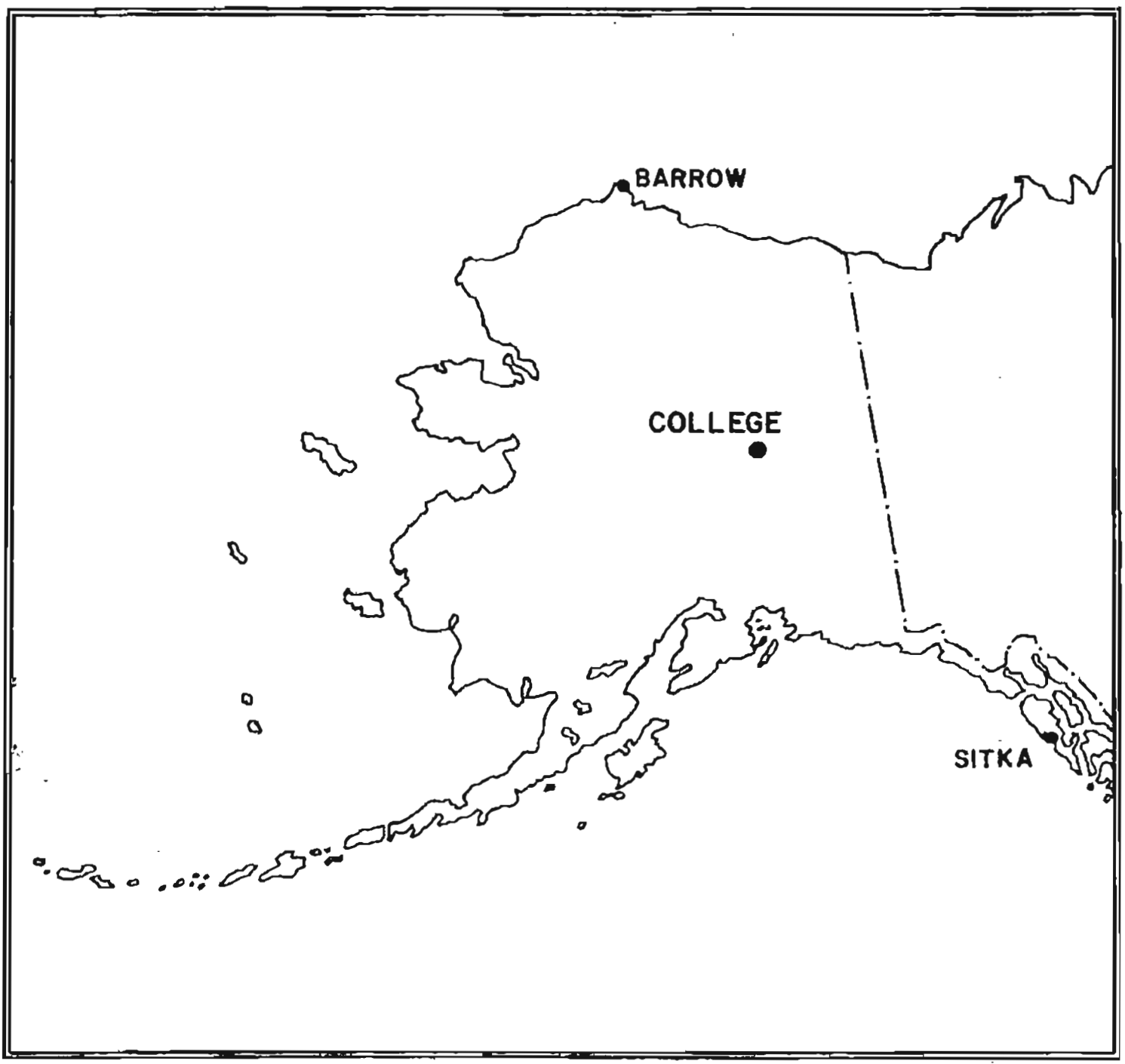
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

MAY 1984

OPEN FILE REPORT 84-0300E



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.

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

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: COLLEGE, ALASKA

MONTH AND YEAR: MAY 1984

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	3	3	4	6	6	6	4	3	35	42
2	3	4	4	5	3	1	1	1	22	18
3	1	1	2	3	2	3	2	2	16	08
4	3	2	2	6	4	2	1	1	21	19
5	2	2	3	4	5	5	5	3	29	27
6	3	4	3	4	3	2	1	1	21	14
7	1	0	0	4	3	0	1	1	10	06
8	1	1	1	2	1	1	2	2	11	05
9	2	3	3	2	5	5	3	3	26	21
10	2	4	5	5	6	5	2	2	31	34
11	2	2	3	3	3	1	2	1	17	09
12	1	2	3	4	2	3	2	2	19	11
13	4	3	2	3	3	0	1	1	17	11
14	0	1	0	2	5	3	2	3	16	12
15	3	2	3	4	4	1	1	2	20	13
16	2	2	1	3	1	1	1	2	13	06
17	3	4	5	5	3	4	3	2	29	25
18	2	3	3	5	4	3	2	3	25	19
19	3	4	7	5	2	3	3	2	29	34
20	3	4	5	6	5	6	5	3	37	45
21	6	4	6	6	5	4	4	3	38	48
22	3	5	5	6	6	6	3	3	37	48
23	6	5	6	5	6	5	3	3	39	52
24	3	3	4	6	6	6	5	2	35	44
25	3	2	2	3	5	5	3	3	26	21
26	3	4	6	4	4	3	2	0	26	25
27	0	0	4	4	4	4	2	1	19	15
28	1	1	1	2	3	2	2	2	14	07
29	3	4	3	4	3	3	2	1	23	16
30	4	3	5	7	3	5	2	2	31	38
31	1	2	1	2	0	0	0	3	09	04

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

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY
COLLEGE, ALASKA

MONTH: MAY

YEAR: 1984

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
-			
31	1022	bps	

IDENTIFIED BY: JEP

VERIFIED BY: JBT

1. NATURE OF PHENOMENON: ssc, ssc*, si, si*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80303 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

MAY 1984

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	05	07xx	..	..	..	..	05	5,6,7	5	130	890	470	06	12
		18	23xx	..	..	..	..	19	3	7	305	1710	990	25	03

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: MAY 1984

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T. 5-1-84	2400 U.T. 5-31-84	1.0'/mm	3.7γ/mm	27° 16.7' E
H	0000 U.T. 5-1-84	2400 U.T. 5-31-84	7.8γ/mm		12676γ
Z	0000 U.T. 5-1-84	2400 U.T. 5-31-84	7.6γ/mm		55178γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T. 5-1-84	2400 U.T. 5-31-84	7.9'/mm	29.6γ/mm	23° 42.8' E
H	0000 U.T. 5-1-84	2400 U.T. 5-31-84	43.9γ/mm		10795γ
Z	0000 U.T. 5-1-84	2400 U.T. 5-31-84	48.3γ/mm		54075γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 45.7' E	12927γ	55362γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: MAY 3, 7, 8, 11, 12, 13, 14, 16, 28, 31

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. Skinkage 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	84	MAY	D

C	Q-mS	Ica 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	203	174	179	224	288	242	305	296	244	231	261	324*	01	491*	666*	729*	563*	535	563	458	325	266	266	240	230	8303
			02	177	172	172	145	203	130	135	165	250	228	240	92	02	322	313	311	318	355	371	378	362	314	292	262	234	5941
			03	232	244	265	281	292	289	294	287	252	265	258	284	03	307	256	380	438	404	416	418	381	314	256	315	232	7360
			04	190	194	212	214	243	264	278	243	253	227	368	271	04	321	335	331	375	384	417	418	361	321	297	260	245	7022
			05	231	261	251	257	262	241	245	210	164	279	272	299	05	301*	443*	358	499*	579*	610*	571*	476	261	234	237	278	7819
			06	259	258	230	248	279	186	193	175	266	227	271	299	06	293	319	372	367	380	376	364	332	304	271	265	258	6792
			07	254	253	259	261	271	276	277	279	280	280	304	354	07	302	298	335	358	375	379	350	314	282	252	237	222	7052
			08	231	233	249	273	285	280	279	276	273	274	292	274	08	270	313	330	361	376	375	368	340	319	278	255	243	7047
			09	240	254	264	246	294	278	236	326	319	282	292	269	09	299	362	523*	698*	385	395	378	338	319	258	230	308	7793
			10	177	204	244	211	140	240	245	298	233	149*	194*	266	10	253*	261*	266	478	555*	442	458	366	334	280	250	233	6717
			11	238	222	233	246	256	269	236	260	265	240	215	272	11	303	325	382	439	454	451	427	414	325	278	246	242	7240
			12	207	216	226	211	251	246	242	240	278	212	185	261	12	293	312	328	416	522	514	378	298	262	208	168	182	6676
			13	166	223	203	256	240	255	250	273	226	248	265	263	13	253	277	312	373	392	378	342	316	272	253	228	235	6509
			14	244	257	262	292	295	263	271	273	268	279	275	207	14	420	494	408	463	476	462	399	391	273	225	173	181	7591
			15	196	210	225	262	287	302	356	139	248	337	317	291	15	272	314	278	305	351	371	380	326	296	270	259	260	6854
			16	252	246	248	265	291	312	305	309	317	302	250	246	16	262	251	293	313	340	362	356	340	325	300	283	272	7040
			17	256	224	210	216	170	282	227	212	277*	563*	200	261	17	291	386	369	394	416	442	430	398	343	287	283	261	7418
			18	243	230	205	194	204	195	205	206	272	243	250	302	18	329	364	394	436	448	407	422	375	315	340	296	292	7167
			19	252	212	153	139	296	284	-81*	174*	153	86*	236	268	19	278	319	348	353	401	417	361	309	332	286	234	206	6036
			20	216	191	191	168	197	138	170	103	111	71	97	250	20	246	298	359	348	535	587*	288	290	263	312	224	254	5907
			21	278	314	324*	199	144	214	211	-89*	-200*	162	193	197*	21	-89*	255	449	424	385	423	375	451	374	364	303	294	5955
			22	257	214	174	118	271	216	79*	188	133	210	240	293*	22	380*	602*	419*	476*	682*	729*	322	418	375	286	265	276	7623
			23	275	194	239	229	190*	232	277	246	-25*	207	277*	340*	23	209	334	362	468*	432	428	381	384	298	320	284	291	6872
			24	280	244	248	245	281	231	267	250	220	190*	46*	206	24	246	380	476*	865*	674*	517	604	263	279	256	290	209	7767
			25	206	229	237	251	273	263	252	274	258	249	274	268	25	272	350	390	540	500	407	427	336	298	279	235	219	7287
			26	220	216	195	254	296	188	127	190	113	227	273	266	26	223	289	324	350	420	464	412	352	286	237	216	213	6351
			27	221	228	254	274	288	288	293	274	246	274	250	247	27	245	340	412*	409	443	460	422	340	299	210	198	204	7139
			28	210	211	227	254	294	309	309	284	258	237	249	281	28	353	369	399	422	433	454	404	312	246	262	259	206	7242
			29	228	186	177	154	212	251	244	256	228	238	218	242	29	307	395	394	428	383	392	390	328	321	277	257	230	6736
			30	218	225	224	194	156	178	234	56	31	396*	232	322	30	308	299	370	448	462	393	374	373	295	216	166	170	6340
			31	164	151	183	206	226	252	254	252	240	232	279	245	31	286	313	348	374	401	396	388	382	354	338	174	222	6660

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	216 256
MONTHLY MEAN	291
DATES WITH GAPS:	

FORM 76-106

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

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of min. 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.

OBSY.	YEAR	MONTH	ELEMENT
CO	84	MAY	Z

C	Q or S	Tem O	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	301	309	286	314	319	293	273	188	245	250	309*	289*	01	321*	456*	474*	-19*	186	104	9	45	152	215	267	304	5885
			02	304	328	329	258	287	264	334	219*	309	262	284	189	02	124	214	245	262	264	261	253	247	232	235	242	249	6195
			03	256	265	267	267	263	254	255	254	264	284	254	264	03	257	238	244	213	159	155	201	219	220	230	256	297	5836
			04	316	298	299	297	334	347	361	304	235	236	389	431	04	231	262	69	140	223	249	257	231	233	247	252	267	6508
			05	277	307	303	307	317	310	345	293	190	240	343	507	05	498*	505*	303	434*	389*	159*	216*	180	224	237	250	290	7424
			06	288	314	271	270	275	257	140*	204*	267	212	290	291	06	268	247	220	207	247	263	253	248	253	253	257	257	6052
			07	267	260	254	252	257	260	257	257	262	257	232	232	07	202	240	253	265	267	255	253	246	247	250	250	250	6025
			08	250	247	256	267	277	269	267	269	263	257	246	247	08	257	259	260	260	261	259	252	242	239	236	237	246	6123
			09	248	256	263	263	304	276	279	305	276	261	256	243	09	244	209	191*	102*	104	206	260	233	246	237	254	278	5796
			10	316	277	270	272	166*	69*	177*	221	209	256	368	338	10	358*	485*	363	247	184*	229	259	219	227	231	243	254	6238
			11	259	254	262	264	263	266	254	299	249	236	231	239	11	210	231	250	249	244	227	214	220	204	217	217	221	5780
			12	224	237	235	236	258	257	262	250	168	103*	265	277	12	273	272	262	236	188	61	93	160	195	203	221	233	5189
			13	246	294	327	350	287	276	270	277	265	261	265	254	13	243	239	237	262	263	257	247	240	237	237	237	243	6314
			14	243	247	253	253	253	253	250	247	243	247	244	213	14	175	109	119	146	164	103	122	183	163	191	247	290	4960
			15	283	296	260	283	293	287	305	217	304	268	230	263	15	237	250	197	250	260	270	263	245	242	243	246	247	6279
			16	267	276	274	283	297	286	268	263	264	255	206	244	16	263	267	276	270	278	272	264	252	242	242	250	258	6317
			17	274	293	302	311	319	388	310	294	303	11*	119	243	17	270	281	250	263	266	254	252	243	239	225	236	240	6166
			18	242	237	236	248	256	270	264	282	288	229	262	161	18	196	211	106	116	120	186	230	232	216	236	253	288	5389
			19	286	304	306	234*	94*	-3*	-118*	260*	267	311	299	302	19	316	286	239	238	228	186	128	160	238	248	246	251	5306
			20	264	325	327	303	330	248*	106*	187	242	299	357	408	20	337	459	301	152	146	119*	-46	105	182	204	263	350	5988
			21	266*	176*	-91*	164*	248*	189*	139*	-48*	101*	211	322	465*	21	227	248	236	263	217	179	136	232	225	266	275	324	4970
			22	323	321	324	290	279*	260*	68*	68*	210	208	269	468*	22	388*	388*	316*	407*	465*	171*	84	190	190	207	272	274	6432
			23	268	126*	262	303	126*	256	292	122	-36	153	381*	522*	23	438	301	278	426*	209	170	202	262	237	261	261	266	6086
			24	268	259	270	276	301	286	298	256	299	215*	413*	294	24	281	273	535*	228*	203*	43	100	86	219	260	286	293	6242
			25	300	291	278	278	282	278	289	301	272	258	210	179	25	206	243	145	90	38	154	201	236	256	270	288	322	5665
			26	272	269	280	300	292	265	200	184	188	233	193	127	26	240	291	234	258	292	273	232	227	230	240	251	263	5834
			27	267	270	273	266	263	260	259	254	246	188	239	252	27	234	302	318*	165*	155	198	191	206	223	221	247	273	5770
			28	304	292	298	309	313	299	285	272	268	280	280	274	28	247	199	176	150	136	169	178	170	197	217	240	274	5627
			29	276	246	278	278	269*	323	326	298	260	240	239	229	29	251	204	193	136	139	180	147	161	192	214	227	237	5563
			30	250	282	304	307	319	302	256*	109*	147*	307*	185	297	30	252	214	233	223	144	100	196	230	232	228	240	251	5608
			31	242	248	258	268	287	273	257	252	255	264	249	228	31	257	263	263	262	256	253	253	248	240	248	226	245	6095

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 Mgnb., converted to Normal Mgnb.

MONTHLY SUM	180,882
MONTHLY MEAN	247
DATES WITH GAPS	

FORM 76-106

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

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.

OBSY.	YEAR	MONTH	ELEMENT
CO	84	MAY	H

C	Q or 3	Tes 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	378	396	448	431	326	361	455	333	344	296	-98*	-188*	01	-204*	-338*	-317*	-345*	-112*	11	161	176	246	238	315	352	3665
			02	503	524	475	463	413	551	544	549*	511	487	382	231	02	212	316	319	348	326	314	309	300	292	294	297	290	9250
			03	292	300	295	301	307	316	316	333	367	379	388	405	03	367	327	309	187	210	291	324	306	282	286	300	292	7480
			04	278	336	352	363	407	417	414	390	393	340	96	-162*	04	185	61	126	331	355	349	328	320	322	310	287	306	6906
			05	329	366	348	340	354	392	411	476	437	206	157	116	05	16	-183*	-82	-80	-255*	-183*	-111	120	232	318	309	316	4349
			06	377	528	309	313	303	477	543*	586*	504	391	315	241	06	291	240	180	303	328	320	310	302	298	291	295	309	8174
			07	310	300	310	315	323	331	323	330	331	340	311	159	07	302	345	332	340	329	330	329	300	294	292	300	311	7487
			08	320	331	320	339	320	323	347	339	345	353	350	360	08	347	339	341	334	344	349	340	339	329	313	310	306	8038
			09	307	321	328	383	319	333	420	427	367	341	352	331	09	279	-6	-202	-168	290	361	351	355	311	300	319	313	6732
			10	286	306	316	404	598*	542*	570*	461	292	165	118	163	10	47*	-48	-82*	153	121	372	360	340	332	327	316	323	6784
			11	322	330	327	328	333	336	398	412	323	372	375	316	11	342	368	332	333	319	305	310	283	312	307	313	320	8018
			12	320	320	313	359	331	341	380	511	488	307*	292	363	12	360	339	304	258	146	201	312	343	320	311	301	309	7831
			13	339	389	488	376	342	312	330	333	364	299	368	353	13	350	293	319	350	349	341	319	312	302	290	290	300	8108
			14	315	320	319	319	321	341	322	323	333	343	339	319	14	154	26	149	167	232	197	250	277	223	278	286	369	6542
			15	293	296	334	320	338	362	373	460	384	126	246	180	15	231	116	303	362	360	353	338	334	338	316	307	292	7360
			16	305	311	329	343	322	336	321	320	328	336	246	352	16	375	373	359	347	346	354	346	343	336	332	338	344	8044
			17	339	325	373	378	459	466	366	402	336	36	297	341	17	316	290	337	361	356	352	338	336	327	320	304	301	8056
			18	300	314	334	360	362	385	380	468	466	344	116	239	18	292	164	203	245	292	341	310	296	276	244	305	368	7406
			19	384	420	381	608*	547*	525*	535*	-188*	322	180	312	218	19	192	206	221	266	235	170	185	302	304	302	290	322	7239
			20	384	412	419	447	422	502*	462*	433	461	240	86	106	20	258	76	-102	213	35	-294*	95	161	294	320	359	370	6159
			21	626*	737*	926*	755*	720*	648*	631*	264*	160*	406	318	-42*	21	-199*	-52	156	147	251	143	242	259	358	334	378	450	8638
			22	435	360	396	520	469*	513*	300*	216*	346	506	353	6	22	-255*	-176*	-31*	-106	-322*	-284*	232	258	272	315	361	412	5116
			23	459	732*	522	401	636*	466	442	208	-132*	146	-26*	-26	23	44	106	256	-63	111	169	272	314	342	309	306	374	6398
			24	330	321	336	340	329	399	428	446	418	183*	-176*	387	24	326	182	-328*	-568*	-317*	86	54	316	360	320	310	320	4802
			25	344	350	336	323	306	336	360	324	336	332	315	264	25	171	-51	-50	-40	117	267	275	303	220	238	291	367	6034
			26	340	380	489	474	477	512	408	172	312	295	140	76	26	206	95	156	365	342	298	264	295	298	290	290	293	7289
			27	296	302	309	317	318	319	308	348	468	262	268	294	27	186	59	-24	36	150	182	276	318	301	307	303	322	6225
			28	347	346	336	342	332	324	328	342	360	361	353	326	28	312	280	236	200	213	281	295	281	289	302	309	350	7445
			29	303	386	412	525	584*	362	383	440	436	398	356	311	29	288	217	207	212	246	265	246	282	300	283	308	308	8058
			30	358	479	486	444	435	482	483*	584*	427*	-167*	39	72	30	205	303	264	104	40	271	308	271	241	245	302	301	6977
			31	316	326	321	312	323	312	327	337	356	372	381	359	31	343	335	322	322	308	303	296	295	286	270	282	315	7721

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[ ] Significant portion of hour interpolated.

[ ] No record; or no values available because of faulty record.

[ ] Scaling uncertain because of magnetic storm.

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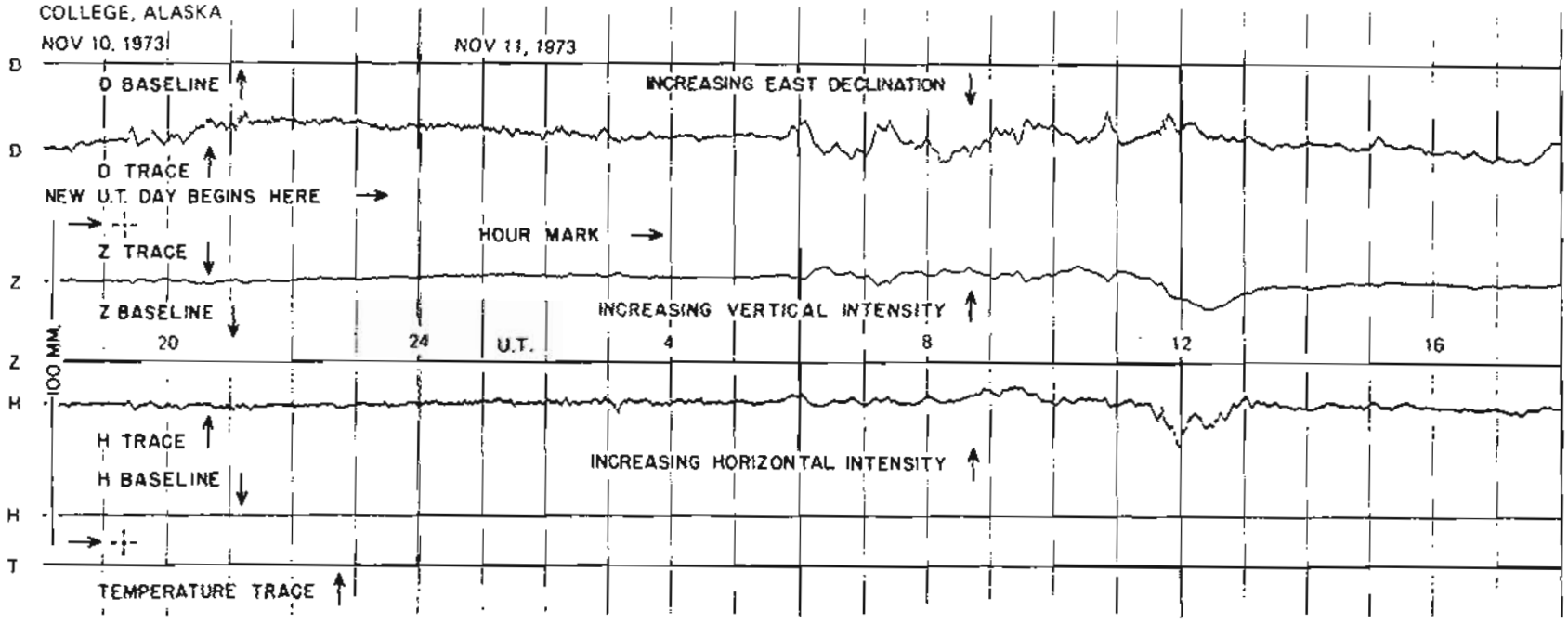
* Derived from STORM Mgnb., converted to Normal Mgnb.

MONTHLY SUM	218,331
MONTHLY MEAN	293

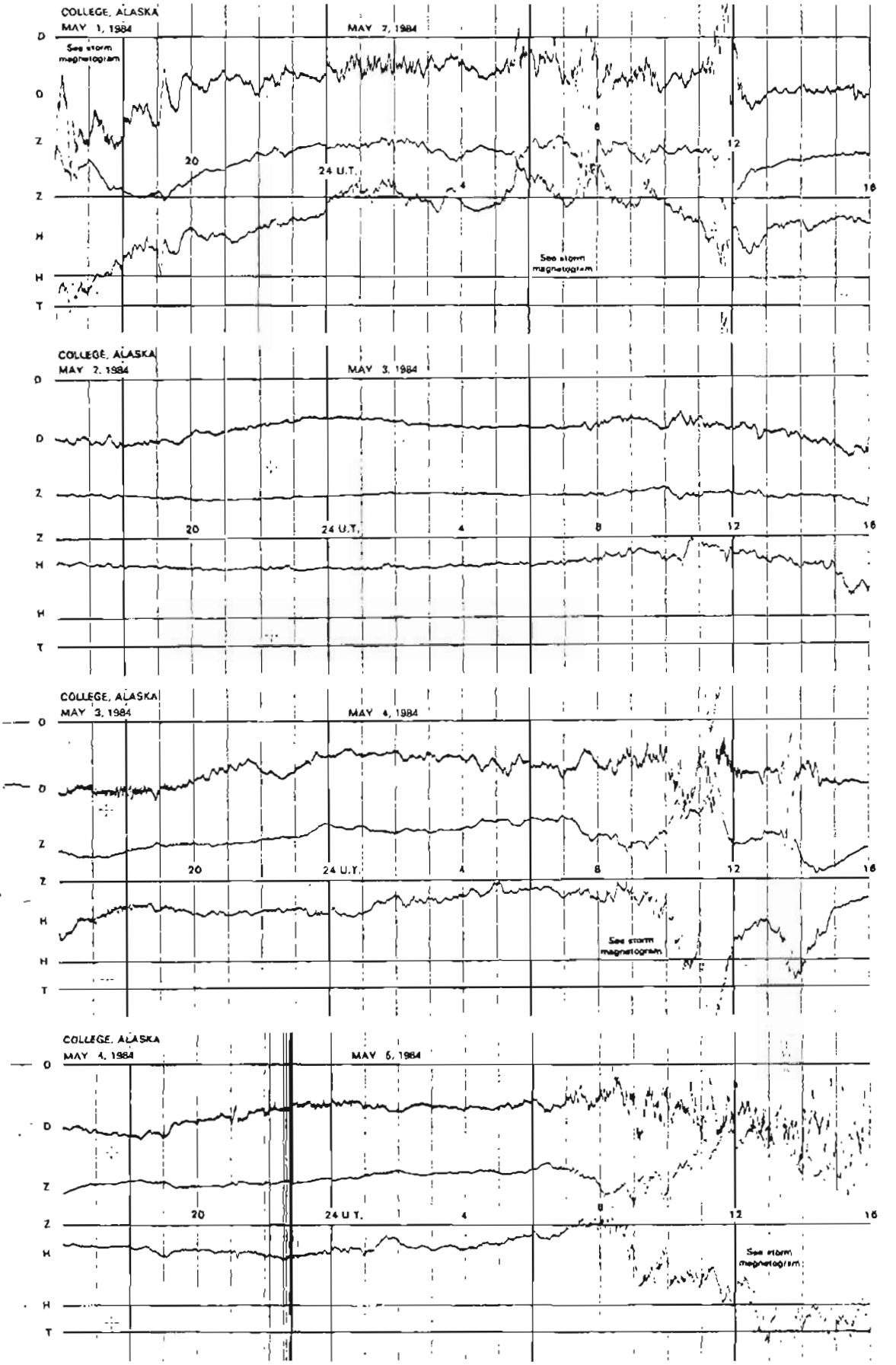
DATES WITH GAPS:

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

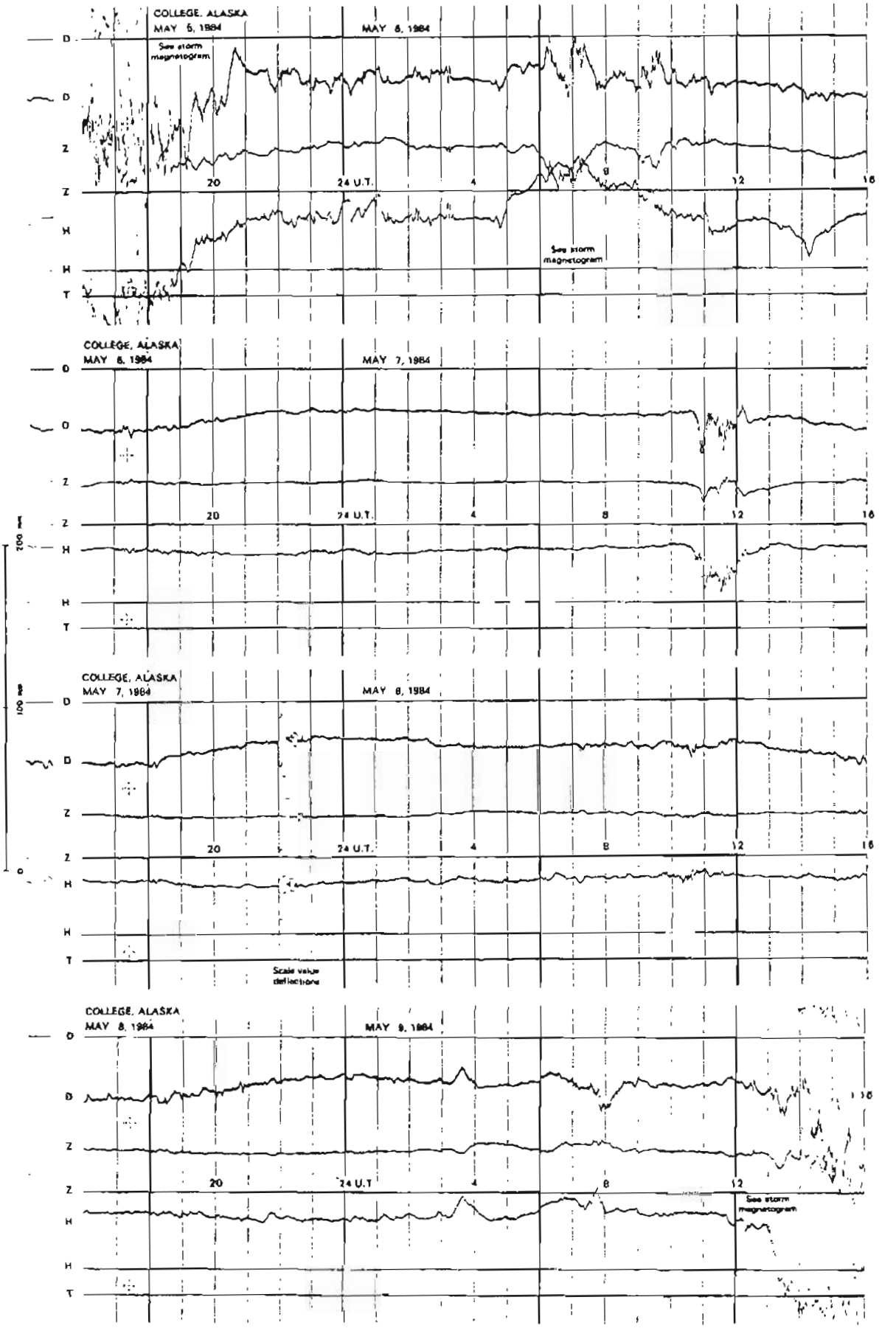


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

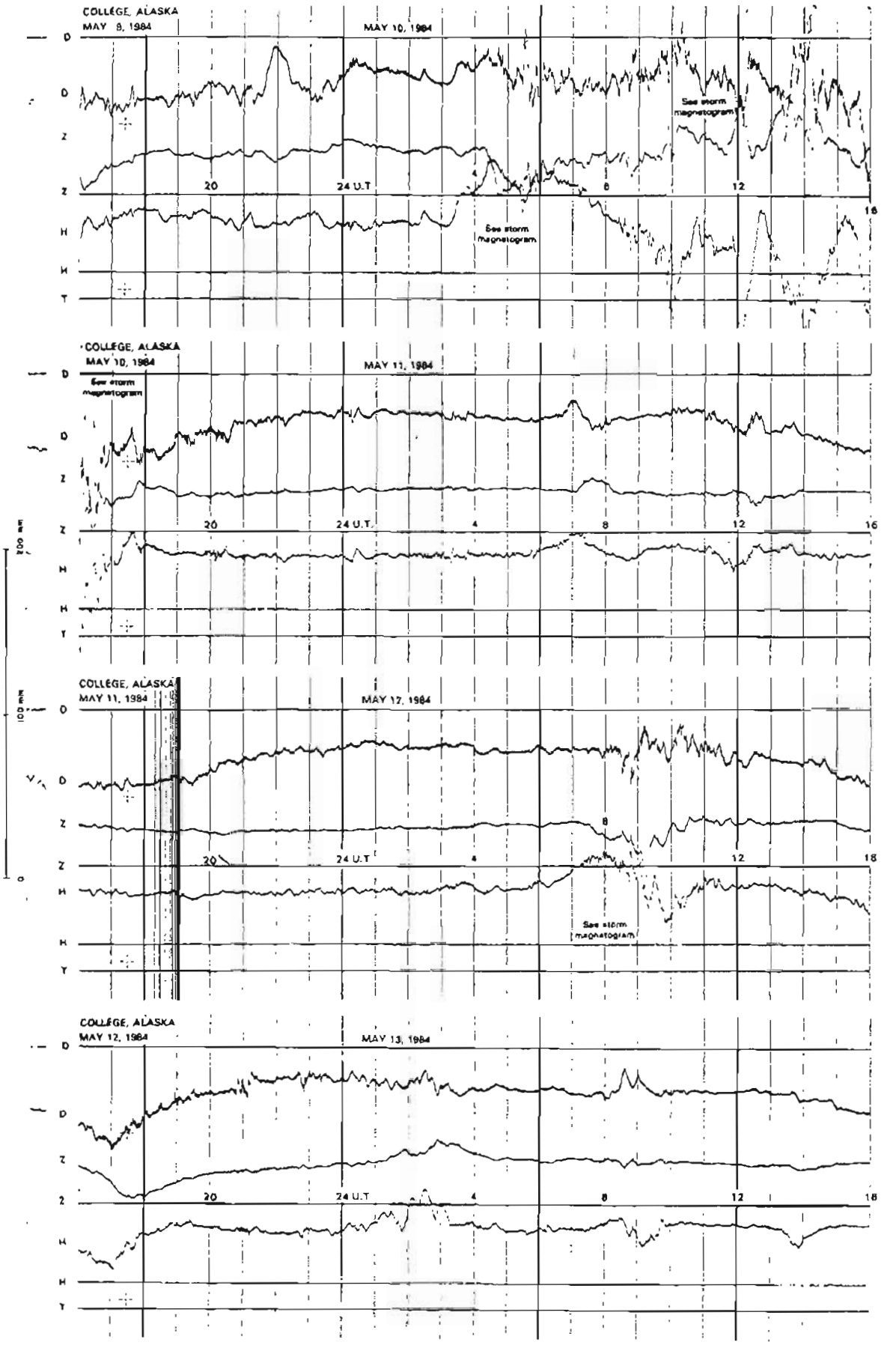
NORMAL MAGNETOGRAMS



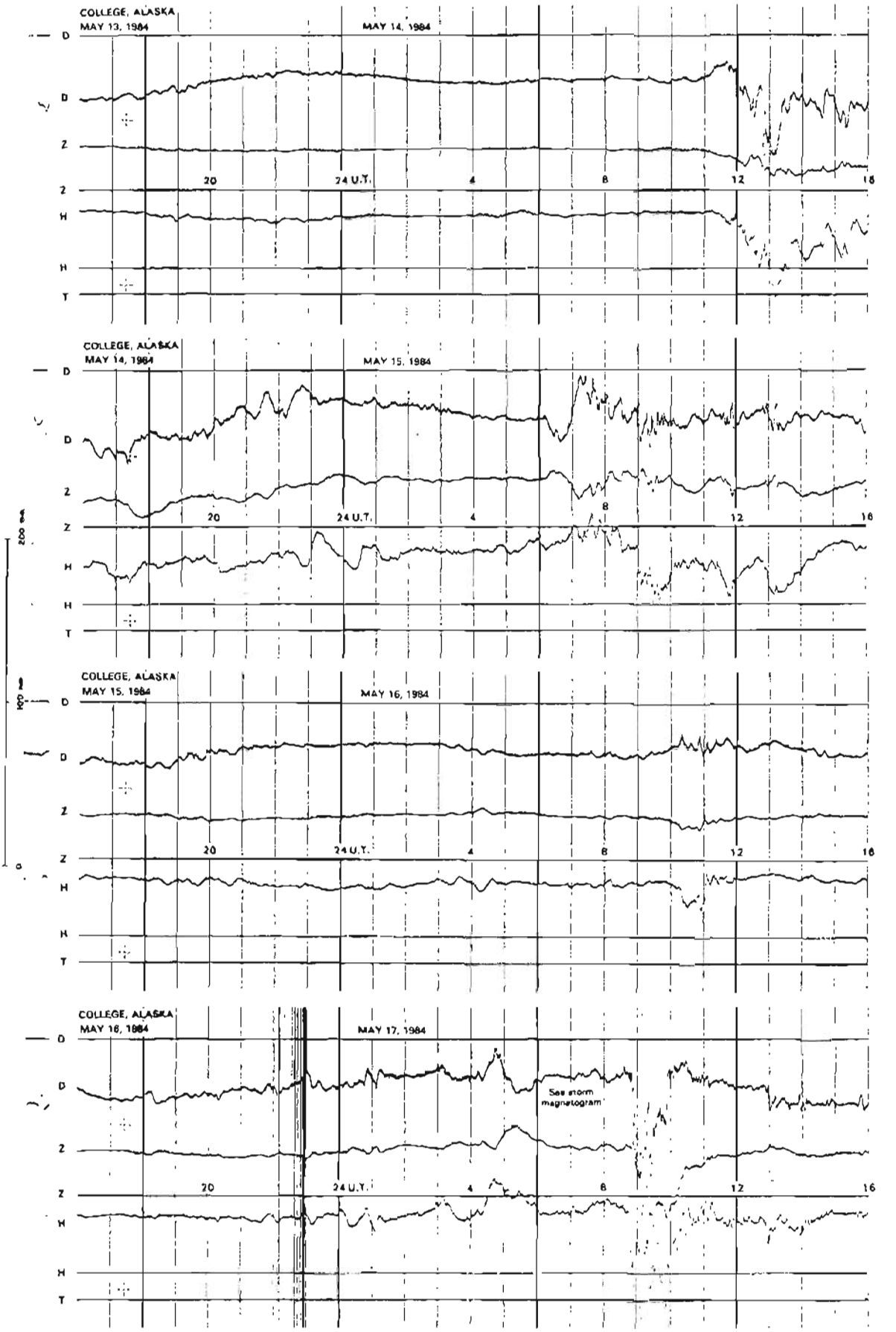
NORMAL MAGNETOGRAMS



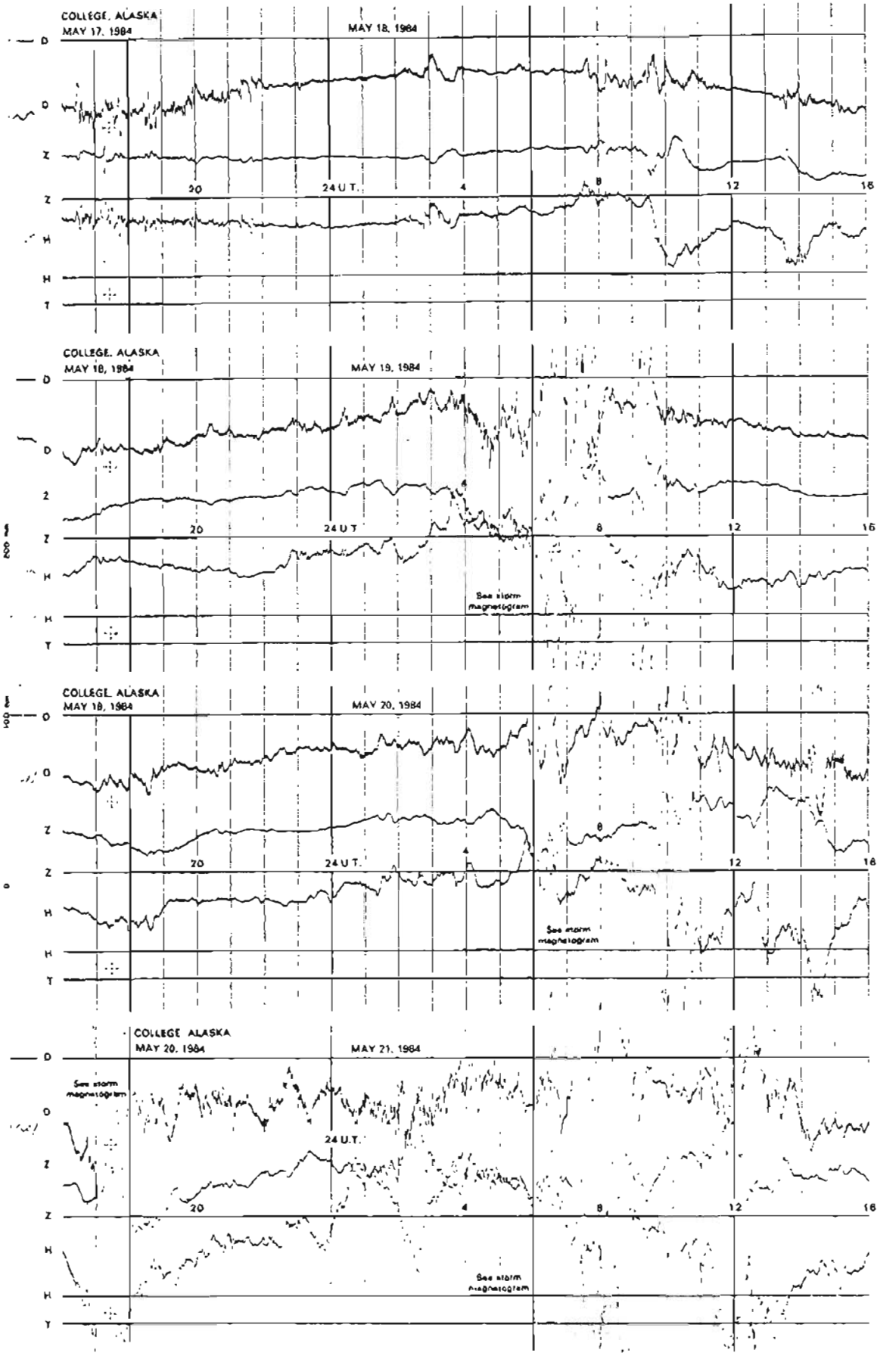
NORMAL MAGNETOGRAMS



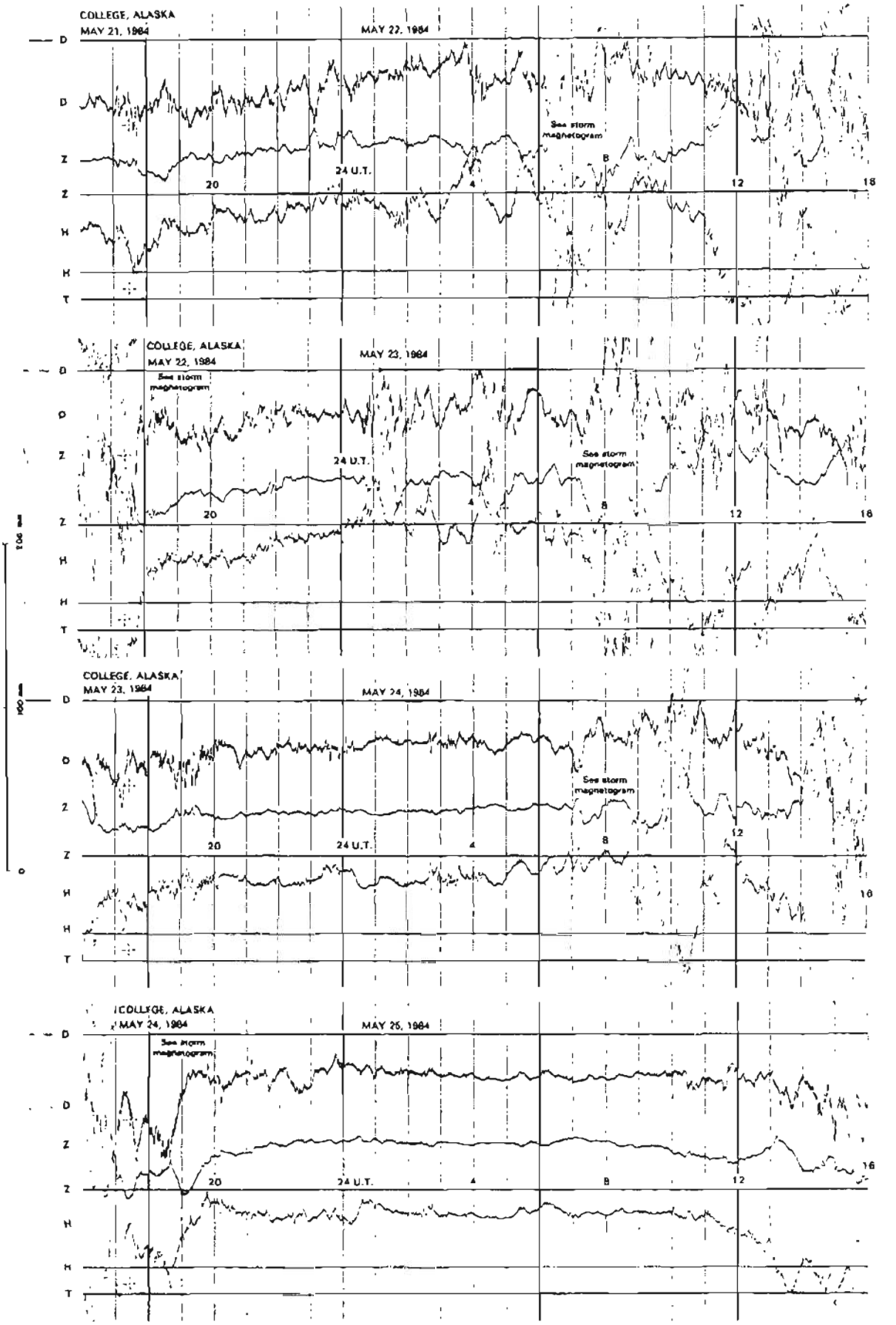
NORMAL MAGNETOGRAMS



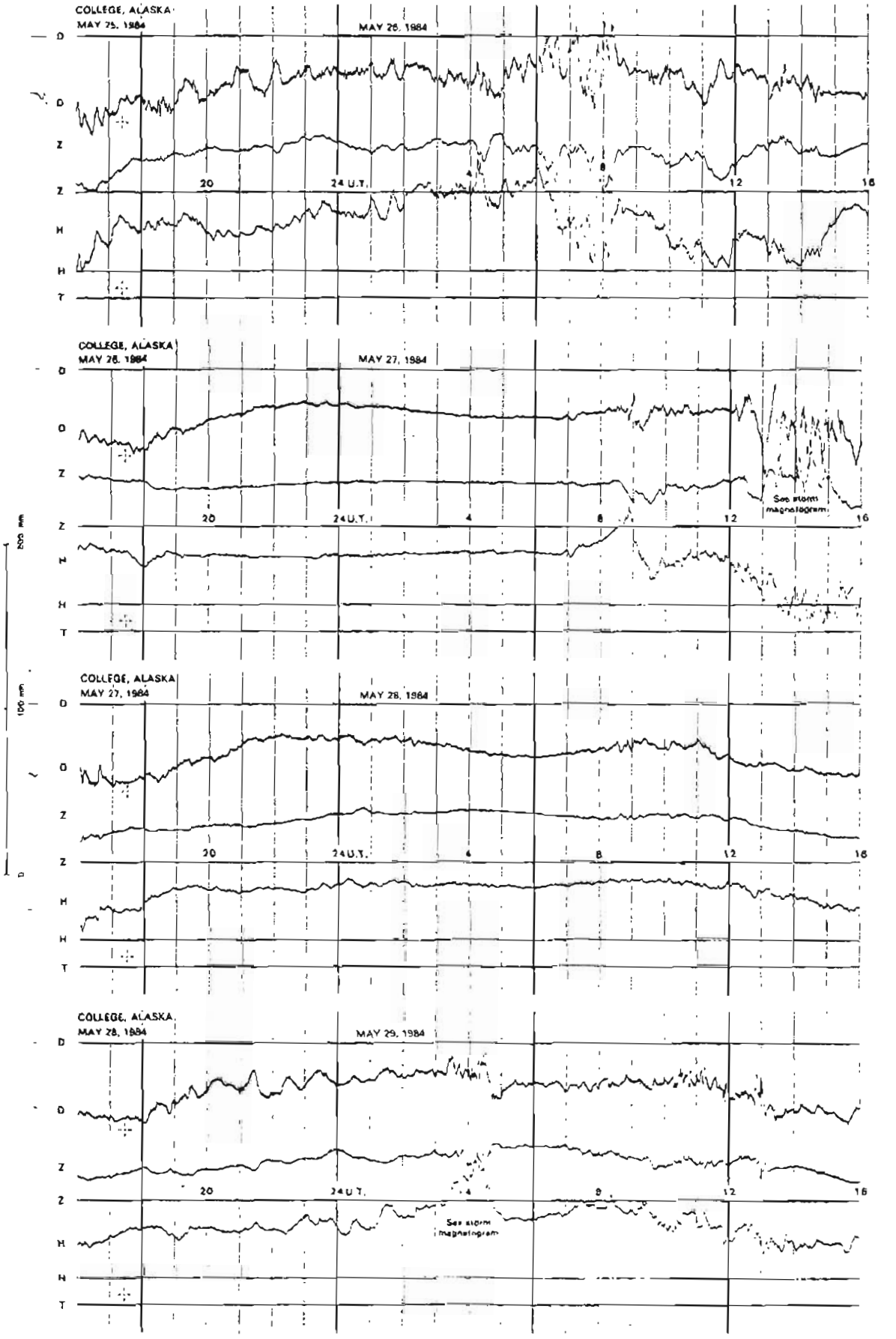
NORMAL MAGNETOGRAMS



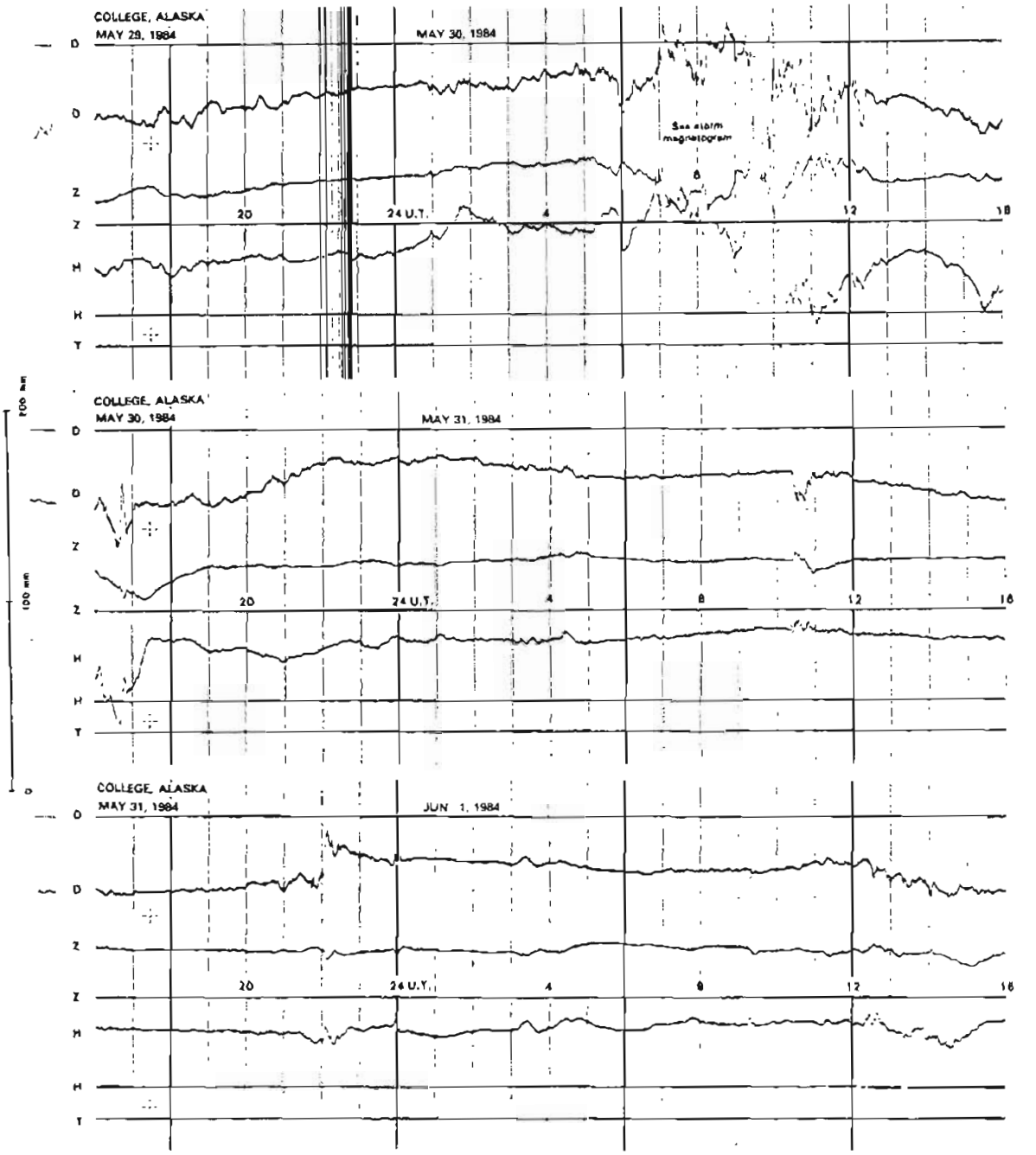
NORMAL MAGNETOGRAMS



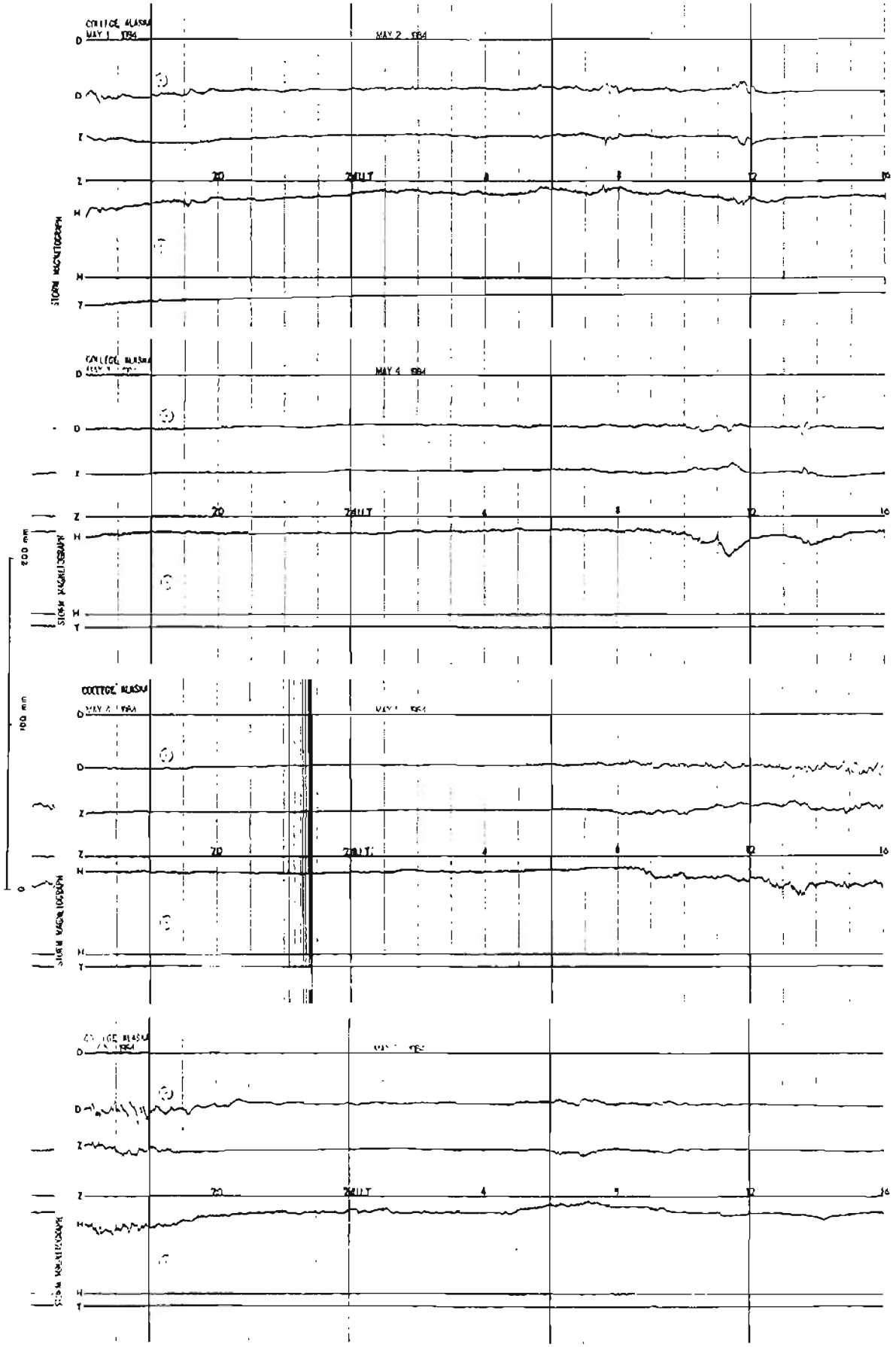
NORMAL MAGNETOGRAMS



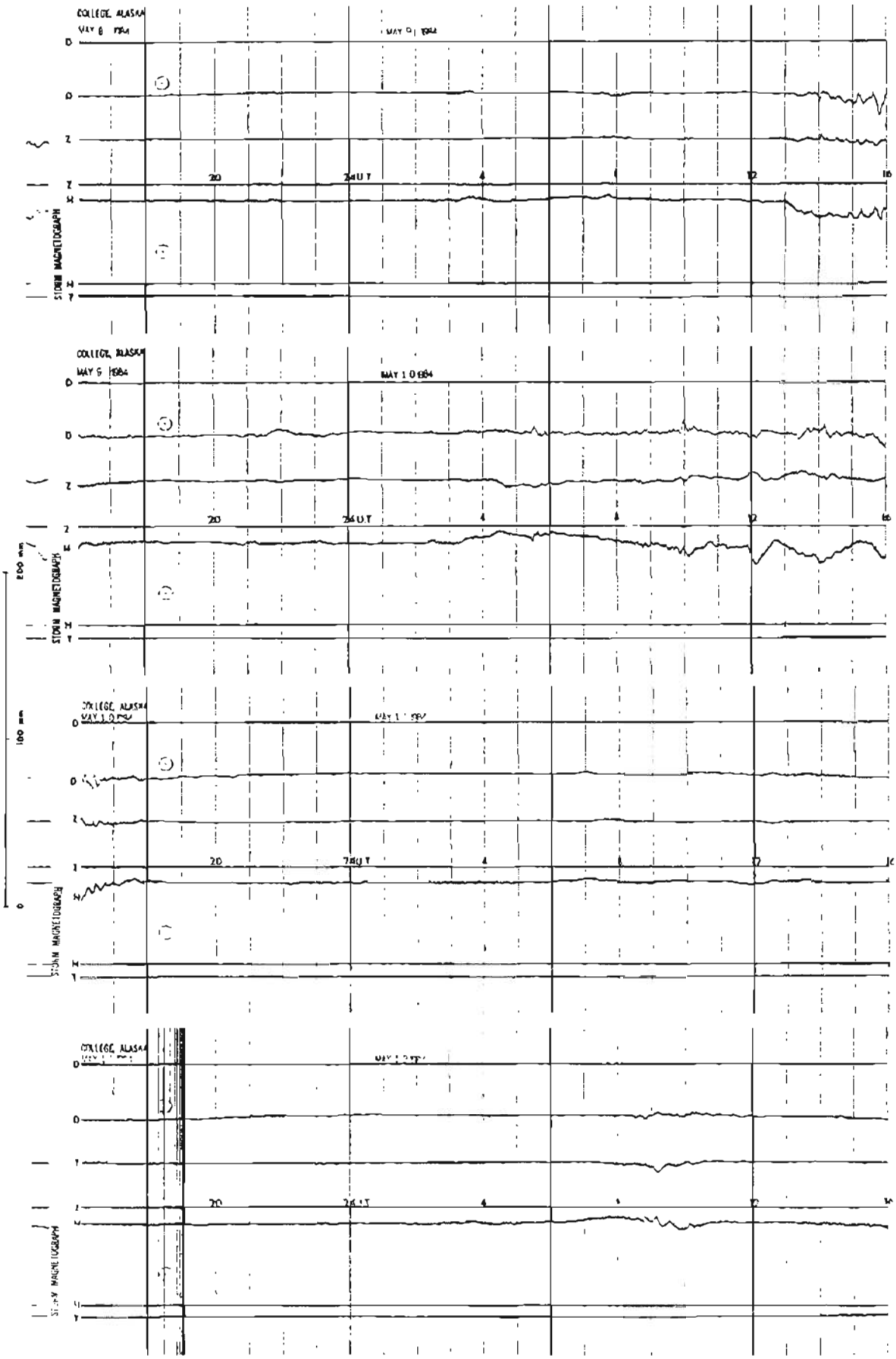
NORMAL MAGNETOGRAMS



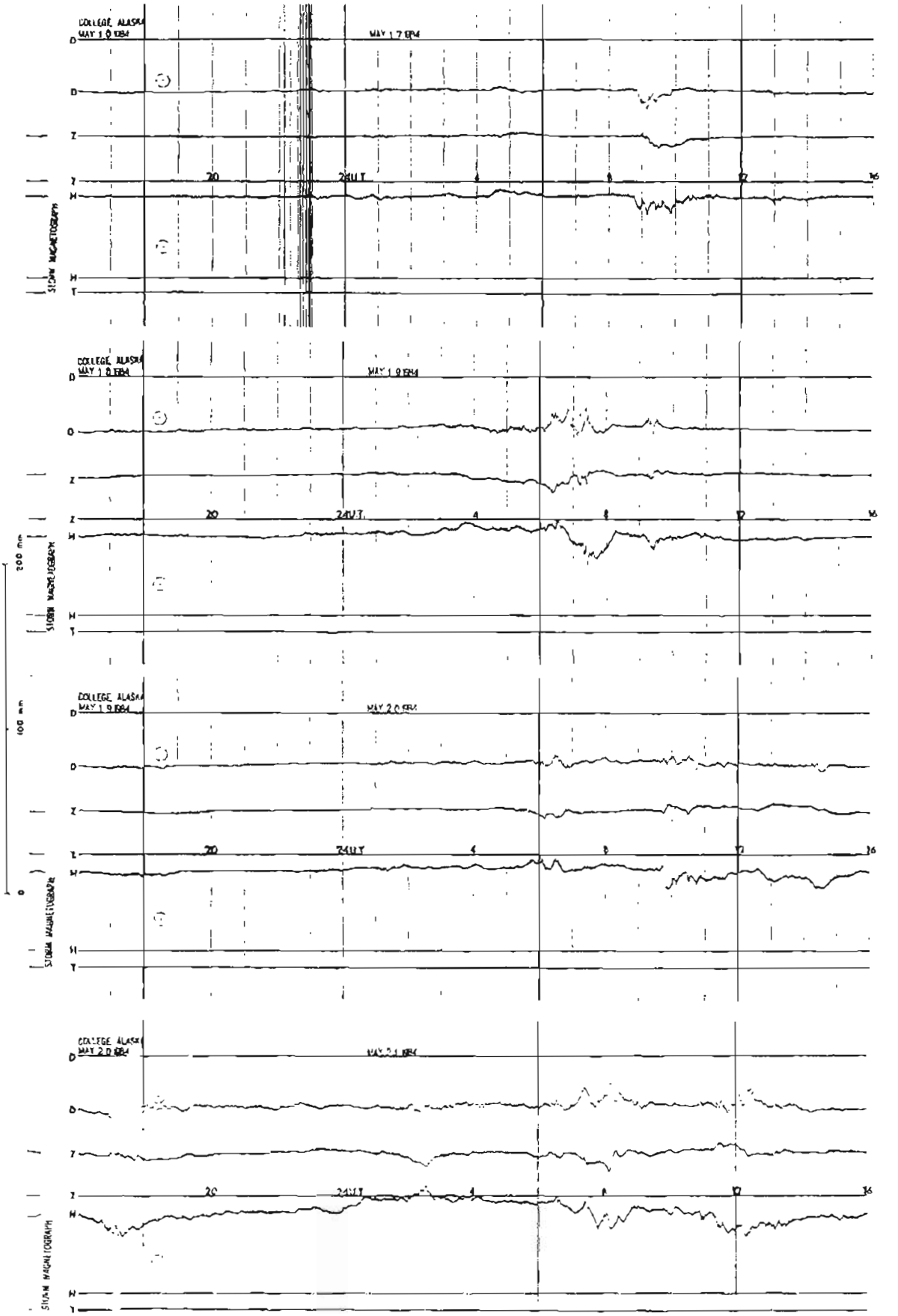
STORM MAGNETOGRAMS



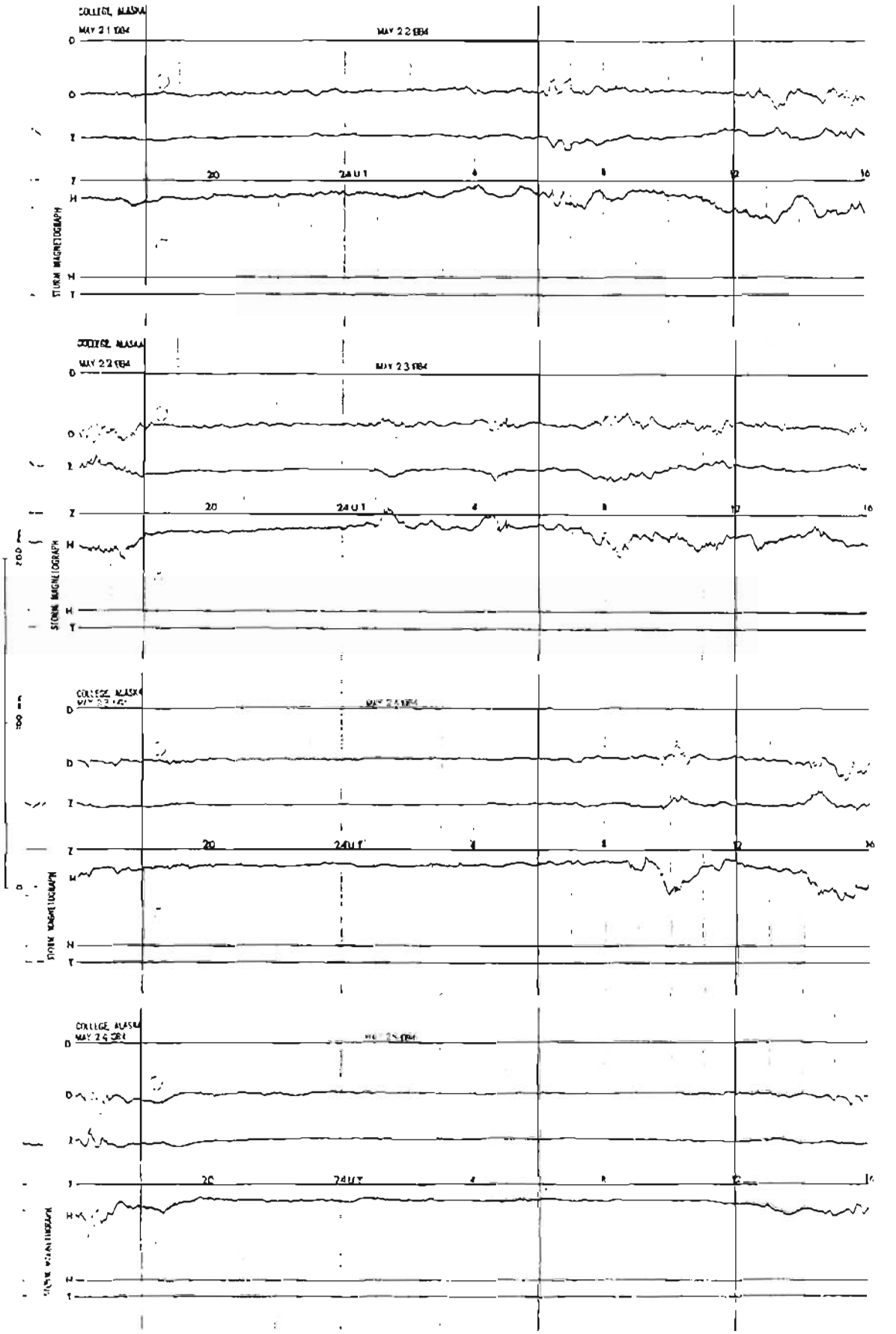
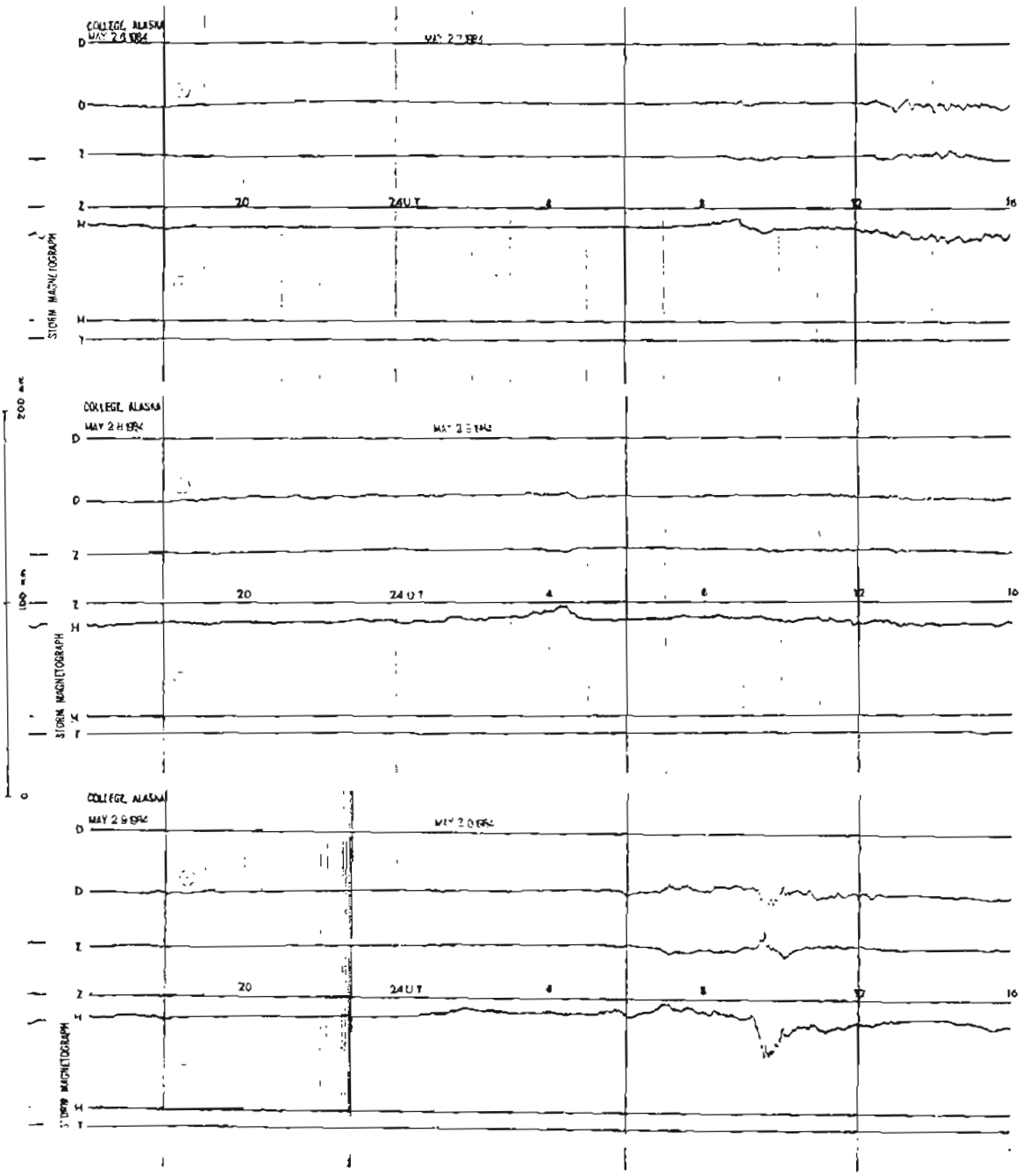
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS