UNITED STATES DEPARTMENT OF THE INTERIOR

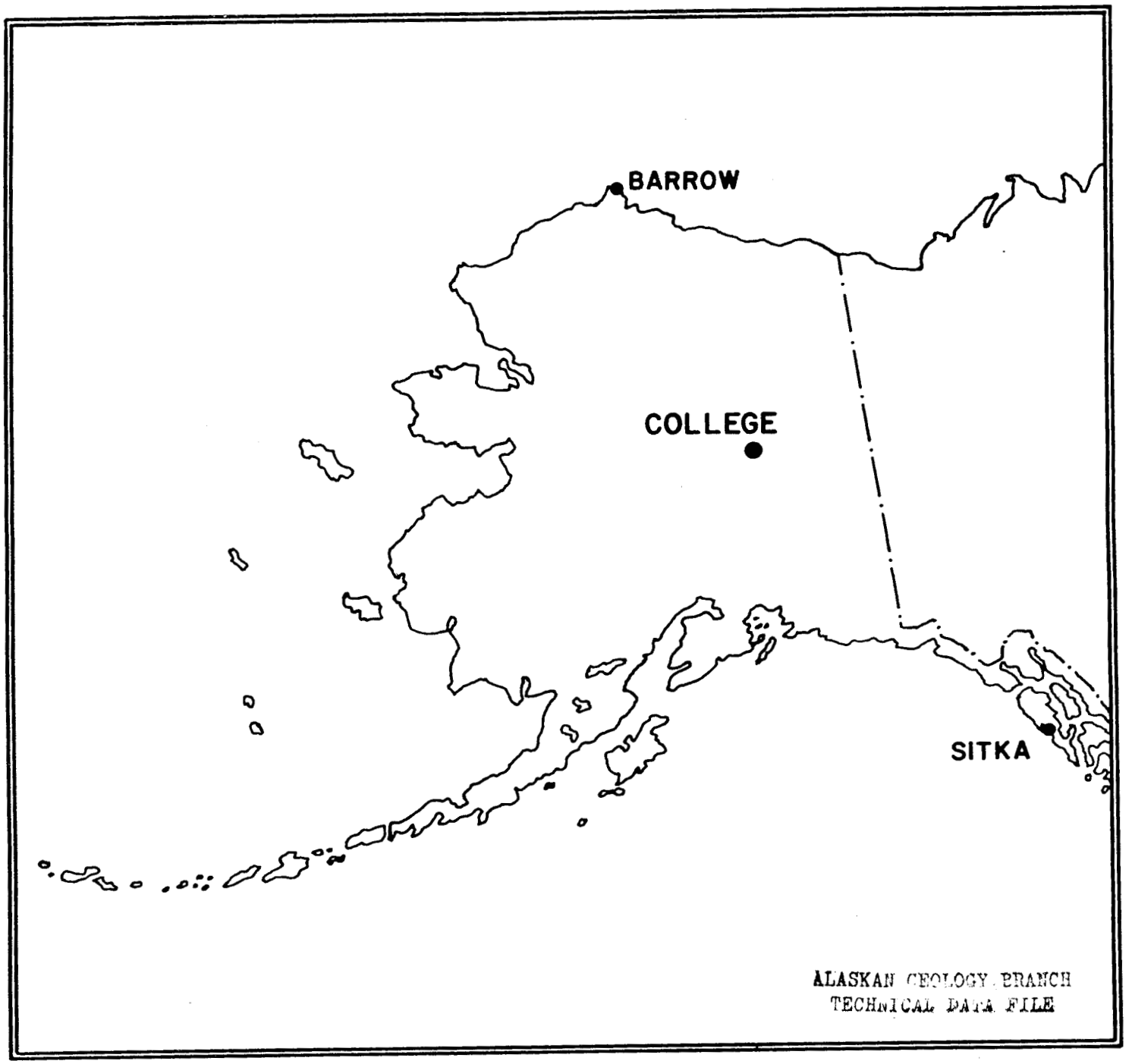
GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

JUNE 1980

OPEN FILE REPORT

80-300F



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THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY WITH THE ASSISTANCE OF OBSERVATORY STAFF MEMBERS J.E. PAPP, E.A. SAUTER, AND S.P. TILTON, 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:

Chief, College Observatory
U.S. Geological Survey
Yukon Drive on West Ridge
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 10 γ 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 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: JUNE 1980

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	3	4	4	6	5	5	3	3	33	34
2	3	3	2	4	1	1	1	1	16	10
3	2	2	2	4	5	2	1	1	19	14
4	1	0	2	1	0	2	1	1	08	03
5	0	0	1	2	0	0	1	1	05	02
6	1	0	1	2	3	2	2	3	14	07
7	4	3	3	3	5	4	3	4	29	24
8	5	4	5	5	5	3	2	1	30	31
9	3	2	2	4	4	3	3	4	25	18
10	4	4	6	6	5	5	5	3	38	47
11	3	3	6	6	7	6	6	4	41	65
12	5	4	6	4	4	4	5	5	37	42
13	4	3	6	4	5	5	5	3	35	39
14	3	1	2	1	4	3	2	2	18	11
15	1	2	1	1	2	1	2	1	11	05
16	2	2	1	2	5	5	2	1	20	16
17	1	1	1	0	0	0	0	0	03	01
18	0	0	0	0	0	1	0	0	01	00
19	1	2	2	2	2	2	3	2	16	08
20	1	1	2	1	1	1	1	1	09	04
21	1	2	1	1	1	3	1	1	11	05
22	2	2	1	1	1	1	2	1	11	05
23	2	2	1	0	3	1	1	0	10	05
24	3	3	3	4	3	3	1	2	22	14
25	3	3	3	1	1	1	1	1	14	08
26	3	2	2	2	4	5	5	2	25	21
27	2	0	1	0	0	0	0	1	04	02
28	2	1	0	0	1	0	0	1	05	02
29	1	1	1	2	2	1	0	2	10	04
30	2	1	1	4	3	3	1	1	16	10
31										

TIME SCALE ON MAGNETOGRAMS: 20mm/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.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.81		(γ/mm)
LOWER LIMIT FOR K = 9	2560	2510		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

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

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

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: JUNE

YEAR: 1980

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
24	0247	ssc*	
26	00XX	pc5	
29	11XX	pi2	With small bay.

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

JUNE 1980

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	09	09XX	..	..	..	..	11	5	7	203	1330	820	14	02

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: JUNE 1980

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 6-1-80	2400 U.T., 6-30-80	1.'0/mm	3.7 γ/mm	27° 47.'2 E
H	0000 U.T., 6-1-80	2400 U.T., 6-18-80	7.8 γ/mm		12765 γ
	0000 U.T., 6-19-80	2400 U.T., 6-30-80	"		12768 γ
Z	0000 U.T., 6-1-80	2400 U.T., 6-30-80	7.3 γ/mm		55164 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 6-1-80	2400 U.T., 6-30-80	7.'8/mm	29.7 γ/mm	23° 48.'6 E
H	0000 U.T., 6-1-80	2400 U.T., 6-30-80	44.0 γ/mm		11530 γ
Z	0000 U.T., 6-1-80	2400 U.T., 6-30-80	48.5 γ/mm		54030 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 06.'7 E	13020 γ	55382 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JUN 4, 5, 15, 17, 18, 20, 21, 27, 28, 29

NOAA FORM 76-106
(3-72)

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

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 (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.

OBSY.	YEAR	MONTH	ELEMENT
CO	80	JUN	D

C	Q or S	Ten Q	Hr. Dy.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Dy.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	100	51	60	78	70	54	53	-42*	-145*	25	83	140*	01	148	181	267*	410*	513*	551	357	292	228	225	172	125	3996
			02	115	137	99	121	201	195	182	179	156	137	137	139	02	161	211	252	304	333	346	330	296	240	192	154	117	4734
			03	99	92	106	123	151	157	159	132	126	64	55	104	03	157	218	301	315	360	375	391	333	265	207	136	92	4518
			04	88	96	125	135	152	152	156	166	172	177	191	206	04	212	230	217	254	306	302	281	267	251	219	157	145	4657
			05	132	119	119	137	157	188	206	204	178	203	173	173	05	172	175	208	258	292	317	302	258	229	198	184	168	4750
			06	170	158	152	171	196	212	211	207	194	170	157	189	06	200	206	248	331	352	407	342	289	262	192	211	164	5391
			07	109	91	66	32	54	138	65	140	151	128	107	244	07	234	163	481	397	398	362	401	305	168	263	234	223	4954
			08	126	194	161	73	145	97	31	181	154	102	132	260	08	195	155	219	259	321	292	301	266	205	148	141	128	4286
			09	96	78	89	131	147	158	162	158	146	225	241	146	09	225	241	299	314	283	291	254	328	250	247	180	224	4913
			10	215	135	68	97	88	97	173	55*	166*	55*	151	174*	10	146	153	231	334	443	311	366	259	324	254	285	109	4689
			11	139	113	108	70	19	93	77	-88*	158*	182*	-14	23	11	126*	166*	435*	641*	538*	396*	383	483*	257	286	282	312	5185
			12	122	93	70	51	91	128	104	91	39*	-33	50	91	12	195	152	192	460*	396*	359	491	393	416	308	393	331	4983
			13	181	64	71	145	70	77	-40*	-72*	31*	2	20	76	13	31*	259	292	307	419*	355	276	201	261	281	182	72	3561
			14	101	82	117	152	172	181	182	171	172	186	166	183	14	177	176	191	224	297	325	309	292	313	163	148	140	4620
			15	117	118	118	130	162	181	202	192	182	171	156	150	15	151	174	204	262	332	333	326	327	287	259	210	155	4899
			16	126	97	82	115	138	172	194	189	168	147	155	154	16	152	241	254	261	365	311	340	298	270	240	147	111	4727
			17	78	93	123	136	179	202	208	199	192	183	186	172	17	166	172	215	266	297	308	302	307	277	246	202	168	4877
			18	149	147	134	135	155	179	187	182	173	171	165	166	18	195	218	249	276	303	300	319	310	272	212	146	117	4860
			19	111	113	115	122	116	123	147	152	176	148	149	163	19	178	220	278	335	370	391	375	224	228	204	192	174	4804
			20	130	125	128	136	148	164	178	190	173	171	177	141	20	176	167	204	285	284	317	299	259	233	221	187	154	4647
			21	109	107	120	159	178	202	191	172	170	174	163	158	21	134	173	199	210	306	382	343	298	265	229	181	171	4794
			22	135	123	134	161	165	173	182	176	166	161	156	158	22	163	179	232	246	317	355	340	318	261	240	198	179	4918
			23	125	100	102	126	166	184	196	190	156	155	152	175	23	143	167	225	301	297	339	318	304	261	191	138	111	4622
			24	115	130	137	120	116	84	98	70	46	19	22	140	24	148	211	313	368	447	378	369	301	276	204	128	85	4325
			25	60	98	127	142	152	176	183	169	166	160	144	138	25	168	154	199	244	285	315	305	301	259	240	200	167	4552
			26	124	42	118	145	154	175	153	197	145	137	150	145	26	124	327	231	361	486	504	498	345	105	101	102	91	4960
			27	83	81	112	138	149	164	173	175	170	172	166	177	27	199	221	253	287	302	306	302	268	232	201	168	135	4634
			28	112	116	130	148	157	154	168	164	169	175	177	191	28	210	227	240	275	278	297	271	242	199	160	126	131	4517
			29	118	111	108	127	135	154	162	182	189	164	168	163	29	222	244	263	282	329	355	323	312	260	224	172	146	4745
			30	124	104	112	123	148	159	159	163	178	185	161	97	30	190	222	238	318	304	320	323	282	205	192	140	89	4536
			31													31													

SCALED BY	PEF, SPT
CHECKED BY	JEP, SPT, EAS
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	140654
MONTHLY MEAN	195
DATES WITH GAPS:	

☆ U.S. G.P.O. 1973-789-571/932 REG.#6

NOAA FORM 76-104
(3-72)

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

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

OBSY.	YEAR	MONTH	ELEMENT
CO	80	JUN	H

Values are in tenths 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 or S	Ten Q	Day	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	439	357	345	360	468	646	554	647	461	344	221	28*	-38	-42	-90	-103	-165	6	260	305	332	353	321	411	6420
			02	469	450	388	372	274	283	313	334	357	303	359	355	328	314	331	322	331	323	299	297	287	284	298	288	7959
			03	302	348	341	329	336	362	405	446	447	351	299	255	56	183	325	359	354	349	296	290	281	278	273	303	7568
			04	318	324	314	328	328	330	333	338	355	386	364	367	366	367	363	332	355	385	366	359	331	310	307	298	8224
			05	301	300	317	319	327	331	333	352	362	356	327	343	348	342	347	361	352	352	369	364	338	325	314	317	8097
			06	317	312	329	322	322	319	335	333	349	362	347	317	331	357	364	342	318	304	334	332	314	324	322	322	7928
			07	293	338	381	526	586	471	501	487	398	362	346	296	126	-23	-110	293	325	358	285	254	319	302	338	415	7867
			08	446	678	603	571	521	408	538	379	365	338	37	-99	38	221	269	306	291	328	289	280	322	318	308	300	8055
			09	318	328	358	303	332	335	330	340	358	380	154	193	59	203	232	291	359	332	353	274	236	265	353	438	7124
			10	545	364	287	302	369	558	495	356*	40*	139	97	-203*	23	323	150	-47	-27	163	68*	305	355	355	345	317	5679
			11	404	473	475	389	492	534	538	531*	-50*	-146*	136	202	175	86	-350*	-367*	-332*	-153*	18	-45*	329	389	448	568	4744
			12	479	737	530	552	527	349	425	477	41	226	249	239	33	135	198	-135*	-186*	-9	24	-7	136	351	470	707	6548
			13	418	334	555	506	489	514	255	444	105	189	212	175	44	145	35	-79	-169*	-71	-34	218	317	306	310	349	5567
			14	307	323	284	295	290	297	310	333	337	352	353	338	336	322	141	255	250	301	352	313	283	268	296	292	7228
			15	288	290	302	354	318	374	347	332	346	344	338	340	337	328	305	312	340	347	331	338	308	292	290	277	7778
			16	288	294	333	335	334	330	354	346	332	342	337	327	252	90	-100	-146*	34	243	356	368	333	307	278	291	6258
			17	290	308	318	351	347	350	363	350	334	342	337	331	342	342	340	342	343	347	342	341	336	313	289	273	7971
			18	279	288	295	308	319	330	343	345	345	347	343	337	330	330	332	339	348	332	317	291	282	272	273	267	7592
			19	271	282	311	332	366	399	402	418	422	380	356	334	332	291	291	322	292	284	279	310	320	325	290	287	7896
			20	267	288	308	322	335	345	374	358	347	368	372	353	346	352	338	386	388	367	370	343	333	315	296	281	8152
			21	279	302	307	310	327	345	364	359	362	351	352	334	322	334	346	300	231	251	328	327	303	291	284	302	7611
			22	326	321	322	324	324	350	353	358	356	346	343	342	349	342	334	316	339	334	330	307	289	304	289	311	7909
			23	331	266	321	325	327	376	367	341	346	345	349	345	332	272	254	343	352	337	298	285	286	292	299	299	7688
			24	308	318	350	412	376	436	401	467	511	443	221	254	258	251	221	187	124	237	291	296	271	284	308	297	7522
			25	301	312	315	376	406	494	426	360	341	327	333	343	337	363	367	367	355	342	326	328	319	305	297	306	8346
			26	301	363	308	266	295	303	349	315	327	357	374	345	270	100	66	38	-66	-46*	-49	114	229	291	336	288	5474
			27	271	322	314	303	309	307	310	311	319	318	318	318	318	312	308	310	313	308	293	282	277	275	284	298	7298
			28	296	328	348	332	312	325	319	322	317	316	323	328	325	327	308	308	318	307	308	297	290	282	274	302	7512
			29	298	303	308	309	323	328	335	335	318	330	336	294	325	333	318	299	287	306	297	284	272	269	301	343	7451
			30	360	320	298	315	314	318	344	352	344	352	350	293	141	199	213	182	273	307	302	283	256	261	282	311	6970
			31																									

MONTHLY SUM	218436
MONTHLY MEAN	303
DATES WITH GAPS:	

SCALED BY	PEF, SPT
CHECKED BY	JEP, SPT, EAS
SIGNS RE-VIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[ ] Significant portion of hour interpolated.

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☆ U.S. G.P.O. 1973-760-571/937

NOAA FORM 76-106
(3-72)

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

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 (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.

OBSY.	YEAR	MONTH	ELEMENT
CO	80	JUN	Z

C	Q or S	Ten Q	Hr Day	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	391	338	318	333	362	342	365	245	134	266	394	509	01	464	500	450	398	326	124	127	219	260	315	340	331	7851
			02	337	327	338	359	370	336	308	310	304	292	329	317	02	300	303	316	315	309	312	307	295	288	282	283	289	7526
			03	296	313	328	323	325	321	349	352	329	278	285	351	03	367	258	273	296	321	293	283	263	261	262	262	269	7258
			04	292	297	300	292	297	292	291	296	289	300	304	302	04	302	301	299	301	278	295	307	292	286	282	280	290	7065
			05	297	301	306	308	308	311	310	305	299	274	256	283	05	301	307	316	323	316	304	298	296	297	288	296	300	7200
			06	304	303	299	307	309	311	307	309	304	317	318	304	06	287	305	332	322	291	279	241	244	257	256	267	257	7030
			07	279	274	266	340	400	408	329	315	347	312	302	260	07	297	265	169	134	259	252	266	243	237	295	341	429	7019
			08	381	399	335	329	330	349	312	238	285	300	324	71	08	235	265	270	281	267	278	299	276	268	269	282	289	6932
			09	292	296	319	334	323	316	299	299	298	235	144	236	09	231	185	218	226	286	298	276	295	278	300	348	404	6736
			10	387	383	350	337	327	321	267	212	207	272	472	562*	10	389	268	245	344	312	185	200	258	260	263	315	310	7446
			11	319	342	338	318	316	346	349	309*	489*	429*	312	490	11	629*	709*	755*	683*	463*	203	138	162*	191	305	330	328	9253
			12	342	291	325	333	322	377	387	291	238	322	395	494	12	362	266	277	342*	269*	183	212	172	233	316	318	284	7351
			13	312	339	328	350	364	324	178	304	395	366	318	365	13	438	235	241	386	162	-47	46	88	262	313	302	277	6646
			14	310	305	309	319	317	313	308	301	298	312	307	312	14	308	309	303	287	292	289	292	308	307	278	288	291	7263
			15	299	302	308	329	347	355	362	341	324	317	308	307	15	308	317	307	298	305	302	298	286	283	288	281	273	7445
			16	286	298	307	327	330	335	336	331	323	301	292	273	16	238	204	187	174	318	273	293	280	284	306	311	318	6725
			17	322	337	332	351	377	364	345	331	322	317	308	300	17	307	317	319	319	317	318	308	289	282	291	292	291	7656
			18	285	289	297	303	312	318	309	302	296	292	292	293	18	302	302	305	305	300	297	288	278	266	267	268	275	7041
			19	281	286	283	292	307	337	357	343	360	342	322	301	19	298	298	268	268	248	228	213	202	232	260	276	285	6887
			20	306	297	288	292	302	312	321	332	308	313	308	297	20	298	298	308	318	318	306	298	292	282	288	288	291	7261
			21	292	308	318	312	300	316	318	312	320	297	287	279	21	258	274	296	298	245	235	228	263	278	276	278	288	6878
			22	308	328	341	360	341	323	320	315	310	293	290	298	22	299	300	292	283	303	315	301	300	285	281	281	292	7359
			23	314	332	320	313	319	328	331	328	305	305	302	297	23	281	268	251	302	318	328	300	288	273	278	285	273	7239
			24	275	277	274	292	321	313	374	337	298	255	332	312	24	324	326	327	317	263	163	199	240	270	274	286	308	6957
			25	350	381	381	364	371	386	386	339	331	308	292	291	25	295	298	312	320	328	328	307	291	291	272	280	298	7800
			26	324	352	379	335	300	301	296	320	287	291	292	278	26	233	185	142	88	39	-101	72	121	185	285	259	282	5545
			27	294	309	332	326	313	309	307	303	300	302	300	302	27	302	303	304	298	298	303	303	292	289	290	294	301	7274
			28	306	313	331	318	303	298	308	301	301	299	298	301	28	302	300	290	279	279	287	293	298	294	298	300	302	7199
			29	308	301	294	295	290	294	298	311	312	297	296	267	29	269	292	288	267	250	255	252	266	270	282	291	304	6849
			30	323	352	335	298	302	297	297	298	305	298	288	235	30	114	120	197	171	215	263	257	265	267	279	291	312	6379
			31													31													

SCALED BY	PEF, SPT
CHECKED BY	JEP, SPT, EAS
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.

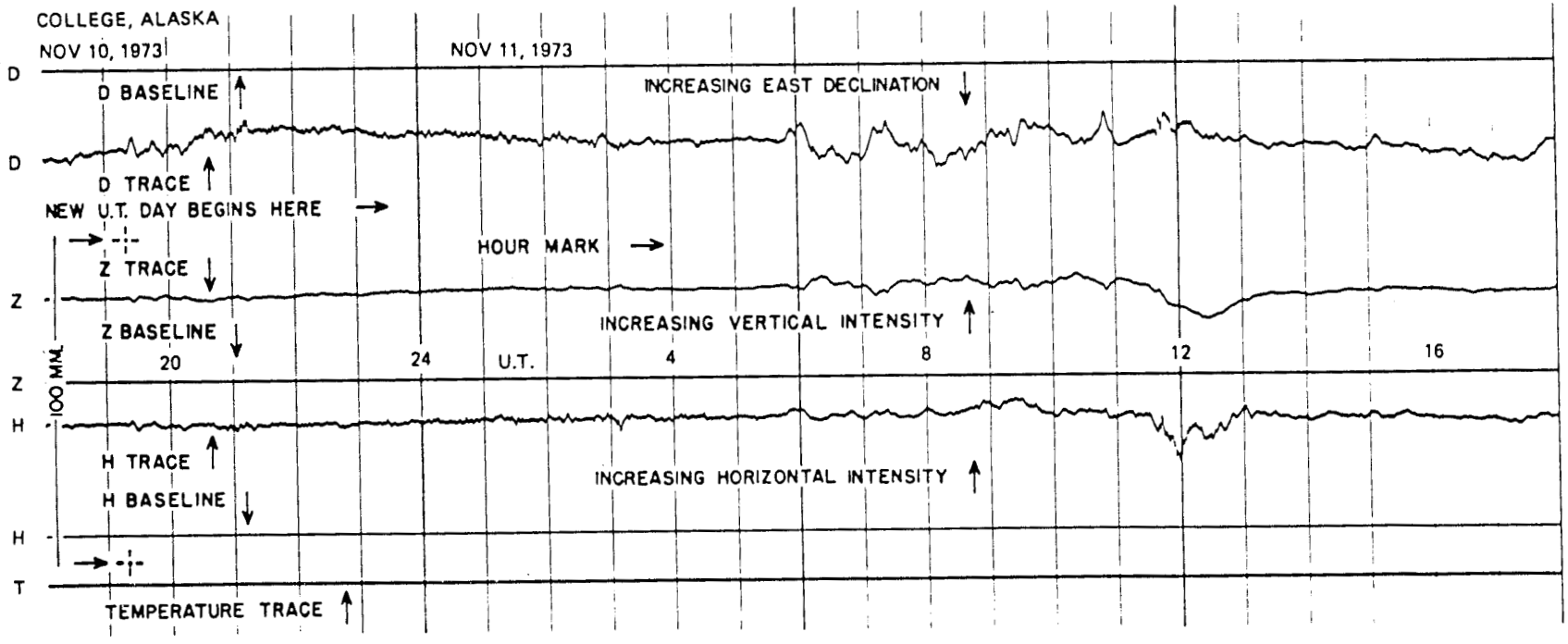
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

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

MONTHLY SUM	215070
MONTHLY MEAN	299
DATES WITH GAPS:	

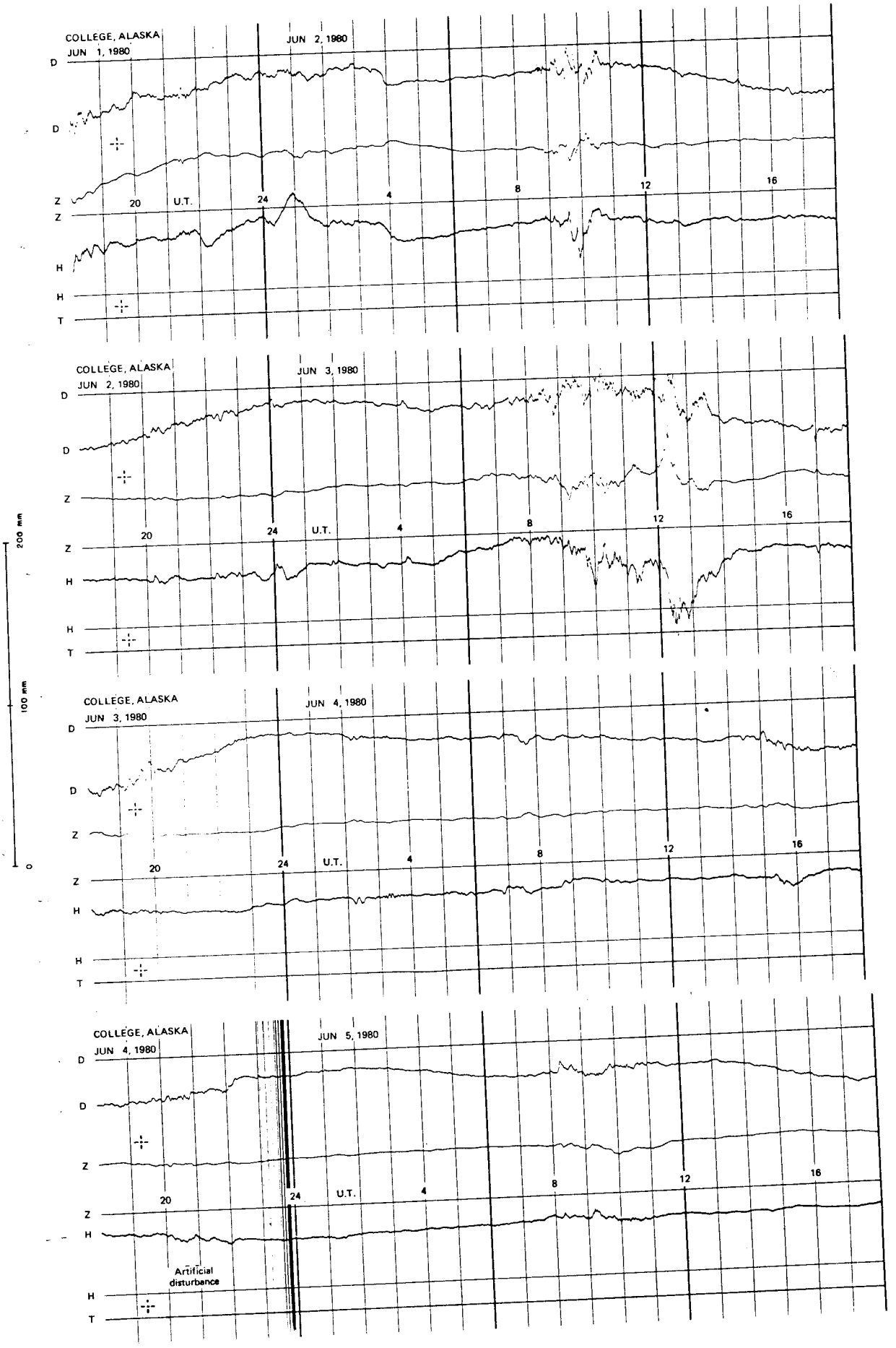
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

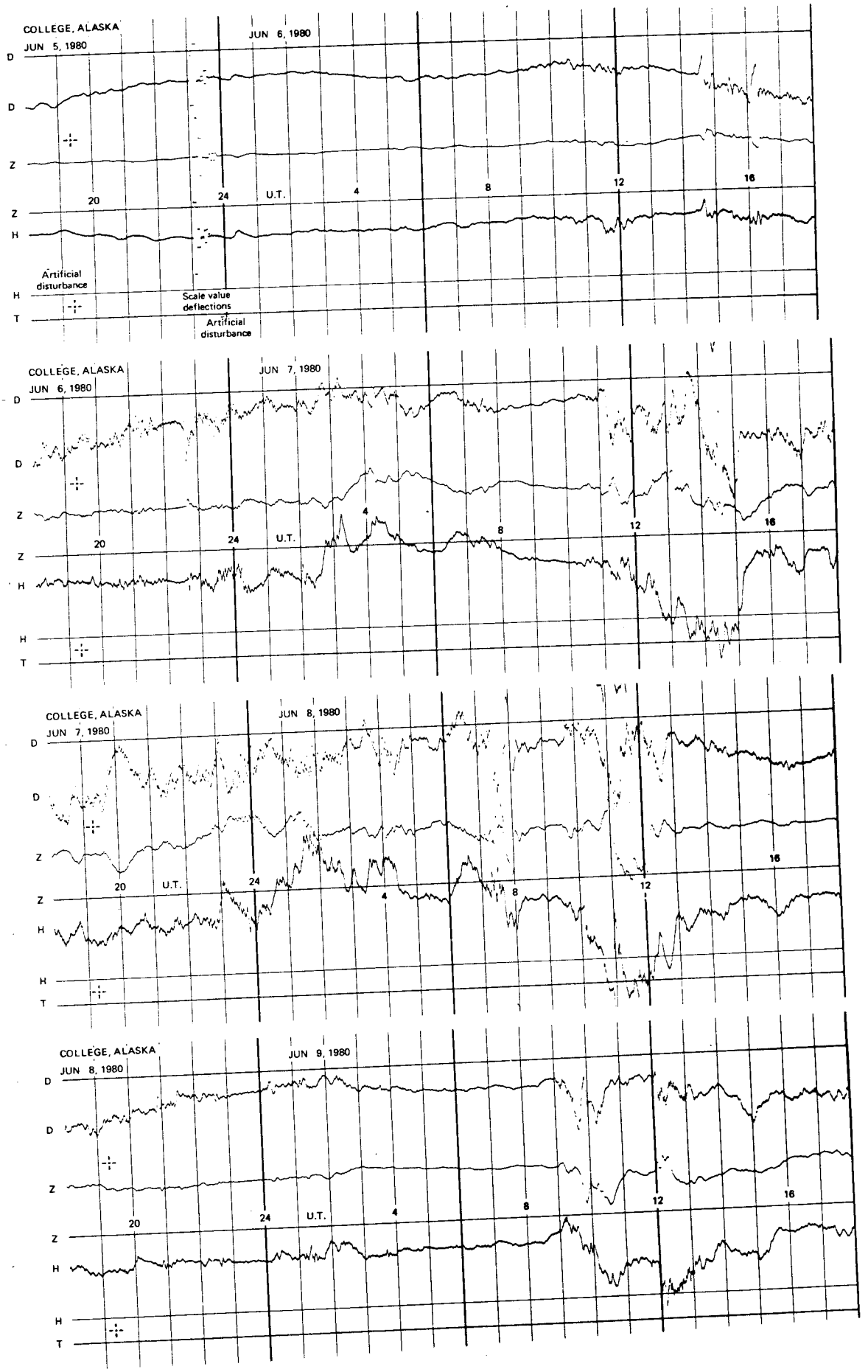


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

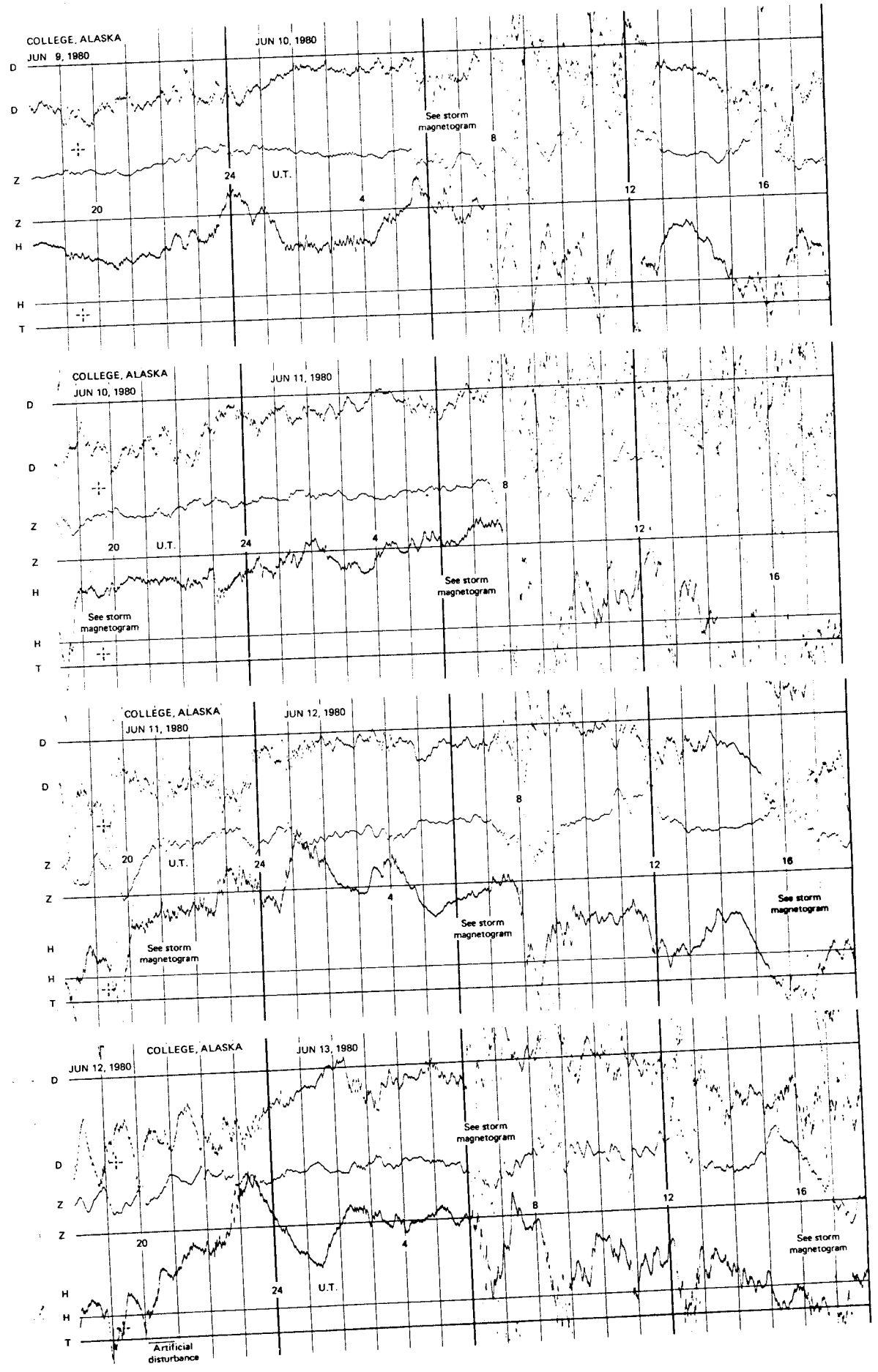
NORMAL MAGNETOGRAMS



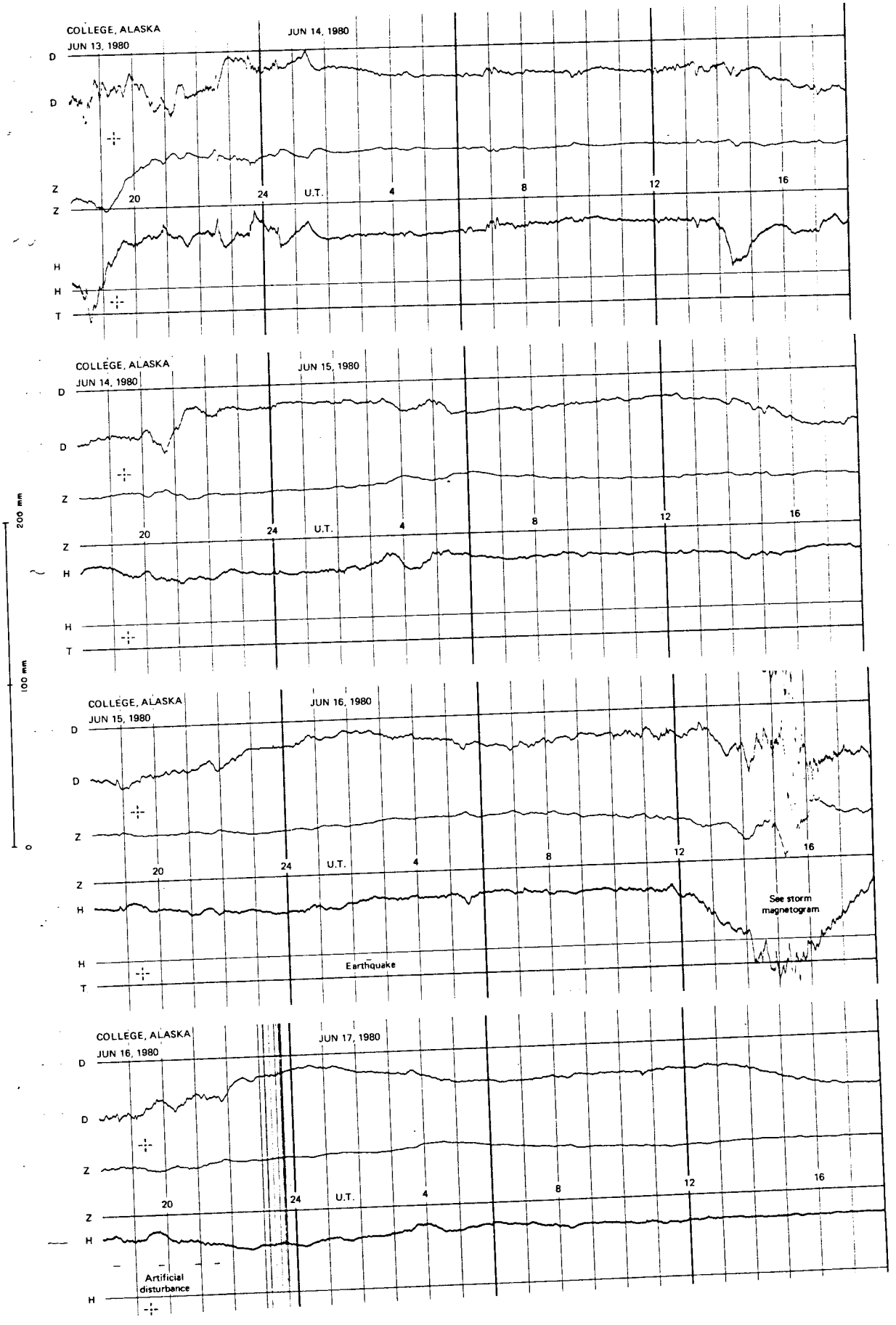
NORMAL MAGNETOGRAMS



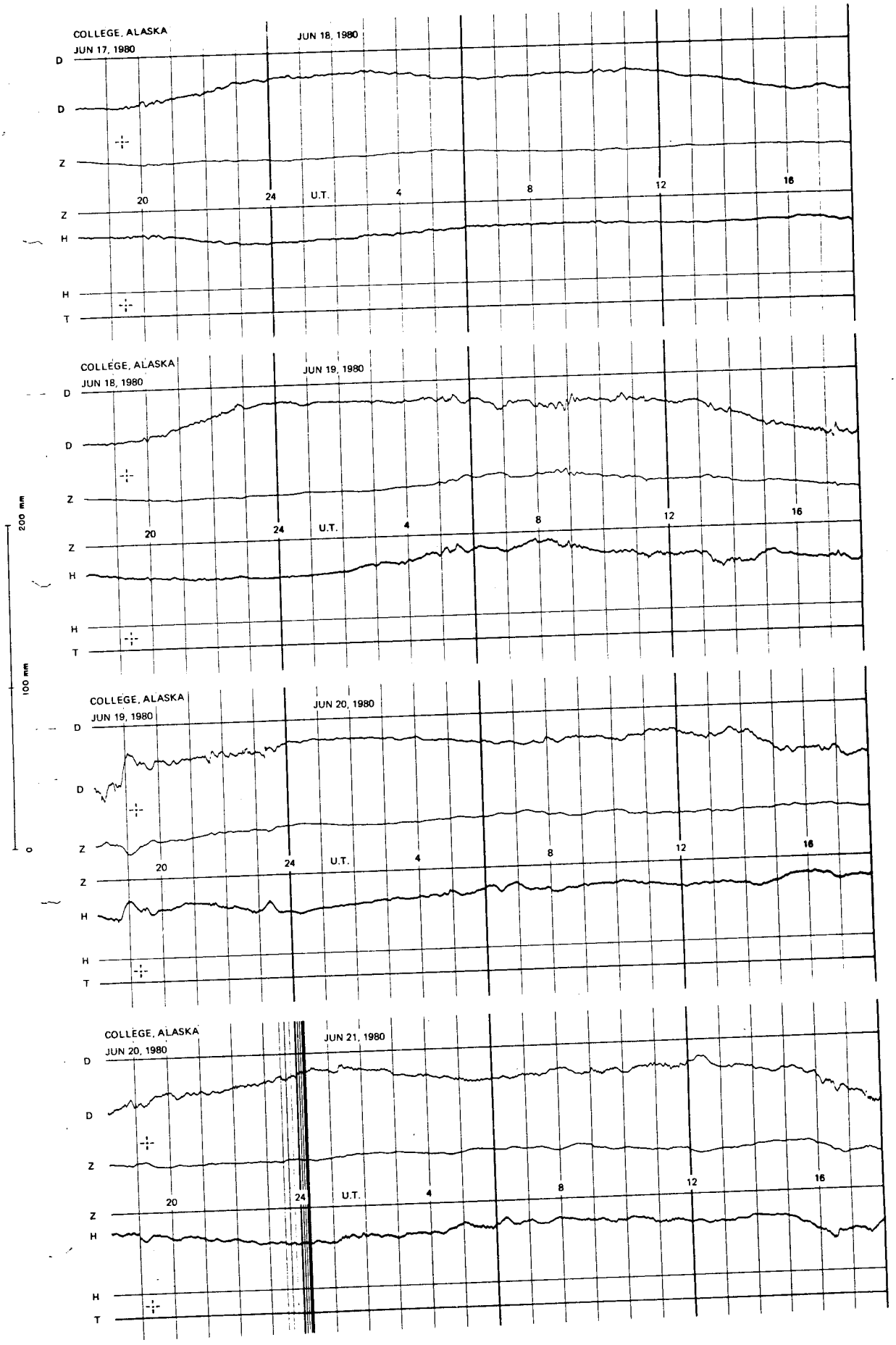
NORMAL MAGNETOGRAMS



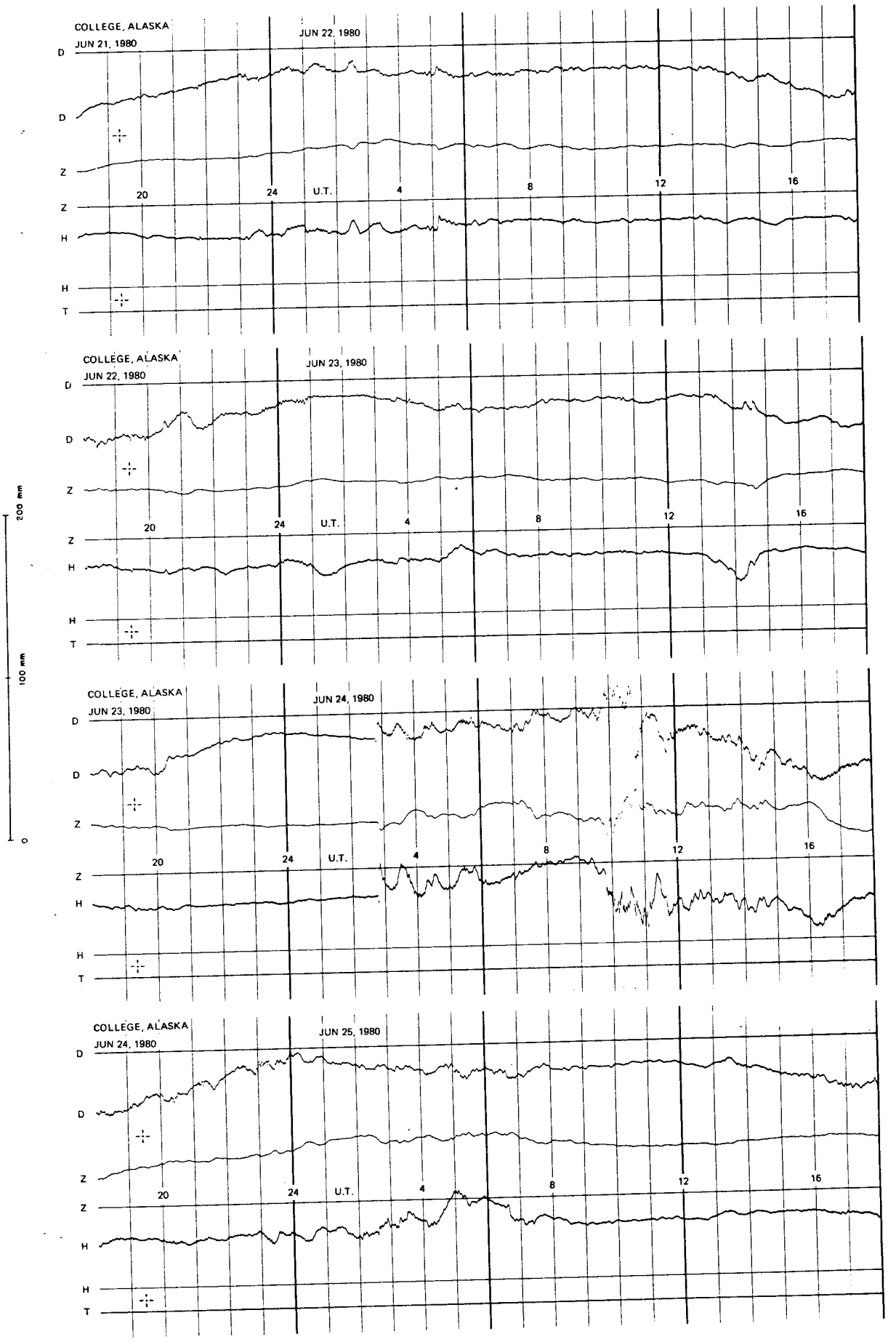
NORMAL MAGNETOGRAMS



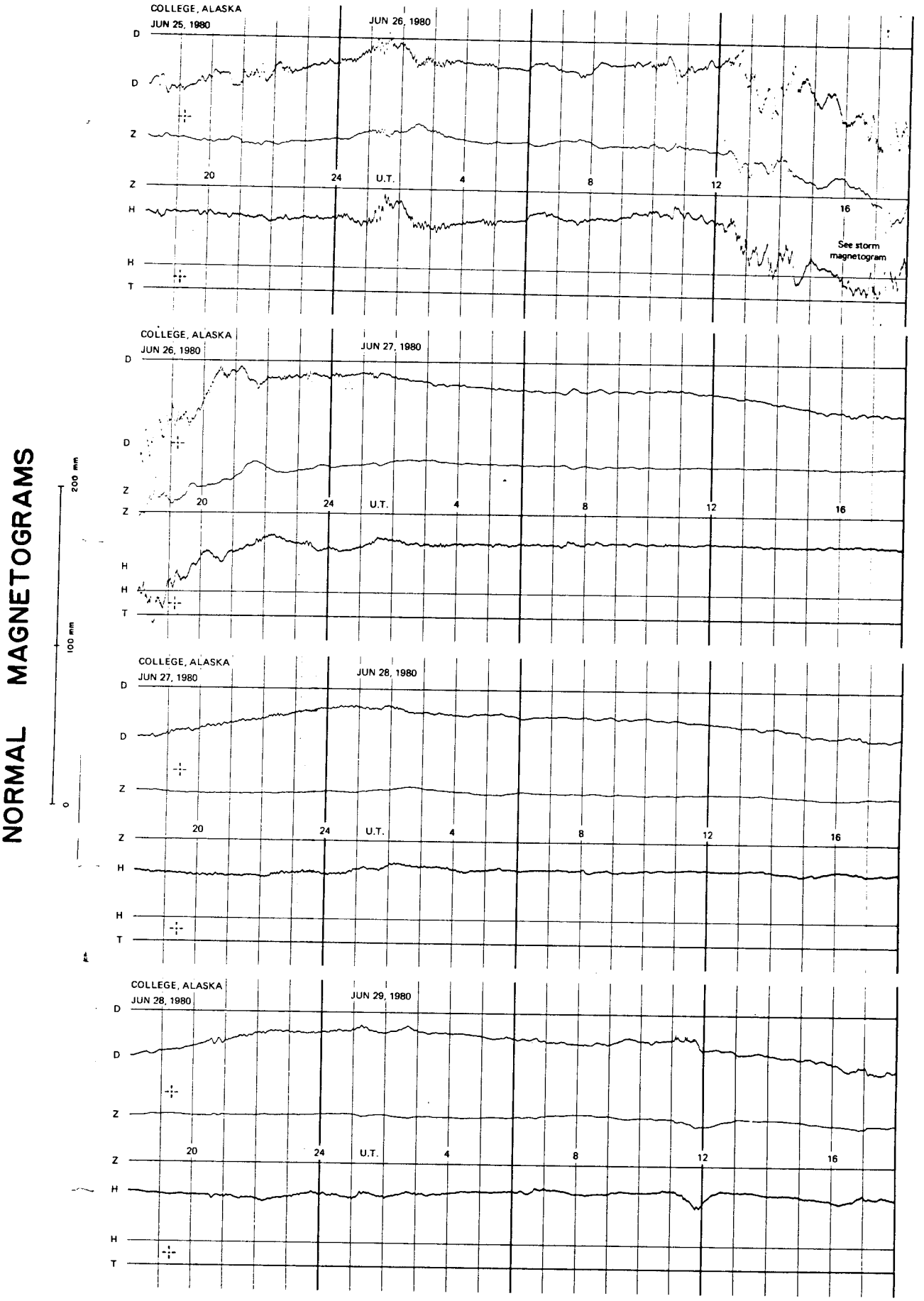
NORMAL MAGNETOGRAMS



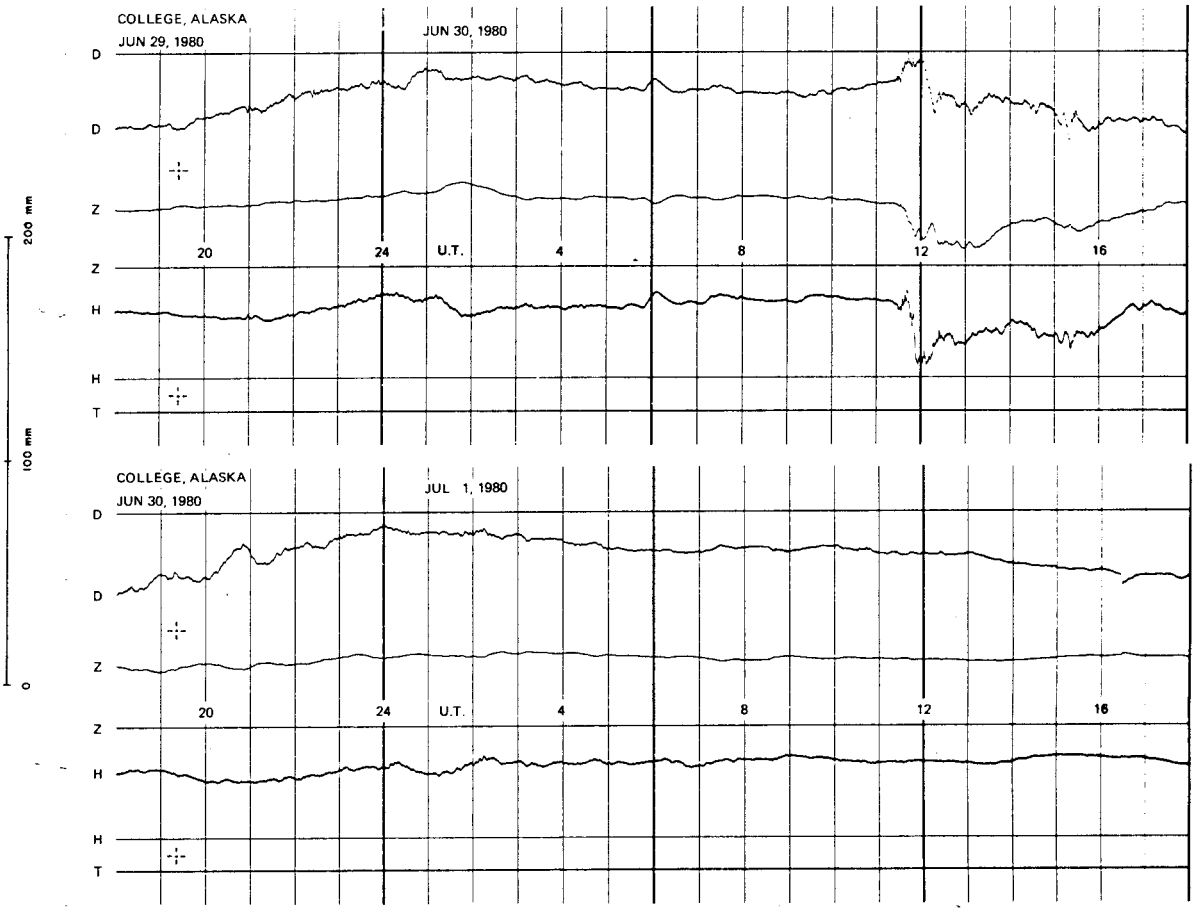
NORMAL MAGNETOGRAMS



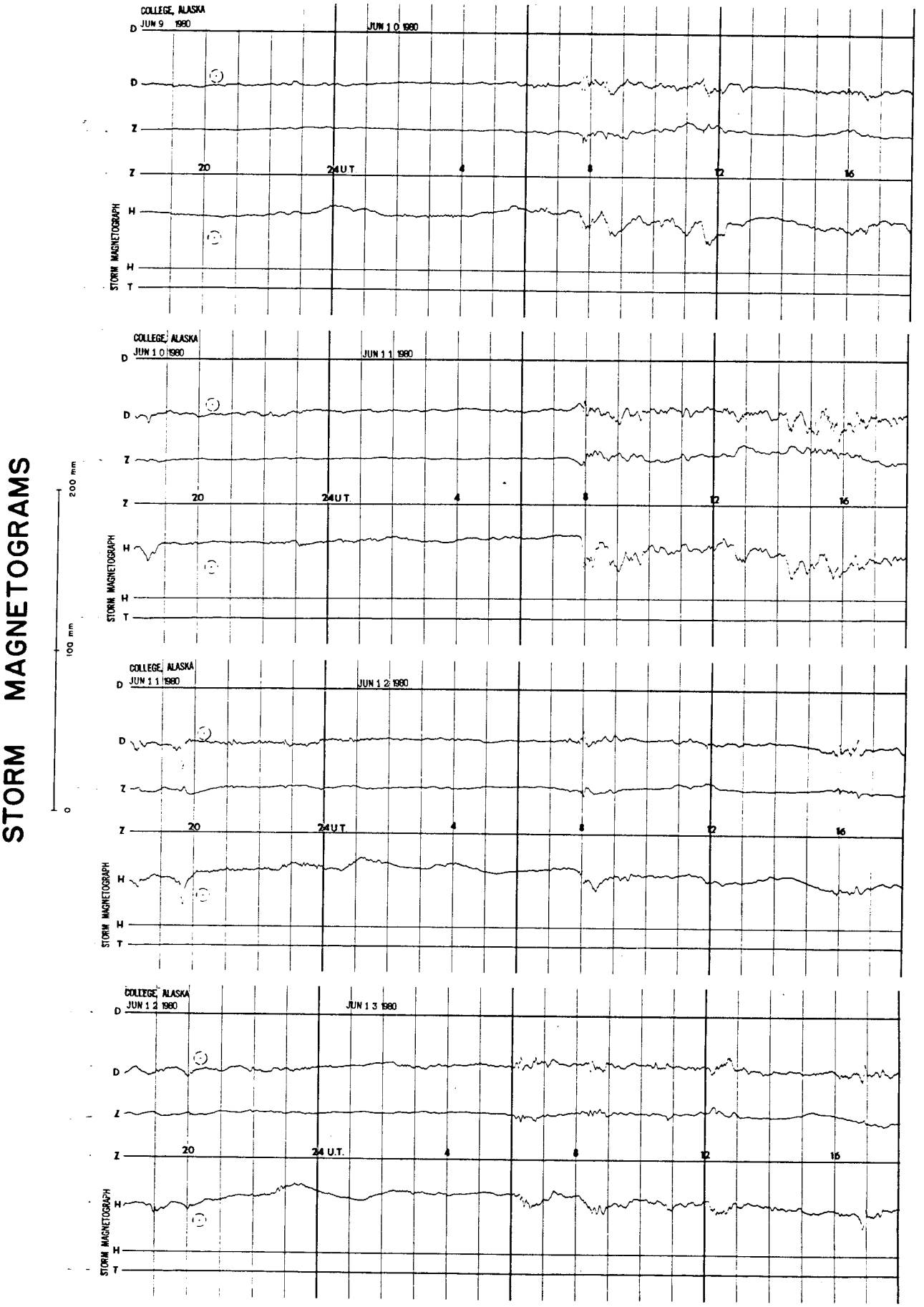
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS