.0	32.8	1.000143
21500.0	452.4	-17.5	-27.0	39.0	616.7	623.1	309.9	32.6	1.000141
22000.0	443.4	-18.6	-28.0	40.0	607.1	621.7	308.0	31.2	1.000139
22500.0	434.4	-19.7	-30.2	38.3	597.4	620.4	306.0	29.7	1.000136
23000.0	426.0	-20.8	-31.3	36.0	587.9	619.0	305.7	29.6	1.000133
23500.0	417.3	-22.2	-33.2	36.0	579.1	617.2	306.2	29.0	1.000131

STATION ALTITUDE 4000.74 FEET MSL
 11 NOV. 63 0800 HRS, MST
 ASCENDING NO. 4

UNOFF. AIR DATA
 5130210000
 RITA

GEOGRAPHIC COORDINATES
 33-1029' LAT N
 106-1511' LONG W

TABLE 8 Cont'd

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUMID. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES (TN)	SPEED KNOTS	
24000.0	400.0	-23.6	-34.4	36.0	570.5	615.0	306.4	30.0	1.000129
24500.0	400.4	-25.0	-35.7	36.0	562.0	615.7	306.4	32.2	1.000127
25000.0	392.1	-25.7	-36.0	35.0	551.9	612.9	306.1	33.3	1.000125
25500.0	383.9	-26.4	-37.0	34.0	542.0	612.0	305.0	34.2	1.000122
26000.0	375.7	-27.4	-37.7	34.5	533.5	610.2	305.7	34.7	1.000120
26500.0	367.7	-29.0	-38.0	34.9	525.1	608.5	306.3	34.7	1.000118
27000.0	359.9	-30.7	-41.0	35.4	517.0	606.7	307.3	34.6	1.000116
27500.0	352.2	-32.1	-42.1	35.8	508.9	604.9	308.9	34.0	1.000114
28000.0	344.7	-33.5	-43.3	36.3	501.0	603.1	310.0	33.8	1.000112
28500.0	337.3	-34.9	-44.0	36.7	493.2	601.3	312.3	34.9	1.000111
29000.0	330.1	-36.0	-45.0	37.2	485.0	599.5	313.9	36.0	1.000109
29500.0	323.1	-37.8	-46.0	37.6	478.1	597.7	316.2	38.3	1.000107
30000.0	316.2	-39.1	-46.0	35.2**	470.0	596.0	318.2	40.6	1.000105
30500.0	309.2	-40.2	-54.0	29.2**	462.4	594.6	319.6	41.7	1.000103
31000.0	302.4	-41.0	-65.4	5.3**	454.4	593.2	321.0	42.0	1.000101
31500.0	295.6	-42.6			446.7	591.5	322.8	42.4	1.000099
32000.0	288.9	-44.0			439.2	589.7	323.0	41.3	1.000098
32500.0	282.3	-45.4			431.9	587.9	324.3	39.9	1.000096
33000.0	275.9	-46.8			424.7	586.1	325.0	38.5	1.000095
33500.0	269.7	-48.2			417.6	584.3	325.4	37.4	1.000093
34000.0	263.6	-49.6			410.7	582.5	325.9	36.2	1.000091
34500.0	257.6	-51.0			403.9	580.7	326.3	35.0	1.000090
35000.0	251.7	-52.4			397.2	578.8	326.7	33.4	1.000088
35500.0	245.8	-53.7			390.2	577.1	327.1	31.8	1.000087
36000.0	240.0	-55.0			383.2	575.4	328.0	30.3	1.000085
36500.0	234.3	-56.3			376.3	573.7	329.0	28.8	1.000084
37000.0	228.7	-57.6			369.0	572.0	329.1	29.0	1.000082
37500.0	223.3	-58.9			363.0	570.3	328.5	30.2	1.000081
38000.0	218.0	-60.1			356.5	568.6	328.0	32.1	1.000079
38500.0	212.8	-61.4			350.1	566.9	327.7	34.8	1.000078
39000.0	207.7	-62.5			343.6	565.4			1.000077
39500.0	202.7	-62.8			335.6	563.1			1.000075

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4100.74 FEET USE
 9 NOV. 63 0800 HRS MST
 ASCENSION NO. 2

MANDATORY LEVELS
 7150210009
 ZITA

GEODETTIC COORDINATES
 33-18294 LAT DEG
 106-15114 LONG DEG

TABLE 9

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUMIDITY PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5126.	5.9	-4.0	30.	07	10.9
800.0	6745.	2.0	-11.7	33.	352.3	19.6
750.0	8461.	2.0	-12.5	33.	321.3	17.0
700.0	10278.	2.0	-16.4	24.	310.8	12.3
650.0	12241.	2.1	-15.4	20.	331.6	24.0
600.0	14347.	-1.9	-18.3	27.	311.0	30.3
550.0	16597.	-6.7	-22.5	27.	305.3	20.9
500.0	19014.	-11.9	-24.2	30.	315.4	31.3
450.0	21651.	-17.8	-28.0	40.	309.3	32.3
400.0	24443.	-25.1	-30.0	30.	300.4	32.2
350.0	27625.	-32.5	-42.5	30.	309.5	33.8
300.0	31118.	-41.7			321.8	42.1
250.0	35076.	-52.8			320.0	33.0
200.0	39676.	-64.9				

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4150.70 F (1265.2 M)
 WINDY 2.5 1100-1900 Z
 ASCENSION NO. 10

SIGNIFICANT LEVEL DATA
 5180210010
 WITA

GEOGRAPHIC COORDINATES
 33-1629' LAT 116
 106-1516' LONG 116

TABLE 10

PRESSURE MILLIBARS	GEOGRAPHIC ALTITUDE (MEL FEET)	TEMPERATURE AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE	REL. HUM. PERCENT
885.2	4130.7	11.7	2.7	54.0
862.7	4765.2	8.3	-11.1	24.0
850.0	5197.6	7.1	-11.1	26.0
803.5	6703.4	2.5	-13.7	29.0
793.3	7009.0	2.3	-13.2	29.0
782.6	7401.6	1.0	-17.0	23.0
761.8	8113.0	1.3	-19.1	20.0
740.0	8530.1	2.6	-17.3	21.0
720.0	8782.3	3.8	-17.7	19.0
715.1	8795.5	3.5	-18.5	18.0
700.0	10363.7	4.1	-18.0	18.0
671.7	11460.8	4.1	-17.4	19.0
621.7	13511.4	-1.6	-21.6	20.0
587.2	14993.0	-4.1	-24.8	18.0
572.4	15389.7	-3.6	-24.4	18.0
565.9	15550.5	-4.2	-19.9	28.0
500.0	19117.1	-12.3	-26.3	30.0
475.1	20394.1	-15.2	-27.2	35.0
444.1	22057.9	-19.5	-25.6	57.0
437.8	22405.5	-20.5	-28.0	51.0
432.9	22680.4	-20.9	-30.4	42.0
400.0	24587.5	-24.8	-35.2	37.0
395.7	24785.6	-25.3	-36.2	35.0
373.9	25975.6	-28.4	-34.0	58.0
353.1	27225.4	-32.6	-41.3	41.0
340.7	27351.7	-34.2	-45.1	32.0
317.3	29975.3	-38.8	-49.2	32.0
300.0	31230.4	-43.0		
250.0	35190.0	-53.0		
234.3	36750.5	-56.5		
225.1	37482.2	-58.7		
200.0	39005.5	-64.2		

STATION: 111100L 0186.74 FT MSL
 4 NOV 53 1100 UTC
 OBSERVER: JH

UNIT: AIRCRAFT
 110010010
 DATA

GEOGRAPHIC COORDINATES
 33-1829N 141-18E
 106-15114 100 DEG

TABLE 11

DEPTH, FATHOMS MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	SALINITY PRACTICAL SALINITY METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES (T)	SPEED KNOTS	
4100.7	882.2	11.7	2.7	54.0	1075.5	658.0	350.0	9.9	1.000274
4500.0	872.1	9.9	-3.0	37.8	1071.4	650.0	350.0	9.5	1.000260
5000.0	850.2	7.0	-11.1	25.1	1061.0	653.2	351.9	10.4	1.000249
5500.0	840.5	6.2	-11.0	26.6	1047.0	651.5	352.9	11.3	1.000245
6000.0	824.4	4.6	-12.4	27.5	1033.3	647.7	353.7	12.2	1.000242
6500.0	807.0	3.1	-13.3	23.0	1019.9	647.9	351.3	12.4	1.000238
7000.0	794.0	2.3	-13.1	26.1	1004.0	646.9	345.8	12.0	1.000233
7500.0	779.7	1.0	-13.9	22.6	989.9	645.3	340.1	11.7	1.000228
8000.0	763.1	1.3	-13.9	20.5	470.6	645.0	334.4	11.3	1.000223
8500.0	750.8	2.5	-13.0	20.4	948.0	647.1	327.9	11.2	1.000219
9000.0	730.8	3.3	-13.0	19.0	427.5	648.1	321.0	11.3	1.000214
9500.0	720.1	3.7	-13.0	18.6	909.2	648.4	313.5	11.7	1.000210
10000.0	707.6	3.7	-13.4	18.0	842.2	648.5	306.3	12.3	1.000206
10500.0	690.5	4.1	-13.0	18.1	874.4	648.9	310.2	13.0	1.000202
11000.0	680.5	4.1	-13.7	18.6	858.2	649.0	315.7	13.8	1.000199
11500.0	670.9	4.0	-13.5	19.0	842.5	648.9	321.7	15.0	1.000195
12000.0	650.3	2.6	-13.5	19.3	830.9	647.2	326.5	18.6	1.000192
12500.0	640.0	1.2	-13.5	19.5	419.5	645.5	327.0	21.0	1.000189
13000.0	630.8	-0.2	-20.5	19.7	808.3	645.9	325.7	22.8	1.000186
13500.0	622.0	-1.6	-21.5	20.0	797.3	642.2	324.0	24.7	1.000183
14000.0	610.1	-2.4	-23.0	19.3	784.0	641.2	319.4	26.5	1.000180
14500.0	595.5	-3.3	-23.7	18.7	772.1	640.2	315.4	28.4	1.000177
15000.0	587.2	-4.1	-24.3	18.0	759.0	639.2	310.8	29.7	1.000174
15500.0	575.9	-3.7	-23.4	19.9	744.2	639.7	306.8	29.0	1.000171
16000.0	564.9	-4.3	-20.0	28.0	731.4	639.0	305.2	26.3	1.000169
16500.0	554.0	-5.0	-21.0	28.3	720.7	637.5	304.5	27.6	1.000167
17000.0	543.2	-6.9	-22.0	28.7	710.2	635.9	306.6	27.2	1.000164
17500.0	532.7	-8.2	-23.0	29.0	699.8	634.4	307.6	26.8	1.000161
18000.0	522.4	-9.4	-24.0	29.3	689.6	632.0	306.7	26.2	1.000158
18500.0	512.2	-10.7	-25.0	29.6	679.6	631.3	305.7	26.0	1.000156
19000.0	502.3	-12.0	-25.0	29.9	669.7	629.7	304.8	26.7	1.000153
19500.0	492.4	-13.2	-25.5	31.5	659.4	628.3	304.3	27.6	1.000151
20000.0	482.0	-14.3	-26.0	33.5	649.2	626.9	304.9	28.8	1.000148
20500.0	473.1	-15.5	-27.0	36.4	639.2	625.5	305.3	29.9	1.000146
21000.0	463.0	-16.8	-26.3	43.0	629.5	624.0	305.1	30.0	1.000144
21500.0	454.3	-18.1	-26.0	49.6	620.0	622.4	304.9	30.0	1.000142
22000.0	445.1	-19.4	-25.3	56.2	610.0	620.8	304.9	31.1	1.000140
22500.0	430.1	-20.5	-24.7	47.0	601.4	619.2	305.0	32.5	1.000137
23000.0	427.2	-21.0	-31.2	41.2	591.3	618.1	304.8	33.5	1.000134
23500.0	410.4	-22.0	-32.0	39.0	581.5	616.0	304.3	34.2	1.000132

STATION ALTITUDE 4146.74 FT. TISEL
 4 NOV. 63 110000Z 63
 ASCENDING TO 10

WIND AIR DATA
 3150210010
 0114

GEODETIC COORDINATES
 33°15'29" LAT 156
 106°15'11" LONG 156

TABLE 11 Cont'd

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		RELATIVE HUMIDITY PERCENT	DENSITY GRAMS PER CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES (T)	SPEED KNOTS	
24000.0	407.0	-23.5	-37.7	38.5	572.0	615.5	303.9	34.8	1.000130
24500.0	401.5	-24.6	-35.0	37.2	562.0	614.3	303.2	33.6	1.000127
25000.0	395.1	-25.9	-35.0	37.5	553.8	612.7	302.5	31.6	1.000125
25500.0	388.9	-27.3	-34.5	50.1	545.4	610.9	301.2	29.7	1.000124
26000.0	382.9	-28.7	-34.5	56.7	537.0	609.2	299.5	28.3	1.000122
26500.0	376.9	-30.0	-36.7	51.6	528.4	607.6	300.2	28.5	1.000119
27000.0	371.1	-31.3	-38.3	45.4	520.0	606.0	303.1	30.4	1.000117
27500.0	365.5	-32.5	-41.2	41.5	511.7	604.4	306.9	30.0	1.000115
28000.0	360.0	-33.5	-43.4	35.8	502.8	603.1	310.0	31.1	1.000113
28500.0	354.5	-34.6	-45.4	32.0	494.3	601.7	312.8	30.0	1.000111
29000.0	349.2	-36.0	-46.7	32.0	486.5	599.9	313.7	27.9	1.000109
29500.0	344.0	-37.5	-48.0	32.0	478.8	598.1	314.2	26.7	1.000107
30000.0	339.0	-38.9	-49.4	31.4**	471.3	596.3	314.0	26.3	1.000105
30500.0	334.0	-40.6	-55.2	18.6**	464.2	594.2	315.0	28.1	1.000104
31000.0	329.1	-42.2	-55.4	5.9**	457.3	592.0	316.5	31.2	1.000102
31500.0	290.3	-43.7			449.8	590.1	317.4	34.0	1.000100
32000.0	285.0	-44.4			442.0	588.5	318.0	36.6	1.000098
32500.0	280.0	-46.2			434.4	586.9	318.7	38.4	1.000097
33000.0	275.5	-47.5			426.9	585.3	319.7	38.6	1.000095
33500.0	271.2	-48.7			419.5	583.8	320.6	38.8	1.000093
34000.0	267.1	-50.0			412.3	582.0	321.5	38.1	1.000092
34500.0	263.1	-51.3			405.2	580.3	322.5	37.2	1.000090
35000.0	259.2	-52.5			398.2	578.7	323.2	36.3	1.000089
35500.0	245.3	-53.8			391.2	577.0	323.4	35.6	1.000087
36000.0	240.6	-55.1			384.3	575.3	323.6	34.9	1.000086
36500.0	234.4	-56.4			377.5	573.6	323.5	33.7	1.000084
37000.0	229.9	-57.9			370.0	572.0	322.9	32.6	1.000083
37500.0	225.9	-58.7			363.8	570.4	323.5	32.1	1.000081
38000.0	218.7	-59.9			357.0	568.9	324.5	32.0	1.000080
38500.0	215.7	-71.1			350.3	567.3			1.000079
39000.0	210.1	-72.3			343.7	565.7			1.000077
39500.0	205.0	-73.5			337.3	564.1			1.000075

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 9186.79 FEET SL
 4 NOV. 63 1100 EST 1963
 ASCENDING NO. 19

LABORATORY LEVELS
 319210019
 0113

GEOGRAPHIC COORDINATES
 33-1829.5 LAT DEG
 106-1511.7 LONG DEG

TABLE 12

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT DEGREES CENTIGRADE		DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5174.	7.1	-11.1	26.	352.3	10.8
800.0	6814.	2.4	-14.2	26.	347.7	12.2
750.0	8510.	2.6	-17.5	21.	327.6	11.2
700.0	10355.	4.1	-18.0	16.	300.0	12.8
650.0	12327.	1.7	-19.2	19.	320.4	20.4
600.0	14422.	-3.2	-23.0	19.	315.9	20.1
550.0	16672.	-6.1	-21.4	23.	305.3	27.5
500.0	19071.	-12.3	-26.3	30.	304.0	26.9
450.0	21703.	-18.7	-25.9	33.	304.9	30.3
400.0	24548.	-24.8	-35.2	37.	303.1	33.3
350.0	27601.	-33.0	-42.2	39.	308.0	30.9
300.0	31171.	-43.0			310.9	32.5
250.0	35116.	-53.0			323.3	30.1
200.0	39714.	-64.2				

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4186.74 FEET MSL
 9 NOV. 63 1215 MST
 ASCENSION NO. 11

SIGNIFICANT LEVEL DATA
 3130210011
 WITA

GEODETIC COORDINATES
 33-1829S LAT 160
 106-1511W LONG DEG

TABLE 13

PRESSURE MILLIBARS	GEO. STIC ALTITUDE MSL FEET	TEMPERATURE		R. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
487.7	4186.7	12.7	-4.4	50.0
661.4	4794.4	10.4	-11.0	20.0
850.0	5157.4	9.3	-14.5	20.0
116.4	7589.7	2.2	-15.7	25.0
167.8	7895.5	3.1	-20.2	16.0
123.6	9462.1	3.0	-21.1	15.0
115.2	9772.9	3.5	-20.7	15.0
700.0	10345.0	3.4	-20.7	15.0
681.0	11079.6	4.7	-19.7	15.0
655.6	12093.7	3.0	-21.1	15.0
605.6	14175.9	-2.0	-25.1	15.0
570.4	15336.4	-3.5	-20.3	15.0
565.9	15649.3	-3.1	-22.3	21.0
500.0	19123.0	-11.1	-23.5	35.0
474.2	20453.8	-14.3	-21.5	54.0
430.3	22346.2	-18.5	-24.3	60.0
431.4	22790.7	-19.7	-26.0	57.0
411.5	23936.5	-22.4	-26.4	56.0
400.0	24622.1	-23.6	-30.4	53.0
377.9	25979.9	-27.1	-30.1	42.0
345.9	28059.2	-31.7	-43.7	29.0
306.7	30916.5	-39.1	-50.0	30.0
300.0	31314.0	-40.0		
250.0	35322.4	-50.4		
224.3	37620.7	-56.7		
200.0	39162.7	-60.5		
200.0	39985.6	-61.4		

STATION ALTITUDE 4100.0 FEET ASL
 4 NOV 53 1215 MST
 ASOS 51.0.0. 11

REF: ALI DATA
 7120210011
 0117

GEOGRAPHIC COORDINATES
 33-1029.0 LAT DEG
 106-1511.0 LONG DEG

TABLE 14

GEOGRAPHIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		RELATIVE HUMIDITY PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KILOIS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE				DIRECTION DEGREES(TI)	SPEED KNOTS	
4100.0	880.0	12.0	-4.4	30.0	1071.3	659.3	340.0	6.0	1.000250
4500.0	870.0	11.5	-7.9	24.8	1064.0	657.0	342.0	6.4	1.000253
5000.0	854.0	9.8	-12.1	20.0	1051.5	655.0	346.3	6.9	1.000246
5500.0	839.0	8.3	-17.9	20.7	1037.7	653.9	349.4	7.5	1.000242
6000.0	825.0	6.4	-18.5	21.7	1023.9	652.2	352.1	8.1	1.000239
6500.0	810.0	5.4	-14.2	27.6	1010.3	650.5	354.0	8.7	1.000235
7000.0	795.0	3.4	-14.4	23.8	996.9	648.8	346.2	9.4	1.000232
7500.0	779.0	2.5	-15.0	24.8	983.6	647.0	349.5	10.2	1.000228
8000.0	764.0	3.1	-20.5	15.9	963.5	647.7	351.0	10.9	1.000221
8500.0	750.0	3.1	-20.0	15.6	949.7	647.7	320.5	11.9	1.000217
9000.0	736.0	3.0	-20.0	15.3	928.2	647.0	312.0	13.1	1.000213
9500.0	722.0	3.1	-21.0	15.0	910.8	647.0	306.6	14.4	1.000209
10000.0	709.0	3.5	-20.7	15.0	892.5	646.1	302.1	15.8	1.000205
10500.0	695.0	3.7	-20.5	15.0	875.2	646.4	303.6	16.2	1.000201
11000.0	680.0	4.6	-19.0	15.0	856.2	649.4	300.4	16.4	1.000197
11500.0	670.0	4.0	-20.3	15.0	842.0	648.8	314.9	17.1	1.000194
12000.0	657.0	3.2	-20.9	15.0	828.9	647.0	323.7	18.4	1.000190
12500.0	645.0	2.0	-21.3	15.0	816.8	646.4	324.8	21.0	1.000187
13000.0	633.0	.4	-22.0	15.0	805.0	645.0	324.4	23.5	1.000184
13500.0	621.0	.4	-23.0	15.0	793.4	643.6	319.7	25.5	1.000181
14000.0	609.0	-1.6	-24.8	15.0	781.9	642.2	314.4	27.1	1.000178
14500.0	597.0	-2.4	-25.5	15.0	769.5	641.2	311.5	27.6	1.000175
15000.0	586.0	-3.1	-26.0	15.0	756.7	640.4	309.5	28.0	1.000172
15500.0	575.0	-3.4	-25.1	16.6	743.2	640.0	308.7	28.1	1.000170
16000.0	564.0	-3.2	-27.3	21.2	728.4	640.3	308.2	28.0	1.000168
16500.0	553.0	-4.5	-27.2	23.4	717.7	638.8	307.9	27.7	1.000165
17000.0	543.0	-5.7	-27.3	25.6	707.1	637.3	307.5	27.3	1.000163
17500.0	532.0	-7.0	-27.4	27.8	696.6	635.8	306.7	27.1	1.000161
18000.0	522.0	-8.3	-27.7	30.0	686.0	634.3	305.8	26.8	1.000158
18500.0	512.0	-9.5	-23.0	32.2	675.5	632.8	304.0	26.8	1.000156
19000.0	502.0	-10.8	-23.4	34.5	665.0	631.2	303.0	27.0	1.000154
19500.0	492.0	-12.0	-27.7	40.4	654.5	629.8	303.4	27.9	1.000152
20000.0	482.0	-13.2	-27.0	47.5	644.0	628.4	303.2	28.8	1.000150
20500.0	473.0	-14.4	-21.0	54.1	633.5	626.9	303.4	29.9	1.000148
21000.0	463.0	-15.5	-27.3	55.7	623.0	625.0	303.5	30.0	1.000145
21500.0	454.0	-16.0	-23.0	57.3	612.5	624.2	303.0	31.3	1.000143
22000.0	445.0	-17.7	-23.0	58.9	602.0	622.4	303.0	31.6	1.000140
22500.0	436.0	-18.9	-24.9	59.9	591.5	621.4	304.2	32.3	1.000138
23000.0	427.0	-20.2	-25.4	57.2	581.0	619.0	304.9	33.0	1.000135
23500.0	418.0	-21.4	-27.5	57.6	570.5	616.5	304.7	33.1	1.000133

STATION ALTITUDE 4106.0 METERS
 9 NOV. 83 1215 MST
 ASL/DISEL. NO. 11

NO. OF AIR DATA
 770010011
 DATA

GEOMETRIC COORDINATES
 33°16'29" LAT N
 106°15'14" LONG W

TABLE 14 Cont'd

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	DEW POINT CENTIGRADE	REL. HUM. PERCENT	WIND VELOCITY METERS PER SECOND	SPEED OF SOUND KILOMETERS	WIND DATA DIRECTION DEGREES (TN)	SPEED KNOTS	INDEX OF REFRACTION
24000.0	410.5	-22.5	-22.5	57.6	570.2	010.5	300.5	33.2	1.000120
24500.0	402.0	-23.4	-30.1	53.7	560.5	015.0	304.2	34.2	1.000118
25000.0	395.7	-24.0	-32.0	49.9	551.0	014.5	304.0	35.5	1.000125
25500.0	389.0	-25.4	-34.5	45.9	543.0	012.7	304.7	36.5	1.000123
26000.0	377.0	-27.1	-35.1	41.9	534.5	011.1	305.7	37.3	1.000121
26500.0	369.0	-28.5	-37.3	38.7	525.7	009.7	306.0	38.2	1.000119
27000.0	361.0	-29.4	-37.7	35.6	517.0	008.5	307.2	36.4	1.000116
27500.0	354.2	-30.5	-41.0	32.5	508.4	007.0	307.7	34.5	1.000114
28000.0	346.4	-31.0	-43.5	29.4	500.0	005.0	308.2	32.5	1.000112
28500.0	339.5	-32.9	-44.7	26.2	491.9	003.9	308.4	30.4	1.000110
29000.0	332.0	-34.2	-45.3	23.3	484.0	002.2	308.4	29.3	1.000108
29500.0	324.8	-35.0	-47.0	20.5	476.2	000.5	307.9	28.8	1.000107
30000.0	317.0	-36.9	-48.1	20.7	468.0	000.0	307.6	30.3	1.000105
30500.0	311.0	-38.5	-48.3	20.9	461.1	000.1	308.0	31.4	1.000103
31000.0	304.2	-39.4	-54.1	18.0**	453.4	005.0	308.5	32.5	1.000101
31500.0	297.5	-40.5			445.4	004.2	311.0	33.1	1.000099
32000.0	290.0	-41.8			437.8	002.6	313.0	33.8	1.000098
32500.0	284.2	-43.1			430.4	000.9	315.6	34.5	1.000096
33000.0	277.9	-44.4			423.1	000.3	317.4	35.3	1.000094
33500.0	271.0	-45.7			415.9	007.0	318.9	35.7	1.000093
34000.0	265.5	-47.0			408.9	005.9	320.1	35.6	1.000091
34500.0	259.5	-48.5			402.0	004.2	321.4	35.4	1.000090
35000.0	253.7	-49.6			395.3	002.5	322.0	35.0	1.000088
35500.0	247.9	-50.0			388.0	000.0	322.0	34.5	1.000087
36000.0	242.1	-52.5			381.9	000.0	323.4	34.1	1.000085
36500.0	236.7	-53.6			375.3	007.2	324.5	33.9	1.000084
37000.0	231.0	-55.0			368.8	005.4	325.0	33.6	1.000082
37500.0	225.0	-56.4			362.5	003.0	327.5	33.7	1.000081
38000.0	220.2	-57.6			356.0	001.9	329.1	33.0	1.000079
38500.0	215.0	-58.9			349.5	000.5			1.000078
39000.0	209.8	-60.1			343.1	000.0			1.000076
39500.0	204.8	-60.9			336.1	007.0			1.000075

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 4126.74 FEET MSL
 9 NOV. 65 1215 MST
 ASCENDING 19. 11

BAROMETRIC LEVELS
 5130210011
 DATA

GEOGRAPHIC COORDINATES
 33-1829' LAT N
 106-1511' LONG DEG

TABLE 15

PRESSURE (GEOPOTENTIAL)		TEMPERATURE		REL. HUM. %	WIND DATA	
MILLIBARS	FEET	AIR	DEWPOINT		DIRECTION	SPEED
		DEGREES	CENTIGRADE		DEGREES (TN)	KNOTS
850.0	5176.	9.3	-12.5	20.	347.3	7.1
800.0	6707.	4.5	-14.6	23.	349.3	9.1
750.0	8502.	3.1	-20.6	18.	320.4	11.9
700.0	10375.	3.4	-20.7	15.	302.6	10.1
650.0	12300.	2.5	-21.5	15.	324.5	20.0
600.0	14411.	-2.3	-27.4	15.	312.0	27.5
550.0	16668.	-4.9	-22.2	24.	307.8	27.5
500.0	19078.	-11.1	-23.5	35.	303.5	27.2
450.0	21722.	-17.2	-23.4	58.	303.0	31.4
400.0	24593.	-23.6	-30.4	53.	304.2	34.5
350.0	27776.	-31.1	-42.6	31.	308.1	33.4
300.0	31254.	-40.0			310.0	32.9
250.0	35248.	-50.4			322.4	34.7
200.0	39872.	-61.4				

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.