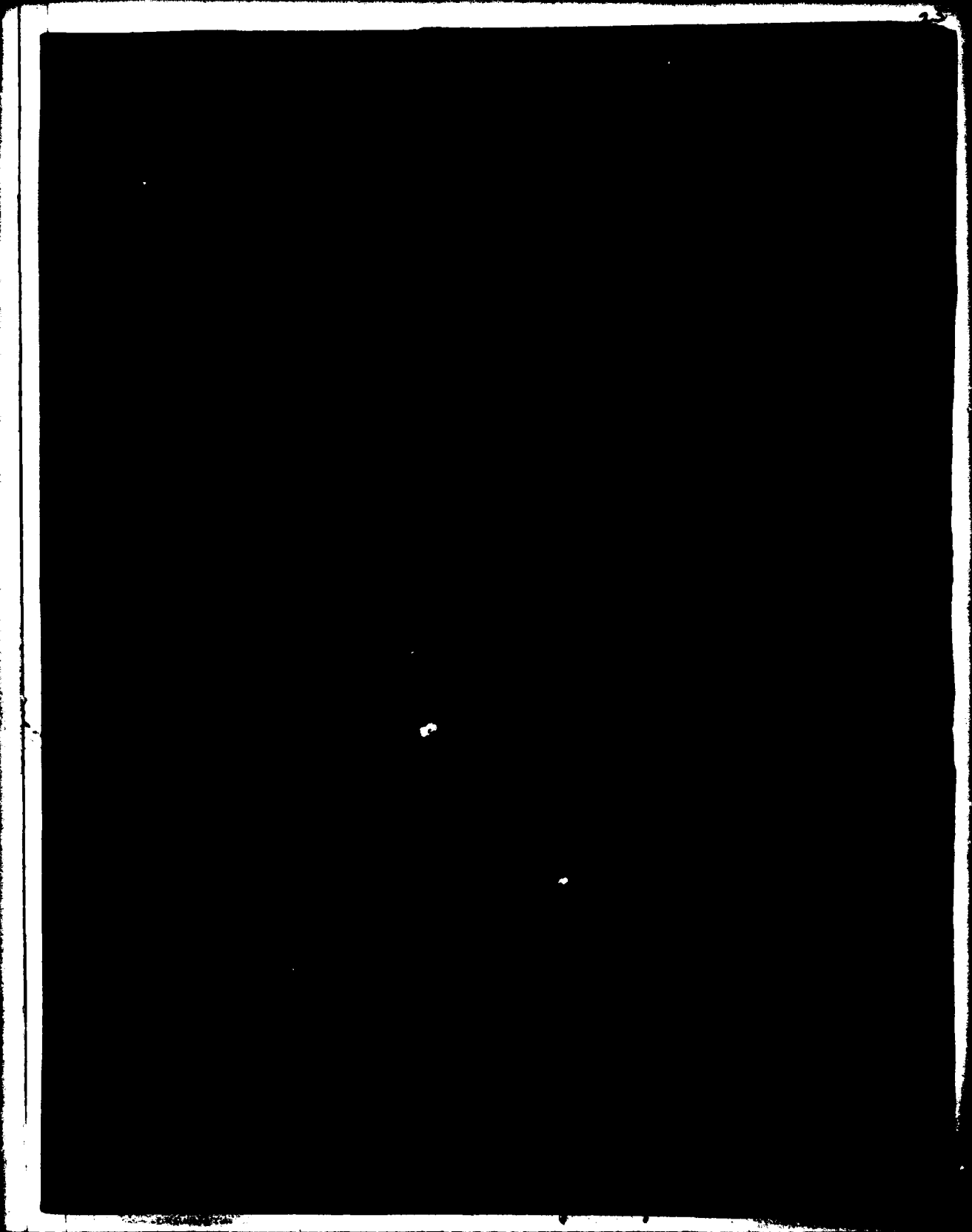


MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

ADA 121651



**UNCLASSIFIED**

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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SELECTED  
NOV 22 1982  
S A D

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## INTRODUCTION

19314A MLRS, Missile Numbers BC-101, BC-104, and BC-106, Round Numbers V-321/PQ-61, V-322/PQ-62, and V-323/PQ-63, were launched from Deadhorse, White Sands Missile Range (WSMR), New Mexico, at 1635:02, 1635:07, and 1635:12 MDT, 17 September 1982. The scheduled launch times were 1330 MDT and 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 ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm}/\text{m}^3$ ), wind direction and speed, and cloud cover were made at the Deadhorse Met Site at T-0 minutes.

(2) Anemometer data were provided from existing tower mounted anemometers at Deadhorse. 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 a single theodolite pilot-balloon observation at:

### SITE AND ALTITUDE

Deadhorse 2 Km

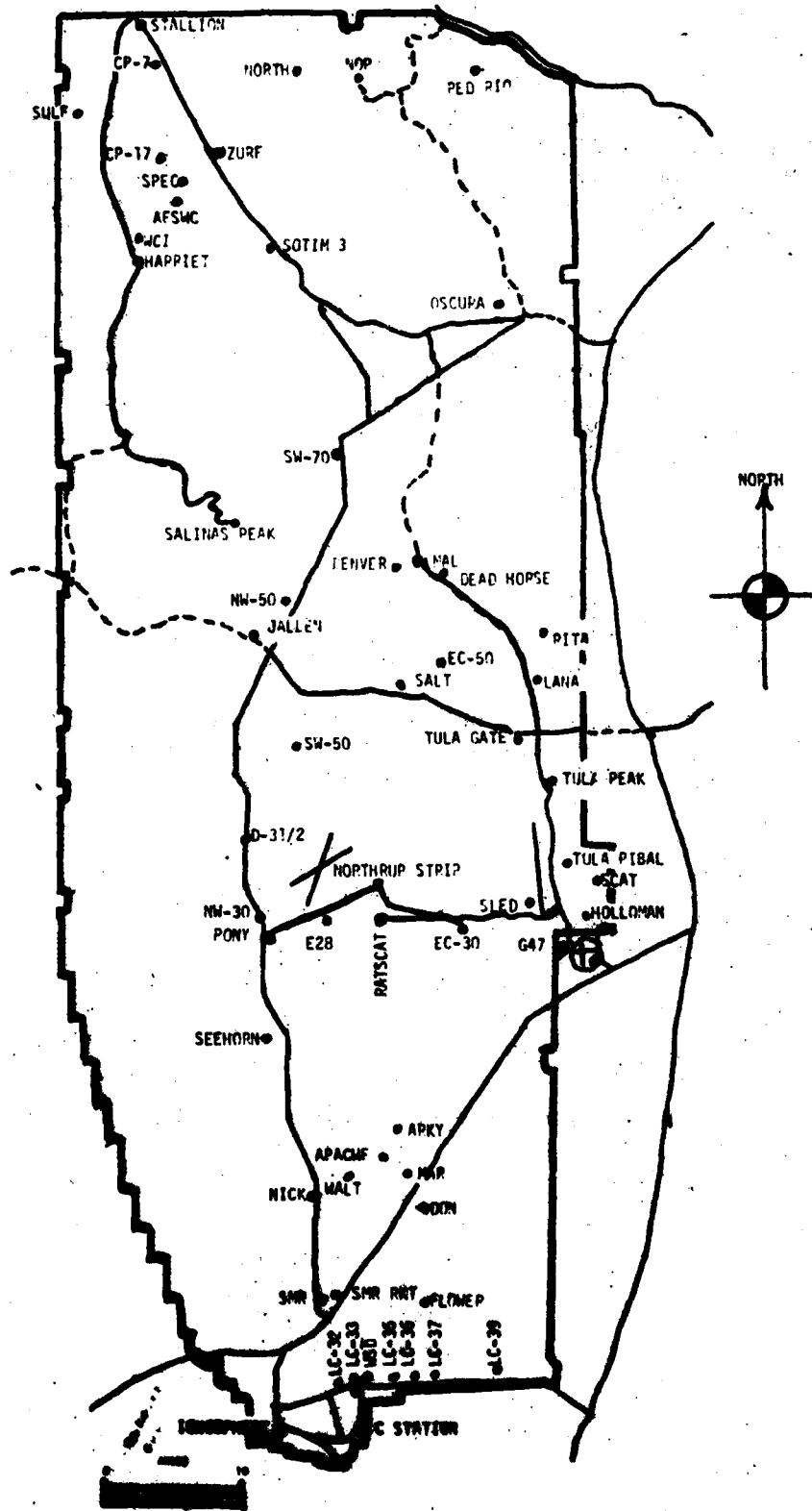
(2) Air structure data (rawinsonde) were collected at the following Met Sites.

### SITE AND TIME

Rita	1345 MDT
Lana	1445 MDT
Rita	1515 MDT
Lana	1636 MDT

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

# WSMR METEOROLOGICAL SITES



DEAD HORSE  
NET SITE

NORTH

WEST

1 inch = 1000 ft

Y493,000

X521,000

X523,000

Y491,000

BASE  
#107

EAST  
#108

LINE OF FIRE

598

30 meter  
Anemometer tower

Y489,000

SOUTH  
#106

318

Y487,000

9

PROJECT SURFACE OBSERVATION

STATION <u>Deadhorse</u>									
X = <u>519,982.11</u> Y = <u>490,249.23</u> H = <u>4133.12</u>									
TABLE <u>1</u>									
DATE <u>17</u> <u>09</u> <u>82</u>									
TIME <u>MOON</u> <u>YEAR</u>									
TIME H D J	PRESSURE mbs	TEMPERATURE OF OC	DEW POINT OF OC	RELATIVE HUMIDITY %	DENSITY gm/m <sup>3</sup>	WIND		VISIBIL- ITY	
						DIRECTION degs In	SPEED kts		
1615	875.0	30.0	14.1	38	1004	300	22	50	
1635	874.8	30.2	15.1	40	1003	330	14	50	

OBSTRUCTIONS TO VISIBILITY	CLOUDS						REMARKS
	1st LAYER		2nd LAYER		3rd LAYER		
	AMT	TYPE	AMT	TYPE	AMT	TYPE	
	4	CU	2	AC	3	C1	
	2	CU	2	AC	4	C1	

PSYCHROMETRIC COMPUTATION

TIME: MDI	1615	1635
DRY BULB TEMP.	30.0	30.2
WET BULB TEMP.	19.2	19.8
WET BULB DEPR.	10.8	10.4
DEW POINT	14.1	15.1
RELATIVE HUMID.	38	40

TABLE 2

ANEMOMETER DATA  
30 FOOT LEVEL OF 30 METER TOWER

X= 519,923.74 Y= 489,901.20 H= 4132.51 (BASE)

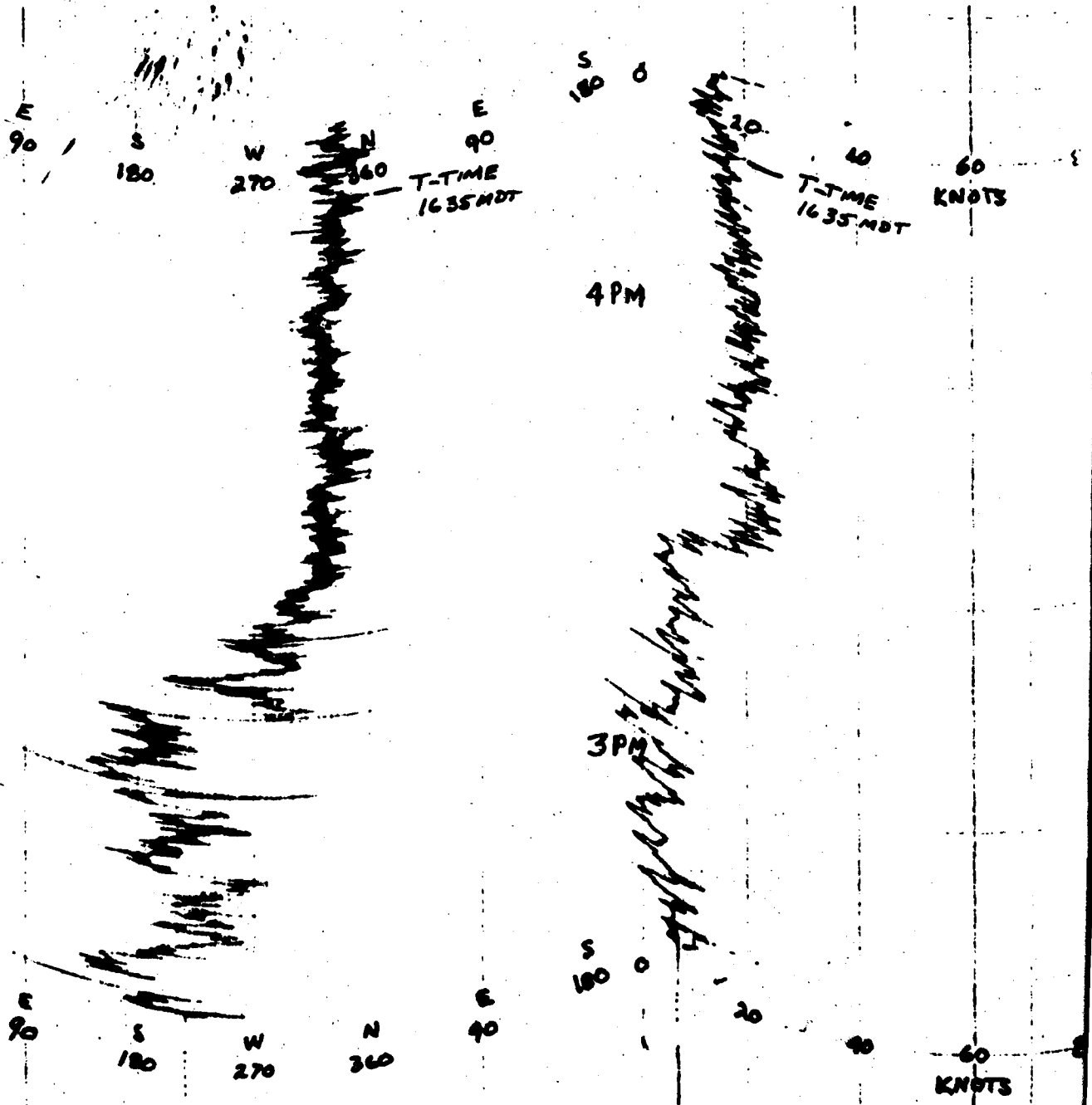


TABLE 3

ANEMOMETER DATA  
60 FOOT LEVEL OF 30 METER TOWER

X= 519,923.74 Y= 489,901.20 N-4132.51 (BASE)

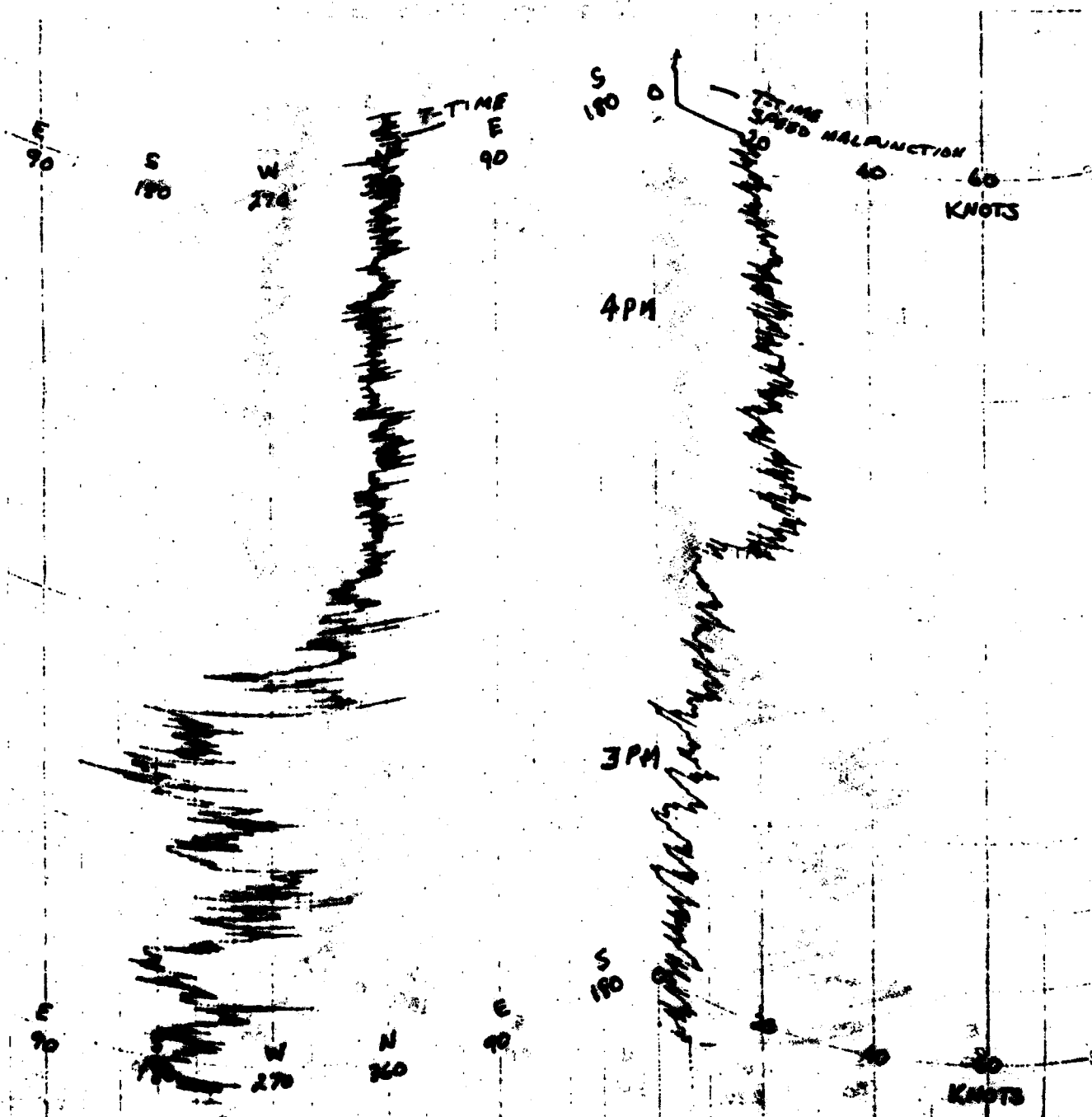


TABLE 4

ANEMOMETER DATA  
90 FOOT LEVEL OF 30 METER TOWER

X= 519,923.74 Y= 489,901.20 H= 4132.51 (BASE)

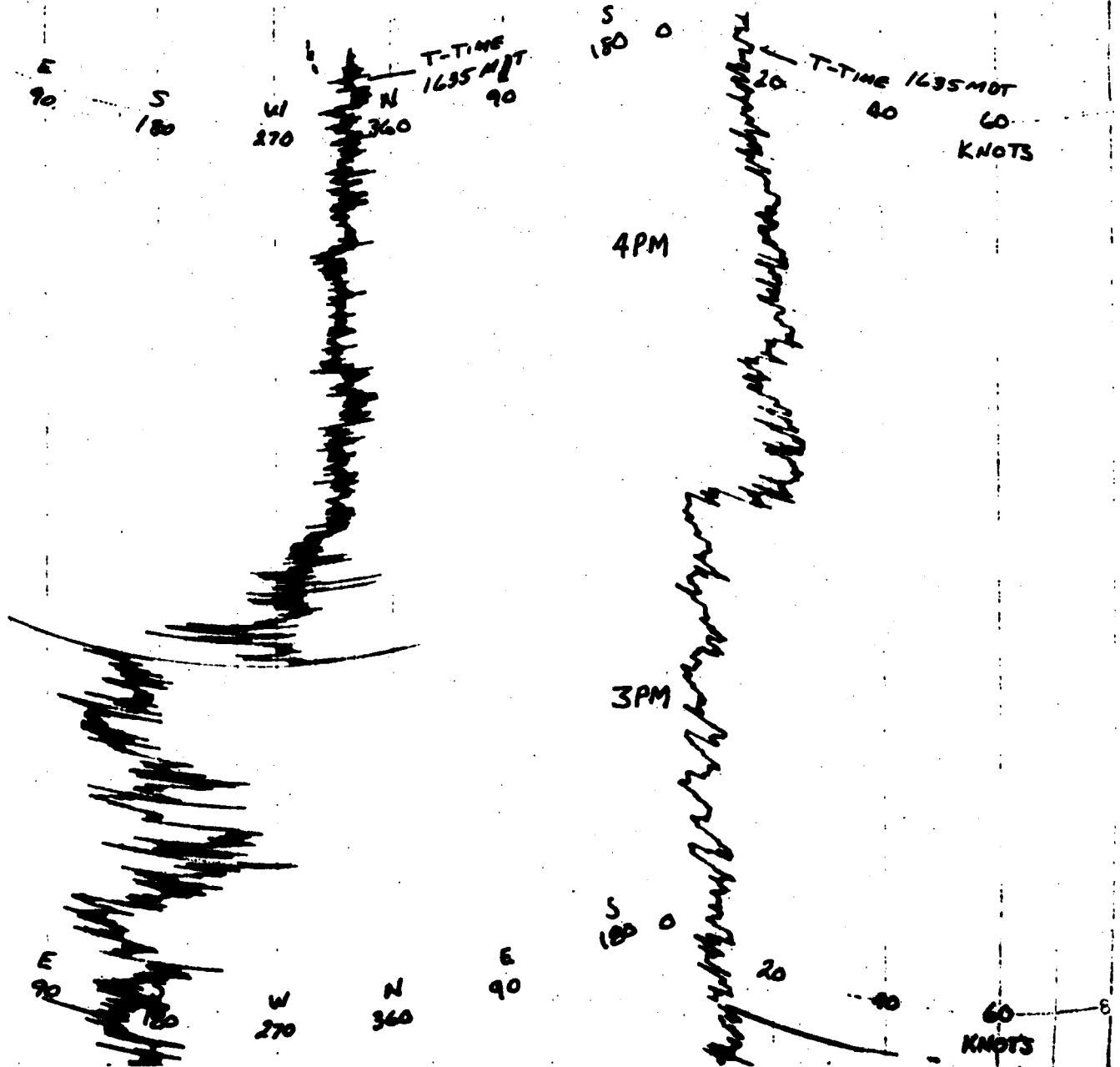


TABLE 5

T-TIME PILOT-BALLOON MEASURED WIND DATA  
DATE 17 Sep 82

SITE: Deadhorse

TIME: 1635 MDT

WSTM COORDINATES:

X= 519,982.11

Y= 490,249.23

H= 4,133.12

LAYER MIDPOINT METERS AGL	DIRECTION DEGREES	SPEED KNOTS
SURFACE	330	14
150	310	17
210	307	17
270	309	15
330	311	14
390	310	12
500	303	10
650	280	06
800	228	05
950	191	02
1150	212	09
1350	224	13
1550	224	12
1750	215	13
2000	190	10

TABLE 6

AIMING AND T-TIME COMPUTER MET MESSAGES

17 Sep 82

RITA 1345 MDT

METCM1332062

171980128876

00356004 30550876

01357007 30320866

02324008 29990842

03347013 29630804

04329012 29150759

05365013 28780715

06380013 28390674

LANA 1445 MDT

METCM1331062

172080127873

00320005 30500873

01353010 30340864

02385008 30030840

03331010 29680802

04355012 29240757

05383011 28780714

06398010 28380672

RITA 1515 MDT

METCM1332062

172130128874

00302004 30550874

01394011 30420864

02425008 30130840

03427010 29740803

04392012 29270758

05374010 28830715

06394009 28400673

LANA 1636 MDT

METCM1331062

172260127872

00569005 30570872

01579010 30340862

02571009 30020838

03538010 29640801

04443006 29170756

05382009 28690712

06365011 28270671

STATION ALTITUDE 4186.74 FEET MSL  
 17 SEP. 62  
 ACCESSION NO. 7

SIGNIFICANT LEVEL DATA  
 2000210007  
 RITA  
 TABLE 7

GEODETIC COORDINATES  
 33.18295 LAT DEG  
 106.15114 LON DEG

PRESSURE GEOMETRIC MILLIBARS MSL FEET	ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT
875.7	4186.7	30.4	39.0
864.8	4553.2	27.4	42.0
850.0	5054.0	25.5	47.0
817.0	6193.5	22.5	53.0
749.4	8636.8	15.6	65.0
700.0	10529.8	11.9	68.0
668.7	11783.6	8.6	74.0
635.0	13185.3	5.9	69.0

STATION ALTITUDE 4166.74 FEET MSL  
 17 SEP. 82  
 ASCENSION NO. 7 1345 MDT

UPPER AIR DATA  
 2600210007  
 RITA

TABLE 8

GEODETTIC COORDINATES  
 33.18295 LAT DEG  
 106.15114 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	WIND DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION (DEGREES TRUE)	WIND DATA		INDEX OF REFRACTION
							SPEED KNOTS	HEIGHT FEET	
9186.7	875.7	30.4	39.0	997.0	661.2	200.0	4.1	1.000292	
4500.0	866.4	27.8	41.0	995.9	678.2	197.1	5.3	1.000287	
5000.0	851.6	25.7	46.5	985.9	675.8	194.5	7.3	1.000285	
5500.0	836.9	24.3	49.3	973.4	674.2	193.0	9.3	1.000281	
6000.0	822.5	23.0	52.0	961.0	672.7	192.7	11.0	1.000277	
6500.0	808.2	21.6	54.5	948.6	671.1	194.1	11.9	1.000273	
7000.0	794.8	20.2	57.0	936.8	669.4	191.9	11.6	1.000268	
7500.0	780.1	18.8	59.4	925.0	667.8	187.3	11.2	1.000264	
8000.0	766.5	17.4	61.9	913.4	666.1	180.8	12.3	1.000259	
8500.0	753.0	16.0	64.3	902.0	664.4	187.3	13.3	1.000254	
9000.0	739.7	14.9	65.6	889.5	663.1	191.6	14.0	1.000249	
9500.0	726.5	13.9	66.8	876.7	661.9	196.4	14.4	1.000244	
10000.0	713.5	12.9	67.2	864.2	660.7	204.3	13.4	1.000239	
10500.0	700.8	12.0	68.0	851.8	659.5	211.5	12.7	1.000234	
11000.0	688.1	10.7	70.3	840.4	657.9	215.9	12.2	1.000230	
11500.0	675.7	9.3	72.6	829.2	656.4	217.5	11.7	1.000225	
12000.0	663.4	8.2	73.2	817.7	654.9	216.9	11.1	1.000220	
12500.0	651.3	7.2	71.4	805.8	653.7			1.000215	
13000.0	639.4	6.3	69.7	794.0	652.5			1.000209	

STATION ALTITUDE 4106.74 FEET MSL  
 17 SEP. 82  
 ASCENSION NO. 7 1345 MDT

MANDATORY LEVELS  
 260021000/  
 RITA

TABLE 7

GEODETIC COORDINATES  
 33.18295 LAT DEG  
 106.15114 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		HLL. HUM.		WIND DATA	
MILLIBARS	FEET	AIR DEGREES	DEWPOINT DEGREE	PERCENT	DIRECTION DEGREES(TN)	SPEED KNOTS	
890.0	5051.	25.5	13.4	47.	194.3	7.5	
-	6749.	20.8	11.7	50.	193.7	12.1	
750.0	8607.	15.7	9.1	65.	188.3	13.4	
700.0	10520.	11.9	6.2	68.	211.7	12.7	
650.0	12541.	7.1	2.3	71.			

REVISION 10  
 15 FEB 82  
 OPERATIONS SECTION

STATION ALTITUDE 4173.4 FEET MSL  
 17 SEP. 82 1445 MDJ  
 ASCENSION NO. 6

SIGNIFICANT LEVEL DATA  
 2600320008  
 LANA

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

TABLE 10

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE	
873.8	4173.4	29.8	14.7	40.0
850.0	4065.2	25.5	16.1	56.0
829.4	5673.8	23.9	15.1	58.0
825.8	5799.0	23.4	15.2	60.0
738.4	8970.6	15.7	8.2	61.0
700.0	10452.6	11.7	5.8	67.0
660.0	12062.8	7.8	5.1	83.0
643.0	12769.9	6.4	1.5	71.0

STATION ALTITUDE 4173.44 FEET MSL  
 17 SEP. 82  
 ASCENSION NO. 8

UPPER AIR DATA  
 2600320006  
 LANA

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

TABLE 11

GEOMETRIC ALTITUDE MPL FEET	PRESSURE MILLIBARS	AIR TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION (DEGREES(TN))	WIND SPEED KNOTS	INDEX OF REFRACTION
3173.4	873.5	29.8	48.0	997.0	680.6	180.0	5.1	1.000292
3000.0	863.7	28.8	46.6	991.3	678.7	183.4	5.6	1.000295
2800.0	849.8	25.4	56.1	982.5	675.9	187.5	6.5	1.000297
2600.0	834.4	24.3	57.5	969.5	674.6	190.6	7.4	1.000291
2400.0	828.8	22.9	60.1	957.3	672.9	193.0	8.3	1.000286
2200.0	805.6	21.7	60.2	944.9	671.4	190.7	9.8	1.000279
2000.0	777.7	20.5	60.4	932.6	669.9	187.1	11.6	1.000272
1800.0	764.1	19.3	60.5	920.4	668.4	192.0	12.1	1.000265
1600.0	750.8	18.1	60.7	908.4	666.9	197.2	12.5	1.000259
1400.0	737.6	16.8	60.9	896.8	665.4	202.6	12.1	1.000252
1200.0	724.4	15.6	61.1	884.9	663.9	207.6	11.7	1.000247
1000.0	711.5	14.3	63.1	873.3	662.3	211.0	11.1	1.000242
800.0	698.8	12.9	65.2	862.0	660.8	214.8	10.5	1.000237
600.0	686.1	11.6	67.5	850.7	659.0	218.9	10.1	1.000233
400.0	673.7	10.4	72.4	838.8	657.6	222.5	9.8	1.000230
200.0	661.5	9.2	77.4	827.1	656.2	224.2	9.7	1.000227
100.0	649.4	8.0	82.4	815.7	654.8			1.000224
0	637.3	6.9	87.6	804.2	653.4			1.000216

REVISION 011

MANDATORY LEVELS  
 2600320000  
 LANA  
 TABLE 12

STATION ALTITUDE 9173.54 FEET MSL  
 1445 MDT  
 17 SEP. 62  
 ASCENSION NO. 0

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
		AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION (DEGREES(TN))	SPEED KNOTS
850.0	4942.	25.5	16.1	50.	187.2	6.4
700.0	6703.	21.2	13.2	60.	169.1	10.5
750.0	8527.	16.8	9.2	61.	202.9	12.1
700.0	10443.	11.7	5.6	67.	218.4	10.1
650.0	12464.	7.0	3.0	76.		

GEODETTIC COORDINATES  
 33.18295 LAT DEG  
 106.15114 LON DEG

SIGNIFICANT LEVEL DATA  
 2600210008  
 RITA  
 TABLE 13

STATION ALTITUDE 4186.74 FEET MSL  
 17 SEP, 02  
 Observation No. 0 1515 MDT

PRESSURE GEOMETRIC ALTITUDE MILLIBARS MSL FEET	TEMPERATURE		REL. HUM. PERCENT
	AIR DEGREES	DEWPOINT CENTIGRADE	
874.2 4186.7	30.5	13.7	36.0
850.0 5007.5	27.1	12.7	41.0
804.6 6590.3	22.3	11.1	49.0
756.8 8327.8	17.7	8.3	54.0
700.0 10502.0	12.2	5.6	64.0
656.2 12270.3	7.4	4.4	81.0
629.6 13307.4	4.8	.2	72.0

PROCESSED BY  
 11 SEP 02  
 CIVILS BRANCH

STATION ALTITUDE 4186174 FEET MSL  
 17 SEP. 82 1515 MDT  
 ASCENSION NO. 8

UPPER AIR DATA  
 2600210008  
 RITA  
 TABLE 14

GEODETIC COORDINATES  
 33.18295 LAT DEG  
 106.15114 LONG DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE		REL. HUM. PERCENT	DENSITY GM/CURIC METER	SPEED KNOTS	SOUND KNOTS	WIND DATA		INDEX OF REFRACTION
		AIR DEGREES	DEWPOINT DEGREES					DIRECTION DEGREES(TN)	SPEED KNOTS	
4106.7	874.2	30.5	13.7	36.0	926.1	681.2	170.0	4.1	1.000287	
4500.0	864.9	29.2	13.4	37.9	989.8	679.7	185.7	4.2	1.000284	
5000.0	850.2	27.1	12.7	41.0	979.9	677.3	206.4	5.0	1.000280	
5500.0	835.6	25.6	12.3	43.5	963.1	675.6	220.3	6.2	1.000276	
6000.0	821.2	24.1	11.8	46.0	956.4	673.8	229.3	7.6	1.000272	
6500.0	807.1	22.6	11.2	48.5	944.9	672.0	235.3	9.2	1.000268	
7000.0	793.1	21.2	10.4	50.2	932.9	670.4	236.5	10.4	1.000263	
7500.0	779.2	19.9	9.6	51.6	920.9	668.8	232.3	10.8	1.000258	
8000.0	765.6	18.6	8.8	53.1	909.1	667.3	225.4	10.9	1.000253	
8500.0	752.1	17.3	8.1	54.8	897.3	665.7	215.0	10.8	1.000249	
9000.0	738.8	16.0	7.5	57.1	885.3	664.2	210.6	10.6	1.000244	
9500.0	725.6	14.7	6.9	59.4	873.5	662.7	208.6	10.2	1.000240	
10000.0	712.7	13.5	6.3	61.7	861.9	661.2	213.4	9.9	1.000236	
10500.0	700.1	12.2	5.6	64.0	850.4	659.7	218.0	9.7	1.000232	
11000.0	687.4	10.8	5.4	68.8	839.0	658.1	221.0	10.0	1.000229	
11500.0	674.9	9.5	5.0	73.6	827.8	656.6	221.5	9.9	1.000226	
12000.0	662.7	8.1	4.6	78.4	816.8	655.0	219.4	9.6	1.000223	
12500.0	650.6	6.9	3.5	79.1	805.8	653.4			1.000218	
13000.0	638.7	5.7	1.6	75.1	794.7	651.9			1.000211	

STATION ALTITUDE 4186.74 FEET MSL  
 17 SEP. 82  
 ASCENSION NO. 8

MANDATORY LEVELS  
 2600210008  
 RITA  
 TABLE 15

GEODETIIC COORDINATES  
 33.18295 LAT DEG  
 106.15114 LON DEG

PRESSURE GEOPOTENTIAL		TEMPERATURE		REL. HUM. PERCENT	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	DEWPOINT CENTIGRADE		DIRECTION (DEGREES(TN))	SPEED KNOTS
850.0	5004.	27.1	12.7	41.	206.6	5.0
800.0	6749.	21.9	10.8	49.	237.6	10.0
750.0	8574.	17.1	8.0	55.	213.3	10.9
700.0	10472.	12.2	5.0	64.	218.0	9.7
650.0	12515.	6.8	3.4	79.		

SECRET  
 13 SEP 82  
 DIVISION VI

STATION ALTITUDE 4173.4 FEET MSL  
 17 SEP. 82  
 ASCENSION NO. 9

SIGNIFICANT LEVEL DATA  
 2600320009  
 LANA

GEODETIC COORDINATES  
 33.15510 LAT DEG  
 106.15446 LON DEG

TABLE 16

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE		REL. HUM. PERCENT
		AIR DEGREES	DEWPOINT CENTIGRADE	
872.1	4173.4	30.5	13.3	35.0
862.1	4510.8	27.4	13.0	41.0
850.0	4921.3	26.2	13.0	44.0
781.0	7346.9	19.4	10.1	55.0
700.0	10401.6	11.0	5.5	69.0
686.8	10923.8	9.9	5.3	73.0
655.2	12204.9	6.3	3.6	83.0
646.6	12561.5	5.8	2.4	79.0

UPPER AIR DATA  
 2600320009  
 LANA  
 TABLE 17

GEODETIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

STATION ALTITUDE 8173.44 FEET MSL  
 STATION NO. 9 1636 MDT

GEOMETRIC ALTITUDE (FEET)	GEOMETRIC ALTITUDE (METERS)	WIND DIRECTION (DEGREES)	WIND SPEED (KNOTS)	INDEX OF REFRACTION	REL. HUM. PERCENT	DENSITY (GM/CM <sup>3</sup> )	SOUND SPEED (M/S)	TEMPERATURE (C)	TEMPERATURE (F)	WIND DIRECTION (DEGREES)	WIND SPEED (KNOTS)	INDEX OF REFRACTION
8173.44	2491.8	320.0	5.1	1.000284	35.0	993.9	681.1	13.3	56.3	320.0	5.1	1.000284
8173.44	2491.8	316.4	5.8	1.000294	48.8	992.7	677.7	13.0	55.4	316.4	5.8	1.000294
8173.44	2491.8	312.5	7.1	1.000282	44.4	988.6	676.0	12.9	55.2	312.5	7.1	1.000282
8173.44	2491.8	309.7	8.3	1.000277	46.6	968.3	674.4	12.4	54.3	309.7	8.3	1.000277
8173.44	2491.8	307.7	9.6	1.000273	48.9	956.2	672.6	11.8	54.0	307.7	9.6	1.000273
8173.44	2491.8	303.9	10.1	1.000269	51.2	944.2	671.1	11.2	53.2	303.9	10.1	1.000269
8173.44	2491.8	292.6	8.7	1.000264	53.4	932.5	669.5	10.8	52.5	292.6	8.7	1.000264
8173.44	2491.8	278.4	7.7	1.000260	55.7	920.7	667.9	9.9	51.7	278.4	7.7	1.000260
8173.44	2491.8	259.2	6.7	1.000255	58.0	908.8	666.2	9.2	51.0	259.2	6.7	1.000255
8173.44	2491.8	236.6	6.6	1.000259	60.3	897.1	664.6	8.5	50.3	236.6	6.6	1.000259
8173.44	2491.8	228.6	7.6	1.000246	62.6	885.5	662.9	7.8	49.6	228.6	7.6	1.000246
8173.44	2491.8	222.5	8.7	1.000241	64.9	874.1	661.3	7.0	48.9	222.5	8.7	1.000241
8173.44	2491.8	218.5	9.4	1.000237	67.2	862.9	659.6	6.2	48.2	218.5	9.4	1.000237
8173.44	2491.8	215.2	10.8	1.000232	69.8	851.5	658.1	5.5	47.5	215.2	10.8	1.000232
8173.44	2491.8	210.6	10.4	1.000229	73.6	839.4	656.8	5.2	46.8	210.6	10.4	1.000229
8173.44	2491.8	204.1	10.6	1.000225	77.5	828.4	655.1	4.6	46.1	204.1	10.6	1.000225
8173.44	2491.8			1.000221	81.4	817.5	653.4	3.9	45.4			1.000221
8173.44	2491.8			1.000216	79.7	805.6	652.2	2.7	44.7			1.000216

STATION ALTITUDE 4173.44 FEET MSL  
 17 SEP. 82  
 ASCENSION NO. 9 1636 PDT

MANDATORY LEVELS  
 2600320009  
 LANA

GEODEIC COORDINATES  
 33.13510 LAT DEG  
 106.15446 LON DEG

TABLE 18

PRESSURE GEOPOTENTIAL		TEMPERATURE	REL. HUM.	WIND DATA	
MILLIBARS	FEET	AIR DEGREES CENTIGRADE	PERCENT	DIRECTION DEGREES(TN)	SPEED KNOTS
650.0	4918.	26.2	44.	313.0	6.9
800.0	6659.	21.3	52.	300.6	9.6
750.0	8440.	16.3	60.	237.2	6.6
700.0	10392.	11.0	69.	215.8	9.9
650.0	12407.	6.0	81.		