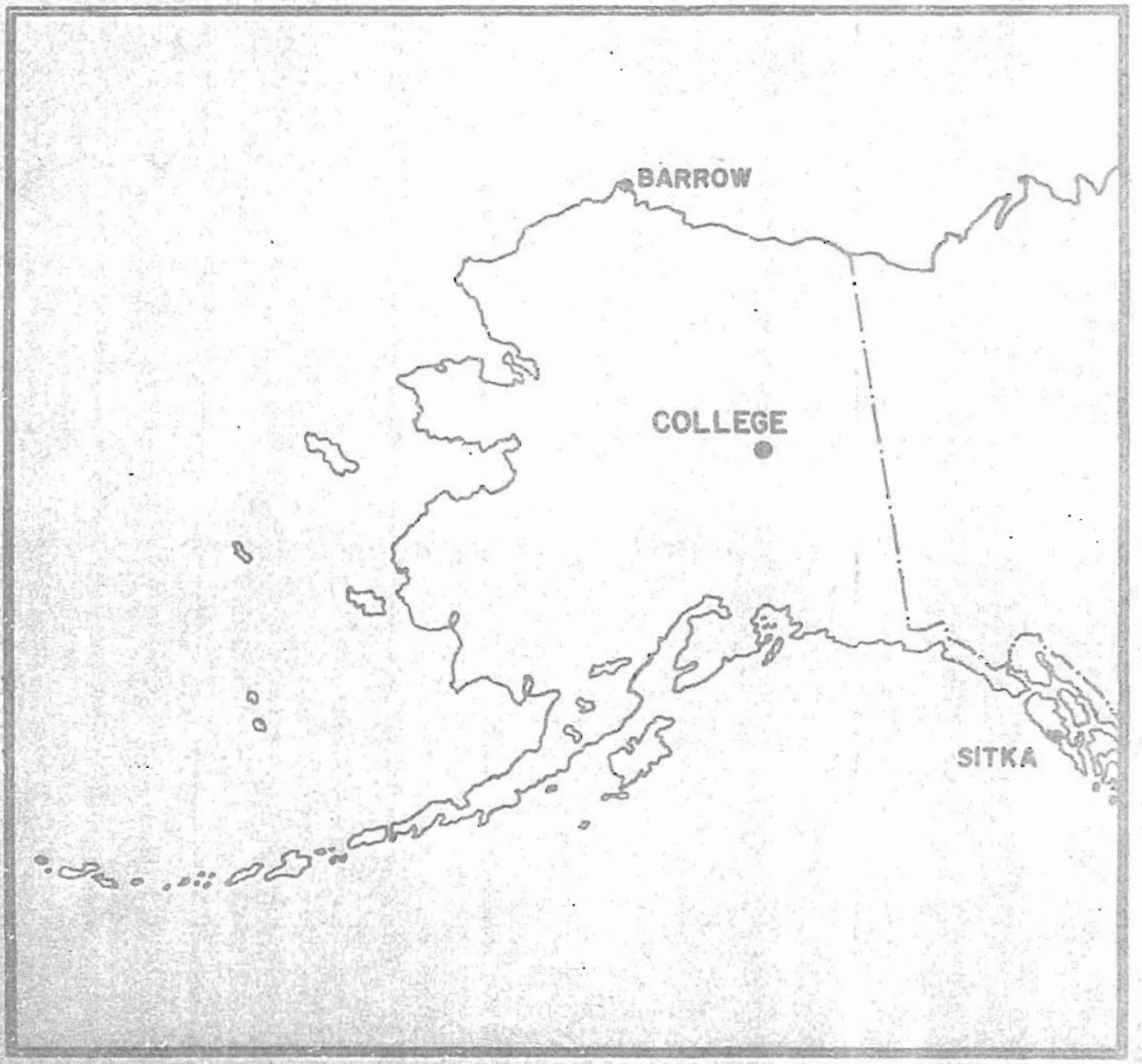
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

MARCH 1979 OPEN FILE REPORT 79-300C



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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 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 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: MARCH 1979

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	2	2	1	5	4	5	3	2	24	20
2	2	5	4	5	5	4	2	2	29	27
3	2	1	2	1	5	3	3	3	20	14
4	2	2	4	7	5	4	4	3	31	37
5	3	4	3	6	2	1	1	2	22	20
6	3	3	6	6	6	6	4	3	37	49
7	2	2	2	1	1	2	2	1	13	06
8	1	1	1	5	5	1	0	0	14	14
9	2	0	2	4	4	3	2	3	20	13
10	3	5	6	5	4	4	4	5	36	40
11	4	3	3	5	5	2	1	0	23	20
12	1	0	3	2	0	1	2	0	09	04
13	2	2	3	3	2	2	0	0	14	07
14	0	0	0	0	0	0	0	0	00	00
15	0	1	1	1	2	2	2	2	11	05
16	2	2	3	4	2	2	1	1	17	10
17	2	2	5	5	4	2	1	2	23	19
18	2	1	0	2	3	2	0	0	10	05
19	0	0	4	5	5	4	2	1	21	20
20	1	1	2	2	1	1	1	0	09	04
21	0	0	0	1	0	0	1	1	03	01
22	0	0	2	6	7	7	4	2	28	50
23	2	2	2	1	2	3	2	1	15	07
24	2	2	5	3	3	2	2	2	21	14
25	3	3	4	6	5	5	3	3	32	33
26	3	3	4	4	5	5	5	3	32	30
27	1	3	4	5	4	6	3	4	30	30
28	4	3	4	6	6	5	4	3	35	40
29	3	3	7	6	5	6	6	3	39	59
30	4	4	3	3	4	2	2	2	24	17
31	3	2	2	1	5	5	3	4	25	21

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.....	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 76-135 SUPERSEDES C&GS FORM 815

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-887

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: MARCH

YEAR: 1979

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
07	18XX	pc5	
22	0826	ssc*	

IDENTIFIED BY: JEP

VERIFIED BY: JEP

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

MARCH 1979

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

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	06	07XX	. .	. .	. .	. .	06	3,4,5,6	6	213	1110	940	06	23
		09	08XX	. .	. .	. .	. .	10	3	6	85	1020	320	11	15
		22	0826	s.c.*	-10	. .	-15	22	5,6	7	220	1600	840	23	03
		27	05XX	. .	. .	. .	. .	29	3	7	245	1240	1140	30	10
		31	13XX	. .	. .	. .	. .	APRIL 01	4	6	143	950	560	APRIL 02	23
								02	6	6					

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

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T. 3-1-79	2400 U.T. 3-31-79	1.0/mm	3.8γ/mm	27° 47.5 E
H	0000 U.T. 3-1-79	2400 U.T. 3-31-79	7.8 γ/mm		12751 γ
Z	0000 U.T. 3-1-79	2400 U.T. 3-31-79	7.3 γ/mm		55174 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T. 3-1-79	1842 U.T. 3-13-79	7.8/mm	29.7γ/mm	23° 24.6 E
	1843 U.T. 3-13-79	2400 U.T. 3-31-79	"	"	23° 50.3 E
H	0000 U.T. 3-1-79	2400 U.T. 3-31-79	44.0 γ/mm		11499 γ
Z	0000 U.T. 3-1-79	2400 U.T. 3-31-79	48.6 γ/mm		54024 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION
	FROM	TO	SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 13.2 E	13029 γ	55388 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAR 7, 12, 13, 14, 15, 16, 18, 20, 21, 23

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 (150E 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	79	MAR	D

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	214	179	203	198	213	238	191	211	237	193	261	380	01	383	336	421	440	429	409	381	257	281	268	262	234	6814
02	225	162	188	142	155	164*	163	257	270	260	258	241	02	408	402	361	374	305	290	319	365	259	258	225	241	6288
03	220	169	214	230	234	235	199	289	259	245	250	260	03	286	591	456	401	481	341	348	331	269	141	141	168	6534
04	198	169	178	177	191	134	192	212	140	584*	77*	190	04	233	334	510	284	342	444	461	304	291	304	309	192	6450
05	162	176	152	178	221	111	210	191	172	212	356*	222	05	257	258	270	273	299	312	339	333	272	261	238	248	5753
06	257	193	158	189	169	171	182	190	-51*	-51*	175	417*	06	314	869*	473*	481*	306*	440*	288	278	298	201	261	231	6439
07	241	232	247	209	182	184	188	231	227	238	241	249	07	258	268	271	282	308	339	356	318	289	272	274	237	6141
08	232	229	201	193	187	189	182	237	213	218	241	229	08	169	298	277	278	281	288	262	260	256	250	238	238	5646
09	227	208	217	207	214	242	227	240	158	138	117	207	09	239	342	401	411	471	431	311	328	287	222	228	231	6304
10	218	150	171	157	122	198	-31	161	173	201	310	252	10	253	297	297	281	339	437	399	268	369	376	431	322	6151
11	239	237	197	229	184	195	226	221	221	159	106	164*	11	169	220	249	269	270	291	287	299	301	307	298	278	5616
12	253	228	212	228	234	239	236	282	330	238	249	252	12	263	253	261	252	262	312	341	298	298	308	298	278	6405
13	260	241	192	206	212	199	220	231	218	268	262	271	13	269	296	250	232	292	314	312	298	272	273	283	258	6129
14	258	249	232	226	230	230	232	240	242	248	250	278	14	269	268	279	291	311	337	349	347	309	293	269	270	6507
15	247	222	210	214	216	221	221	222	217	229	241	249	15	261	308	301	312	338	321	354	309	269	238	251	202	6173
16	222	221	173	212	219	201	212	219	218	226	258	301	16	283	272	252	287	298	327	312	310	259	272	229	238	6021
17	194	229	209	208	219	213	140*	169	121	153	341	362	17	271	264	278	298	317	329	324	307	289	258	243	209	5945
18	200	206	219	227	218	247	242	237	234	269	283	262	18	274	261	221	241	296	333	338	309	271	251	251	250	6140
19	241	237	228	224	231	230	280	267	149	184	213	287	19	301	328	311	431	353	361	332	336	320	279	279	258	6660
20	228	224	200	216	221	221	256	298	281	236	273	261	20	250	261	269	279	311	318	329	339	306	303	280	257	6417
21	231	220	211	212	213	228	218	221	227	253	252	269	21	262	251	262	280	278	308	292	278	302	285	267	242	6062
22	210	200	199	214	219	220	221	223	214	209	181	433*	22	336	248	512*	718*	749*	246	288	260	257	220	211	227	7015
23	218	197	199	208	210	224	229	231	237	239	241	251	23	277	282	292	311	338	371	389	334	279	259	258	258	6332
24	226	200	211	211	159	201	171	191	153	216	231	261	24	259	289	341	231	313	371	330	344	317	277	276	261	6090
25	161	144	161	147	109	169	167	138	116	262	196*	298	25	294	371	369	348	420	439	339	241	300	262	270	219	5940
26	159	147	162	141	119	208	230	122	201	161	211	238	26	296	536*	306*	349	319	512*	172*	216	281	252	218	229	5785
27	229	212	211	176	190	203	92	49*	30	93*	251	248	27	311	358	379	600*	459	544*	361	282	179	224	171	193	5927
28	249	178	147	207	220	221	229	214	166	254	378*	584*	28	370*	335	349	466	584*	592*	382	336	357	550	222	207	7527
29	164	159	109	114	108	118	129	272*	-26*	132*	314*	283*	29	536*	283*	314*	512*	346*	425*	544*	330*	228	313	283	221	5667
30	178	171	147	181	228	161	169	208	222	244	278	264	30	244	237	228	278	294	332	339	331	329	322	301	259	5945
31	258	171	149	178	207	234	209	208	221	227	233	249	31	258	308	309	455	496	509	498	389	322	191	271	253	6803

SCALED BY	SPT, JEP
CHECKED BY	JEP, EAS, SPT
SUMS 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'h., converted to Normal Mag'h.

MONTHLY SUM	193626
MONTHLY MEAN	260
DATES WITH GAPS:	

7

NOAA FORM 76-156
(1-72)

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

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of gms, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500 M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSV.	YEAR	MONTH	ELEMENT
CO	79	MAR	H

C	Q or S	Tens Q	Dy	01	02	03	04	05	06	07	08	09	10	11	12	Dy	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	336	391	371	391	396	381	410	439	430	407	303	48	01	131	184	109	-18	130	253	329	360	358	361	341	356	7197
			02	341	387	410	462	487	565	531	471	401	360	352	35*	02	-50*	25	171	126	356	409	373	392	295	311	360	350	7860
			03	338	368	378	370	368	375	411	445	416	380	370	370	03	320	4	103	111	99	196	286	305	238	231	247	989	7036
			04	371	397	423	409	381	419	403	456	477	41*	154*	344	04	400	189	11	338	382	247	163	319	369	341	314	303	7651
			05	374	386	409	400	441	570	539	479	502	430	-50*	194	05	381	390	361	353	358	335	334	340	351	359	349	371	8958
			06	319	350	429	486	417	410	459	491	358	53*	253	-20	06	139	-400*	13*	-89*	-55*	-174*	303	277	267	309	369	416	5350
			07	400	362	347	419	399	418	411	428	400	361	361	356	07	361	353	354	351	341	309	271	309	329	341	338	339	8658
			08	352	346	373	379	394	382	408	379	399	412	377	287	08	127	350	387	370	363	340	323	329	340	341	341	341	8440
			09	342	366	378	372	369	379	379	378	436	361	351	358	09	383	176	231	220	237	364	379	356	340	343	330	362	8190
			10	352	367	379	431	729	824	914	641	349	369	286	233	10	319	314	329	353	320	249	207	169	258	260	281	476	9409
			11	468	331	363	316	359	404	403	418	380	341	138	-9	11	-114	178	369	339	320	331	349	348	334	328	312	301	7297
			12	309	329	348	339	348	358	370	371	369	364	349	350	12	353	361	367	366	356	360	341	307	337	327	316	310	8305
			13	316	327	373	371	367	380	374	372	437	417	378	357	13	352	339	359	339	359	371	359	347	341	333	324	321	8613
			14	315	322	332	349	358	360	363	365	369	370	377	371	14	376	373	371	370	369	362	351	347	339	335	325	319	8488
			15	329	330	341	353	341	368	379	381	400	420	409	411	15	412	371	370	351	349	369	351	371	372	349	333	339	8819
			16	319	326	368	349	349	369	459	456	415	405	367	213	16	321	342	324	370	386	391	379	366	358	342	345	337	8676
			17	360	333	356	371	370	371	468	457	492	428	74	69	17	228	344	341	377	373	353	350	339	328	311	329	319	8141
			18	311	330	344	349	349	377	362	363	369	361	359	342	18	347	359	261	347	369	369	366	357	353	344	339	333	8400
			19	329	330	339	351	344	373	349	400	543	421	249	309	19	89	36	304	149	249	318	407	383	359	341	349	334	7715
			20	342	327	353	356	372	378	379	380	388	379	373	378	20	369	360	379	364	350	353	350	344	349	333	322	319	8597
			21	321	332	345	351	368	371	379	379	375*	379	381	373	21	385	386	384	387	390	382	361	357	350	336	321	322	8715
			22	329	332	347	353	359	363	371	376	409	419	361	-84*	22	260	309	-135*	-577*	-147*	376	373	363	351	343	321	331	6103
			23	341	363	358	356	391	437	401	381	386	359	349	341	23	356	330	306	259	324	339	336	297	302	328	331	324	8295
			24	339	357	341	342	399	389	471	537	286	370	368	343	24	354	309	249	311	331	300	311	309	319	330	339	311	8315
			25	385	397	380	409	425	476	484	589	531	336	18*	111	25	295	191	12	28	6	163	271	320	334	307	326	441	7229
			26	456	486	416	402	457	363	329	383	381	384	394	339	26	59	-59	-23	-18	98	-300*	58	189	297	320	341	310	6028
			27	309	320	327	367	356	384	581	654	549	328	361	300	27	71	69	29	-197*	-203*	-180*	262	178	224	341	330	431	6188
			28	496	491	547	387	350	344	339	370	361	53	-27*	-130*	28	30*	111	179	146	-79*	-53	326	359	327	260	261	358	5501
			29	459	461	572	449	414	498	484	-10*	-27*	131*	103*	-102*	29	265*	-158*	-152*	-310*	225*	345*	-140*	-293*	99	261	339	359	3188
			30	462	509	448	481	499	611	539	459	389	328	284	297	30	329	131	260	366	361	341	324	327	319	320	301	321	9006
			31	291	341	389	389	378	334	340	389	379	361	361	354	31	349	197	-69	-192*	-38	67	90	211	209	289	289	439	6167

SCALED BY	SPT, JEP
CHECKED BY	JEP, EAS, SPT
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 (in part or all of hour); if value is given, it was estimated for missing part.

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

MONTHLY SUM	236535
MONTHLY MEAN	318
DATES WITH GAPS:	

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NOAA FORM 76-186 (1-72)

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

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in scales of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500 M.S.T.) is hour 11 of the 0000 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	79	MAR	Z

C	Q or S	Tro 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	314	311	331	324	313	319	310	347	309	292	253	277	01	275	240	261	267	100	111	191	187	249	295	299	311	6486
			02	329	327	339	335	261	240	298	382	357	320	310	215	02	115	270	237	192	161	263	289	301	258	256	275	320	6750
			03	328	318	323	307	300	298	316	352	324	327	301	290	03	281	288	215	224	218	209	147	159	208	169	208	258	6366
			04	304	319	320	309	311	329	349	331	212	7*	186	340	04	331	442	326	233	291	309	180	186	258	294	318	287	6772
			05	289	324	313	337	354	269	324	311	318	292	427*	283	05	270	304	310	305	310	306	287	292	290	291	290	298	7394
			06	314	290	311	360	357	357	349	268	187*	353*	404	567*	06	607	660*	213*	506*	280*	7*	62	199	270	291	270	304	7792
			07	328	322	327	309	326	337	334	337	323	328	310	316	07	311	308	303	301	309	310	272	250	240	250	279	281	7311
			08	303	318	316	318	313	329	337	337	321	324	298	292	08	178	201	272	292	299	299	290	287	293	301	310	318	7146
			09	319	328	331	319	318	329	309	308	262	207	209	324	09	351	368	272	220	209	213	263	299	283	285	311	320	6957
			10	332	322	350	329	354	325	123	239	209	312	248	256	10	328	321	279	278	280	272	224	239	402	397	390	281	7090
			11	394	371	340	345	320	340	326	311	279	271	182	291	11	251	211	272	291	303	312	329	329	327	321	319	318	7353
			12	313	312	316	322	322	319	320	322	276	270	294	287	12	285	291	293	300	310	309	320	310	297	309	318	313	7328
			13	313	309	305	319	334	340	338	332	317	306	319	288	13	278	242	261	247	260	296	300	300	298	300	305	306	7197
			14	309	300	294	292	293	294	291	292	293	296	302	295	14	288	289	291	293	297	298	297	292	290	293	297	300	7076
			15	299	297	290	287	287	287	283	289	294	304	298	294	15	289	259	251	273	241	255	257	250	266	276	288	289	6723
			16	311	300	294	318	309	305	317	308	321	311	299	329	16	208	234	224	232	273	288	288	287	290	300	297	299	6942
			17	309	320	294	287	292	300	215	215	139	206	408	281	17	245	267	262	287	300	301	299	298	308	309	310	331	6783
			18	319	319	310	300	292	322	309	293	290	292	281	277	18	270	269	220	245	282	294	299	291	289	292	301	308	6964
			19	304	298	291	280	290	291	332	329	267	256	338	333	19	370	321	137	170	189	207	256	287	287	290	299	300	6722
			20	297	297	298	300	292	299	323	313	253	257	280	277	20	271	260	273	298	291	281	271	276	269	282	294	299	6851
			21	300	297	294	287	284	289	300	297	296	297	280	267	21	274	274	270	273	281	280	270	258	267	279	284	287	6785
			22	282	280	287	297	289	289	286	289	278	286	299	424*	22	279	381	645*	337*	217*	137	271	286	316	314	330	323	7424
			23	318	317	329	339	343	347	340	330	299	308	309	311	23	309	298	303	266	277	281	291	279	249	259	280	294	7276
			24	299	306	323	330	301	329	320	271	238	298	317	311	24	306	311	273	254	288	298	261	269	264	281	296	319	7063
			25	304	308	331	330	328	360	361	384	256	249	414	348	25	313	369	338	200	131	39	97	119	243	270	312	339	6743
			26	331	336	327	331	351	351	324	279	182	259	327	331	26	379	503*	477	486	221	224*	106	127	218	287	309	320	7386
			27	316	310	311	319	318	328	282	216	241	191*	305	279	27	264	307	438	88	-99	4*	70	183	199	280	321	341	5820
			28	308	293	288	342	330	330	314	319	260	262	450	405*	28	444	417	174	206	398*	305*	167	231	280	302	291	327	7443
			29	336	561	359	367	379	366	322	191*	444*	370*	545*	624*	29	584*	524*	344*	557*	743*	925*	743*	557*	394	396	356	370	11057
			30	339	264	312	320	306	273	329	277	300	351	340	316	30	311	299	284	311	336	340	334	328	321	321	321	310	7543
			31	337	311	337	359	377	337	311	330	326	330	326	320	31	303	300	325	151	52	33	141	147	218	243	302	317	6533

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

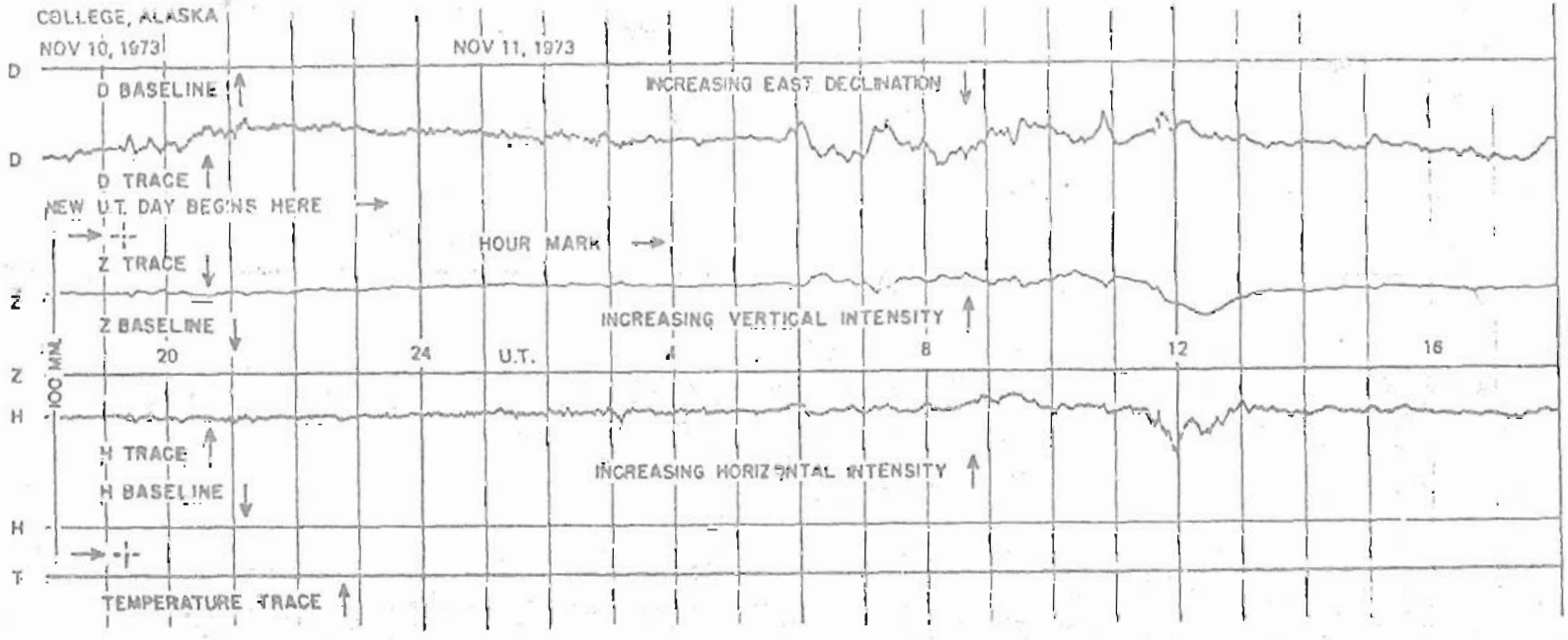
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

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

MONTHLY SUM	221076
MONTHLY MEAN	297
DATES WITH GAPS:	

U.S G.P.O. 1973-769-571/932 REG.#4

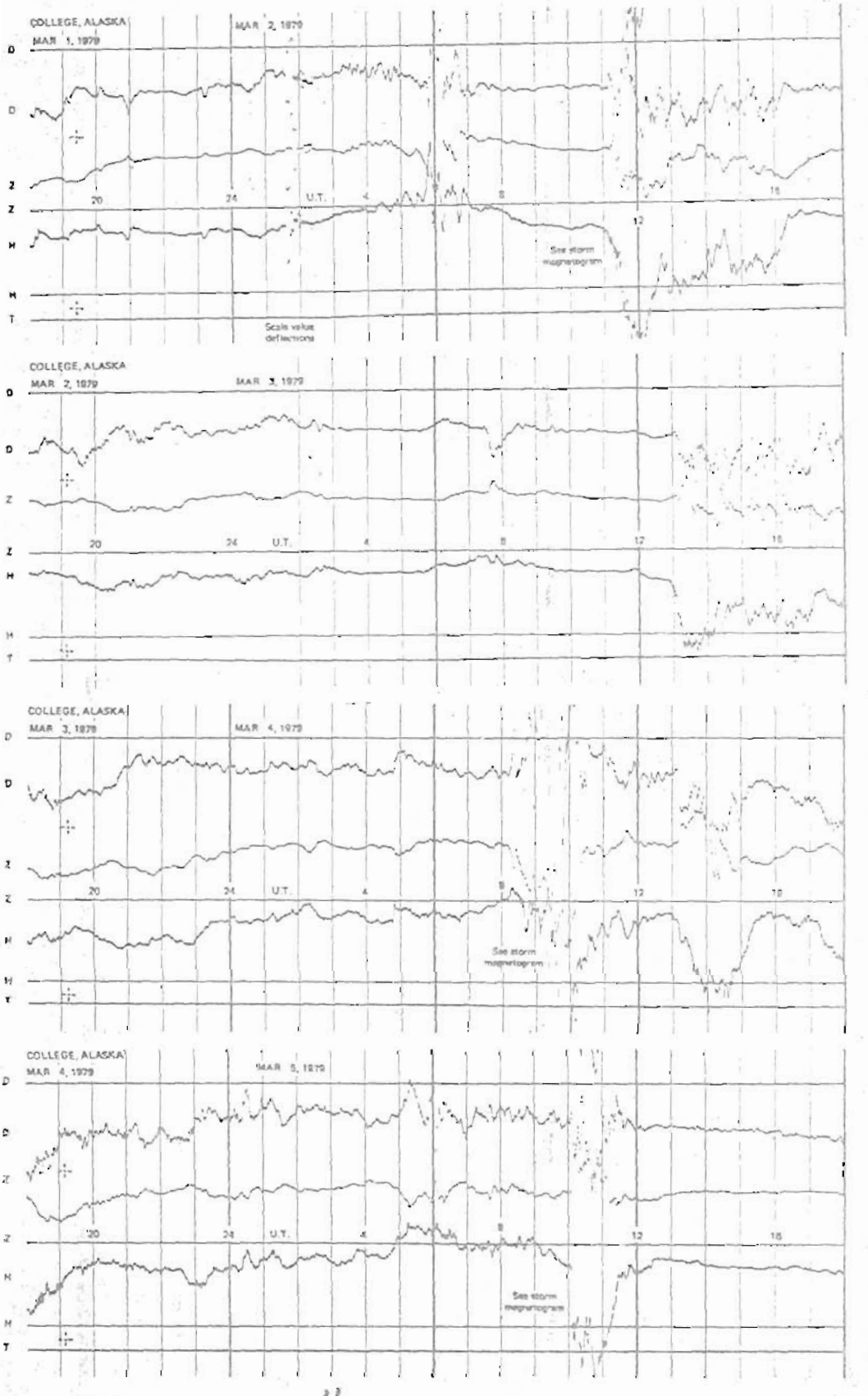
FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)



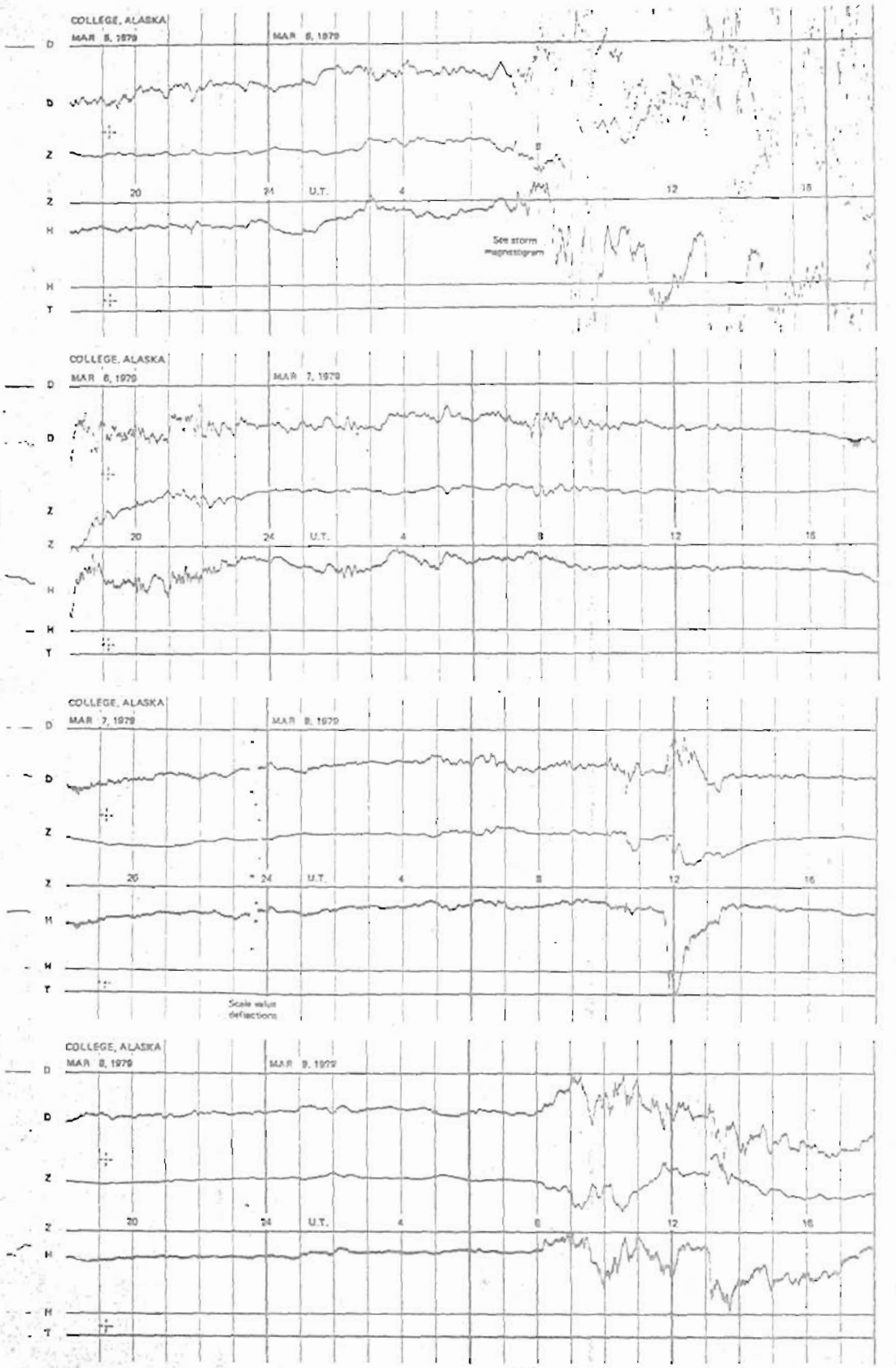
SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

10

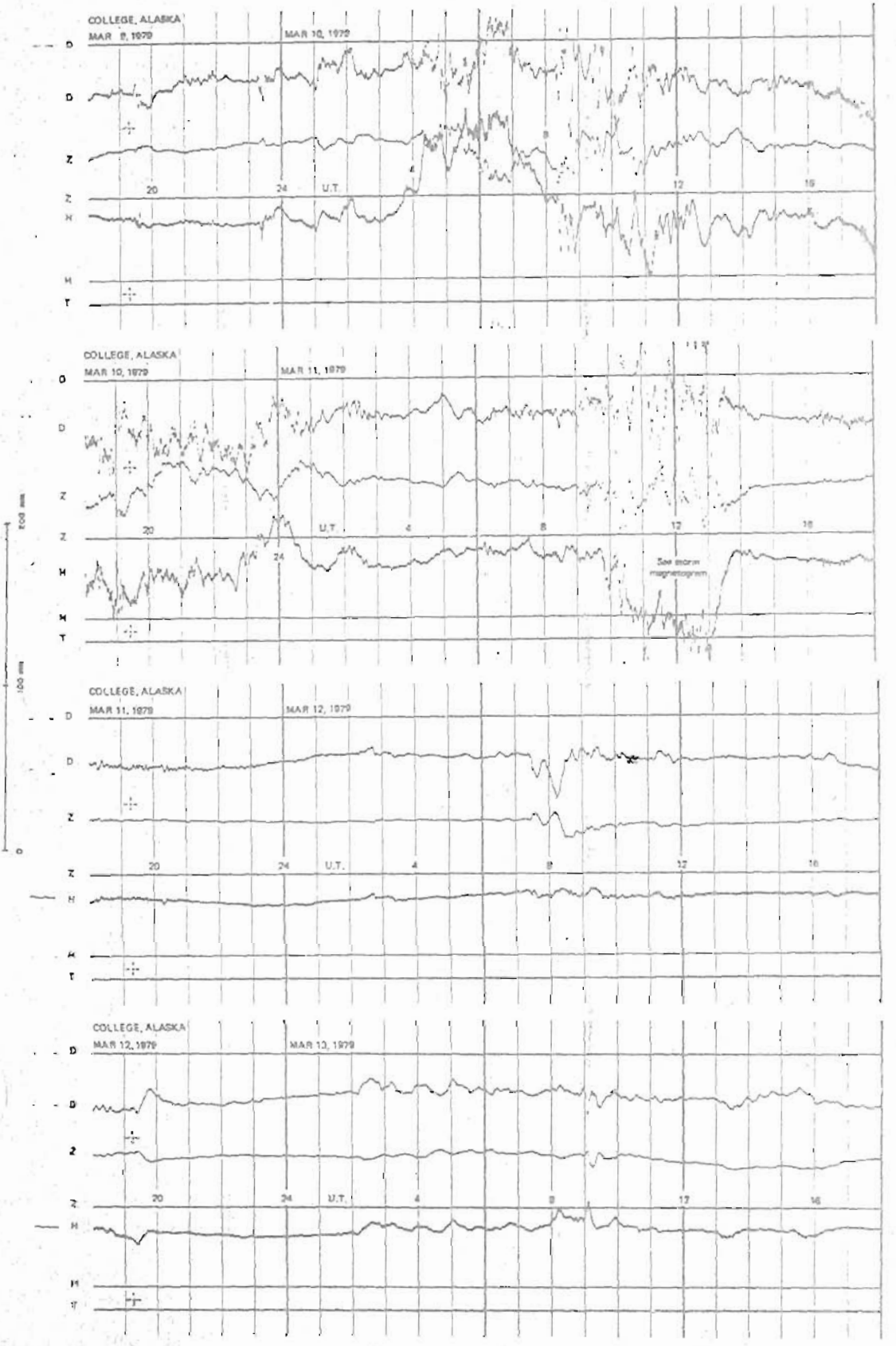
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



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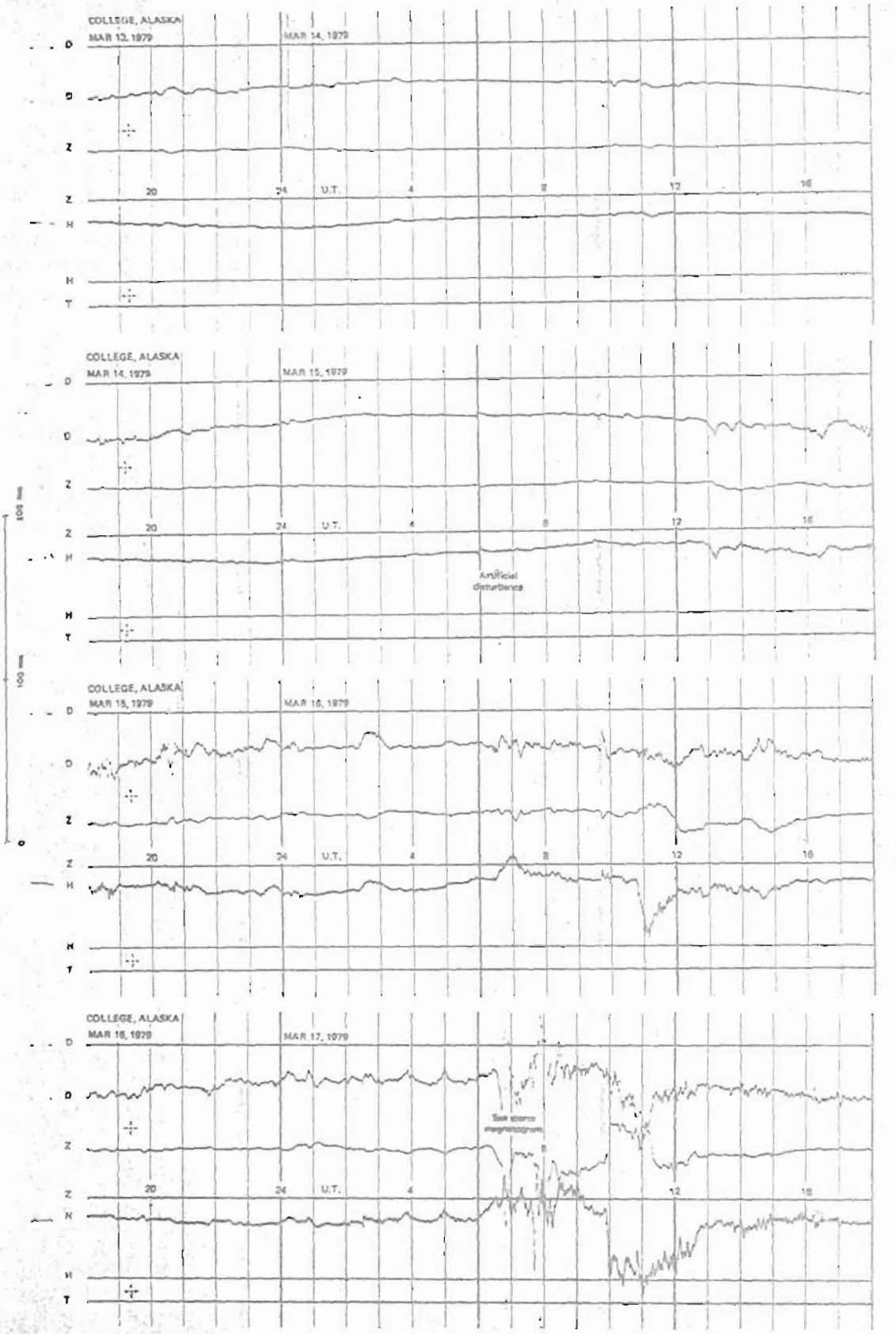

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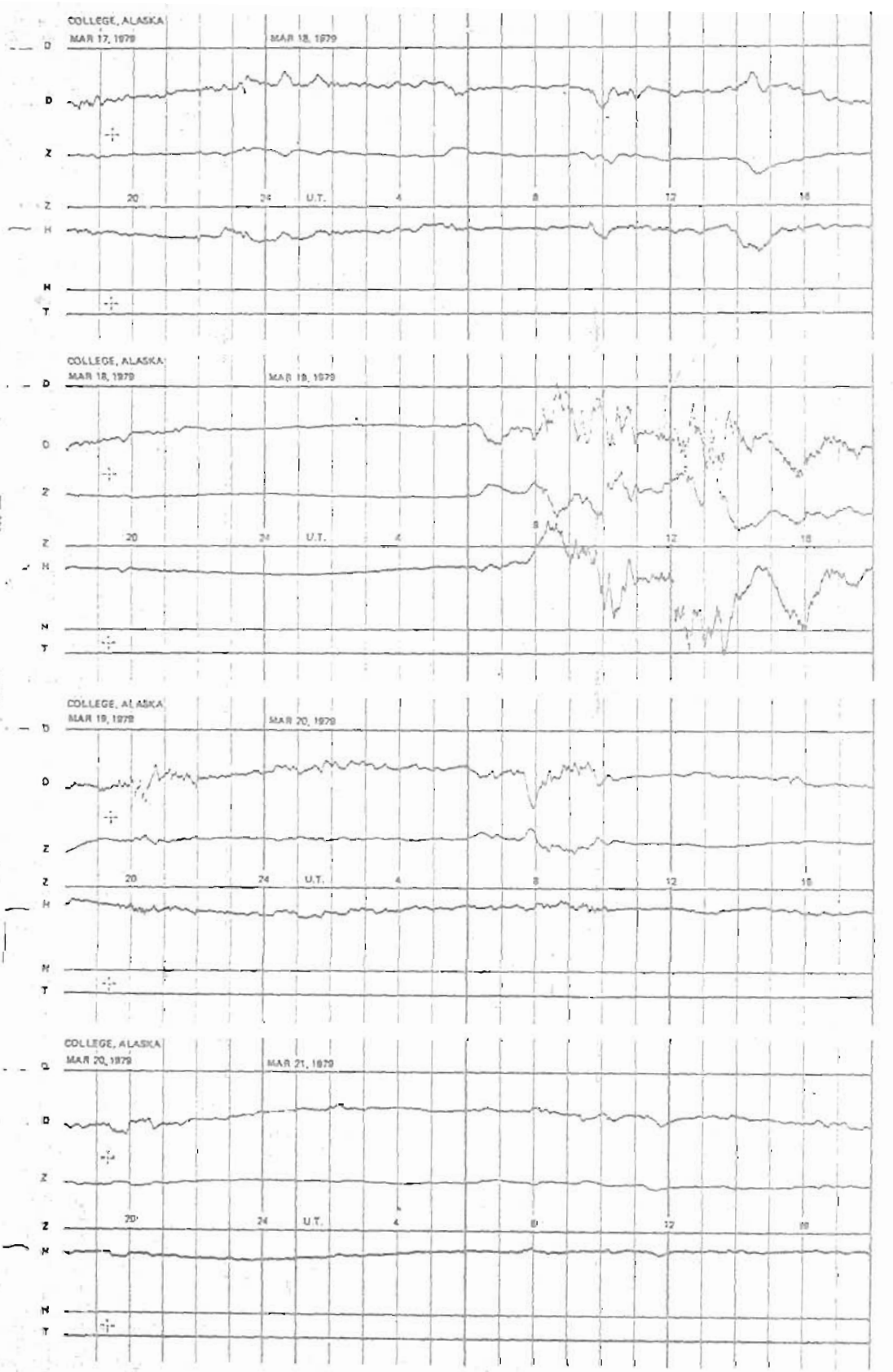

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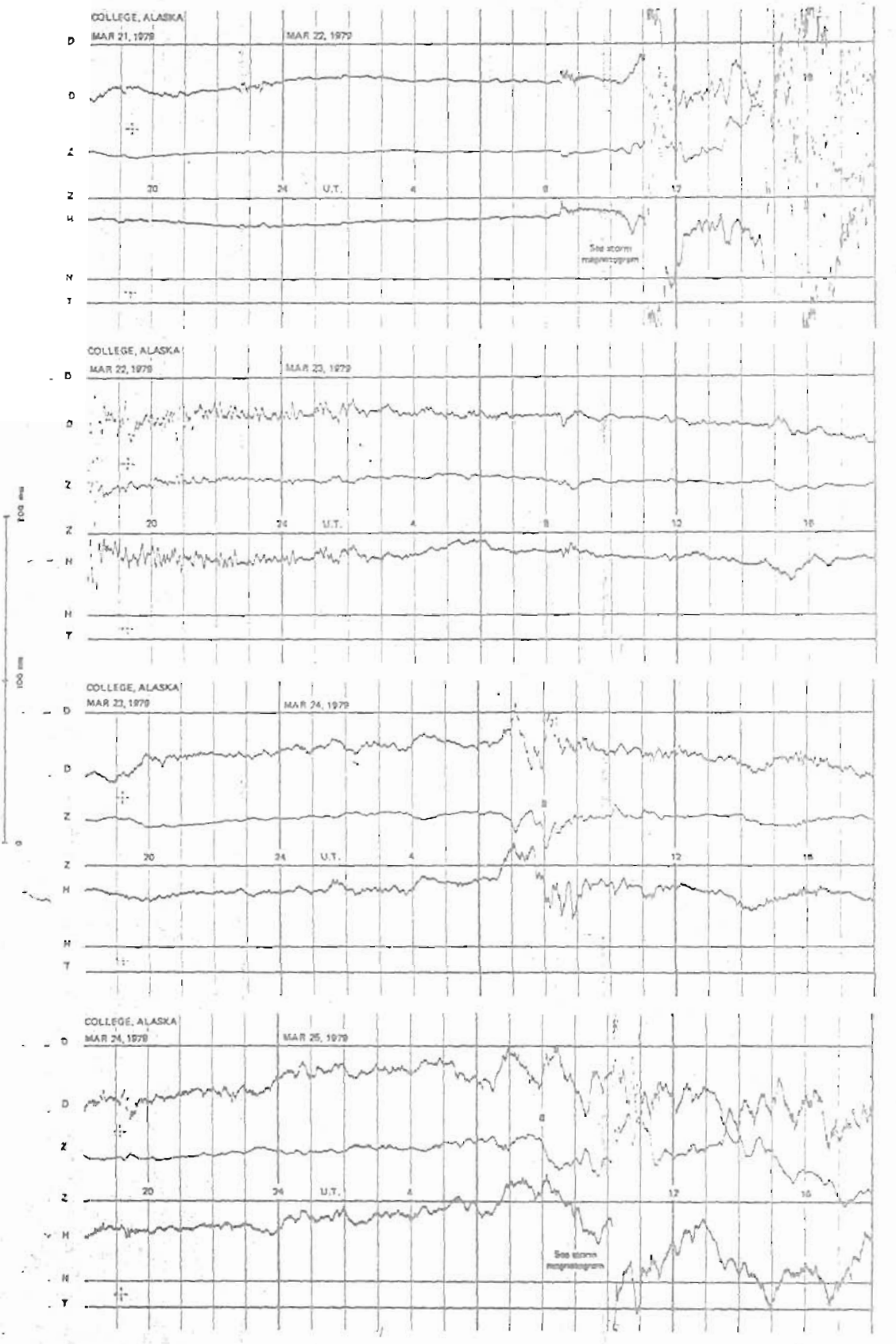

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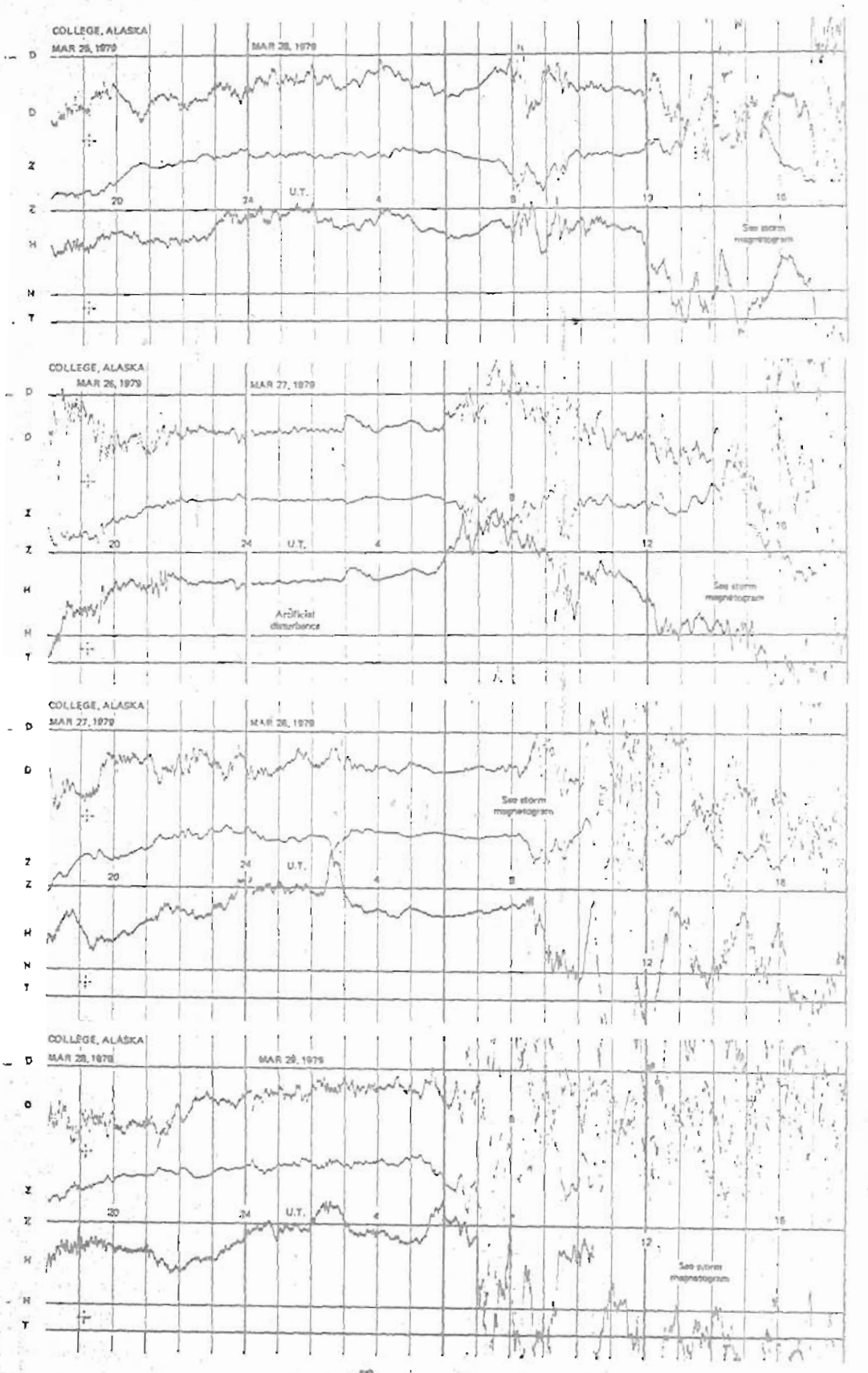

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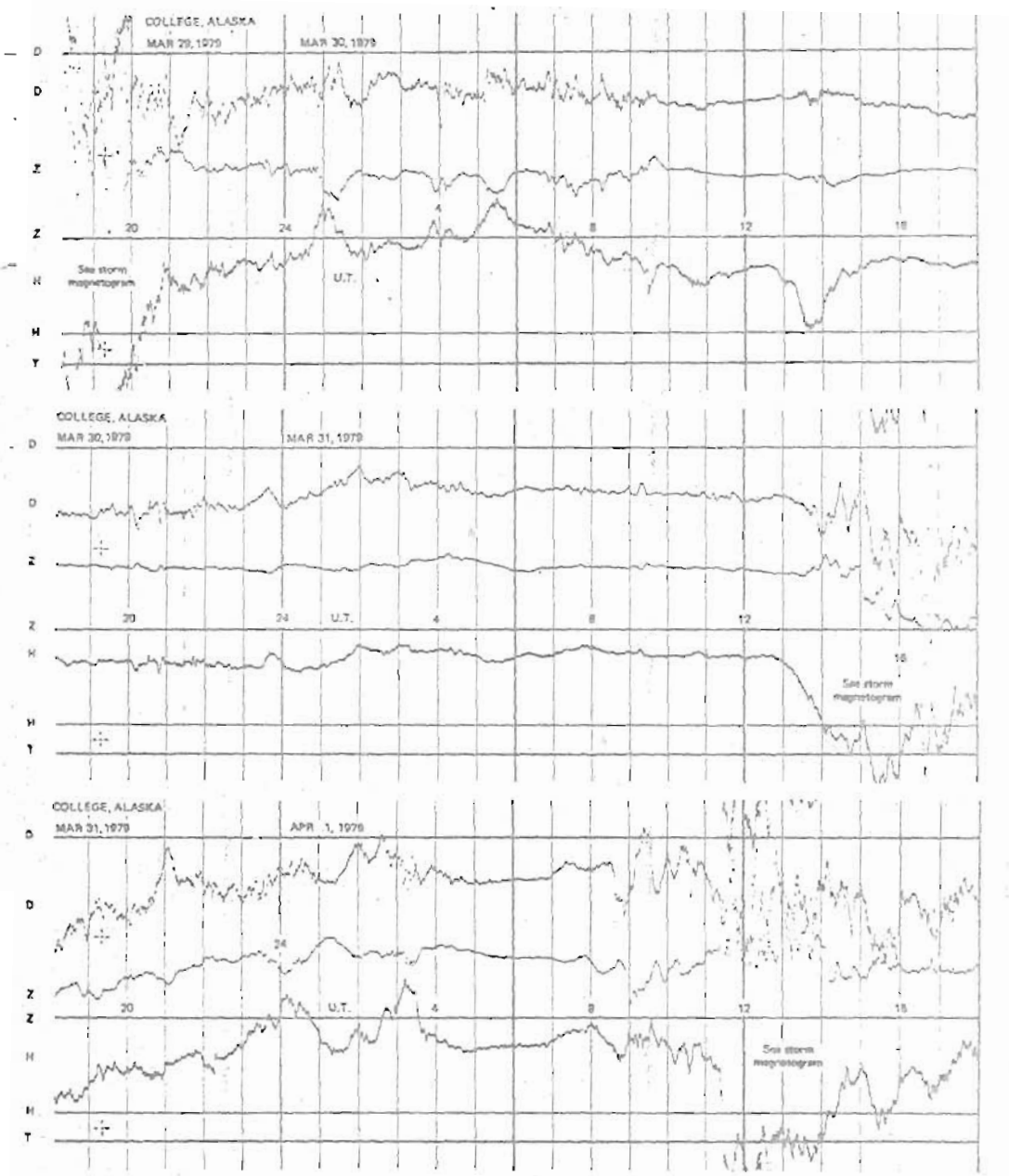
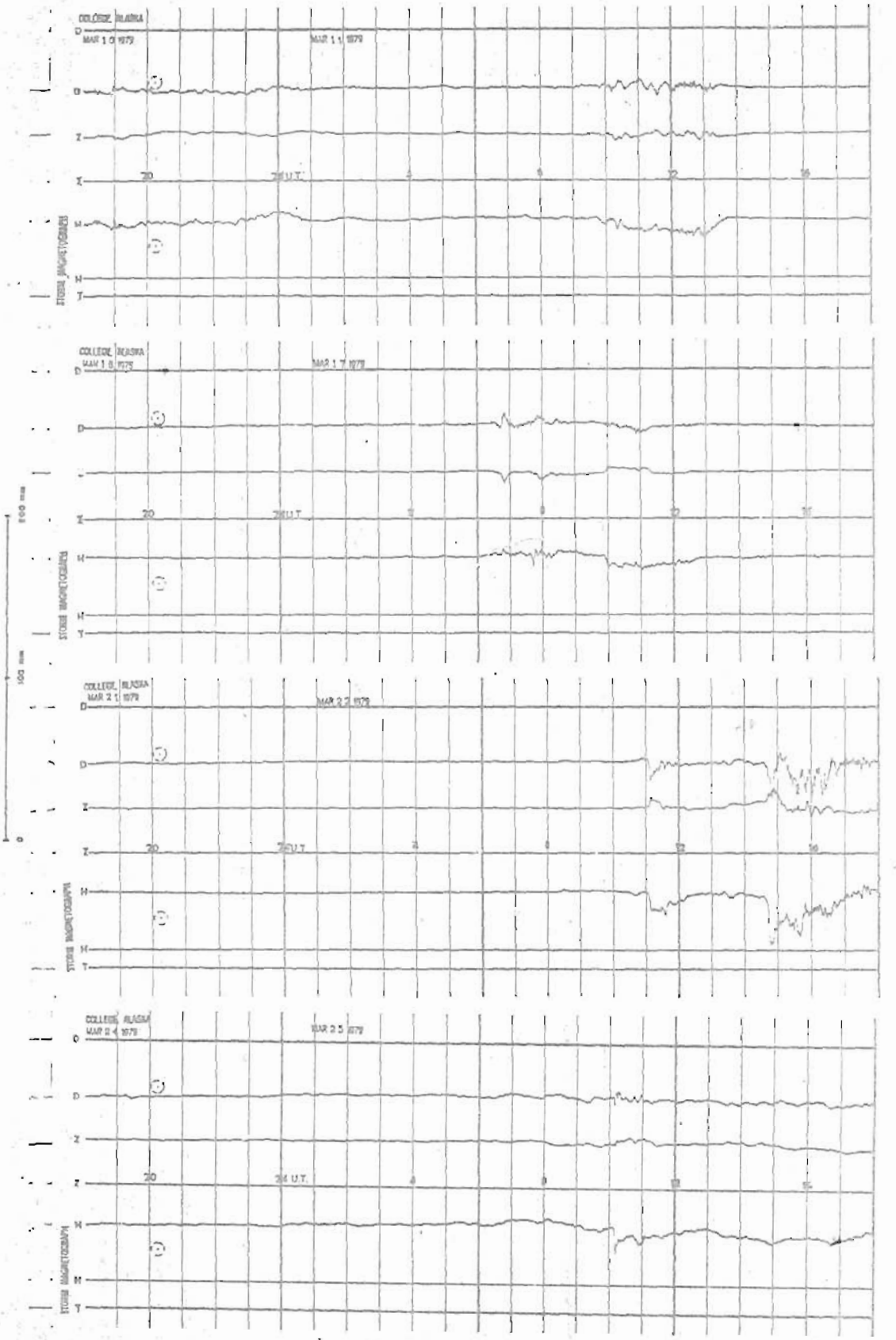


STORM MAGNETOGRAMS

STORM MAGNETOGRAMS



STORM MAGNETOGRAMS

STORM MAGNETOGRAMS