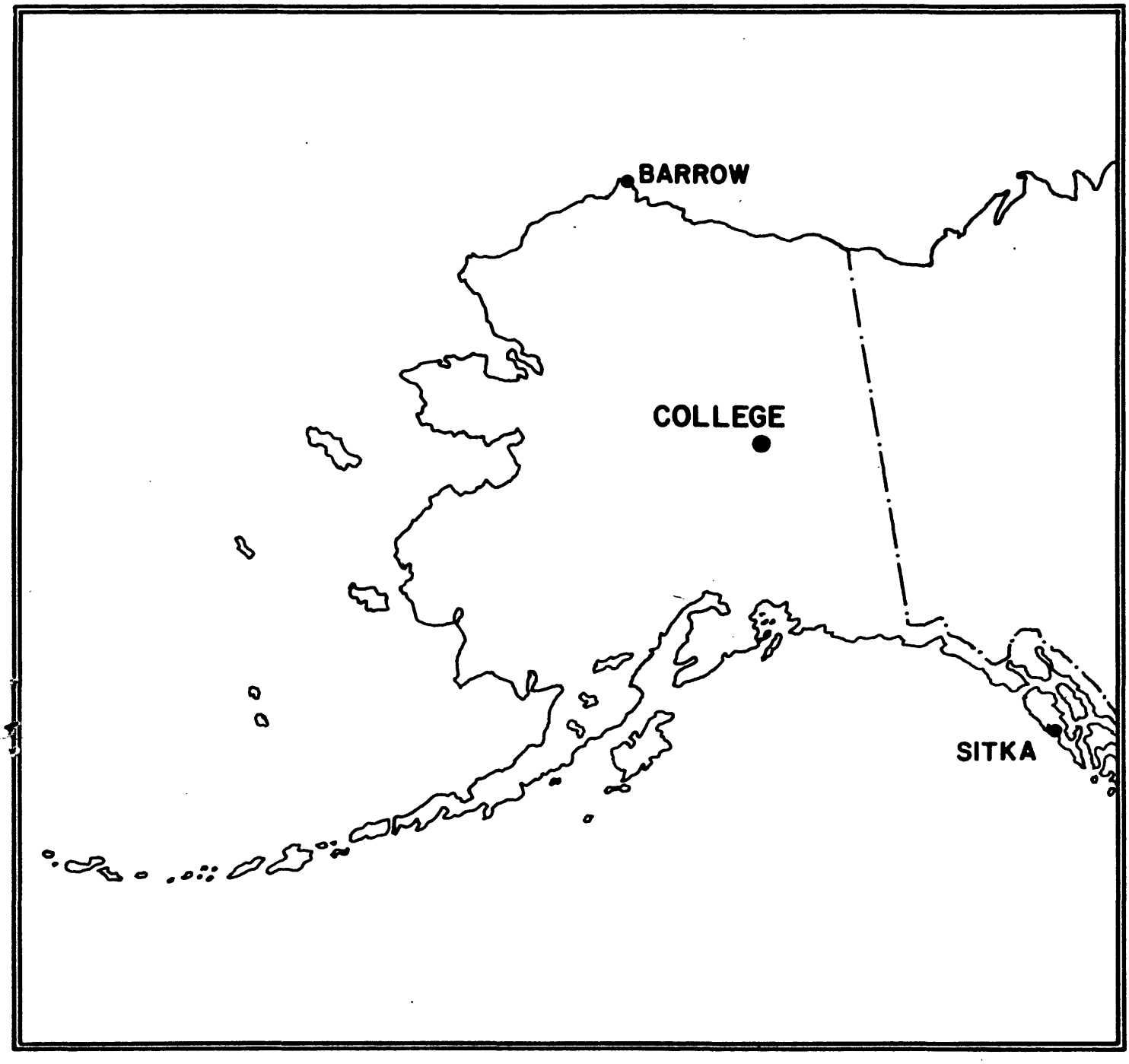
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

APRIL 1985

OPEN FILE REPORT 85-0300D



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

Explanation of Data and Reports

Magnetic Activity Report

Outstanding Magnetic Effects

Principal Magnetic Storms

Preliminary Calibration Data and Monthly Mean Absolute Values

Magnetogram Hourly Scalings

Sample Format for Normal and Storm Magnetograms

Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

EXPLANATION OF DATA AND REPORTS

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory
U.S. Geological Survey
800 Yukon Drive
Fairbanks, Alaska 99701

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A
NOAA D63, 325 Broadway
Boulder, Colorado 80303

OBSERVATORY LOCATION

The College Observatory, operated by the U.S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitude.....64°51.6'N
Geographic longitude.....147°50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

GEOMAGNETIC DATA

Normal, Storm and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available, are mean hourly scalings, K-Indices, selected magnetic phenomena reports and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

Magnetic Activity

The K-Index: The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK: The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as not to give the illusion of an accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak
0 < 25	0	0
25 < 50	1	3
50 < 100	2	7
100 < 200	3	15
200 < 350	4	27
350 < 600	5	48
600 < 1000	6	80
1000 < 1650	7	140
1650 < 2500	8	240
2500+	9	400 (10γ)

The Magnetic Daily Character Figure, C: To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1, if it is moderately disturbed; C=2, if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0≈11	0
11≈50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

Seleeted Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal and Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

Principal Magnetic Storms

Gradual and sudden commencement magnetic disturbances with at least one K-Index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencements; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

Magnetogram Hourly Scalings

Magnetogram hourly scalings are averages for successive periods of one hour for the D, H and Z elements. The Value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheets are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if he is interested in the detailed morphology of the magnetic field, he should refer directly to the magnetograms.

Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

Absolutes, Base-lines and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

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

where D, H and Z are absolute values;
B_D, B_H and B_Z are base-line values;
S_D, S_H and S_Z are scale values;
and d, h and z are scalings in millimeters.

NOAA FORM 76-133 (9-72)

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

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: COLLEGE, ALASKA

MONTH AND YEAR: APRIL 1985

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	1	2	4	4	6	6	4	2	29	32
2	2	3	4	4	3	4	4	2	26	19
3	3	3	2	5	3	3	4	2	25	19
4	2	3	5	5	4	5	3	2	29	27
5	2	2	1	4	3	0	1	1	14	08
6	0	1	1	3	2	0	2	1	10	05
7	1	1	5	4	2	1	1	0	15	12
8	1	0	1	4	3	1	3	4	17	12
9	3	4	7	7	6	7	2	1	37	69
10	0	2	3	6	5	4	1	2	23	23
11	3	3	1	3	3	2	1	1	17	10
12	1	1	0	1	0	0	1	0	04	02
13	0	1	0	3	0	1	1	2	08	04
14	3	4	3	4	4	2	1	0	21	15
15	1	1	0	2	1	0	0	0	05	02
16	2	1	1	5	5	1	1	2	18	15
17	1	0	1	0	0	0	0	0	02	01
18	1	0	0	1	1	0	0	0	03	01
19	2	3	5	5	5	5	5	4	34	36
20	3	5	6	4	3	4	5	4	34	36
21	5	5	8	5	6	6	6	3	44	80
22	3	2	5	5	3	3	2	2	25	20
23	2	2	4	4	3	4	2	2	23	16
24	3	4	6	5	4	2	2	2	28	27
25	3	3	4	6	5	2	2	2	27	26
26	4	5	6	6	2	3	3	3	32	36
27	4	4	6	6	5	6	3	3	37	47
28	5	4	7	7	6	4	2	2	37	60
29	3	5	4	1	3	3	1	0	20	16
30	1	0	0	4	8	4	4	3	24	42
31										

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

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

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

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

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: APRIL

YEAR: 1985

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
05	22XX	pc4	
06	13XX	pc4	
15	07XX	pi2	
17	09XX	pi2	
30	0923	ssc*	

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 80302 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

APRIL 19 85

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	08	19xx	..	..	..	..	09	3, 4, 6	7	272	1750	760	09	21
		19	00xx	..	..	..	..	21	3	8	320	2380	1590	22	11
		25	19xx	..	..	..	..	28	3, 4	7	296	2100	1340	29	08
		30	0923	s.c.*	-7	+53	-32	30	5	8	161	1770	510	30	22

Polar Event

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: APRIL 1985

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 4-1-85	2400 U.T., 4-30-85	1.'0/mm	3.7 γ/mm	27° 16.'8 E
H	0000 U.T., 4-1-85	2400 U.T. 4-20-85	7.8 γ/mm		12668 γ
	0000 U.T., 4-21-85	2400 U.T., 4-30-85	"		12673 γ
Z	0000 U.T., 4-1-85	2400 U.T., 4-12-85	7.6 γ/mm		55181 γ
	0000 U.T., 4-13-85	2400 U.T., 4-30-85	"		55176 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 4-1-85	2400 U.T., 4-30-85	7.'9/mm	29.5 γ/mm	23° 47.'2 E
H	0000 U.T., 4-1-85	2400 U.T., 4-30-85	43.8 γ/mm		10700 γ
Z	0000 U.T., 4-1-85	2400 U.T., 4-30-85	48.2 γ/mm		54110 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION
	FROM	TO	SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 40.'5 E	12906 γ	55340 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: APR 5, 6, 7, 8, 11, 12, 13, 15, 17, 18

Form C&GS-604a

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 (135W M.T.) is hour 09 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
COL	85	APR	D

C	Q or S	Tes Q	Hr. Da.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Da.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	200	196	179	197	202	189	187	188	232	173	400	263	01	301*	301*	611*	523*	404*	278	239	213	176	173	192	192	6209
			02	193	197	217	193	197	239	250	300	298	122	240	247	02	272	253	314	373	353	298	282	207	203	203	211	235	5847
			03	207	193	213	227	209	230	293	240	195	207	207	221	03	273	256	271	284	296	297	307	191	163	173	199	193	5545
			04	206	203	207	201	213	267	327	259	203	230	232	350	04	264	248	293	333	341	225	279	280	228	194	191	202	5976
			05	209	207	217	209	298	237	223	223	213	273	261	223	05	240	231	256	272	283	307	307	293	263	233	211	197	5886
			06	193	203	212	224	234	238	231	230	237	270	241	240	06	248	252	264	280	297	307	318	299	253	207	197	188	5863
			07	187	190	197	216	217	207	215	213	170	175	201	247	07	239	253	257	278	267	283	283	280	267	247	220	207	5516
			08	199	198	197	213	218	219	249	233	215	296	247	260	08	254	282	283	287	264	304	313	231	217	223	219	163	5724
			09	120	177	177	179	156	118	205	147	169*	135	33*	306	09	375	319*	1097*	462*	605*	244	286	282	221	220	213	213	6459
			10	211	204	207	207	193	193	190	203	240	241*	60*	239	10	290	315	326	341	302	303	295	282	277	243	219	217	5798
			11	191	167	154	171	157	173	243	232	230	243	297	246	11	232	238	229	236	282	261	286	291	273	257	233	218	5540
			12	200	200	202	212	220	229	227	223	223	231	259	241	12	243	251	263	272	264	278	285	273	253	248	232	223	5752
			13	209	208	212	216	217	226	229	223	223	238	254	263	13	253	250	254	269	307	310	307	298	300	278	207	187	5938
			14	181	168	122	123	115	284	133	176	254	250	240	340	14	340	379	321	313	307	326	312	290	258	246	228	218	5924
			15	202	190	198	207	217	222	225	228	217	229	230	245	15	243	243	253	270	285	290	297	289	264	243	228	198	5713
			16	187	190	187	201	206	230	267	200	236	217	211	298	16	344	325	262	283	296	290	289	283	262	240	189	180	5873
			17	169	187	199	207	216	228	226	224	219	232	252	240	17	230	237	251	279	312	314	311	288	255	223	197	179	5675
			18	171	187	193	198	213	222	226	227	233	223	228	240	18	253	236	253	282	300	301	299	272	253	233	216	197	5656
			19	173	181	175	150	103	142	172	146	268	137	206	280	19	284	597*	329	624	724*	529	258	237	160	154	131	153	6313
			20	157	120	84	52	144	81	202	66	224*	107	176	314	20	197	250	287	317	320	268	242	209	318	443	319	258	5155
			21	374	268	175	89	25	224*	-380*	-141*	288*	-205*	60	118	21	224*	319*	224*	113*	613*	335*	300	203	252	232	226	207	4143
			22	204	203	193	207	219	233	221	223	346	143	248	226	22	240	247	267	300	277	317	327	293	248	233	203	209	5827
			23	196	183	207	192	208	217	220	216	314	197	229	252	23	238	262	269	287	381	364	255	269	269	233	213	207	5878
			24	176	173	158	216	161	152	285	125	93	239	222	255	24	250	237	269	264	293	301	288	276	249	223	207	193	5305
			25	190	183	150	227	201	180	193	464	201	193	204	447	25	363	235	328	316	292	317	300	262	232	212	200	182	6072
			26	178	152	145	229	173	103	407*	185	18*	-69*	162*	183	26	204	282	307	321	332	320	333	274	260	227	119	135	4980
			27	177	164	118	136	146	220	178	156	67*	201*	237	344*	27	154*	376*	456*	366	284	267	296	287	247	220	247	289	5633
			28	270	224	226	243	272	204	137*	26	-243*	106*	265*	185*	28	320*	645*	567*	355	276	282	338	268	246	236	195	195	5838
			29	176	158	153	174	312*	165	235	204	205	203	223	231	29	255	251	290	281	282	303	312	289	264	234	207	201	5608
			30	194	198	193	193	201	206	219	209	213	196	212	200	30	376*	384*	392*	392*	360	386	296	285	249	200	203	194	6145
			31													31													

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

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
[ ] 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	171,791
MONTHLY MEAN	239
DATES WITH GAPS:	

Form C&GS-404a

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (135W M.T.) is hour 09 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSV.	YEAR	MONTH	ELEMENT
COL	85	APR	Z

C	Q or S	Ten Q	Hr Da	01	02	03	04	05	06	07	08	09	10	11	12	Hr Da	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	220	222	222	226	227	233	244	254	215	238	132	169	01	370*	249*	211*	166*	116*	154	200	221	231	230	243	241	5234
			02	240	239	241	233	253	289	270	249	-1	14	117	204	02	235	182	148	100	133	180	193	193	218	233	246	249	4658
			03	253	275	280	256	239	262	280	249	241	237	160	85	03	147	212	208	181	201	192	207	173	178	216	228	247	5207
			04	248	233	227	247	280	273	258	-4	86	163	115	190	04	36	167	157	134	137	110	173	173	192	210	222	218	4245
			05	222	228	230	236	275	232	218	217	222	237	114	133	05	147	151	186	206	217	223	222	214	217	214	215	219	4995
			06	220	222	220	217	217	218	217	220	229	229	179	177	06	173	197	213	212	214	215	217	213	208	207	210	220	5064
			07	220	220	217	220	222	240	283	254	183	192	250	237	07	212	218	217	199	196	199	209	214	214	217	220	223	5276
			08	230	228	222	224	225	227	247	233	245	240	217	114	08	119	137	190	193	193	194	206	181	170	193	217	262	4907
			09	243	220	238	227	238	240	210	47*	-67*	227	218*	187	09	215	371*	351*	-4*	-61*	-54*	100	163	193	228	232	232	4194
			10	234	231	231	230	228	247	270	207	158	218*	441*	260	10	256	230	230	26	63	153	170	191	201	210	217	230	5132
			11	233	240	279	283	300	347	289	257	245	246	214	192	11	192	147	143	200	198	200	209	219	217	221	219	224	5514
			12	227	224	227	227	230	228	226	227	233	230	220	218	12	216	214	219	224	224	219	216	217	212	213	216	213	5320
			13	219	224	226	224	222	219	221	218	219	220	175	195	13	193	203	198	207	215	210	210	207	202	199	190	203	5019
			14	216	219	253	251	283	306	301	334	334	284	227	177	14	157	123	92	157	202	199	203	207	206	216	218	222	5387
			15	223	220	221	227	227	228	226	232	237	228	221	213	15	177	189	212	221	223	221	220	212	208	211	210	214	5221
			16	216	218	223	232	235	246	251	230	254	233	236	249	16	128	105	184	212	223	222	220	216	210	213	214	214	5184
			17	207	223	218	222	221	221	217	217	217	226	216	216	17	198	193	204	219	224	220	215	207	208	211	213	218	5151
			18	233	240	233	227	226	223	230	233	227	221	222	194	18	187	199	207	213	216	217	220	208	205	206	209	206	5202
			19	199	203	203	210	247	323	303	255	139	260	238	236	19	303	213*	299	38	49*	32	-79	42	103	193	237	263	4509
			20	243	258	247	175*	213*	118*	226*	239	150*	144	232	117	20	180	173	133	55	0	-64	-4	26	161	220	208	249	3699
			21	87*	-111*	-508	-180*	-149*	-257*	-129*	226	872*	159	256	328	21	366*	467*	341*	562*	517*	125*	73	146	267	257	265	267	4247
			22	267	256	252	260	261	266	270	273	217	96	113	233	22	243	235	229	200	176	196	227	227	217	224	223	239	5400
			23	256	280	273	253	254	266	277	266*	243	182	199	227	23	243	197	220	207	163	157	166	216	243	238	241	244	5511
			24	240	266	279	299	263	297	111*	149*	141	224	197	181	24	211	215	191	207	242	221	221	227	223	226	230	232	5293
			25	239	247	260	327	277	268	270	226	124	239	78	-66	25	56	148	138	183	207	237	219	217	226	223	237	242	4822
			26	266	268	292	364*	360	250*	72*	104*	99*	168*	225*	214	26	263	253	235	237	246	237	230	230	227	238	225	259	5562
			27	257	257	252	258	174*	232*	187*	9*	205	383*	196	339*	27	536*	282*	326*	209	90	199	250	245	232	238	267	302	5925
			28	298	263	9*	124*	234	232*	47*	-193*	248	542*	643*	733*	28	441*	326*	339*	233	219	241	213	173	206	220	227	231	6249
			29	256	263	280	162*	-105*	-16*	196	269	253	259	256	247	29	236	223	218	209	226	243	248	230	232	231	231	231	5078
			30	236	237	236	236	237	238	238	242	243	219	200	238	30	428*	479*	441*	333*	250	213	232	226	230	223	231	236	6322
			31													31													

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

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

⌐ Significant portion of hour interpolated.

□ 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	153,527
MONTHLY MEAN	213
DATES WITH GAPS:	

Form C&GS-484a

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day 0.35W M.T.) is hour 09 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
COL	85	APR	H

C	Q or S	Tes 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	295	295	311	301	310	317	332	364	371	313	300	266	01	-341*	-212*	-492*	-116*	208	287	325	322	290	309	309	303	4967
			02	300	306	295	330	310	326	343	347	262	217	216	273	02	200	222	180	149	245	307	187	261	311	286	289	307	6469
			03	348	306	313	328	330	320	300	317	320	323	136	268	03	305	291	259	257	279	270	107	160	239	271	287	300	6634
			04	303	311	316	330	363	357	381	249	330	269	160	-147*	04	235	300	276	170	27	220	243	277	262	298	306	310	6146
			05	313	303	302	328	323	313	310	311	320	328	252	282	05	244	237	323	320	311	309	301	294	290	289	287	283	7173
			06	300	299	307	311	307	307	309	308	312	327	296	290	06	261	310	324	323	320	317	298	283	273	275	281	288	7226
			07	291	300	309	317	318	319	380	400	341	482	380	310	07	313	303	300	301	285	283	285	300	299	287	275	274	7652
			08	281	289	305	300	310	310	309	318	329	327	303	100	08	260	291	316	300	300	297	280	227	242	259	251	218	6722
			09	249	309	300	317	378	509	519	547*	93*	65	-125*	24	09	159	121*	-527*	-774*	-466*	289*	319	327	331	307	301	302	3874
			10	298	293	302	310	328	339	386	430	402	171*	4*	220	10	133	160	-97	71	289	305	310	303	287	285	281	293	6103
			11	297	339	332	350	386	407	307	311	297	320	293	291	11	251	209	271	308	247	275	299	303	297	290	290	290	7260
			12	289	290	298	300	306	310	310	320	320	312	312	313	12	316	310	314	303	301	295	296	290	296	288	283	283	7255
			13	280	285	292	304	311	313	312	319	319	319	281	329	13	323	312	319	320	310	313	310	305	293	289	264	286	7308
			14	314	297	353	373	400	504	515	533	422	367	293	210	14	121	81	265	316	320	313	315	313	309	295	293	292	7814
			15	289	293	298	298	304	307	313	315	322	321	319	313	15	271	300	307	304	307	303	305	303	302	298	285	273	7250
			16	282	290	309	301	313	310	303	328	320	350	316	-2	16	83	229	321	317	312	307	308	297	285	278	274	276	6707
			17	284	288	293	304	306	303	307	313	313	313	316	324	17	314	309	319	313	311	303	299	294	283	273	270	277	7229
			18	285	290	295	294	295	299	307	302	307	314	319	308	18	313	310	309	310	313	310	302	296	295	287	283	286	7224
			19	293	301	319	341	368	413	374	410	337	202	270	221	19	208	57	-12	-185*	-212*	-134*	80	209	219	250	321	404	5054
			20	453	440	436	593*	571*	649*	487*	270	146*	290	319	268	20	284	247	222	174	74	31	11	7	48	113	262	351	6746
			21	548*	420*	448	414*	303*	101*	17*	-45*	-1253*	157*	178	282	21	150	-475*	-420*	-447*	-503*	-151*	-74	416	346	323	320	323	1378
			22	300	327	305	293	300	319	317	308	240	-34	129	333	22	279	275	167	125	231	288	308	284	297	297	283	308	6279
			23	308	332	300	293	284	303	321	321	309	271	228	212	23	203	260	219	253	123	100	290	291	291	284	283	286	6365
			24	292	302	390	373	347	448	512*	444*	308	244	112	111	24	106	212	242	299	280	282	298	289	278	279	283	285	7016
			25	290	288	360	388	315	307	325	344	329	319	-20*	-317*	25	-28	88	192	279	309	293	272	277	283	290	282	280	5745
			26	321	313	440	567*	401*	595*	630*	545*	287*	103*	-65*	300*	26	338	309	307	317	330	299	294	318	277	235	250	294	8005
			27	312	257	374	544	618*	607*	517*	221*	237	-165*	-221*	-322*	27	-221*	-126*	-282*	-137*	123	342	334	315	283	300	333	331	4574
			28	503	494	595*	539*	395*	450*	416*	-120*	-232*	-411*	-188*	-534*	28	-294*	-345*	-188*	184	311	311	240	269	308	297	308	310	3618
			29	315	322	329	651*	557*	567*	347	309	279	312	300	297	29	260	211	199	180	286	289	270	288	289	283	286	279	7705
			30	277	270	275	280	289	296	303	307	309	360	352	305	30	-143*	-512*	-42*	250	318	263	319	311	292	282	281	276	5518
			31													31													

SCALED BY	LYT
CHECKED BY	JEP
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.

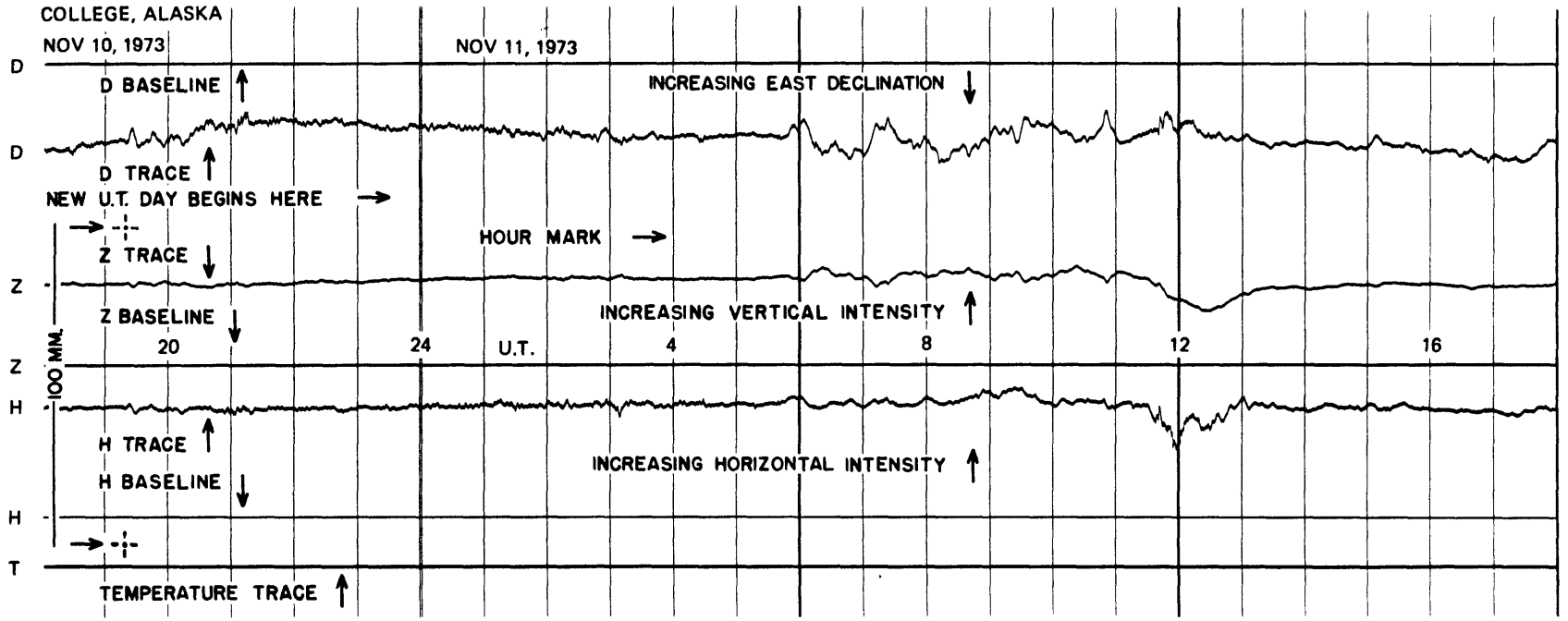
[ ] Scaling uncertain because of magnetic storm.

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

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

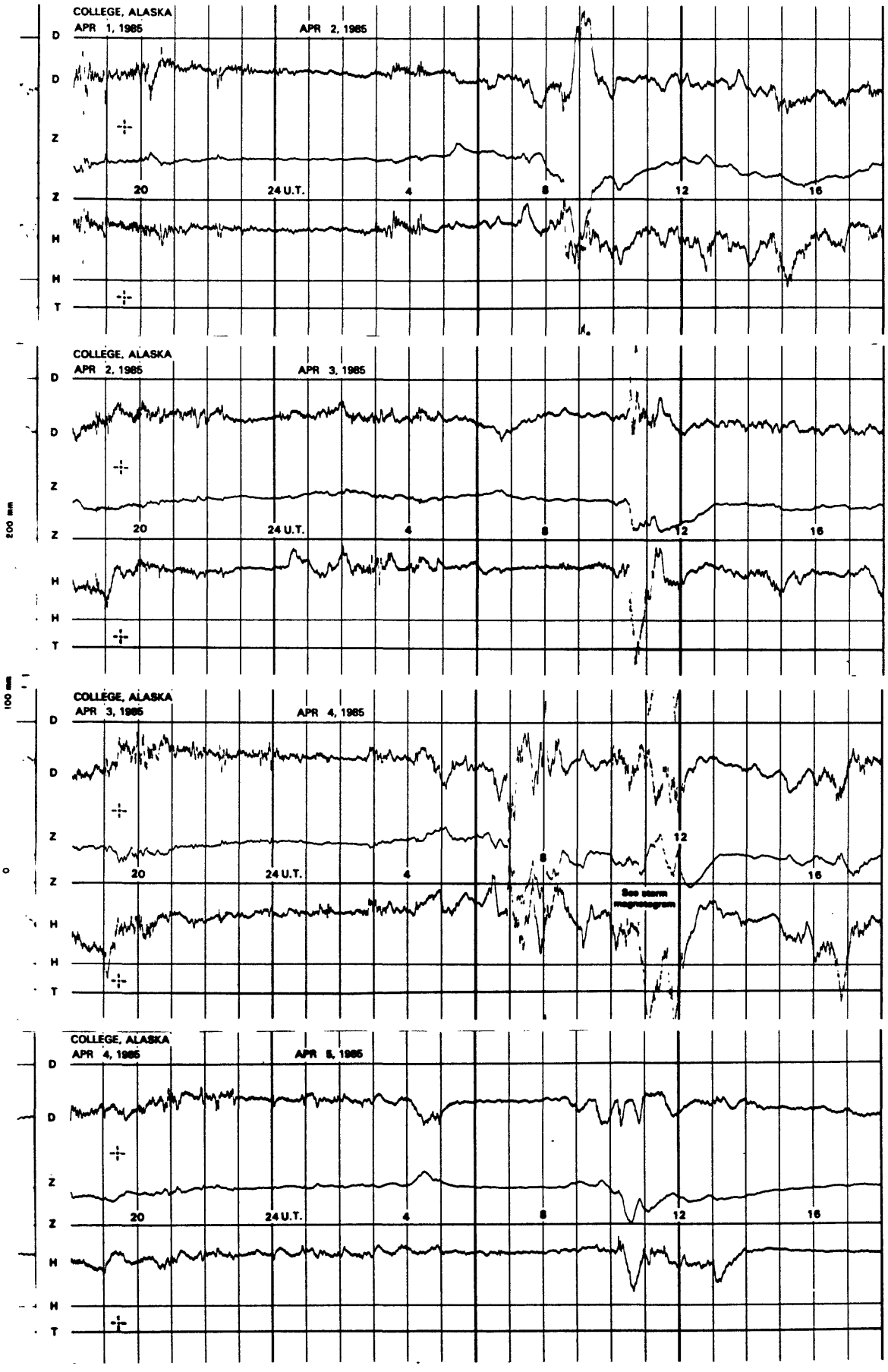
MONTHLY SUM	189,016
MONTHLY MEAN	263
DATES WITH GAPS:	

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

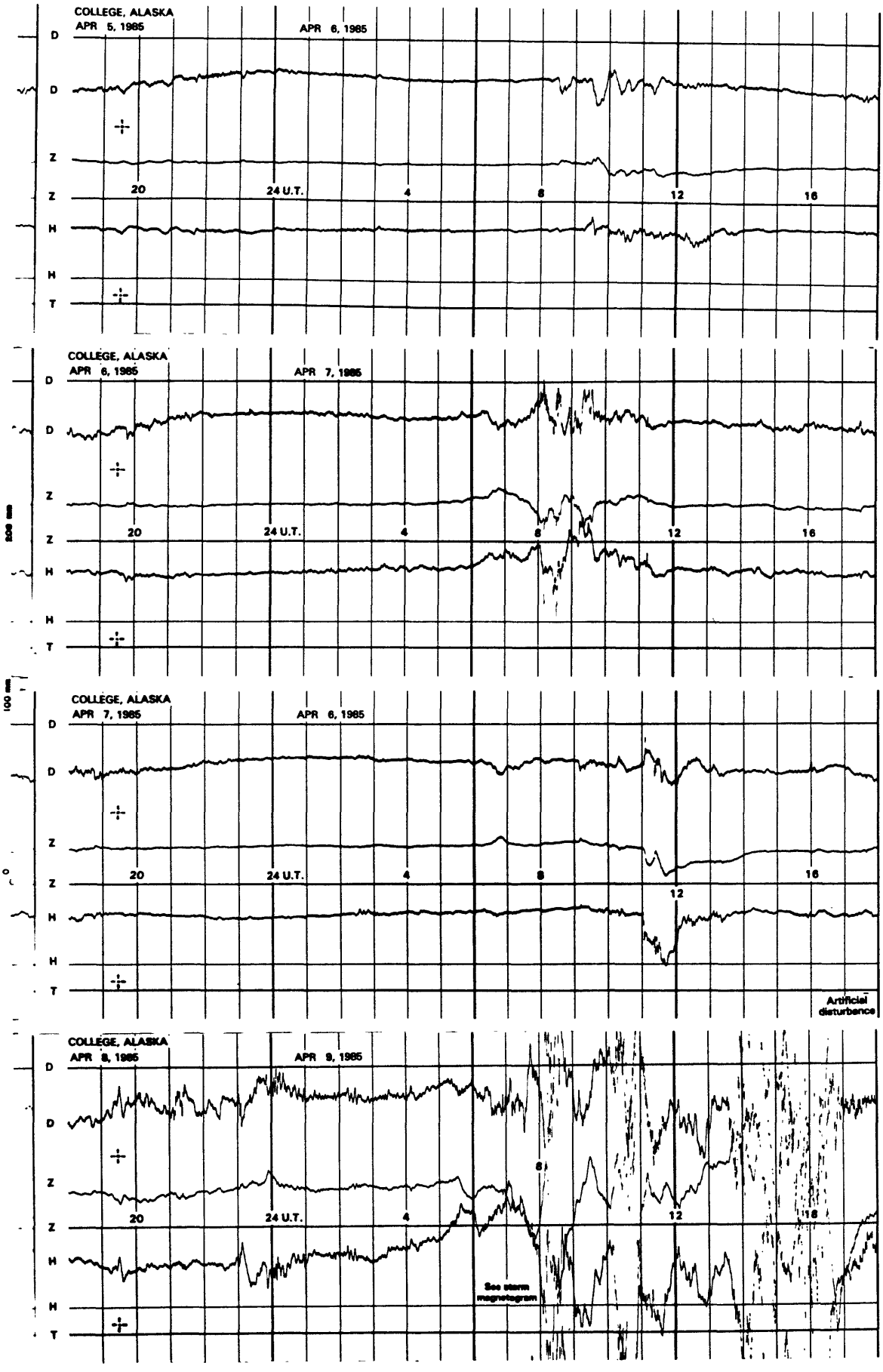


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

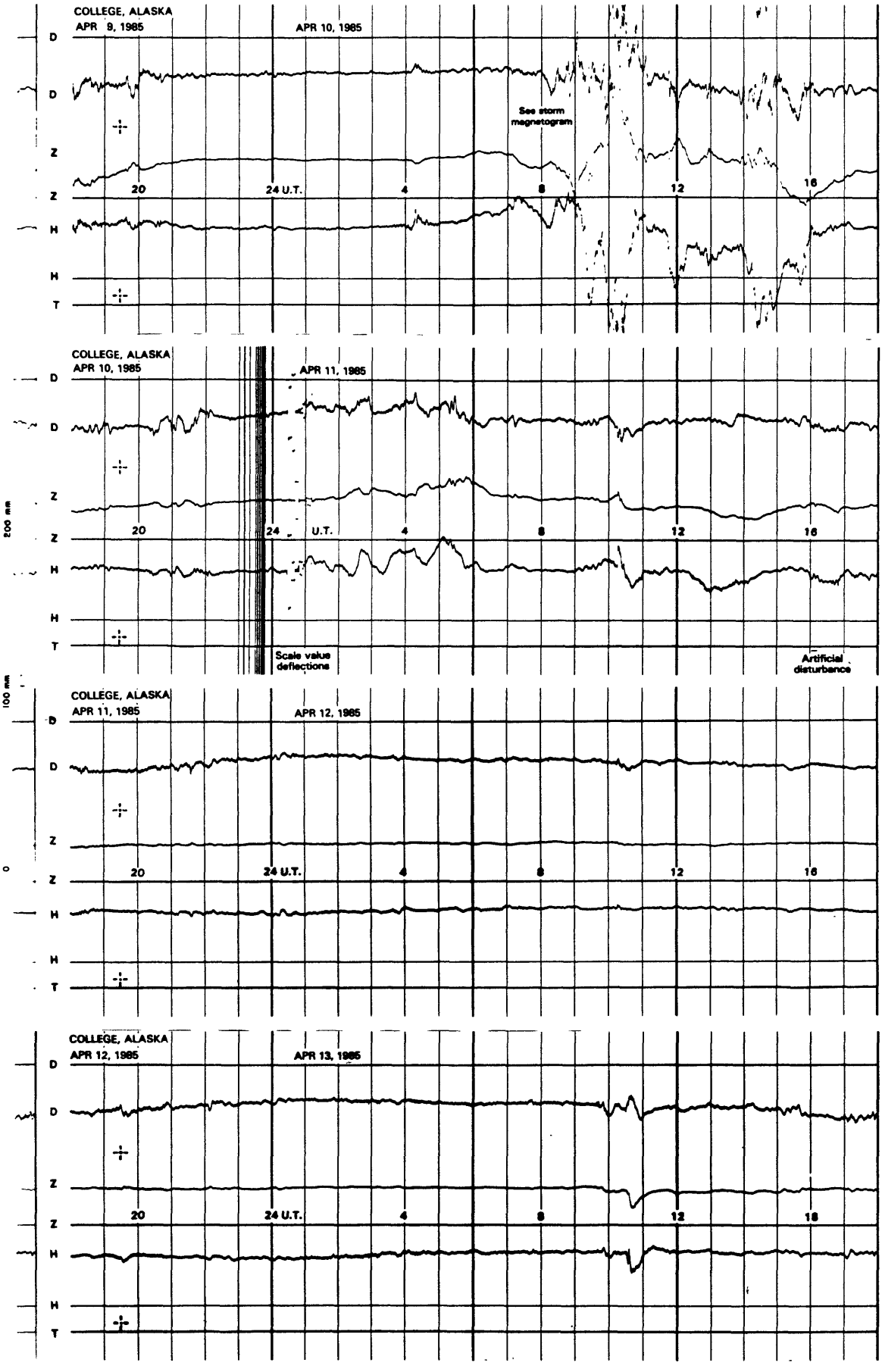
NORMAL MAGNETOGRAMS



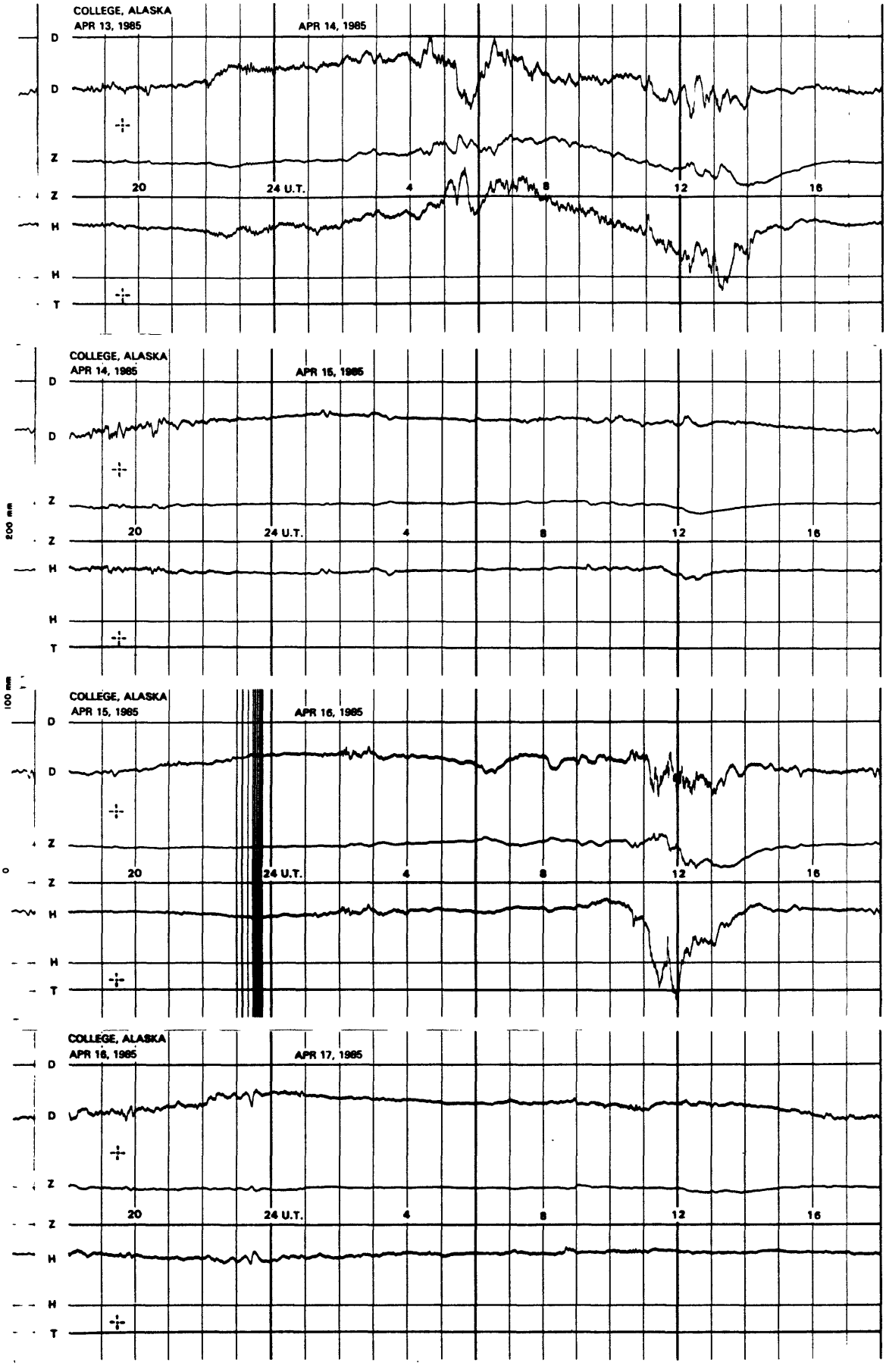
NORMAL MAGNETOGRAMS



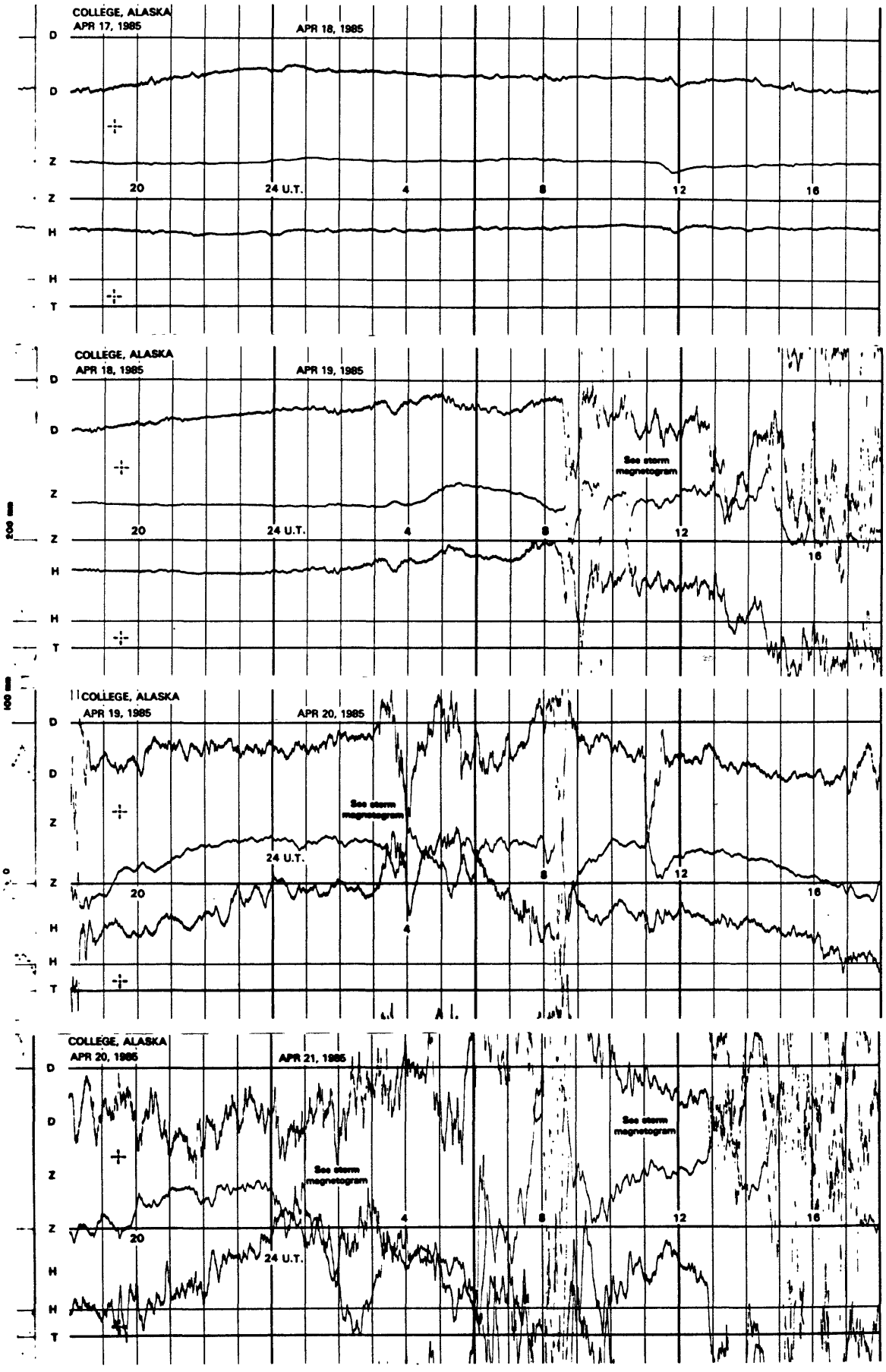
NORMAL MAGNETOGRAMS



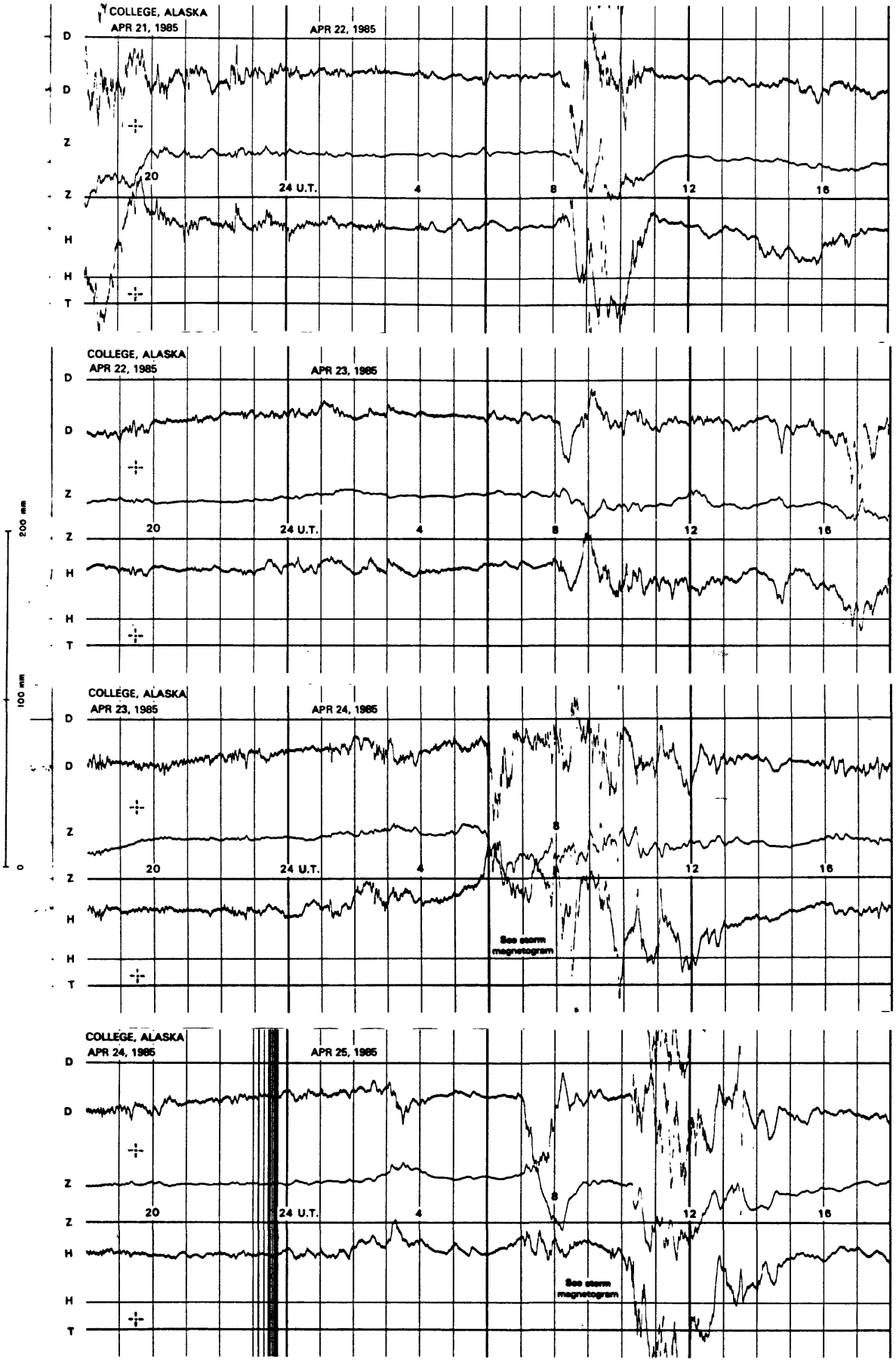
NORMAL MAGNETOGRAMS



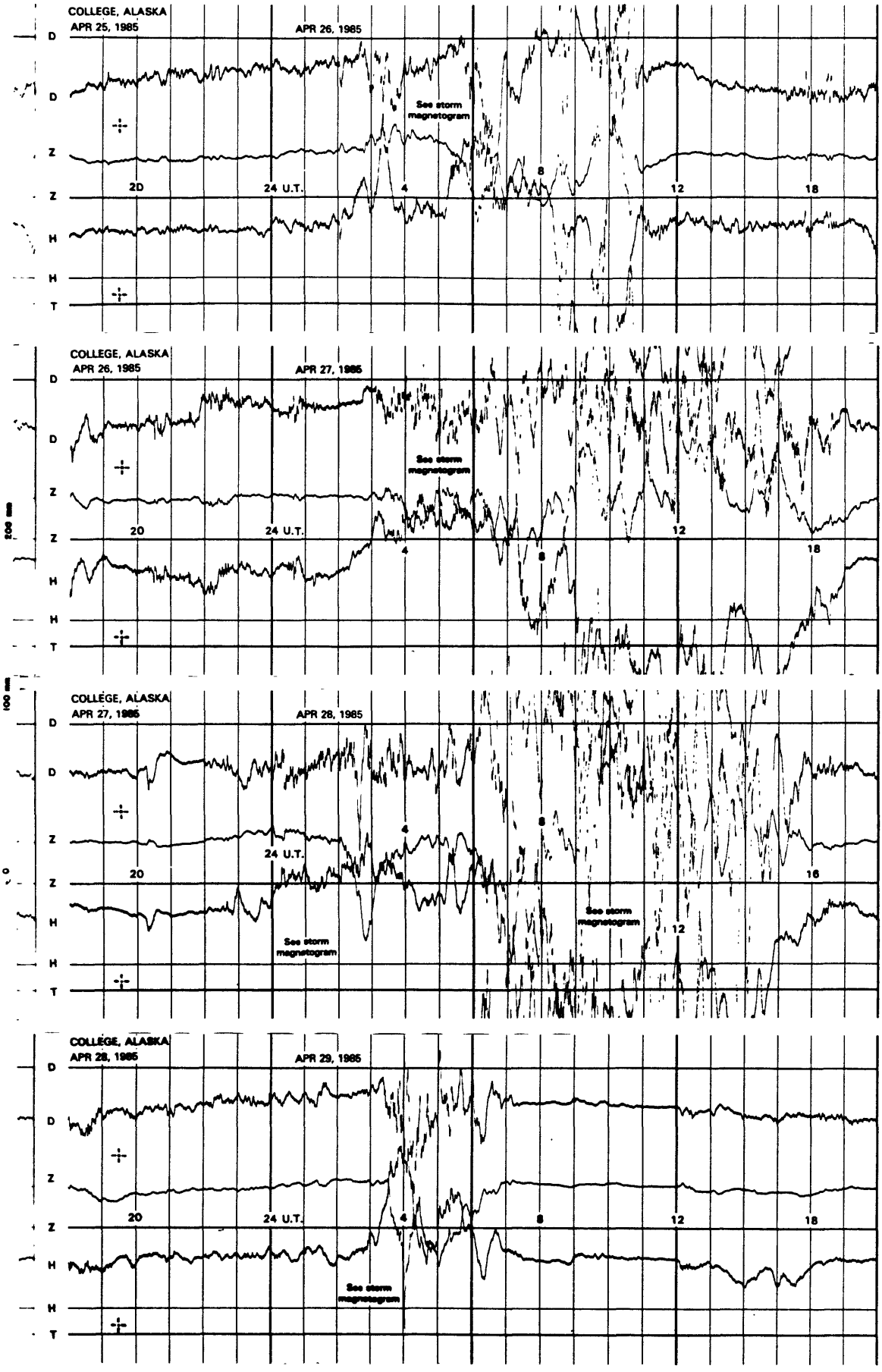
NORMAL MAGNETOGRAMS



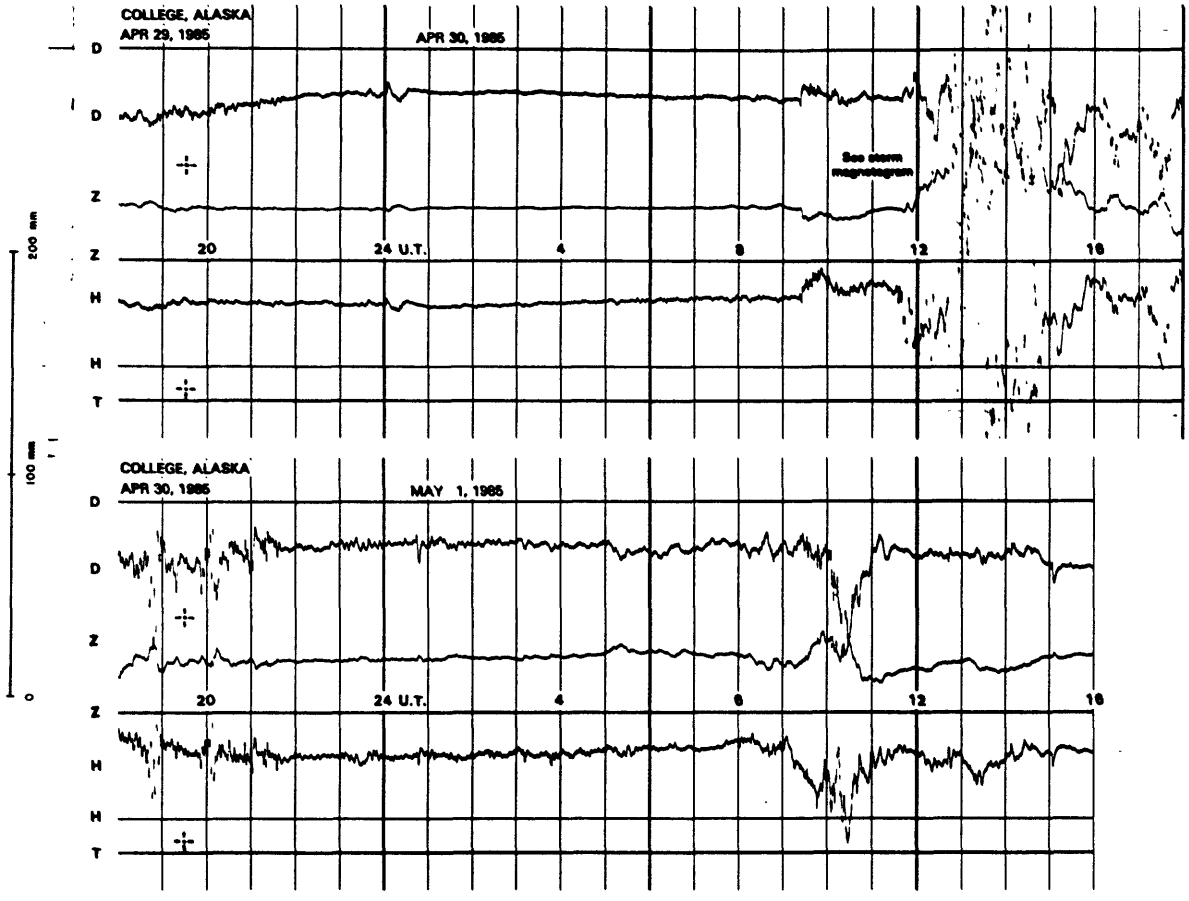
NORMAL MAGNETOGRAMS



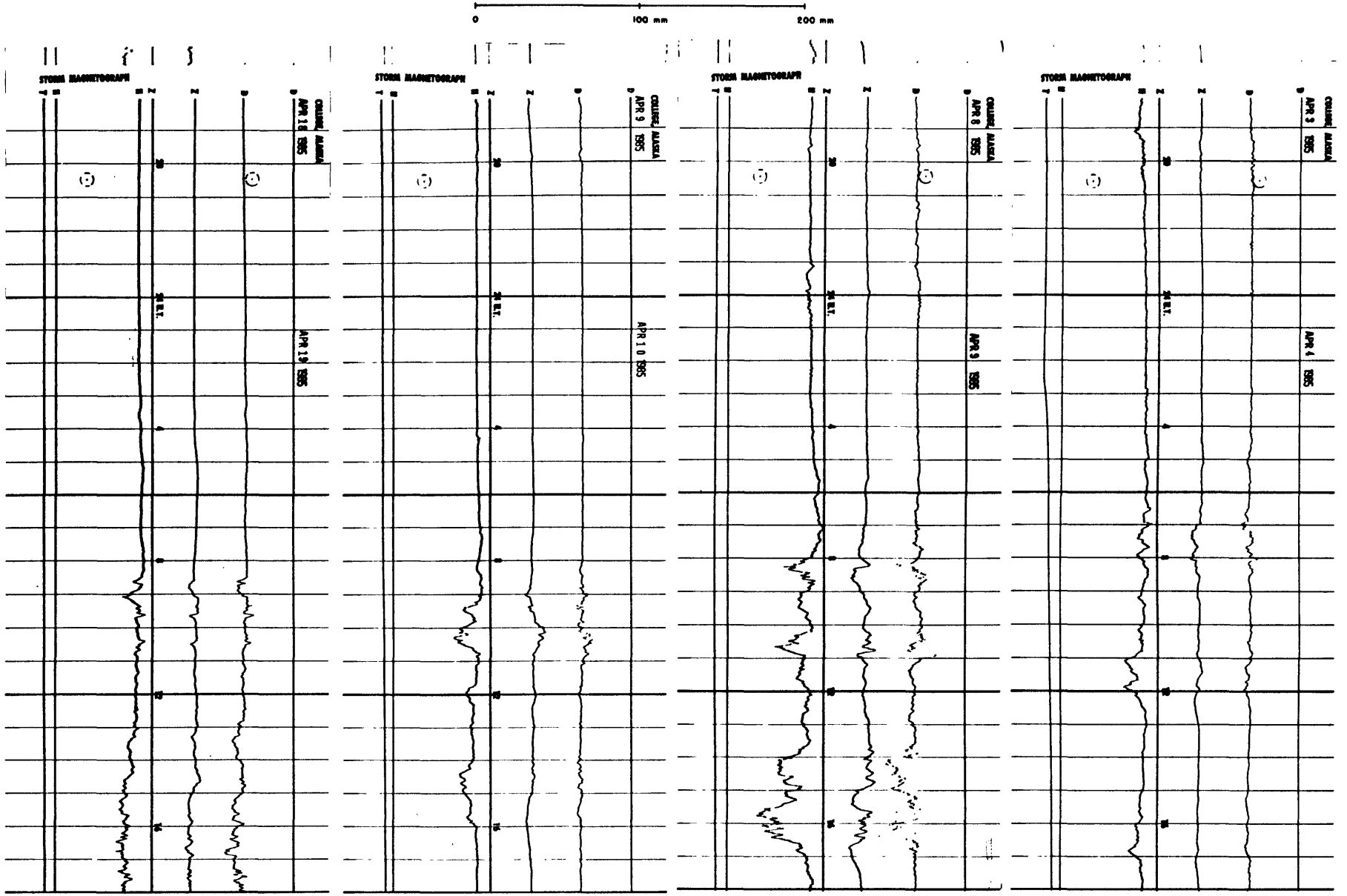
NORMAL MAGNETOGRAMS



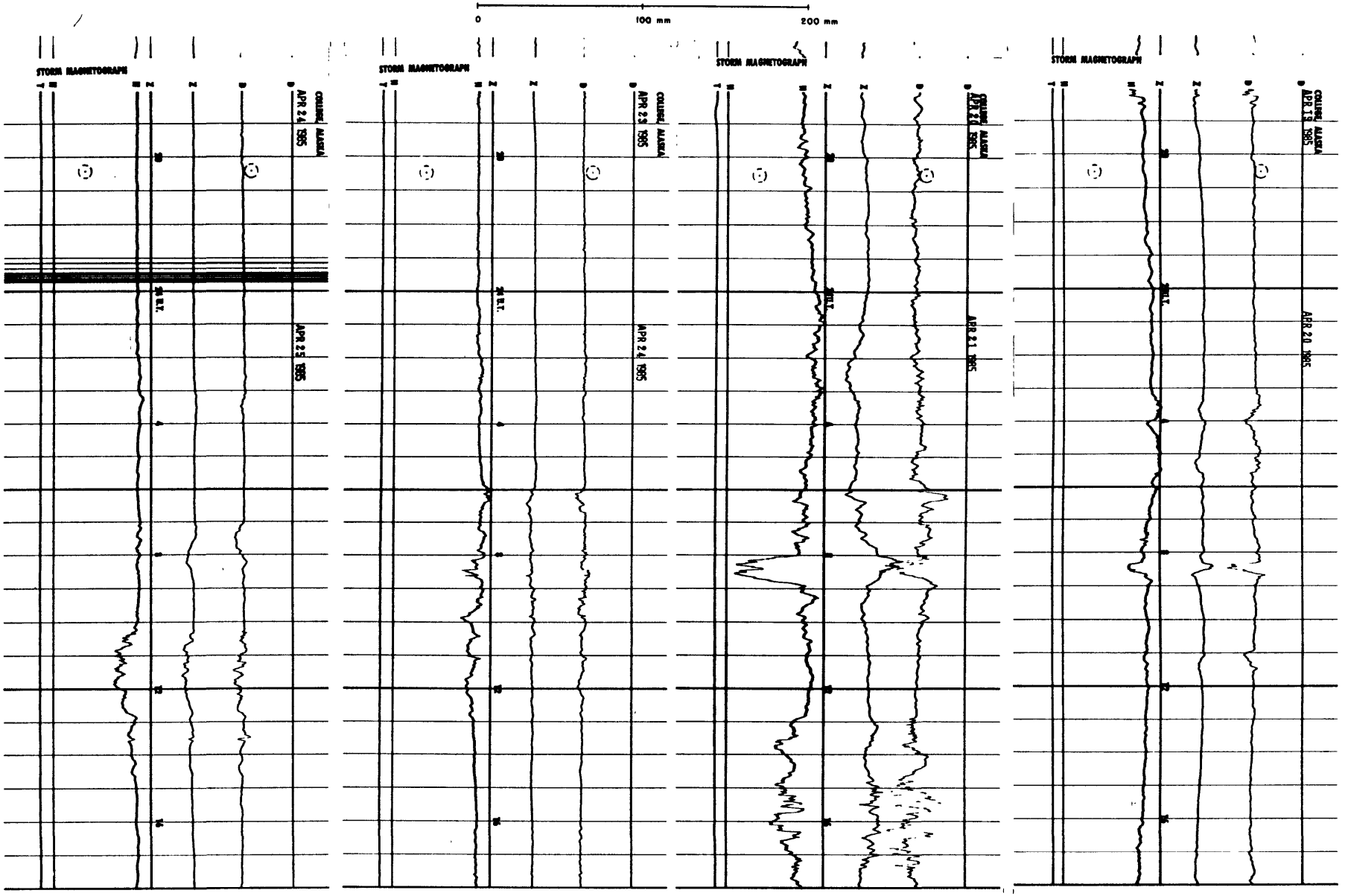
NORMAL MAGNETOGRAMS



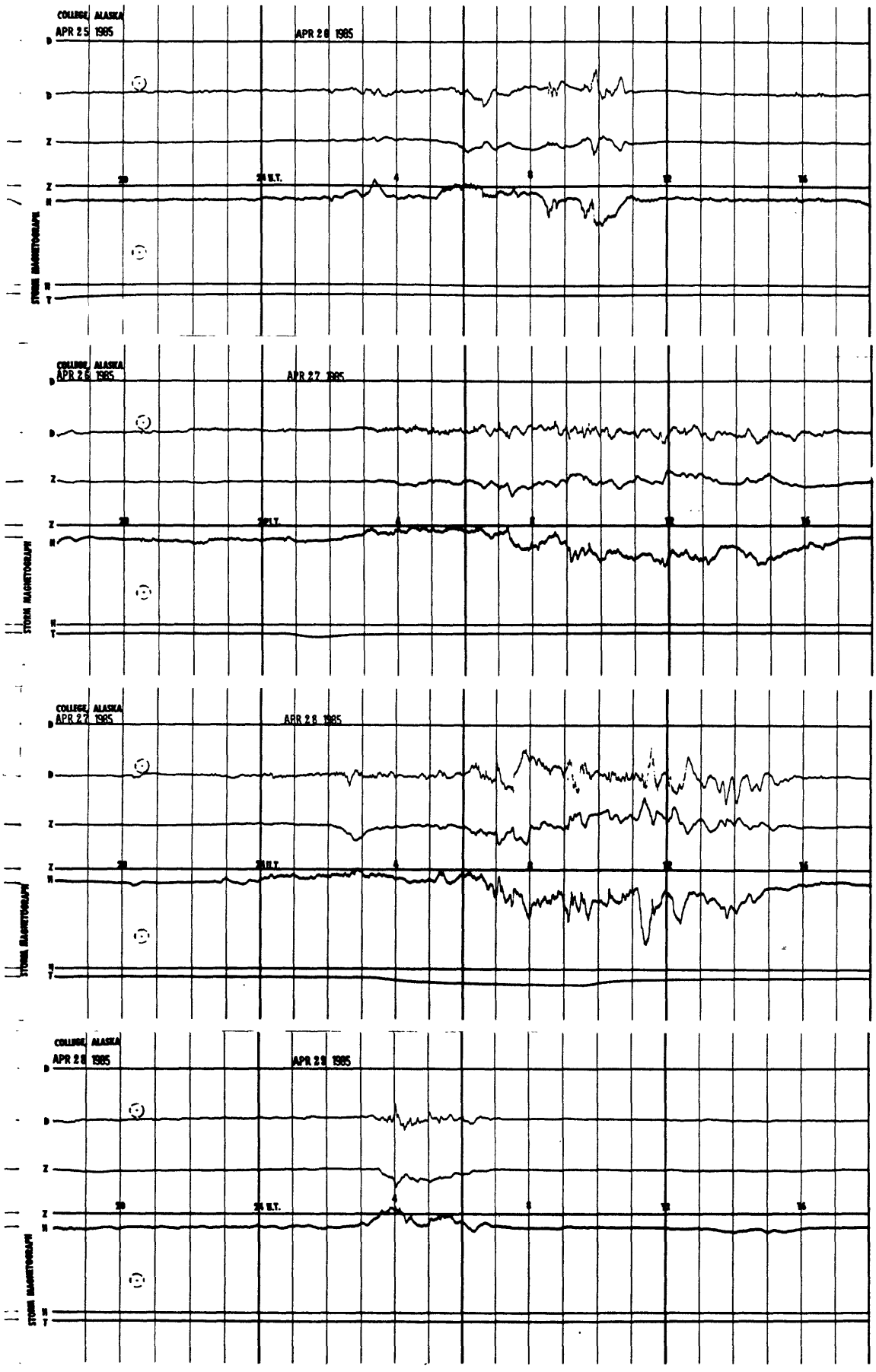
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS