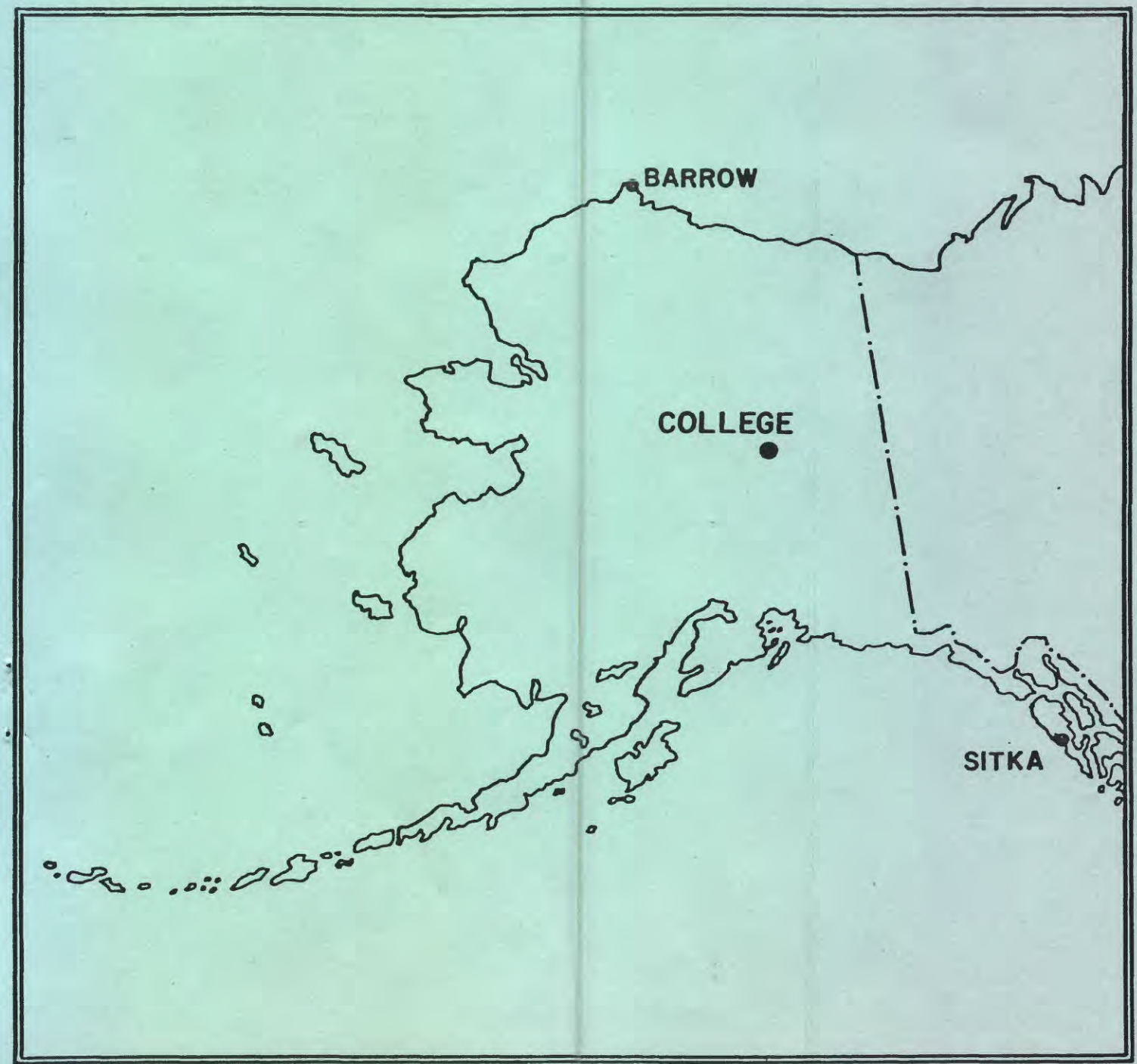
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

OCTOBER 1984

OPEN FILE REPORT 84-0300J



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.

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 OBSERVATORY

MONTH AND YEAR: OCTOBER 1984

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	1	2	3	4	5	2	0	0	17	13
2	1	1	2	3	5	5	2	2	21	17
3	3	4	5	5	4	2	2	1	26	23
4	0	0	1	1	3	5	1	1	12	09
5	1	1	3	3	3	1	1	1	14	08
6	3	3	3	2	3	3	2	4	23	15
7	5	4	4	5	6	5	3	4	36	40
8	4	5	2	5	3	3	3	4	29	25
9	3	2	3	5	3	4	3	3	26	20
10	3	4	4	6	6	5	3	3	34	38
11	3	3	4	6	5	5	4	5	35	39
12	4	3	6	6	5	6	4	3	37	47
13	3	3	5	6	7	3	2	1	30	40
14	2	2	2	2	1	2	2	2	15	07
15	2	2	1	1	0	2	3	3	14	07
16	3	3	5	6	5	4	2	2	30	31
17	2	0	1	1	0	0	0	0	04	02
18	1	2	2	7	6	6	6	5	35	56
19	5	4	7	7	6	7	6	4	46	85
20	4	6	7	7	6	6	6	3	45	80
21	3	4	6	6	7	6	4	4	40	60
22	4	5	7	6	6	6	5	4	43	66
23	3	3	6	6	5	6	3	3	35	44
24	4	4	6	7	7	5	4	3	40	63
25	2	3	3	5	5	3	2	5	28	25
26	4	2	2	2	2	3	2	2	19	11
27	2	1	1	2	5	3	1	0	15	11
28	0	1	3	4	3	1	2	2	16	10
29	1	1	1	3	3	3	1	1	14	08
30	1	2	1	0	0	0	1	1	06	02
31	1	0	0	0	0	1	1	2	05	02

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: OCTOBER

YEAR: 1984

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
02	12XX	pc4	
02	18XX	pc4	
04	08XX	pi2	
26	16XX	pc5	

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
OCTOBER 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	06	02XX	..	..	..	..	13	5	7	263	1400	990	13	21
		18	09XX	..	..	..	..	18	4	7	391	1910	1260	26	03
								19	3, 4, 6	7					
								20	3, 4	7					
								21	5	7					
								22	3	7					
								24	4, 5	7					

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

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 10-1-84	2400 U.T., 10-31-84	1.'0/mm	3.7 γ/mm	27° 17.'0 E
H	0000 U.T., 10-1-84	2400 U.T., 10-10-84	7.8 γ/mm		12687 γ
	0000 U.T., 10-11-84	2400 U.T., 10-23-84	"		12684 γ
	0000 U.T., 10-24-84	2400 U.T., 10-31-84	"		12671 γ
Z	0000 U.T., 10-1-84	2400 U.T., 10-31-84	7.6 γ/mm		55177 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 10-1-84	2400 U.T., 10-31-84	7.'9/mm	29.6 γ/mm	23° 41.'2 E
H	0000 U.T., 10-1-84	2400 U.T., 10-31-84	43.9 γ/mm		10803 γ
Z	0000 U.T., 10-1-84	2400 U.T., 10-31-84	48.3 γ/mm		54045 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION
	FROM	TO	SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 44.'0 E	12915 γ	55359 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: OCT 4, 5, 14, 15, 17, 26, 28, 29, 30, 31

FORM C&GS-404a

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	84	OCT	D

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	210	223	230	229	218	243	393	266	225	254	276	326	01	432	272	313	348	313	320	309	300	287	247	232	233	6699
			02	243	233	243	256	260	263	257	243	263	330	263	281	02	269	313	380	389	454	407	332	300	273	257	267	235	7041
			03	190	169	140	181	202	97	304	229	203	264	242	293*	03	349	321	341	317	333	326	342	316	273	243	234	219	6128
			04	237	244	254	261	263	269	257	263	261	273	280	280	04	293	335	342	341	385	353	346	321	297	263	237	237	6892
			05	223	223	239	250	250	260	249	293	233	362	283	283	05	296	313	303	299	307	328	327	322	297	250	247	247	6684
			06	249	253	268	257	247	203	256	257	241	245	267	287	06	316	351	340	364	392	347	379	356	333	332	30	112	6682
			07	189	180	177	248	287	298	237	252	272	223	380	273	07	381*	603*	373*	603*	500*	313	327	300	265	217	243	223	7364
			08	235	205	205	223	305	500	228	242	246	357*	245*	200	08	243	262	321	333	339	347	347	300	240	233	210	212	6578
			09	228	227	278	284	244	257	236	230	334	382	177	264	09	287	291	327	321	357	383	381	305	251	243	216	223	6726
			10	217	233	248	239	357*	456	465	268	240	404*	100	315	10	309*	325*	881*	172	316	373	328	293	247	226	223	227	7462
			11	211	226	257	200	242	233	328	367	264	190*	226	199	11	353	293	264	517	293	331	347	204	203	193	186	218	6345
			12	233	298	252	217	240	283	341	297	0*	247	245	240	12	291	350	359	611*	301	309	297	267	200	215	259	223	6525
			13	253	260	233	251	263	267	243	407	400	63*	198*	243	13	317*	325*	387	336	323	331	304	300	277	259	237	236	6713
			14	236	243	242	321	253	236	273	387	261	254	248	247	14	278	302	300	327	313	303	283	257	250	220	220	232	6486
			15	245	231	239	237	231	243	279	269	267	273	277	287	15	300	313	299	312	311	330	347	302	200	113	202	236	6343
			16	213	228	249	219	275	223	303	200	314	103*	317*	420*	16	417	497	453	396	313	279	293	287	275	272	248	217	7011
			17	238	243	242	252	260	266	264	261	299	269	280	287	17	280	282	279	289	287	293	319	317	303	283	269	268	6625
			18	265	267	255	253	231	278	213	253	237	312	401*	433*	18	497*	505*	949*	1188*	775*	187*	234*	230	219*	187*	113	155	8637
			19	162	190	217	127	289	211	333	161	12*	386*	233*	401*	19	394*	719*	481*	520*	592*	219*	156*	210	273	219	253	300	7058
			20	244	217	203	303	349	370	437	267*	-75*	147*	298*	100*	20	234*	330*	441*	362*	465*	275	263	223	200	222	233	248	6356
			21	260	269	250	253	463	240	219*	170	233	-52*	61*	345*	21	536*	413	470	631*	286	273	267	252	193	141	153	227	6553
			22	243	223	241	406	271	259	401*	584*	-59*	195*	80	283*	22	251*	243	480	277	441*	141	128	100	113	227	225	213	5966
			23	277	277	282	293	273	323	547	330*	76*	139*	227*	277	23	285	375	359	455	520*	213	203*	205	200	183	237	220	6776
			24	243	245	297	386	240	463	560	163	227*	-3*	270	256	24	338*	362*	814*	528*	240	252	251	200	165	184	[228]	247	7156
			25	266	252	262	270	363	318	270	243	298	383	287	215	25	288	347	362	310	315	277	267	254	213	135	200	200	6595
			26	173	227	243	291	271	277	282	257	263	259	254	268	26	277	294	299	287	303	327	333	303	300	251	240	243	6522
			27	238	261	255	247	253	243	262	259	300	260	268	278	27	284	250	235	387	357	306	303	302	259	257	241	243	6548
			28	253	260	261	249	261	267	247	233	242	210	283	270	28	277	296	273	284	337	335	307	221	235	241	247	253	6342
			29	223	226	239	263	253	252	244	253	265	267	267	319	29	344	347	347	291	299	307	303	307	292	241	219	215	6583
			30	223	255	265	263	241	290	280	257	263	266	267	268	30	283	287	292	293	287	303	307	294	278	256	248	249	6515
			31	260	260	263	269	267	266	263	263	263	262	264	266	31	270	281	287	280	297	313	317	300	279	264	258	203	6515

SCALED BY	LYT
CHECKED BY	EAS, 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	208426
MONTHLY MEAN	280
DATES WITH GAPS:	

FORM CSGS-404a

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

OBSY.	YEAR	MONTH	ELEMENT
CO	84	OCT	Z

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.

C	Q or S	Ten 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	275	274	276	276	278	300	323	269	269	247	224	233	01	124	178	225	215	202	223	243	249	255	246	245	251	5900
			02	256	263	271	273	265	258	259	267	279	238	253	238	02	243	230	154	24	0	93	128	147	200	224	237	248	5048
			03	269	310	300	286*	138*	49*	24*	11*	189*	268	261	356*	03	225	220	245	253	249	252	253	240	237	227	237	238	5337
			04	243	250	249	249	260	251	257	256	261	267	260	252	04	240	193	202	209	64	113	197	217	230	233	234	240	5412
			05	243	257	274	275	276	266	264	314	284	271	260	256	05	237	230	184	203	244	247	245	246	235	229	230	226	5996
			06	229	233	243	240	246	286	307	273	238	200	254	252	06	247	233	217	219	213	227	184	200	205	239	149	217	5551
			07	270	221*	209*	176*	317	294	244	226	256	245	159*	194	07	420*	483*	241*	176*	215*	212	190	213	237	241	253	277	5969
			08	287	314	310	280	317	290	264	279	274	279*	150*	160	08	245	252	245	233	240	228	240	235	224	249	247	264	5801
			09	277	280	305	266	258	264	263	275	244	101*	113*	243	09	249	249	233	228	204	216	200	206	206	243	242	264	5629
			10	267	299	300	273	311*	290	236	225	267	62*	-13*	250	10	605*	138*	203*	151*	186	197	213	199	233	243	237	253	5625
			11	259	283	272	273	278	278	336	264	290	190	187	94	11	117	178	170	170	220	187	216	169	227	238	280	297	5473
			12	296	316	284	274	284	286	306	202	11*	156	244	262	12	174	231	177	164*	201	227	207	203	205	233	263	273	5479
			13	297	286	269	300	271	257	265	230	109	363*	164*	227	13	45	199	135	224	236	244	236	246	241	243	246	254	5587
			14	256	267	274	317	266	270	285	255	250	263	264	257	14	251	252	247	240	233	203	200	183	183	196	233	256	5901
			15	266	267	281	257	257	283	276	263	259	264	268	257	15	246	230	224	219	216	204	223	212	203	178	234	265	5852
			16	283	293	287	307	278	279	217	223	133	46	381*	291*	16	15	123	132	49	126	217	245	253	254	256	264	297	5249
			17	277	258	254	256	253	256	263	266	271	254	249	239	17	238	237	228	228	248	246	246	243	243	240	243	246	5982
			18	246	250	246	255	277	323	306	296	286	240	273	570*	18	409*	486*	493*	282*	0*	32*	-57*	-10	167	170	243	235	6018
			19	266	280	300	266	280	122*	109*	100	608*	333	265	633*	19	287*	321*	768*	-45*	-90*	-19*	53	212	252	263	346	379	6289
			20	306	294	340	323	270	172*	20*	83*	97*	140	373	346*	20	400	468*	429*	221	154*	200	207	256	310	286	273	284	6252
			21	319	307	300	333	304	300	58*	160*	210	97*	-42	448*	21	384*	-80	100	262*	158	123	178	228	233	257	275	326	5238
			22	313	333	307	314*	288	313	274	109*	20*	217*	102*	441*	22	359*	33	167	196	203	163	73	89	192	305	308	309	5428
			23	303	300	301	287	274	300	115*	97*	83*	187	262	29	23	152	270	287	164	301*	108	140*	158	227	267	284	307	5203
			24	323	356	341	360	292	249*	120	153	135	423*	207	314	24	493*	332*	179*	172*	96	187	169	224	229	254	288	324	6220
			25	302	280	303	287	274	298	281	257	267	163	266	127	25	-17	87	135	177	203	221	197	213	247	256	304	353	5481
			26	400	323	287	284	277	272	269	254	265	253	238	253	26	253	247	247	217	204	235	237	236	227	223	233	243	6177
			27	253	258	253	247	253	253	260	257	260	252	256	244	27	245	80	60	127	173	205	223	233	236	242	244	247	5361
			28	248	244	243	245	264	257	254	276	254	291	248	243	28	242	183	197	210	224	225	213	174	177	203	236	249	5600
			29	249	249	250	259	253	259	265	267	269	253	229	218	29	161	168	194	181	224	228	228	226	220	217	218	227	5512
			30	236	253	256	248	253	292	262	256	247	249	239	237	30	226	223	233	232	227	227	228	232	226	228	230	237	5777
			31	237	237	235	234	233	232	236	241	243	246	247	244	31	239	232	227	223	213	226	223	219	217	219	223	223	5549

SCALED BY	LYT
CHECKED BY	EAS, 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	175896
MONTHLY MEAN	236
DATES WITH GAPS:	

FORM C&GS-484a

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	84	OCT	H

C	Q or S	Ten Q	Hr. Dy.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Dy.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	276	278	286	291	299	331	359	361	337	292	228	120	01	0	290	263	242	243	281	291	290	284	280	288	292	6502
			02	284	279	279	300	295	294	306	327	369	339	338	302	02	300	249	-70	-131	114	235	260	297	298	289	288	260	6101
			03	282	310	390	557*	662*	578*	360*	404*	489*	348	305	70	03	188	289	273	292	289	291	274	259	264	272	283	274	7997
			04	277	283	289	291	295	295	302	293	301	308	307	299	04	274	253	271	226	-35	269	297	308	295	283	279	264	6524
			05	285	289	297	301	308	310	329	396	413	400	347	313	05	280	285	253	300	311	301	301	301	291	290	290	303	7494
			06	307	310	303	307	301	361	333	305	247	290	313	299	06	271	247	260	249	300	268	257	285	273	173	139	290	6688
			07	373	517*	679*	571*	355	350	410	335	297	300	105	230	07	-37*	-130*	-70	41*	33	253	233	252	273	259	272	350	5891
			08	398	387	300	318	360	364	343	305	339	200	64*	215	08	361	300	280	250	231	276	264	265	279	261	280	293	6933
			09	389	303	327	330	304	293	303	330	360	327*	394*	361	09	300	299	207	200	210	253	234	200	245	249	288	278	6984
			10	330	316	340	337	439	400	339	373	278	108*	124	130	10	-531*	-156*	-407*	160	259	281	259	257	298	282	291	303	4810
			11	295	299	340	323	322	348	445	411	440	46*	-32*	-145	11	17	-25	228	-40	185	203	231	180	257	227	280	309	5144
			12	379	391	322	320	331	320	329	323	36*	341	300	-15*	12	175	145	-60	-273*	183	271	158	240	268	258	280	294	5316
			13	333	303	353	329	321	298	330	343	234	-385*	-37*	120	13	-430*	-128*	223	305	290	290	295	280	282	285	288	297	4819
			14	308	279	303	332	340	313	330	302	306	313	298	293	14	300	301	289	282	266	267	263	251	280	268	260	290	7034
			15	290	291	321	310	310	317	317	302	307	308	310	303	15	291	293	284	294	290	300	270	259	157	241	263	247	6875
			16	247	315	333	370	311	370	409	447	221*	-329*	-60*	-390*	16	-110*	70	89	187	244	329	308	303	303	293	267	291	4818
			17	285	273	293	288	298	299	300	305	310	312	297	299	17	293	292	288	289	298	299	293	289	285	280	285	290	7040
			18	297	297	317	313	328	321	360	337	353	165	-58	-451*	18	-254*	-310*	-557*	-507*	-456*	-406*	-137*	-100	139	191	220	303	711
			19	360	560	383	520	441	553*	441*	300	-573*	-153*	184	-625*	19	-41*	-130*	-406*	85	-388*	-137*	-86*	369	277	352	340	307	2933
			20	347	415	491	410	497*	384*	402*	9*	-158*	15*	-35	-754*	20	-209*	-64*	-142*	156	-86*	167	127	340	263	306	325	300	3506
			21	333	363	340	370	400	369	166*	290*	181	-19*	-193*	-97*	21	-434*	-100	110	-193*	-25	271	176	120	168	359	287	370	3612
			22	391	430	385	475*	335	363	323	299	-517*	-8*	301*	-125*	22	-590*	-33	37	200	-176*	157	50	88	287	350	276	327	3625
			23	348	340	308	314	325	410	347	441*	229*	181	88*	-80*	23	212	137	-45	-170*	-350*	242	245*	280	312	302	288	299	5003
			24	362	448	428	359	331	423	367	436	-41*	-287*	159	190	24	-338*	-815*	-484*	-40	175	290	249	295	263	279	315	321	3685
			25	341	320	351	333	380	321	297	299	259	289	100	49	25	27	-10	168	243	260	293	272	255	220	229	245	330	5871
			26	330	373	311	296	300	304	302	320	330	309	348	313	26	309	304	294	251	303	293	293	282	287	289	292	297	7330
			27	303	308	309	310	307	310	309	305	313	312	308	281	27	-47*	-155*	131	269	286	273	289	301	299	291	299	300	6211
			28	302	308	309	323	309	310	334	391	379	276	314	309	28	294	217	290	310	308	299	281	255	283	291	294	297	7283
			29	302	310	314	319	320	333	333	340	328	328	308	280	29	215	216	178	291	320	310	301	289	285	285	290	299	7094
			30	309	308	311	327	323	343	328	319	313	325	310	312	30	303	313	309	310	306	303	300	295	292	295	302	305	7461
			31	303	309	316	315	317	313	315	314	312	316	317	319	31	320	313	310	312	318	321	326	312	318	320	289	281	7506

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

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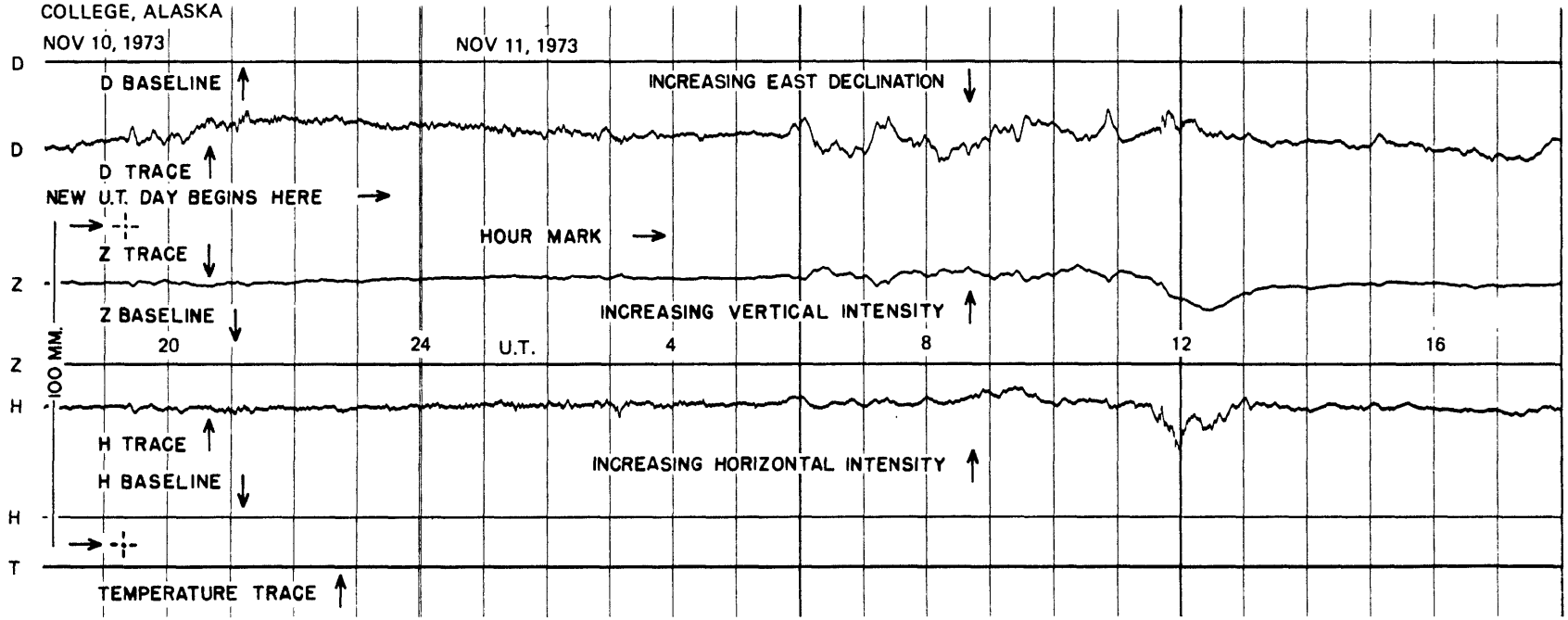
[Significant portion of hour interpolated.
□ No record; or no values available because of faulty record.
[] Scaling uncertain because of magnetic storm.
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.
* Derived from STORM Mgph., converted to Normal Mgph.

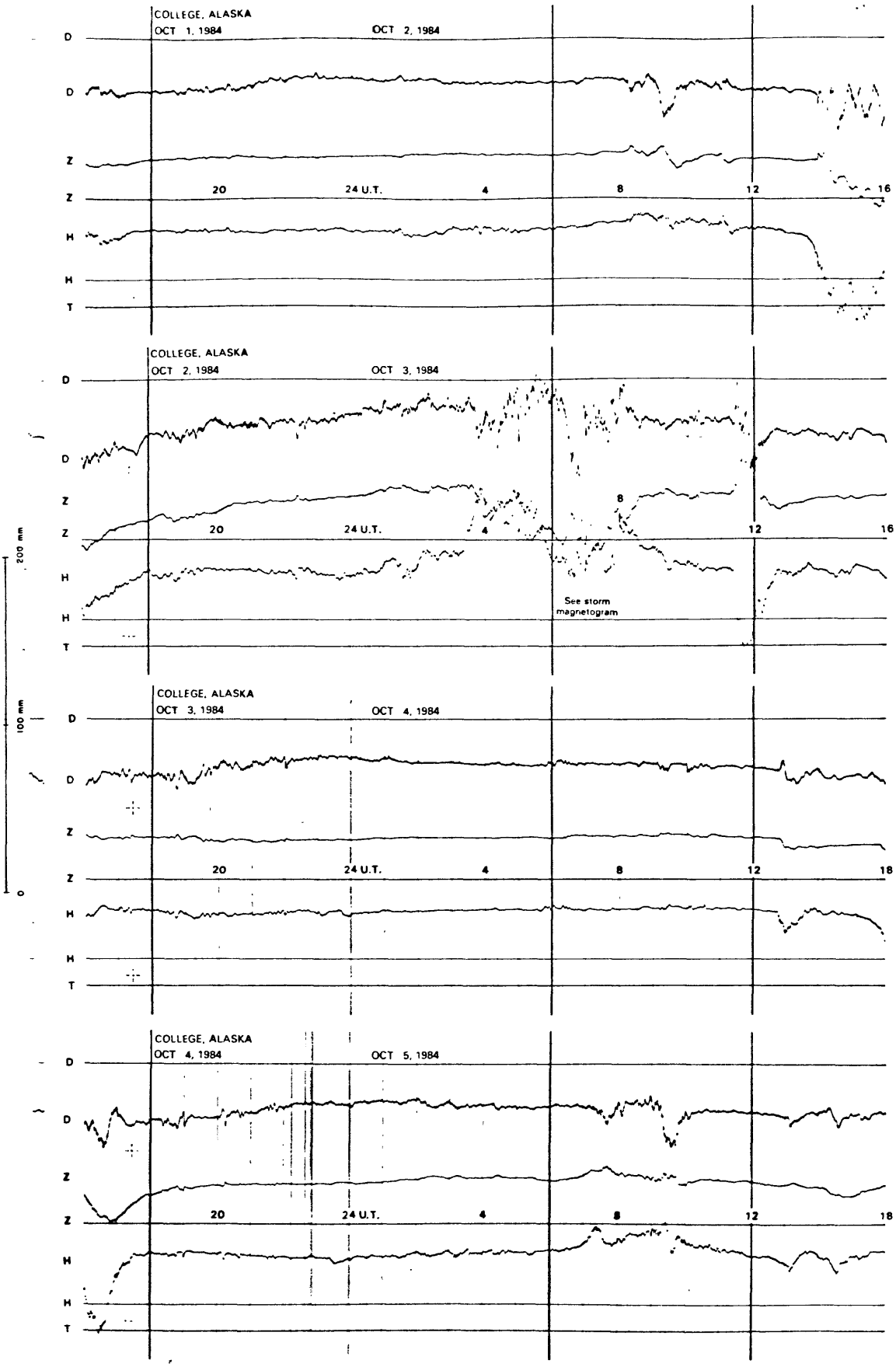
MONTHLY SUM	178801
MONTHLY MEAN	240
DATES WITH GAPS:	

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

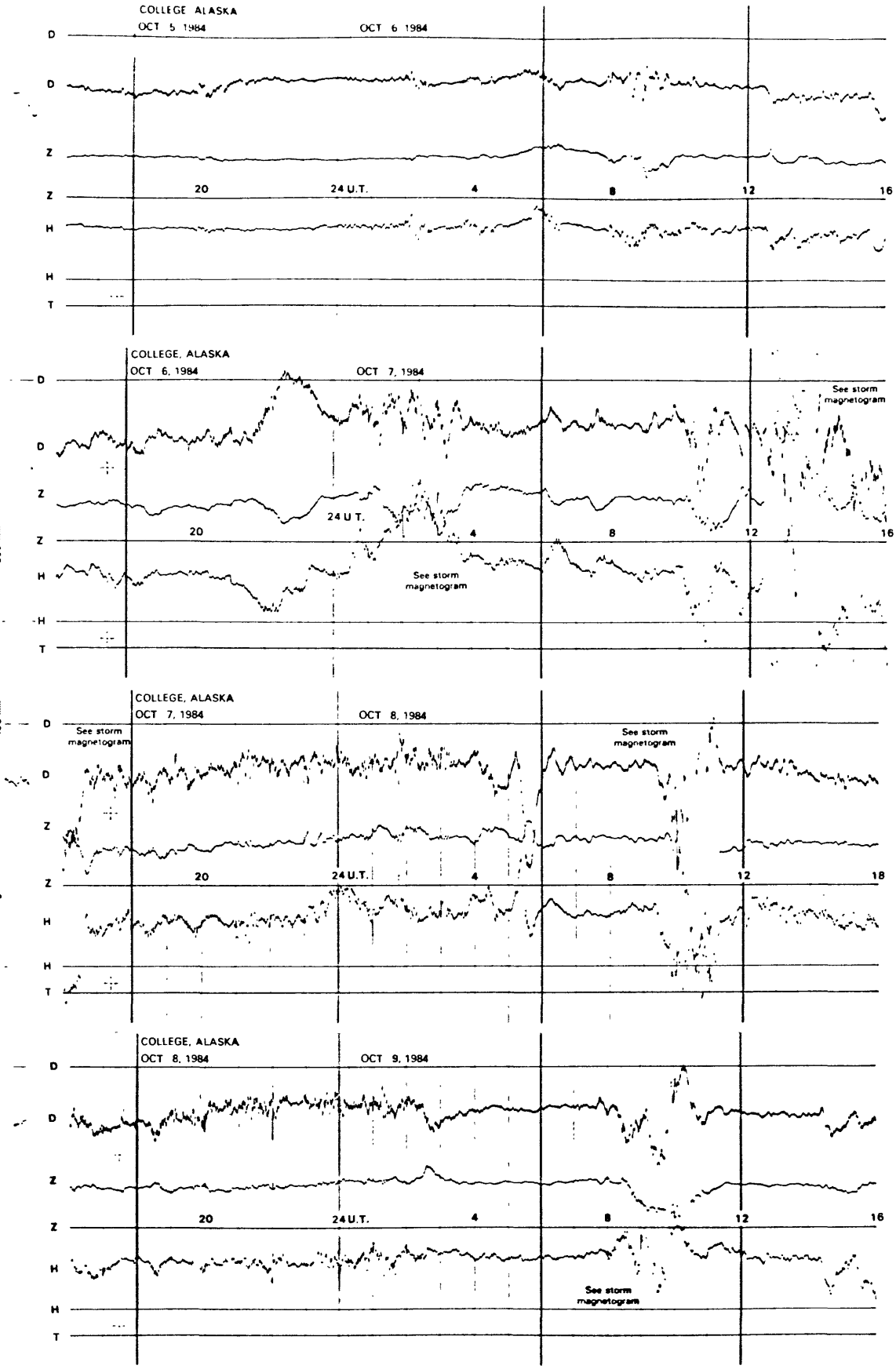


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

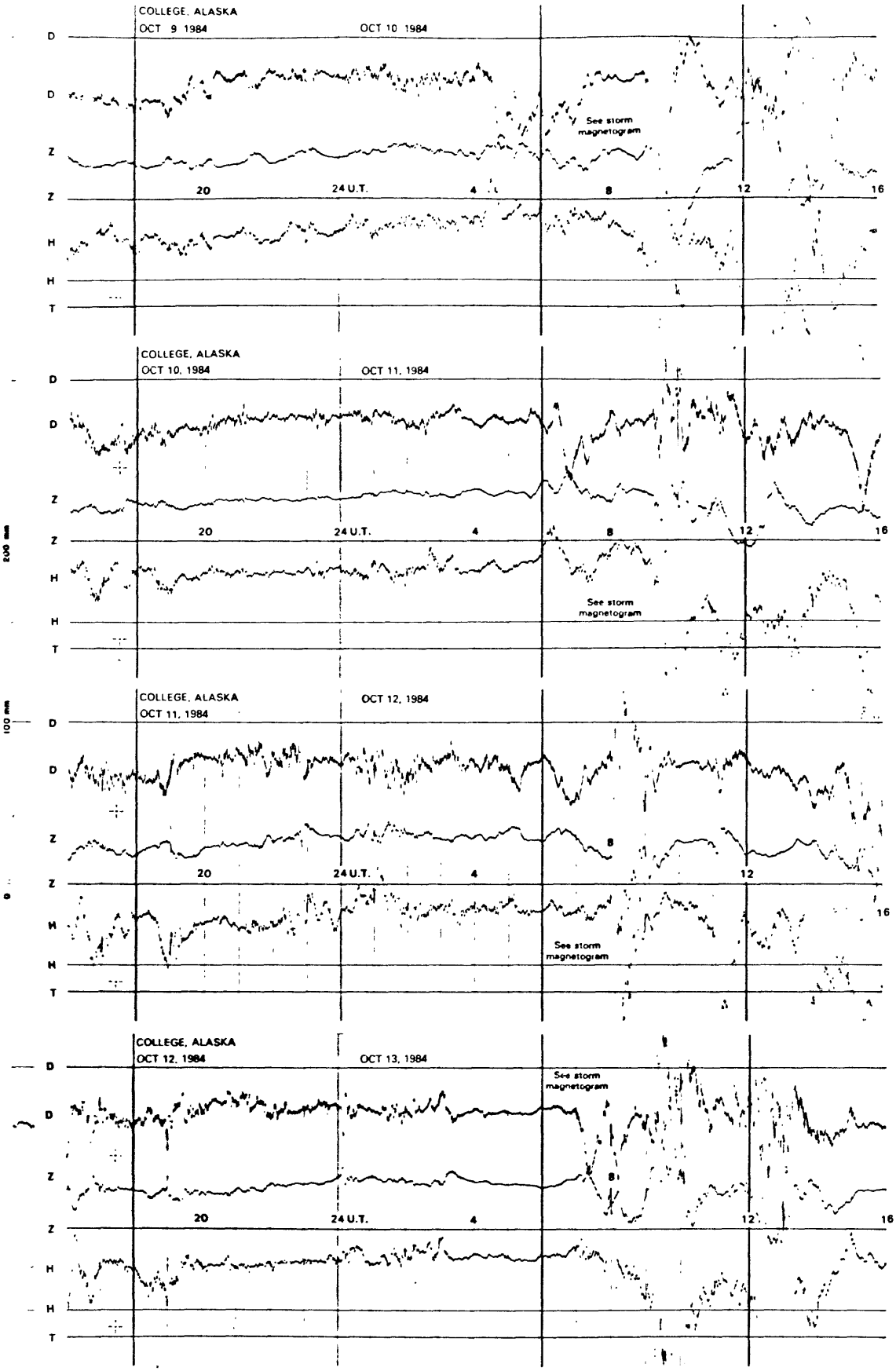
NORMAL MAGNETOGRAMS



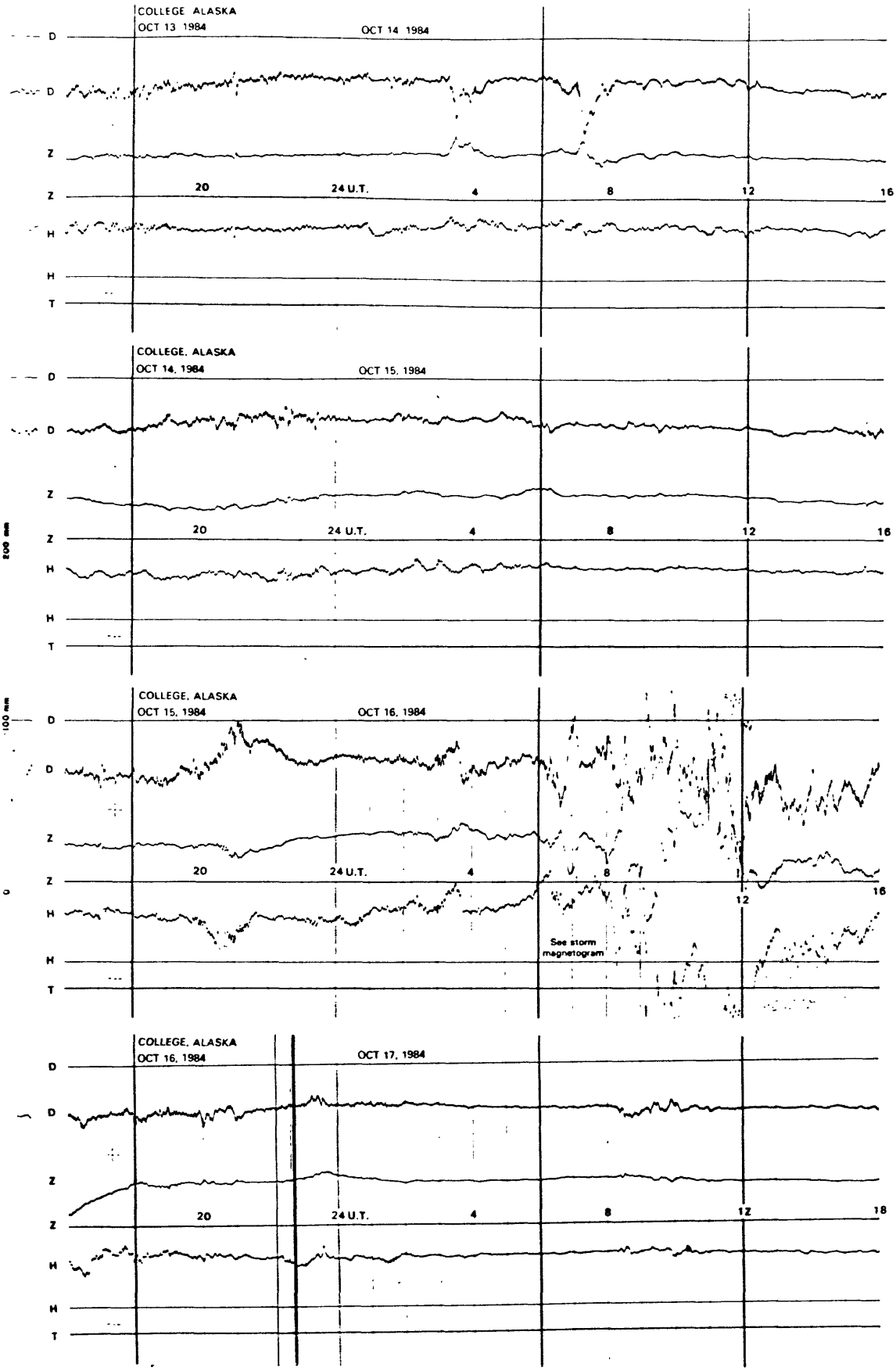
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



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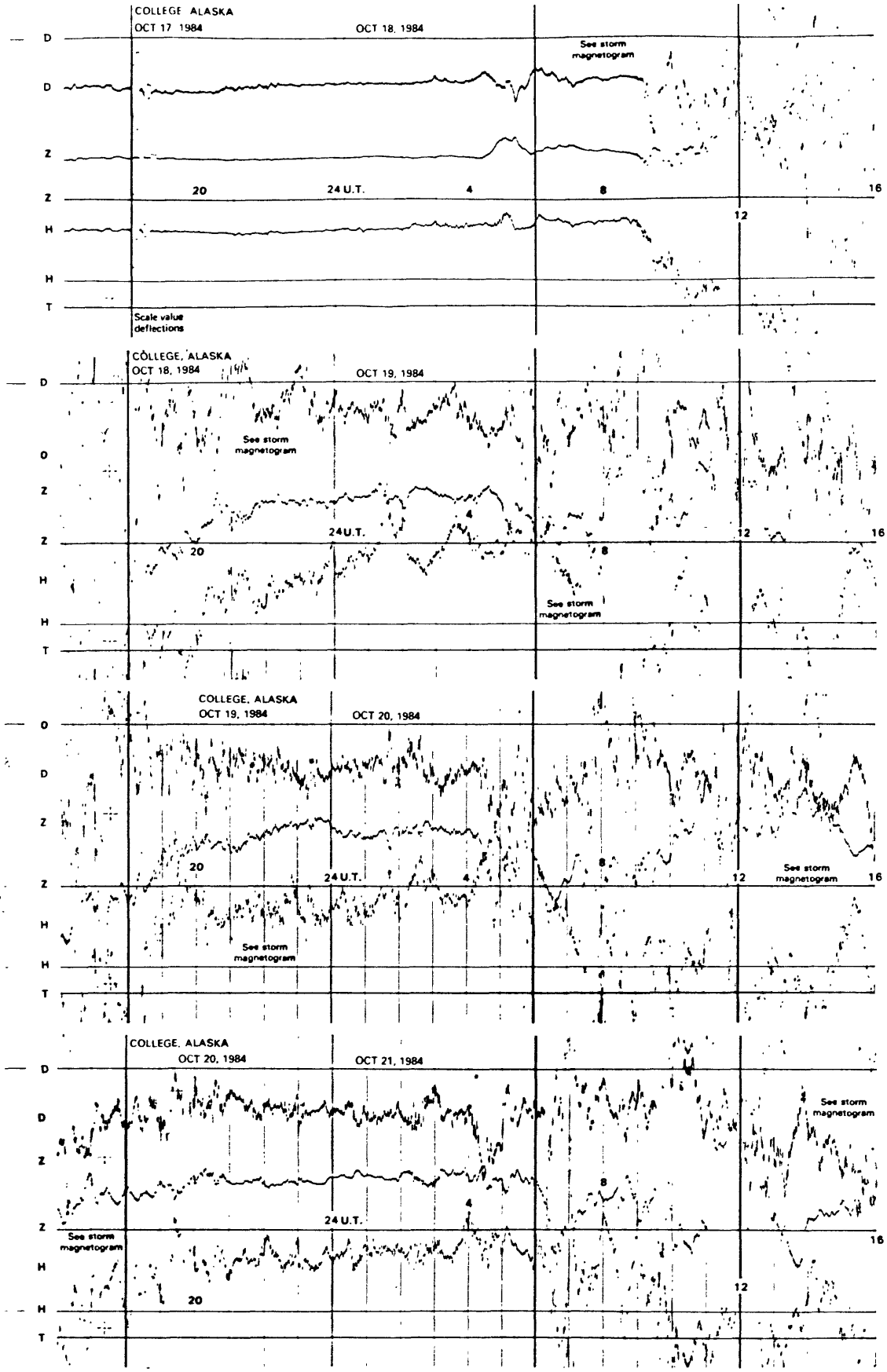

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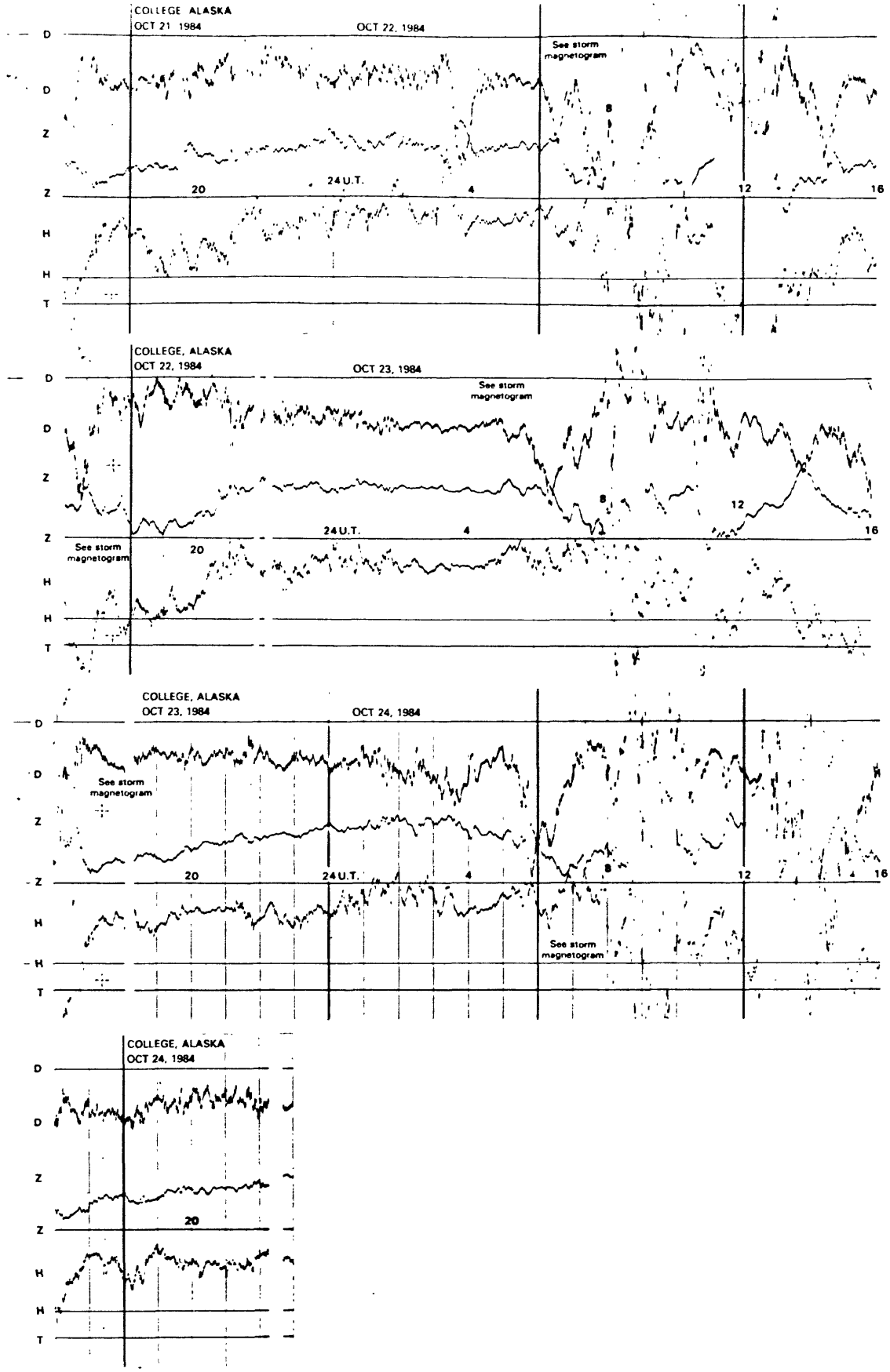

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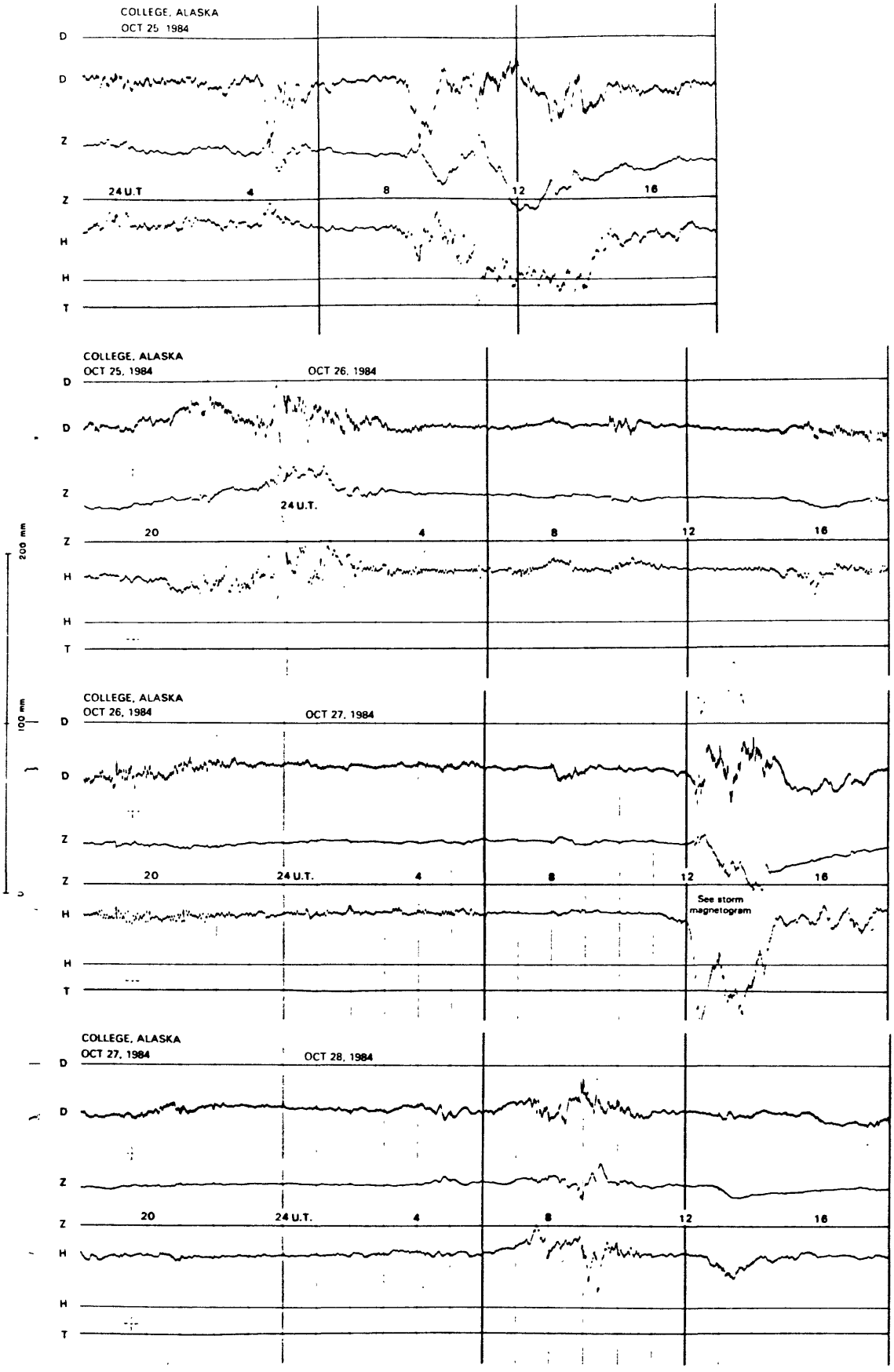
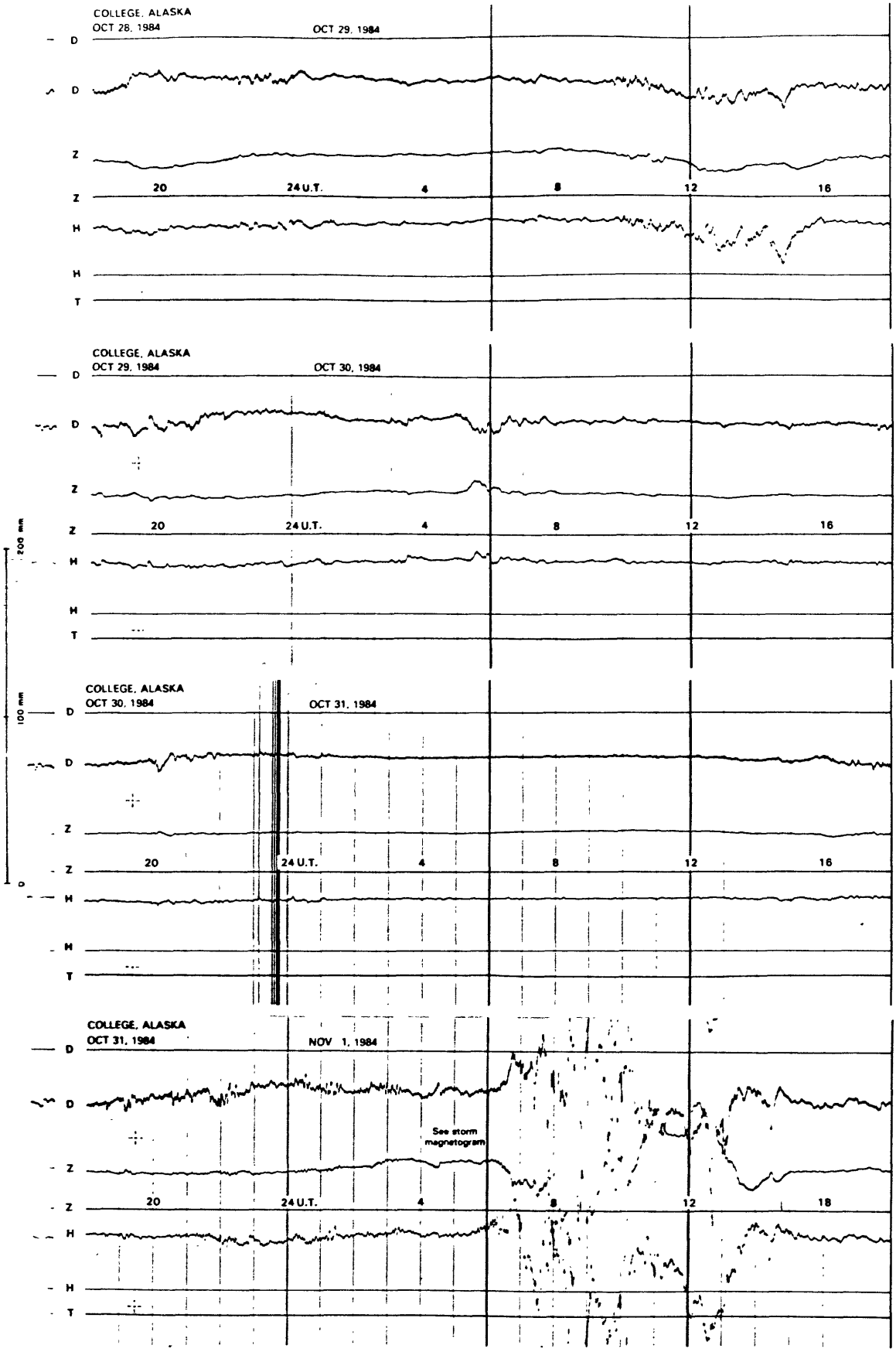
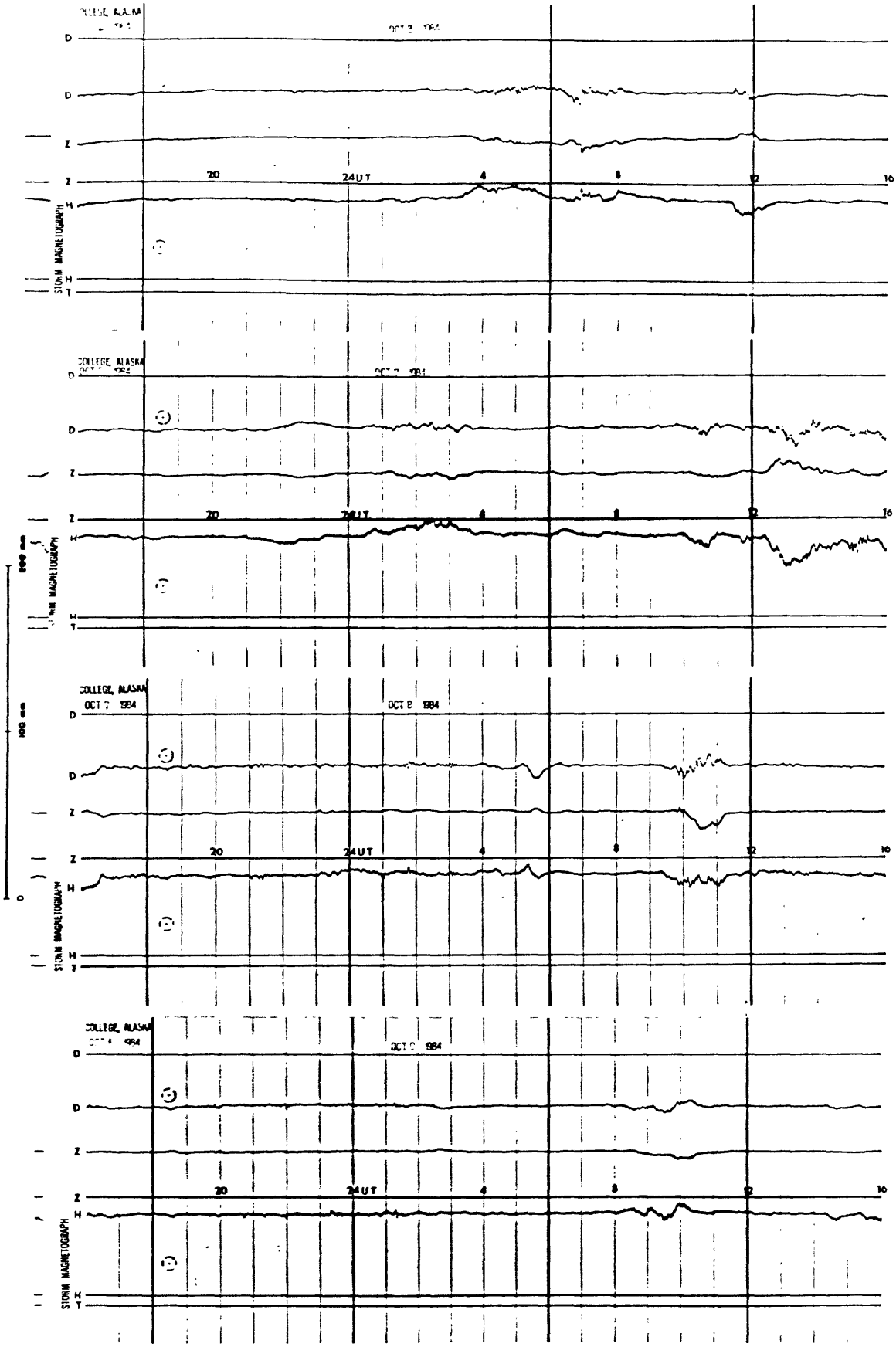


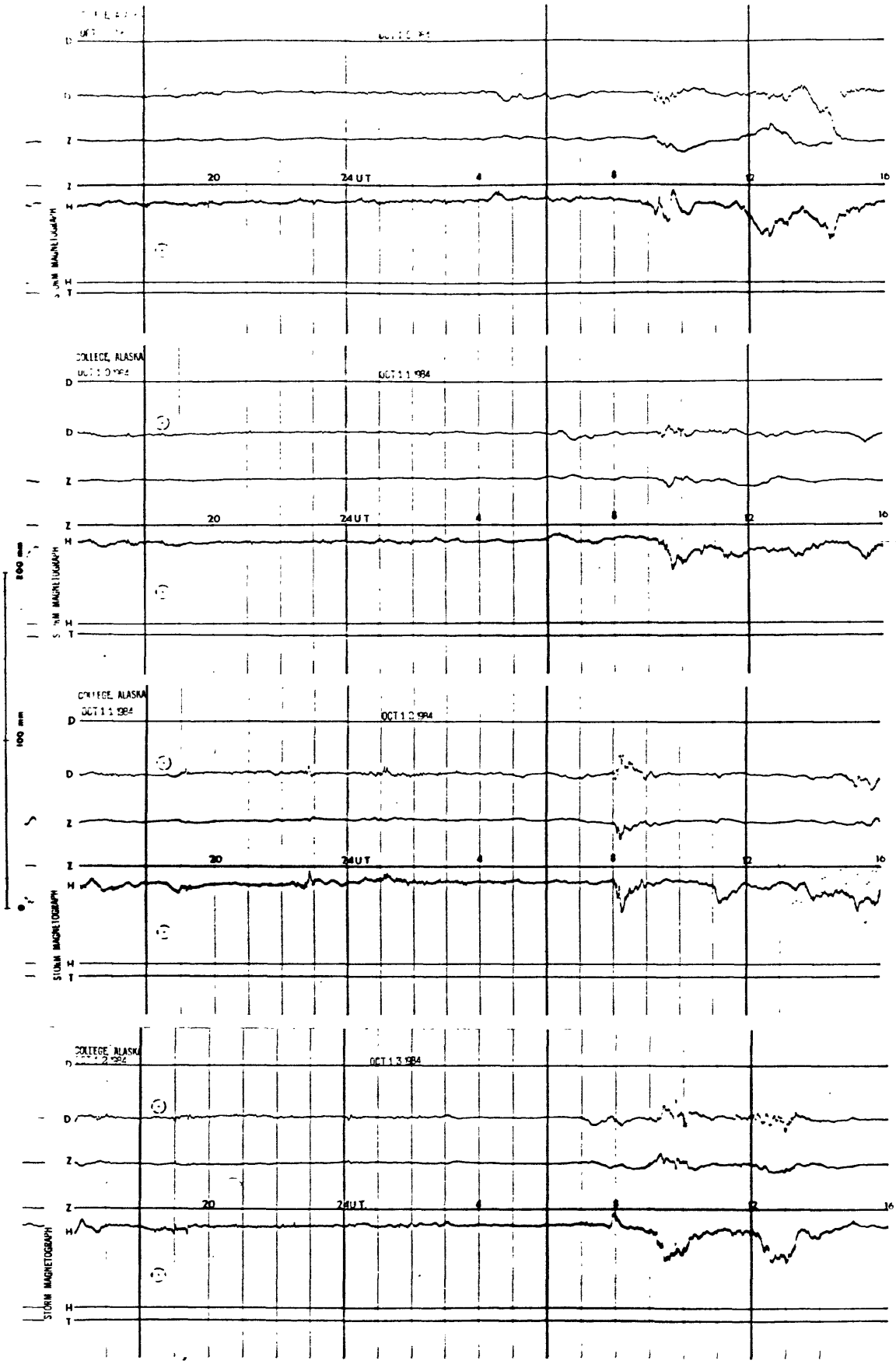
NORMAL MAGNETOGRAMS



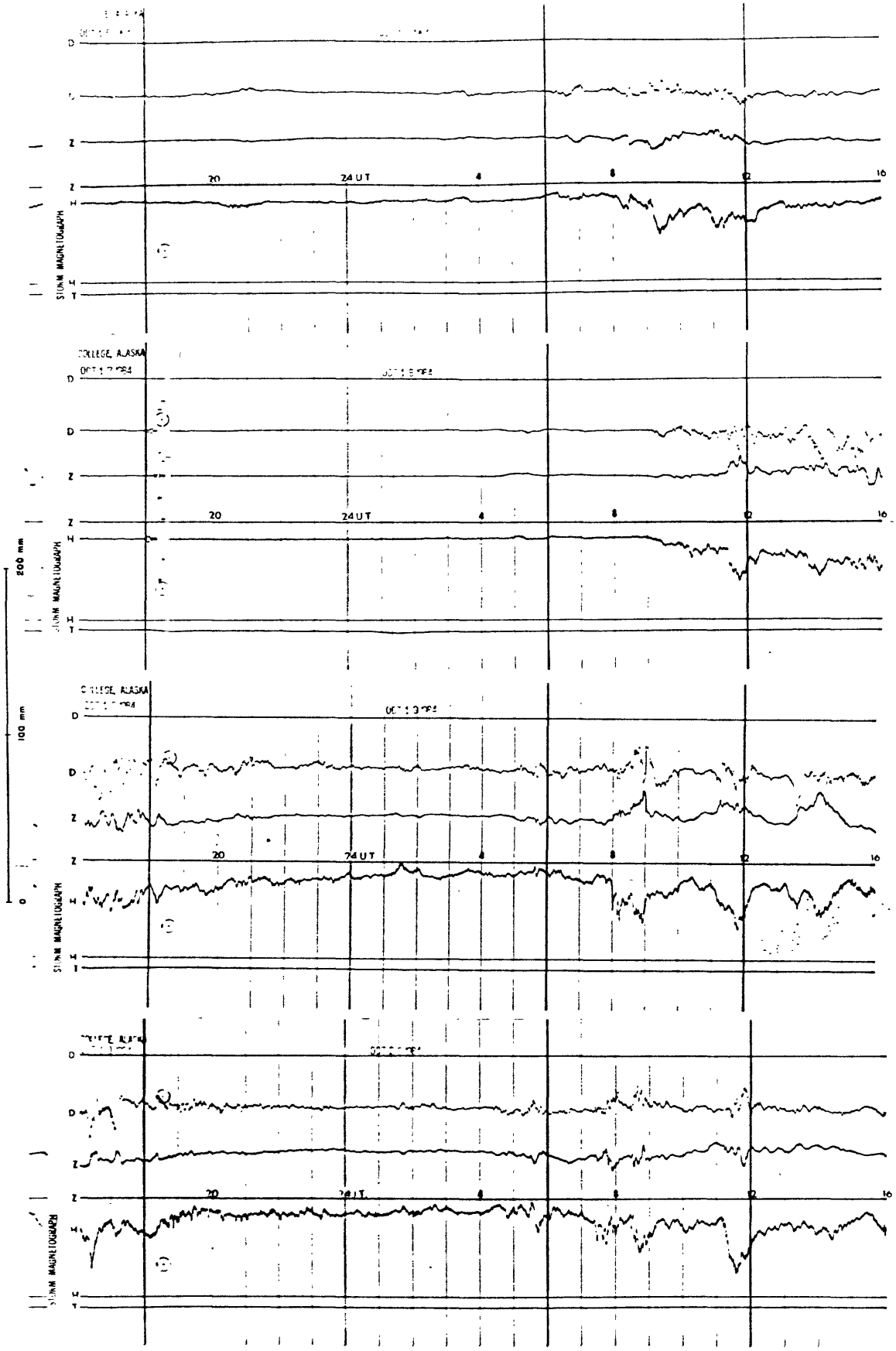
STORM MAGNETOGRAMS



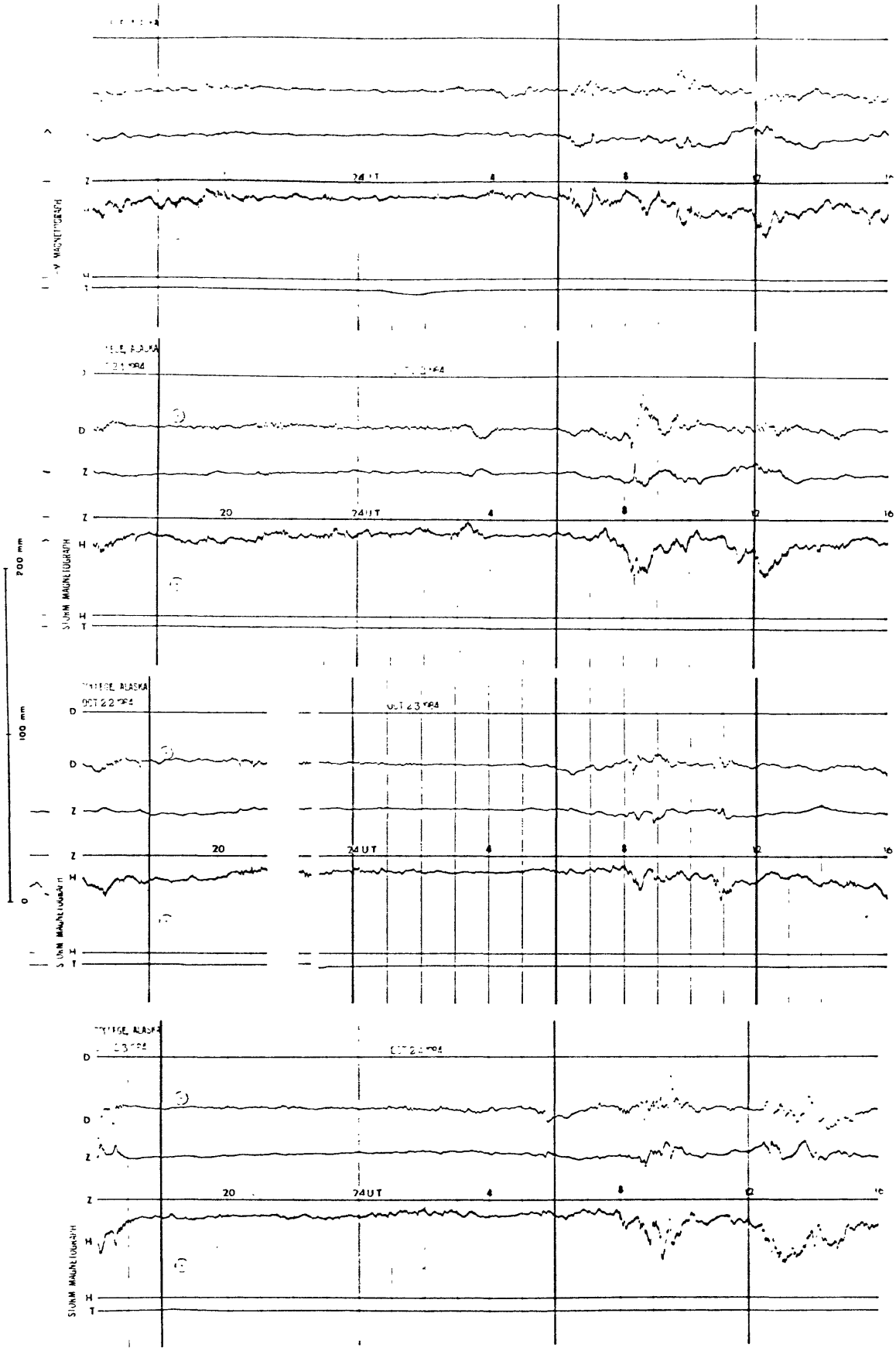
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS