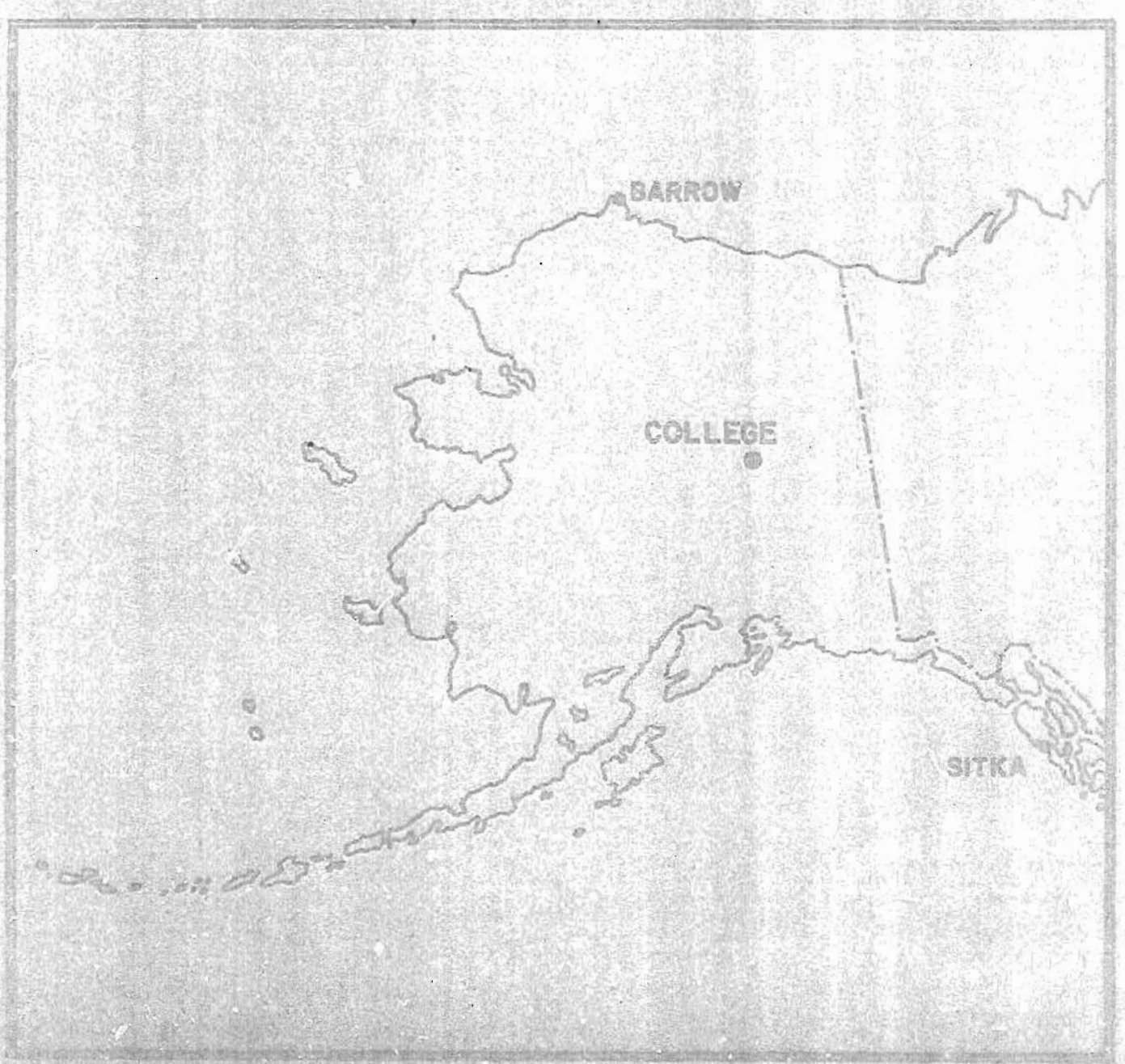
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

MAY 1979 OPEN FILE REPORT 79-300E



ORDER OF CONTENTS

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.....256.9°
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: MAY 1979

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	3	5	5	5	0	3	2	4	27	26
2	4	4	3	4	3	2	2	1	23	16
3	2	1	1	2	3	2	2	2	15	07
4	2	2	2	3	2	2	2	2	17	08
5	3	2	2	5	2	1	1	1	17	12
6	0	1	2	2	1	1	1	1	09	04
7	2	1	2	5	4	3	3	2	22	16
8	2	2	3	2	2	1	2	2	16	08
9	1	3	3	4	4	3	3	2	23	16
10	2	2	1	2	2	2	2	2	15	07
11	3	3	5	5	5	4	3	3	31	29
12	2	3	2	3	4	2	2	2	20	12
13	2	2	2	1	2	2	2	2	15	07
14	3	3	1	2	5	3	2	2	21	15
15	3	3	3	3	3	3	2	2	22	13
16	2	2	2	0	0	1	1	1	09	04
17	2	2	2	2	0	0	1	0	09	04
18	1	1	1	2	4	2	2	3	16	09
19	5	5	3	5	5	4	3	3	33	33
20	3	5	4	4	4	4	2	2	28	23
21	1	1	5	4	5	4	3	3	26	23
22	5	4	5	5	4	4	4	3	34	33
23	4	3	1	1	1	1	3	3	17	11
24	4	4	5	5	5	5	3	4	35	36
25	4	5	5	6	5	6	4	3	38	47
26	3	5	5	4	5	5	3	3	33	33
27	4	4	5	5	5	5	3	2	33	34
28	3	2	2	1	3	2	2	2	17	09
29	3	1	1	5	5	2	4	5	26	25
30	3	4	3	2	1	1	1	0	15	09
31	0	1	0	2	0	2	1	1	07	03

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

BEGIN d	BEGIN h	BEGIN m	END d	END h	END m

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

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.80		(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

NOAA FORM 76-133 SUPERSEDES C&GS FORM 812

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-781-557

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: MAY

YEAR: 1979

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
29	1849	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. 4

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

MAY 1979

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	21	08XX	..	..	..	..	21	3, 5	5	111	860	430	23	06
								22	1, 3, 4	5					
		23	19XX	..	..	..	..	25	4, 6	6	173	1180	620	28	02

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: MAY 1979

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T. 5-1-79	2400 U.T. 5-31-79	1.6/mm	38'/mm	27° 47.3 E
H	0000 U.T. 5-1-79	2400 U.T. 5-31-79	7.8 γ/mm		12761 γ
Z	0000 U.T. 5-1-79	2400 U.T. 5-31-79	7.3 γ/mm		55168 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T. 5-1-79	2400 U.T. 5-31-79	7.8'/mm	29.7 γ/mm	23° 48.6 E
H	0000 U.T. 5-1-79	2400 U.T. 5-31-79	44.0 γ/mm		11517 γ
Z	0000 U.T. 5-1-79	2400 U.T. 5-31-79	48.6 γ/mm		54025 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION
	FROM	TO	SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 11.6 E	13032 γ	55379 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAY 3, 4, 6, 8, 10, 13, 16, 17, 18, 31

NOAA FORM 76-186

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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

OBS.	YEAR	MONTH	ELEMENT
[illegible]	79	MAY	D

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

Day	01	02	03	04	05	06	07	08	09	10	11	12	Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
01	221	170	139	121	104	202	196	189	162	164	238	242	01	259	282	310	339	362	367	330	271	233	259	244	309	5173
02	230	192	169	201	172	200	225	141	223	201	173	221	02	270	309	314	351	353	349	309	299	229	223	217	212	5776
03	207	181	187	201	218	203	210	207	206	208	192	211	03	271	331	349	342	348	321	347	289	289	230	217	227	5994
04	178	149	156	201	204	227	230	231	239	242	249	238	04	268	271	308	321	339	357	361	358	226	169	183	161	5868
05	157	149	151	171	138	231	215	221	204	163	232	212	05	229	287	292	319	359	370	289	270	238	199	177	175	5446
06	158	162	162	197	218	239	259	238	242	230	249	222	06	232	241	269	301	344	352	321	300	260	254	250	219	5919
07	194	191	187	206	219	234	238	242	232	284	258	242	07	352	276	361	371	359	372	349	278	258	256	223	209	6411
08	197	189	167	190	209	213	217	277	202	232	221	231	08	239	276	316	340	319	337	302	261	230	210	190	191	5778
09	158	157	162	176	199	211	229	218	208	220	219	256	09	259	189	318	371	376	379	307	338	223	211	210	190	5764
10	170	180	190	199	218	239	240	247	229	231	248	210	10	207	213	266	350	366	369	311	315	228	233	164	178	5821
11	156	160	183	190	209	222	148	123	52*	160	163	187	11	237	256	376	404	462	356	364	269	280	212	207	202	5598
12	192	173	174	200	199	270	262	219	230	260	237	199	12	217	191	270	210	338	338	301	293	231	221	167	169	5561
13	179	161	169	189	211	231	241	268	259	237	213	209	13	211	261	301	310	361	399	357	299	251	218	191	169	5915
14	173	149	173	171	211	226	241	239	216	218	238	205	14	238	259	332	349	399	431	382	328	276	213	192	188	6047
15	179	187	189	207	199	279	181	288	251	252	201	220	15	188	211	184	350	391	377	342	317	230	204	222	180	5799
16	186	181	190	198	221	218	219	291	219	211	212	207	16	222	248	279	303	338	350	322	308	283	238	208	192	5844
17	176	169	169	191	216	220	218	231	210	200	205	230	17	227	243	283	329	364	374	352	328	293	237	194	188	5847
18	180	173	159	169	192	214	227	233	223	206	199	167	18	217	308	342	387	323	320	364	291	337	349	183	135	5898
19	136	161	157	106	47	210	214	209	170	125	76*	123	19	350	375	386	448	444	432	430	361	228	261	163	197	5809
20	150	154	127	121	178	106	154	201	212	209	209	179	20	253	304	332	361	378	408	361	329	313	169	120	99	5427
21	141	170	191	202	229	231	231	188	126	121	151	181	21	212	231	311	439	525	573	569	311	181	92	93	89	5788
22	133	192	170	192	201	129	84	233*	-83*	-60*	-11*	220	22	201	258	312	407	473	397	338	259	271	171	219	133	4373
23	190	189	171	219	200	189	218	219	213	231	209	204	23	201	231	269	301	351	342	369	331	308	192	179	199	5725
24	173	156	193	149	200	78	173	36*	155*	110	179	197	24	196	201	317	382	432	476	340	322	340	218	134	297	5454
25	171	163	49	63	132	66	115	181	88	55	28*	115*	25	392*	187*	361*	438	645*	534*	332	332	250	218	212	258	5385
26	279	219	179	80	137	165	138*	194	192	167	142	133	26	133	292	298	362	391	359	356	311	309	263	221	214	5534
27	193	178	129	137	101	158	176	111	60*	122	43	198	27	261	237	288	448	413	401	371	347	313	249	221	203	5358
28	184	203	179	178	169	213	221	228	227	219	200	200	28	189	212	260	302	372	398	400	328	260	241	143	161	5687
29	169	169	168	178	217	238	229	221	200	182	169	248	29	232	234	298	332	392	381	331	289	369*	282*	78	121	5727
30	101	119	128	131	139	232	199	206	200	207	191	208	30	212	218	268	303	338	340	310	287	277	260	231	210	5315
31	199	188	187	185	207	222	227	227	218	221	212	231	31	233	250	283	307	361	361	380	297	269	257	211	185	5318

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

[ ] 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 Mag., converted to Normal Mag.

MONTHLY SUM	175979
MONTHLY MEAN	237
DATES FILM GAPS:	

7

NOAA FORM 76-108

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

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 [illegible] universal day. Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	79	MAY	H

Day	01	02	03	04	05	06	07	08	09	10	11	12	Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
01	361	389	446	444	681	463	427	439	261	277*	236	381	01	368	359	354	339	343	273	220	256	254	269	354	491	8285
02	466	492	681	489	391	360	419	392	399	349	219	209	02	211	267	257	259	236	279	292	307	290	314	315	305	8202
03	297	370	361	330	327	340	361	361	364	382	377	344	03	321	241	253	357	359	360	315	317	271	290	320	337	7985
04	311	313	339	297	336	347	361	399	401	341	320	271	04	273	300	277	333	359	351	330	287	261	271	309	324	7715
05	389	373	369	359	419	380	384	399	421	208	351	379	05	366	341	312	349	340	340	343	359	339	329	322	319	8484
06	330	322	332	339	348	362	358	386	397	386	369	372	06	362	370	370	349	363	369	360	354	346	339	330	323	8536
07	346	311	330	332	352	360	361	388	400	392	371	288	07	5	114	138	316	343	361	249	306	339	337	322	326	7389
08	312	328	336	351	361	360	468	521	497	419	392	371	08	371	361	372	377	361	371	370	353	336	357	327	337	9015
09	328	338	342	348	352	402	400	498	498	463	360	252	09	173	227	338	385	395	317	315	310	332	359	328	328	8350
10	318	328	343	360	371	374	369	375	380	380	360	349	10	369	308	359	377	403	383	367	340	350	328	335	342	8568
11	343	369	376	345	364	400	492	518	347	179	319	336	11	274	62	36	114	61	263	372	367	333	319	304	332	7225
12	337	359	389	369	402	381	387	389	396	381	351	359	12	258	209	330	331	384	367	369	356	350	321	324	326	8425
13	332	339	356	363	367	359	390	381	379	380	380	373	13	346	349	340	333	343	351	329	316	310	299	301	324	8340
14	321	369	361	361	400	387	388	389	394	396	371	361	14	262	288	78	344	311	332	349	336	313	316	311	339	8077
15	362	331	338	361	429	450	489	400	393	364	353	358	15	341	299	251	281	361	370	362	327	321	320	321	315	8497
16	323	361	367	380	351	361	431	384	369	356	359	363	16	361	367	371	371	359	364	337	332	313	308	313	315	8516
17	317	343	359	352	363	382	415	417	400	391	375	342	17	343	351	360	365	322	358	344	325	310	308	305	304	8491
18	309	331	341	357	369	377	389	391	400	406	385	365	18	295	179	353	363	369	317	291	329	315	279	327	302	8139
19	449	606	628	646	773	606	466	414	449	336	88	301	19	-130	54	81	89	151	312	288	279	286	320	383	361	8236
20	471	529	540	629	557	588	450	421	390	373	368	311	20	181	209	101	123	241	263	329	343	298	270	280	299	8664
21	300	316	331	349	349	366	379	429	127	321	387	391	21	320	239	-145	146	177	94	157	189	217	231	281	341	6292
22	479	676	759	573	401	529	670	566	331	144	251	54	22	318	297	301	211	153	207	231	344	314	319	386	387	8901
23	458	400	524	454	457	394	349	330	339	359	352	349	23	341	349	360	351	340	349	300	261	241	224	271	354	8506
24	417	513	599	592	411	561	544	264*	347	389	184	193	24	278	-46	129	281	209	12	261	327	251	271	279	420	7686
25	539	375	458	804	706	614	616	524	391	357	133*	-184*	25	-156*	-127*	-21	101	-74	-71*	247	335	420	382	347	431	7161
26	502	529	454	744	545	474	315	394	367	334	208	270	26	17	-45	207	-5	-74	260	289	351	336	330	301	313	7416
27	371	423	528	571	629	601	573	439	319	364	249	121	27	199	147	-122*	37	219	270	378	377	352	336	329	351	8061
28	403	484	399	359	371	394	363	367	370	371	349	351	28	341	300	247	286	289	289	264	283	291	291	290	340	8092
29	399	351	389	361	367	357	358	349	351	371	369	113	29	-21	209	366	353	336	333	338	326	307	264	337	347	7630
30	324	343	347	397	489	464	398	369	376	390	383	367	30	369	379	371	361	361	360	350	334	314	302	307	321	8415
31	329	333	335	349	354	356	354	355	363	362	373	354	31	357	358	357	321	308	352	324	318	314	297	288	313	8124

SCALED BY	SPT, PEF
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 Mag., converted to Normal Mag.

MONTHLY SUM	251723
MONTHLY MEAN	338
DATES WITH GAPS	

8

NOAA FORM 76-106

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.

OBS.	YEAR	MONTH	ELEMENT
CO	77	MAY	Z

C	Int. S	Int. Q	Day	01	02	03	04	05	06	07	08	09	10	11	12	Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	322	320	322	337	280	351	391	316	325	370	209	306	01	320	323	322	321	310	313	254	227	216	259	317	334	7369
			02	323	317	219	348	369	353	279	252	352	316	224	247	02	217	261	279	270	269	288	279	278	270	278	297	298	6899
			03	299	309	342	340	381	299	299	303	306	310	301	310	03	279	239	215	251	290	299	279	281	277	287	298	319	7093
			04	329	341	329	314	301	311	310	311	320	273	288	244	04	239	276	263	264	287	290	277	269	237	229	252	246	6870
			05	324	317	350	342	338	370	324	320	313	298	273	280	05	291	294	270	278	281	267	260	280	268	268	[illegible]	287	7136
			06	292	277	298	300	500	303	309	300	313	297	284	289	06	299	300	310	310	302	300	298	294	282	281	282	287	7131
			07	291	308	300	302	297	304	300	299	301	260	251	280	07	289	161	179	199	258	251	257	167	238	276	289	293	6334
			08	291	290	298	309	310	306	320	288	320	359	311	292	08	297	278	299	301	296	257	289	286	282	274	270	290	7162
			09	287	281	276	296	308	328	339	335	282	312	290	358	09	218	250	268	301	307	270	230	254	256	291	308	306	6971
			10	299	301	297	299	309	308	308	310	303	306	284	246	10	269	253	249	257	295	280	269	270	257	272	274	291	6836
			11	295	295	330	319	317	316	282	137	241	348	298	305	11	381	458	377	264	278	222	237	244	278	269	301	309	7139
			12	329	331	337	320	317	370	327	309	319	278	221	251	12	219	209	273	276	293	290	288	289	288	299	300	301	7034
			13	310	313	311	318	313	311	314	332	308	301	286	287	13	278	262	291	277	269	281	271	264	261	261	272	286	6997
			14	291	291	317	311	337	341	321	322	311	310	268	271	14	217	240	319	290	279	258	253	261	271	273	287	300	6939
			15	302	321	317	311	321	377	322	356	327	251	251	261	15	276	269	221	211	259	279	282	294	280	282	298	299	6967
			16	300	308	330	340	337	304	331	354	303	300	291	289	16	289	298	300	300	301	297	290	275	271	261	270	278	7217
			17	282	295	306	313	315	313	329	342	331	315	298	280	17	268	288	301	305	299	294	293	287	279	276	276	281	7168
			18	283	286	265	288	295	299	303	304	295	296	292	263	18	259	241	257	289	291	264	189	142	213	252	247	328	6461
			19	335	364	350	361	336	245	367	349	268	196	281	360	19	464	288	334	367	262	242	265	245	225	276	288	305	7423
			20	328	348	356	345	294	220	319	354	336	313	300	315	20	285	215	282	264	200	177	222	269	277	253	261	283	6856
			21	300	297	309	311	319	317	313	300	134	268	281	292	21	288	309	317	119	146	106	51	116	187	221	241	269	5811
			22	347	336	239	380	418	330	251	71	254	239	232	383	22	291	287	300	299	287	259	250	277	301	299	312	289	6931
			23	316	340	338	351	347	307	341	311	303	294	290	292	23	297	303	319	321	318	304	300	282	280	263	280	305	7322
			24	328	350	339	334	369	308	154	125 *	254	294	237	160	24	289	359	67	188	209	142	119	196	269	266	300	392	6648
			25	401	361	314	262	235	356	326	197	223	311	304	217	25	406 *	472 *	486 *	267	265 *	52 *	72	201	273	305	317	332	6955
			26	349	325	312	291	334	375	163	282	308	312	311	271	26	300	372	298	326	369	230	249	246	281	286	299	329	7238
			27	336	328	328	340	350	276	230	214	284	332	261	310	27	319	349	323	87	126	211	279	303	304	291	313	322	6616
			28	330	337	340	341	320	347	327	327	321	312	287	288	28	277	256	216	259	241	261	264	267	282	298	300	330	7128
			29	359	337	338	333	340	329	320	307	290	287	267	242	29	208	209	260	291	290	301	283	290	299	267	264	261	6272
			30	273	293	308	314	361	417	349	324	311	297	299	300	30	297	300	312	310	303	297	282	280	270	276	280	250	7333
			31	291	299	297	290	292	291	291	290	284	287	280	290	31	291	295	300	294	266	260	270	240	237	252	265	276	6731

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

[ ] 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.

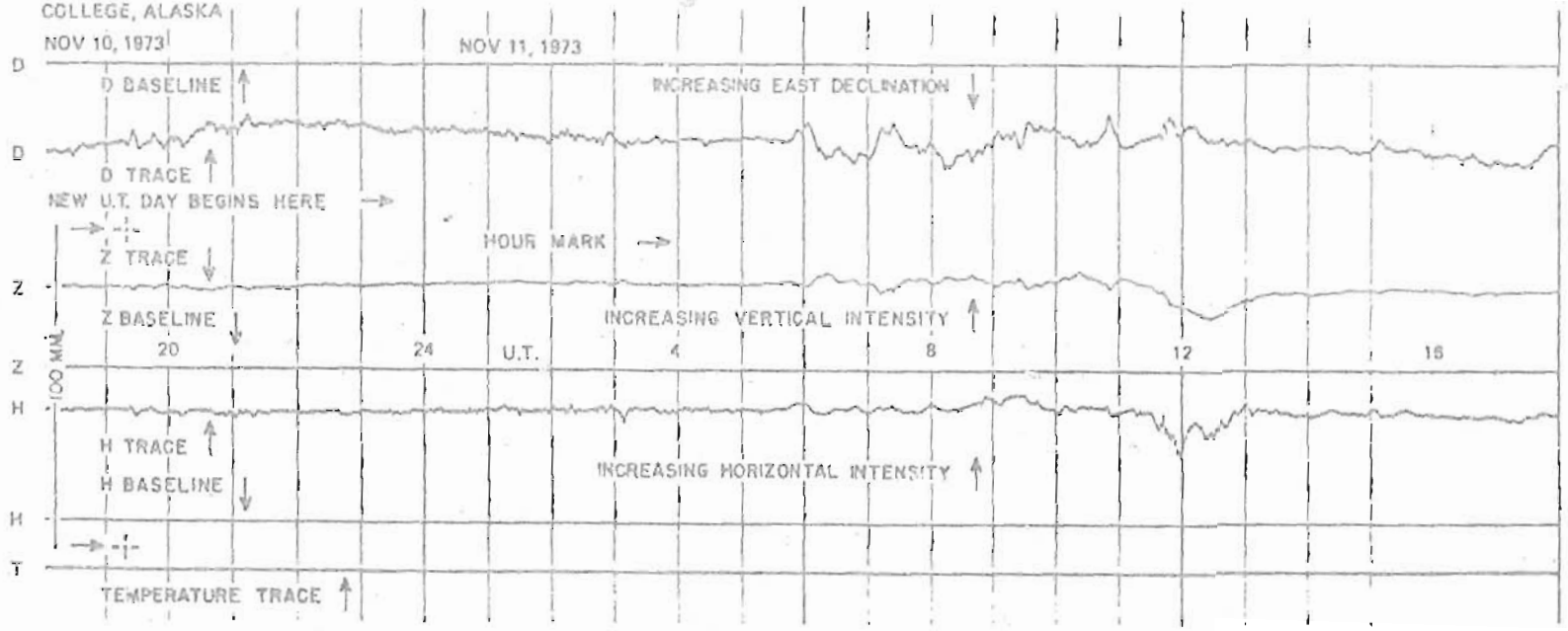
* Derived from Z(mm) Mags., converted to Normal Mags.

MONTHLY SUM	215337
MONTHLY MEAN	289
DATES WITH GAPS	

9

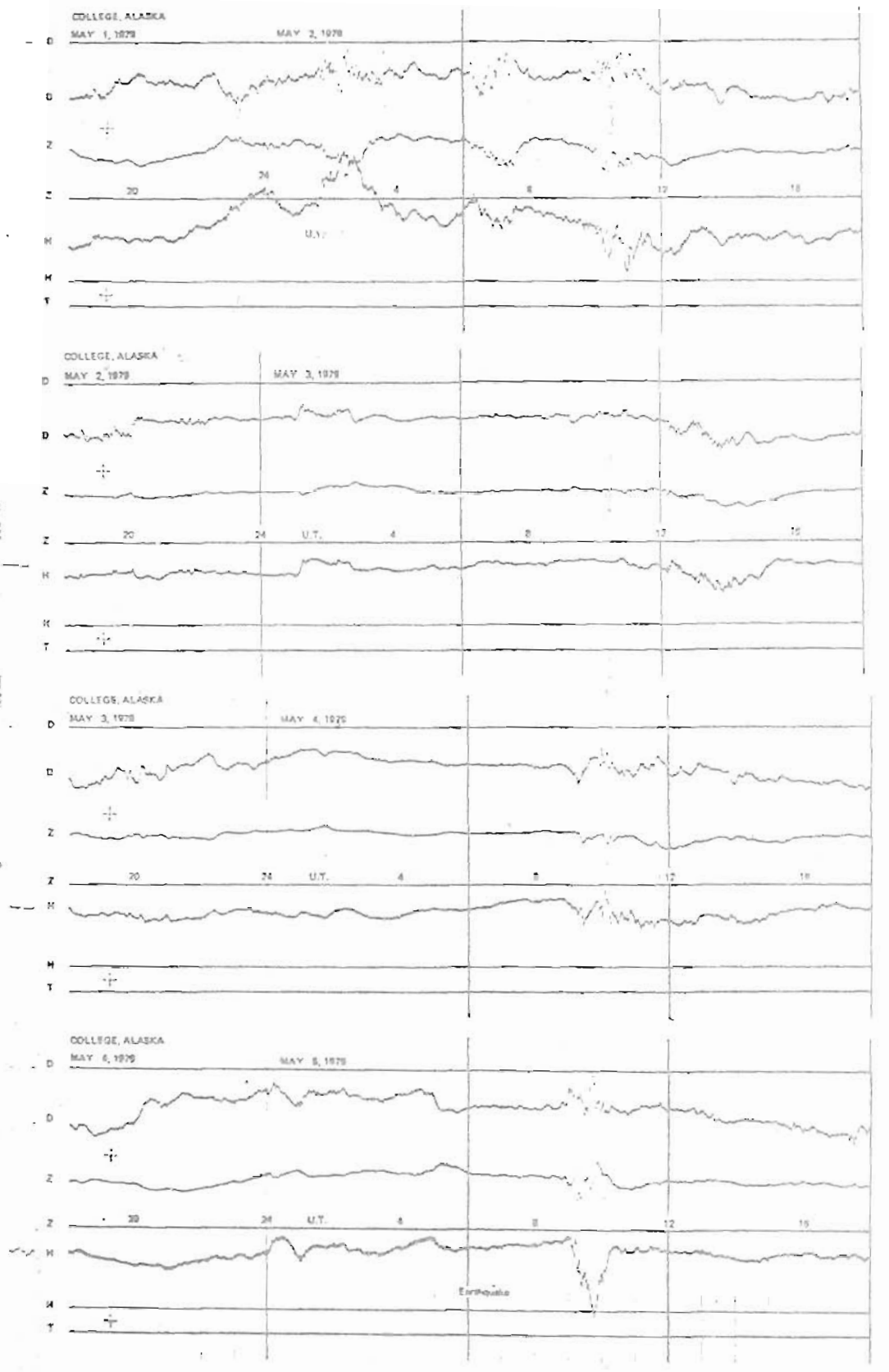
☆ U.S. G.P.O. 1975-769-571/932 REG. #8

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

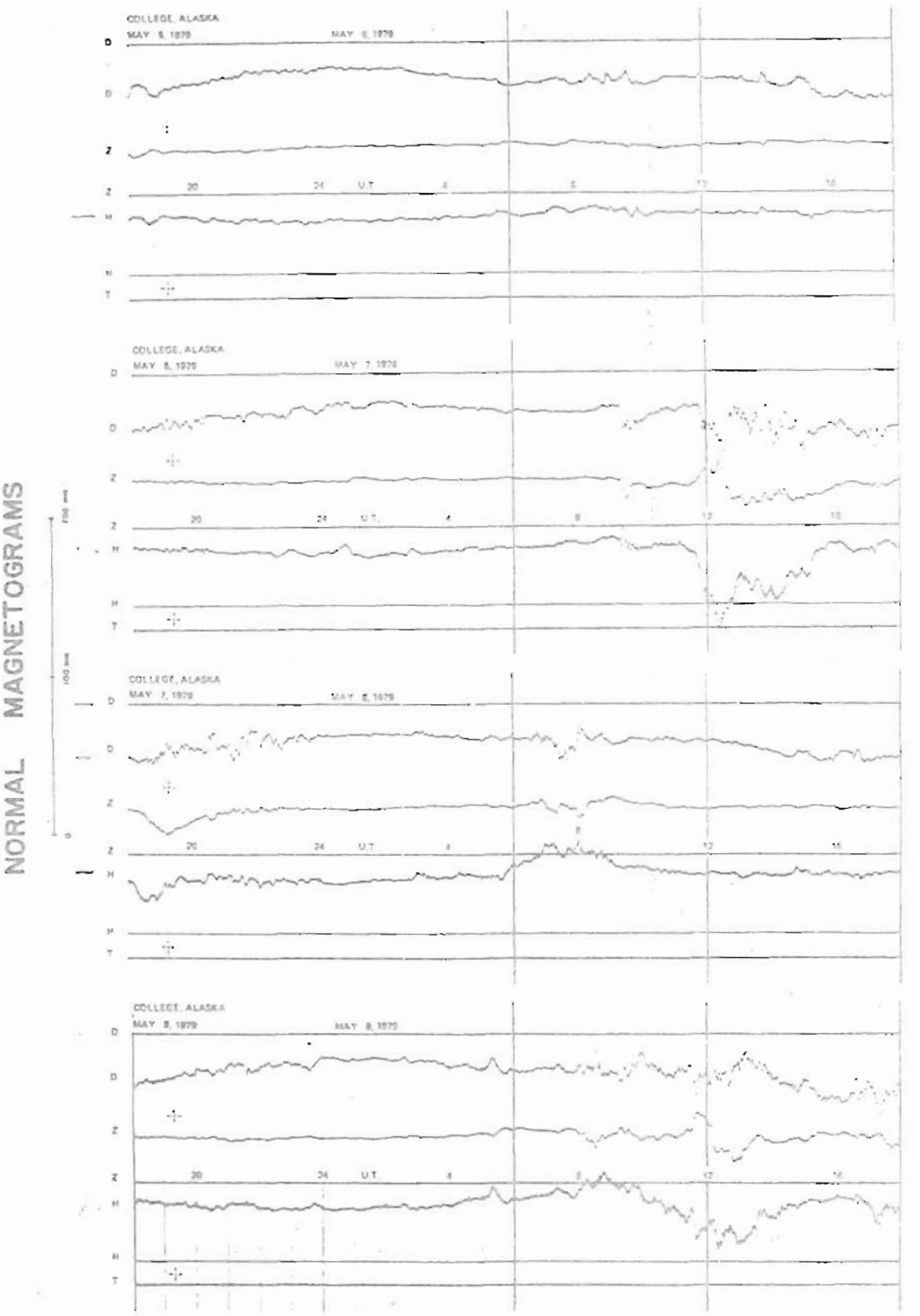


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

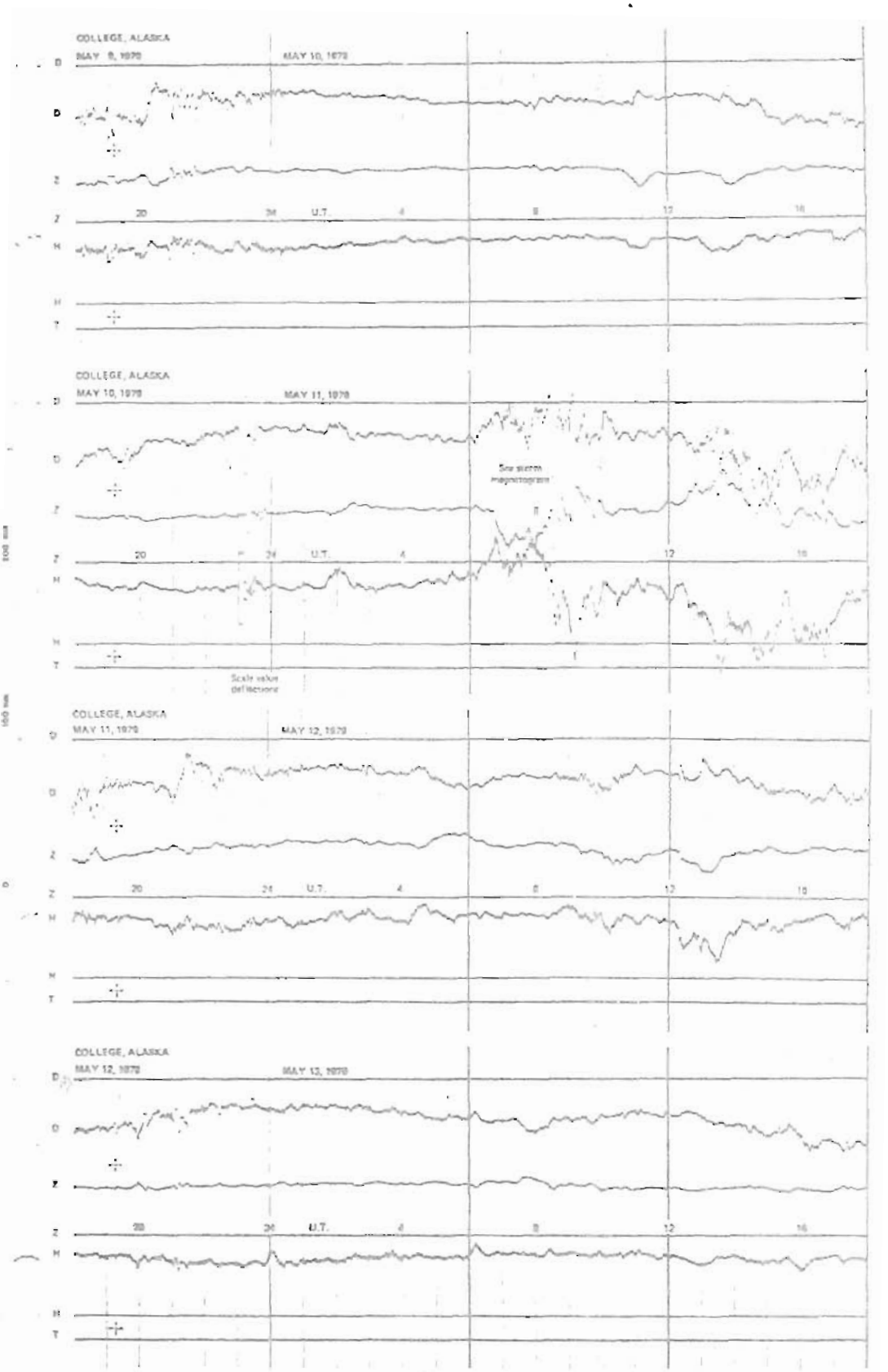
NORMAL MAGNETOGRAMS



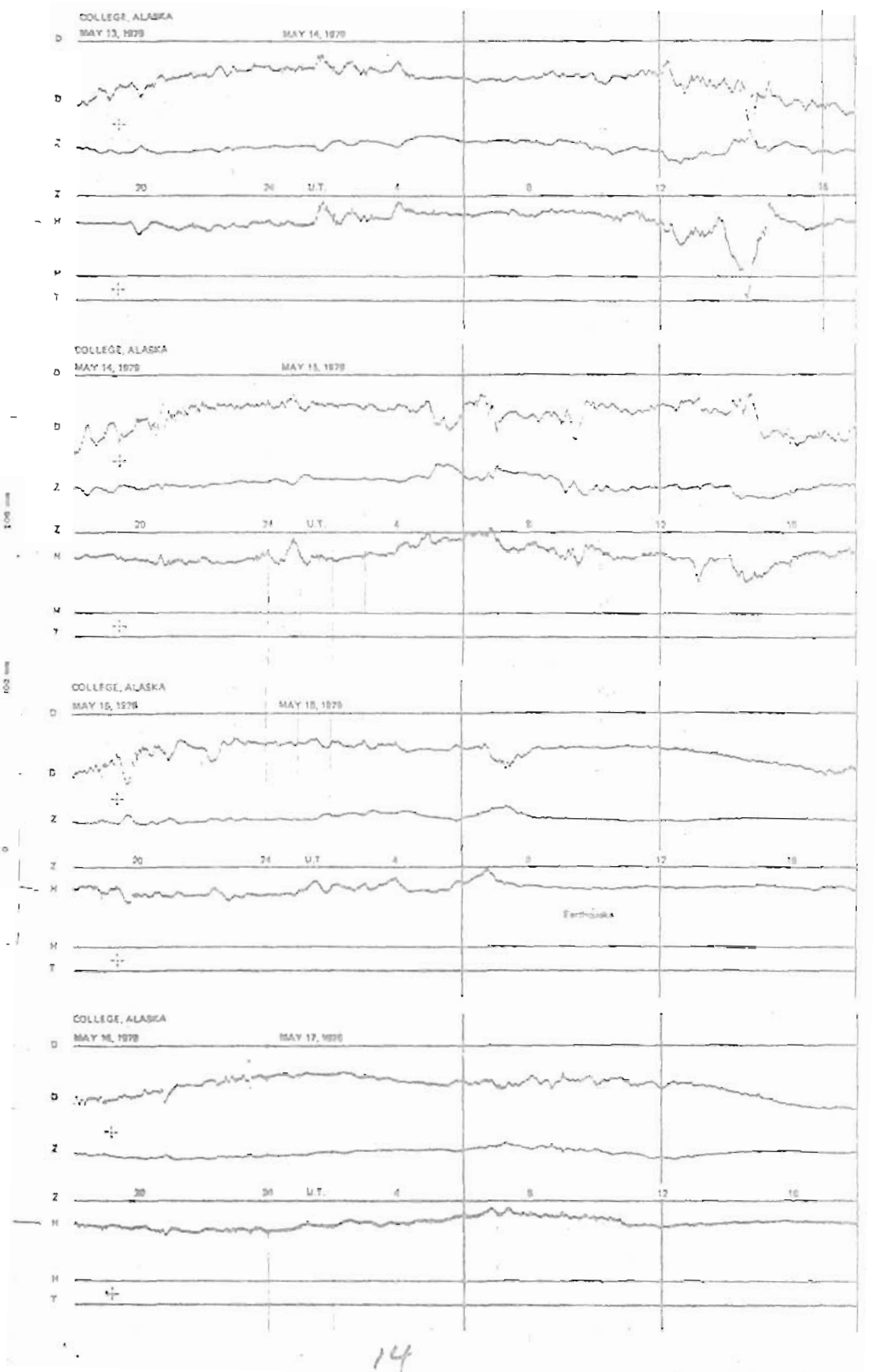
NORMAL MAGNETOGRAMS



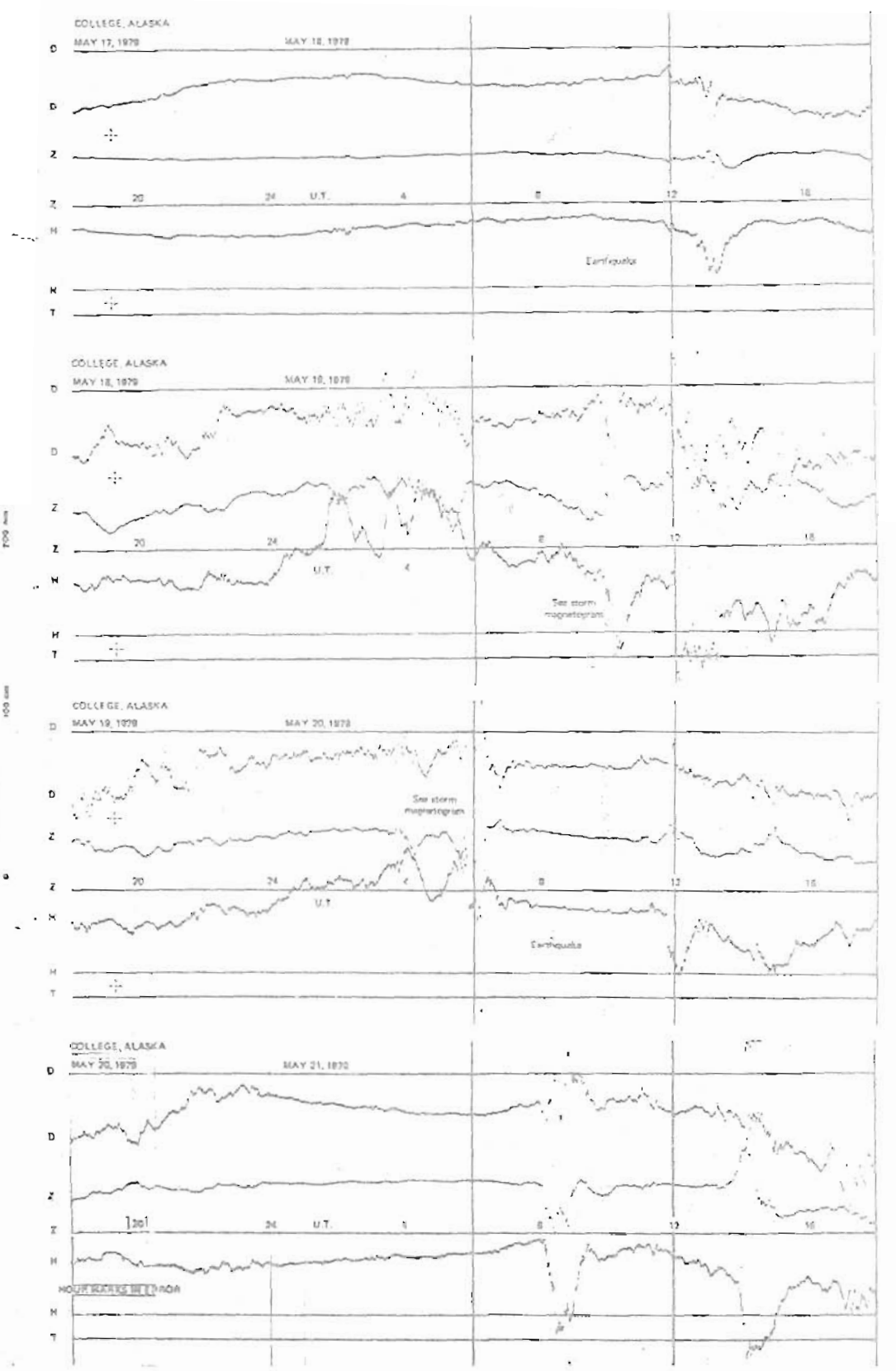
NORMAL MAGNETOGRAMS



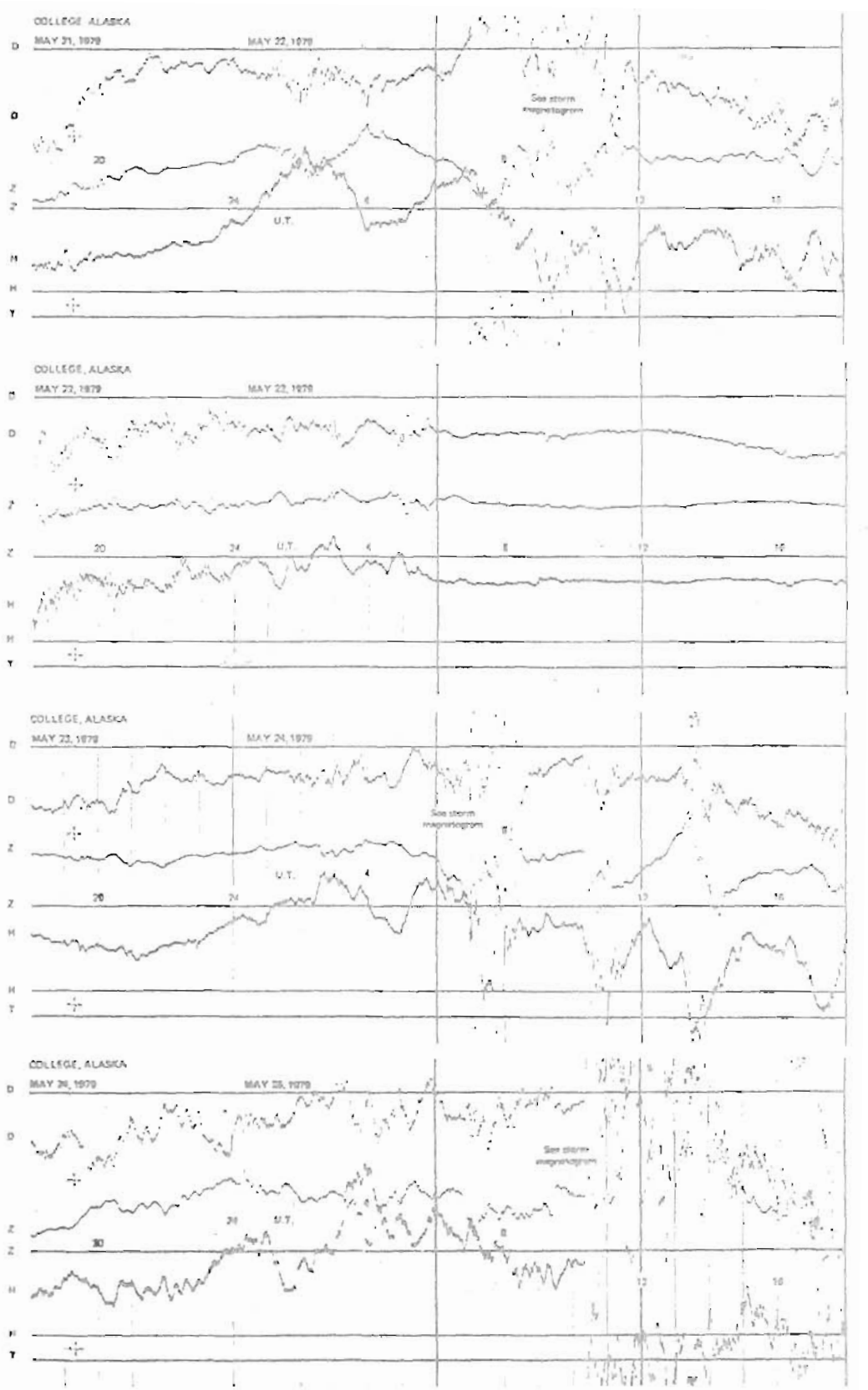
NORMAL MAGNETOGRAMS



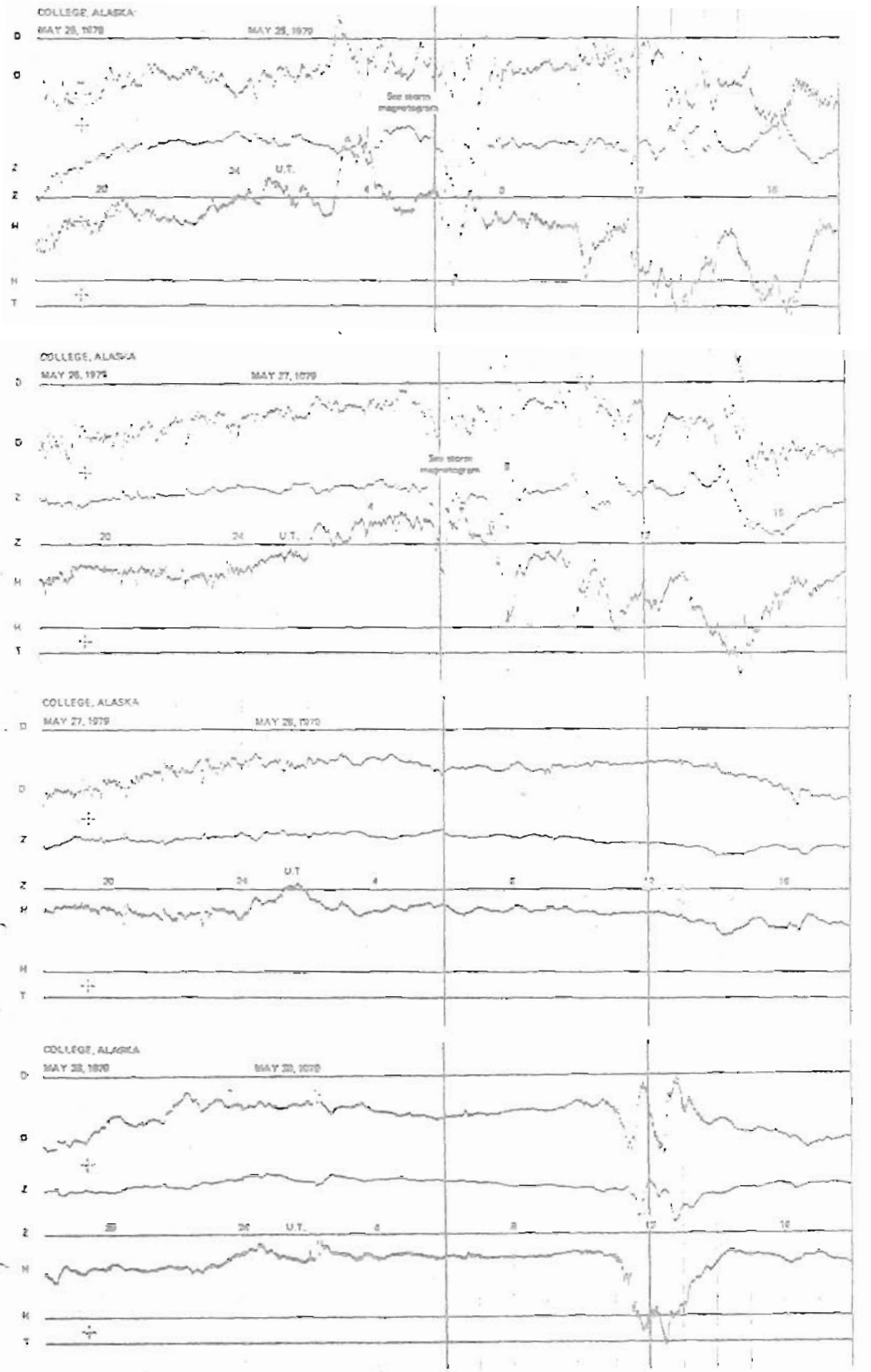
NORMAL MAGNETOGRAMS



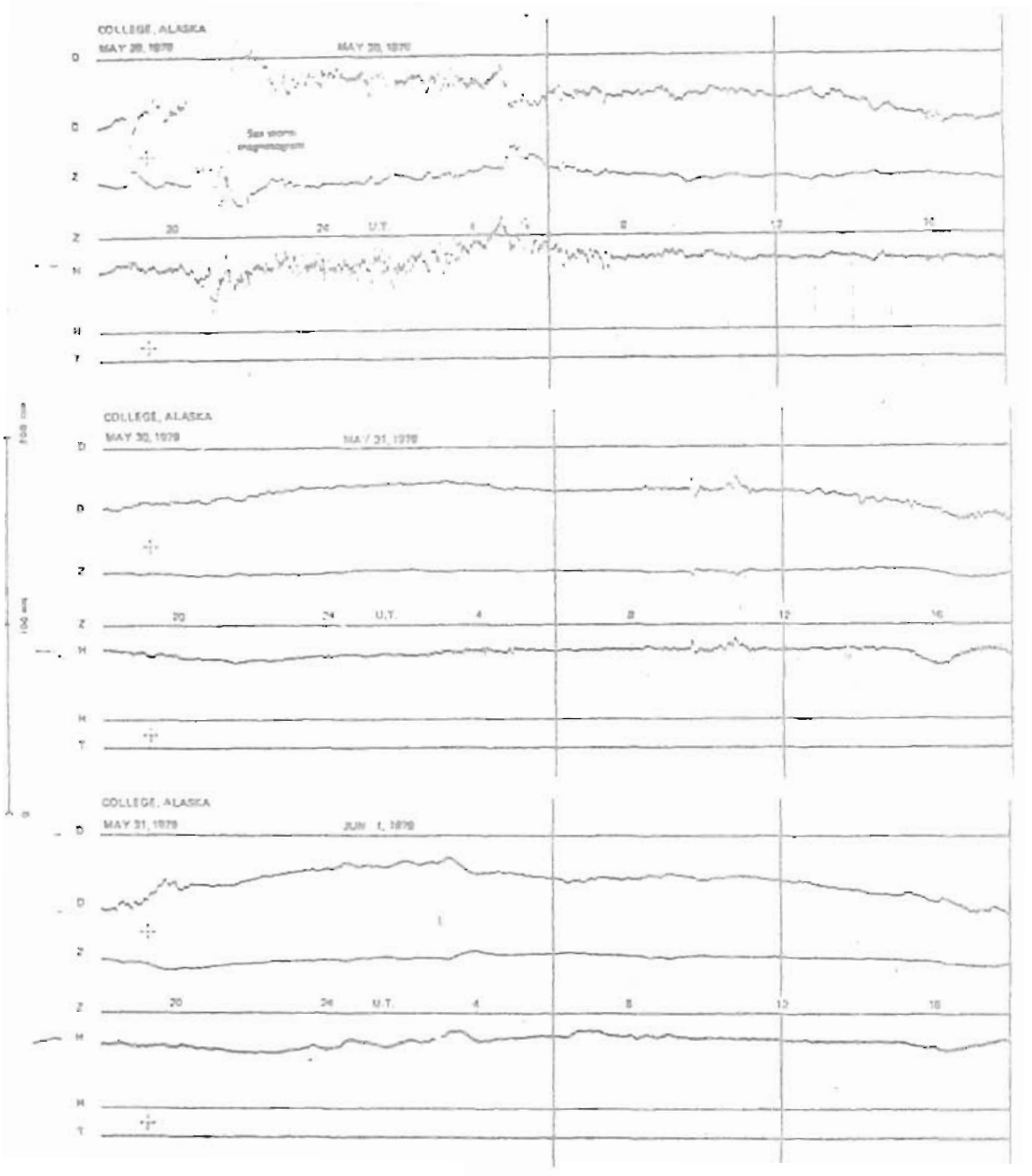
NORMAL MAGNETOGRAMS



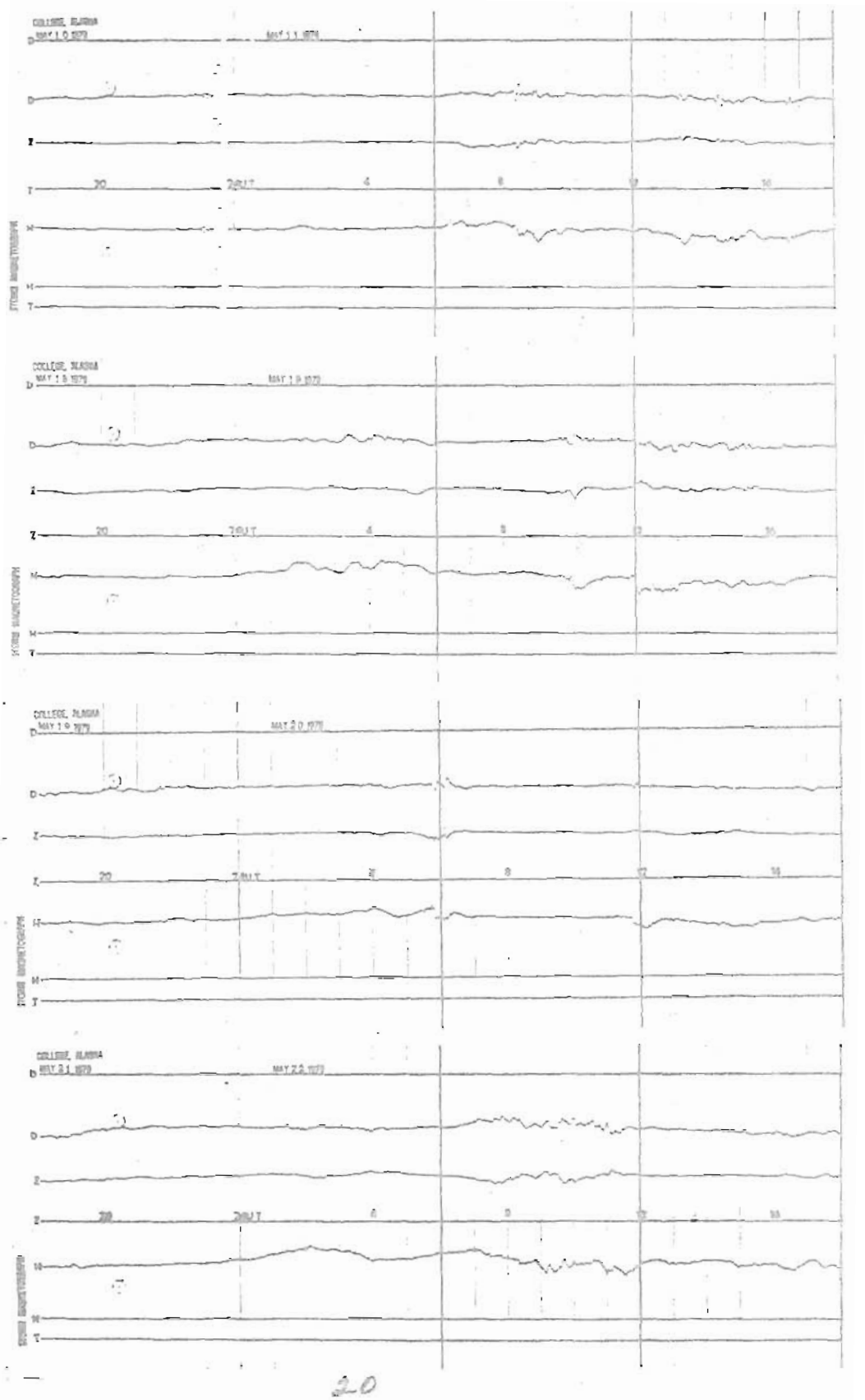
NORMAL MAGNETOGRAMS



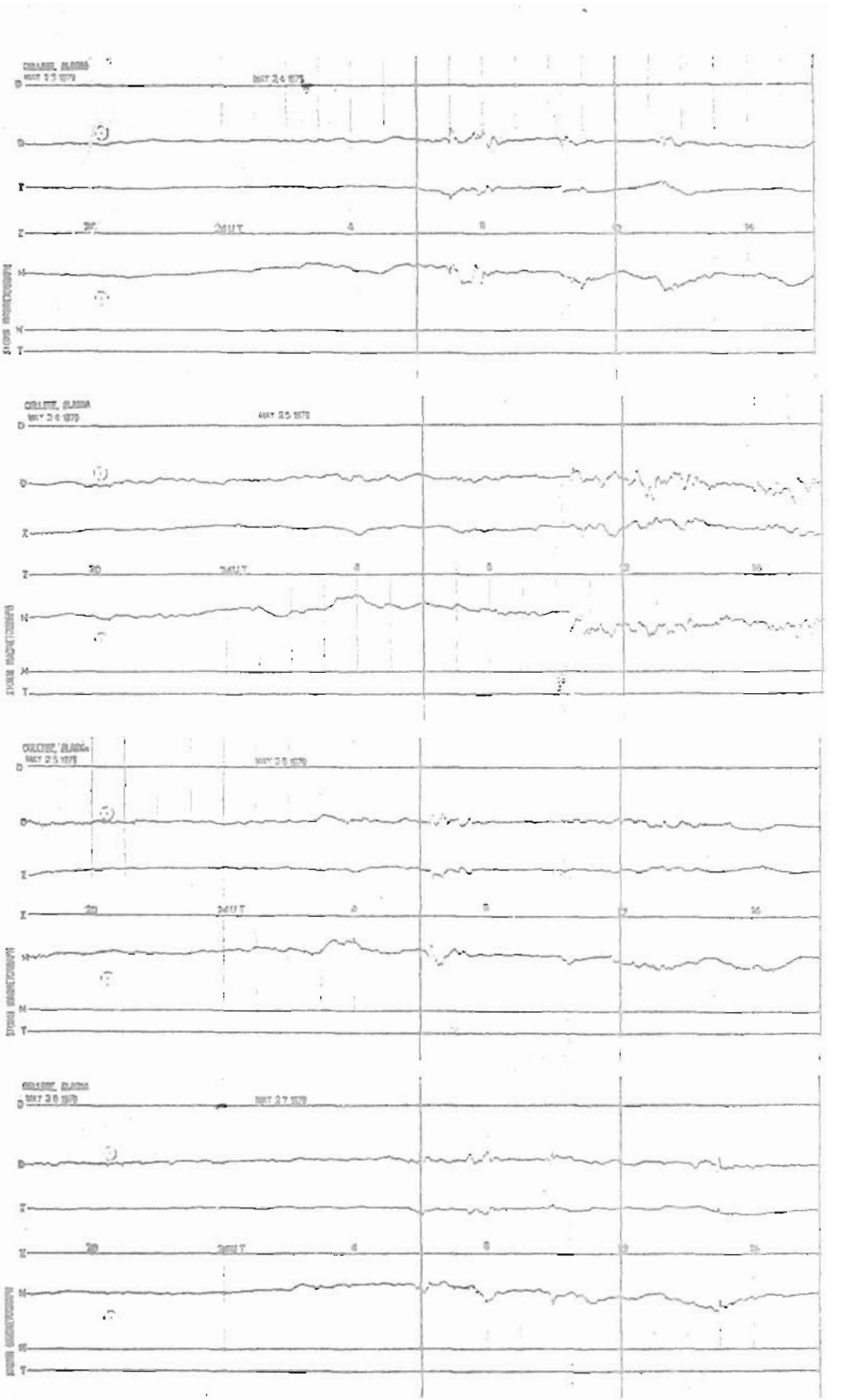
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS