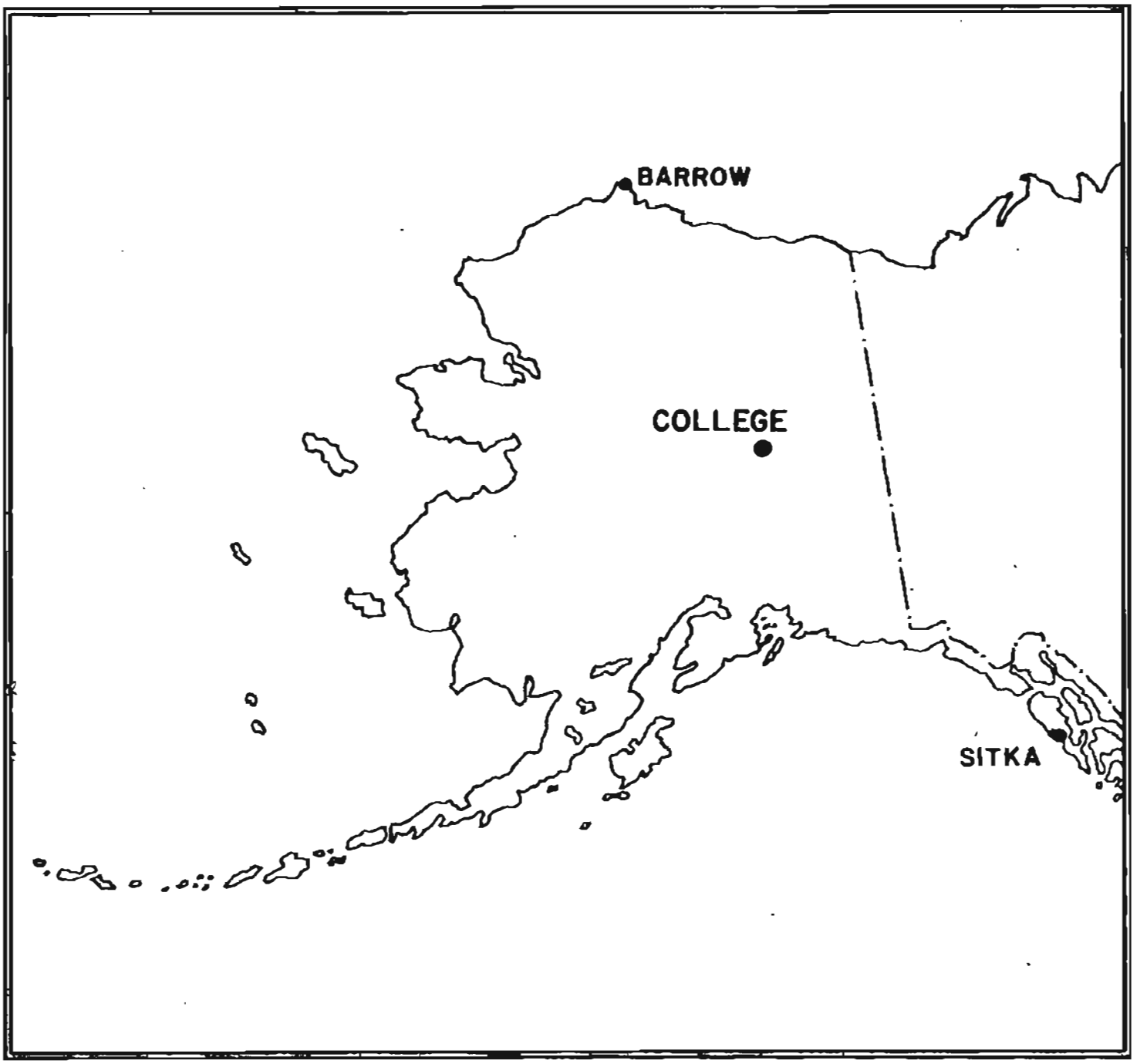
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

MARCH 1983

OPEN FILE REPORT 83-0300C



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, T.K. CUNNINGHAM 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
500 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 D-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 ≈ 30	1
30+	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

OBSERVATORY: COLLEGE OBSERVATORY

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR: MARCH 1983

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	3	3	2	2	4	3	3	3	23	15
2	4	5	7	7	6	6	5	4	44	74
3	3	3	5	7	5	6	4	3	36	49
4	4	3	4	4	6	3	3	3	30	28
5	3	4	4	7	4	6	3	4	35	45
6	3	2	0	0	2	2	2	1	12	06
7	2	2	1	3	3	0	0	1	12	06
8	1	0	1	3	5	4	2	1	17	13
9	2	2	2	2	0	2	2	0	12	05
10	0	0	1	2	0	2	3	1	09	04
11	3	1	2	4	6	3	4	4	27	25
12	3	2	3	6	6	7	6	5	38	58
13	3	4	4	6	6	3	3	3	32	34
14	2	3	6	5	6	4	3	3	32	36
15	2	3	3	6	5	5	3	2	29	29
16	2	2	2	5	6	1	1	2	21	20
17	2	3	4	5	1	1	1	1	18	14
18	1	1	2	2	2	6	5	4	23	23
19	5	4	5	5	6	4	4	2	35	39
20	3	5	5	4	6	6	4	4	37	44
21	3	3	2	4	3	4	2	2	23	15
22	3	3	3	3	4	4	2	1	23	16
23	2	3	4	4	4	4	1	1	23	17
24	1	3	4	4	3	2	2	2	21	14
25	3	4	6	7	7	5	5	3	40	64
26	4	3	1	1	1	2	2	2	16	09
27	0	0	0	1	2	1	1	1	06	02
28	1	3	3	4	6	7	5	4	33	44
29	4	5	4	6	4	6	5	3	37	44
30	3	4	5	6	5	6	3	3	35	41
31	4	4	3	6	5	3	4	3	32	32

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	BEGIN h	BEGIN m	END d	END h	END m

K SCALE USED:

	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.73	7.77		(γ/mm)
LOWER LIMIT FOR K = 9	2550	2500		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

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

NOAA FORM 76-138 SUPERSEDES C&GS FORM 818

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

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: MARCH

YEAR: 1983

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
06	16XX	pc5	
10	19XX	pc5	
26	17XX	pc5	
27	09XX	pi2	With small bay.

IDENTIFIED BY: JEP

VERIFIED BY: EAS

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 80303 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

MARCH 19 83

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	01	19XX	..	..	..	..	02	3, 4	7	296	1850	1390	06	03
								03	4	7					
								05	4	7					
		12	07XX	..	..	..	..	12	6	7	362	1550	1050	15	22
		18	15XX	..	..	..	..	18	6	6	230	1500	820	21	18
								19	5	6					
								20	5, 6	6					
		24	19XX	..	..	..	..	25	4, 5	7	229	1460	860	26	05
		28	04XX	..	..	..	..	28	6	7	424	1910	1040	APR 01	21

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: MARCH 1983

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 3-1-83	2400 U.T., 3-31-83	1.0'/mm	3.7γ/mm	27° 46.8' E
H	0000 U.T., 3-1-83	2400 U.T., 3-31-83	7.8 γ/mm		12750 γ
Z	0000 U.T., 3-1-83	2400 U.T., 3-31-83	7.7 γ/mm		55154 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 3-1-83	2400 U.T., 3-31-83	7.9'/mm	29.6 γ/mm	23° 43.1' E
H	0000 U.T., 3-1-83	2400 U.T., 3-31-83	43.9 γ/mm		11496 γ
Z	0000 U.T., 3-1-83	2400 U.T., 3-31-83	48.4 γ/mm		54086 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 54.1' E	12945 γ	55387 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAR 1, 6, 7, 8, 9, 10, 17, 24, 26, 27

FORM A-1M

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

Values are in units of nm, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150 M.T.) is hour 13 of the same universal day.
Shortage corrections have been applied. Negative values are in red, with minus signs shown.

DAY	YEAR	MONTH	ELEMENT
00	83	MAR	D

C	Day S	Type C	Mo Day	01	02	03	04	05	06	07	08	09	10	11	12	Mo Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	29	36	-29	-41	-40	-19	48	63	84	67	63	87	01	102	111	158	192	258	326	258	237	82	45	95	101	2313
			02	51	24	22	74	-70	-201	-399	-288	-304	-18	-10	148	02	236	617	537	132	307	451	188	76	188	128	25	110	2024
			03	70	46	1	-20	18	-11	38	222	-58	42	46	45	03	165	128	218	152	88	226	213	122	89	64	94	114	2112
			04	46	42	-33	36	9	-2	-25	165	64	81	69	54	04	143	-42	252	103	150	134	104	190	119	58	4	-5	1656
			05	20	27	-7	-42	-95	16	215	-24	-129	-58	45	6	05	170	230	190	260	92	123	142	100	41	50	69	51	1492
			06	52	75	55	61	71	76	72	69	70	67	77	81	06	80	79	89	103	141	160	90	109	102	82	82	63	2006
			07	40	25	35	34	41	67	56	62	80	127	128	112	07	127	90	95	89	98	115	116	113	116	115	85	60	2028
			08	37	25	14	38	38	37	51	52	50	42	75	73	08	122	189	104	163	180	166	124	103	92	35	24	14	1850
			09	16	11	10	22	44	11	34	40	52	57	65	72	09	70	92	98	102	111	131	151	24	61	60	67	66	1467
			10	59	62	62	56	60	56	62	54	32	6	70	74	10	85	91	96	107	114	140	106	72	-4	32	58	56	1606
			11	57	52	37	50	46	49	51	52	42	54	14	133	11	200	70	125	140	135	144	80	66	-47	-20	132	118	1780
			12	54	3	45	61	60	51	50	73	52	55	138	-158	12	51	235	311	177	41	89	216	143	49	294	337	93	2520
			13	-1	23	32	4	47	64	31	242	-46	-54	-62	295	13	-86	19	78	102	113	107	97	72	48	67	64	62	1318
			14	56	54	42	16	47	46	37	105	-253	-22	-54	90	14	177	71	138	192	137	120	146	135	67	84	99	82	1614
			15	60	50	42	40	59	13	88	110	74	58	25	62	15	136	112	210	300	209	141	115	98	48	76	53	54	2233
			16	56	56	38	43	98	86	53	64	113	129	74	61	16	109	13	121	95	96	116	148	161	129	106	104	49	2118
			17	31	11	24	30	-16	18	10	44	49	93	44	88	17	76	92	78	73	102	120	118	92	80	82	70	45	1454
			18	19	30	30	37	52	36	48	97	75	50	67	74	18	86	78	113	110	227	203	171	118	73	136	88	30	2048
			19	28	8	-83	51	-1	-76	-75	18	-59	-91	68	172	19	242	28	243	84	256	158	60	0	59	67	54	22	1232
			20	15	3	6	-75	53	52	-27	80	59	84	79	83	20	163	205	338	664	179	98	180	61	-83	-76	18	52	2209
			21	32	56	44	47	34	60	74	45	52	84	28	87	21	95	88	110	66	111	109	119	112	63	90	87	73	1766
			22	35	5	-21	14	3	24	36	38	157	97	72	78	22	80	80	103	73	143	152	122	106	82	69	7	54	1609
			23	39	35	10	6	18	60	112	81	-14	55	70	106	23	92	184	227	173	99	122	142	108	59	64	62	60	1970
			24	29	19	15	8	-8	-17	-37	23	82	-10	75	78	24	98	157	152	144	113	131	144	62	-16	-3	10	19	1268
			25	-2	-8	-15	-52	28	-16	-46	-329	-456	-305	131	115	25	36	584	457	314	238	284	272	103	-3	30	51	-10	1401
			26	-6	18	-2	38	23	41	46	56	63	68	78	90	26	94	96	96	114	117	128	142	112	82	91	82	69	1736
			27	58	56	61	54	56	56	61	62	64	68	116	82	27	116	134	116	133	136	147	146	140	108	94	49	40	2143
			28	46	34	15	-24	-35	17	-22	-58	-138	-19	-130	57	28	179	123	569	497	592	314	-43	19	70	39	-46	6	2062
			29	27	10	-130	-59	38	-130	-186	-35	-24	-114	-35	-19	29	195	114	148	378	60	94	283	50	44	59	79	-6	841
			30	8	-7	-10	-13	44	-14	-29	96	18	-83	-52	-52	30	71	70	202	394	-75	122	165	121	41	12	37	43	1109
			31	49	-14	8	-86	81	34	59	33	-20	44	123	71	31	108	139	114	120	148	140	192	213	-22	-5	56	43	1628

SCALED BY	LYT, TKC
CHECKED BY	JEP, TKC
MORE REVIEWED BY	JEP
PUNCHED BY	

Preliminary baseline 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 chart for part or all of hour; if value is given, curve was estimated for missing part.

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

MONTHLY SUM	54613
MONTHLY MEAN	73
DATES WITH GAPS:	

Form 75-188

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	82	MAR	Z

C	Q or S	Type Of Day	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	301	311	302	316	350	362	344	340	318	306	305	306	01	295	301	281	200	182	116	155	211	145	180	211	232	6425
			02	269	216	87	-16	-75	-116	2	350	325	501	754	648	02	703	816	703	634	672	559	220	123	277	320	334	362	8670
			03	313	280	341	330	366	398	371	174	164	273	330	382	03	337	248	396	421	252	268	237	265	303	300	338	352	7459
			04	351	390	367	371	336	345	264	310	379	353	331	301	04	468	286	457	232	275	285	276	281	277	278	295	304	7842
			05	312	335	338	365	361	363	306	391	225	217	419	224	05	329	416	526	111	162	226	271	297	283	300	342	394	7515
			06	378	329	317	339	319	315	317	321	326	322	322	313	06	312	312	310	289	269	273	271	295	292	302	317	322	7482
			07	334	336	344	339	338	340	344	361	340	306	274	265	07	292	295	296	299	306	314	313	316	317	318	316	324	7671
			08	328	325	340	346	335	330	331	327	336	348	353	328	08	306	160	206	219	134	127	184	233	257	266	275	294	6688
			09	312	329	347	340	328	327	345	358	371	330	326	324	09	316	312	306	305	306	307	291	273	292	302	308	312	7669
			10	320	320	316	312	312	313	314	306	310	312	320	316	10	312	302	298	298	300	298	290	287	269	268	269	301	7285
			11	302	302	303	306	300	302	297	304	304	278	238	341	11	454	147	201	246	286	283	238	224	176	186	394	387	6919
			12	353	336	349	327	317	325	327	299	310	286	363	404	12	220	378	430	518	398	625	587	437	285	443	282	246	8841
			13	353	364	357	348	366	345	325	237	135	318	515	587	13	312	219	291	308	309	310	308	309	307	321	318	320	7879
			14	323	326	324	340	356	344	318	126	50	153	232	394	14	559	452	376	355	298	322	316	316	324	340	333	324	7655
			15	324	326	320	326	336	334	375	356	340	253	210	262	15	346	526	354	290	286	302	272	302	296	326	322	322	7708
			16	315	315	316	324	346	344	331	335	327	290	311	294	16	326	99	215	270	291	312	308	310	313	313	319	317	7261
			17	318	330	345	346	352	407	415	294	315	325	282	225	17	268	302	280	287	299	307	310	302	303	305	312	319	7568
			18	323	320	308	306	314	322	348	352	335	320	312	300	18	301	283	267	284	305	206	115	157	220	311	309	331	6951
			19	322	338	279	391	352	348	253	265	129	284	442	536	19	540	441	228	168	200	231	195	228	280	304	304	319	7372
			20	329	346	382	321	70	258	347	381	290	299	328	272	20	245	294	505	335	202	220	255	229	210	251	290	308	6967
			21	323	355	334	330	312	352	326	321	328	264	245	271	21	252	287	283	249	188	192	225	240	264	286	308	325	6860
			22	326	316	349	349	338	354	355	328	319	228	286	314	22	304	290	222	146	175	268	289	296	290	296	294	318	7070
			23	321	325	331	337	335	348	316	243	282	315	324	295	23	287	241	224	189	267	305	294	271	270	292	309	291	7032
			24	319	309	328	345	343	372	400	412	354	188	320	298	24	290	242	199	227	268	296	280	260	256	263	276	301	7146
			25	373	350	382	272	369	276	67	1	32	228	616	603	25	522	680	565	553	284	228	205	128	148	282	308	303	7725
			26	312	329	352	369	372	346	337	333	324	322	324	321	26	311	315	314	319	324	319	318	312	303	311	309	314	7804
			27	318	320	321	312	308	309	308	307	308	314	302	298	27	284	217	264	298	308	310	307	301	291	293	294	296	7188
			28	298	297	304	310	373	359	321	295	248	223	229	342	28	585	598	540	383	301	445	24	151	208	251	270	323	7678
			29	342	326	267	178	358	315	61	194	348	260	271	386	29	622	437	548	369	452	125	203	165	234	288	312	326	7407
			30	331	324	348	372	396	366	380	264	125	231	190	188	30	286	320	388	591	106	134	282	281	289	303	330	369	7194
			31	405	362	371	313	238	360	368	316	289	92	-74	190	31	398	560	271	244	270	306	309	260	219	289	315	324	6995

SCALED BY	LTT, TKC
CHECKED BY	JEP, TKC
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 Magn., converted to Normal Magn.

MONTHLY SUM	229926
MONTHLY MEAN	309
DATES WITH GAPS:	

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of gam, 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.
Skittle-eye corrections have been applied. Regulite 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	TELEMENT
CO	83	MAR	H

C	O M S	Tra 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	263	266	288	304	384	382	310	316	290	288	293	330	01	290	250	184	92	120	93	196	147	178	154	179	146	5775
			02	233	397	429	354	351	193	151	-542	101	-58	-585	-200	02	-126	-777	-572	29	-143	-268	-93	170	216	136	236	277	29
			03	336	348	322	360	360	390	424	385	352	290	264	-624	03	-70	208	37	-1	-19	227	220	292	248	259	241	246	5137
			04	299	251	381	295	294	315	476	439	338	250	276	186	04	-223	-534	-188	164	219	249	236	149	116	176	177	233	4570
			05	240	252	295	348	423	441	484	428	455	360	387	-149	05	-62	-54	-86	-166	280	289	256	199	139	165	164	266	4580
			06	398	364	341	248	232	231	234	239	235	240	245	246	06	250	251	219	182	176	208	264	247	242	232	227	242	6015
			07	234	228	252	261	262	286	281	286	260	257	194	169	07	211	249	242	249	256	249	249	242	232	229	229	236	5863
			08	235	247	235	252	266	264	264	266	253	312	283	255	08	124	0	237	152	98	213	260	271	252	226	230	230	5457
			09	233	256	254	265	266	288	282	310	313	338	295	297	09	267	279	260	285	288	271	239	260	262	243	238	238	6597
			10	239	248	252	264	261	272	274	274	292	324	286	292	10	278	279	286	286	283	274	261	254	236	251	259	240	6467
			11	245	254	262	263	272	273	274	260	300	196	238	122	11	-131	-104	246	294	267	223	144	26	83	241	279	349	4896
			12	369	400	266	226	238	259	276	330	338	261	-54	-256	12	212	-285	-422	-149	-802	-427	-216	-64	-160	135	318	426	591
			13	251	241	250	318	262	261	258	272	164	6	-200	-387	13	228	244	274	243	227	230	231	253	237	228	245	246	4166
			14	252	267	269	290	277	285	294	61	251	94	230	53	14	-251	106	126	132	230	262	241	240	279	278	268	247	4285
			15	242	248	253	280	270	319	306	303	316	246	37	164	15	17	-48	-143	-40	98	186	250	278	275	240	240	235	4576
			16	237	237	257	261	252	290	266	294	260	279	266	179	16	-455	-81	283	266	271	262	256	246	243	234	226	229	5080
			17	232	247	270	245	364	336	369	283	290	271	-46	186	17	260	263	256	254	264	260	238	237	220	224	221	212	5956
			18	215	238	249	260	266	278	287	283	289	279	268	255	18	258	243	256	235	-108	-363	-21	207	271	254	178	264	4861
			19	299	353	514	443	503	547	533	406	375	230	42	-153	19	-136	-429	-273	-224	79	82	184	254	270	255	246	226	5004
			20	275	288	304	435	661	516	523	316	273	230	117	52	20	43	-18	-430	-544	-255	212	109	32	94	185	240	260	3918
			21	297	322	259	259	286	294	262	272	278	270	152	161	21	197	215	118	105	46	190	216	211	236	239	230	226	5341
			22	246	260	328	392	303	272	316	340	284	243	258	259	22	244	213	16	-24	192	252	259	237	218	207	208	222	5745
			23	253	224	258	270	263	292	306	388	410	307	304	244	23	223	140	-4	186	284	272	242	211	236	252	241	239	6041
			24	253	241	251	281	298	331	483	418	351	183	269	244	24	200	119	148	212	272	246	222	211	179	213	212	236	6073
			25	254	290	380	550	462	488	162	130	282	172	277	204	25	168	713	220	85	102	122	123	20	298	319	302	290	2865
			26	289	266	323	309	334	261	269	258	245	240	230	234	26	249	239	246	242	247	244	237	238	239	242	239	237	6165
			27	236	232	235	238	246	250	255	257	261	271	268	265	27	197	216	244	255	258	259	252	241	238	227	226	228	5655
			28	232	240	255	269	334	294	333	348	282	126	188	215	28	119	277	345	634	634	277	115	236	161	143	189	301	1995
			29	348	430	552	574	366	450	514	486	340	317	252	124	29	0	32	43	436	419	166	15	78	260	227	219	186	4974
			30	234	293	327	393	504	296	391	422	472	368	57	138	30	254	194	102	532	284	200	266	254	231	242	242	334	5080
			31	381	448	270	514	530	422	230	245	278	198	284	113	31	21	227	32	276	271	256	123	48	91	252	246	237	4253

SCALED BY	LYT, TMC
CHECKED BY	JEP, TKC
SIGNAL RECEIVED BY	JEP
PUNCHED BY	

Preliminary baseline and scale values.

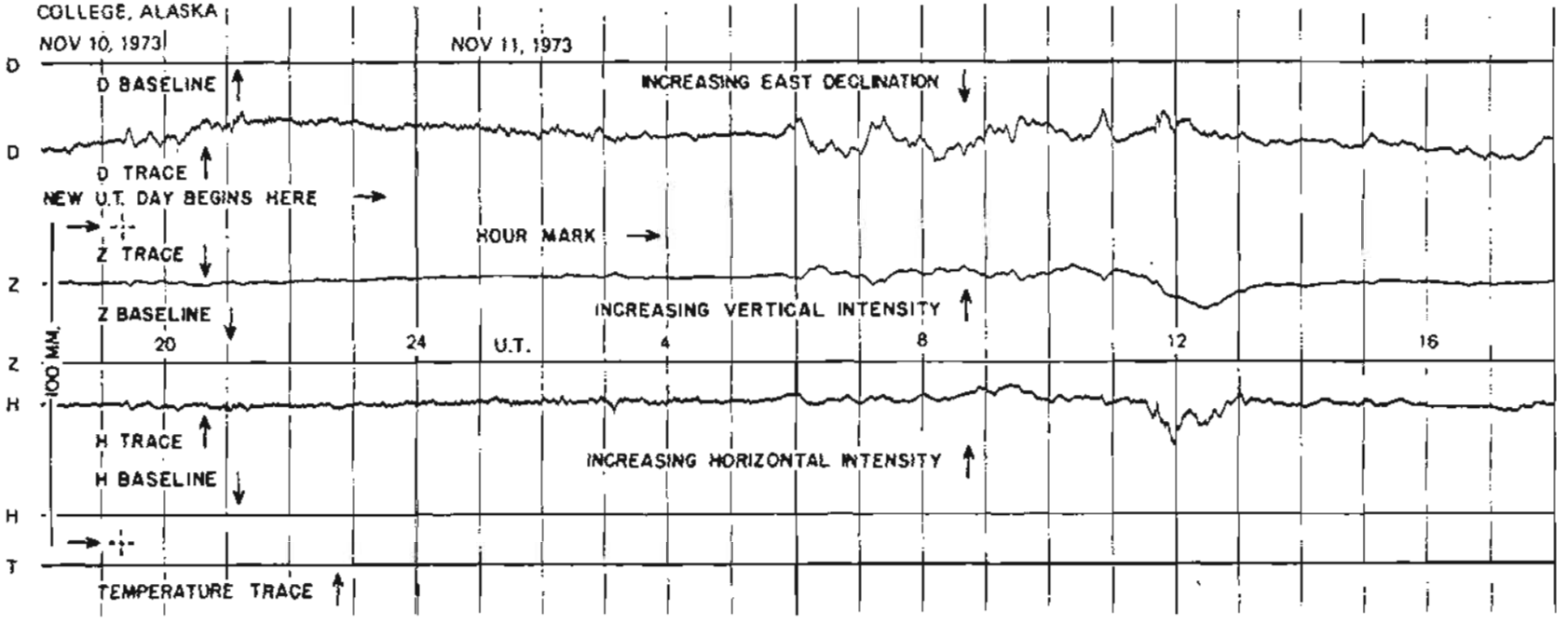
Interval Beginning	Baseline Value	Scale Value

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

MONTHLY SUM	148210
MONTHLY MEAN	199
DAYS WITH GAPS	

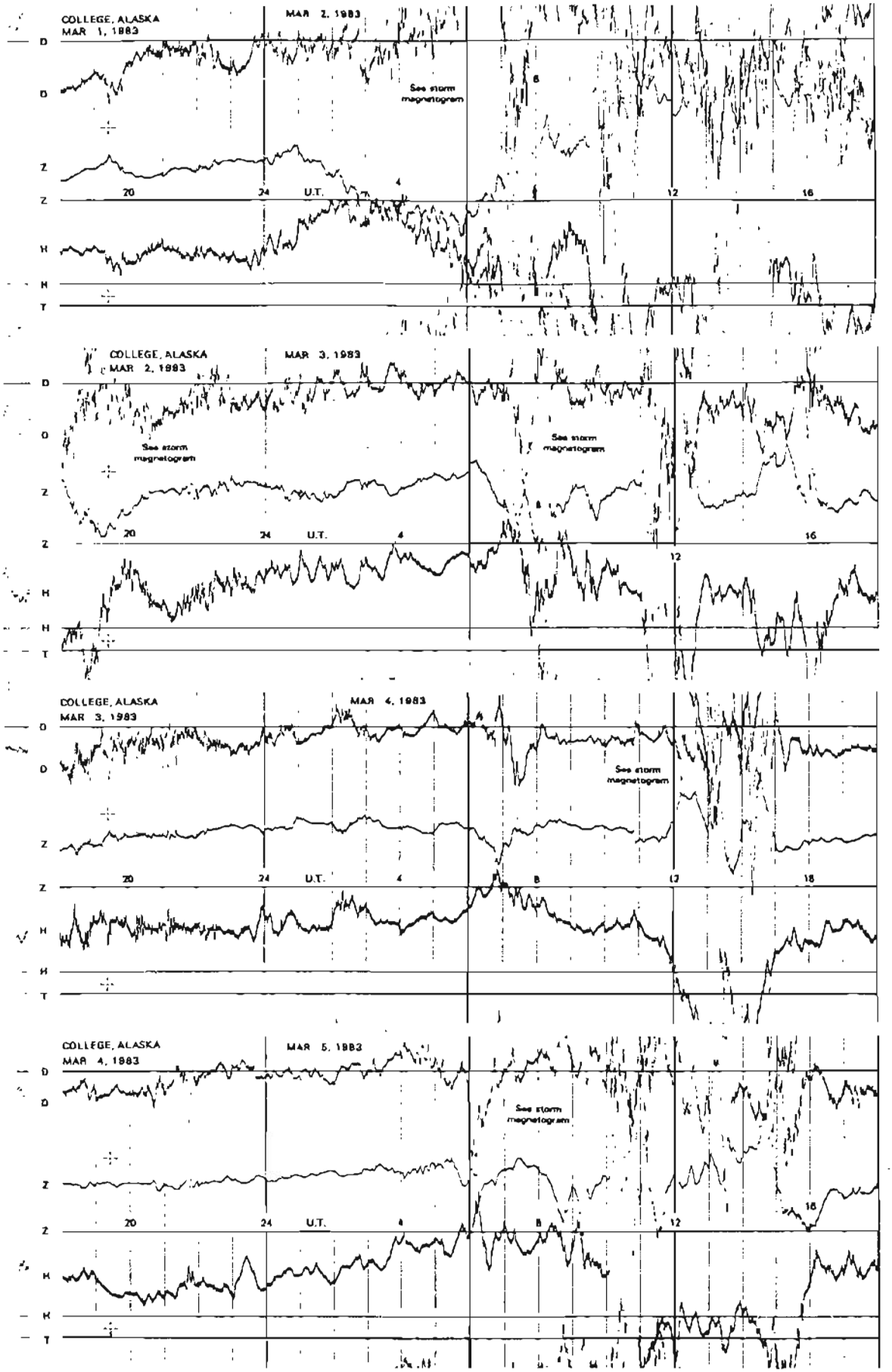
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

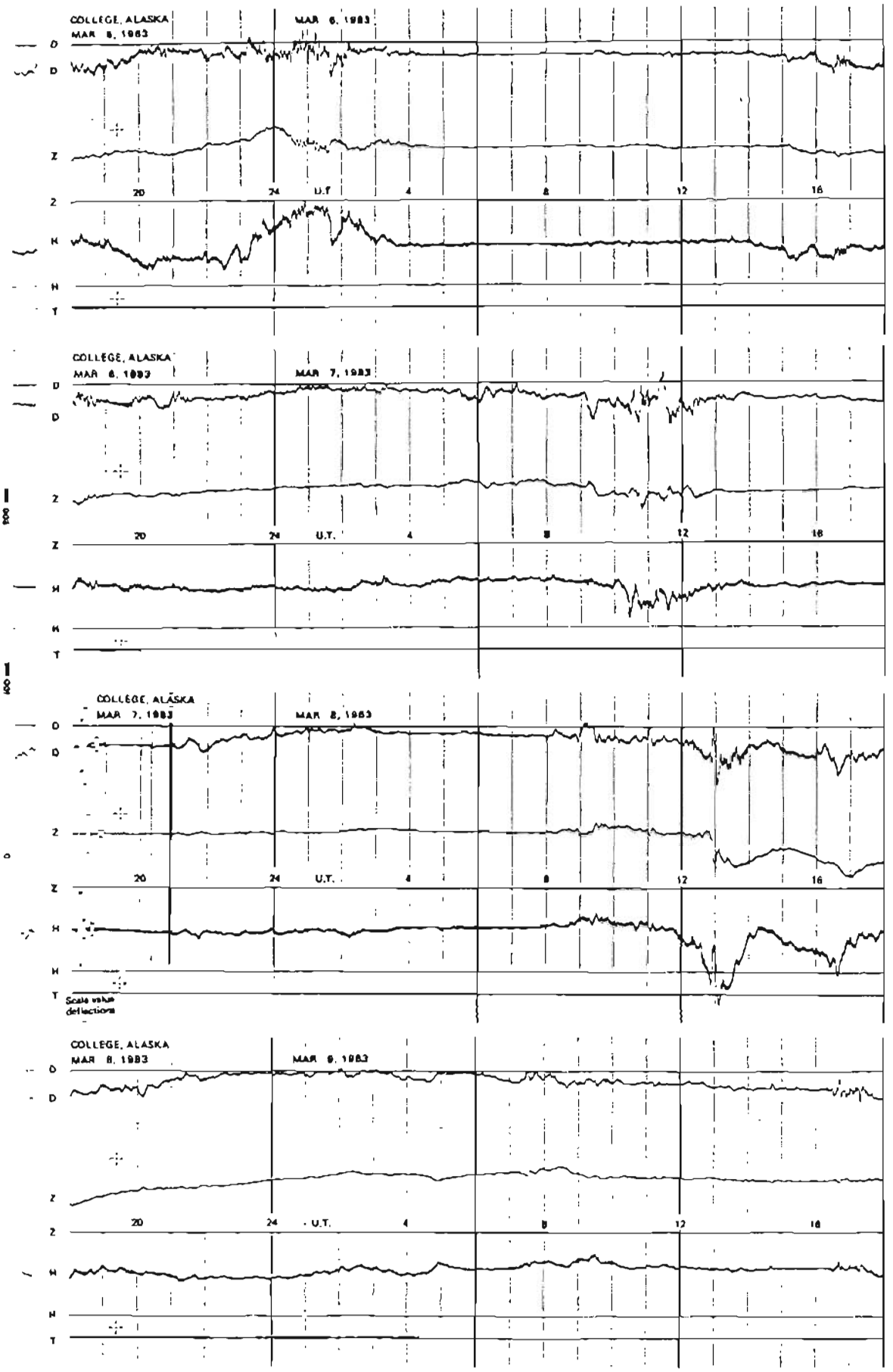


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

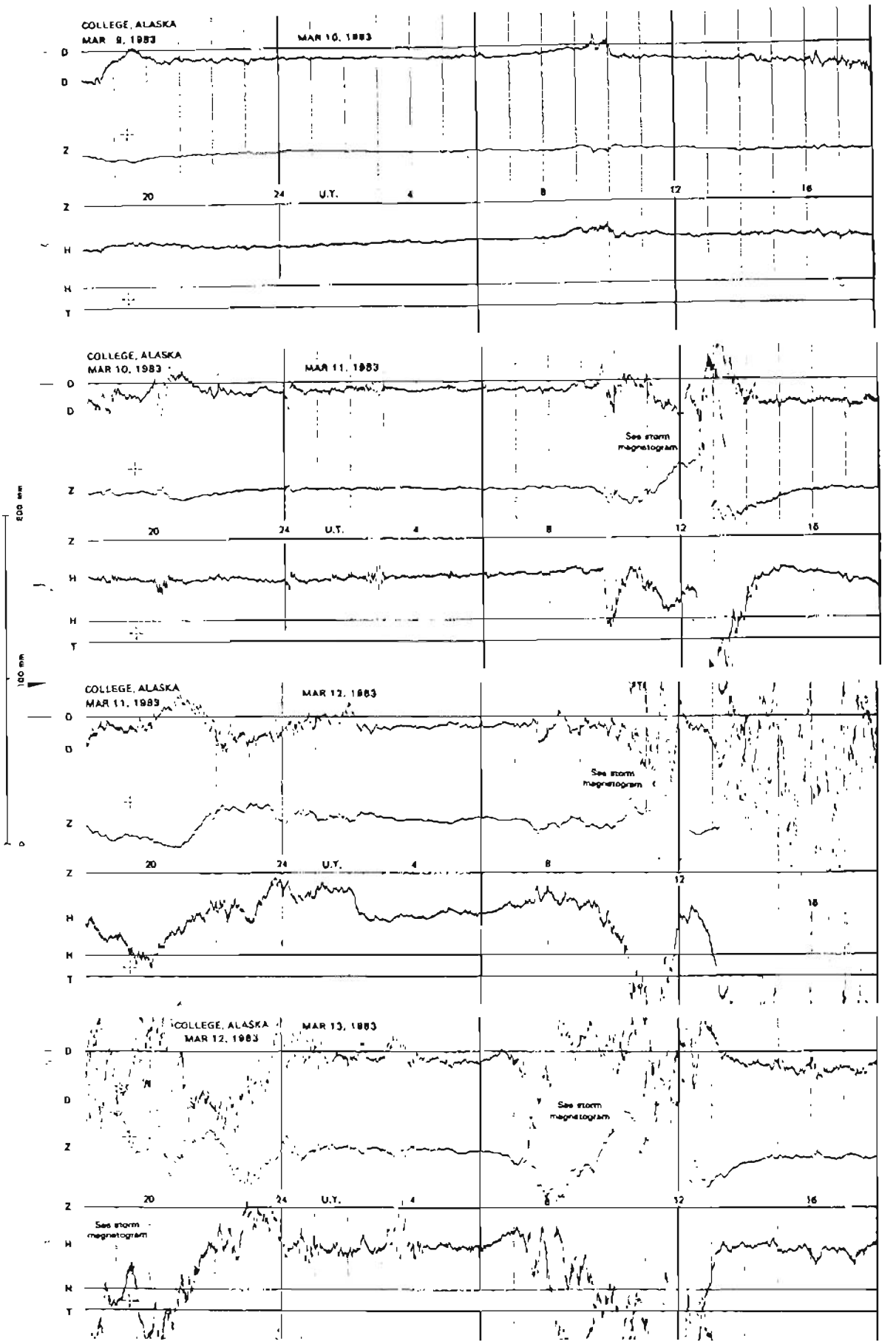
NORMAL MAGNETOGRAMS



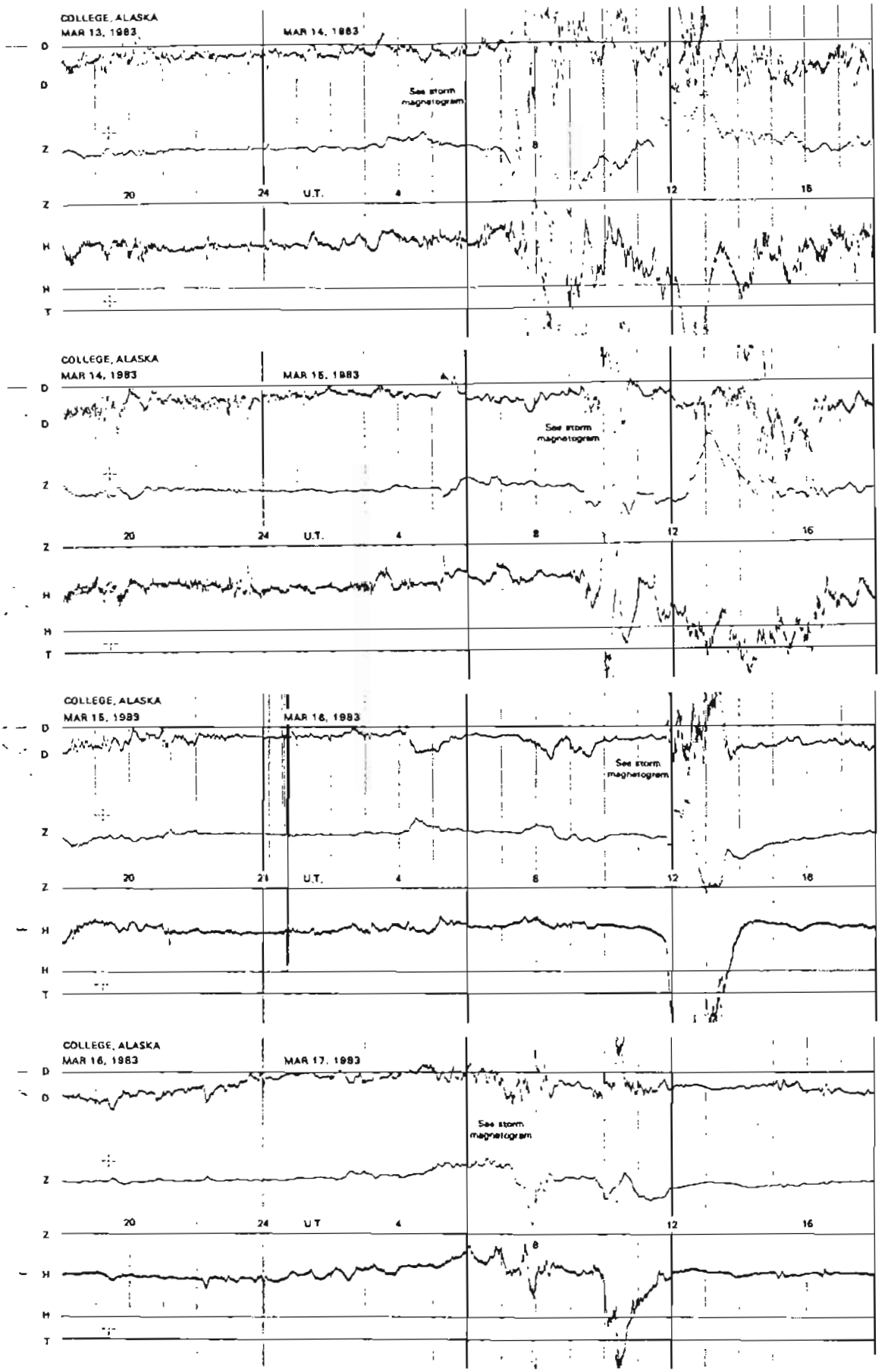
NORMAL MAGNETOGRAMS



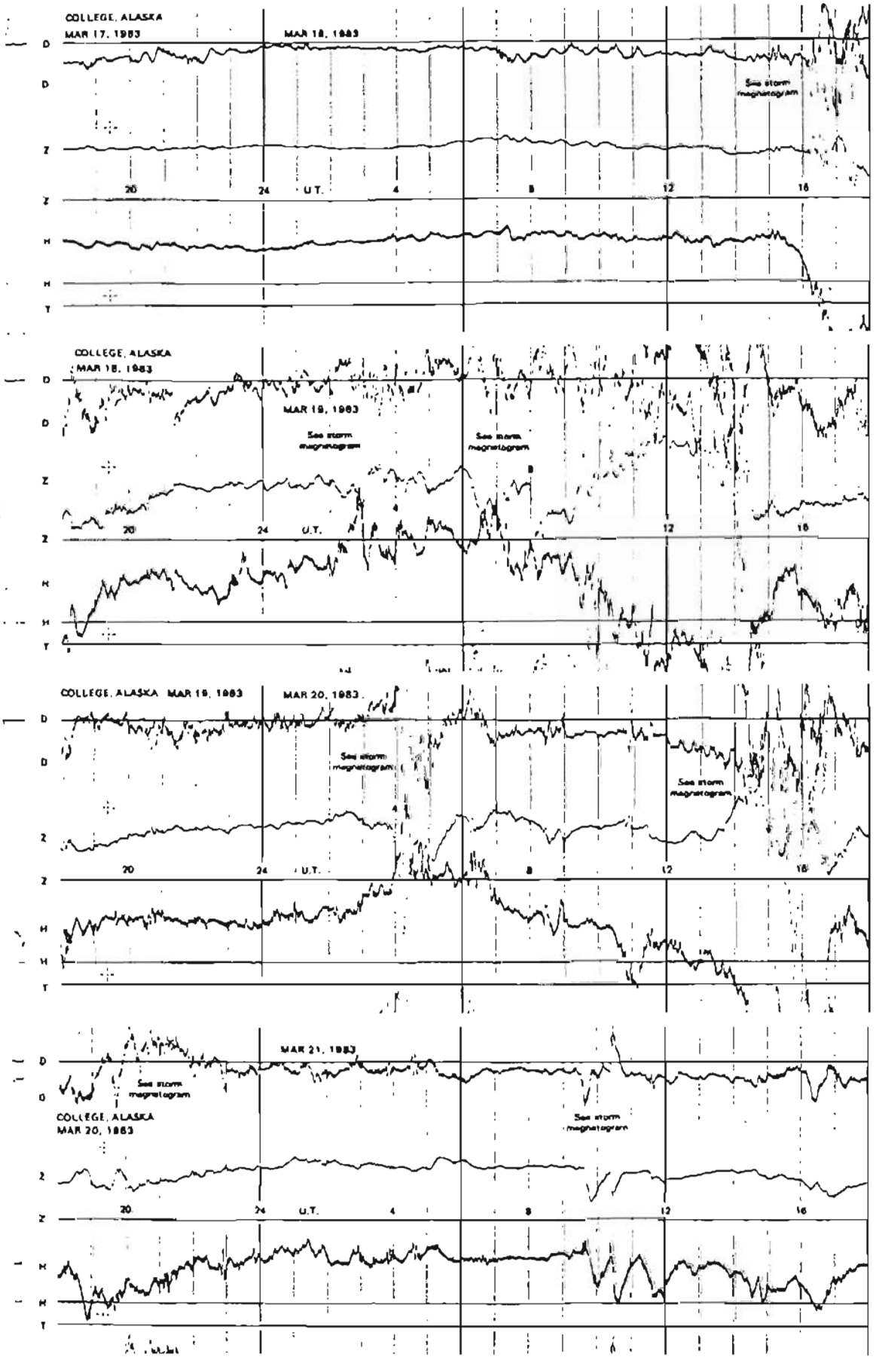
NORMAL MAGNETOGRAMS



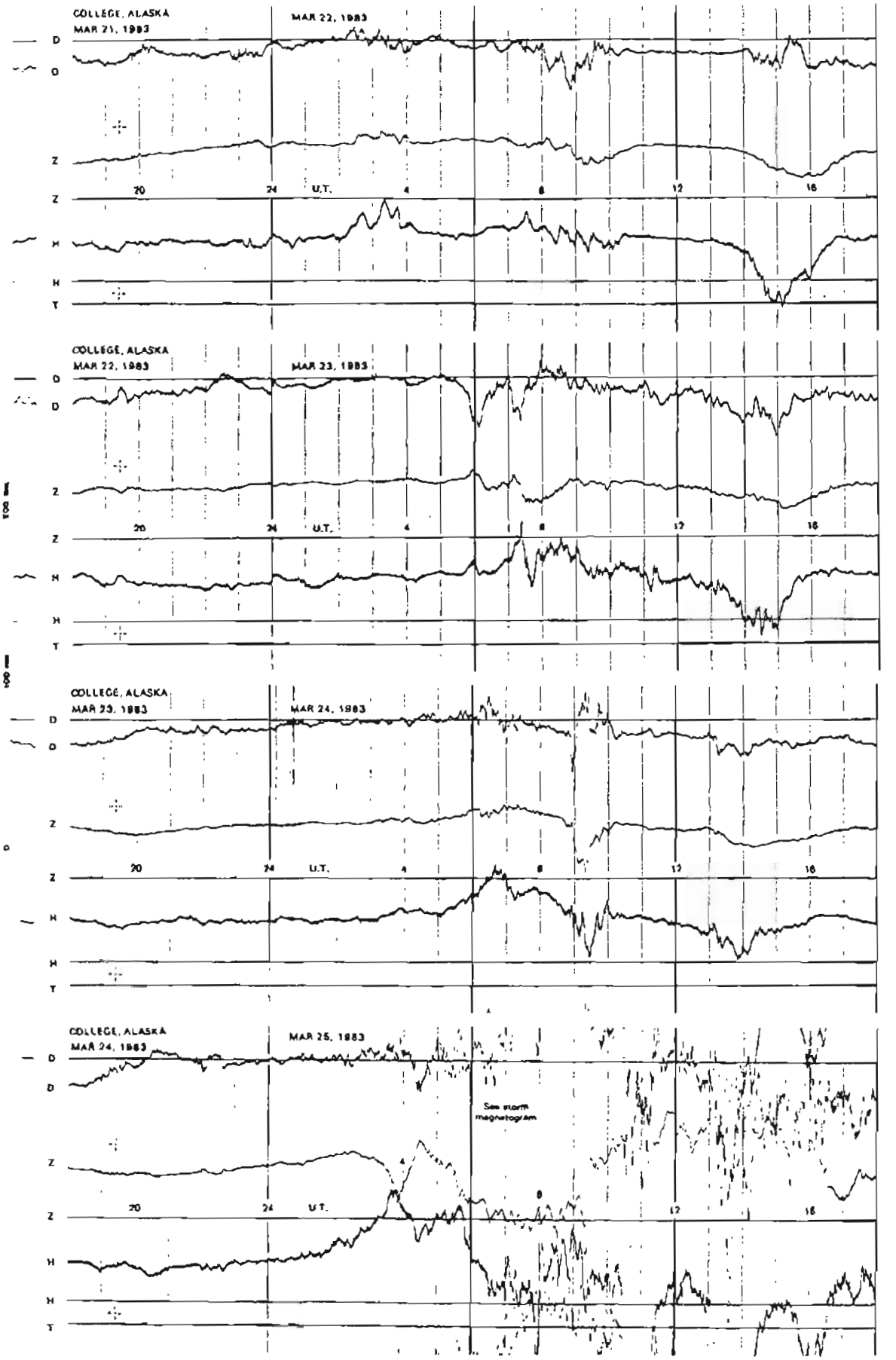
NORMAL MAGNETOGRAMS



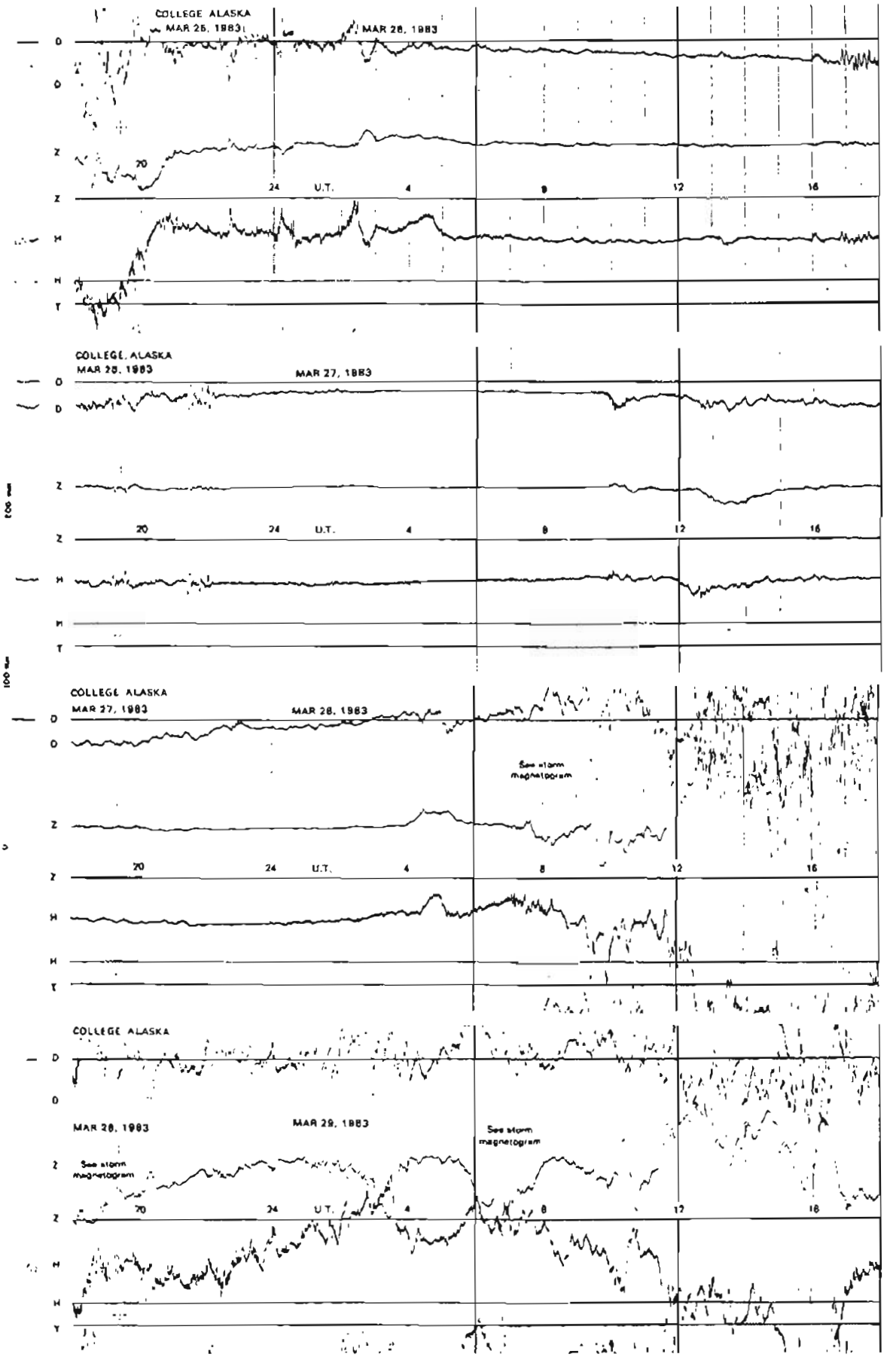
NORMAL MAGNETOGRAMS



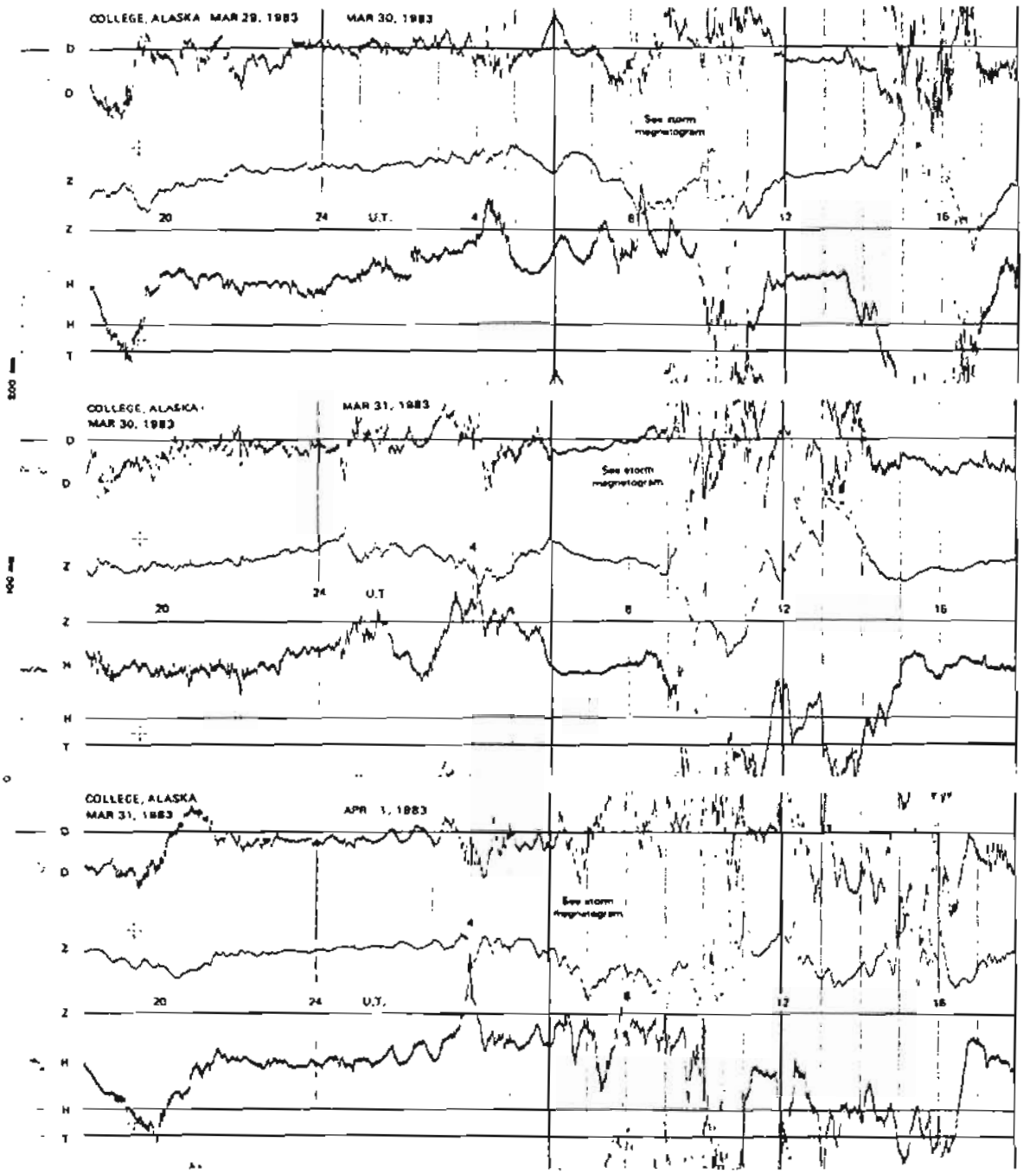
NORMAL MAGNETOGRAMS



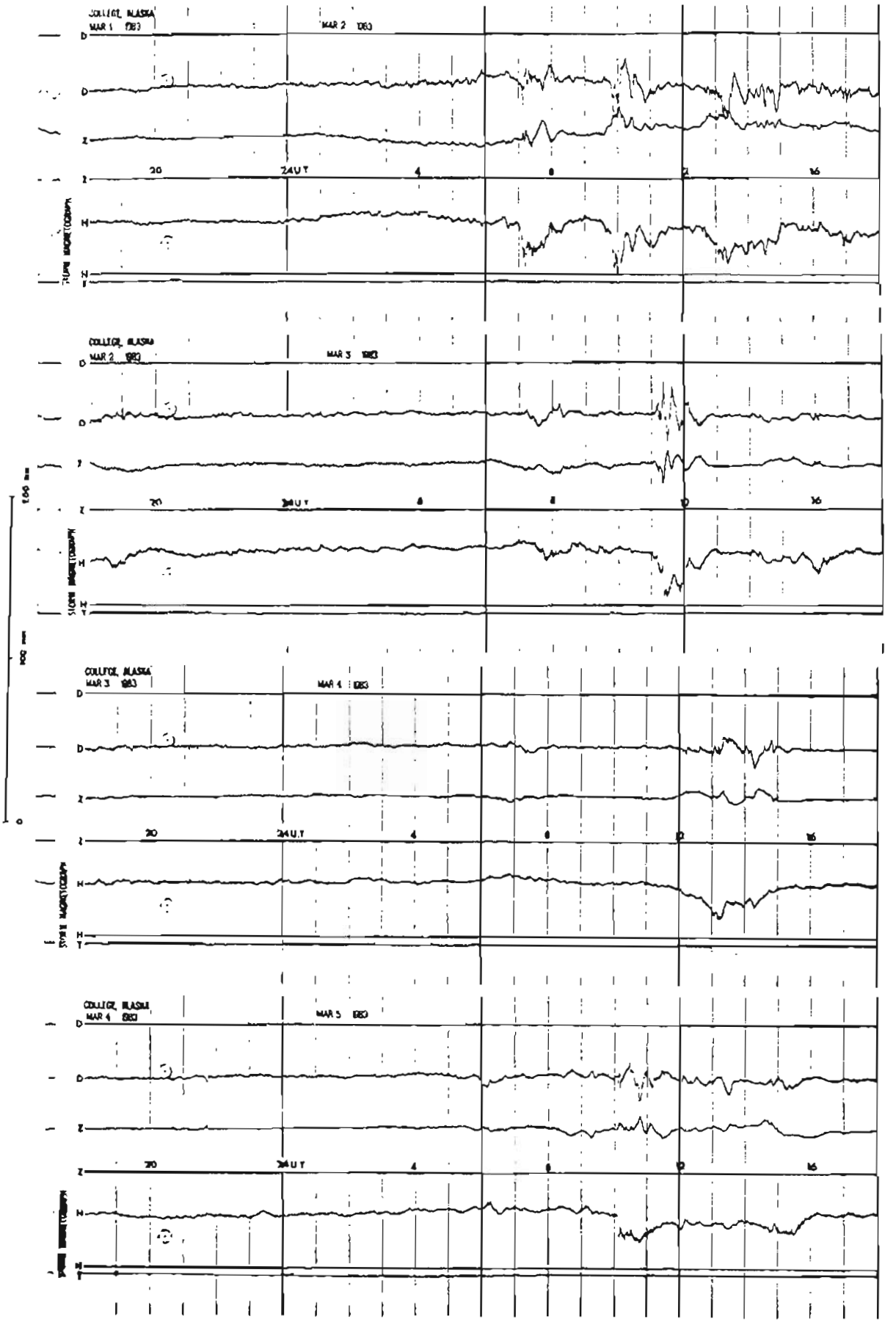
NORMAL MAGNETOGRAMS



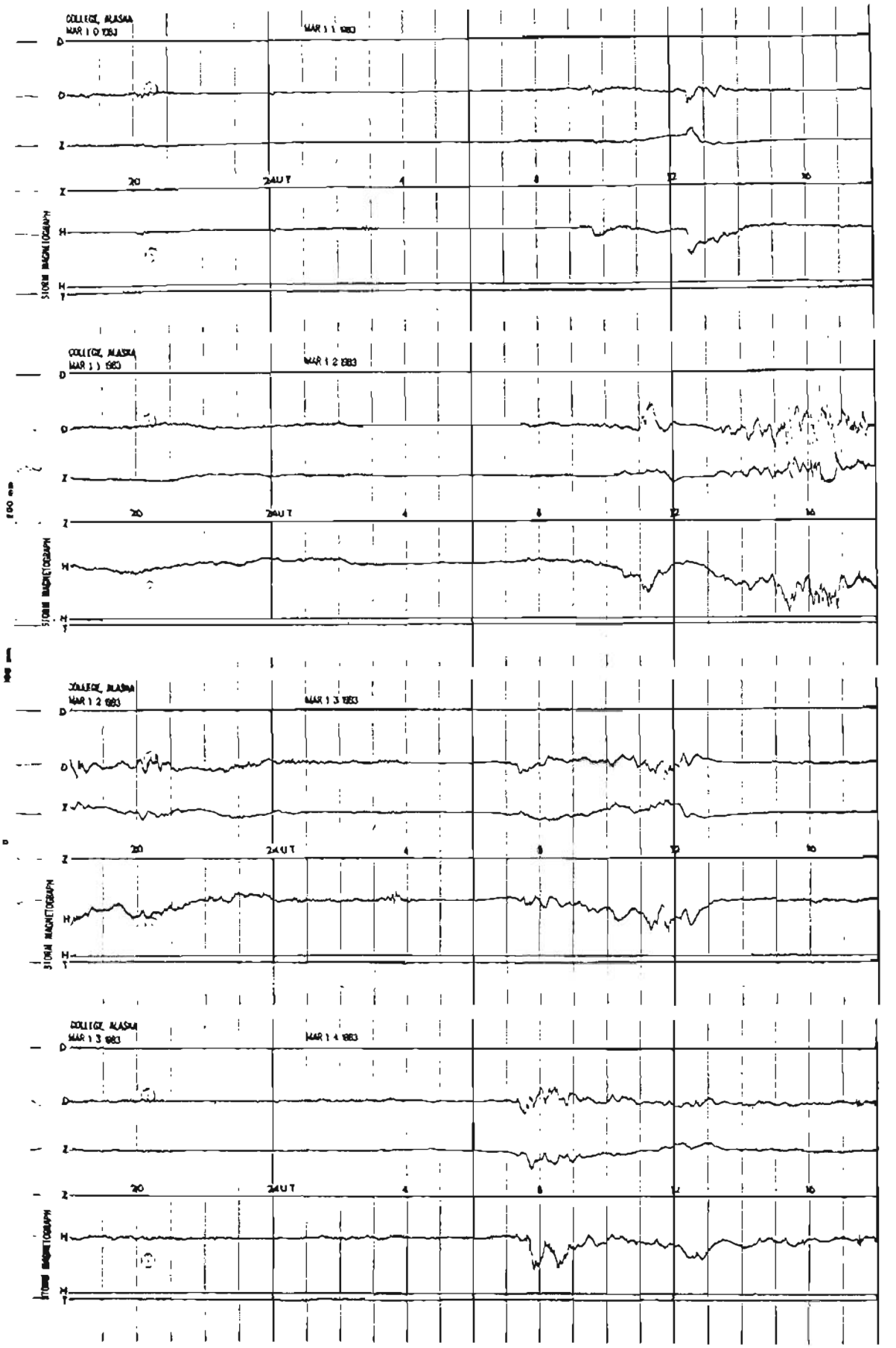
NORMAL MAGNETOGRAMS



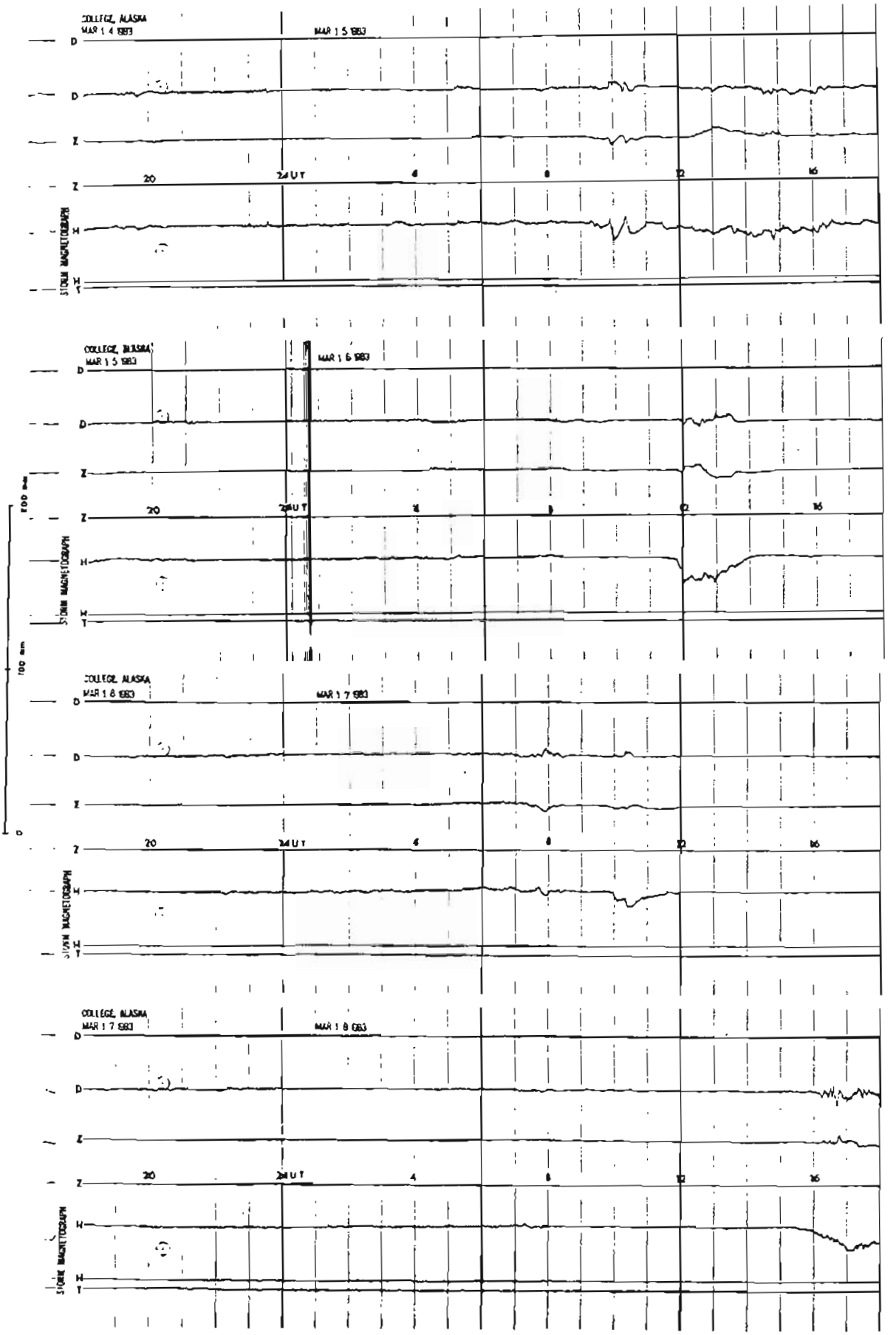
STORM MAGNETOGRAMS



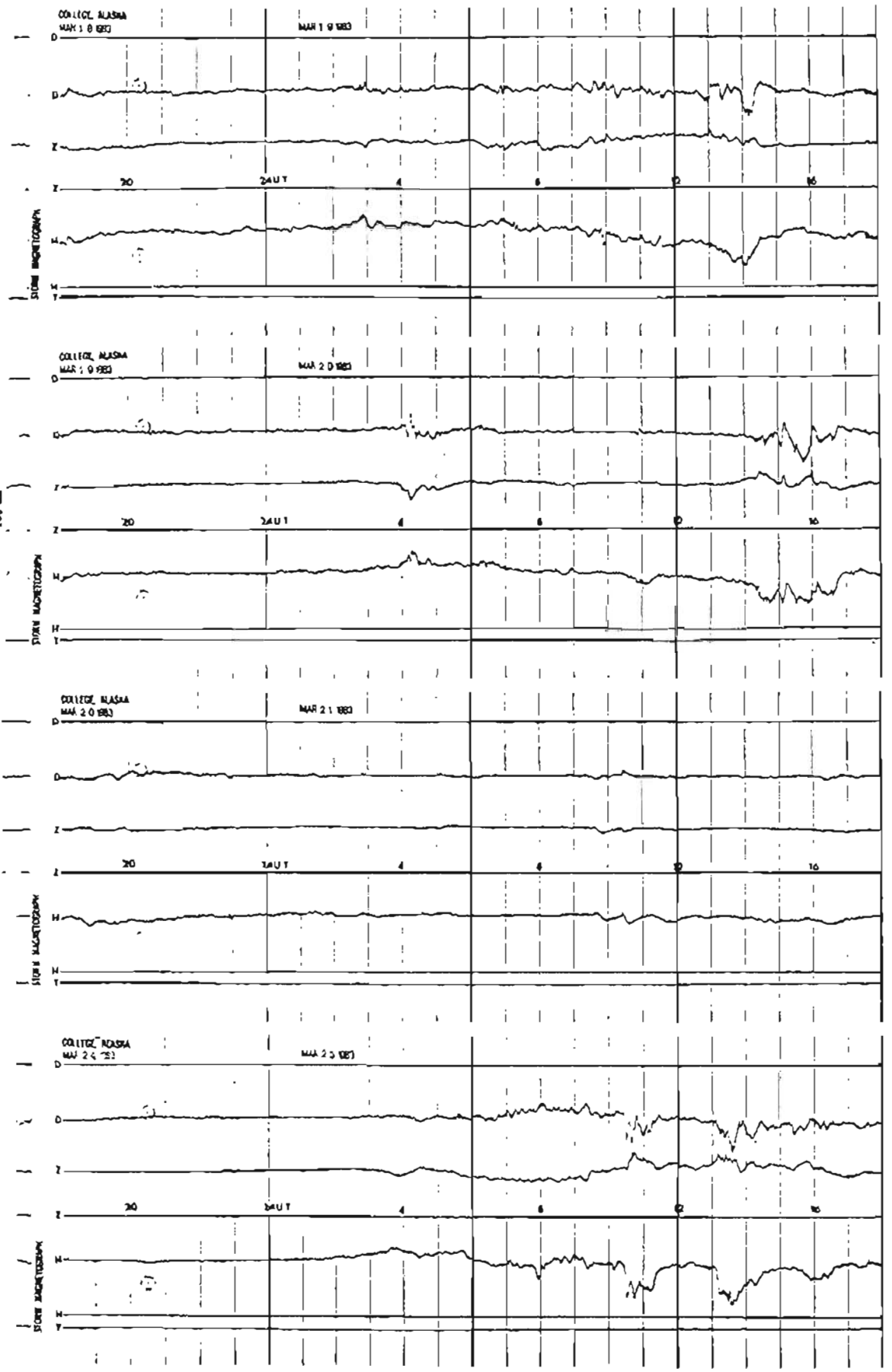
STORM MAGNETOGRAMS



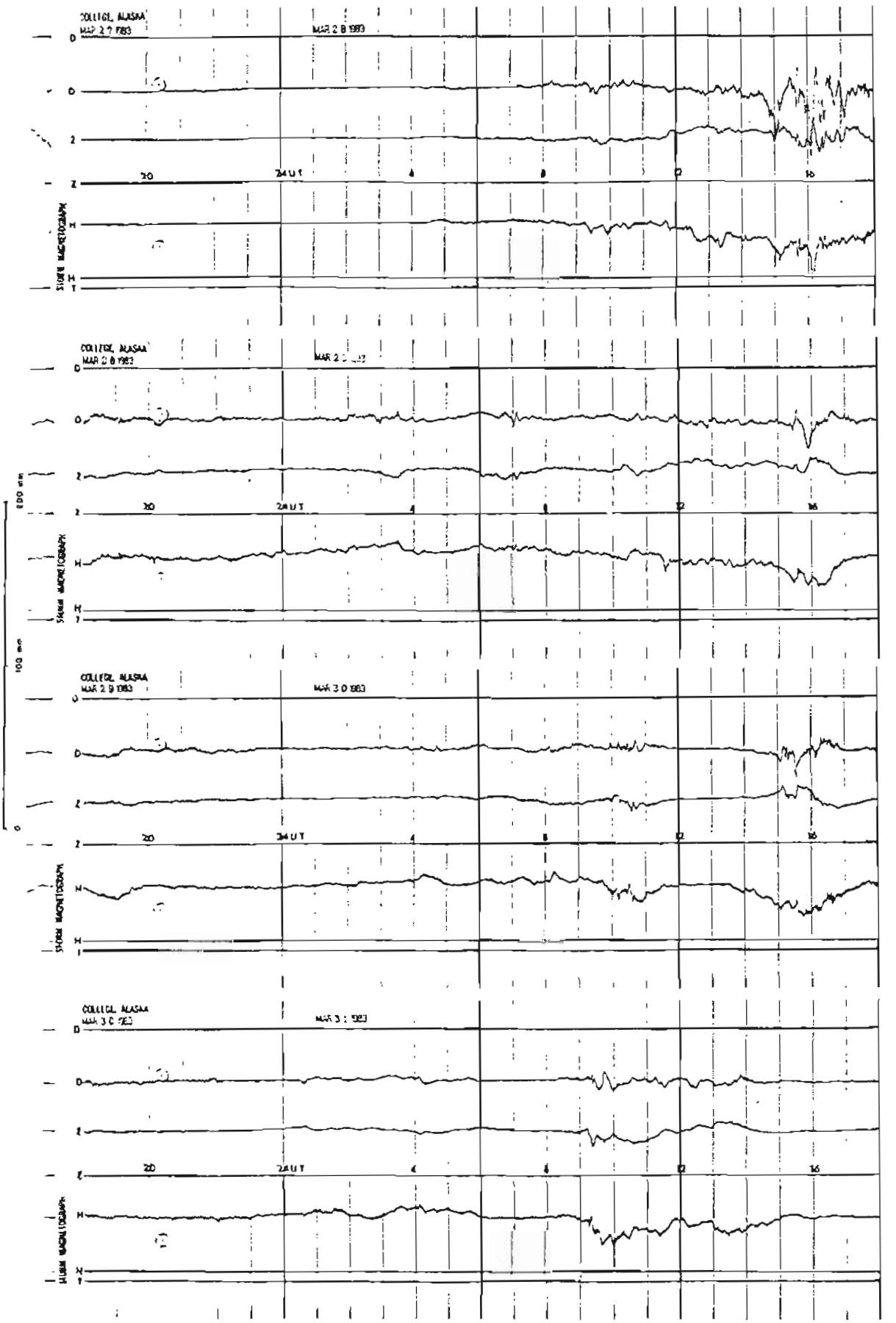
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS