1. DATE - TIME GROUP

7 Sept 64 08/0306Z

2. LOCATION

Whiteman AFB, Missouri

3. SOURCE

Military

10. CONCLUSION

INSUFFICIENT DATA FOR EVALUATION

4. NUMBER OF OBJECTS

One

5. LENGTH OF OBSERVATION

One Hour

6. TYPE OF OBSERVATION

Ground-Visual

7. COURSE

Erratic

8. PHOTOS

☐ Yes
☒ No

9. PHYSICAL EVIDENCE

☐ Yes
☒ No

11. BRIEF SUMMARY AND ANALYSIS

Object changing course moving with wind. Observed as a bright light to South of several Missile sites. In sight for over one hour. Kept changing course. Report as low (200 ft). Efforts by mobile team to close on object failed. Chase turned over to civil authorities. Object described as a blue light size and brightness of auto headlight. At one time reported to appear to explode in mid air. Kept moving and reported to be as low as 20 ft off ground at one of the sites.

COMMENTS: Object apparently moving with wind. Definite track of object as observed not included with the report. Sighting indicates a possible balloon at low altitude with light attached. Insufficient data for a firm analysis. No report from the civil authorities who continued chanse of object and no flight path of object included with the report.

FORM
FTD SEP 63 0-329 (TDE) **Previous editions of this form may be used.**

WHITEMAN AFB, 7 Sep 64 Missouri

On 8 Sep 64 Hq USAF SAFOI PB (Helen) called regarding a sighting at Whiteman AFB on 7 Sep 64. UPI had asked them for information on sighting. Helen gave this information: Blue object 500 ft in air, speed ~~5~~ knots, ~~g~~ crashed rose 20 ft in air in field, rose about 5 ft took off at 4 - 5 knots. This was reported by Highway Patrol. Air Force Security People on station at Whiteman had done reporting to Highwa Patrol.

On 8 Sep 64 call made to Whiteman AFB, Base Security Office, area code 816 Logan 3 5511. Spoke with Airman Farley. told him we were checking up on a UFO report. We have reports from Wash which we want to find out about. Call transfered to Wing (387). Spoke with Sgt Lemington. Last night at 2106 hours about 20 and 25 miles. Appeared about 200 ft in air. Similar reports. Directly South of original sighting. Col Baker said no action unless object intends penetration. Sgt Lemington said he would find out more information and give us a call right back after Maj Q informed him that the Secreaty of the Air Force needed this information in a hurry as someone had reported it to the UPI and associated press also had info on it.

10 Sep 64 placed a Call to Whiteman AFB, spoke with Command post. Sighting at 0336Z, 8 Sep 64, India reported sighting UFO, small blue light size of auto headlight. Also 5 other sighted south of Whiteman Moved ~~South~~ towards Clington, Missour about 20 ft off ground. Mobile Strike team sent out. Looked like it was hovering over another site. State highway patrol notified. Always in South. Striketeam called back in. Seemed to be moving with wind. Wind to South. Ask command Post to find out lateral movement. Command post ext 3855.

WX CHECKED 9/22

UNCLAS EFTO

14 SEP 74 21 01z

actn/TDEW

WPA054

CZCSQJ279ZCJYA823

RR RUCDSQ

DE RUEAGL 58 14/1803Z

R 141751Z

FM AFSC

TO FTD WPAFB OHIO

BT

UNCLAS E F T O SCFTC 74-9-13.

FOR TDEW (UFO). THE FOLLOWING MSG FROM 351 STRATMSLWG WHITEMAN AFB MO IS QUOTED FOR YOUR INFORMATION. QUOTE. UNCLAS BC 00001. AFSC FOR SCFD & SCFT; CSAF FOR AFNIN;
USAF FOR SAFOI
~~[illegible] SAFO~~I, SAFOIPB & SAFOIPC. UFO. IN ACCORDANCE WITH PARA

W

ITH PARA

14, AFR -00--, THE FOLLOWING IS SUBMITTED: IARA A, (1) ROUND, (2) BLANK, (3) BLUE, (4) ONE, (5) N/A, (6) BLUE LIG T ABOUT THE SIZE OF AN AUTOMMBILE HEADLIGHT, (7) BLANK, (8) NONE, (9) APPEARED TO EXPLODE IN MID AIR AND LAND IN FIELD, KEPT MOVING ABOUT 20 FEET OFF GROUND AT SITE I-10 (ABOUT 15 MILES SOUTHWEST OF WHITEMAN AFB

MISSOURI); PAR B, KEPT CHANGING COURSE, (1) OBJECT AT ABOUT 500 FEET OVER SEVERAL SITES, I-10, I-11, J-8, G-4, G-11; (2) BLANK, (3) BLANK, (4) MOVING WITH THE WIND, (5) BLANK, (6) APPROXIMATELY ONE HOUR; PAR C, (1)OUND VISUAL, (2) BLANK, 3() N/A; PAR D, (1) 08/0306Z, (2) NIGHT, PAR EN SIGHT I-10, 15 MILES SOUTHWEST OF WHITEMAN AFB MM; PAR F, (1)N/A, (2) REPORTED BY CAPTAIN W.M. BERRY, MISSILE COMBAT CREW COMMANDER, AT I-1 LAUNCH CONTROL FACILITY, 510 MISSILE SQUADRON, 351ST STRATEGIC MISSILE WING. SITE GUARD AT I-11 SIGHTED OBJECT. CONFIRMED BY SEVERAL PERSONS; PAR G, WEATHER AT 0300Z CLEAR 10 1016.3 MB 76/66 190/03 3002, WEATHER AT 0400Z CLEAR, 10 75/66 180/04 3003, WINDS: 2M 210/20, 5M 190-20, 8M 200/20, 10M 200/15, 14M 210/20, 20M 210/15, 25M 230/15, 30M 240/15, 35M 260/08, 40M 270/20, 50M 240/12; PAR H. NONE; PAR I, EFFORTS BY MOBILE STRIKE TEAM TO INTERCEPT FAILED, OBJECT KEPT MOVING, APPEARED TO BE ABOUT 20 FEE OFF OF THE GROUND; PAR J, NOE; PAR K, MAJOR GEORGE B. BAXTER, DIRECTOR OF INFORMATION, 351ST STRATEGIC MISSILE WING, WHITEMAN AFB MO. EVIDENCE OF METEORITE SHOWING DURING THE PERIOD. THE CHASE WAS TURNED OVER TO CIVIL AUTHORIIES AND MSG WAS DIRECTED TO RETURN TO THE LAUNCH CONTROL FACILITY AT 0400Z, BY THE 351ST SMW DIRECTOR OF OPERATIONS; PAR L,

NONE. UNQUOTE.

BT

OFFICIAL FILE COPY

TDEW

Wind Data for Springfield, Missouri, 7 - 8 September 1964   25 Sep 64

U S Weather Station
Springfield, Missouri

1. We would like to have copies of the wind data for 7 - 8 Sep 64. Contact with the U S Weather Records Center at Ashville, North Carolina, revealed that these records are not forwarded for approximately thirty days.

2. We are attaching a self addressed label for your convenience in mailing. Thank you for your cooperation in this matter.

FOR THE COMMANDER

ERIC T de JONCKHEERE
Colonel, USAF
Deputy for Technology
and Subsystems

1 Atch
a/s

OFFICIAL FILE COPY

DATA PROCESSING DIVISION
CLIMATIC CENTER, USAF
Air Weather Service (MATS)
Asheville, North Carolina

REPLY TO
ATTN OF: CCDPD

SUBJECT: Selected Surface and Winds Aloft Data 28 Sep 1964

TO: Aerospace Technical Intelligence Center
Foreign Technology Division (Sgt. Moody)
Wright-Patterson AFB, Ohio

1. Reference: Telecon with this Division 24 Sep 64.

2. We are sending copies of weather records as follows:

a. WBAN-10 Anderson, S. C. 28-30 June 1964

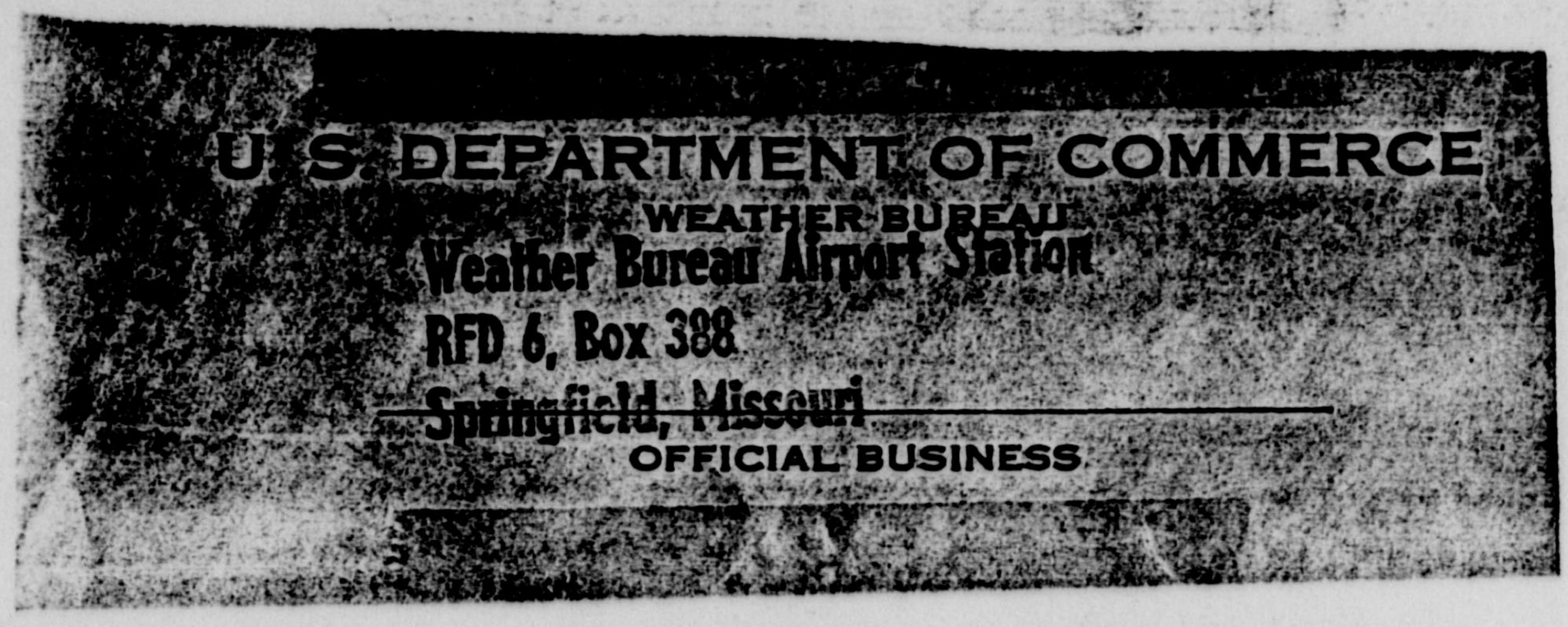
b. WBAN-20 Colombia, Mo. 6-8 September 1964

3. Springfield, Missouri is a Pibal station, and it is doubtful that data reach 50-60,000 feet. This station submits data monthly and the September 1964 records are not yet available. However, Colombia, Missouri is a rawinsonde station which forwards records weekly and we have included copies of the 6-8 Sep 64 for Colombia as a substitute.

FOR THE DIRECTOR

Thomas D. Fillenworth
THOMAS D. FILLENWORTH
2D LT, USAF
Administrative Officer

Atch
a/s



U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU
Weather Bureau Airport Station
RFD 6, Box 388
~~Springfield, Missouri~~
OFFICIAL BUSINESS

FORM 610-12
(3)
COMM-WB-DC

*Identification
COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time 90th mer.	1964	SEP	5	1900
Scheduled (G.M.T.)	1964	SEP	6	00

Ascension No. 9[illegible]

Page
7

Type of balloon 600 gram DA322

Orientation, 360° = South

Slant range (m.) (yds.)	Pibal ht. above sfc. (m.) 30 gram / 100 gram	Minute	Rawin ht. above surface (m.)	Elevation angle ° Observed	Elevation angle ° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction ° 360° = N.	Wind Speed (m.p.s.)
									sfc. 140	3.6
	216 350	1	250	46.6		240	125.8	1	139	5.0
	414 670	2	520	42.7		570	138.8	2	146	5.5
	612 980	3	790	41.0		910	141.9	3	154	5.9
	801 1285	4	1050	39.1		1280	146.8	4	166	6.1
	990 1585	5	1300	39.4		1580	152.3	5	181	5.8
	1170 1880	6	1580	40.3		1860	158.7	6	193	5.0
	1350 2170	7	1800	41.0		2060	163.1	7	196	4.7
	1530 2455	8	2050	41.9		2300	166.9	8	207	4.6
	1710 2740	9	2300	42.8		2470	172.8	9	223	5.0
	1890 3020	10	2570	43.9		2640	181.0	10	241	5.6
	2070 3300	11	2800	45.8		2710	187.3	11	255	5.8
	2250 3580	12	3010	46.8		2810	194.1	12	262	5.9
	2430 3855	13	3280	47.4		2990	200.2	13	258	6.0
	2610 4130	14	3500	46.9		3250	204.8	14	248	6.8
	2790 4405	15	3750	45.6		3650	209.7	15	244	7.2
	2970 4675	16	3960	44.7		3990	213.1	16	243	7.8
	3150 4945	17	4180	43.5		4500	216.7	17	242	8.7
	3330 5215	18	4450	41.9		5000	219.3	18	239	10.2
	3510 5485	19	4690	40.1		5670	221.5	19	241	10.8
	3690 5755	20	4920	38.6		6200	223.9	20	248	10.5
	3870 6025	21	5150	37.1		6800	226.6	21	254	10.7
	4050 6295	22	5390	35.9		7390	228.4	22	255	12.9
	4230 6565	23	5630	34.4		8200	231.9	23	256	15.8
	4410 6835	24	[illegible]	32.2		9160	[illegible]	24	262	16.6
	4590 7105	25	[illegible]	[illegible]		[illegible]	[illegible]	25	270	1.9
	4770 7375	26	[illegible]	30.5		10750	[illegible]	26	278	17.0
	4950 7645	27	[illegible]	29.3		11600	[illegible]	27	278	17.3
	5130 7915	28	[illegible]	28.2		126[illegible]	[illegible]	28	275	17.1
	5310 8185	29	[illegible]	27.0		1360[illegible]	[illegible]	29		
	5490 8455	30		[illegible]			[illegible]	30	[illegible]	17.1
	5670 8730	31	7520	[illegible]		[illegible]	251.1	31		
	5850 9005	32		25.5			251.5	32	251	16.0
	6030 9285	33	8070	24.7		17330	251.8	33		
	6210 9565	34		24.0			252.0	34	257	17.0
	6390 9850	35	8520	23.5		19500	252.1	35		
	6570	36		22.9			252.2	36	256	11[illegible]

Stamp the following:
Name of Station
Lat. and long.
Local Standard time, 90th meridian
El. of Station
Method of obs., e.g., rawinsonde, rawin, pibal
Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

Rawinsonde Time-Altitude Data

Contact	Pressure (mb.)	Altitude (m., m.s.l.)	Elapsed time (min.)
5	986	238	0.0
10	941	660	1.4
15	879	1220	3.[illegible]
20	818	1800	6.3
25	760	2480	9.3
30	704	3060	11.8
35	652	3760	14.5
40	602	4400	17.1
45	556	5070	19.6
50	508	5720	22.6
55	466	6400	25.5
60	424	7120	28.5
65	385	7890	31.4
70	349	8600	34.2
75	311	9300	37.4
80	282	10020	40.5
85	251	10840	43.6
90	223	11600	46.7
95	197	12500	49.9
100	172	13300	53.1
105	150	14114	56.2
110	128	15100	59.7
115	109	16100	63.5
120	91	17190	67.0
125	74	18410	70.7
130	[illegible]	[illegible]	76.0
135	[illegible]	[illegible]	81.0
140	[illegible]	[illegible]	93.7
145	13		
14[illegible]	13	23677	101.[illegible]

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of			16	Type of		

	3690 5755	20	4920	38.6		6200	[illegible]	20	[illegible]
	3870 6025	21	5150	37.1		6800	226.6	21	254	10.7
	4060 6298	22	5390	35.9		7390	229.4	22	255	12.9
	4230 6568	23	5630	34.4		8200	231.9	23	256	15.8
	4410 6835	24	[illegible]	32.9		9160	234.9	24	262	16.6
	4590 7105	25	[illegible]	31.6		10000	237.6	25	270	16.4
	4770 7375	26	[illegible]	30.5		10750	241.1	26	278	17.0
	4950 7645	27	[illegible]	29.3		11600	244.7	27	278	19.3
	5130 7915	28	[illegible]	28.2		12600	247.3	28	275	18.9
	5310 8185	29	[illegible]	27.4		13600	249.3	29		
	5490 8455	30		26.7			[illegible]	30	268	17.1
	5670 8730	31	7520	26.0		15400	251.1	31		
	5850 9005	32		25.3			251.5	32	259	16.0
	6030 9285	33	8020	24.7		17350	251.8	33		
	6210 9565	34		24.0			252.0	34	257	17.0
	6390 9850	35	8520	23.5		19500	252.1	35		
	6570 10135	36		22.8			252.2	36	256	19.3
	6750 10420	37	9000	22.7		21900	252.5	37		
	6930 10710	38		21.8			152.7	38	255	19.0
	7110 11005	39	9530	21.5		24000	252.9	39		
	7290 11300	40		21.1			253.1	40	[illegible]	[illegible]
	7470 11595	41	10000	20.8		26200	253.4	41		
	7650 11890	42		20.4			253.8	42	260	19.3
	7830 12185	43	10480	20.0		28500	254.0	43		
	8010 12480	44		19.75			254.3	44	261	19.6
	8190 12775	45	10960	19.35		30950	254.6	45		
	8370 13075	46		19.05			255.0	46	259	23.0
	8550 13375	47	11430	18.65		33700	255.4	47		
	8730 13675	48		18.35			255.7	48	260	22.3
	8910 13975	49	11960	17.95		36500	255.8	49		
	9090 14275	50		17.65			255.9	50	261	23.6

110	[illegible]	[illegible]	[illegible]
115	109	16100	63.5
120	91	17190	67.0
125	74	18410	70.7
130	58	19960	76.0
135	44	21810	82.0
140	28	24620	90.7
145	12		
[illegible]	15	28694	100.5

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

Reason for termination BURST

Computer A. R. BROWN

Verifier D. P. [illegible]

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of equipment		8	16	Type of equipment		8
sfc.	120	4	17-21	7	279	19
150 M.	139	5	22-26	8	262	[illegible]
300 M.	139	5	27-31	9	255	[illegible]
0.5	[illegible]	5	32-36	10	256	[illegible]
1.0	[illegible]	6	37-41	11	261	[illegible]
1.5	178	6	42-46	12	259	[illegible]
2.0	195	5	47-51	13	262	[illegible]
2.5	215	5	52-56	14	[illegible]	[illegible]
3	253	6	57-61	15	[illegible]	[illegible]
4	243	9	62-66	16	251	[illegible]
5	243	11	67-71	17	222	
6	260	17	72-76	18	253	

Coded Data for Transmission

PPDDYYS	00931	1408	2 1410	1512	4 1612	1811	6 1910	2009	8 2109
2310	0 2511	2 2613	4 2415	6 2420	8 2522	0 2632	32837	52833	02638
52638	02645	52648	02633	32719	11	99995	02411	52510	80908
00809	50504	01306	01905	319050					

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

Enter check if additional levels appear on reverse side. ☐

FORM 610-12
(…63)
COMM-WB-DC

*Identification
COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time 90th mer.	1964	SEP	5	1[illegible]
Scheduled (G.M.T.)	1964	SEP	6	00

Ascension No. 9[illegible]

Page 1

Type of balloon [illegible]

Orientation, 360° = South

Slant range (m.) (yds.)	Pibal ht. above sfc. (m.) 30 gram / 100 gram	Minute	Rawin ht. above surface (m.)	Elevation angle ° Observed	Elevation angle ° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction ° 360° = N.	Wind Speed (m.p.s.)
								sfc.	140	3.6
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	990 1585	5	1300	39.4		1580	152.3	5	181	5.8
	1170 1880	6	1580	40.3		1860	158.7	6	193	5.0
	1350 2170	7	1800	41.0		2060	163.1	7	196	4.7
	1530 2455	8	2050	41.9		2300	166.9	8	207	4.6
	1710 2740	9	2300	42.8		2470	172.8	9	223	5.0
	1890 3020	10	2570	43.9		2640	181.0	10	241	5.6
	2070 3300	11	2800	45.8		2710	187.3	11	255	5.8
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	3870 6025	21	5150	37.1		6800	226.6	21	254	10.7
	4050 [illegible]	22	5390	35.9		7390	228.4	22	255	12.9
	[illegible]	23	5630	34.4		8200	231.4	23	256	15.8
	[illegible]	24	[illegible]	32.2		9160	[illegible]	24	[illegible]	[illegible]
	[illegible]	25	[illegible]	[illegible]		[illegible]	[illegible]	25	270	[illegible]
	4770 7375	26	[illegible]	30.5		10750	[illegible]	26	273	17.0
	4950 7645	27	[illegible]	29.3		11600	[illegible]	27	[illegible]	[illegible]
	5130 7915	28	[illegible]	28.2		126[illegible]	[illegible]	28	[illegible]	[illegible]
	5310 8185	29		27.1		136[illegible]	[illegible]	29		
	5490 8455	30		[illegible]			[illegible]	30		171
	5670 8730	31	7520	[illegible]		[illegible]	251.1	31		
	5850 9005	32		23.2			251.5	32	[illegible]	[illegible]
	6030 9285	33	8020	24.7		133[illegible]	251.8	33		
	6210 9565	34		24.0			252.0	34	257	170
	6390 9850	35	8520	23.5		17500	252.1	35		
	6570	36		22.9			252.2	36	256	[illegible]

Rawinsonde Time-Altitude Data

Contact	Pressure (mb.)	Altitude (m., m.s.l.)	Elapsed time (min.)
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30	704	3060	11.8
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40	602	4400	17.1
45	556	5070	19.6
50	508	5720	22.6
55	466	6400	25.5
60	[illegible]	7120	28.5
65	385	7890	31.4
70	349	8600	34.2
75	311	9300	37.4
80	280	10020	40.5
85	251	10840	43.6
90	223	11600	46.7
95	197	12500	49.9
100	172	13300	53.1
105	150	14114	56.2
110	128	15100	59.7
115	109	16100	63.5
120	91	17190	67.0
125	74	18410	70.7
130	[illegible]	[illegible]	76.0
135	[illegible]	[illegible]	82.0
140	[illegible]	[illegible]	90.7
145	13		
14[illegible]	13	23677	10[illegible]

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of			16	Type of		

tamp the
ollowing:
Name of Station
Lat. and long.
Local Standard time, 90 th meridian
El. of Station
Method of obs., e.g., rawinsonde, rawin, pibal
Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

*Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LAND STATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time ___th mer.	1964	SEP	5	1915
Scheduled (G.M.T.)	1964	SEP	6	00
Ascension No.	825			

Page
2

Slant range (M.) (yds.)	Pibal ht. above sfc. (m.) 100-gram	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)
	14570	51	12480	17.35		39500	256.2	51		
	14860	52		17.15			256.3	52	261	23.0
	15145	53	13000	17.05		41800	256.6	53		
	15425	54	13280	16.75		43500	256.7	54	260	25.0
	15705	55	13600	16.55		45100	[illegible]	55		
	15985	56	13880	16.45		46400	256.8	56	260	24.5
	16265	57		16.20			256.9	57		
	16545	58	14400	16.00		49400	257.2	58	262	21.0
	16825	59		16.00			257.6	59		
	17105	60	14920	15.95		51400	257.7	60	264	16.5
	17385	61		15.90			257.7	61		
	17670	62	15400	15.90		53300	257.8	62	268	13.0
	17950	63		16.00			258.2	63		
	18235	64	15980	16.10		54450	258.2	64	274	8.5
	18515	65		16.25			258.3	65		
	18795	66	16520	16.45		55000	258.5	66	275	8.0
	19080	67		16.55			258.8	67		
	19360	68	17200	16.70		56400	258.8	68	266	8.5
	19645	69		16.90			258.6	69		
	19925	70	17890	17.10		57200	258.5	70	248	6.5
	20210	71		17.30			258.4	71		
	20490	72	18500	17.50		57700	258.2	72	242	5.5
	20775	73		17.65			258.0	73		
	21055	74	19100	17.80		58500	258.1	74	244	6.0
	21340	75		17.95			258.1	75		
	21620	76	19780	18.15		59300	258.0	76	258	5.0
	21905	77		18.35			258.1	77		
	22185	78	20420	18.70		59500	258.2	78	89	4.0
	22470	79		18.95			258.1	79		
	22750	80	20980	19.25		59200	258.0	80	81	4.0
	23040	81		19.60			257.9	81		
	23320	82	21580	19.85		58800	258.0	82	72	2.5
	23600	83		20.2			258.1	83		
	23880	84	22200	20.4		58500	258.2	84	53	2.0
	24160	85		20.7			258.3	85		
		86						86	49	2.0

Minute	Wind Speed (m.p.s.)	Wind Direction° 360°= N	Azimuth angle °	Distance from observation Point (m.)	Elevation angle° Smoothed	Elevation angle° Observed	Rawin ht. above surface (m.)	Slant range (m.) (yds.)
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								

*Stamp the following:
1. Name of Station
2. Lat. and long.
3. Local Standard time, ___ meridian
4. El. of S
5. Method obs., e. rawinso rawin,
6. Type of equip., WBRT-5 GMD-1A GMD-1, SCR-65 theodol

Altitude in km.,

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		
Type of			16	Type of		

	20210	71		17.30			[illegible]			
	20490	72	18500	17.50		57700	258.2	72	242	5.5
	20775	73		17.65			258.0	73		
	21055	74	19100	17.80		58500	258.1	74	244	6.0
	21340	75		17.95			258.1	75		
	21620	76	19780	18.15		59300	258.0	76	258	5.0
	21905	77		18.35			258.1	77		
	22185	78	20420	18.70		59500	258.2	78	89	4.0
	22470	79		18.95			258.1	79		
	22750	80	20980	19.25		59200	258.0	80	81	4.0
	23040	81		19.60			257.9	81		
	23320	82	21580	19.85		58800	258.0	82	72	2.5
	23600	83		20.2			258.1	83		
	23880	84	22200	20.4		58500	258.2	84	53	2.0
	24160	85		20.7			258.3	85		
	24440	86	22830	21.0		58200	258.5	86	49	2.0
	24730	87		21.5			258.6	87		
	25010	88	23470	21.8		58000	258.4	88	76	1.5
	25300	89		22.1			258.2	89		
	25580	90	24140	22.3		57900	258.2	90	134	3.0
	25860	91		22.6			258.1	91		
	26140	92	24900	22.9		57800	258.0	92	158	3.5
	26420	93		23.3			257.8	93		
	26700	94	25640	23.6		57800	257.6	94	167	3.5
	26980	95		24.0			257.6	95		
	27260	96	26500	24.4		57600	257.4	96	165	3.0
	27540	97		24.7			257.3	97		
	27820	98	27300	25.0		57800	257.0	98	167	2.5
	28100	99		25.2			256.9	99		
	28380	100	28160	25.5		58000	256.9	100	169	2.5
	28660	101	25.8					101		
	28940	102						102		
	29220	103						103		
	29500	104	28338					104		
	29780	105						105		

Minute	106	107	108	109	110	111	112	113	114	115
Slant range (m.) (yds.)										

Altitude
in km.,

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		
Type of equipment		8	16	Type of equipment		8
19	241	5	17-21	31		
20	255	5	22-26	32		
21	84	4	27-31	33		
22	68	2	32-36	34		
23	48	2	37-41	35		
24	94	2	42-46	36		
25	152	3	47-51	37		
26	167	4	52-56	38		
27	166	3	57-61	39		
28	169	3	62-66	40		
29			67-71	41		
30			72-76	42		

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

FORM 610-12
(53)
COMM-WB-DC

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*Identification —

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-20

	Year	Month	Day
Actual time ___th mer.	1964	SEP	6
Scheduled (G.M.T.)	1964	SEP	6

Ascension No. 927

Type of balloon 600G

Orientation, 360° = South

Stamp the following:
Name of Station
Lat. and long.
Local Standard time, ______th meridian
El. of Station
Method of obs., e.g., rawinsonde, rawin, pibal
Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination
Alt. for 150 & 300 mb. are with respect to ground, alt. for other standard levels are in km., msl.

Slant range (m.) (yds.)	Pibal ht. above sfc. (m.) 30 gram / 100 gram	Minute	Rawin ht. above surface (m.)	Elevation angle ° Observed	Elevation angle ° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction ° 360° = N.	Wind Speed (m.p.s.)
								sfc.	130	3.1
	216 350	1	240	21.3		620	155.2	1	170	12.4
	414 670	2	500	18.65		1450	169.6	2	181	14.8
	612 980	3	730	17.65		2280	178.2	3	199	13.0
	801 1285	4	960	18.15		2920	185.1	4	214	10.4
	990 1585	5	1170	18.90		3400	190.2	5	221	10.2
	1170 1880	6	1390	19.20		4000	195.6	6	224	11.4
	1350 2170	7	1620	19.55		4600	199.8	7	227	11.1
	1530 2455	8	1860	19.75		5200	203.3	8	229	11.3
	1710 2740	9	2100	19.65		5800	206.4	9	228	12.5
	1890 3020	10	2310	19.40		6600	208.6	10	227	13.3
	2070 3300	11	2550	19.10		7300	210.8	11	232	12.6
	2250 3580	12	2780	19.10		8000	212.9	12	235	12.4
	2430 3855	13	3020	19.05		8700	214.8	13	234	11.9
	2610 4130	14	3250	19.05		9300	216.0	14	229	13.0
	2790 4405	15	3500	18.80		10250	216.8	15	219	15.2
	2970 4675	16	3720	18.50		11200	216.5	16	216	14.4
	3150 4945	17	3940	18.15		12050	216.5	17	222	12.1
	3330 5210	18	4200	18.40		12650	217.3	18	239	11.6
	3510 [illegible]	19	4460	18.50		13300	218.7	19	245	10.6
	[illegible]	20	4740	18.80		13800	219.7	20	251	9.6
	[illegible]	21	[illegible]	19.10		14300	221.1	21	262	10.0
	[illegible]	22	5240	[illegible]		14750	222.7	22	268	10.4
	[illegible]	23	[illegible]	[illegible]		[illegible]	[illegible]	23	[illegible]	11.4
	[illegible]	24	[illegible]	[illegible]		[illegible]	[illegible]	24	[illegible]	11.5
	[illegible]	25						25	[illegible]	15.5
	[illegible]	26	[illegible]					26	[illegible]	16.0
	[illegible]	27	[illegible]				[illegible]	27		
	[illegible]	28					[illegible]	28	241	11.5
	[illegible]	29	[illegible]	[illegible]			[illegible]	29		
	5490 [illegible]	30						30	241	15.0
	5670 8730	31	[illegible]	[illegible]		[illegible]		31		
	5850 9005	32		[illegible]			[illegible]	32	248	14.0
	6030 9285	33	8110	19.05		23300	[illegible]	33		
	6210 9565	34		19.05			230.8	34	254	14.5
	6390 9850	35	8650	19.00		24400	231.6	35		
	6570	36		18.60			232.3	36	256	13.0

Rawinsonde Time-Altitude Data

Contact	Pressure (mb.)	Altitude (m., m.s.l.)	Elapsed time (min.)
5 1.6	986	238	0.0
10	943	600	[illegible]
15	878	1260	4.[illegible]
20	817	1850	7.[illegible]
25	758	2470	9.[illegible]
30	702	3110	12.[illegible]
35	648	3700	15.[illegible]
40	598	4420	18.1
45	549	5100	20.7
50	502	5800	23.[illegible]
55	459	6490	26.1
60	417	7210	28.8
65	379	7890	31.6
70	342	8620	34.[illegible]
75	307	9390	37.[illegible]
80	275	10150	39.[illegible]
85	244	11000	[illegible]
90	216	11800	45.9
95	190	12600	49.[illegible]
100	167	13400	52.3
105	144	14300	55.[illegible]
110	123	15270	58.7
115	105	16270	62.0
120	88	17280	65.5
125	[illegible]	18410	69.6
130	[illegible]	[illegible]	74.0
135	[illegible]	[illegible]	[illegible]
140	[illegible]	[illegible]	[illegible]

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of			16	Type of		

	6485	19	[illegible]	[illegible]		[illegible]	[illegible]	19	[illegible]	[illegible]
	3690 6755	20	4790	19.80		13800	219.7	20	251	9.6
	3870 6025	21	4980	19.10		14300	221.1	21	262	10.0
	4050 6295	22	5240	19.50		14750	222.7	22	268	10.4
	4230 6565	23	5510	19.90		15200	224.5	23	260	11.4
	4410 6835	24	[illegible]	[illegible]		15900	225.6	24	239	12.5
	4590 7105	25	[illegible]	[illegible]		16000	225.9	25	232	15.5
	4770 7375	26	6300	19.45		17800	226.4	26	232	16.0
	4950 7645	27	6390	19.35		18700	226.5	27		
	5130 7915	28		19.30			227.2	28	241	11.5
	5310 8185	29	7040	19.25		20000	227.6	29		
	5490 8455	30		19.15			228.1	30	241	15.0
	5670 8730	31	7600	19.15		21750	[illegible]	31		
	5850 9005	32		19.10			229.2	32	248	14.0
	6030 9285	33	8110	19.05		23300	229.9	33		
	6210 9565	34		19.05			230.8	34	254	14.5
	6390 9850	35	8650	19.00		24900	231.6	35		
	6570 10135	36		18.90			232.3	36	256	13.0
	6750 10420	37	9170	18.95		26500	232.9	37		
	6930 10710	38		19.00			233.5	38	257	11.0
	7110 11005	39	9630	19.00		27700	234.2	39		
	7290 11300	40		19.20			234.8	40	260	14.0
	7470 11595	41	10230	19.20		29200	235.5	41		
	7650 11890	42		19.35			236.3	42	270	11.5
	7830 12185	43	10780	19.45		30300	237.1	43		
	8010 12480	44		19.50			238.0	44	276	12.5
	8190 12775	45	11300	19.60		31500	238.9	45		
	8370 13075	46		19.70			239.4	46	282	13.0
	8550 13375	47	11830	19.70		32750	240.8	47		
	8730 13675	48		19.65			241.6	48	271	15.0
	8910 13975	49	12330	19.60		34300	242.4	49		
	9090 14275	50		19.45			243.3	50	273	19.5

105	[illegible]	[illegible]	[illegible]
110	123	15270	58.7
115	105	16220	62.0
120	88	17280	65.5
125	72	18480	69.6
130	57	19930	74.4
135	43	21770	80.0
140	28		
145	13		
1328	34	23260	83.5

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

Reason for termination Burst

Computer C. PARNES

Verifier M. LANHAM

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of equipment		8	16	Type of equipment		8
sfc.	130	3	17-21	7	240	1
150 M.	158	10	22-26	8	246	14
300 M.	173	13	27-31	9	255	12
0.5	168	13	32-36	10	258	12
1.0	200	13	37-41	11	274	1
1.5	221	10	42-46	12	270	14
2.0	228	11	47-51	13	275	1
2.5	228	13	52-56	14	270	1
3	234	12	57-61	15	252	1
4	217	14	62-66	16	248	1
5	249	10	67-71	17	291	1
6	243	12	72-76	18	302	[illegible]

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		
Enter check if additional levels appear on reverse side.		

Coded Data for Transmission

[illegible]	12931	1413	21728	2026	42120	2221	62322	2322	82325
2325	02324	22227	42223	62519	82721	02425	32424	52429	02525
52722	02727	52733	02533	32522	99996	02904	51911	01505	30734

Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LAND STATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time ___th mer.	1964	SEP	6	0515
Scheduled (G.M.T.)	1964	SEP	6	12
Ascension No.	927			

Slant range (M.) (yds.)	Pibal ht. above sfc. (m.) 100-gram	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)
	14570	51	12960	19.4		36400	244.3	51		
	14860	52		19.35			245.1	52	270	16.0
	15145	53	13400	19.20		38100	245.5	53		
	15425	54	13720	19.05		39300	[illegible]	54	270	17.0
	15705	55	13980	[illegible]		40200	[illegible]	55		
	15985	56	14280	18.90		41200	247.2	56	262	18.7
	16265	57		18.70			247.5	57		
	16545	58	14860	18.60		43600	247.7	58	247	17.0
	16825	59		18.60			247.6	59		
	17105	60	15430	18.60		45300	[illegible]	60	238	12.6
	17385	61		18.55			246.9	61		
	17670	62	16000	18.65		46800	247.2	62	269	10.7
	17950	63		18.70			247.6	63		
	18235	64	16560	18.85		47800	248.4	64	294	12.4
	18515	65		18.90			249.1	65		
	18795	66	17240	19.20		48800	249.8	66	301	8.3
	19080	67		19.55			250.0	67		
	19360	68	17870	19.80		49000	252.0	68	301	2.5
	19645	69		20.1			250.0	69		
	19925	70	18470	20.4		49200	253.2	70	224	2.0
	20210	71		20.6			250.0	71		
	20490	72	19080	20.9		495.00	249.6	72	197	5.5
	20775	73		21.1			249.2	73		
	21055	74	19720	21.3		49800	249.1	74	185	5.0
	21340	75		21.5			248.6	75		
	21620	76	20300	21.8		50100	248.5	76	179	4.0
	21905	77		22.0			248.4	77		
	22185	78	20930	22.4		50200	248.0	78	156	3.5
	22470	79		22.7			247.7	79		
	22750	80	21554	23.0		50200	247.5	80	148	1.5
	23040	81		23.3			247.5	81		
	23320	82	22240	23.7		50200	247.5	82	66	2.5
	23600	83	22600	24.0		50000	247.7	83		
	23880	84						84		
	24160	85						85		

Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)	Azimuth angle °	Distance from observation Point (m.)	Elevation angle° Smoothed	Elevation angle° Observed	Rawin ht. above surface (m.)	Slant range (m.) (yds.)
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								

*Stamp the following:
1. Name of Station
2. Lat. and long.
3. Local Standard time, ___ meridian
4. El. of S
5. Method obs., e. rawinso rawin, p
6. Type of equip., WBRT-5 GMD-1A GMD-1, SCR-65 theodol

Altitude in km., n

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		

	19360	68	11840	19.00						
	19645	69		20.1			2500	69		
	19925	70	15490	204		49200	238.2	70	224	2.0
	20210	71		206			250.0	71		
	20490	72	19080	209		495.00	249.6	72	197	5.5
	20775	73		211			249.2	73		
	21055	74	19790	213		49800	249.1	74	185	5.0
	21340	75		215			248.6	75		
	21620	76	20300	218		50100	248.5	76	179	4.0
	21905	77		220			248.4	77		
	22185	78	20930	224		50200	248.0	78	156	3.5
	22470	79		227			247.7	79		
	22750	80	21554	230		50200	247.5	80	148	1.5
	23040	81		233			247.5	81		
	23320	82	22240	237		50200	247.5	82	66	2.5
	23600	83	22600	240		50000	247.7	83		
	23880	84						84		
	24160	85						85		
	24440	86	2247					86		
	24730	87						87		
	25010	88						88		
	25300	89						89		
	25580	90						90		
	25860	91						91		
	26140	92						92		
	26420	93						93		
	26700	94						94		
	26980	95						95		
	27260	96						96		
	27540	97						97		
	27820	98						98		
	28100	99						99		
	28380	100						100		
	28660	101						101		
	28940	102						102		
	29220	103						103		
	29500	104						104		
	29760	105						105		

Rawin ht. above surface (m.)										
Minute	106	107	108	109	110	111	112	113	114	115
Slant range (m.) (yds.)										

Altitude: in km., n

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		
Type of equipment		8	16	Type of equipment		2
19	213	4	17-21	31		
20	186	5	22-26	32		
21	161	4	27-31	33		
22	133	2	32-36	34		
23			37-41	35		
24			42-46	36		
25			47-51	37		
26			52-56	38		
27			57-61	39		
28			62-66	40		
29			67-71	41		
30			72-76	42		

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

FORM 610-12
3)
COMM-WB-DC

*Identification	COLUMBIA, MO. 38° 58' N 92° 22' W LST-90th Meridian El. 238 Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time 90 th mer.	1964	SEP	6	1715
Scheduled (G.M.T.)	1964	SEP	7	00

Ascension No. 929

Page 1

Type of balloon 600 TP

Orientation, 360° = South

Slant range (m.) (yds.)	Pibal ht. above sfc. (m.) 30 gram / 100 gram	Minute	Rawin ht. above surface (m.)	Elevation angle ° Observed	Elevation angle ° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction ° 360° = N.	Wind Speed (m.p.s.)
								sfc.	910	4.1
	216 350	1	210	23.7		490	180.6	1	183	7.5
	414 670	2	460	25.7		910	183.2	2	182	7.3
	612 980	3	700	26.7		1390	182.1	3	179	7.7
	801 1285	4	980	27.7		1860	180.6	4	178	7.4
	990 1585	5	1210	28.4		2220	180.3	5	174	7.0
	1170 1880	6	1480	27.6		2720	178.7	6	177	8.0
	1350 2170	7	1690	27.4		3240	179.3	7	180	8.2
	1530 2455	8	1920	27.8		3610	179.2	8	180	7.0
	1710 2740	9	2180	28.9		3910	179.5	9	183	6.1
	1890 3020	10	2400	29.0		4290	181.7	10	186	6.3
	2070 3300	11	2680	29.6		4670	180.7	11	183	5.8
	2250 3580	12	2900	29.9		4970	180.3	12	188	4.0
	2430 3855	13	3120	31.4		5100	181.6	13	199	2.2
	2610 4130	14	3360	33.2		5200	181.7	14	262	1.5
	2790 4405	15	3580	35.0		5100	183.3	15	276	38
	2970 4675	16	3790	36.7		5000	186.6	16	262	42
	3150 4945	17	4000	37.2		5250	188.5	17	241	64
	3330 5215	18	4240	37.6		5550	191.2	18	241	65
	3510 5485	19	4480	38.2		5700	194.6	19	249	6.0
	3690 5755	20	4720	38.3		6000	197.2	20	237	62
	3870 6025	21	4950	38.3		6300	199.1	21	232	62
	4050 6295	22	5190	38.2		6650	200.2	22	225	6.0
	4230 6565	23	5430	38.1		6950	201.4	23	[illegible]	6.4
	4410 6835	24	5670	37.7		7400	202.7	24	[illegible]	7.2
	4590 7105	25	5900	37.6		7750	204.3	25	234	6.0
	4770 7375	26	6120	37.7		7950	206.2	26	240	6.0
	4950 7645	27	6350	37.6		8300	207.8	27	232	68
	5130 7915	28	6580	37.1		8700	208.2	28	226	76
	5310 8185	29	6800	36.6		9200	209.2	29		
	5490 8455	30		36.2			210.5	30	235	8.0
	5670 8730	31	7300	35.9		10100	211.8	31		
	5850 9005	32		35.6			213.4	32	243	9.0
	6030 9285	33	7280	35.1		11000	215.0	33		
	6210 9565	34		34.5			216.7	34	243	120
	6390	35	[illegible]	[illegible]		[illegible]	[illegible]	35		

Rawinsonde Time-Altitude Data

Contact	Pressure (mb.)	Altitude (m., m.s.l.)	Elapsed time (min.)
66 5	984	238	0.0
10	942	630	1.9
15	877	1250	4.4
20	814	1880	7.0
25	754	2530	9.8
30	697	3160	12.8
35	642	3840	15.8
40	590	4530	18.7
45	539	5260	21.7
50	491	6000	25.2
55	446	6730	29.2
60	403	7540	31.4
65	361	8360	34.7
70	324	9160	38.0
75	287	10000	41.6
80	253	10880	45.[illegible]
85	222	11740	48.[illegible]
90	194	12600	52.7
95	168	13500	56.3
100	143	14500	60.1
105	122	15480	64.1
110	102	16580	67.9
115	85	17650	71.9
120	70	18860	76.4
125	56	20240	81.5
130	43	21950	87.6
135	31	24100	95.1
140	19	27400	106.0
143.5	13	29828	114.6

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)

amp the
llowing:
Name of Station
Lat. and long.
Local Standard time, 90 th meridian
El. of Station
Method of obs., e.g., rawinsonde, rawin, pibal
Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

GMD-1A,
GMD-1,
SCR-658,
theodolite

Termination

Alt. for
150 & 300 m.
are with
respect to
ground, alt.
for other
standard **levels**
are in km., msl.

Reason for termination BURST

Computer A.R. BROWN

Verifier D.P. [illegible]

	3150 4945	17	[illegible]	[illegible]		[illegible]	[illegible]			
	3330 5215	18	4240	37.6		5550	191.2	18	241	65
	3510 5485	19	4450	38.2		5700	194.6	19	241	6.0
	3690 5755	20	4720	38.3		6000	197.2	20	237	62
	3870 6025	21	4950	38.3		6300	199.1	21	232	62
	4050 6295	22	5190	38.2		[illegible]	200.2	22	225	6.0
	4230 6565	23	5450	38.1		6900	201.4	23	[illegible]	6.4
	4410 6835	24	5670	37.7		[illegible]	202.7	24	[illegible]	7.2
	4590 7105	25	5900	37.6		[illegible]	204.5	25	234	6.0
	4770 7375	26	6120	37.7		[illegible]	206.2	26	240	6.0
	4950 7645	27	6350	37.6		8300	207.8	27	232	68
	5130 7915	28	6580	37.1		8700	208.2	28	226	76
	5310 8185	29	6800	36.6		9200	209.2	29		
	5490 8455	30		36.2			210.5	30	235	8.0
	5670 8730	31	7300	35.9		10100	211.8	31		
	5850 9005	32		35.6			213.4	32	243	9.0
	6030 9285	33	7750	35.1		11000	215.0	33		
	6210 9565	34		34.5			216.7	34	243	120
	6390 9850	35	8220	33.8		12300	218.4	35		
	6570 10135	36		33.1			219.8	36	245	136
	6750 10420	37	8900	32.3		13750	221.1	37		
	6930 10710	38		31.5			222.7	38	246	144
	7110 11005	39	9130	30.9		15300	224.3	39		
	7290 11300	40		30.2			225.4	40	237	[illegible]
	7470 11595	41	9680	29.4		17100	226.0	41		
	7650 11890	42		28.7			226.5	42	237	15.5
	7830 12185	43	10120	28.0		19000	227.0	43		
	8010 12480	44		27.2			227.7	44	238	16.5
	8190 12775	45	10580	26.6		21000	228.4	45		
	8370 13075	46		26.0			229.1	46	242	12.5
	8550 13375	47	11050	25.5		23000	229.9	47		
	8730 13675	48		25.1			230.9	48	244	170
	8910 13975	49	11580	24.7		25000	231.5	49		
	9090 14275	50		24.3			231.9	50	245	17.5

100	143	14500	60.1
105	122	15410	[illegible]
110	102	16550	67.9
115	85	17650	71.9
120	70	18860	76.4
125	56	20240	81.5
130	43	21950	87.6
135	31	24100	95.1
140	19	27400	106.0
			8.1
142.5	17	29828	114.6

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of equipment		8	16	Type of equipment		8
sfc.	210	4	17-21	7	229	8
150 M.	190	6	22-26	8	244	11
300 M.	182	7	27-31	9	246	14
0.5	184	7	32-36	10	236	16
1.0	179	8	37-41	11	242	18
1.5	175	7	42-46	12	245	18
2.0	179	8	47-51	13	245	13
2.5	184	6	52-56	14	250	15
3	185	5	57-61	15	254	1[illegible]
4	265	4	62-66	16	253	1[illegible]
5	236	6	67-71	17	251	11
6	229	7	72-76	18	255	9

Coded Data for Transmission

PP72445	00951	2009	^{2}1814	1815	^{4}1814	1715	^{6}1816	1814	^{8}1812
1912	01809	22605	42412	62412	82211	02311	52315	52416	02528
52432	02433	52525	02521	32523	0 ///	99996	02512	42702	80905
01205	21506	60204	00910	00809	70607	0			

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		
Enter check if additional levels appear on reverse side.		

*Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LAND STATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time ___th mer.	1964	SEP	6	1715
Scheduled (G.M.T.)	1964	SEP	7	00
Ascension No.	229			

Page 2

Slant range (M.) (yds.)	Pibal ht. above sfc. (m.) 100-gram	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)
	14570	51	12040	24.0		27900	232.3	51		
	14860	52		23.7			232.7	52	246	14.0
	15145	53	12520	23.5		28800	233.0	53		
	15425	54		23.3			233.1	54	246	13.0
	15705	55	12970	23.1		30400	233.7	55		
	15985	56	13250	22.9		31200	234.2	56	249	12.5
	16265	57	13540	22.8		32000	234.6	57		
	16545	58	13800	22.6		32900	235.1	58	250	14.5
	16825	59		22.4			235.5	59		
	17105	60	14300	22.2		34750	236.0	60	252	15.0
	17385	61		22.1			236.5	61		
	17670	62	14800	22.1		36100	237.0	62	254	11.0
	17950	63		22.1			237.3	63		
	18235	64	15300	22.2		37200	237.6	64	256	10.5
	18515	65		22.2			237.8	65		
	18795	66	15800	22.1		38500	238.2	66	251	12.0
	19080	67		22.1			238.4	67		
	19360	68	16320	22.0		39950	238.5	68	251	10.5
	19645	69		22.0			239.0	69		
	19925	70	16860	22.1		41000	239.4	70	252	11.0
	20210	71		22.2			239.5	71		
	20490	72	17540	22.2		42500	239.6	72	253	9.5
	20775	73		22.3			239.8	73		
	21055	74	18020	22.4		43300	240.2	74	256	6.5
	21340	75		22.6			240.5	75		
	21620	76	18600	22.7		44000	240.6	76	254	3.5
	21905	77		22.9			240.5	77		
	22185	78	19160	23.3		44300	240.4	78	249	1.5
	22470	79		23.6			240.3	79		
	22750	80	19700	23.7		44400	240.3	80	32	1.0
	23040	81		24.1			240.3	81		
	23320	82	20240	24.4		44200	240.0	82	79	2.5
	23600	83		24.7			239.6	83		
	23880	84	20780	25.0		44000	239.3	84	107	3.0
	24160	85		25.2			239.3	85		

Slant range (m.) (yds.)	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Distance from observation Point (m.)	Azimuth angle °	Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)
	106	27130	33.8		41400	235.9	106	84	4.5
	107		34.2			235.6	107		
	108	27730	34.7		40700	235.3	108	95	6.0
	109		35.1			235.2	109		
	110	28320	35.3		39800	235.3	110	73	5.5
	111		35.7			235.2	111		
	112	28920	36.1		39400	234.9	112	69	4.0
	113		36.4			235.2	113		
	114	29410	36.9		39000	235.4	114	60	3.5
	115	238					115		

29673

*Stamp the following:
1. Name of Station
2. Lat. and long.
3. Local Standard time, ___ meridian
4. El. of S
5. Method of obs., e. rawinso rawin, p
6. Type of equip., WBRT-5 GMD-1A GMD-1, SCR-658 theodoli

Altitudes in km., n

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		

	19645	69		22.0			239.0	69		
	19925	70	16860	22.1		41000	[illegible]	70	252	11.0
	20210	71		22.2			239.5	71		
	20490	72	17540	22.2		42500	239.6	72	253	9.5
	20775	73		22.3			239.8	73		
	21055	74	18020	22.4		43300	240.2	74	256	6.5
	21340	75		[illegible]			240.5	75		
	21620	76	18600	22.7		44000	240.6	76	254	3.5
	21905	77		229			240.5	77		
	22185	78	19160	23.3		44300	240.4	78	249	1.5
	22470	79		23.6			240.3	79		
	22750	80	19700	23.7		44400	240.3	80	32	1.0
	23040	81		24.1			240.3	81		
	23320	82	20240	244		44200	240.0	82	79	2.5
	23600	83		247			2396	83		
	23880	84	20780	250		44000	2393	84	107	3.0
	24160	85		252			2393	85		
	24440	86	21300	255		44200	2394	86	129	3.0
	24730	87		257			2394	87		
	25010	88	21850	260		44200	2392	88	147	3.0
	25300	89		263			2390	89		
	25580	90	22400	265		44300	2380	90	76	1.0
	25860	91		269			2379	91		
	26140	92	22940	272		44200	2381	92	25	2.0
	26420	93		274			238.5	93		
	26700	94	23560	280		43800	2384	94	77	40
	26980	95		286			2380	95		
	27260	96	24130	291		43000	237.4	96	94	5.0
	27540	97		295			236.9	97		
	27820	98	24720	299		42600	236.9	98	92	40
	28100	99		303			236.6	99		
	28380	100	25300	306		42400	236.7	100	91	30
	28660	101		310			236.8	101		
	28940	102	25970	31.4		42000	236.8	102	90	3.0
	29220	103		321			236.2	103		
	29500	104	26540	327		41800	236.0	104	93	4.0
	29780	105		331			236.0	105		

Minute	Rawin ht. above surface (m.)	Slant range (m.) (yds.)
106	27130	
107		
108	27730	
109		
110	28320	
111		
112	28920	
113		
114	29410	
115	[illegible]	

2967

Altitudes
in km., n

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		
Type of equipment		8	16	Type of equipment		8
19	253	3	17-21	31		
20	32	1	22-26	32		
21	106	3	27-31	33		
22	144	2	32-36	34		
23	113	2	37-41	35		
24	83	4	42-46	36		
25	92	4	47-51	37		
26	91	3	52-56	38		
27	91	4	57-61	39		
28	75	6	62-66	40		
29	70	5	67-71	41		
30			72-76	42		

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

El. of Station

Method of obs., e.g., rawinsonde, rawin, pibal

Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

Reason for termination BURST

Computer R.S. Vrach

Verifier G. BARNES

	2250 3580	12	2960	19.60		8300	200.4	12	201	12.5
	2430 3855	13	3210	19.55		9000	200.9	13	208	10.8
	2610 4130	14	3430	19.75		9600	201.3	14	204	10.0
	2790 4405	15	3700	19.95		10200	201.2	15	194	10.0
	2970 4675	16	3930	20.0		10800	200.5	16	192	11.4
	3150 4945	17	4180	19.90		11500	200.1	17	190	12.6
	3330 5215	18	4410	19.80		12300	199.2	18	184	12.5
	3510 5485	19	4650	19.70		13000	198.3	19	186	11.1
	3690 5755	20	4910	19.75		13600	197.9	20	191	10.2
	3870 6025	21	5140	19.90		14200	197.7	21	192	9.1
	4050 6295	22	5400	20.2		14700	197.8	22	200	9.0
	4230 6565	23	5660	20.3		15300	197.9	23	202	9.0
	4410 6835	24	5900	20.5		15800	198.1	24	206	7.5
	4590 7105	25	6140	20.8		16200	198.4	25	213	6.0
	4770 7375	26	6400	21.2		16500	198.6	26	213	5.0
	4950 7645	27	6640	21.5		16800	198.9	27	208	6.2
	5130 7915	28	6900	21.6		17400	199.2	28	208	5.6
	5310 8185	29	7080	21.9		17500	199.3	29	1	
	5490 8455	30		22.1			199.0	30	198	5.3
	5670 8730	31	7560	22.4		18200	198.8	31		
	5850 9005	32		22.8			198.8	32	196	6.0
	6030 9285	33	8060	23.0		18900	198.8	33		
	6210 9565	34		23.3			199.1	34	219	6.2
	6390 9850	35	8550	23.5		19600	199.6	35		
	6570 10135	36		23.9			200.4	36	234	7.5
	6750 10420	37	9120	24.0		20400	201.1	37		
	6930 10710	38		24.2			201.7	38	230	8.8
	7110 11005	39	9670	24.2		21400	202.4	39		
	7290 11300	40		24.3			203.1	40	243	8.5
	7470 11595	41	10240	24.7		22200	204.1	41		
	7650 11890	42		25.1			204.7	42	245	6.4
	7830 12185	43	10540	25.4		22750	205.4	43		
	8010 12480	44		25.9			206.2	44	294	4.7
	8190 12775	45	11350	26.3		22750	206.9	45		
	8370 13075	46		26.7			207.6	46	223	6.0
	8550 13375	47	11930	27.2		23100	208.5	47		
	8730 13675	48		27.6			209.1	48	262	5.3
	8910 13975	49	12500	27.9		23500	209.8	49		
	9090 14275	50		28.3			210.8	50	273	7.0

70	332	[illegible]	35.4
75	278	9700	38.3
80	264	10550	41.3
85	234	11360	44.4
90	206	12180	47.5
95	180	13160	50.7
100	156	13950	53.9
105	135	14840	57.3
110	114	15860	60.9
115	97	16800	64.5
120	81	17890	68.7
125	66	19130	72.4
130	52	20610	77.1
135	39	22500	82.8
140	26	25180	90.1
145	12		1.3
No.	24	25661	91.8

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of equipment		8	16	Type of equipment		8
sfc.	160	4	17-21	7	209	6
150 M.	179	9	22-26	8	198	6
300 M.	193	13	27-31	9	233	7
0.5	192	13	32-36	10	240	9
1.0	208	14	37-41	11	261	6
1.5	207	11	42-46	12	270	6
2.0	197	9	47-51	13	272	7
2.5	195	9	52-56	14	276	8
3	196	13	57-61	15	266	9
4	193	10	62-66	16	262	7
5	187	11	67-71	17	240	5
6	204	9	72-76	18	236	3

Coded Data for Transmission

PP 72445	12941	1612	2 1928	2128	4 2126	2121	6 2018	2018	8 2018
19220	0 2025	2 2119	4 1923	6 1823	8 1917	0 2016	3 2112	5 2011	02315
52513	02711	52816	02718	326130	99996	02705	52207	00705	00712
20816									

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

Enter check if additional levels appear on reverse side. ☐

FORM 610-12
(.63)
COMM-WB-DC

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*Identification

COLUMBIA, MO.
38° 58' N · 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time 90th mer.	1964	SEP	7	0515
Scheduled (G.M.T.)	1964	SEP	7	12

Ascension No. 931

Type of balloon 600 GR

Orientation, 360° = South

Slant range (m.) (yds.)	Pibal ht. above sfc. (m.) 30 gram / 100 gram	Minute	Rawin ht. above surface (m.)	Elevation angle ° Observed	Elevation angle ° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction ° 360° = N.	Wind Speed (m.p.s.)
								sfc.	160	4
	216 350	1	270	20.1		740	187.3	1	194	13.8
	414 670	2	520	17.35		1660	193.9	2	204	15.5
	612 980	3	770	16.95		2500	198.3	3	211	13.8
	801 1285	4	1020	17.15		3300	202.3	4	215	12.5
	990 1585	5	1280	17.80		4000	203.5	5	207	10.8
	1170 1880	6	1520	18.25		4600	203.9	6	201	9.0
	1350 2170	7	1760	19.10		5100	203.3	7	196	9.3
	1530 2455	8	2020	19.55		5700	202.8	8	196	9.2
	1710 2740	9	2260	20.0		6200	202.2	9	195	9.0
	1890 3020	10	2480	20.1		6800	201.4	10	194	11.0
	2070 3300	11	2730	19.90		7500	201.0	11	195	12.5
	2250 3580	12	2960	19.60		8300	200.4	12	201	12.5
	2430 3855	13	3210	19.55		9000	200.9	13	208	10.8
	2610 4130	14	3430	19.75		9600	201.3	14	204	10.0
	2790 4405	15	3700	19.95		10200	201.3	15	194	10.0
	2970 4675	16	3930	20.0		10800	200.5	16	192	11.4
	3150 4945	17	4180	19.90		11500	200.1	17	190	12.6
	3330 5215	18	4410	19.80		12300	199.2	18	184	12.5
	3510 5485	19	4650	19.70		13000	198.3	19	186	11.1
	3690 5755	20	4910	19.75		13600	197.9	20	191	10.2
	3870 6025	21	5140	19.90		14200	197.7	21	192	9.1

Rawinsonde Time-Altitude Data

Contact	Pressure (mb.)	Altitude (m., m.s.l.)	Elapsed time (min.)
6.5	988	238	0.0
10	936	710	2.1
15	870	1360	4.7
20	807	2000	7.2
25	749	2630	9.9
30	692	3280	12.6
35	639	3940	15.3
40	587	4620	18.1
45	539	5290	20.9
50	494	5980	23.6
55	450	6680	26.5
60	410	7390	29.4
65	369	82[illegible]	32.3
70	332	8930	35.4
75	298	9700	38.3
80	264	10550	41.3
85	234	11360	44.4
90	206	12180	47.5
95	180	13160	50.7
100	156	13950	53.9
105	135	14560	[illegible]
110	114	15560	[illegible]
115	[illegible]	16300	64.5

Stamp the following:
Name of Station
Lat. and long.
Local Standard time, 90th meridian
El. of Station
Method of obs., e.g., rawinsonde, rawin, pibal
Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

	17670	62	[illegible]	[illegible]	
	17950	63		30.2	
	18235	64	16490	30.4	
	18515	65		30.5	
	18795	66	17080	30.7	
	19080	67		30.8	
	19360	68	17700	31.1	
	19645	69		31.4	
	19925	70	18300	31.7	
	20210	71		31.9	
	20490	72	18920	32.2	
	20775	73		32.3	
	21055	74	19560	32.4	
	21340	75		32.6	
	21620	76	20100	32.9	
	21905	77		33.4	
	22185	78	20780	34.0	
	22470	79		34.4	
	22750	80	21420	34.7	
	23040	81		35.0	
	23320	82	22000	35.5	
	23600	83		36.0	
	23880	84	22700	36.7	
	24160	85		37.4	
	24440	86	23500	38.0	
	24730	87		38.5	
	25010	88	24180	39.3	
	25300	89		40.1	
	25580	90	24890	40.9	
	25860	91	25360	41.5	
	26140	92			
	26420	93			
	26700	94			
	26980	95			
	27260	96			
	27540	97			
	27820	98			
	28100	99			
	28380	100			
	28660	101			
	28940	102			
	29220	103			
	29500	104			
	29780	105			

	222.3	63		
27900	222.5	64	239	4.6
	222.9	65		
28600	222.7	66	241	5.5
	223.1	67		
29200	223.6	68	236	3.8
	223.4	69		
29500	223.5	70	224	2.6
	223.6	71		
29900	223.5	72	227	3.7
	223.5	73		
30600	223.5	74	224	3.6
	223.5	75		
30900	223.5	76	122	1.0
	224.0	77		
30600	223.7	78	72	2.4
	223.4	79		
30500	223.1	80	71	2.9
	222.9	81		
30400	222.0	82	95	1.6
	223.0	83		
30300	222.8	84	92	3.0
	222.3	85		
29900	221.8	86	72	4.1
	221.9	87		
29300	221.8	88	66	5.6
	221.5	89		
28600	220.5	90	89	8.8
28400	219.5	91		
		92		
		93		
		94		
		95		
		96		
		97		
		98		
		99		
		100		
		101		
		102		
		103		
		104		
		105		

Minute	106	107	108	109	110	111	112	113	114	115
Elevation angle° Smoothed										
Elevation angle° Observed										
Rawin ht. above surface (m.)										
Slant range (m.) (yds.)										

rawinso

rawin, p

6. Type of equip.,

WBRT-5

GMD-1A

GMD-1,

SCR-658

theodoli

Altitudes in km., n

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		
Type of equipment		8	16	Type of equipment		8
19	227	3	17-21	31		
20	195	3	22-26	32		
21	75	2	27-31	33		
22	75	2	32-36	34		
23	91	3	37-41	35		
24	70	4	42-46	36		
25	73	8	47-51	37		
26			52-56	38		
27			57-61	39		
28			62-66	40		
29			67-71	41		
30			72-76	42		

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

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Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LAND STATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time ___th mer.	1964	SEP	7	0515
Scheduled (G.M.T.)	1964	SEP	7	12

Ascension No. 931

Slant range (M.) (yds.)	Pibal ht. above sfc. (m.) 100-gram	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)
	14570	51	13080	28.6		23900	211.8	51		
	14860	52	13380	29.0		24000	213.3	52	285	8.5
	15145	53	13620	29.3		24200	214.1	53		
	15425	54	13890	29.6		24300	215.0	54	274	8.0
	15705	55		29.7			216.0	55		
	15985	56	14380	29.8		25000	217.1	56	265	9.5
	16265	57		29.8			218.0	57		
	16545	58	14900	29.8		25900	218.8	58	263	9.5
	16825	59		29.8			219.8	59		
	17105	60	15430	29.8		26700	220.6	60	263	9.3
	17385	61		29.8			221.5	61		
	17670	62	15950	30.0		27500	222.1	62	250	6.5
	17950	63		30.2			222.3	63		
	18235	64	16490	30.4		27900	222.5	64	239	4.6
	18515	65		30.5			222.9	65		
	18795	66	17080	30.7		28600	222.7	66	241	5.5
	19080	67		30.8			223.1	67		
	19360	68	17700	31.1		29200	223.6	68	236	3.8
	19645	69		31.4			223.4	69		
	19925	70	18300	31.7		29500	223.5	70	224	2.6
	20210	71		31.9			223.6	71		
	20490	72	18920	32.2		29900	223.5	72	227	3.7
	20775	73		32.3			223.5	73		
	21055	74	19560	32.4		30600	223.5	74	224	3.6
	21340	75		32.6			223.5	75		
	21620	76	20100	32.5		30900	223.5	76	122	1.0
				[illegible]			[illegible]	77		

Wind Speed (m.p.s.)										
Wind Direction° 360°= N										
Minute	106	107	108	109	110	111	112	113	114	115
Azimuth angle °										
Distance from observation Point (m.)										
Elevation angle° Smoothed										
Elevation angle° Observed										
Rawin ht. above surface (m.)										
Minute	106	107	108	109	110	111	112	113	114	115
Slant range (m.) (yds.)										

*Stamp the following:
1. Name of Station
2. Lat. and long.
3. Local Standard time, ___ meridian
4. El. of St
5. Method of obs., e.g. rawinso rawin, p
6. Type of equip., WBRT-5 GMD-1A GMD-1, SCR-65 theodoli

Altitude in kms., m

FORM 610-12
(3)31
COMM-WB-DC

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Stamp the following:
Name of Station
Lat. and long.
Local Standard time, 90 th meridian
El. of Station
Method of obs., e.g., rawinsonde, rawin, pibal
Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

*Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time 90th mer.	1964	SEP	7	1715
Scheduled (G.M.T.)	1964	SEP	8	00

Ascension No. [illegible]

Type of balloon 600 GRAM PA322

Orientation, 360° = South

Slant range (m.) (yds.)	Pibal ht. above sfc. (m.) 30 gram / 100 gram	Minute	Rawin ht. above surface (m.)	Elevation angle ° Observed	Elevation angle ° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction ° 360° = N.	Wind Speed (m.p.s.)
								sfc.	220	4.5
	216 350	1	230	32.2		370	204.4	1	207	8.1
	414 670	2	500	29.0		890	206.6	2	206	9.9
	612 980	3	770	27.0		1500	207.6	3	204	10.0
	801 1285	4	1040	26.5		2090	203.2	4	196	10.1
	990 1585	5	1290	25.9		2690	201.1	5	191	10.0
	1170 1880	6	1560	25.4		3250	199.9	6	190	10.5
	1350 2170	7	1800	24.3		3950	197.7	7	188	11.2
	1530 2455	8	2050	23.7		4590	196.1	8	188	10.7
	1710 2740	9	2280	23.8		5100	195.2	9	189	9.4
	1890 3020	10	2540	24.0		5630	194.7	10	193	8.1
	2070 3300	11	2800	24.4		6080	195.0	11	201	7.9
	2250 3580	12	3050	24.5		6590	195.9	12	206	9.0
	2430 3855	13	3280	24.4		7130	196.5	13	209	8.7
	2610 4130	14	3500	24.4		7580	197.6	14	213	8.6
	2790 4405	15	3780	24.2		8250	198.7	15	214	9.4
	2970 4675	16	3990	24.1		8740	199.5	16	214	10.5
	3150 4945	17	4250	24.2		9430	200.7	17	215	10.3
	3330 5215	18	4500	24.4		9900	201.5	18	217	9.1
	3510 5485	19	4770	24.7		1032.0	202.0	19	219	7.9
	3690 5755	20	5000	24.9		10750	203.1	20	223	8.2
	3870 6025	21	5280	25.0		11250	204.3	21	227	8.3
	4050 6295	22	5500	25.1		11740	205.3	22	[illegible]	8.8
	4230 6565	23	5780	25.1		12300	205.4	23	217	8.4
	4410 6835	24	5980	25.2		12610	205.6	24	209	6.3
	4590 7105	25	6200	25.3		12870	205.2	25	204	5.2
	4770 7375	26	6480	25.4		13490	205.4	26	207	7.0
	4950 7645	27	6710	25.7		14000	206.2	27	220	8.0
						[illegible]	[illegible]	28	236	7.1

Rawinsonde Time-Altitude Data

Contact	Pressure (mb.)	Altitude (m., m.s.l.)	Elapsed time (min.)
6.P	988	238	0.0
10	934	740	2.0
15	866	1410	4.6
20	801	2080	7.5
25	740	2760	9.9
30	681	3410	12.5
35	627	4100	15.5
40	574	4800	18.5
45	524	5540	21.4
50	477	6280	24.7
55	432	7030	27.7
60	390	7800	30.8
65	350	8609	33.9
70	314	[illegible]	37.3
75	280	10190	40.0
80	246	11110	43.6
85	217	11950	46.9
90	190	12960	50.7
95	164	13690	54.2
100	141	14640	57.7
105	120	15600	61.4
110	101	16650	65.1
115	84	17740	69.3
120	69	[illegible]	[illegible]
125	54	[illegible]	[illegible]
130	41	[illegible]	[illegible]
135	23	24660	92.9
140	14	27300	105.5
			[illegible]

Method of obs., e.g., rawinsonde, rawin, pibal

Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

Reason for termination BURST

Computer A.P. BROWN

Verifier D.A. S[illegible]

	2250 3580	12	3050	24.5		6590	195.7	12	206	9.0
	2430 3855	13	3280	24.4		7130	196.5	13	209	8.7
	2610 4130	14	3500	24.4		7580	197.6	14	213	8.6
	2790 4405	15	3780	24.2		8250	198.7	15	214	9.4
	2970 4675	16	3990	24.1		8740	199.5	16	214	10.5
	3150 4945	17	4250	24.2		9430	200.7	17	215	10.3
	3330 5215	18	4500	24.4		9900	201.5	18	217	9.1
	3510 5485	19	4770	24.7		1032.0	202.0	19	219	7.9
	3690 5755	20	5000	24.9		10750	203.1	20	223	8.2
	3870 6025	21	5280	25.0		11250	204.3	21	227	8.3
	4050 6295	22	5500	25.1		11740	205.3	22	224	8.8
	4230 6565	23	5780	25.1		12300	205.4	23	217	8.4
	4410 6835	24	5980	25.2		12610	205.6	24	209	6.3
	4590 7105	25	6200	25.3		12870	205.2	25	204	5.2
	4770 7375	26	6480	25.4		13490	205.4	26	207	7.0
	4950 7645	27	6710	25.7		14000	206.2	27	220	8.0
	5130 7915	28	6960	26.1		14220	207.0	28	236	7.1
	5310 8185	29	7180	26.5		14350	208.0	29		
	5490 8455	30		26.8			208.6	30	229	6.5
	5670 8730	31	7680	26.9		15100	209.2	31		
	5850 9005	32		27.2			209.5	32	228	6.0
	6030 9285	33	8200	27.4		15750	209.9	33		
	6210 9565	34		27.5			210.0	34	225	6.5
	6390 9850	35	8700	27.6		16600	210.0	35		
	6570 10135	36		27.7			210.1	36	221	7.0
	6750 10420	37	9200	27.7		17400	210.3	37		
	6930 10710	38		27.8			210.7	38	225	6.0
	7110 11005	39	9700	28.2		18000	211.0	39		
	7290 11300	40		28.6			211.5	40	232	4.5
	7470 11595	41	10200	28.8		18500	211.9	41		
	7650 11890	42		29.1			211.9	42	242	2.5
	7830 12185	43	10700	29.6		18800	212.0	43		
	8010 12480	44		30.1			212.2	44	250	2.0
	8190 12775	45	11200	30.6		18900	212.8	45		
	8370 13075	46		31.3			213.4	46	289	5.0
	8550 13375	47	11700	32.0		18900	214.9	47		
	8730 13675	48		32.4			216.0	48	304	6.5
	8910 13975	49	12210	32.9		18800	217.0	49		
	9090 14275	50		33.4			217.8	50	306	4.5

70	314	[illegible]	37.5
75	280	10180	40.4
80	246	11110	43.6
85	217	11350	46.9
90	190	12960	50.7
95	164	13690	54.2
100	141	14640	57.7
105	120	15600	61.4
110	101	16650	65.1
115	84	17740	69.3
120	69	18930	[illegible]
125	54	[illegible]	[illegible]
130	41	22230	84.
135	28	24660	92.4
140	14	27300	105.5
			9.5
141.9	10	31582	113.5

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of equipment		8	16	Type of equipment		8
sfc.	220	5	17-21	7	[illegible]	8
150 M.	212	9	22-26	8	227	6
300 M.	209	9	27-31	9	222	7
0.5	207	8	32-36	10	230	5
1.0	204	10	37-41	11	247	2
1.5	193	10	42-46	12	300	6
2.0	188	11	47-51	13	294	4
2.5	187	10	52-56	14	279	7
3	200	8	57-61	15	285	6
4	214	9	62-66	16	260	7
5	218	8	67-71	17	246	6
6	218	8	72-76	18	240	4

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		
Enter check if additional levels appear on reverse side.		

Coded Data for Transmission

PP72445	00951	2212	2 2118	2119	4 2020	1919	6 1921	1922	8 1919
1916	0 2015	2 2117	4 2120	6 2216	8 2216	0 2115	3 2215	52313	02214
52406	02013	52810	02810	32414	0 11	99996	02407	51707	01503
00410	01009	00510	20611	0					

17670	62	[illegible]	[illegible]		[illegible]	[illegible]			
17950	63		35.9			228.7	63		
18235	64	16140	35.9		22200	229.4	64	250	7.0
18515	65		35.8			230.2	65		
18795	66	16680	36.0		22800	230.7	66	247	5.5
19080	67		36.2			231.0	67		
19360	68	17220	36.4		23300	231.2	68	243	5.0
19645	69		36.8			230.6	69		
19925	70	17780	36.5		23900	230.8	70	240	4.0
20210	71		36.6			231.6	71		
20490	72	18300	37.1		24100	231.6	72	237	3.0
20775	73		37.7			231.3	73		
21055	74	18970	37.5		24550	231.2	74	222	2.5
21340	75		37.7			231.1	75		
21620	76	19520	38.3		24700	230.8	76	178	3.5
21905	77		38.7			231.3	77		
22185	78	20080	38.9		24800	229.9	78	165	3.0
22470	79		39.0			229.5	79		
22750	80	20700	39.1		25300	229.3	80	157	2.0
23040	81		39.5			229.5	81		
23320	82	21300	40.1		25300	229.5	82	150	1.5
23600	83		40.5			229.3	83		
23880	84	21900	40.9		25200	229.1	84	122	2.0
24160	85		41.3			229.0	85		
24440	86	22480	41.8		25050	228.9	86	85	3.0
24730	87		42.4			229.1	87		
25010	88	23080	43.3		24400	229.2	88	58	6.0
25300	89		44.1			228.8	89		
25580	90	23620	44.9		23600	228.3	90	68	6.5
25860	91		45.5			227.7	91		
26140	92	24350	46.1		23250	227.7	92	75	4.0
26420	93		46.8			227.3	93		
26700	94	25240	47.5		23000	227.5	94	78	4.5
26980	95		48.4			226.9	95		
27260	96	25920	49.2		22300	225.9	96	85	6.5
27540	97		49.9			225.1	97		
27820	98	26500	50.5		21700	224.1	98	94	5.5
28100	99		51.0			223.0	99		
28380	100	27140	51.3		21500	222.6	100	100	4.0
28660	101		51.9			222.2	101		
28940	102	27800	52.5		21300	221.9	102	96	3.0
29220	103		52.9			221.8	103		
29500	104	28480	53.5		21000	221.3	104	66	4.0
29780	105		54.2			221.4	105		

Slant range (m.) (yds.)	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed
	106	29060	55.0	
	107		55.5	
	108	29680	56.2	
	109		56.9	
	110	30240	57.7	
	111		58.5	
	112	30860	58.9	
	113	31140	59.2	
	114	238		
	115	31098		

rawinso
rawin,

6. Type of
equip.,
WBRT-5
GMD-1A
GMD-1,
SCR-65
theodol

Altitude
in km.,

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		
Type of equipment		8	16	Type of equipment		8
19	229	2	17-21	31	57	5
20	171	4	22-26	32		
21	156	2	27-31	33		
22	130	2	32-36	34		
23	70	4	37-41	35		
24	69	7	42-46	36		
25	76	4	47-51	37		
26	82	6	52-56	38		
27	98	5	57-61	39		
28	100	3	62-66	40		
29	57	5	67-71	41		
30	45	5	72-76	42		

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LAND STATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time ___th mer.	1964	SEP	7	1715
Scheduled (G.M.T.)	1964	SEP	8	00
Ascension No.	933			

Page
2

Slant range (M.) (yds.)	Pibal ht. above sfc. (m.) 100-gram	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)
	14570	51	12710	33.7		18800	218.4	51		
	14860	52		34.0			219.2	52	280	4.0
	15145	53	13230	34.4		19200	219.9	53		
	15425	54	13490	34.6		19400	220.4	54	278	5.5
	15705	55	13750	35.0		19600	221.6	55		
	15985	56	14020	35.2		19900	223.2	56	279	7.5
	16265	57		35.6			225.5	57		
	16545	58	14520	36.0		20000	226.8	58	285	7.0
	16825	59		36.1			227.3	59		
	17105	60	15020	36.0		20600	227.6	60	280	5.0
	17385	61		35.9			228.2	61		
	17670	62	15580	36.6		21300	228.6	62	265	7.0
	17950	63		35.9			228.7	63		
	18235	64	16140	35.9		22200	229.4	64	250	7.0
	18515	65		35.8			230.2	65		
	18795	66	16680	36.0		22800	230.7	66	247	5.5
	19080	67		36.2			231.0	67		
	19360	68	17220	36.4		23300	231.2	68	243	5.0
	19645	69		36.8			230.6	69		
	19925	70	17780	36.5		23900	230.8	70	240	4.0
	20210	71		36.6			231.6	71		
	20490	72	18300	37.1		24100	231.6	72	237	3.0
	20775	73		37.3			[illegible]	73		
	21055	74	18970	37.5		24550	231.0	74	222	2.5
	21340	75		37.7			231.1	75		
	21620	76	19520	38.3		24700	230.8	76	198	3.5
	21905	77		38.7			230.3	77		
	22185	78	20080	38.9		24800	229.9	78	165	3.0
	22470	79		39.0			229.5	79		
	22750	80	20700	39.1		25300	229.3	80	157	2.0
	23040	81		37.5			[illegible]	81		

Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)	Azimuth angle °	Distance from observation Point (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Rawin ht. above surface (m.)	Slant range (m.) (yds.)
106	48	5.5	221.0	20700	55.0		29080	
107			220.6		55.5			
108	45	5.0	221.2	19700	56.2		29680	
109			221.3		56.9			
110	52	5.0	220.9	19200	57.7		30240	
111			220.2		58.5			
112	58	5.5	219.3	18600	58.9		30860	
113			219.1	18400	59.2		31140	
114							238	
115							31098	

Punched Card Data

*Stamp the
following:
1. Name of
Station
2. Lat. an
long.
3. Local
Standar
time, ___
meridian
4. El. of S
5. Method
obs., e.
rawinso
rawin,
6. Type of
equip.,
WBRT-5
GMD-1A
GMD-1,
SCR-65
theodol

Altitude
in km.,

B FORM 610-12
(-53)
COMM-WB-DC

Page
1

*Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time ___th mer.	1964	SEP	8	0515
Scheduled (G.M.T.)	1964	SEP	8	12

Ascension No. 935

Type of balloon 600GR

Orientation, 360° = South

Stamp the following:
- Name of Station
- Lat. and long.
- Local Standard time, 90 th meridian
- El. of Station
- Method of obs., e.g., rawinsonde, rawin, pibal
- Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination

Slant range (m.) (yds.)	Pibal ht. above sfc. (m.) 30 gram / 100 gram	Minute	Rawin ht. above surface (m.)	Elevation angle ° Observed	Elevation angle ° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction ° 360° = N.	Wind Speed (m.p.s.)
								sfc.	180	3,1
	216 350	1	240	19.35		680	207.7	1	215	12.9
	414 670	2	480	17.20		1540	214.9	2	221	14.8
	612 980	3	730	16.45		2450	217.3	3	222	14.2
	801 1285	4	960	16.35		3240	218.6	4	223	13.8
	990 1585	5	1200	16.40		4100	219.8	5	226	13.0
	1170 1880	6	1470	17.15		4800	221.4	6	228	10.1
	1350 2170	7	1700	17.80		5300	221.9	7	230	8.3
	1530 2455	8	1960	18.75		5800	222.7	8	233	7.6
	1710 2740	9	2200	19.65		6200	223.5	9	243	6.1
	1890 3020	10	2480	20.9		6500	224.9	10	250	4.6
	2070 3300	11	2710	22.1		6700	225.8	11	247	2.6
	2250 3580	12	2970	23.3		6500	225.7	12	243	2.5
	2430 3855	13	3220	24.4		7100	226.8	13	237	2.5
	2610 4130	14	3480	25.7		7200	226.5	14	202	1.8
	2790 4405	15	3740	26.9		7300	226.1	15	194	1.8
	2970 4675	16	4000	28.3		7350	225.0	16	197	1.9
	3150 4945	17	4250	29.5		7500	225.2	17	189	3.2
	3330 5215	18	4520	30.4		7700	223.8	18	188	5.1
	3510 5485	19	4800	30.9		8000	222.6	19	195	4.6
	3690 5755	20	5030	31.5		8700	221.9	20	215	6.0
	3870 6025	21	5300	31.6		8700	221.8	21	225	6.0
	4050 6295	22	5590	31.9		8900	222.5	22	233	4.8
	4230 6565	23	5830	32.3		9200	223.7	23	237	5.0
	4410 6835	24	6080	32.9		9400	224.5	24	244	3.0
	4590 7105	25	6320	33.7		9550	224.6	25	229	1.7
	4770 7375	26	6600	34.2		9700	224.8	26	225	1.4
	4950 7645	27	6560	34.8		9500	224.9	27		
	5130 7915	28		35.6			225.4	28	236	1.4
		29				[illegible]	225.7	29		

Rawinsonde Time-Altitude Data

Contact	Pressure (mb.)	Altitude (m., m.s.l.)	Elapsed time (min.)
68	990	238	0.0
10	935	730	2.2
15	868	1360	4.9
20	802	2030	7.4
25	742	2680	—
30	684	3370	12.9
35	628	4070	15.5
40	576	4760	18.1
45	527	5460	21.1
50	479	6220	23.9
55	437	6920	26.7
60	394	7710	29.6
65	356	8460	32.5
70	319	9260	35.6
75	285	10040	38.6
80	253	10840	41.7
85	224	11650	44.7
90	197	12510	47.9
95	172	13380	51.0
100	149	14250	54.0
105	129	15120	57.1
110	110	16070	[illegible]
115	93	[illegible]	[illegible]
120	77	18200	[illegible]
125	[illegible]	[illegible]	[illegible]
130	50	20101	[illegible]
135	37	22820	81.0
140	26	25200	[illegible]
145	13	29771	71.1

El. of Station

Method of obs., e.g., rowinsonde, rawin, pibal

Type of equip., e.g., WBRT-57, GMD-1A, GMD-1, SCR-658, theodolite

Termination

Alt. for 150 & 300 m. are with respect to ground, alt. for other standard levels are in km., msl.

Reason for termination

Computer H. J. EMERY

Verifier R. S. VEACH

	2250 3580	12	2970	23.3		6500	225.7	12	243	2.5
	2430 3855	13	3220	24.4		7100	226.8	13	237	2.5
	2610 4130	14	3480	25.7		7200	226.5	14	202	1.8
	2790 4405	15	3740	26.9		7300	226.1	15	194	1.8
	2970 4675	16	4000	28.3		7350	225.0	16	197	1.9
	3150 4945	17	4250	29.5		7500	225.2	17	189	3.2
	3330 5215	18	4520	30.4		7700	223.8	18	188	5.1
	3510 5485	19	4800	30.9		8000	222.6	19	195	4.6
	3690 5755	20	5030	31.5		8200	221.9	20	215	6.0
	3870 6025	21	5300	31.6		8700	221.8	21	225	6.0
	4050 6295	22	5590	31.9		8900	222.5	22	253	4.8
	4230 6565	23	5820	32.3		9200	223.7	23	257	5.0
	4410 6835	24	6080	32.9		9400	224.5	24	244	3.0
	4590 7105	25	6320	33.7		9550	224.6	25	227	1.7
	4770 7375	26	6600	34.2		9700	224.8	26	225	1.4
	4950 7645	27	6560	34.8		9800	224.9	27		
	5130 7915	28		35.6			225.4	28	236	1.4
	5310 8185	29	7370	36.0		10000	225.7	29		
	5490 8455	30		36.4			225.9	30	232	2.8
	5670 8730	31	7900	36.8		10600	225.5	31		
	5850 9005	32		37.6			225.8	32	343	4.0
	6030 9285	33	8430	38.4		10600	225.9	33		
	6210 9565	34		39.4			226.4	34	352	5.3
	6390 9850	35	8930	40.5		10300	227.8	35		
	6570 10135	36		41.4			228.9	36	323	3.0
	6750 10420	37	9440	42.4		10300	230.0	37		
	6930 10710	38		43.2			231.5	38	324	5.5
	7110 11005	39	9970	43.9		10250	233.7	39		
	7290 11300	40		44.7			236.9	40	328	8.8
	7470 11595	41	10510	45.5		10250	239.9	41		
	7650 11890	42		46.4			242.9	42	330	8.8
	7830 12185	43	11020	47.0		10250	245.8	43		
	8010 12480	44		47.4			247.5	44	326	5.5
	8190 12775	45	11540	47.8		10400	249.4	45		
	8370 13075	46		47.9			251.0	46	284	5.0
	8550 13375	47	12080	48.0		10800	251.7	47		
	8730 13675	48		48.0			252.3	48	274	4.3
	8910 13975	49	12660	47.9		11400	253.3	49		
	9090 14275	50		47.8			255.1	50	303	10.0

70	319	9260	35.6
75	285	10040	38.6
80	253	10840	41.7
85	224	11650	44.7
90	197	12510	47.9
95	172	13380	51.0
100	149	14250	54.0
105	129	15120	57.1
110	110	16070	60.
115	93	17060	63.
120	77	18200	67.
125	63	19430	71.
130	50	20701	75.
135	37	22820	81.
140	26	25200	88.
145	13	29771	99.1
150	13	29771	991

Punched Card Data

Altitude #	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude #	Direction (degrees)	Speed (m.p.s.)
Card No. 1			15	Card No. 2		
Type of equipment		5	16	Type of equipment		
sfc.	180	3	17-21	7	227	1
150 M.	190	5	22-26	8	232	3
300 M.	214	13	27-31	9	350	5
0.5	212	12	32-36	10	324	5
1.0	214	14	37-41	11	332	9
1.5	227	12	42-46	12	270	5
2.0	230	8	47-51	13	270	8
2.5	244	6	52-56	14	288	1
3	247	3	57-61	15	284	3
4	194	2	62-66	16	264	6
5	192	5	67-71	17	257	6
6	256	5	72-76	18	207	3

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		
Enter check if additional levels appear on reverse side.		

Coded Data for Transmission

PP72445	12941	1807	^{2}2227	2228	^{4}2226	2323	^{6}2318	2316	^{8}2412
2510	^{0}2505	^{2}2204	^{4}1904	^{6}1910	^{8}2211	^{0}2110	^{3}2303	52403	03510
53317	02810	52920	02814	32612	07777	01803	00304	63303	00715
00714	60807								

Identification

COLUMBIA, MO.
38° 58' N 92° 22' W
LST-90th Meridian El. 238
Rawinsonde WBRT-57

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LAND STATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time ___th mer.	1964	SEP	8	0515
Scheduled (G.M.T.)	1964	SEP	8	12
Ascension No.	935			

Page
2

Slant range (M.) (yds.)	Pibal ht. above sfc. (m.) 100-gram	Minute	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction° 360°= N	Wind Speed (m.p.s.)
	14570	51	13200	47.7		12000	256.9	51		
	14860	52	13470	47.4		12400	255.9	52	306	10.0
	15145	53	13780	47.1		12800	261.0	53		
	15425	54	14040	46.8		13200	2629	54	289	8.0
	15705	55		46.6			263.1	55		
	15985	56	14680	46.2		14100	2628	56	283	7.8
	16265	57		45.7			2631	57		
	16545	58	15230	45.4		15000	2639	58	269	6.0
	16825	59		45.3			2636	59		
	17105	60	15760	45.2		15500	2635	60	262	6.2
	17385	61		45.0			263.5	61		
	17670	62	16400	44.6		16500	2635	62	264	6.0
	17950	63		44.6			2636	63		
	18235	64	16970	44.5		17200	2638	64	247	5.0
	18515	65		45.0			2631	65		
	18795	66	17600	45.0		17600	[illegible]	66	220	3.3
	19080	67		45.6			261.5	67		
	19360	68	18240	45.9		17700	261.6	68	154	1.0
	19645	69		46.4			2615	69		
	19925	70	18900	46.7		17800	261.2	70	121	1.5
	20210	71		47.0			261.6	71		
	20490	72	19500	47.0		18000	262.9	72	101	2.0
	20775	73		47.5			262.6	73		
	21055	74	20180	48.6		17500	262.1	74	85	2.5
	21340	75		49.9			262.1	75		
	21620	76	20870	50.9		16800	260.8	76	54	2.5
	21905	77		51.4			261.0	77		
	22185	78	21540	51.5		17200	260.8	78	347	2.0
							261.2	79		

Minute	Wind Speed (m.p.s.)	Wind Direction° 360°= N	Azimuth angle °	Distance from observation Point (m.)	Elevation angle° Smoothed	Elevation angle° Observed	Rawin ht. above surface (m.)	Slant range (m.) (yds.)
106								
107								
108								
109								
110								
111								
112								
113								
114								
115								

*Stamp the following:
1. Name of Station
2. Lat. and long.
3. Local Standard time, ___ meridian
4. El. of S
5. Method obs., e. rawinso rawin, p
6. Type of equip., WBRT-5 GMD-1A GMD-1, SCR-65 theodol

Altitudes in km., r

	17950	63		44.6			263.6	63		
	18235	64	16970	44.5		17200	263.4	64	247	5.0
	18515	65		45.0			263.1	65		
	18795	66	17600	45.0		17600	262.0	66	220	3.3
	19080	67		45.6			261.5	67		
	19360	68	18240	45.9		17700	261.6	68	154	1.0
	19645	69		46.4			261.5	69		
	19925	70	18900	46.7		17800	261.2	70	121	1.5
	20210	71		47.0			261.6	71		
	20490	72	19500	47.0		18000	262.9	72	101	2.0
	20775	73		47.5			263.6	73		
	21055	74	20180	48.6		17500	263.1	74	85	2.5
	21340	75		49.9			262.1	75		
	21620	76	20870	50.9		16800	260.8	76	54	2.5
	21905	77		51.4			261.0	77		
	22185	78	21540	51.5		17200	260.8	78	347	2.0
	22470	79		51.9			261.2	79		
	22750	80	22280	52.3		17200	261.3	80	320	2.0
	23040	81		52.8			261.4	81		
	23320	82	23030	53.2		17200	263.6	82	333	2.0
	23600	83		53.9			263.6	83		
	23880	84	23650	54.0		17200	264.0	84	87	4.0
	24160	85		54.9			263.5	85		
	24440	86	24260	56.3		16200	263.2	86	97	12.5
	24730	87		57.7			261.7	87		
	25010	88	25000	60.1		14300	261.3	88	85	13.5
	25300	89		61.8			261.2	89		
	25580	90	25810	63.3		129500	263.3	90	62	10.8
	25860	91		64.5			264.9	91		
	26140	92	26590	65.7		11900	265.2	92	79	8.6
	26420	93		67.0			265.0	93		
	26700	94	27480	68.2		10900	264.1	94	90	6.5
	26980	95		69.1			263.7	95		
	27260	96	28230	69.9		10300	264.6	96	82	4.4
	27540	97		70.6			265.4	97		
	27820	98	29030	71.1		9900	264.4	98	86	3.6
	28100	99	29440	71.9		9500	265.4	99		
	28380	100	238					100		
	28660	101						101		
	28940	102	29268					102		
	29220	103						103		
	29500	104						104		
	29780	105						105		

Minute	Slant range (m.) (yds.)	Rawin ht. above surface (m.)	Elevation angle° Observed	Elevation angle° Smoothed
106				
107				
108				
109				
110				
111				
112				
113				
114				
115				

obs., e.
rawinso
rawin, p

6. Type of
equip.,
WBRT-5
GMD-1A
GMD-1,
SCR-65
theodol

Altitudes
in km., n

Punched Card Data

Altitude#	Direction (degrees)	Speed (m.p.s.)	Card columns	Altitude#	Direction (degrees)	Speed (m.p.s.)
Card No. 3			15	Card No. 4		
Type of equipment		8	16	Type of equipment		8
19	132	1	17-21	31		
20	96	2	22-26	32		
21	60	3	27-31	33		
22	354	1	32-36	34		
23	326	2	37-41	35		
24	85	4	42-46	36		
25	92	13	47-51	37		
26	64	11	52-56	38		
27	82	8	57-61	39		
28	88	6	62-66	40		
29	84	4	67-71	41		
30			72-76	42		

Maximum Wind Speed Data

Min. alt. wind speed 45 m.p.s. or more (m.)		
Alt. of maximum wind speed (m.)		
Dir. (degrees) and speed (m.p.s.) of Max. wind		
Max. alt. wind speed 45 m.p.s. or more (m.)		

UNITED STATES DEPARTMENT OF COMMERCE
WEATHER BUREAU
Airport Station
Springfield, Missouri

September 28, 1964

Colonel Eric T. de Jonckheere
Deputy for Technology & Subsystems
Foreign Technology Division
United States Air Force
Wright-Patterson AFB, Ohio

Dear Colonel:

Reference is made to your letter of September 25, 1964, requesting wind data. It is assumed that you are interested in upper air data. Copies for the period requested are enclosed.

Yours truly,

Ray C Nelson

Ray C. Nelson
Meteorologist in Charge

Encls

TDEW

Wind Data for Springfield, Missouri, 7 - 8 September 1964   25 Sep 64

U S Weather Station
Springfield, Missouri

1. We would like to have copies of the wind data for 7 - 8 Sep 64. Contact with the U S Weather Records Center at Ashville, North Carolina, revealed that these records are not forwarded for approximately thirty days.

2. We are attaching a self addressed label for your convenience in mailing. Thank you for your cooperation in this matter.

FOR THE COMMANDER

ERIC T de JONCKHEERE
Colonel, USAF
Deputy for Technology
and Subsystems

1 Atch
a/s

[illegible] FIELD MISSOURI

U. S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS ALOFT COMPUTATION SHEET

Page

Minute	Elevation angle Observed	Azimuth angle
1	25.4	169.3
2	[illegible]	172.6
3	[illegible]	[illegible]
4	[illegible]	[illegible]
5	[illegible]	[illegible]
6	18.6	[illegible]
7	18.6	[illegible]
8	[illegible]	[illegible]
9	[illegible]	[illegible]
10	[illegible]	[illegible]
11	[illegible]	[illegible]
12	[illegible]	[illegible]
13	[illegible]	[illegible]

Card No.

Type of

wind speed

mph. or more (m.)

or more (m.)

Check if additional

on reverse side

[illegible] MISSOURI

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET
(LAND STATION FORM)
WBAN-20

	Year	Month	Day	Hour
Actual time	[illegible]	1	6	2205
Scheduled (G.M.T.)	[illegible]	[illegible]	7	0000

Ascension No. [illegible]

Orientation 360° = [illegible]

Minute	Elevation angle ° Observed	Elevation angle ° Recomputed	Distance from observation point (m.)	Azimuth angle °	Minute	Wind Direction	Wind Speed
1	26.5		[illegible]	166		[illegible]	[illegible]
2	17.9		[illegible]	164		[illegible]	[illegible]
3	17.3		[illegible]	167	3	160	[illegible]
4	[illegible]		[illegible]	[illegible]	4	[illegible]	[illegible]
5	[illegible]		[illegible]	[illegible]	5	[illegible]	[illegible]
6	[illegible]		[illegible]	167	6	[illegible]	[illegible]
7	[illegible]		[illegible]	[illegible]	7	[illegible]	[illegible]
8	[illegible]		[illegible]	[illegible]	8	[illegible]	[illegible]
9	[illegible]		[illegible]	[illegible]	9	[illegible]	[illegible]
10	[illegible]		[illegible]	164	10	[illegible]	[illegible]
11	17.6		[illegible]	167	11	[illegible]	[illegible]
12	[illegible]		[illegible]	164	12	[illegible]	[illegible]
13	[illegible]		4?0	173	13	[illegible]	[illegible]
14	[illegible]		[illegible]	[illegible]	14	[illegible]	[illegible]
15	[illegible]		[illegible]	[illegible]	15	[illegible]	[illegible]
16	[illegible]		[illegible]	[illegible]	16	[illegible]	[illegible]
17	[illegible]		[illegible]	[illegible]	17	[illegible]	[illegible]
18	[illegible]		[illegible]	[illegible]	18	[illegible]	[illegible]
19	[illegible]		[illegible]	[illegible]	19	223	[illegible]
20	[illegible]		[illegible]	[illegible]	20	213	[illegible]
21	[illegible]		[illegible]	[illegible]	21	210	[illegible]
22	[illegible]		[illegible]	[illegible]	22	[illegible]	[illegible]
23	[illegible]		[illegible]	[illegible]	23	[illegible]	[illegible]
24	[illegible]		[illegible]	[illegible]	24	[illegible]	[illegible]
25	[illegible]		[illegible]	[illegible]	25	[illegible]	[illegible]
26	[illegible]		[illegible]	1825	26	[illegible]	[illegible]
27					27		
28					28		
29					29		
30					30		
31					31		
32					32		
33					33		
34					34		
35					35		
36					36		

Radiosonde Time-Altitude Data

Code Min.	Pressure (mb.)	Altitude (m. m.s.l.)	Elapsed time (min.)
[illegible]			

Punched Card Data

Card No. [illegible]

Card No. 2

Coded Data for Transmission

99	[illegible]	[illegible]	[illegible]	1615	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	22 [illegible]	42108	61908	523[illegible]	32109	32147	[illegible]	2

Maximum Wind Speed Data

Max. alt. wind speed [illegible] (m.)

Alt. of maximum wind speed (m.)

Dir (degrees) and speed [illegible] of max. wind

Max. alt. wind speed [illegible] or more (m.)

Enter check if additional levels appear on reverse side.

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET

(LANDSTATION FORM)

WBAN-20

Identification
WBAS SPRINGFIELD MISSOURI

	Year	Month	Day	Time
[illegible]	64	09	7	0514
[illegible]	64	09	7	1730

Ascension No. 35

Type of balloon

Orientation 360° ...

Page

Slant range (m.) (yds.)	Fibel ht. above sfc. (m.)	Min.	Height ht. above ...	Elevation angle Observed	Elevation angle ...	Distance from ... point (m.)	Azimuth angle	Min.	Wind Direction	Wind Speed
	[illegible]	1		[illegible]		[illegible]	[illegible]	1	[illegible]	[illegible]
	[illegible]	2		[illegible]		[illegible]	[illegible]	2	[illegible]	[illegible]
	[illegible]	3		[illegible]		[illegible]	[illegible]	3	[illegible]	[illegible]
	[illegible]	4		[illegible]		[illegible]	[illegible]	4	[illegible]	[illegible]
	[illegible]	5		[illegible]		[illegible]	[illegible]	5	[illegible]	[illegible]
	[illegible]	6		[illegible]		[illegible]	[illegible]	6	[illegible]	[illegible]
	[illegible]	7		[illegible]		[illegible]	[illegible]	7	[illegible]	[illegible]
	[illegible]	8		[illegible]		[illegible]	[illegible]	8	[illegible]	[illegible]
	[illegible]	9		[illegible]		[illegible]	[illegible]	9	[illegible]	[illegible]
	[illegible]	10		[illegible]		[illegible]	[illegible]	10	[illegible]	[illegible]
	[illegible]	11						11		
	[illegible]	12						12		
	[illegible]	13						13		
	[illegible]	14						14		
	[illegible]	15						15		
	[illegible]	16						16		
	[illegible]	17						17		
	[illegible]	18						18		
	[illegible]	19						19		
	[illegible]	20						20		
	[illegible]	21						21		
	[illegible]	22						22		
	[illegible]	23						23		

WB Form 610-12

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS-ALOFT COMPUTATION SHEET

(LANDSTATION FORM)
WBAN-20

	Year	Month	Day	Time
Actual time	64	09	7	1123
Scheduled (G.M.T.)	64	09	7	1800

Ascension No. 850

Type of balloon [illegible]

Orientation 360° = North

Slant range (m) (yds.)	Pibal ht. above sfc.	Min.	Rawin ht. above surface	Elevation angle Observed	Elevation angle Smoothed	Distance from observing point	Azimuth angle	Min.	Wind Direction	Wind Speed
		1		56.1		320	160.7	1	341	3.7
		2		53.7		779	158.2	2	[illegible]	7.1
		3		57.3		1155	174.9	3	181	7.8
		4		43.3		955	182.3	4	203	[illegible]
		5		52.2		3091	178.2	5	[illegible]	[illegible]
		6		31.7		3025	170.7	6	[illegible]	3.6
		7						7		
		8						8		
		9						9		
		10						10		

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

WINDS ALOFT COMPUTATION SHEET
(LANDSTATION FORM)
WBAN-30

Identification [illegible] MISSOURI

	Year	Month	Day	Time
Actual	[illegible]	07	[illegible]	1710
Scheduled (G.M.T.)	[illegible]	07	[illegible]	[illegible]

Accession No. [illegible]

Type of balloon [illegible]

Orientation [illegible]

Final reference altitude	Min.	Observed elevation angle	Distance from observation point	Azimuth angle	Min.	Distance	Speed
[illegible]	1	7.2	[illegible]	62.0	1	[illegible]	[illegible]
[illegible]	2	[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]
[illegible]	3	[illegible]	[illegible]	[illegible]	3	[illegible]	[illegible]
[illegible]	4	[illegible]	[illegible]	[illegible]	4	[illegible]	[illegible]
[illegible]	5	[illegible]	[illegible]	[illegible]	5	[illegible]	[illegible]
[illegible]	6	[illegible]	[illegible]	[illegible]	6	[illegible]	[illegible]
[illegible]	7	[illegible]	[illegible]	[illegible]	7	[illegible]	[illegible]
[illegible]	8	[illegible]	[illegible]	121.0	8	[illegible]	[illegible]
[illegible]	9	[illegible]	[illegible]	[illegible]	9	[illegible]	[illegible]
[illegible]	10	[illegible]	[illegible]	[illegible]	10	[illegible]	[illegible]
[illegible]	11	[illegible]	[illegible]	[illegible]	11	[illegible]	[illegible]
[illegible]	12	[illegible]	[illegible]	[illegible]	12	[illegible]	[illegible]
[illegible]	13	[illegible]	[illegible]	[illegible]	13	[illegible]	[illegible]
[illegible]	14	23.1	[illegible]	[illegible]	14	[illegible]	[illegible]
[illegible]	15	[illegible]	[illegible]	[illegible]	15	[illegible]	[illegible]
[illegible]	16	[illegible]	[illegible]	[illegible]	16	[illegible]	[illegible]
[illegible]	17	[illegible]	[illegible]	[illegible]	17	[illegible]	[illegible]
[illegible]	18	[illegible]	[illegible]	[illegible]	18	[illegible]	[illegible]
[illegible]	19	[illegible]	[illegible]	[illegible]	19	[illegible]	[illegible]
[illegible]	20	[illegible]	[illegible]	[illegible]	20	[illegible]	[illegible]
[illegible]	21	[illegible]	[illegible]	[illegible]	21	[illegible]	[illegible]
[illegible]	22	[illegible]	[illegible]	[illegible]	22	[illegible]	[illegible]
[illegible]	23	[illegible]	[illegible]	[illegible]	23	[illegible]	[illegible]
[illegible]	24	[illegible]	[illegible]	[illegible]	24	[illegible]	[illegible]
[illegible]	25	[illegible]	[illegible]	[illegible]	25	[illegible]	[illegible]
[illegible]	26	[illegible]	[illegible]	[illegible]	26	[illegible]	[illegible]
	27				27		
	28				28		
	29				29		
	30				30		
	31				31		
	32				32		
	33				33		
	34				34		

Punched Card Pr[illegible]

Reason for termination

Computer

Verifier

Coded Data for Transmission

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Card No.

Type of equipment

Sfc	[illegible]	[illegible]	[illegible]	2	[illegible]
150 M	[illegible]	[illegible]	[illegible]		
300 M	[illegible]	[illegible]	[illegible]		
0.5	[illegible]	[illegible]	[illegible]		
1.0	[illegible]	[illegible]	[illegible]		
1.5	[illegible]	[illegible]	[illegible]		
2.0	[illegible]	[illegible]	[illegible]		
2.5	[illegible]	[illegible]	[illegible]		
3	[illegible]	[illegible]	[illegible]		
4	[illegible]	[illegible]	[illegible]		
5	[illegible]	[illegible]	[illegible]		
6	[illegible]	[illegible]	[illegible]		

Maximum Wind Speed Data

Identification

MISSOURI

Page

1

U.S. DEPARTMENT OF COMMERCE
WEATHER BUREAU

ALOFT COMPUTATION SHEET
(LAND STATION FORM)

	Year	Month	Day
	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]

Ascension No. [illegible]

Type of balloon