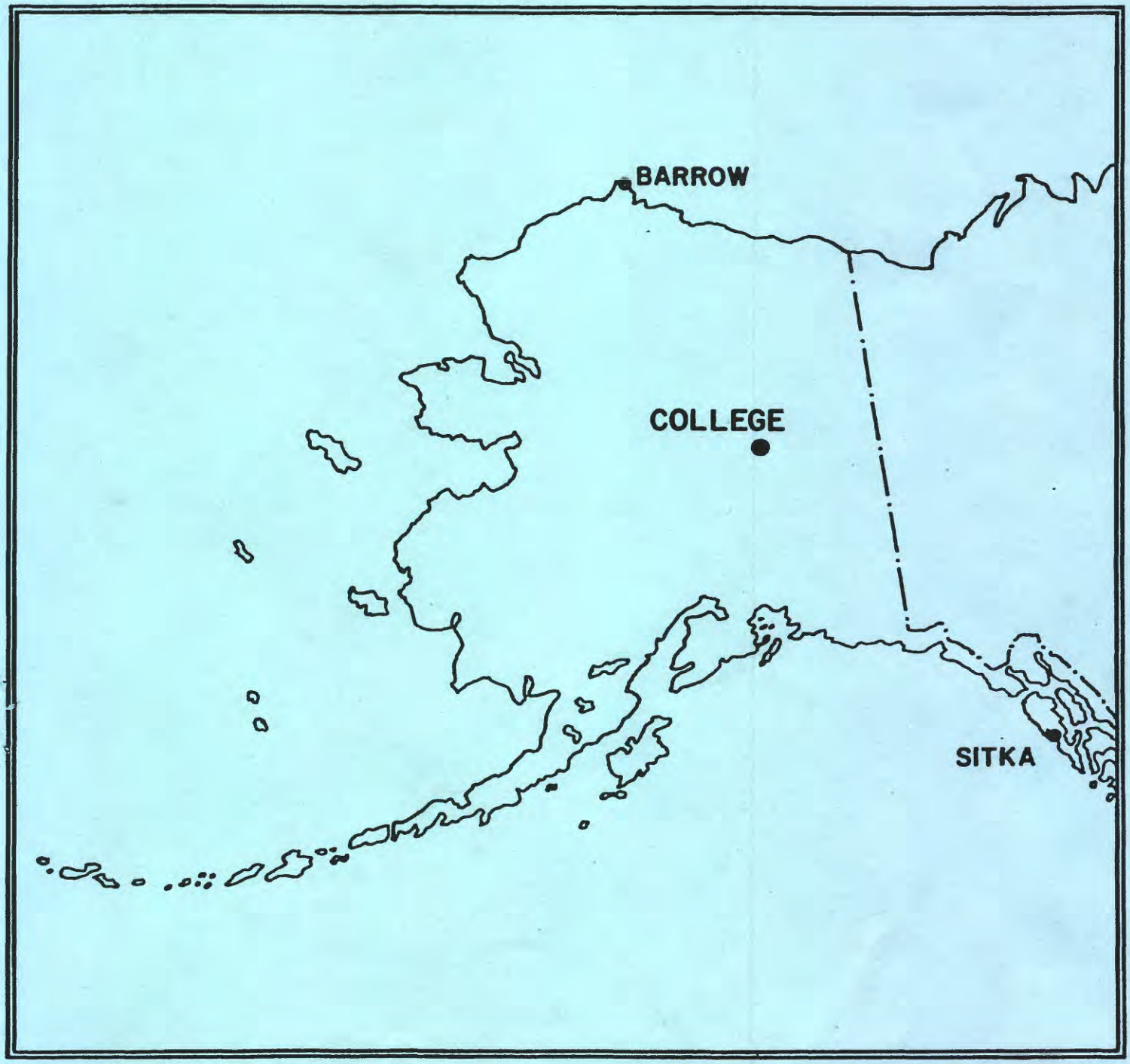
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

JULY 1984

OPEN FILE REPORT 84-0300G



THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY; WITH THE ASSISTANCE OF THE OBSERVATORY STAFF MEMBERS: J.E. PAPP, E.A. SAUTER, L.Y. TORRENCE, P.A. FRANKLIN AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF GLOBAL SEISMOLOGY AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

EXPLANATION OF DATA AND REPORTS

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:

Chief, College Observatory
U.S. Geological Survey
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 D63, 325 Broadway
Boulder, Colorado 80303

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 and 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 commencements; 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:

$D = B_D + d \cdot S_D$; $H = B_H + h \cdot S_H$; $Z = B_Z + z \cdot S_Z$

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.

NOAA FORM 76-133 (9-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: COLLEGE, ALASKA

MONTH AND YEAR: JULY 1984

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	2	3	2	3	1	3	3	3	20	12
2	3	2	2	3	2	4	3	2	21	13
3	3	2	3	5	5	4	3	1	26	22
4	3	3	3	3	3	3	3	3	24	15
5	3	3	4	3	3	2	2	2	22	14
6	3	3	2	3	5	2	2	2	22	15
7	3	2	1	2	3	2	2	2	17	09
8	2	3	4	3	3	2	2	2	21	13
9	3	3	3	4	4	2	2	1	22	15
10	2	2	3	4	6	3	3	2	25	22
11	1	1	1	0	4	5	2	3	17	13
12	5	4	3	4	2	1	2	2	23	18
13	3	4	6	6	7	6	3	3	38	57
14	6	5	5	5	5	5	3	3	37	44
15	4	4	5	5	5	5	3	4	35	36
16	3	4	3	6	3	4	3	3	29	26
17	4	5	4	7	5	6	3	3	37	50
18	3	3	3	4	6	4	4	3	30	28
19	4	4	2	3	4	2	2	2	23	16
20	3	2	4	5	3	3	1	3	24	18
21	3	2	4	2	1	1	2	2	17	10
22	3	3	1	4	3	2	2	2	20	12
23	3	2	1	2	4	2	2	2	18	10
24	4	3	3	5	2	2	1	1	21	16
25	2	2	2	4	3	2	2	2	19	11
26	3	3	2	3	1	0	1	1	14	08
27	2	2	2	3	4	3	2	2	20	12
28	4	5	4	5	4	4	2	1	29	27
29	1	1	2	5	4	4	3	2	22	17
30	3	2	2	4	4	4	1	1	21	15
31	2	2	2	3	5	2	2	4	22	16

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

d	h	m

POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)

BEGIN d	h	m	END d	h	m

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	675.7	322.2		(mm)
CURRENT SCALE VALUE.....	3.72	7.83		(γ/mm)
LOWER LIMIT FOR K = 9	2510	2520		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY
OBSERVER IN CHARGE

NOAA FORM 76-133 SUPERSEDES C&GS FORM 815

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-857

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: JULY

YEAR: 1984

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
22	1122	bps	
27	0001	ssc*	
27	2107	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

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

JULY 1984

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	day	hr
CO	64.6 N	13	01xx	..	..	..	..	13	5	7	346	1930	1190	19	15
								17	4	7					
		31	19xx	..	..	..	..	Aug. 01	3, 4	7	274	1980	980	04	15

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: JULY 1984

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 7-1-84	2400 U.T., 7-31-84	1.0'/mm	3.7 γ/mm	27° 16.9' E
H	0000 U.T., 7-1-84	2400 U.T., 7-31-84	7.8 γ/mm		12689 γ
Z	0000 U.T., 7-1-84	2400 U.T., 7-31-84	7.6 γ/mm		55171 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 7-1-84	2400 U.T., 7-31-84	7.9'/mm	29.6 γ/mm	23° 41.9' E
H	0000 U.T., 7-1-84	2400 U.T., 7-31-84	43.9 γ/mm		10814 γ
Z	0000 U.T., 7-1-84	2400 U.T., 7-31-84	48.3 γ/mm		54064 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 44.2' E	12926 γ	55361 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JUL 1, 2, 7, 8, 21, 22, 23, 25, 26, 27

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

OBSY.	YEAR	MONTH	ELEMENT
CO	84	JUL	D

C	Q or S	Ten Q	Hr. / Da.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. / Da.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	183	195	210	190	186	288	243	247	258	311	284	276	01	268	292	316	328	348	445	427	365	310	170	176	210	6526
			02	227	215	193	217	225	248	267	265	272	258	258	272	02	298	287	288	329	378	403	368	367	358	299	267	295	6854
			03	234	209	197	198	216	234	236	239	261	292	334	291	03	238	321	313	328	300	333	340	359	353	248	275	256	6605
			04	215	205	182	226	250	218	218	354	229	208	235	259	04	270	257	313	346	363	389	411	442	324	342	279	319	6854
			05	219	223	162	180	238	221	234	302	345	293	250	262	05	290	236	274	322	340	358	380	374	348	322	298	290	6761
			06	272	216	215	191	220	281	242	260	238	288	271	272	06	291	319	312	329	359	387	365	359	330	285	258	201	6761
			07	198	181	207	215	238	268	273	260	246	276	309	262	07	264	279	332	346	359	410	405	388	346	254	254	221	6791
			08	225	230	240	248	268	233	304	232	240	289	240	256	08	309	313	388	331	391	444	384	352	308	305	235	234	6999
			09	190	202	209	234	269	262	248	238	196	230	222	198	09	258	280	334	352	418	403	428	386	346	317	271	238	6729
			10	247	239	251	235	235	256	273	250	231	377	313	280	10	248	386	480	326	389	420	413	322	267	262	259	240	7199
			11	200	194	209	220	245	266	276	275	266	257	263	261	11	270	286	370	493*	460	456	451	390	333	301	155	200	7097
			12	187	166	157	243	213	207	267	310	228	200	213	237	12	257	300	330	383	413	380	387	383	341	247	233	220	6502
			13	197	160	121	37	100	197	-151*	1*	100	143*	469*	80*	13	810*	635*	723*	890*	477*	557*	571	452	417	335	306	284	7911
			14	186	287*	158	164	149	185	160	310	189	186	349*	218	14	310*	135*	342*	437*	485*	359	438	403	386	284	292	263	6675
			15	206	154	164	171	107	186	199	204	231*	189	154	302*	15	280	306	193	322	362	440	446	429	321	354	344	250	6314
			16	222	198	180	132	172	258	210	217	238	330	170	231*	16	204	280	328	392	398	403	454	457	319	266	340	263	6662
			17	204	254	212	189	82	176*	288	176	235	180	342*	168*	17	263*	279*	441	398*	288	442	395	367	379	346	263	205	6572
			18	204	208	179	180	212	228	216	219	236	233	198	249	18	160*	236	312	352	395	466	387	372	303	197	256	244	6242
			19	240	242	203	272	188	201	265	234	297	297	250	236	19	256	199	277	342	333	352	354	386	345	265	192	227	6453
			20	197	212	212	260	232	238	301	242	288	285	240	276	20	296	299	312	357	403	399	388	352	331	320	332	247	7019
			21	233	226	234	229	215	250	205	326	287	258	252	290	21	272	291	314	348	378	358	345	328	311	293	247	192	6682
			22	186	193	205	133	249	224	222	238	256	232	234	245	22	248	285	325	353	387	367	350	380	300	279	273	269	6433
			23	247	229	236	217	272	287	270	251	248	266	254	257	23	287	295	333	353	393	373	347	354	290	297	248	257	6861
			24	207	187	163	100	259	267	239	189	190	233	137	273	24	270	300	355	384	406	454	400	380	302	280	237	213	6425
			25	223	214	196	217	217	261	375	258	233	213	230	287	25	284	343	339	359	373	397	383	320	283	217	213	194	6629
			26	187	165	153	193	183	200	217	237	202	187	289	290	26	282	293	313	347	380	377	346	322	290	227	200	207	6087
			27	212	167	202	193	200	243	257	228	227	260	243	253	27	275	376	353	403	407	383	373	323	229	169	220	221	6417
			28	201	223	182	232	204	309	177	115	202	120	332	268	28	342	274	493*	406	337	407	437	378	339	280	243	217	6718
			29	227	222	213	223	248	252	278	307	252	273	377	347	29	342	333	353	442	457	477	380	323	292	257	255	232	7362
			30	219	218	229	230	243	253	260	337	239	300	292	243	30	293	250	359	342	389	415	389	340	311	283	263	243	6940
			31	214	221	221	227	222	243	237	321	243	233	283	252	31	243	328	410	387	415	436	404	388	315	417	91	123	6874

SCALED BY	LYT
CHECKED BY	JEP, PAF
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[ ] Significant portion of hour interpolated.

[ ] Scaling uncertain because of magnetic storm.

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

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

* Derived from STORM Mgph., converted to Normal Mgph.

MONTHLY SUM	208954
MONTHLY MEAN	281
DATES WITH GAPS:	

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day (150 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	84	JUL	Z

C	Q or S	Ten Q	Hr. Da.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Da.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	238	247	269	260	309	366	313	303	287	231	154	224	01	256	273	257	247	229	134	203	213	207	184	221	234	5859
			02	259	307	329	297	273	270	303	292	289	282	264	246	02	197	253	267	267	263	239	236	237	246	234	240	268	6358
			03	282	303	304	272	269	262	272	284	307	258	121	109	03	167	207	145	102	83	116	207	237	236	217	225	247	5232
			04	253	259	263	307	290	266	306	308	302	287	278	276	04	278	280	246	233	239	269	240	245	207	228	227	265	6352
			05	306	323	300	327	313	296	308	307	117	163	253	243	05	200	198	257	274	267	270	270	257	247	238	247	256	6237
			06	280	278	303	330	347	399	314	330	320	279	227	262	06	237	124	182	243	247	267	253	252	243	243	257	256	6473
			07	254	261	283	267	273	289	294	283	267	256	243	240	07	233	190	165	176	218	247	240	223	237	223	237	250	5849
			08	263	279	289	319	300	307	347	270	219	207	217	225	08	177	143	147	167	217	228	223	227	228	243	247	270	5759
			09	273	293	297	313	356	316	303	309	277	274	286	283	09	123	157	217	254	263	253	246	240	228	227	237	237	6262
			10	243	248	253	258	259	271	267	250	270	217	183	232	10	229	273	135	50	180	149	213	185	200	216	235	265	5281
			11	266	262	253	254	259	263	263	268	249	242	243	235	11	213	113	97	208*	170	113	149	207	228	248	227	243	5273
			12	260	273	270	310	313	292	302	280	257	283	277	250	12	216	242	260	261	249	243	244	242	230	207	197	217	6175
			13	223	237	256	248	68*	196*	11*	56*	203*	318*	375*	554*	13	605*	739*	637*	465*	215*	260*	196	250	234	232	258	270	7160
			14	276	183*	189*	68*	176*	203*	300	141	238	286	343*	405	14	522*	426*	266*	407*	298*	176	225	247	258	250	260	273	6416
			15	267	287	293	286	277	214	293	200	-16*	197	330	413*	15	263	313	239	200	187	233	243	210	200	239	292	280	5940
			16	294	284	307	310	314	325	295	280	260	30	327	368*	16	263	280	260	237	253	267	260	253	207	207	278	287	6446
			17	282	320	313	297	246*	49*	61*	170*	81*	180	246*	285*	17	375*	291*	215	458*	179	204	206	264	260	269	267	257	5775
			18	282	304	304	306	323	293	317	300	287	257	250	210	18	260	62	103	205	237	170	205	216	165	187	240	253	5736
			19	268	307	274	280	287	250	307	283	284	136	174	248	19	232	131	160	217	249	266	256	263	237	215	213	247	5784
			20	247	293	288	300	287	300	284	198	279	215	184	268	20	103	183	227	236	242	233	230	234	230	237	253	253	5804
			21	263	247	243	240	254	265	267	239	302	262	223	233	21	239	259	270	260	247	248	251	243	240	245	247	244	6031
			22	259	276	269	260	320	313	304	299	273	248	244	135	22	193	243	254	247	219	204	230	239	219	226	235	247	5956
			23	273	283	292	284	336	284	250	254	256	277	250	226	23	190	193	233	253	240	185	139	177	203	223	223	240	5764
			24	247	263	251	265	330	270	247	252	190	233	257	200	24	239	264	272	241	244	233	237	240	224	223	224	224	5870
			25	249	247	263	297	283	287	293	294	287	253	264	250	25	260	252	228	253	245	240	235	230	224	226	244	240	6144
			26	247	282	313	367	336	337	321	294	255	245	280	210	26	213	243	247	243	245	239	246	246	246	225	227	237	6344
			27	244	278	263	257	286	327	327	323	282	297	260	243	27	263	327	257	188	237	232	223	220	197	187	240	247	6205
			28	263	263	283	349	312	273*	233	74*	223	323	376	257	28	350	383	375*	200	163	253	252	237	239	238	243	243	6405
			29	247	257	260	275	287	275	290	290	276	272	190	95	29	148	216	257	266	173	218	173	215	223	223	237	236	5599
			30	247	265	281	268	262	265	283	244	255	233	113	115	30	127	156	127	182	236	221	227	213	212	227	247	250	5256
			31	243	253	243	253	256	277	279	298	256	244	220	243	31	247	217	107	163	253	256	241	237	218	254	204	261	5723

SCALED BY	LYT
CHECKED BY	PAF, JEP
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
[ ] Scaling uncertain because of magnetic storm.
□ No record; or no values available because of faulty record.
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.
* Derived from STORM Mgnh., converted to Normal Mgnh.

MONTHLY SUM	185468
MONTHLY MEAN	249
DATES WITH GAPS:	

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day (150 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

OBST.	YEAR	MONTH	ELEMENT
CO	84	JUL	H

C	Q or S	Tes Q	Hr. / Da.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. / Da.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	308	324	321	341	422	398	360	330	342	354	262	323	01	330	330	300	326	196	228	282	238	187	251	299	270	7322
			02	350	317	350	329	335	332	340	385	370	351	259	295	02	258	316	307	275	266	284	337	330	304	272	277	296	7535
			03	255	316	342	320	331	335	324	344	403	393	159	124	03	264	5	-20	141	176	266	374	347	294	266	258	274	6231
			04	280	292	356	375	320	360	437	353	397	373	292	280	04	363	334	260	259	304	341	348	298	302	288	258	294	7764
			05	341	317	400	369	358	372	392	443	257	262	320	226	05	207	262	307	313	306	342	326	320	318	293	285	264	7600
			06	293	298	319	394	407	445	366	359	382	329	295	307	06	170	10	330	318	323	330	314	299	288	283	263	265	7387
			07	264	291	313	291	318	324	336	338	325	324	312	333	07	298	238	253	298	340	333	296	313	291	305	282	295	7311
			08	300	314	310	337	323	398	371	360	332	200	296	300	08	254	185	182	299	300	294	295	302	284	264	260	272	7032
			09	271	307	341	358	438	373	344	384	425	322	316	85	09	65	234	286	315	335	317	323	300	289	299	313	300	7340
			10	300	309	305	310	315	345	313	326	379	300	281	333	10	260	47*	-144*	248	248	249	270	298	263	277	280	290	6402
			11	273	293	299	312	309	305	321	325	320	310	307	310	11	265	105	80	-74	-100	152	293	317	311	297	260	330	5920
			12	332	375	521	362	307	306	457	373	396	433	382	255	12	251	297	287	295	303	320	298	273	254	255	260	268	7860
			13	279	320	399	505	618	573*	545*	186*	540*	330	-290*	19*	13	-346*	-695*	-419*	-255*	298	163	336	340	303	279	274	305	4407
			14	340	759*	630*	681*	552*	608*	499	180	313	246	85	129	14	41*	-93*	119	-178*	3*	166	248	301	292	267	277	297	6762
			15	296	380	450	407	479	430	470	450	158*	290	129	30	15	228	75	-183	-72	300	280	267	190	254	255	340	310	6213
			16	342	421	399	428	380	379	327	343	360	150	-65*	-172*	16	306	393	232	180	313	322	269	200	242	269	291	253	6502
			17	327	455	440	378	512*	489*	383*	462*	456*	400	-351*	-284*	17	73	60	-13	-133*	160	267	323	333	309	294	308	293	5941
			18	310	337	381	370	450	384	326	385	386	330	287	140	18	-116*	-166*	221	300	240	143	270	233	100	249	287	287	6134
			19	356	395	470	418	419	433	345	308	310	256	277	313	19	171	81	239	297	331	300	320	281	276	265	253	278	7392
			20	270	347	339	385	380	343	464	403	343	228	65	-118	20	217	287	270	273	278	280	287	291	283	290	290	288	6783
			21	315	273	283	293	333	305	399	375	339	319	285	314	21	300	308	307	300	313	315	295	293	258	256	243	270	7291
			22	280	285	280	420	436	338	321	317	310	307	307	208	22	310	307	297	273	226	303	300	270	273	263	268	291	7190
			23	261	303	277	326	309	317	305	330	325	349	317	299	23	133	302	302	298	258	219	244	287	293	273	270	299	6896
			24	267	293	342	448	360	303	307	450	411	160	100	264	24	310	339	300	260	290	260	283	280	281	273	275	283	7139
			25	289	307	317	310	337	320	365	320	349	391	222	282	25	304	244	253	300	307	270	240	218	239	270	280	314	7048
			26	337	392	462	409	341	333	352	373	369	385	333	264	26	294	303	297	295	279	287	280	260	253	258	273	280	7709
			27	293	294	283	323	354	356	401	430	427	331	316	277	27	271	103	45	273	322	328	293	249	257	271	281	278	7056
			28	282	340	417	439	447	590*	486	522*	421	198	100	154	28	98	172	-48	130	283	317	285	292	277	277	277	283	7039
			29	283	306	303	309	314	308	325	340	362	355	270	104	29	109	157	209	128	87	217	264	292	295	288	288	292	6205
			30	292	319	306	311	299	327	333	325	322	273	172	132	30	184	163	7	231	297	287	277	263	276	277	270	283	6226
			31	292	310	310	330	340	313	330	344	351	327	293	347	31	340	221	167	313	344	320	299	268	264	204	234	306	7167

SCALED BY	LYT
CHECKED BY	JEP, PAF
SIGNS REVIEWED 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.

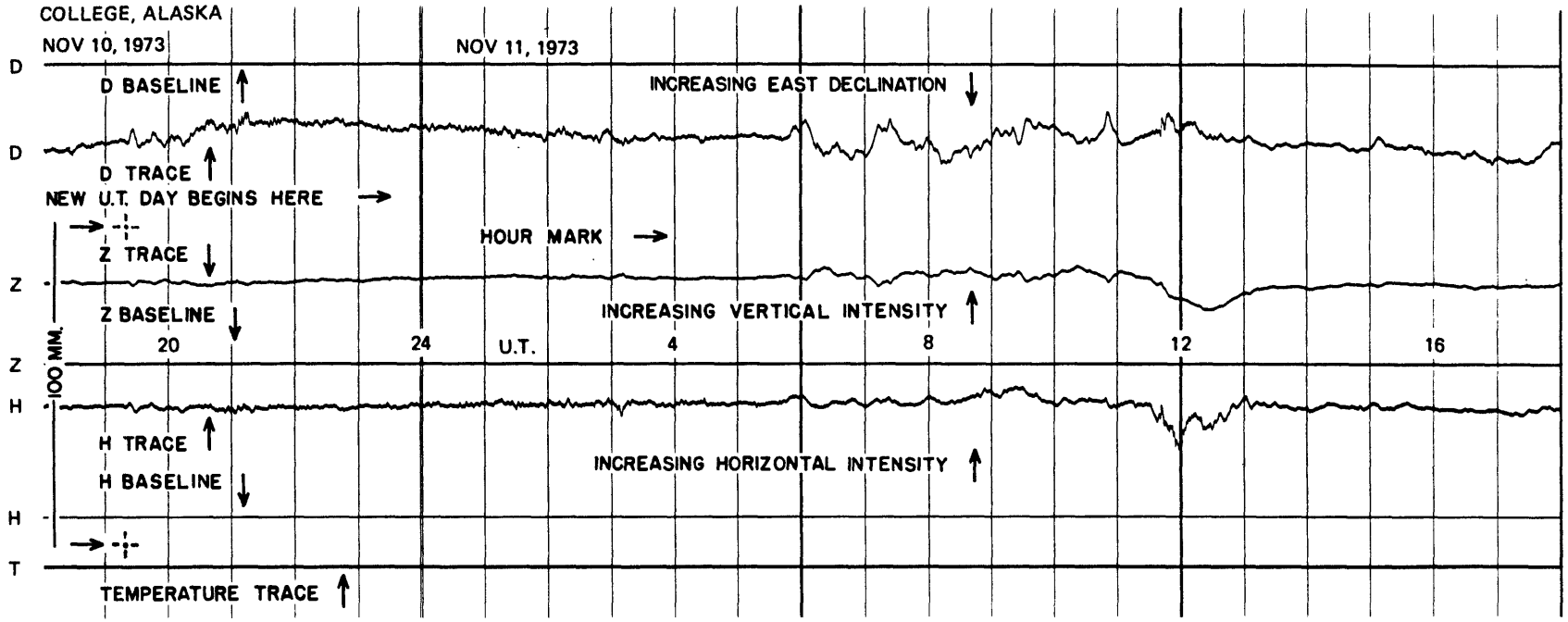
[ ] Scaling uncertain because of magnetic storm.

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

* Derived from STORM Mgph., converted to Normal Mgph.

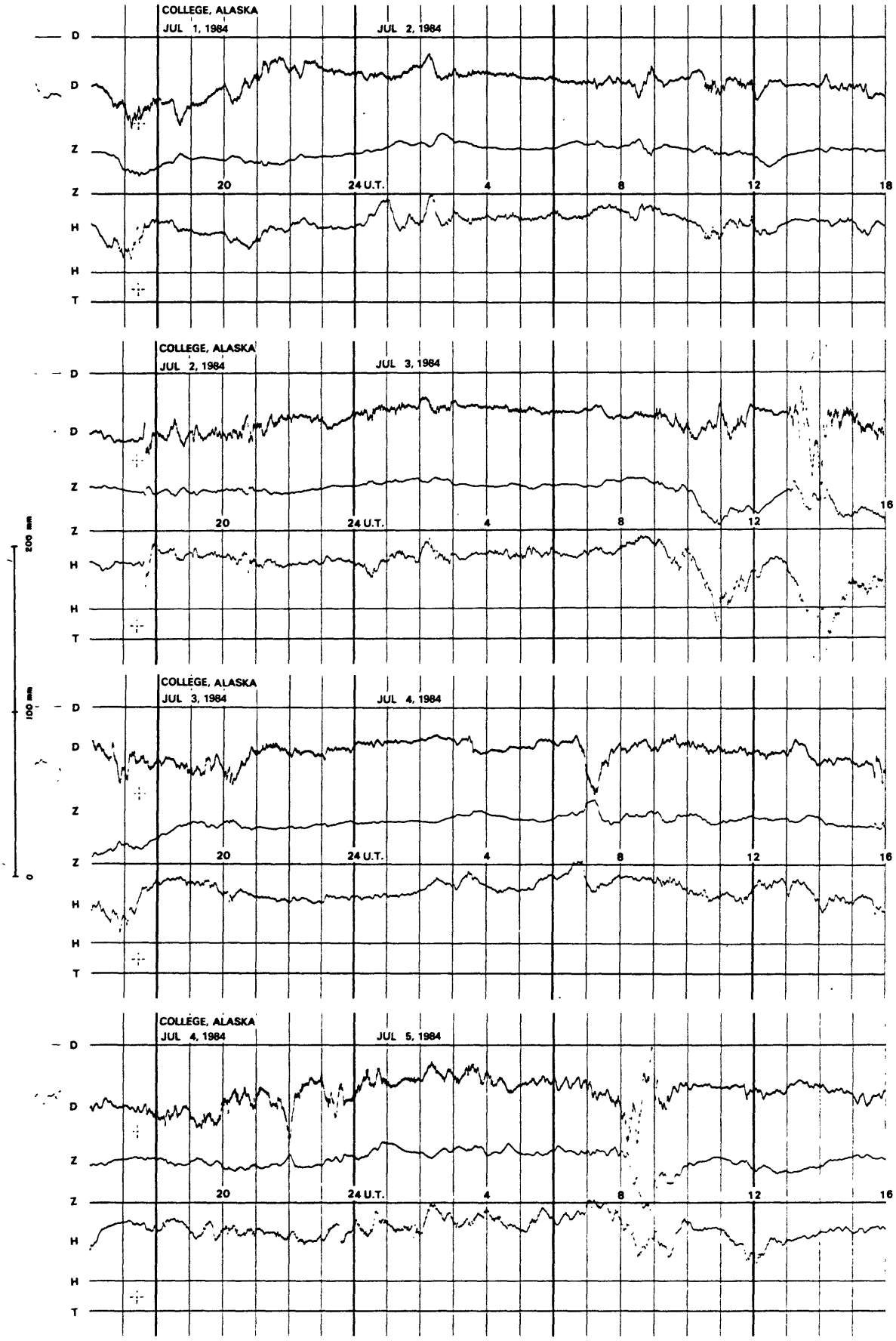
MONTHLY SUM	212804
MONTHLY MEAN	286
DATES WITH GAPS:	

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

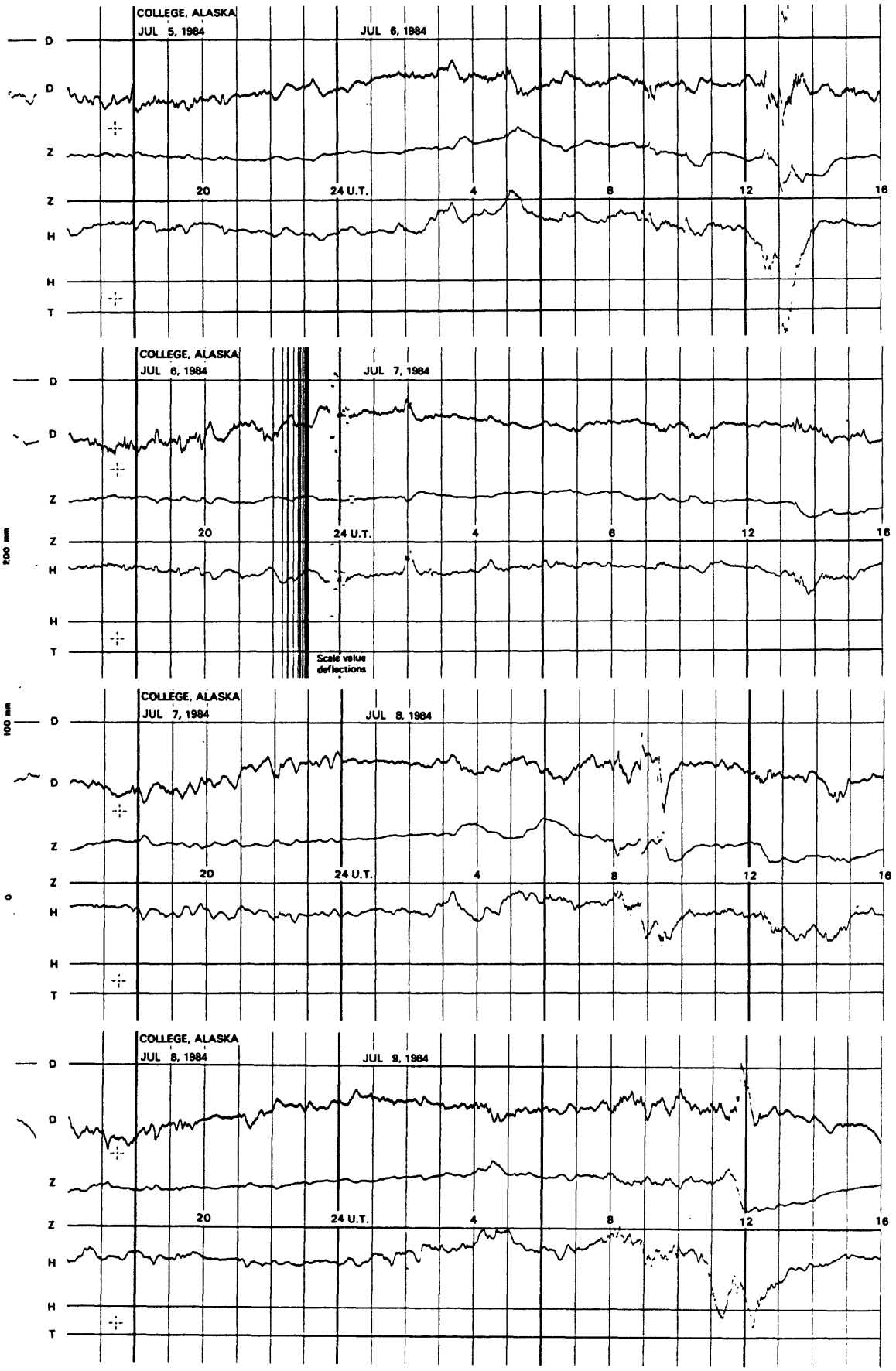


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

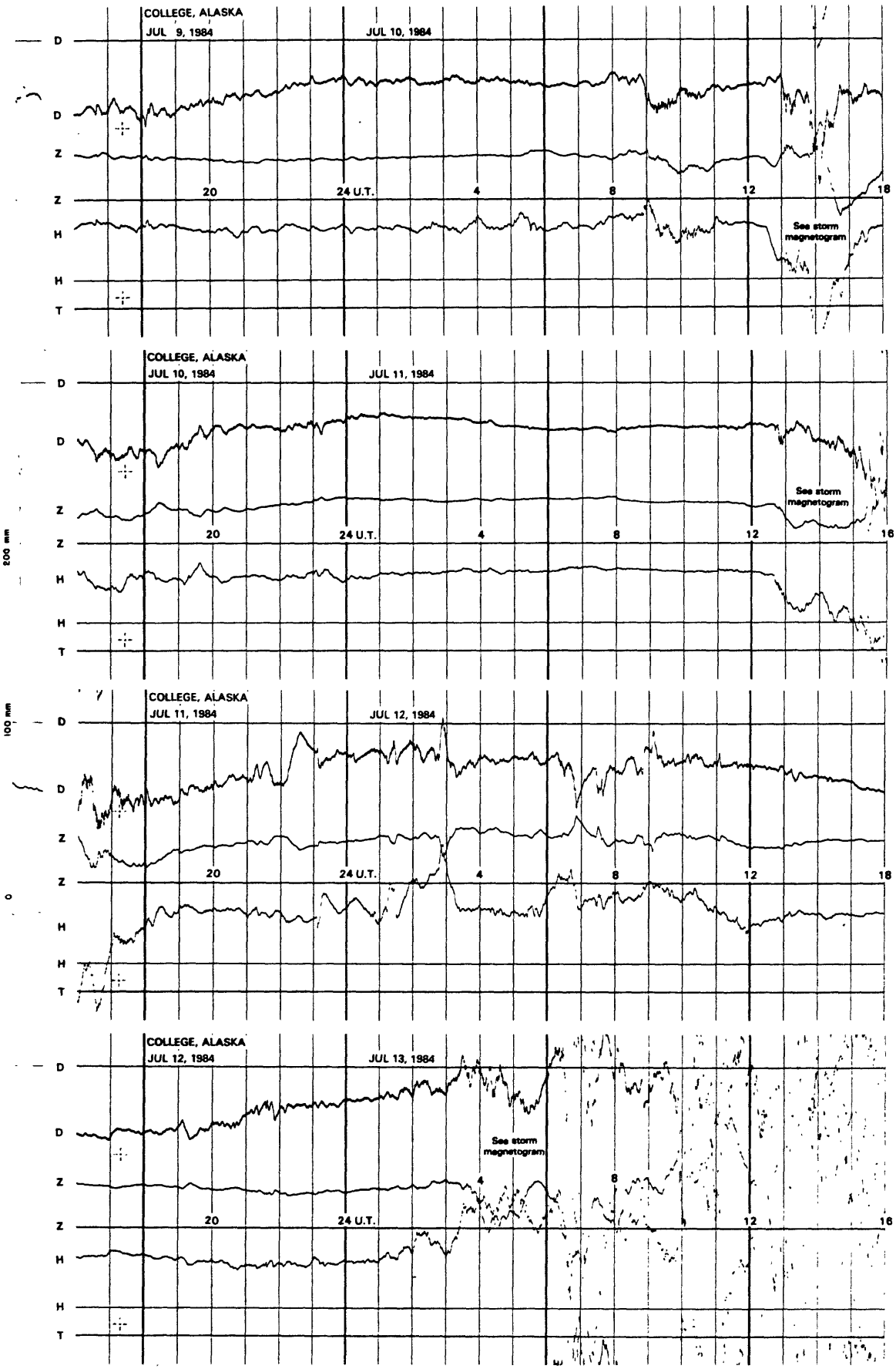
NORMAL MAGNETOGRAMS



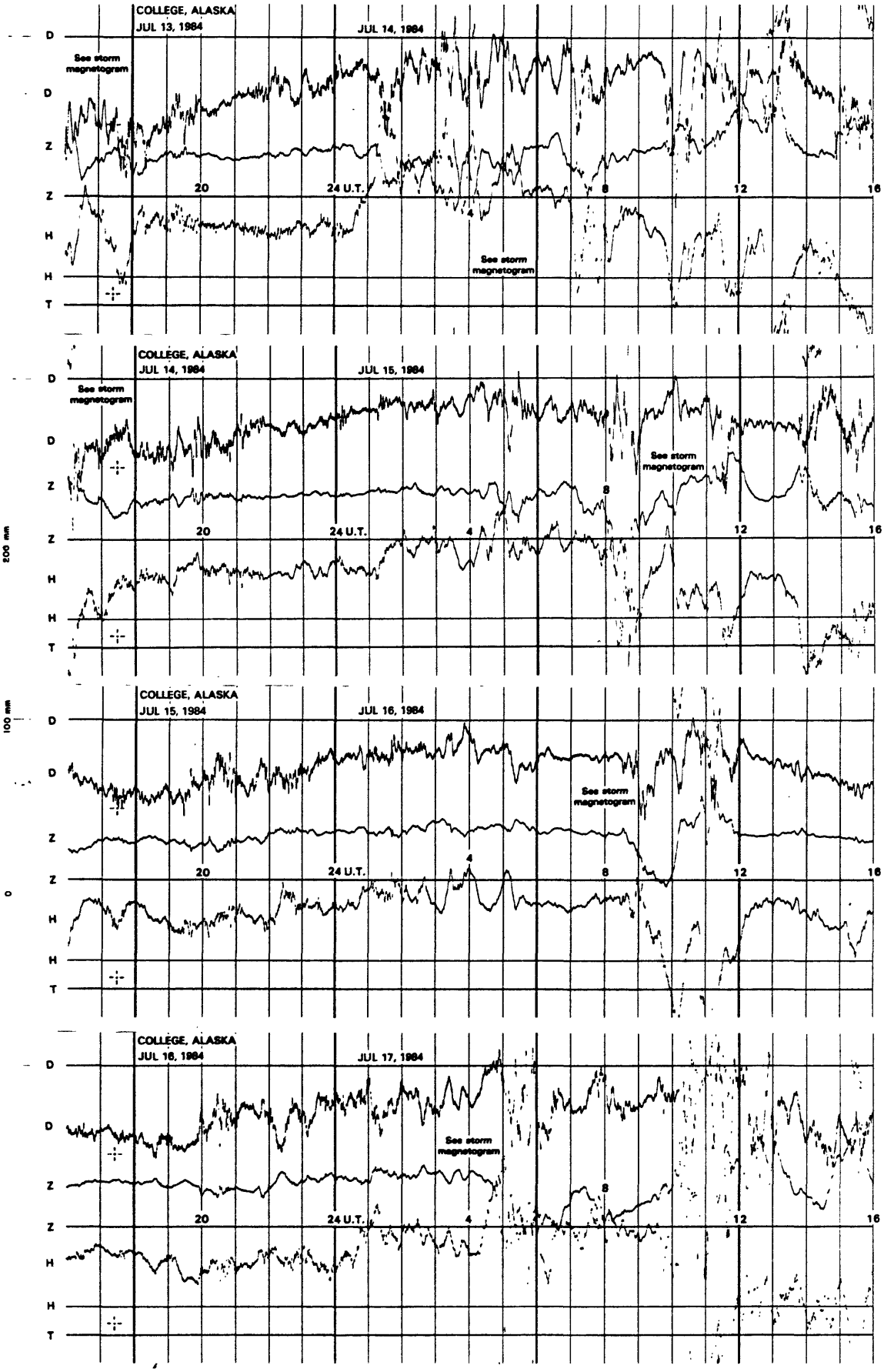
NORMAL MAGNETOGRAMS



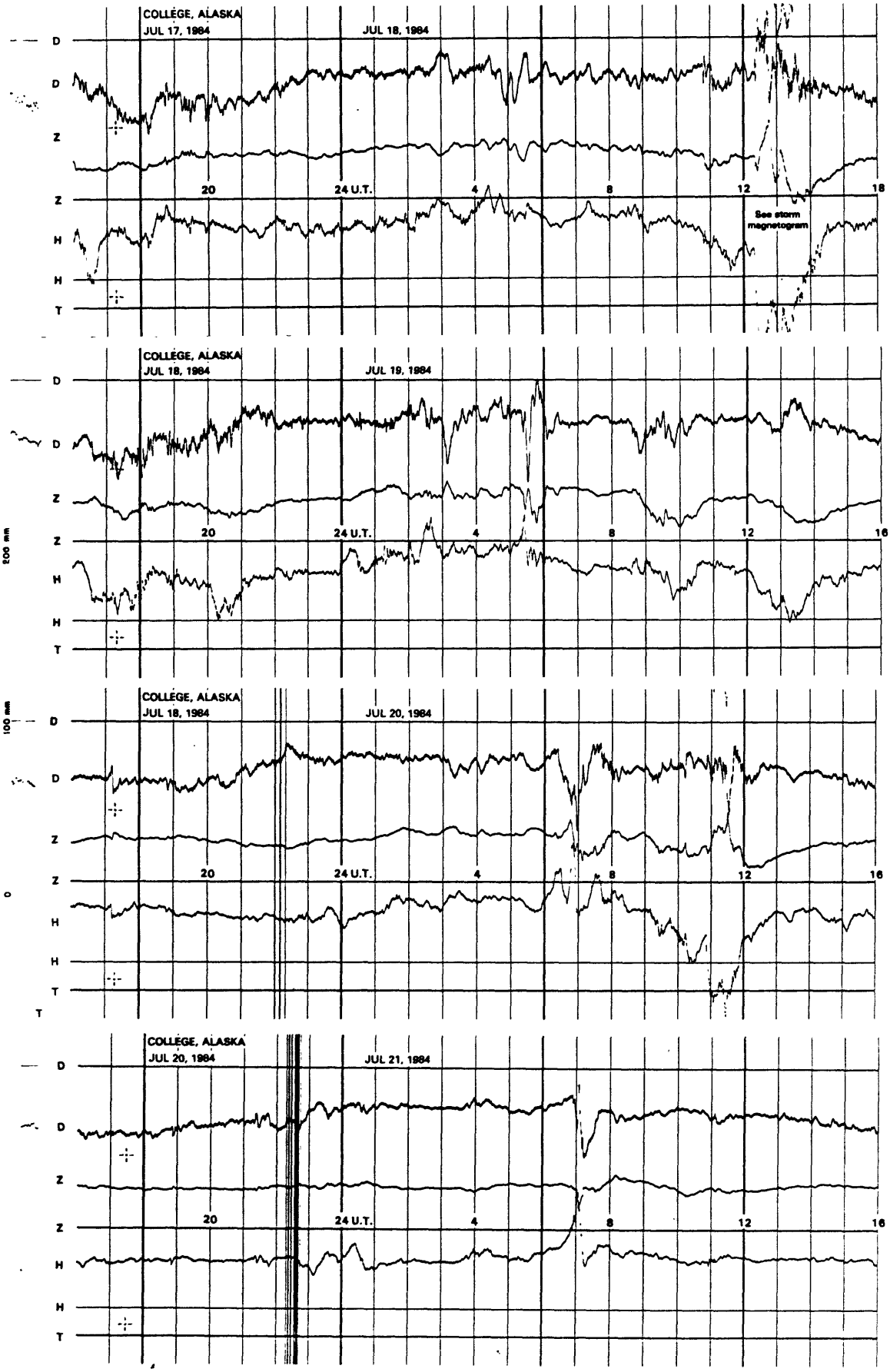
NORMAL MAGNETOGRAMS



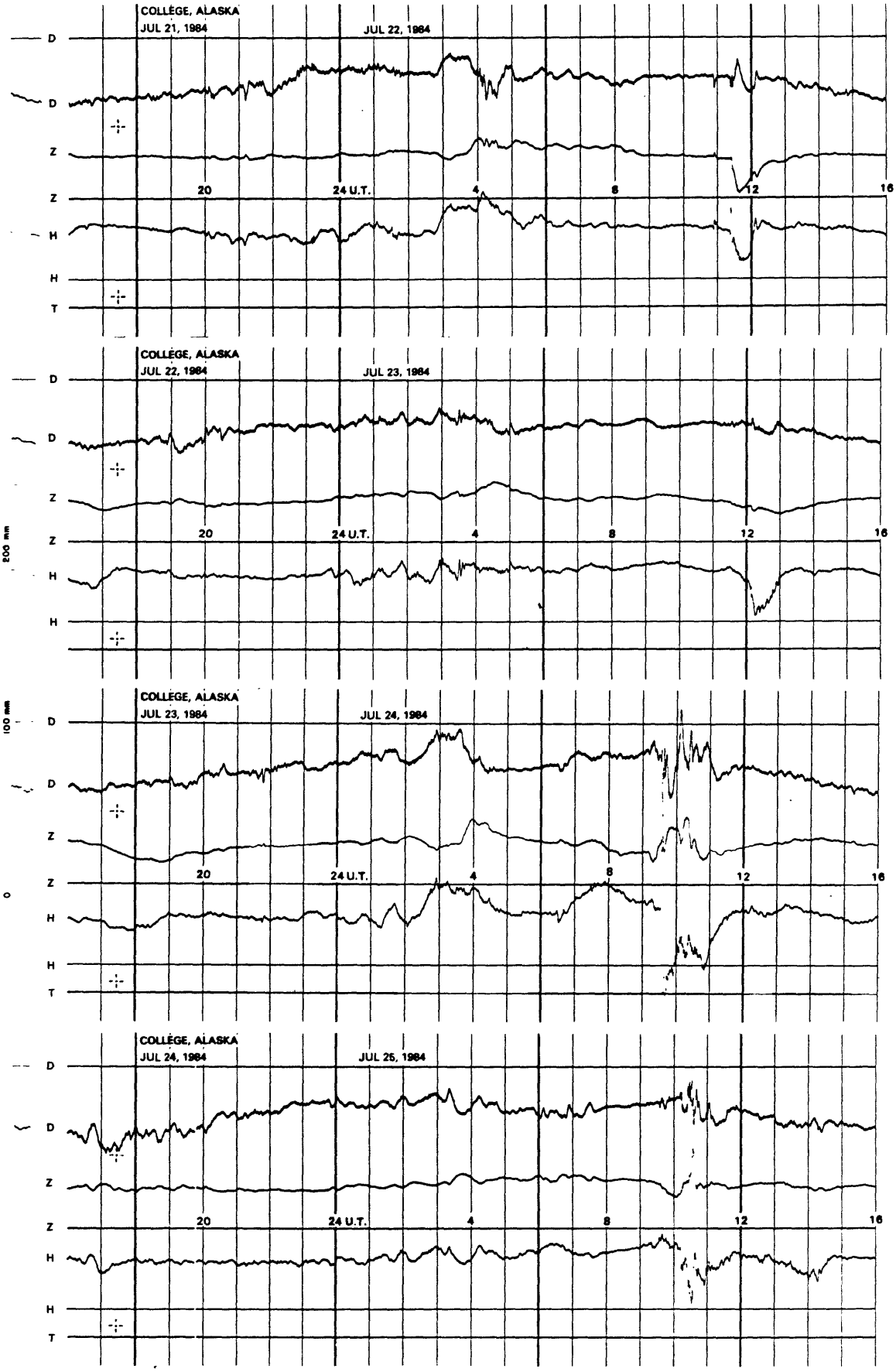
NORMAL MAGNETOGRAMS



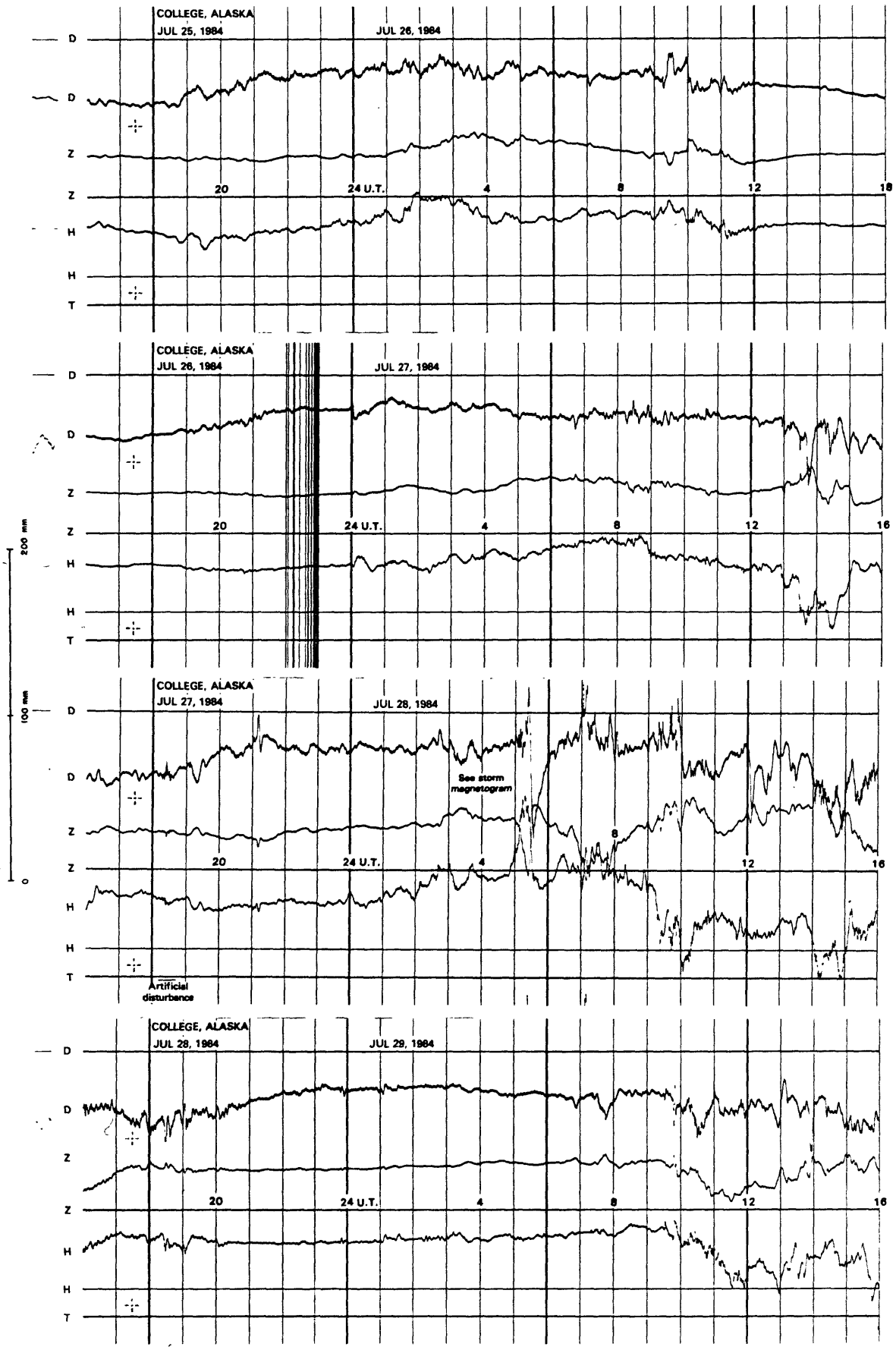
NORMAL MAGNETOGRAMS



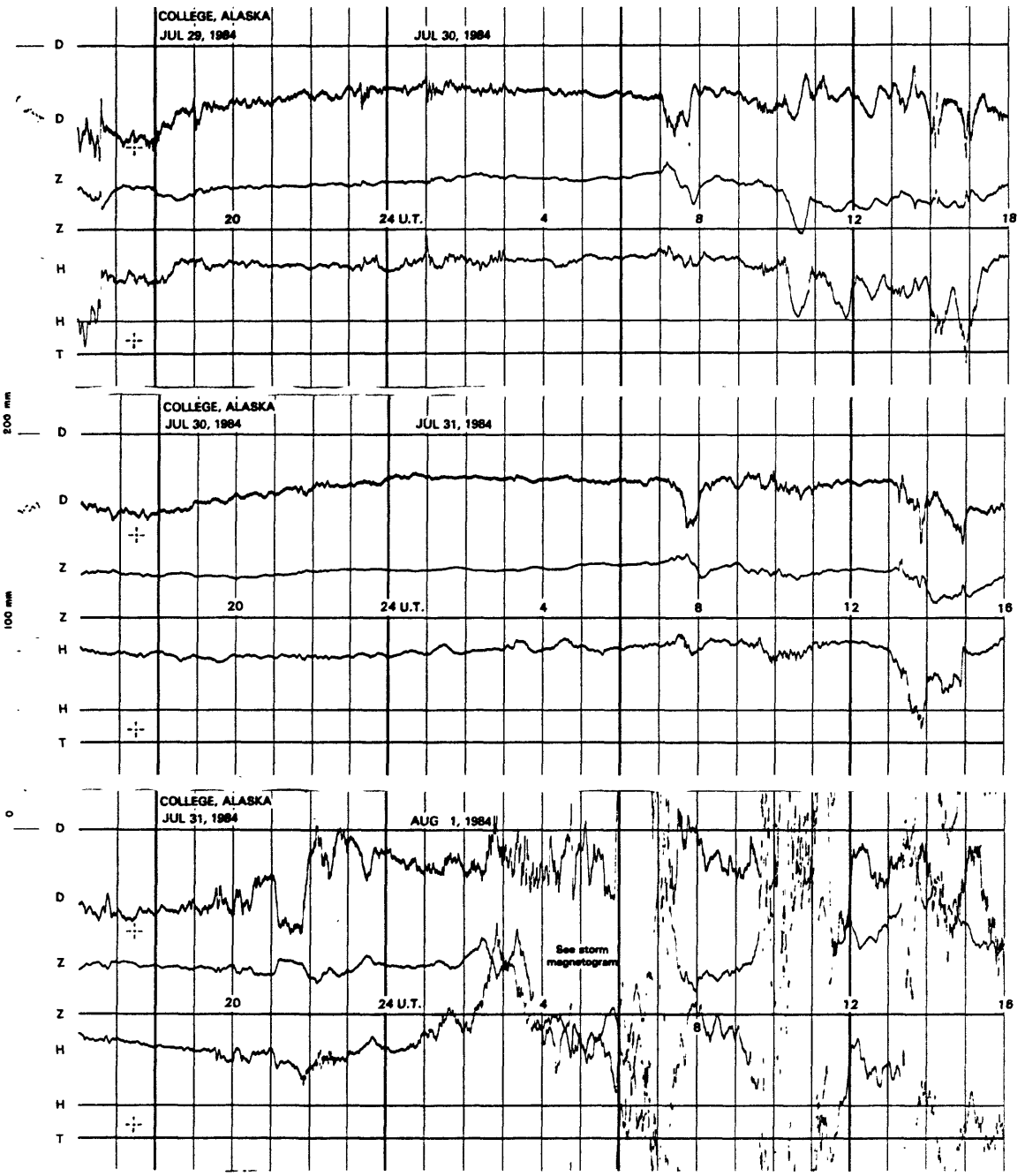
NORMAL MAGNETOGRAMS



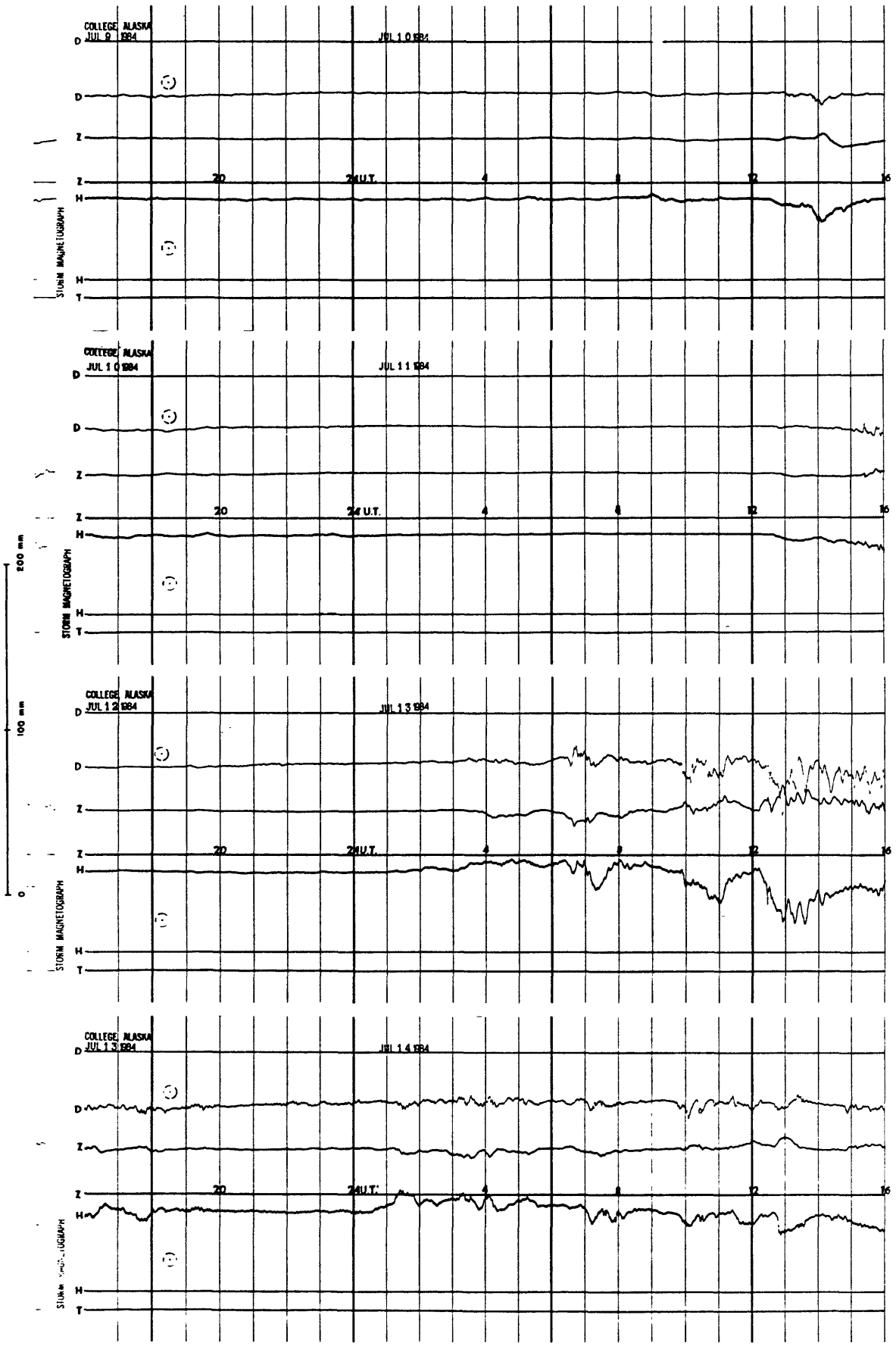
NORMAL MAGNETOGRAMS



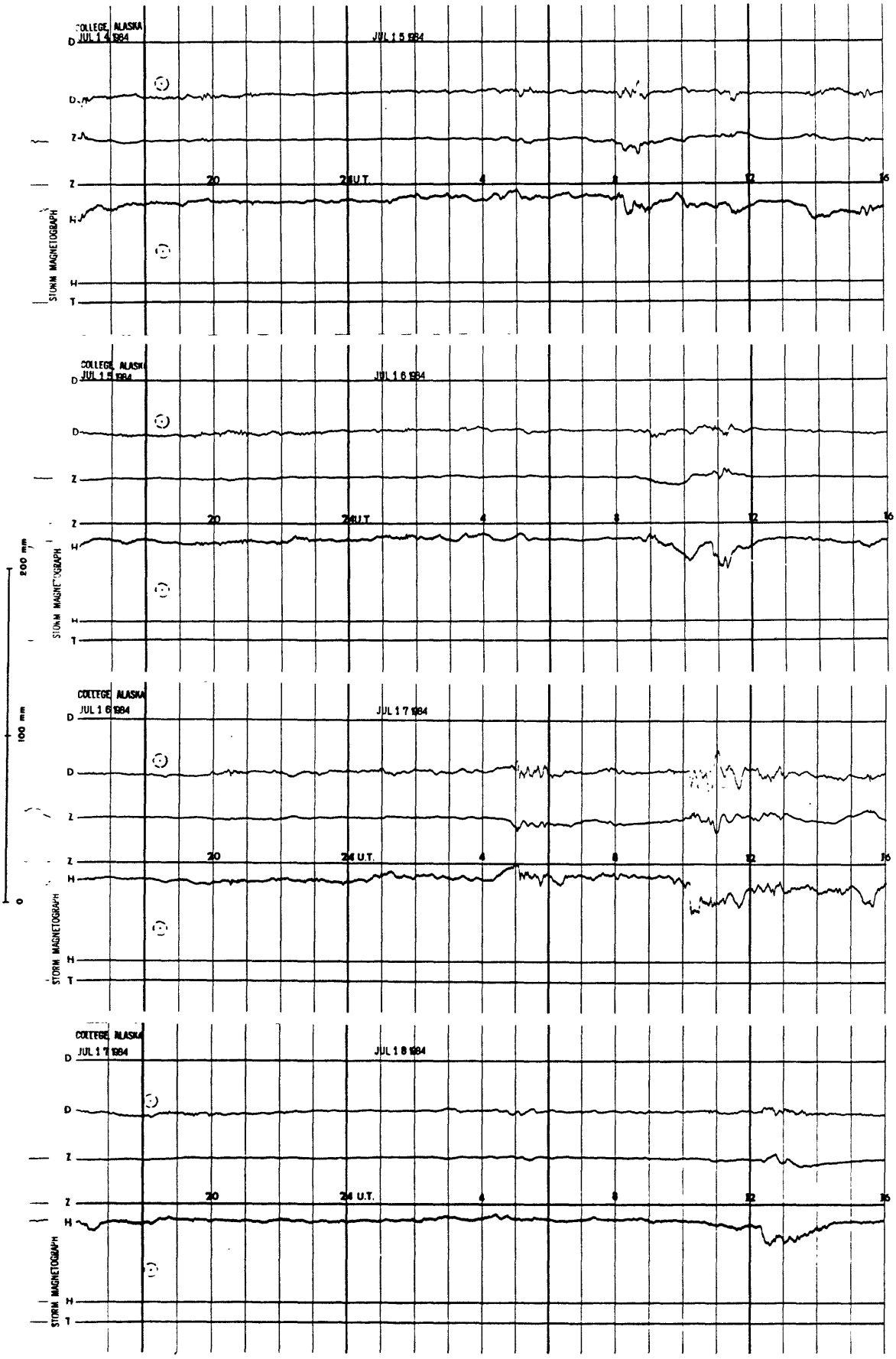
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS