UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

JULY 1981

OPEN FILE REPORT

81-300G

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THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSEND, CHIEF OF THE COLLEGE OBSERVATORY WITH THE ASSISTANCE OF OBSERVATORY STAFF MEMBERS J.E. PAPP AND E.A. SAUTER, AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations, as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

COLLEGE OBSERVATORY
800 YUKON DRIVE
FAIRBANKS, ALASKA 99701

Requests for copies of the magnetograms except for the current month should be addressed to:
World Data Center A-NOAA
Environmental Data Service
Boulder, Colorado 80302

OBSERVATORY LOCATION

The College Observatory, operated by the U. S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic Belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:
Geographic latitude.....64°51.6'N
Geographic longitude.....147°50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

GEOMAGNETIC DATA

Normal, Storm, and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available are mean hourly scalings, K-Indices, selected magnetic phenomena reports, and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

Magnetic Activity

The K-Index. The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK. The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as not to give the illusion of an accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak*
0 < 25	0	0
25 < 50	1	3
50 < 100	2	7
100 < 200	3	15
200 < 350	4	27
350 < 600	5	48
600 < 1000	6	80
1000 < 1650	7	140
1650 < 2500	8	240
2500+	9	400 (10γ)

The Magnetic Daily Character Figure, C. To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1 if it is moderately disturbed; C=2 if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0-11	0
11-50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

Selected Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal & Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

Principal Magnetic Storms

Gradual and sudden commencement magnetic disturbances with at least one K-Index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencement; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

Magnetogram Hourly Scalings

Magnetogram hourly scalings are averages for successive periods of one hour for the D, H, and Z elements. The value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheets are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if he is interested in the detailed morphology of the magnetic field, he should refer directly to the magnetograms.

Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

Absolutes, Base-lines, and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

$D = B_D \cdot d \cdot S_D$; $H = B_H \cdot h \cdot S_H$; $Z = B_Z \cdot z \cdot S_Z$
where D, H, and Z are absolute values;
 B_D , B_H and B_Z are base-line values;
 S_D , S_H and S_Z are scale values;
and d, h, and z are scalings in millimeters.

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

COLLEGE, ALASKA

MONTH AND YEAR

JULY 1981

DATE	K-INDICES									AK	TIME SCALE ON MAGNETOGRAMS			
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM		20 mm/hr			
1	4	4	5	5	5	3	2	2	30	28	SUDDEN COMMENCEMENTS			
2	3	5	7	7	6	2	3	2	35	57	d	h	m	
3	1	1	1	2	0	1	2	3	11	05				
4	3	3	1	0	1	1	1	3	13	07				
5	2	3	1	4	4	3	3	2	22	15				
6	3	4	6	5	5	5	4	2	34	38				
7	4	4	4	4	5	3	2	2	28	23				
8	2	4	2	5	1	0	2	1	17	13				
9	1	2	2	2	5	1	1	1	15	10				
10	1	2	2	1	0	0	1	1	08	03				
11	0	2	4	5	3	3	2	2	21	16				
12	3	4	4	4	5	4	4	3	31	27				
13	3	2	2	3	4	3	1	2	20	12				
14	2	2	1	2	4	4	0	1	16	10				
15	1	2	0	1	0	0	0	0	04	02				
16	2	2	2	3	1	1	1	1	13	06				
17	1	2	5	5	4	3	4	5	29	28				
18	3	3	3	2	1	1	1	1	15	08	POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)			
19	2	2	1	2	3	3	1	1	15	08				
20	2	4	1	2	6	2	1	1	19	17				
21	2	1	3	2	1	0	0	1	10	05				
22	3	4	2	4	5	5	3	3	29	25				
23	3	3	5	6	6	6	5	3	37	48				
24	2	1	1	1	3	3	2	3	16	09	BEGIN	END		
25	3	6	6	4	9	8	6	6	48	125	d	h	m	
26	6	6	6	4	4	5	3	3	37	47				
27	4	4	6	7	5	3	1	2	32	43				
28	2	4	3	5	3	2	2	2	23	17				
29	3	1	0	0	0	1	1	1	07	03				
30	2	2	3	5	4	3	2	2	23	17				
31	3	3	4	1	3	3	3	3	23	15				

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9.....

D

683.8

3.75

2560

H

321.7

7.81

2510

Z

(mm)

(Y/mm)

(to nearest 10Y)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED

JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

OUTSTANDING MAGNETIC EFFECTS			OBSERVATORY COLLEGE, ALASKA	
			MONTH JULY	YEAR 1981
DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS	
03	09XX	pi2		
04	14XX	pi2		
04	22XX	pc5		
09	1210	bps		
14	14XX	pc3, pc4	With bay and pi2's.	
15	11XX	pi2		
16	0442	si		
IDENTIFIED BY: JEP			VERIFIED BY: JBT	

1. NATURE OF PHENOMENON: ssc, ssc*, si, si*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

Data from Individual Observatories:

COLLEGE OBSERVATORY, COLLEGE, ALASKA

JULY 19 81

WDC-A FOR SOLAR-TERRRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80502 U.S.A.

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End day hr
		day	hr min (UT)	type	D(')	H(Y)	Z(Y)	day	(3 hr - period)	K	D(')	H(Y)	Z(Y)	
CO	64°6 N	02	03XX	..	..	..	..	02	3, 4	7	165	1280	870	02 23
		06	01XX	..	..	..	..	06	3	6	118	800	480	06 23
		23	05XX	..	..	..	..	23	4, 5, 6	6	177	1420	960	23 23
		24	21XX	..	..	..	..	25	5	9	442	4360	1720	27 17

JULY

1981

NORMAL MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 7-1-81	2400 U.T., 7-31-81	1.6/mm	3.78/mm	27° 46.9 E
H	0000 U.T., 7-1-81	2400 U.T., 7-15-81	7.88/mm		127678
	0000 U.T., 7-16-81	2400 U.T., 7-31-81	"		127708
Z	0000 U.T., 7-1-81	2400 U.T., 7-15-81	7.78/mm		551388
	0000 U.T., 7-16-81	2400 U.T., 7-31-81	"		551338

STORM MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 7-1-81	2400 U.T., 7-31-81	7.8/mm	29.78/mm	23° 46.7 E
H	0000 U.T., 7-1-81	2400 U.T., 7-15-81	44.08/mm		115238
	0000 U.T., 7-16-81	2400 U.T., 7-31-81	"		115328
Z	0000 U.T., 7-1-81	2400 U.T., 7-15-81	48.68/mm		540128
	0000 U.T., 7-16-81	2400 U.T., 7-31-81	"		540178

RAPID RUN MAGNETOGRAPH				
COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*		
D	H	Z
28° 02.8 E	129978	553898

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JUL 3, 4, 10, 15, 16, 18, 19, 21, 24, 29

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geological Division
Denver Federal Center
Denver, CO 80275

OBSV.

YEAR

MONTH

ELEM-

Values are in centia of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1504 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

CO

81

JUL

0

C	Q	Ten	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM
	01	103	119	110	111	124	138	154	120	115	6*	125	112	01	88	67	32	163	279	330	317	275	226	179	113	19	3425	
	02	28	17	22	7	75	-6	1	22	105*	89*	72	63	02	35	192*	153	231	298	323	323	292	281	156	114	44	2937	
	03	27	41	64	104	130	159	157	155	153	155	120	100	03	131	162	204	234	258	272	299	295	279	188	160	117	3964	
	04	68	41	53	58	112	146	156	134	144	137	134	125	04	128	139	178	196	244	271	308	321	259	208	111	81	3752	
	05	34	26	36	56	115	146	141	167	141	141	135	164	05	144	153	157	262	240	308	307	234	199	138	134	64	3642	
	06	45	58*	92	80	59	107	162	113*	27	67	34	11	06	144	108	183	204	323	411	264	219	198	172	151	92	3324	
	07	61	63	61	78	114	99	89	117	153	129	109	153	07	154	156	181	239	284	311	305	252	237	155	127	129	3756	
	08	74	60	56	35	55	116	107	118	96	106	140	127	08	121	120	181	256	278	289	289	269	259	191	138	109	3610	
	09	110	73	64	86	108	140	171	131	103	100	108	130	09	95	128	177	217	269	268	283	231	174	130	113	123	3532	
	10	88	99	105	109	131	180	156	139	110	109	97	100	10	131	151	200	226	260	285	260	246	198	189	159	116	3844	
	11	72	76	89	98	101	99	57	51	144	125	8	182	11	189	223	306	328	308	310	276	261	248	210	127	103	3991	
	12	54	36	74	48	41	69	77	163	185	61	79	22*	12	164	248	241	240	306	317	271	298	246	197	95	36	3568	
	13	58	36	53	86	116	123	136	129	131	142	123	83	13	75	163	197	242	280	276	301	295	211	153	101	82	3592	
	14	63	43	80	114	121	137	149	145	143	126	130	159	14	147	178	187	296	293	303	285	264	198	131	91	63	3846	
	15	36	37	73	96	136	172	158	148	139	132	135	147	15	145	168	216	269	307	312	285	257	224	196	172	104	4064	
	16	63	65	58	103	104	113	116	150	127	95	81	159	16	157	179	213	263	302	317	327	293	224	185	112	87	3893	
	17	47	52	65	87	123	118	114	68	-40	-48	122	210	17	34	171	302	283	338	421	427	374	353	306	256	106	4289	
	18	13	-32	17	24	39	85	135	148	145	112	107	120	18	139	177	201	249	273	275	320	279	302	192	162	99	3581	
	19	61	32	43	77	124	144	141	142	125	108	104	75	19	131	129	211	279	282	317	339	317	226	197	98	61	3763	
	20	66	23	42	63	38	129	127	119	134	133	123	131	20	103	254*	175*	275	303	348	333	289	228	189	148	101	3874	
	21	78	38	25	54	90	108	134	128	163	146	115	128	21	126	171	207	245	290	320	301	287	227	206	104	70	3761	
	22	69	74	55	86	146	127	116	117	106	86	106	60	22	83	84	169	303	343	375	266	231	176	214	52	112	3556	
	23	41	73	78	113	114	124	133	-64*	117	18	103	135*	23	167*	262*	8*	308	358	539*	325	279	124	136	83	103	3677	
	24	87	99	112	120	150	153	167	169	148	130	117	120	24	130	130	138	228	264	316	307	263	238	273	161	28	4048	
	25	43	74	111	100	68	-31*	-159*	85	34	-79*	-47*	-7	25	-79*	262*	1205*	682*	587*	-16*	563*	754*	634*	222*	209	539*	5468	
	26	412	368	318	-348*	-56*	36	-15*	166	114	34	-18	72	26	62	214	243	269	397*	202	288	264	196	177	166	189	3614	
	27	148	108	16	-87*	118	193	-87*	-37*	151*	-47*	-47*	46	27	56*	119	167	248	315	310	262	217	157	138	98	29	2009	
	28	77	86	104	94	118	91	131	115	183	163	206	99	28	109	136	186	241	294	300	273	259	231	159	118	87	3860	
	29	100	103	134	130	144	138	127	134	132	136	151	156	29	162	185	198	217	255	265	238	226	209	193	164	105	4002	
	30	65	76	84	114	123	117	91	109	71	8	108	127	30	205	203	238	336	356	387	351	295	226	172	77	69	4008	
	31	58	24	46	25	72	74	59	81	155	148	172	166	31	164	163	165	230	232	240	323	244	258	87	16	75	3277	

SCALED BY: TKE, JEP
 CHECKED BY: JEP, EAS
 SIGNED BY: JEP
 PUNCHED BY:

Preliminary base-line and scale values:
Interval: Beginning

Base-line Value

Scale Value

() Interpolated

[] Significant portion of hour interpolated.

☐ No record; or no values available because of faulty record.

[] Scaling uncertain because of magnetic storm.

☐ Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

* Derived from Storm Mapb., converted to Normal Mapb.

MONTHLY SUM 115527

MONTHLY MEAN 155

DATES WITH GAPS:

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geological Division
Denver Federal Center
DENVER, CO 80225DATE: 08 JUL 81
TIME: 11:00
SCALE: 1:1Values are in cents of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	T	Q	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM				
				01	349	426	401	390	380	390	380	340	232	192	304	307	01	303	254	283	252	267	291	291	270	271	288	312	309	7482			
				02	330	341	348	378	362	272	265	332	284	298	311	418	02	432	559*	317	350	356	336	324	324	318	296	307	316	8174			
				03	317	321	329	338	341	338	338	328	329	324	309	271	03	308	314	318	321	322	315	322	319	317	301	321	369	7720			
				04	385	369	311	319	379	370	336	320	332	330	320	318	04	312	303	295	292	321	324	327	323	304	311	330	327	7858			
				05	332	334	342	348	372	352	353	370	319	318	307	261	05	238	285	331	294	292	322	318	301	281	280	293	300	7543			
				06	307	312	362	429	405	413	361	158	293	354	399	395	06	534	394	339	326	337	314	146	229	292	299	310	324	8052			
				07	333	340	349	374	407	364	331	377	399	359	340	332	07	317	489	337	277	306	304	288	297	306	291	300	325	8142			
				08	350	359	359	358	396	381	417	421	384	359	356	275	08	299	319	349	356	339	332	329	319	318	309	311	317	8312			
				09	329	345	365	389	401	398	389	388	368	349	298	318	09	250	260	291	319	335	337	339	317	300	298	306	320	8009			
				10	331	348	354	369	381	396	369	359	360	349	337	330	10	331	342	349	340	338	325	312	304	300	298	299	297	8118			
				11	300	310	317	319	332	317	316	331	273	312	299	309	11	210	291	300	281	280	296	297	299	308	302	291	299	7189			
				12	310	319	401	362	380	360	342	341	247	329	299	286	12	152	154	216	286	269	152	131	239	282	291	304	353	6805			
				13	399	399	369	352	337	322	323	317	330	331	311	266	13	192	290	303	310	302	238	272	285	284	300	312	307	7451			
				14	329	357	361	332	338	349	352	335	319	300	277	282	14	307	303	248	169	210	299	316	312	310	309	317	321	7342			
				15	318	318	329	330	356	360	332	317	313	316	320	305	15	316	319	311	313	311	309	302	295	289	292	299	301	7571			
				16	307	320	353	360	339	331	345	372	332	306	296	319	16	301	321	332	330	329	322	316	302	286	288	292	308	7707			
				17	322	341	329	337	352	339	332	334	270	248	368	489	17	369	438	409	288	344	343	298	215	209	289	324	331	7918			
				18	362	406	392	378	389	372	354	349	350	326	321	309	18	319	330	325	333	321	320	322	308	310	299	300	321	8116			
				19	342	360	389	376	378	357	336	328	319	315	320	302	19	307	310	300	228	261	306	307	290	257	277	278	296	7539			
				20	329	330	329	331	328	382	350	326	325	322	316	326	20	349	607*	163	291	319	328	321	313	302	300	309	304	7900			
				21	314	328	342	356	349	334	341	340	346	331	320	331	21	316	332	333	338	340	327	319	318	312	321	311	313	7912			
				22	323	349	345	421	466	373	339	340	329	301	300	319	22	560	412	385	410	262	251	301	305	314	331	328	353	8447			
				23	369	412	399	401	345	341	379	214	391	354	379	589*	23	715*	759*	879*	838	833	746*	145	186	241	297	329	361	10902			
				24	385	400	379	366	367	351	359	379	350	343	339	339	24	332	335	358	371	350	342	304	305	310	342	357	355	8418			
				25	404	449	370	378	379	62*	69*	312	308	339	406	381	25	462*	790*	184*	677*	949*	538*	1100*	1044*	880	287	370	462*	11600			
				26	238	-27	23	-139*	-177	68	139*	374	390	380	411	380	26	340	405	298	308	279*	251	369	378	351	367	374	376	6156			
				27	380	361	326	259	361	250	133*	222	298	646*	366	453	27	581	530	508	345	290	328	350	348	345	351	362	359	8752			
				28	361	370	369	371	389	359	381	352	317	239	191	234	28	343	340	300	327	364	360	349	340	341	342	346	354	8039			
				29	361	370	395	377	366	349	340	342	340	344	347	347	29	342	348	343	332	336	341	341	339	330	323	319	324	8296			
				30	322	332	349	352	345	341	360	340	272	279	358	349	30	306	270	289	294	280	308	310	311	315	319	312	324	7637			
				31	332	350	390	393	413	393	401	408	419	372	355	339	31	340	334	323	273	272	313	272	234	285	268	270	344	8093			
SCALED BY	TKC, JEP				Preliminary base-line and scale values:												☐ Interpolated ☒ Significant portion of hour interpolated. ☐ No record; or no values available because of faulty record. * Derived from Storm Maphs., converted to Normal Maph.												☐ Scaling uncertain because of magnetic storm. ☒ Reworked all sheet for past or all of hour; if value is given, curve was estimated for missing part.		MONTHLY SUM		249200
CHECKED BY	JEP, ERS				Interval Beginning Over-line Value Scale Value																								MONTHLY MEAN		335		
REVIEWED BY	JEP																												DATES WITH GAPS:				
PUNCHED BY																																	

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80235OBSY. YEAR MONTH ELEV-
MENT
CO 81 JUL 11Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q	S	Q	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
				358	430	435	401	294	309	330	341	133	128	319	300	01	242	194	-95	208	230	276	281	262	278	268	259	252	6433
				276	276	316	472	736	752	729	485	-55	81	355	183	02	36	-4	345	363	331	319	304	253	240	242	250	263	7548
				271	280	290	298	312	306	305	306	303	307	304	282	03	293	293	301	316	316	312	249	222	188	210	263	361	6908
				341	255	244	331	346	290	281	310	291	299	312	308	04	299	282	277	296	294	298	287	263	239	260	297	274	6974
				238	281	287	327	331	317	339	337	352	344	201	218	05	264	202	122	273	321	338	336	318	294	267	257	258	6822
				241	312	376	513	592	649	529	126	241	348	226	177	06	23	204	301	311	131	-108	99	290	305	280	250	267	6683
				261	289	371	378	347	487	532	404	349	323	272	139	07	98	-124	121	264	329	307	323	311	260	250	260	300	6851
				295	269	299	347	511	440	431	409	433	263	203	164	08	309	309	318	337	339	338	310	281	250	260	259	279	7653
				289	309	328	332	359	347	385	369	340	306	249	263	09	29	256	299	319	336	351	310	289	266	276	275	271	7153
				285	289	298	330	321	366	348	339	319	299	299	283	10	298	309	313	321	317	302	299	301	291	279	275	263	7344
				269	278	293	317	318	327	389	490	547	378	304	103	11	226	267	259	299	302	258	261	253	264	263	261	268	7194
				280	337	378	399	508	499	493	437	252	312	284	218	12	-100	122	274	328	181	42	159	244	279	257	230	269	6682
				344	307	353	313	264	276	279	302	323	329	301	256	13	116	311	286	284	226	215	241	239	253	250	233	259	6560
				292	338	306	307	350	336	319	311	313	304	310	307	14	306	289	116	19	283	309	306	291	267	245	243	233	6702
				261	272	285	314	354	352	311	306	310	310	308	306	15	304	296	289	303	317	322	309	287	269	253	250	254	7142
				269	314	367	319	330	321	362	333	350	381	352	330	16	309	337	331	327	304	279	273	258	259	244	240	244	7433
				267	272	286	345	313	317	323	411	346	408	306	24	17	168	184	102	321	353	278	170	1	64	182	363	424	6228
				474	523	441	404	352	372	364	323	288	282	298	280	18	271	290	302	286	287	289	279	270	254	237	239	266	7671
				277	266	292	318	331	330	288	278	297	307	312	289	19	291	269	203	212	277	274	269	244	249	250	247	272	6642
				309	273	274	296	372	292	292	301	304	307	313	353	20	281	338	156	360	357	358	341	306	279	267	248	239	6540
				279	262	271	329	318	326	329	349	356	349	326	308	21	293	309	310	326	319	320	305	286	260	241	250	252	7273
				272	310	337	457	424	293	312	298	338	342	212	198	22	-161	39	67	-57	185	316	333	280	275	237	267	299	5873
				305	333	334	258	252	339	443	543	396	431	272	-118	23	-485	-168	35	-60	-52	-542	-73	237	281	285	313	295	3854
				301	280	259	262	279	285	337	309	305	284	299	289	24	296	289	269	312	295	258	309	289	256	209	208	269	6748
				348	357	307	260	419	837	255	444	325	299	225	207	25	216	-1151	-2529	-648	-196	418	-118	-264	84	204	236	352	893
				530	363	32	329	554	330	413	330	312	263	228	300	26	302	142	109	206	-62	230	309	232	242	232	251	311	6488
				338	545	565	674	615	569	300	239	243	270	-163	42	27	-208	-85	73	215	247	299	298	289	263	258	246	228	5820
				240	246	259	298	310	373	358	371	352	224	96	42	28	112	76	141	251	281	279	266	257	241	222	230	242	5774
				256	321	262	287	269	271	272	271	273	271	270	273	29	273	270	274	264	285	280	259	230	209	223	233	221	6317
				230	248	281	279	283	307	397	480	483	428	179	129	30	52	151	206	138	234	245	249	231	217	222	217	251	6137
				258	302	339	361	342	430	579	454	342	290	275	277	31	292	302	228	174	241	239	78	206	208	209	212	273	6911

SCALED BY: TKC, JEP

CHECKED BY: JEP, EAS

SIGNS REVIEWED BY: JEP

PUNCHED BY:

Preliminary base-line and scale values:

Interval: Base-line: Scale:

Beginning: Value: Value:

[] Interpolated

[] Significant portion of hour interpolated.

[] No records or no values available because of faulty record.

[] Scaling uncertain because of magnetic storm.

[] Kept off sheet for past or all of hour; if value is given, curve was estimated for missing part.

* Derived from Storm Mph., converted to Normal Mph.

MONTHLY SUM: 201271

MONTHLY MEAN: 271

DATES WITH GAPS:

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS

NORMAL MAGNETOGRAMS

NORMAL MAGNETOGRAMS

NORMAL MAGNETOGRAMS

NORMAL MAGNETOGRAMS

NORMAL MAGNETOGRAMS

NORMAL MAGNETOGRAMS

NORMAL MAGNETOGRAMS

STORM MAGNETOGRAMS

STORM MAGNETOGRAMS

STORM MAGNETOGRAMS