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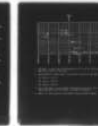
ARMY ELECTRONICS COMMAND WHITE SANDS MISSILE RANGE N--ETC F/G 4/2  
19035D GSRS, MISSILE NUMBER 1020, ROUND NUMBER V-21.(U)  
APR 79

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1. TITLE AND SYNOPSIS

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1. REPORT NUMBER DR-999	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
6. TITLE (and Subtitle) 19305D GSRs Missile Number 1020, Round Number V-21,		5. TYPE OF REPORT & PERIOD COVERED
7. AUTHOR(s) WSMR Meteorological Team <i>Data rept.</i>		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS		8. CONTRACT OR GRANT NUMBER(s) DA Task 1T6657-2D126-02
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Electronics Research & Development Comd Atmospheric Sciences Laboratory White Sands Missile Range, New Mexico		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) US Army Electronics Research & Development Comd		12. REPORT DATE Apr 1979
		13. NUMBER OF PAGES 12 15 p
15. SECURITY CLASS. (of this report) UNCLASSIFIED		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)  Meteorological data gathered for the launching of 19305D GSRs, Missile Number 1020, Round V-21, are presented in tabular form.		

400 844



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## INTRODUCTION

19305D GSRS, Missile Number 1020, Round Number V-21, was launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 0925 MST, 5 April 1979. The scheduled launch time was 0925 MST.

## 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, wind velocity and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

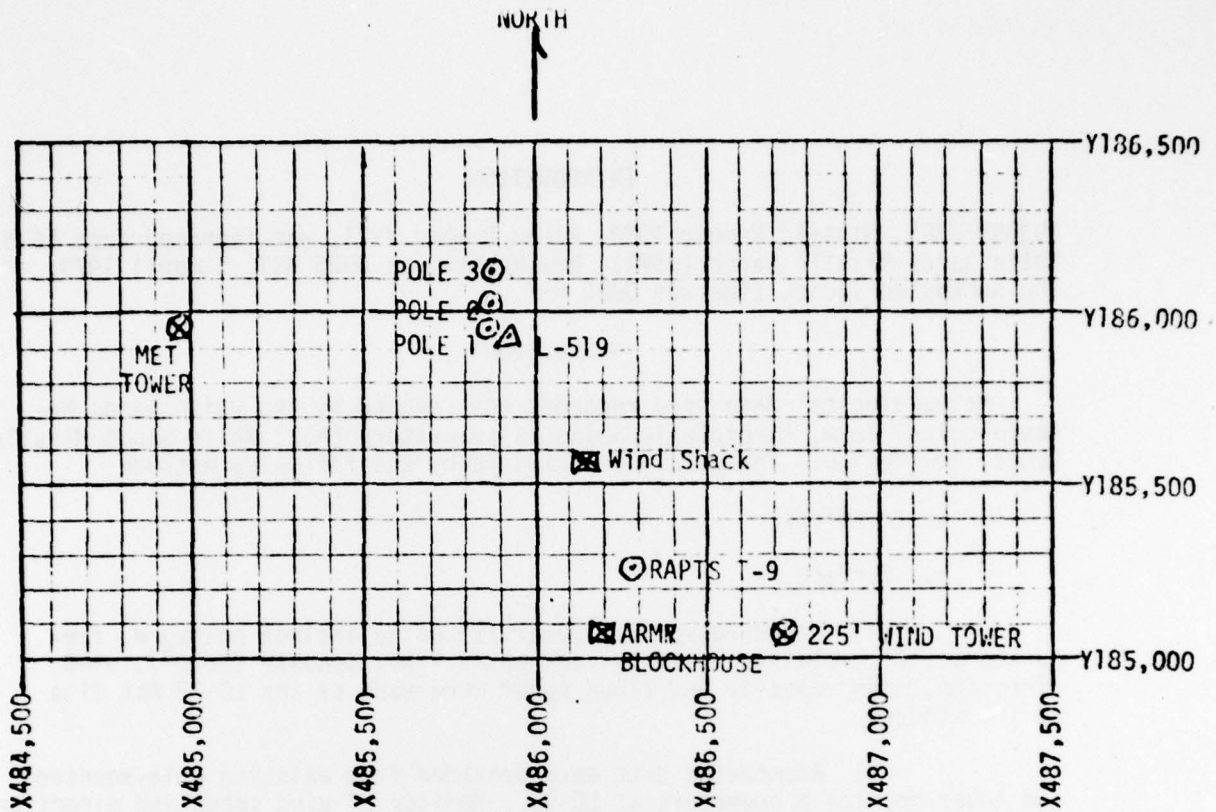
#### b. Upper Air

(1) Low level wind data were obtained from RPTS T-9 pibal observation at T-10 minutes and T-0 as follows:

## SITE AND ALTITUDE

LC-33 1 kilometer (50-meter increments)

(2) Air structure data (rawinsonde) were collected at the SMR Met Site at T-0 minutes. Data were collected from surface to 125% of apogee in 500-foot increments.



1. MET TOWER - 4 Bendix Model T-120 Anemometers at 12 ft, 62 ft, 102 ft and 202 ft with E/A recorders in Wind Shack.
2. POLE ANEMOMETER - Bendix Model T-120 with E/A recorders in Wind Shack
  - (a) Pole #1 - 38.7 ft
  - (b) Pole #2 - 53.0 ft
  - (c) Pole #3 - 83.6 ft
3. 225 FT WIND TOWER - 5 Bendix Model T-120 Anemometers at 35 ft, 88 ft, 128 ft, 168 ft and 200 ft with 5 X-Y visual indicators in Blockhouse.
4. RAPTS T-9 - Radar Automatic Pilot-Balloon Tracking System T-9 Radar

The data are presented in the following tabulations:

ELEVATION	3977.30	FEET/MSL
PRESSURE	883.9	MBS
TEMPERATURE	17.0	°C
RELATIVE HUMIDITY	19	%
DEW POINT	-6.8	°C
DENSITY	1058	GM/IT <sup>3</sup>
WIND SPEED	10	MPH
WIND DIRECTION	360	DEGREES
CLOUD COVER	CLEAR	

TABLE I. SURFACE OBSERVATIONS TAKEN AT 0925 LOCAL TIME,  
5 APRIL 1979 AT LC-33, 19305D GERS (FB),  
MISSILE NO. 1020, ROUND NO. V-21.



LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

POLE #1			POLE #2			POLE #3		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	017	14	-30	032	6	-30	027	22
-20	027	13	-20	030	4	-20	028	18
-10	029	14	-10	028	6	-10	015	17
0.0	014	13	0.0	030	7	0.0	022	16
+10	013	10	+10	011	4	+10	028	16

POLE #1 = X485,874.29 Y185,958.90 H4018.74 38.7 ft. AGL

POLE #2 = X485,874.93 Y186,012.00 H4033.57 53.0 ft. AGL

POLE #3 = X485,877.29 Y186,116.06 H4063.92 83.6 ft. AGL

TABLE II

TYPE 19305D GSRS MISSILE NO. 1020 POUND NO. V-21  
 LAUNCHED FROM LC-33 DATE 5 April 1979 TIME 0925 LST  
 NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH \_\_\_\_\_  
 OR TRUE NORTH TRUE NORTH

LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

LEVEL #1 12 ft			LEVEL #2 62 ft		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	025	15	-30	024	16
-20	030	14	-20	026	17
-10	017	14	-10	020	17
0.0	028	11	0.0	025	16
+10	032	12	+10	024	15
LEVEL #3 102 ft			LEVEL #4 202 ft		
T-TIME SEC	DIR DEG	SPEED MPH	T-TIME SEC	DIR DEG	SPEED MPH
-30	037	23	-30	020	42
-20	030	25	-20	015	42
-10	029	25	-10	015	42
0.0	035	25	0.0	020	42
+10	030	23	+10	020	44

WTSM COORDINATES: X484,982.64 Y185,957.73 H3983.00 (base)

TABLE III

TYPE 193050 GSRS MISSILE NO. 1020 ROUND NO. V-21

LAUNCHED FROM LC-33 DATE 5 April 1979 TIME 0925 MST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH \_\_\_\_\_

OR TRUE NORTH TRUE NORTH

PILOT BALLOON MEASURED WIND DATA

HEIGHT METERS	DIR DEG	SPEED MPH
SUR	350	10
50	356	11
100	002	13
150	003	21
200	014	21
250	015	24
300	014	24
350	011	24
400	010	21
450	020	20
500	017	19

HEIGHT METERS	DIR DEG	SPEED MPH
550	010	15
600	003	15
650	002	14
700	355	11
750	345	09
800	351	09
850	350	06
900	319	06
950	300	05
1000	290	06
1050		

TABLE IV

RELEASED FROM LC-33 DATE 5 April 1979 TIME 0915 LST  
 RELEASE POINT COORDINATES (WSTM) X = 486,037.24 Y = 182,350.16 H = 3977.30  
 MISSILE TYPE 19305D GRS (FB) MISSILE NO. 1020 ROUND NO. V-21  
 MISSILE LAUNCHED FROM LC-33 DATE 5 April 1979 TIME 0925 LST  
 NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH \_\_\_\_\_  
 OR TRUE NORTH TRUE NORTH.

PILOT BALLOON MEASURED WIND DATA

HEIGHT METERS	DIR DEG	SPEED MPH
SUR	340	15
50	010	07
100	030	09
150	040	08
200	030	15
250	037	17
300	019	21
350	060	19
400	070	24
450	060	20
500	050	17

HEIGHT METERS	DIR DEG	SPEED MPH
550	040	13
600	355	13
650	349	15
700	343	10
750	356	09
800	360	06
850	345	05
900	291	06
950	290	06
1000	285	04
1050		

TABLE V

RELEASED FROM LC-33 DATE 5 April 1979 TIME 0925 LST

RELEASE POINT COORDINATES (WSTM) X = 486,037.24 Y = 182,350.16 H = 3977.30

MISSILE TYPE 19305D GSRS (FB) MISSILE NO. 1020 ROUND NO. V-21

MISSILE LAUNCHED FROM LC-33 DATE 5 April 1979 TIME 0925 LST

NOTE: WIND DIRECTIONS ARE REFERENCED TO THE FIRING AZIMUTH \_\_\_\_\_  
OR TRUE NORTH TRUE NORTH.



STATION ALTITUDE 3997.30 FEET MSL  
 5 APR. 79 0930 HRS MST  
 ASCENSION NO. 57

SIGNIFICANT LEVEL DATA  
 0950060057  
 S M R

GEODETIC COORDINATES  
 52.48034 LAT DEG  
 106.42307 LONG DEG

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT
882.1	3997.3	-6.7	20.0
867.8	4450.4	-7.8	23.0
850.0	5020.6	-9.5	23.0
807.6	8420.0	-16.5	23.0
759.2	8091.7	-11.6	27.0
749.6	8453.8	-16.0	26.0
730.8	9115.0	-15.9	21.0
700.0	10266.5	-17.7	18.0
646.5	12374.9	-20.7	18.0
595.0	14548.8	-25.2	18.0
553.6	16353.7	-27.5	19.0
500.0	18971.4	-32.8	20.0
454.0	21347.4	-38.6	18.0
400.0	24321.2	-44.6	19.0
371.6	26090.4	-47.9	20.0
352.8	27300.7	-49.8	20.0
328.4	28953.4		
300.0	30959.8		

STATION ALTITUDE 3997.30 FEET MSL  
 5 APR. 79 0930 HRS MST  
 ASCENSION I.O. 57

UPPLR AIR DATA  
 0950001057  
 S M R

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREE CENTIGRADE	TEMPERATURE DEWPOINT DEGREE CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED SOUND KNOTS	DIRECTION DEGREES (TM)	MIN. DATA	SPEED KNOTS	INDEX OF REFRACTION
3997.0	802.1	16.3	-6.7	20.0	1050.0	603.3	26.0	26.0	18.1	1.000253
4000.0	802.0	16.3	-6.7	20.0	1059.9	603.3	20.0	20.0	18.1	1.000253
4500.0	800.2	12.9	-7.7	23.0	1053.4	603.3	13.1	13.1	15.6	1.000251
5000.0	850.6	11.9	-8.5	23.0	1030.0	603.3	13.4	13.4	13.1	1.000246
5500.0	835.2	11.1	-9.2	23.0	1022.2	603.3	11.6	11.6	10.7	1.000242
6000.0	820.1	10.3	-9.9	23.0	1006.6	603.3	9.4	9.4	9.4	1.000238
6500.0	805.2	9.4	-10.5	23.2	991.5	603.3	353.2	353.2	6.2	1.000234
7000.0	790.5	6.2	-10.9	24.4	977.3	603.3	325.7	325.7	4.7	1.000230
7500.0	775.0	7.1	-11.3	25.6	963.5	603.3	290.8	290.8	5.1	1.000227
8000.0	761.8	5.9	-11.7	26.8	949.8	603.3	274.3	274.3	7.6	1.000224
8500.0	747.8	5.9	-12.4	25.5	932.5	603.3	269.5	269.5	10.4	1.000219
9000.0	733.9	4.8	-15.2	21.8	919.1	649.4	262.0	262.0	12.4	1.000214
9500.0	720.4	4.5	-16.5	20.0	903.0	649.4	258.9	258.9	14.1	1.000209
10000.0	707.0	4.5	-17.3	18.7	889.3	649.4	257.1	257.1	15.0	1.000205
10500.0	693.9	4.1	-18.0	18.0	871.2	643.9	250.0	250.0	15.9	1.000201
11000.0	680.9	3.2	-18.8	18.0	857.6	647.9	253.4	253.4	16.6	1.000198
11500.0	668.2	2.4	-19.5	18.0	844.2	649.9	257.1	257.1	17.5	1.000195
12000.0	655.8	1.5	-20.2	18.0	831.1	645.9	259.1	259.1	18.6	1.000191
12500.0	643.5	0.6	-20.9	18.0	818.4	644.8	260.4	260.4	19.7	1.000188
13000.0	631.3	0.7	-22.0	18.0	800.0	643.3	260.7	260.7	19.8	1.000185
13500.0	619.4	-1.9	-23.0	18.0	795.0	641.8	260.5	260.5	19.7	1.000182
14000.0	607.6	-3.1	-24.0	18.0	783.3	640.3	259.4	259.4	17.3	1.000179
14500.0	596.1	-4.4	-25.1	18.0	772.3	633.8	259.1	259.1	15.2	1.000176
15000.0	584.5	-5.4	-25.7	18.2	760.2	637.7	262.2	262.2	13.7	1.000173
15500.0	573.4	-6.3	-26.4	18.5	748.2	636.5	263.7	263.7	12.6	1.000170
16000.0	562.3	-7.3	-27.0	18.6	736.4	635.4	272.5	272.5	12.0	1.000168
16500.0	551.5	-8.3	-27.7	19.0	723.0	634.2	273.4	273.4	11.2	1.000165
17000.0	540.6	-9.6	-28.7	19.2	714.3	632.8	271.7	271.7	10.3	1.000162
17500.0	530.0	-10.9	-29.7	19.4	703.8	631.8	273.3	273.3	9.9	1.000160
18000.0	519.6	-12.2	-30.7	19.6	693.4	629.3	275.4	275.4	9.7	1.000157
18500.0	509.4	-13.5	-31.7	19.6	683.2	627.9	283.8	283.8	10.0	1.000155
19000.0	499.4	-14.8	-32.7	20.0	673.2	626.3	290.2	290.2	10.5	1.000152
19500.0	489.4	-16.0	-33.9	19.6	662.8	624.8	290.2	290.2	11.4	1.000150
20000.0	479.5	-17.3	-35.2	19.1	652.7	623.3	293.1	293.1	12.3	1.000147
20500.0	469.9	-18.5	-36.3	18.7	642.7	621.8	287.4	287.4	12.4	1.000145
21000.0	460.5	-19.7	-37.7	18.3	632.9	620.2	284.4	284.4	12.5	1.000142
21500.0	451.1	-21.0	-38.9	18.1	623.1	618.7	280.4	280.4	12.4	1.000140
22000.0	441.8	-22.3	-39.3	18.2	613.4	617.1	275.7	275.7	12.4	1.000139
22500.0	432.7	-23.0	-40.9	18.4	603.9	615.3	269.3	269.3	12.6	1.000136
23000.0	423.7	-24.9	-42.0	18.5	594.0	613.9	262.9	262.9	13.6	1.000133

UPPER AIR DATA  
 095000Z057  
 S M R

STATION ALTITUDE 3997.30 FEET MSL  
 5 APR. 79 0430 HRS MST  
 ASCENSION NO. 37

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED SOUND KNOTS	WIND DIRECTION DEGREES(TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
2350.0	415.0	-26.2	19.7	525.4	612.2	259.1	14.0	1.000131
2400.0	405.4	-27.5	18.9	576.3	610.0	250.7	14.0	1.000129
2450.0	398.0	-28.8	19.1	567.3	609.0	257.4	14.0	1.000127
2500.0	389.6	-30.0	19.4	538.1	607.5	261.3	13.9	1.000125
2550.0	381.3	-31.2	19.7	549.1	605.9	260.2	14.1	1.000123
2600.0	373.2	-32.5	19.9	540.2	604.4	271.6	14.7	1.000121
2650.0	365.3	-33.4	20.0	530.8	603.2	274.6	15.8	1.000119
2700.0	357.4	-34.4	20.0	521.4	602.0	274.6	17.5	1.000117
2750.0	349.7	-35.4	17.6**	512.4	600.7	272.1	19.9	1.000114
2800.0	342.1	-36.6	11.4**	503.8	599.2	267.7	23.2	1.000112
2850.0	334.7	-37.8	5.3**	495.4	597.7	265.8	26.5	1.000110
2900.0	327.4	-38.9		487.0	595.2	265.5	29.7	1.000108
2950.0	320.2	-39.9		478.3	595.0	265.8	32.7	1.000107
3000.0	313.1	-40.9		469.7	593.7	268.8	35.7	1.000105
3050.0	306.2	-41.9		461.3	592.4			1.000103

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

STATION ALTITUDE 3937.50 FEET MSL  
 5 APR. 79 0930 HRS MST  
 ASCENSION NO. 57

MANDATORY LEVELS  
 0.25000'057  
 S. M. R.

GEODETIC COORDINATES  
 32.48034 LAT DEG  
 106.42307 LON DEG

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE AIR DEGREES CENTIGRADE	REL. HUMID. PERCENT	WIND DATA	
				DIRECTION DEGREES (TN)	SPEED KNOTS
850.0	5017.	11.9	23.	15.3	13.1
800.0	6072.	9.0	24.	345.3	5.6
750.0	6412.	6.0	20.	267.3	10.0
700.0	10250.	4.5	13.	250.2	15.5
650.0	12220.	1.1	13.	200.0	19.1
600.0	14310.	-4.0	10.	258.5	15.0
550.0	16540.	-8.5	19.	273.3	11.1
500.0	16945.	-14.7	20.	290.2	10.5
450.0	21330.	-21.2	18.	279.9	12.4
400.0	24341.	-28.5	19.	256.4	14.0
350.0	27434.	-35.3	18.**	272.4	19.7
300.0	30699.	-42.6			

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



STATION ALTITUDE 3997.30 FEET MSL  
 5 APR 79 0930 HRS MST  
 ASCENSION NO. 57

NETT MANDATORY LEVELS  
 095000 0057  
 S M P

GEODETIC COORDINATES  
 32.42034 LAT DEG  
 106.42307 LON DEG

GEOMETRICAL ALTITUDE METERS	DIRECTION DEG (TR)	WIND DATA		E-W MPS	DEW PT DFP DEG C	TEMPERATURE		PRESSURE MILLIBARS
		SPEED MPS	N-S MPS			AIR DEG C		
542.	9999.**	9999.**	-9999.**	-9999.**	99	-42.8	3.000+2	
630.	272.	10.	-0.	10.	16	-35.3	3.500+2	
742.	256.	7.	2.	7.	10	-28.5	4.000+2	
650.	260.	0.	-1.	0.	18	-21.2	4.500+2	
577.	290.	0.	-2.	0.	10	-14.7	5.000+2	
504.	273.	0.	-0.	0.	19	-8.5	5.500+2	
430.	258.	0.	2.	0.	21	-4.0	6.000+2	
373.	260.	10.	2.	10.	22	1.1	6.500+2	
313.	256.	0.	2.	0.	22	4.5	7.000+2	
250.	268.	0.	0.	0.	18	6.0	7.500+2	
203.	345.	0.	-3.	0.	20	9.0	8.000+2	
150.	15.	7.	-0.	-2.	20	11.9	8.500+2	

\*\* WIND DATA NOT COMPUTED DUE TO MISSING RAW AZIMUTH AND ELEVATION ANGLES.