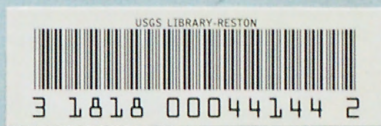


UNITED STATES DEPARTMENT OF THE INTERIOR

(200)  
R290  
no. 81-300L

GEOLOGICAL SURVEY

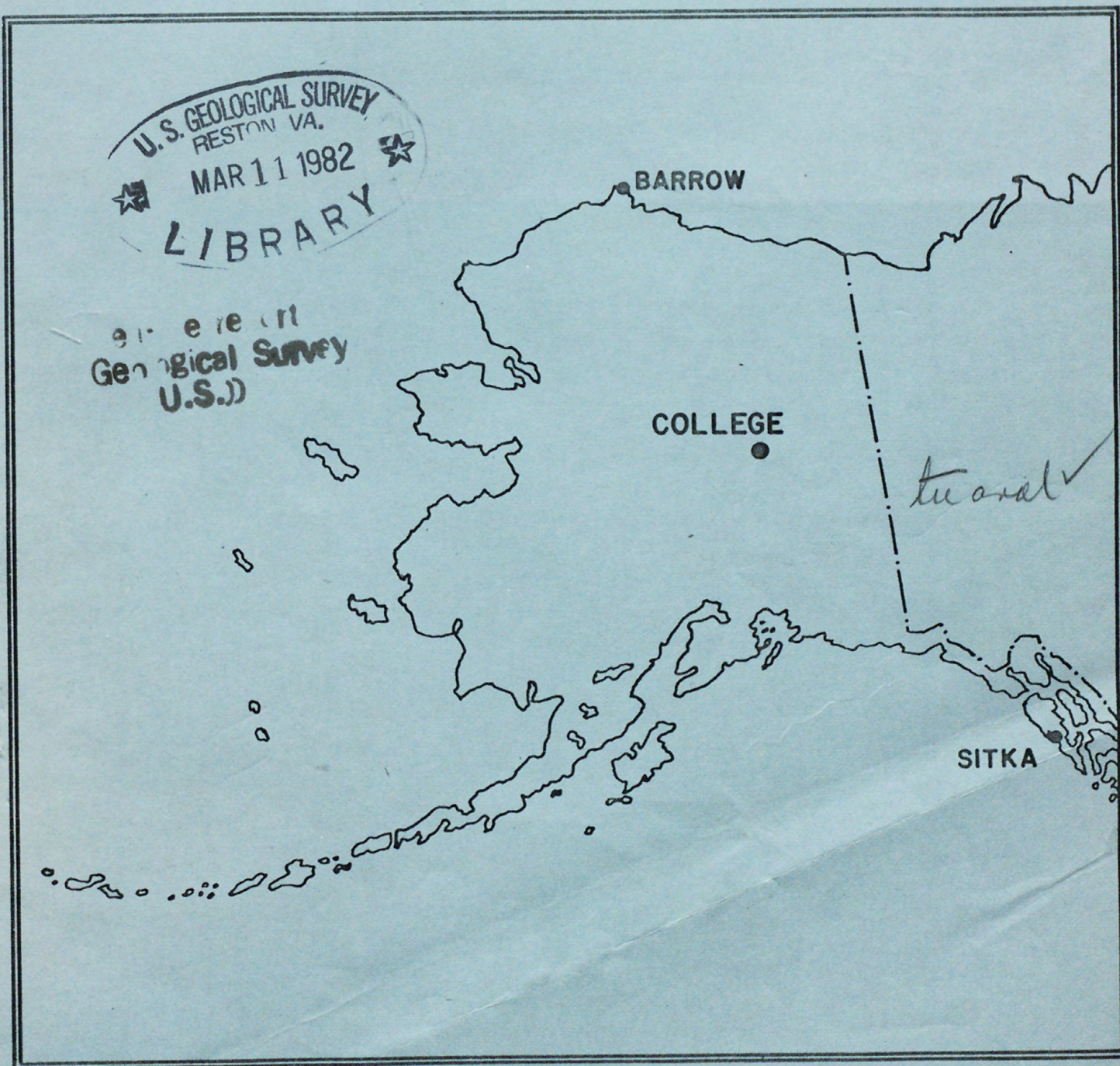


PRELIMINARY GEOMAGNETIC DATA  
COLLEGE OBSERVATORY  
FAIRBANKS, ALASKA

DECEMBER 1981

OPEN FILE REPORT

81-300L



APR 11 1985  
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Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

Open-file report  
(Geological Survey)  
(U.S.)

332248

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

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

INTRODUCTION

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

COLLEGE OBSERVATORY  
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  
Environmental Data Service  
Boulder, Colorado 80302

OBSERVATORY LOCATION

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

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

The position of the observatory site is:  
Geographic latitude.....64°51.6'N  
Geographic longitude.....147°50.2'W  
Geomagnetic latitude.....+64.6°  
Geomagnetic longitude.....+256.5°  
Elevation.....200 meters

GEOMAGNETIC DATA

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

Magnetic Activity

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

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

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

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

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

AK Range	C
0 ≈ 11	0
11 ≈ 50	1
50+	2

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

Selected Phenomena & Outstanding Magnetic Effects

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

Principal Magnetic Storms

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

Magnetogram Hourly Scalings

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

Magnetograms

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

Absolutes, Base-lines, and Scale Values

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

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

**MAGNETIC ACTIVITY**

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

DECEMBER 1981

DATE	K-INDICES									WHOLE-DAY CHARACTER 0, 1, OR 2	TIME SCALE ON MAGNETOGRAMS
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM		
1	0	0	0	2	4	4	2	0	12	09	SUDDEN COMMENCEMENTS d h m
2	0	0	0	5	2	0	1	1	09	08	
3	0	0	0	4	4	2	2	2	14	09	
4	2	3	1	3	4	2	2	1	18	11	
5	1	1	4	4	3	3	1	1	18	12	
6	0	1	3	1	1	2	0	0	08	04	
7	0	0	0	1	2	0	0	1	04	02	
8	0	3	4	3	2	4	3	2	21	14	
9	0	3	3	4	4	4	2	1	21	15	
10	2	4	3	2	1	1	0	0	13	08	
11	0	1	0	0	1	2	1	0	05	02	
12	4	1	3	5	6	5	4	3	31	33	
13	2	5	5	4	4	4	1	0	25	23	
14	1	0	1	3	0	0	1	0	06	03	
15	0	0	0	2	0	0	2	2	06	03	
16	0	0	1	3	1	0	1	0	06	03	
17	0	0	0	1	1	1	1	1	05	02	
18	3	2	5	5	5	4	2	0	26	25	
19	1	1	1	5	4	3	2	0	17	13	
20	0	1	1	2	2	2	1	1	10	04	
21	0	0	2	2	4	3	1	0	12	07	
22	0	0	1	2	3	2	1	0	09	04	
23	0	2	1	0	1	1	1	1	07	03	
24	2	2	3	2	1	3	2	1	16	08	
25	1	1	0	4	4	5	0	1	16	14	
26	1	1	1	4	1	0	0	0	08	05	
27	0	0	1	1	3	0	0	1	06	03	
28	2	1	3	2	5	4	2	1	20	15	
29	0	4	7	7	6	5	4	2	35	59	
30	1	6	6	6	7	6	4	2	38	62	
31	2	2	6	6	5	5	2	1	29	35	

POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)

BEGIN			END		
d	h	m	d	h	m

SUM

K SCALE USED: LOWER LIMIT FOR K = 9..... CURRENT SCALE VALUE..... LOWER LIMIT FOR K = 9.....	D	H	Z	(mm) (γ/mm) (to nearest 10γ)
	683.8	321.7		
	3.75	7.81		
	2560	2510		

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JACK B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY  
COLLEGE, ALASKA

MONTH

YEAR

DECEMBER

1981

DATE	TIME U.T.	NATURE OF PHENOMENON <sup>1</sup>	REMARKS
12	0146	ssc*	
17	10XX	pi 2	
29	0456	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-TERRRESTRIAL PHYSICS  
ENVIRONMENTAL DATA SERVICE, NOAA  
BOULDER, COLORADO 80302 U.S.A.

Data from Individual Observatories:

COLLEGE OBSERVATORY, COLLEGE, ALASKA  
DECEMBER 19 81

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( $\gamma$ )	Z( $\gamma$ )	day	(3 hr - period)	K	D(')	H( $\gamma$ )	Z( $\gamma$ )	day	hr
CO	64.6 N	12	0146	s.c.*	+19	+211	+42	12	5	6	194	1270	520	13	19
		29	0456	s.c.*	+7	+102	+21	29 30	3, 4 5	7 7	283	1850	890	31	23

## NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 12-1-81	2400 U.T., 12-31-81	1.0/mm	3.78/mm	27° 46.7 E
H	0000 U.T., 12-1-81	2400 U.T., 12-31-81	7.88/mm		127518
Z	0000 U.T., 12-1-81	2400 U.T., 12-31-81	7.78/mm		551518

## STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 12-1-81	2400 U.T., 12-31-81	7.8/mm	29.78/mm	23° 46.9 E
H	0000 U.T., 12-1-81	2400 U.T., 12-31-81	44.08/mm		115058
Z	0000 U.T., 12-1-81	2400 U.T., 12-31-81	48.68/mm		540068

## RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		
D					
H					
Z					

## MONTHLY MEAN ABSOLUTE VALUES\*

D	H	Z
28° 01.2 E	129808	553838

\* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: DEC 6, 7, 11, 14, 15, 16, 17, 20, 23, 27



## MAGNETOGRAM HOURLY SCALINGS

U.S. DEPARTMENT OF INTERIOR  
Geological Survey, Geologic Division  
Denver Federal Center  
DENVER, CO 80225OBSY. YEAR MONTH ELEM.  
CO 81 DEC DValues are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day 250W 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)												13	14	15	16	17	18	19	20	21	22	23	24	SUM		
			01	02	03	04	05	06	07	08	09	10	11	12															
			01	131	129	120	130	136	130	135	139	139	127	132	194	01	179	201	200	252	303	172	173	150	165	153	145	126	3861
			02	113	116	131	136	134	140	135	137	136	134	171	444	02	139	140	154	165	167	176	174	175	194	155	142	131	3839
			03	136	135	132	136	139	143	145	138	138	126	142	157	03	190	217	185	154	203	177	186	167	70	115	131	140	3602
			04	146	131	85	67	99	134	150	144	146	245	323	215	04	187	178	155	183	179	197	157	97	133	146	147	126	3770
			05	105	95	86	122	116	133	134	137	131	135	123	139	05	156	160	173	222	221	196	191	176	177	156	126	117	3527
			06	130	117	111	113	124	130	137	123	125	134	145	154	06	159	154	166	185	173	125	192	188	177	164	145	136	3577
			07	143	137	135	137	135	136	138	120	116	127	133	138	07	145	147	166	157	165	173	196	172	167	176	162	158	3579
			08	135	128	120	110	90	64	109	129	123	128	149	188	08	150	152	137	316	284	213	233	139	54	96	114	118	3489
			09	128	131	135	125	119	124	118	105	112	156	201	164	09	206	347	372	296	246	236	191	161	106	166	148	140	4233
			10	134	142	148	137	160	108	125	148	120	142	150	130	10	144	148	152	155	153	168	182	188	177	180	169	149	3609
			11	137	126	120	124	126	133	134	130	128	130	130	138	11	144	156	163	166	214	222	216	155	176	164	160	136	3628
			12	124	106	116	138	138	117	99	76	92	120	137	225	12	736*	1253*	419*	491*	396*	200	187	226	45	1	134	116	5692
			13	102	102	85	72	30	-44	-8	55	134	80	100	141	13	213	194	236	173	227	197*	190	184	168	158	146	131	3066
			14	127	121	126	112	113	117	117	136	139	151	64	141	14	149	172	196	200	191	181	173	174	163	164	146	134	3507
			15	137	122	120	126	134	137	137	134	138	135	136	147	15	140	153	152	151	158	157	162	194	170	64	128	142	3374
			16	139	135	126	129	130	135	133	124	142	69	112	133	16	156	178	167	165	169	165	173	169	165	159	158	145	3476
			17	134	136	130	134	135	142	144	143	142	140	143	149	17	154	159	165	166	181	155	176	184	172	165	87	54	3490
			18	15	106	138	124	82	121	108	111	270	135	228	165	18	189	220	231	262	281	196	159	145	144	154	137	134	3855
			19	128	138	137	139	137	122	128	143	151	156	157	192	19	190	221	135	193	158	160	144	158	154	156	154	146	3737
			20	125	127	131	117	116	123	136	138	145	215	127	130	20	145	159	165	142	171	173	168	140	126	143	135	131	3428
			21	127	127	135	132	131	131	129	163	144	130	130	140	21	198	185	237	232	181	143	155	174	148	107	136	141	3656
			22	134	135	135	128	127	128	133	129	136	156	162	172	22	168	216	167	153	126	157	168	178	159	156	156	138	3617
			23	130	118	117	96	37	56	124	136	137	142	139	149	23	159	167	163	161	162	169	169	186*	193*	162*	154*	145*	3371
			24	130*	114*	75*	51*	51*	90*	83*	106*	145*	138*	106*	122*	24	170*	170*	145*	162*	193*	178*	158	159	156	155	136	115	3108
			25	90	106	118	124	121	135	143	143	144	142	154	209	25	200	196	306	293	260	178	160	153	151	147	143	110	3926
			26	116	117	101	121	123	126	131	138	128	150	263	231	26	172	165	158	170	176	171	161	156	152	150	144	136	3656
			27	140	132	136	132	129	136	146	140	139	148	148	181	27	148	170	162	174	178	164	162	167	152	122	100	110	3536
			28	88	101	115	134	128	146	202	158	147	122	101	125	28	145	203	525	254	212	191	198	128	130	141	141	137	3972
			29	134	129	128	126	140	66	89	233*	11*	-82	257*	3*	29	178*	392*	208	242	237	306	228	194	192	161	156	143	3871
			30	143	138	124	108	97	68	-131*	-187*	-44*	19*	273*	149	30	199	812*	392*	264	258	272	194	168	178	168	142	123	3927
			31	118	119	110	107	132	142	145	70	96	100	104	126	31	178	254	219	172	144	162	182	196	179	169	147	148	3519

SCALED BY  
CHECKED BY  
SIGNS REVIEWED BY  
PUNCHED BY

LYT, TKC

JEP, ERS

JEP

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.

\* Derived from STORM Mgh., converted to Normal Mgh.

[] Scaling uncertain because of magnetic storm.

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

MONTHLY SUM 114498

MONTHLY MEAN 154

DATES WITH GAPS:

MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)U.S. DEPARTMENT OF INTERIOR  
Geological Survey, Geologic Division  
Denver Federal Center  
DENVER, CO 80225OBSY. YEAR MONTH ELEM-  
CO 81 DEC 2Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day (SOW M.T.) is hour 11 of the same universal day.  
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

Q of S	Feet	1/2 in.	01	02	03	04	05	06	07	08	09	10	11	12	1/2 in.	13	14	15	16	17	18	19	20	21	22	23	24	SUM	
			01	311	310	309	310	310	309	310	311	311	315	319	300	01	299	295	273	171	180	222	246	269	290	297	300	306	6873
			02	311	319	318	313	311	310	309	308	308	305	342	286	02	229	311	313	311	310	309	303	306	311	304	308	307	7362
			03	311	310	307	307	306	306	302	309	314	310	306	297	03	254	241	201	258	281	272	261	275	263	279	297	310	6877
			04	311	316	319	354	392	390	334	322	327	312	179	191	04	168	233	290	310	300	262	223	204	249	282	307	317	6892
			05	331	336	342	348	340	341	339	330	277	236	309	324	05	312	299	282	231	221	180	171	236	271	296	301	311	6964
			06	321	325	326	327	332	329	310	289	321	326	320	291	06	279	262	261	271	247	256	285	297	300	309	310	313	7207
			07	316	317	319	320	317	316	320	310	309	302	302	299	07	294	244	254	291	296	277	273	282	299	307	305	310	7179
			08	307	309	319	333	356	318	346	365	331	312	279	290	08	260	271	289	252	57	182	240	233	232	283	299	315	6718
			09	325	323	322	333	350	342	343	335	307	304	330	313	09	420	342	291	352	207	226	261	261	270	312	311	318	7408
			10	319	322	327	339	360	331	342	335	334	348	321	319	10	319	309	299	293	291	301	312	312	312	316	317	313	7691
			11	313	313	317	333	330	325	318	315	312	311	310	310	11	308	304	295	254	245	256	266	277	292	293	301	313	7211
			12	318	310	348	327	317	316	336	263	278	307	327	358	12	572*	421*	503*	560*	445	202	263	266	240	258	319	318	8172
			13	323	331	339	355	347	331	250	317	191	300	323	331	13	493	331	375	247	236	275*	303	309	315	324	323	325	7594
			14	324	321	318	312	315	339	337	339	329	309	260	327	14	327	313	291	287	298	300	306	304	300	309	312	311	7488
			15	315	316	318	315	314	311	316	315	317	301	316	315	15	314	311	310	308	308	308	309	316	304	262	286	306	7411
			16	311	311	308	308	308	310	306	308	304	276	314	338	16	332	321	310	310	306	307	304	303	301	302	309	308	7415
			17	311	309	302	301	300	304	302	305	304	307	302	288	17	274	289	293	298	288	273	274	272	285	297	304	318	7100
			18	350	331	312	314	331	357	329	320	241	199	304	271	18	299	322	223	267	185	173	194	237	271	295	304	317	6746
			19	325	329	320	330	332	358	359	359	324	310	298	71	19	88	190	209	210	257	279	295	290	305	309	311	315	6773
			20	319	318	319	320	320	323	321	317	326	314	300	308	20	307	301	279	248	260	279	281	275	275	283	301	320	7214
			21	320	316	312	316	320	316	329	303	313	321	316	290	21	270	259	176	191	236	260	257	276	282	279	294	309	6861
			22	310	308	304	300	300	302	302	305	326	318	294	263	22	210	190	236	250	228	251	280	291	289	294	299	299	6749
			23	300	299	301	304	334	383	386	326	313	308	308	300	23	289	265	272	276	294	299	296	294*	288*	294*	294*	299*	7322
			24	299*	299*	339*	344*	350*	350*	350*	388*	350*	326*	312*	306*	24	299*	281*	275*	281*	243*	224*	240	268	290	294	304	308	7320
			25	309	319	315	318	314	309	305	300	300	304	299	252	25	176	208	221	228	214	209	275	290	287	300	310	306	6668
			26	311	314	302	313	316	311	307	305	305	308	300	187	26	271	261	289	303	300	296	290	288	287	288	297	304	7053
			27	307	305	304	301	304	319	327	322	324	304	296	283	27	208	238	270	272	274	284	283	280	267	268	264	280	6884
			28	289	304	325	336	333	338	341	297	324	312	323	320	28	312	291	266	164	212	231	207	246	277	285	299	305	6937
			29	312	311	315	318	334	333	243	224*	326	258	332*	421*	29	578*	401*	262	245	270	297	306	317	302	298	307	311	7621
			30	310	313	317	371	386	300	299*	306*	195	204	343	353	30	372	483*	186*	307	152	246	254	264	297	296	299	308	7161
			31	312	312	312	313	318	322	316	308	120	173	266	330	31	468	568	430	277	292	310	300	307	305	316	321	330	7626
SCALED BY	LYT, TKC		Preliminary base-line and scale values:													<input type="checkbox"/> Interpolated		<input type="checkbox"/> Scaling uncertain because of magnetic storm.		MONTHLY SUM	222587								
CHECKED BY	JEP, ERS		Interval Beginning	Base-line Value		Scale Value		<input type="checkbox"/> Significant portion of hour interpolated.		<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.		MONTHLY MEAN	299																
SIGNS REVIEWED BY	JEP															<input type="checkbox"/> No record; or no values available because of faulty record.		DATES WITH GAPS:											
PUNCHED BY																* Derived from <u>STORM</u> Mgph., converted to Normal Mgph.													

MAGNETOGRAM HOURLY SCALINGS  
(UNIVERSAL TIME)

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

OBSY. YEAR MONTH FILE-  
CO 81 DEC H

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (50W M.T.) is hour 11 of the same universal day.  
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

Q	U	Ten	Sec	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM
		01		280	289	293	298	301	303	304	309	309	308	307	302	312	290	210	136	247	315	330	308	292	289	286	271	6689
		02		279	289	290	292	300	301	301	299	296	292	171	-92*	353	312	299	291	290	300	299	287	296	295	271	276	6587
		03		278	289	293	298	299	300	300	301	309	310	300	161	156	101	207	301	296	280	281	271	240	269	278	265	6383
		04		266	270	309	344	391	312	293	289	294	301	252	238	151	298	307	284	287	271	219	232	261	261	259	260	6649
		05		281	293	301	297	300	313	316	314	295	249	321	296	283	280	216	114	191	230	259	288	278	269	248	275	6507
		06		287	291	296	292	291	311	321	314	306	291	280	261	253	267	272	251	226	274	288	284	281	281	279	279	6776
		07		274	280	289	288	289	291	297	299	296	293	290	291	278	244	291	299	288	281	298	297	291	288	288	280	6911
		08		281	289	301	313	350	420	413	320	298	270	211	228	289	278	312	94	99	287	286	208	259	260	270	282	6607
		09		290	279	288	291	330	442	360	359	291	120	84	193	141	-6	39	2	159	271	309	291	279	280	281	278	5653
		10		272	276	290	301	321	334	341	296	331	354	321	290	298	280	284	270	274	289	294	289	285	280	276	277	7123
		11		286	294	305	317	309	304	300	299	300	302	303	298	299	297	286	240	235	272	281	288	289	283	278	280	6945
		12		289	311	342	322	321	320	329	391	378	375	314	89	-421*	-449*	-82*	-132	26	187	287	198	127	151	216	297	4186
		13		311	222	321	369	452	685	599	517	291	284	363	234	87	71	4	62	267	307*	292	291	290	281	278	280	7258
		14		289	297	286	293	304	308	330	328	313	311	257	299	281	280	274	292	299	294	292	291	284	279	278	276	7035
		15		288	290	302	301	306	310	293	298	298	312	303	303	295	296	298	298	298	299	292	285	252	240	283	292	7032
		16		294	300	303	302	306	302	303	296	288	310	359	323	302	296	296	294	292	296	299	297	290	286	271	276	7181
		17		283	291	299	300	303	307	304	302	302	303	300	288	289	307	310	306	288	282	298	307	292	251	240	250	7002
		18		223	292	291	291	340	354	382	369	186	175	23	169	182	-51	212	81	-10	217	274	303	308	296	292	285	5504
		19		276	283	282	304	304	317	321	309	283	281	231	-26	115	153	241	226	300	287	302	307	300	296	280	277	6249
		20		282	291	291	288	298	312	308	308	305	318	305	293	292	286	256	274	282	302	306	304	292	281	282	290	7046
		21		288	287	294	303	296	297	307	345	318	325	297	298	262	235	110	211	224	274	284	304	291	293	284	283	6710
		22		283	293	296	302	301	300	297	298	307	303	291	257	197	250	272	271	238	296	308	311	314	302	292	286	6865
		23		290	295	300	308	348	355	324	309	299	296	300	294	286	283	277	300	306	316	309	307*	307*	307*	295*	279*	7290
		24		279	302*	352*	398*	398*	403*	408*	375*	318*	323*	313*	290*	262	262*	267*	250*	182*	211*	281	301	308	302	287	283	7355
		25		296	302	318	311	318	320	315	302	300	302	293	134	128	240	184	142	112	268	312	314	297	284	292	288	6372
		26		222	298	294	313	324	321	314	306	304	318	177	294	290	292	310	302	299	299	292	286	290	294	290	280	7009
		27		288	294	293	302	306	305	302	320	306	301	292	295	209	291	298	302	306	308	303	312	303	284	280	289	7089
		28		276	294	323	320	323	304	330	347	343	360	330	308	285	169	-162*	182	268	245	259	300	304	291	290	288	6577
		29		292	301	300	307	314	516	526	-21*	-65*	261	-901*	-202*	-49*	-405*	161	225	281	199	311	319	293	298	294	292	3848
		30		299	303	305	367	444	384	257*	432	337	285*	-49*	178	171	-478	-139*	13*	98	265	177	297	286	254	279	282	5047
		31		289	294	306	320	332	324	324	366	239*	-65*	274	182	140	-84	58	100	321	297	307	308	292	276	266	273	5739

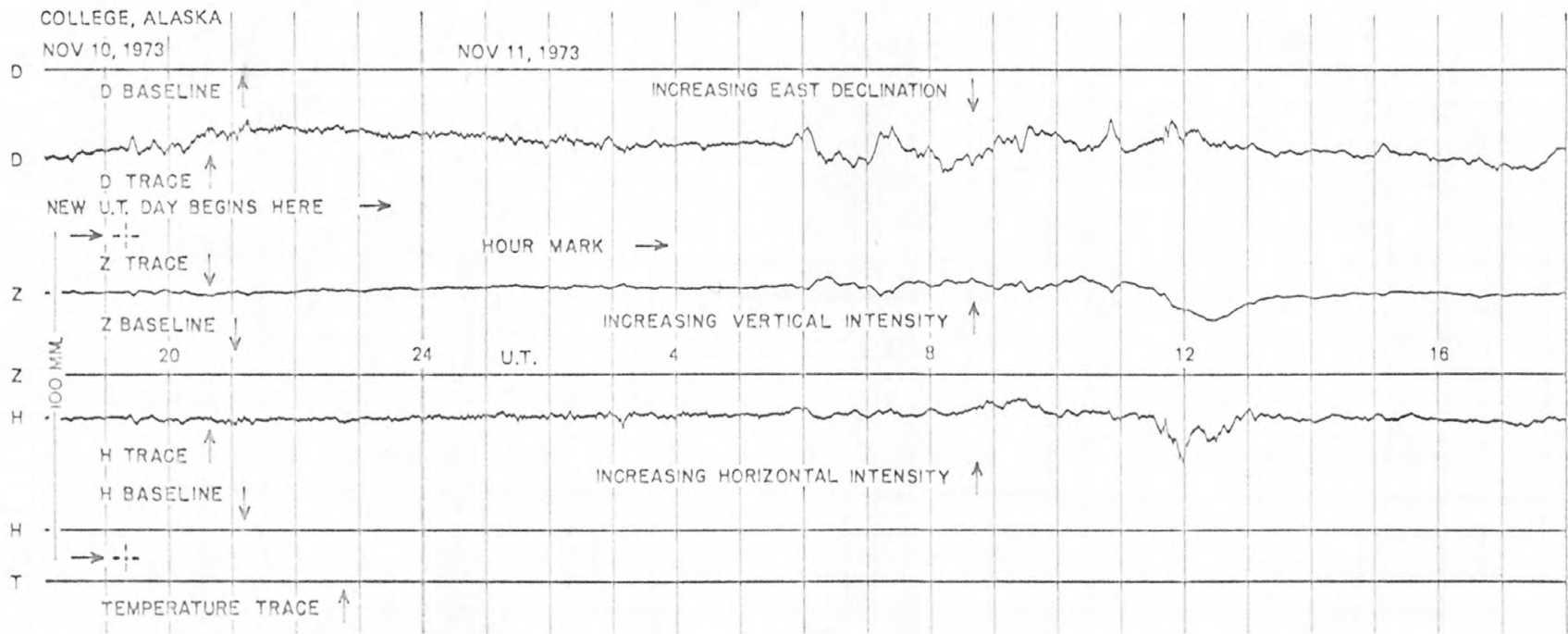
SCALED BY: LYT, TAC  
 CHECKED BY: JEP, ERS  
 RE-VIEWED BY: JEP  
 PUNCHED BY:

Preliminary base-line and scale values:  
 Interval: \_\_\_\_\_ Base-line Value: \_\_\_\_\_ Scale Value: \_\_\_\_\_  
 Beginning: \_\_\_\_\_

- 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	201424
MONTHLY MEAN	271
DATES WITH GAPS:	

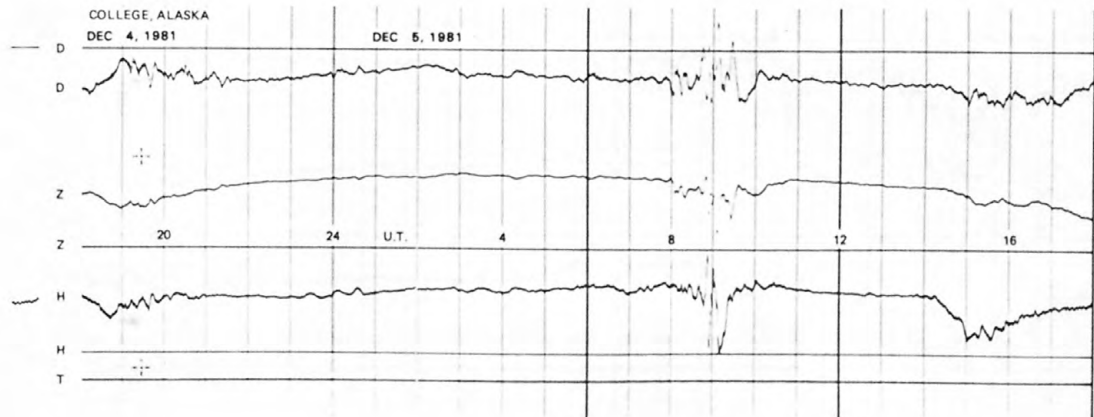
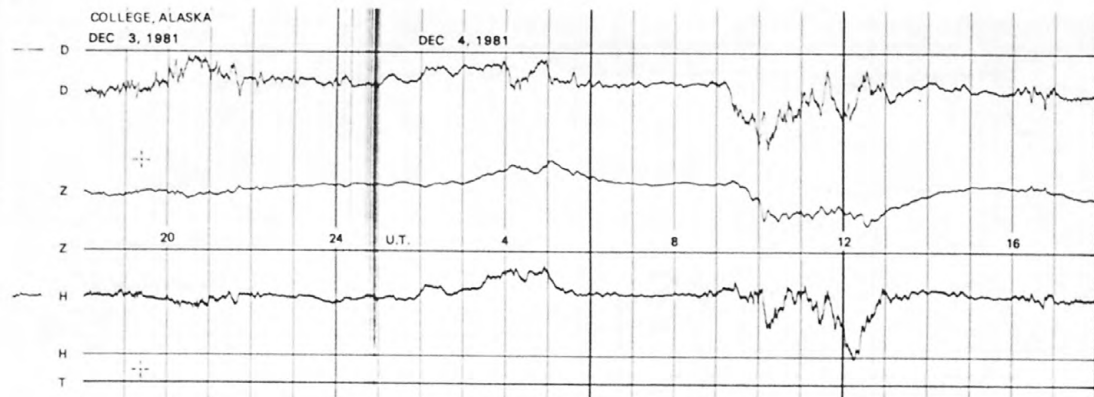
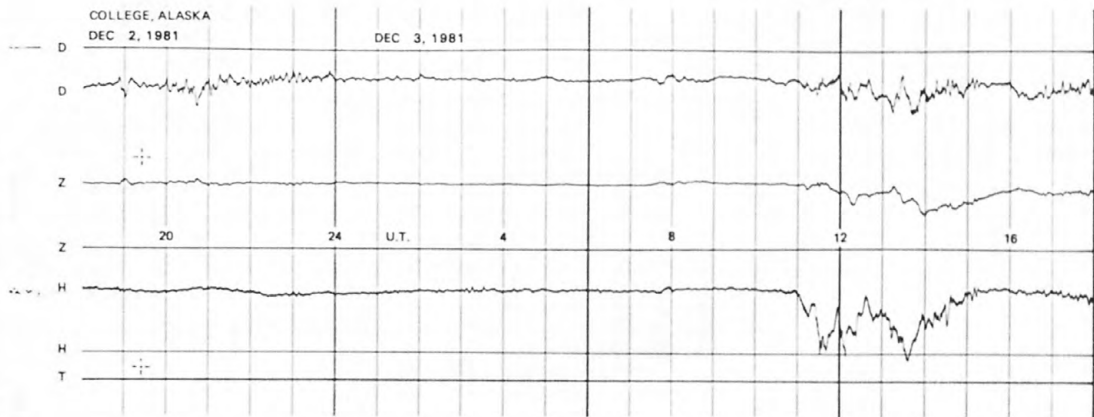
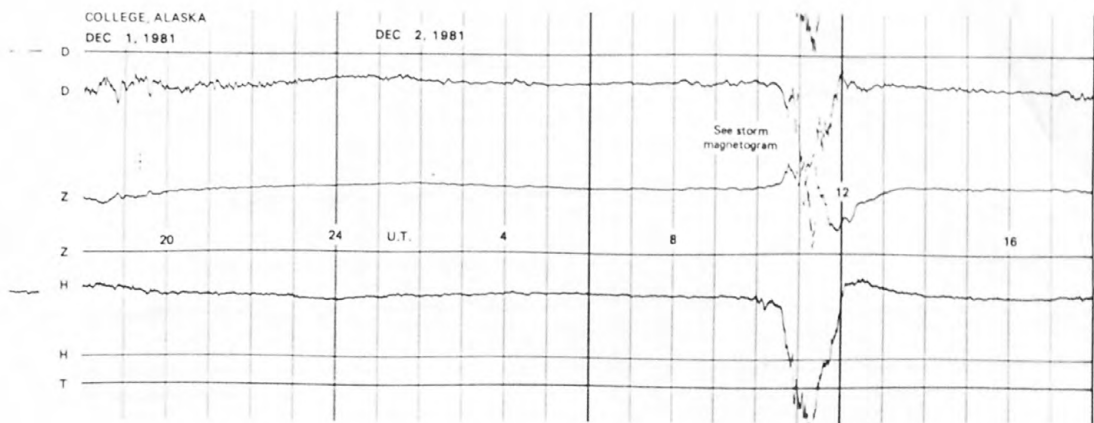
# FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)



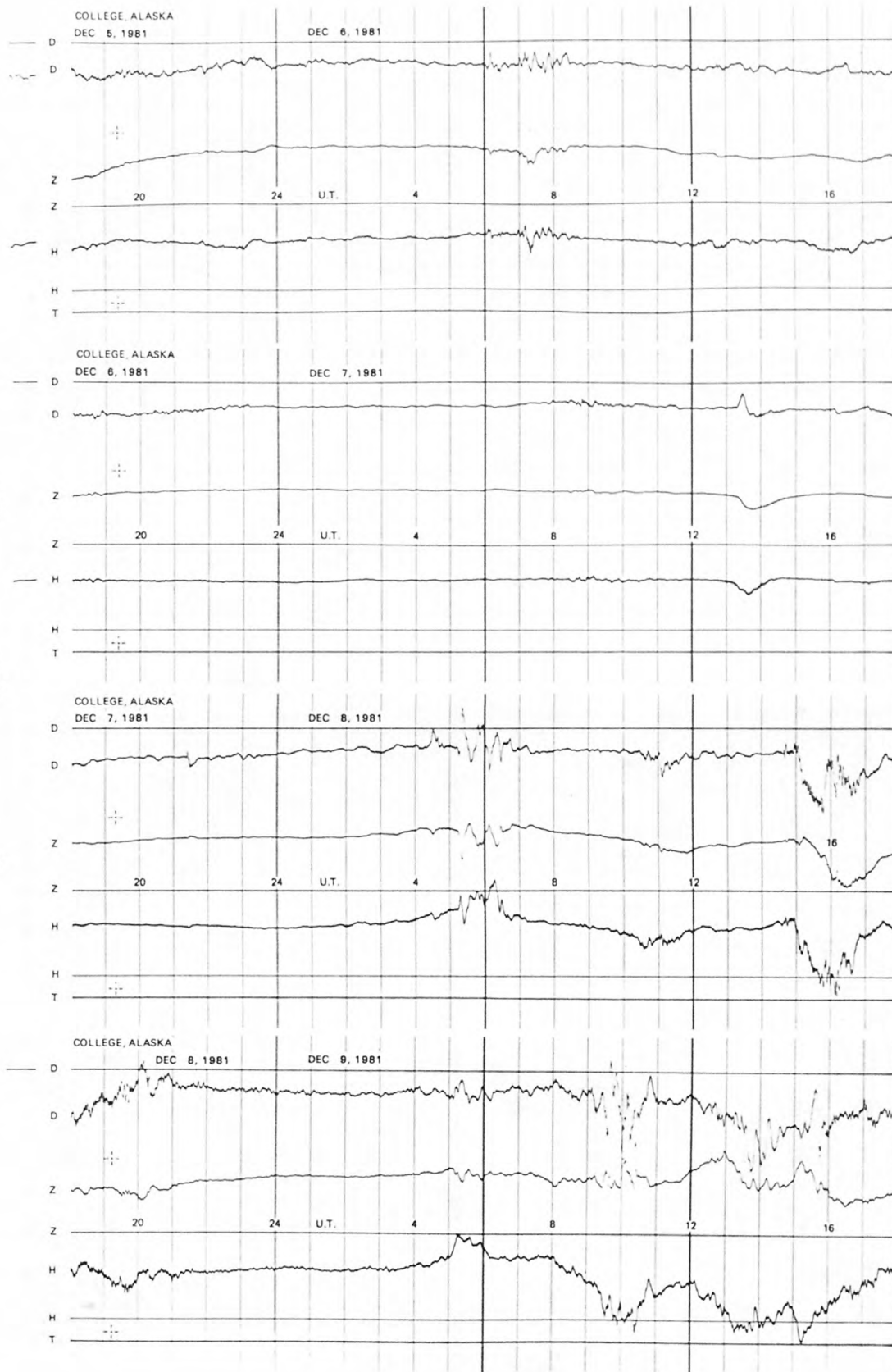
SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS

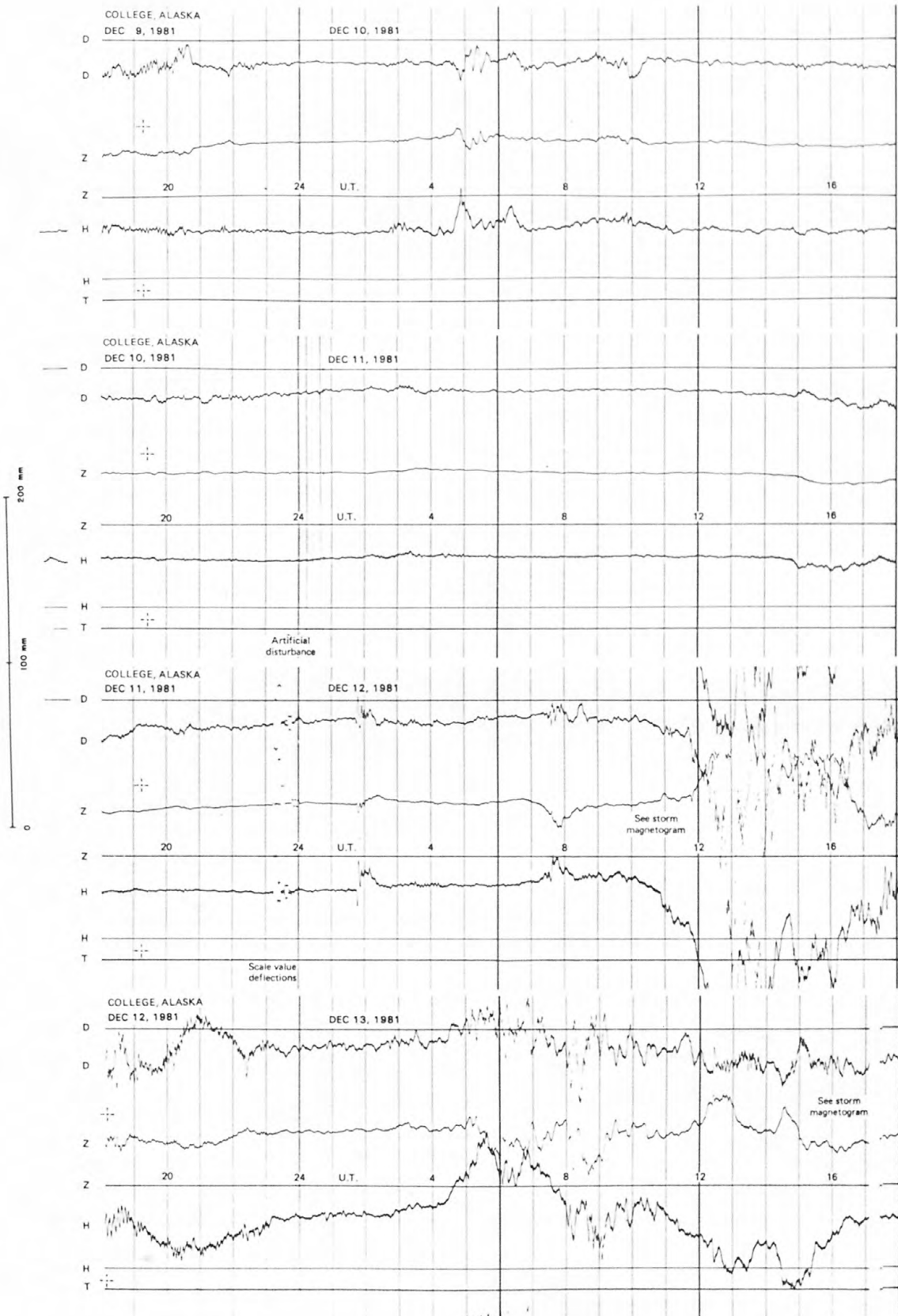
200 mm  
100 mm  
0



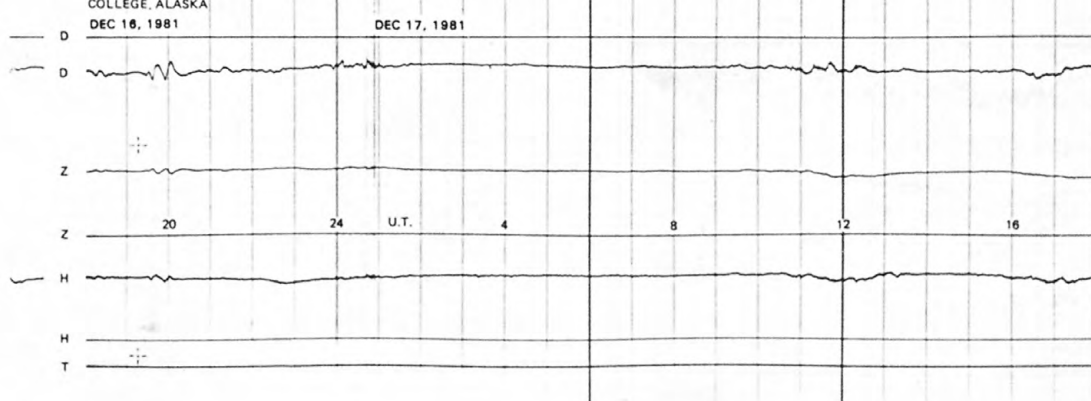
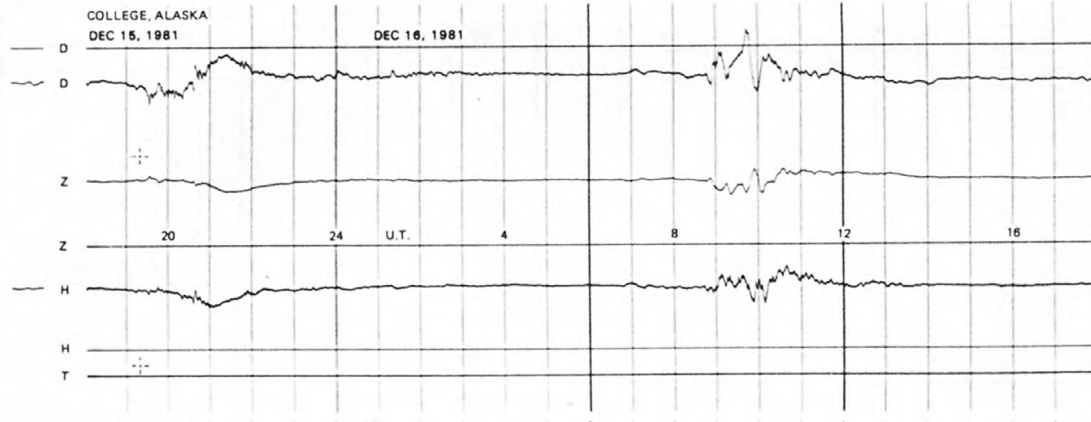
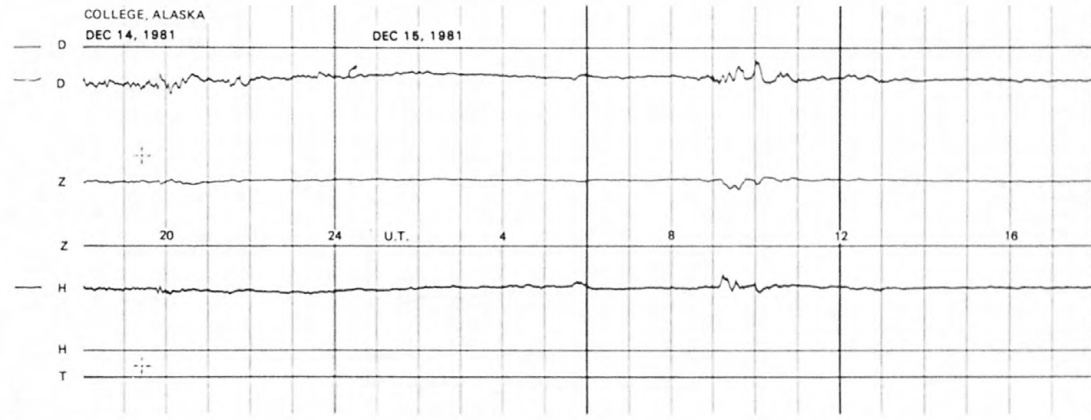
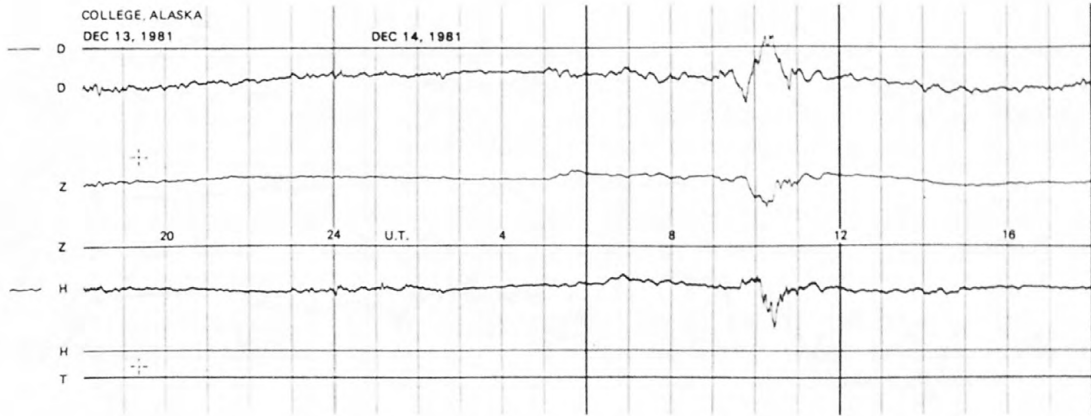
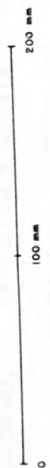
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

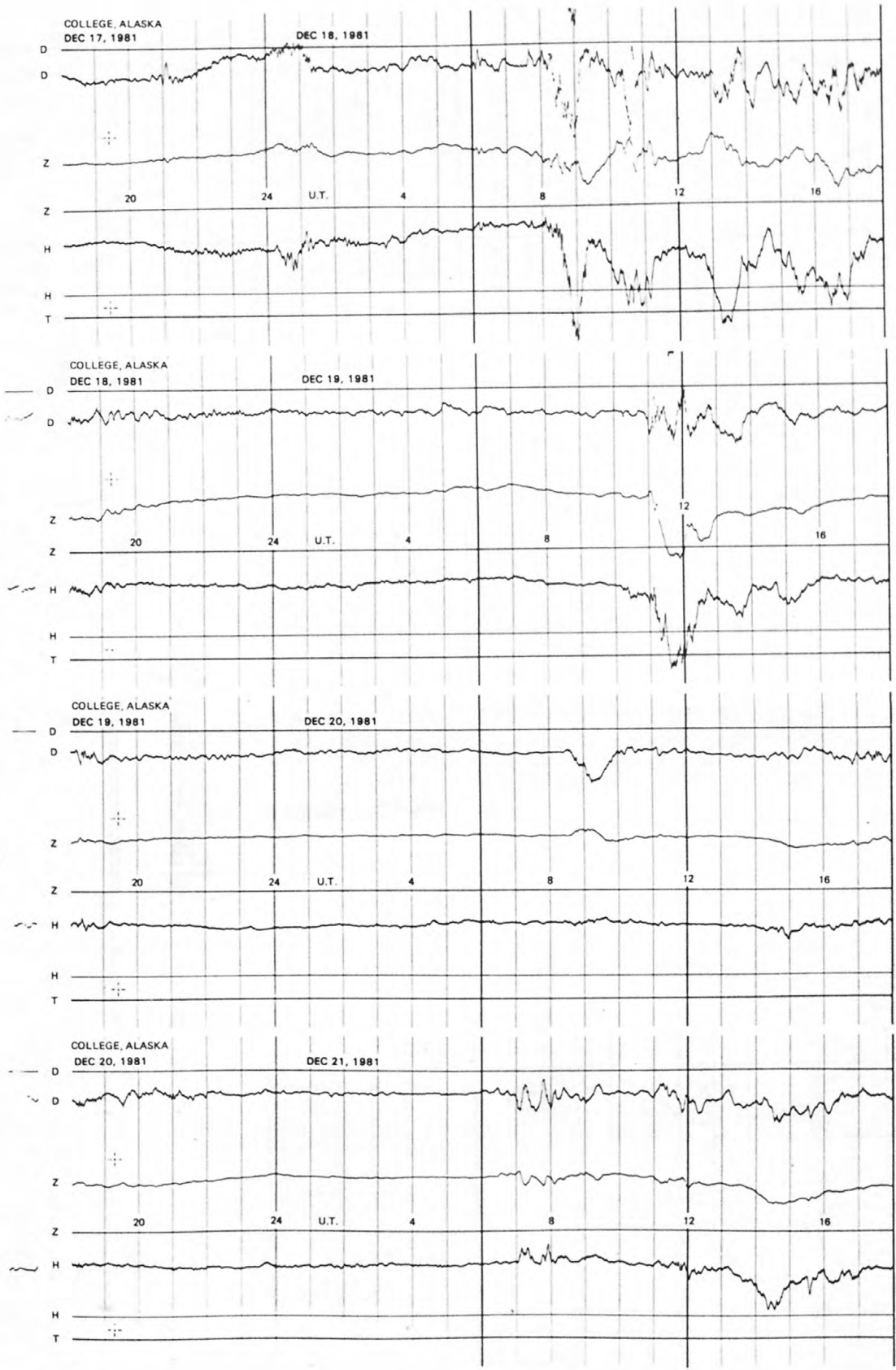
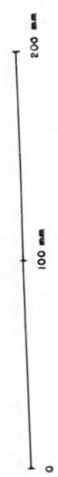


**NORMAL MAGNETOGRAMS**

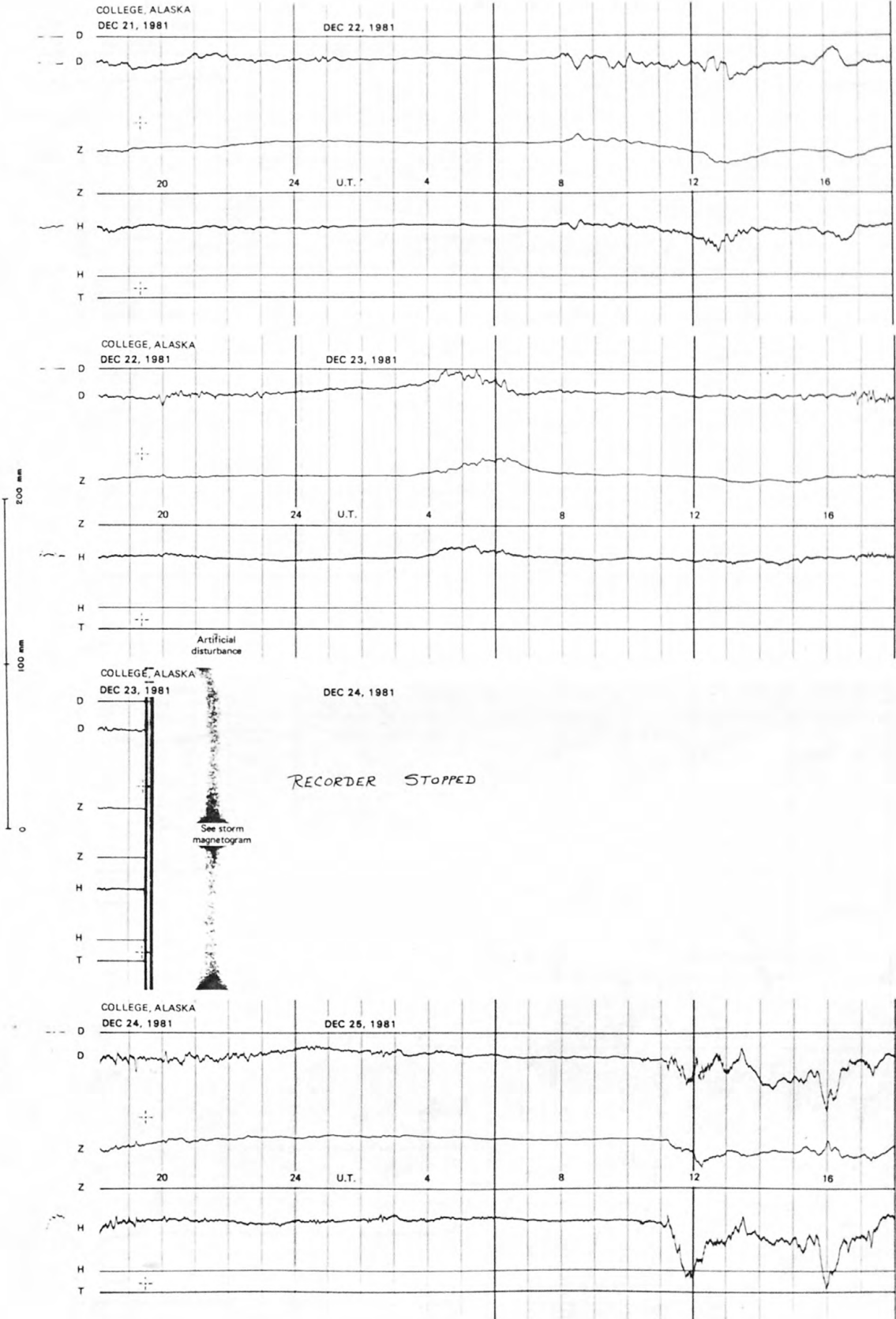




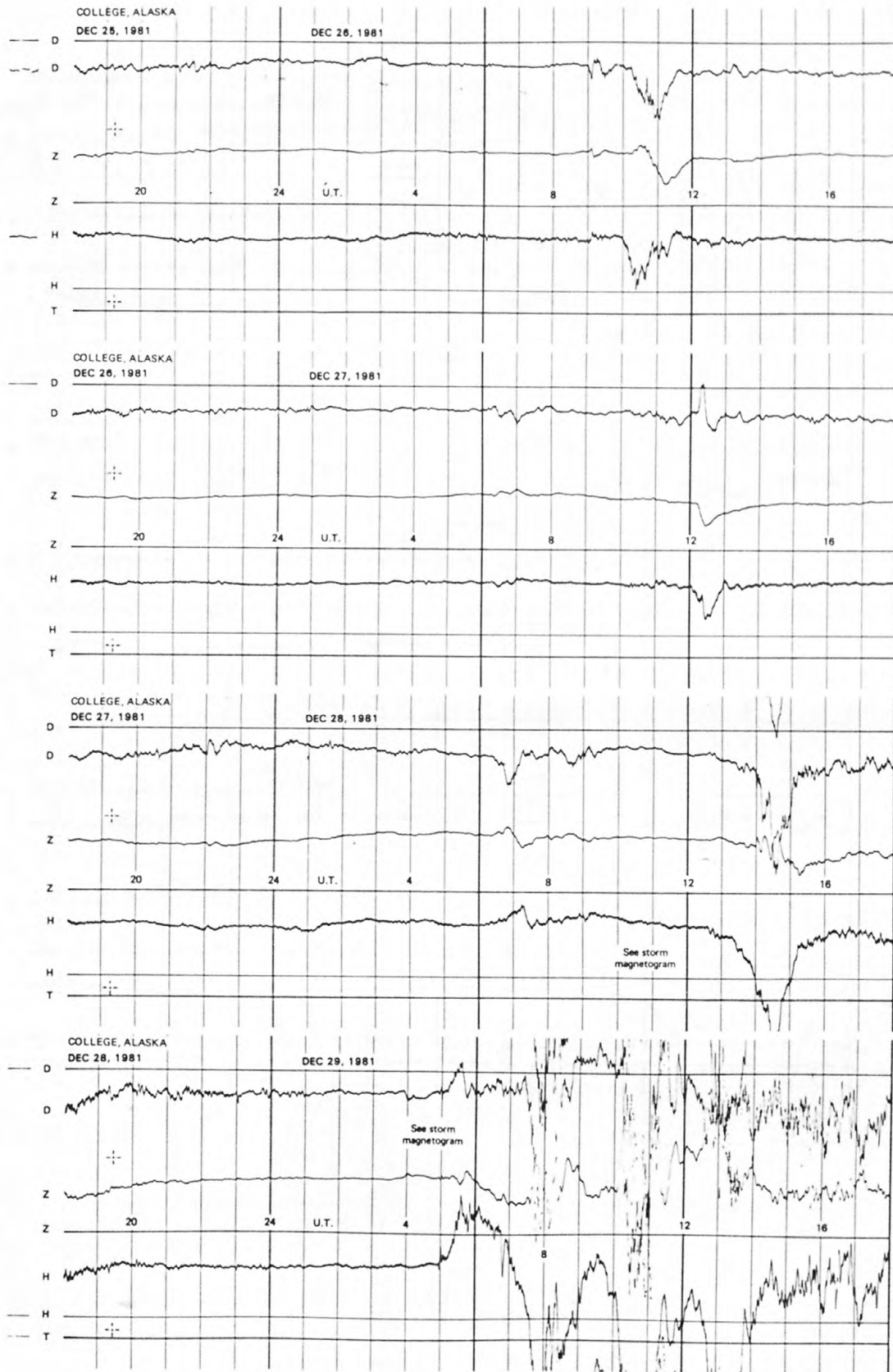
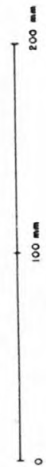
NORMAL MAGNETOGRAMS



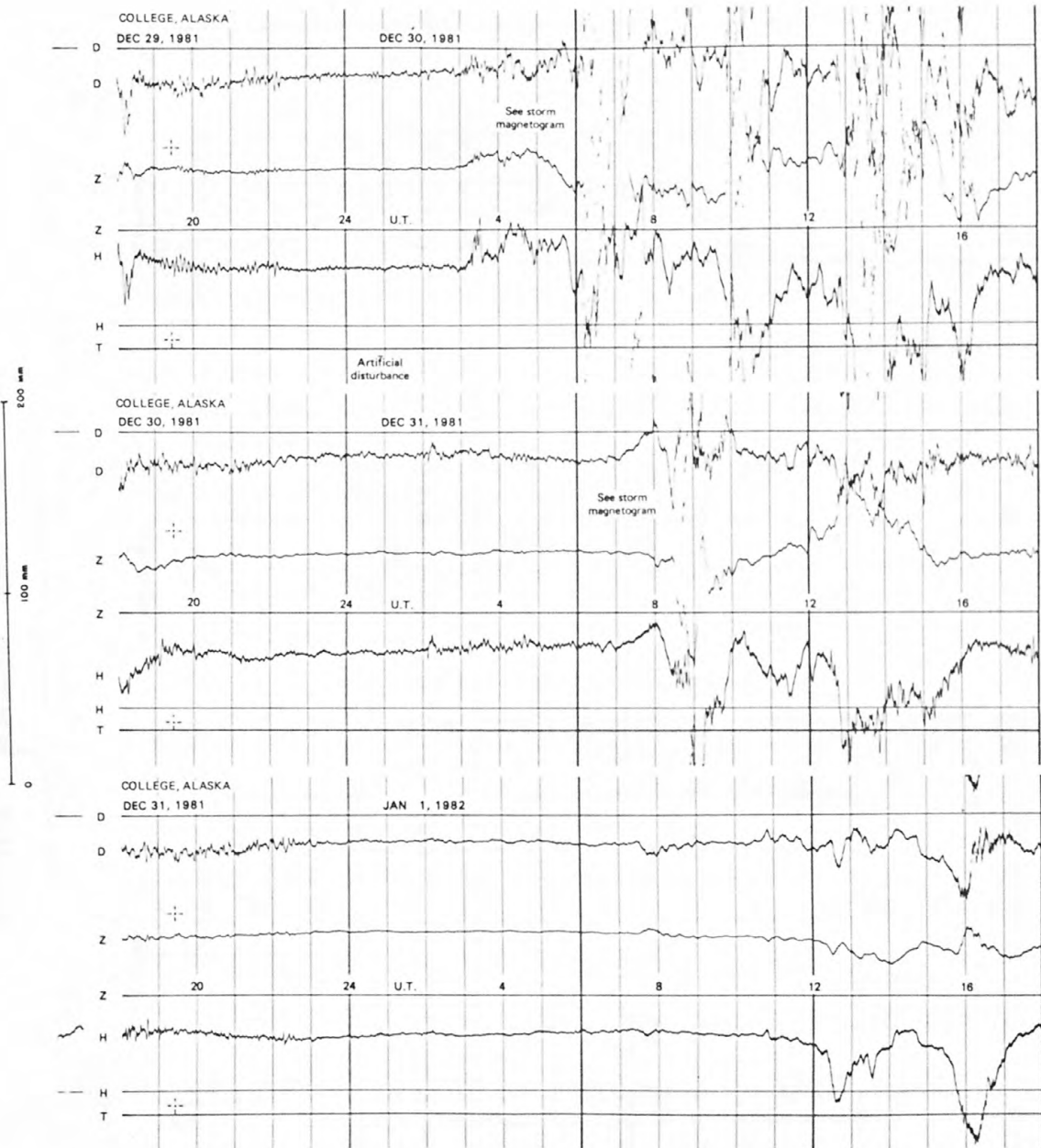
NORMAL MAGNETOGRAMS



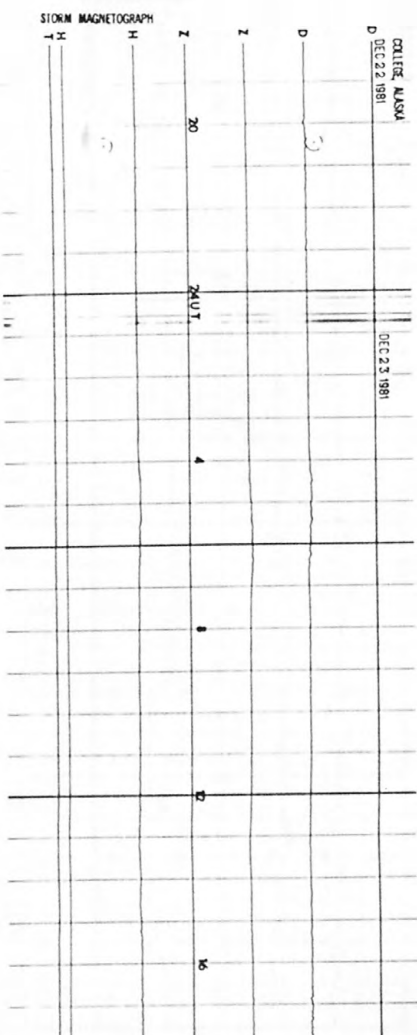
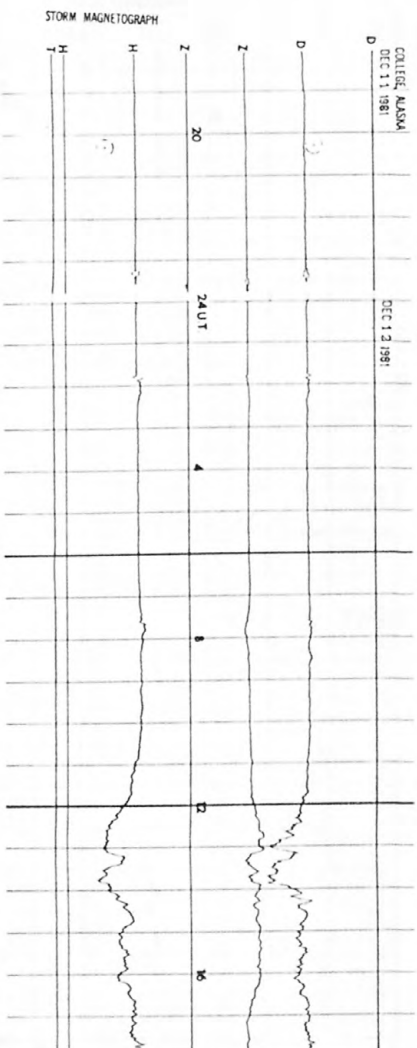
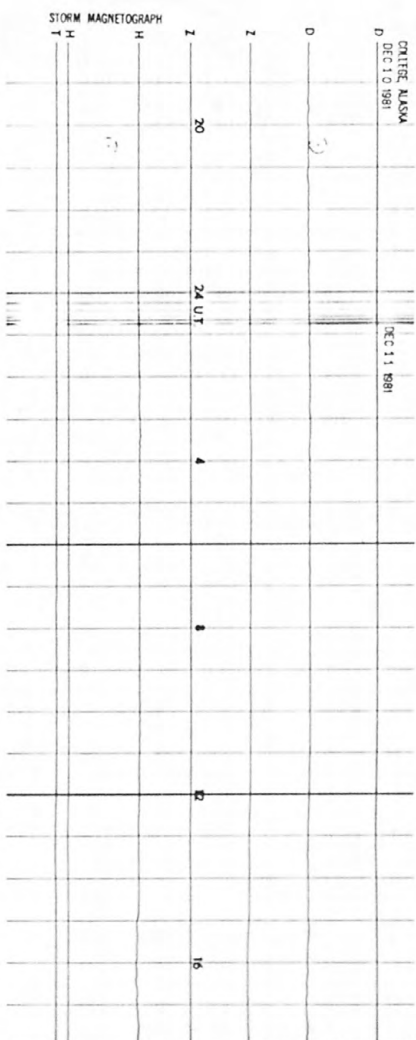
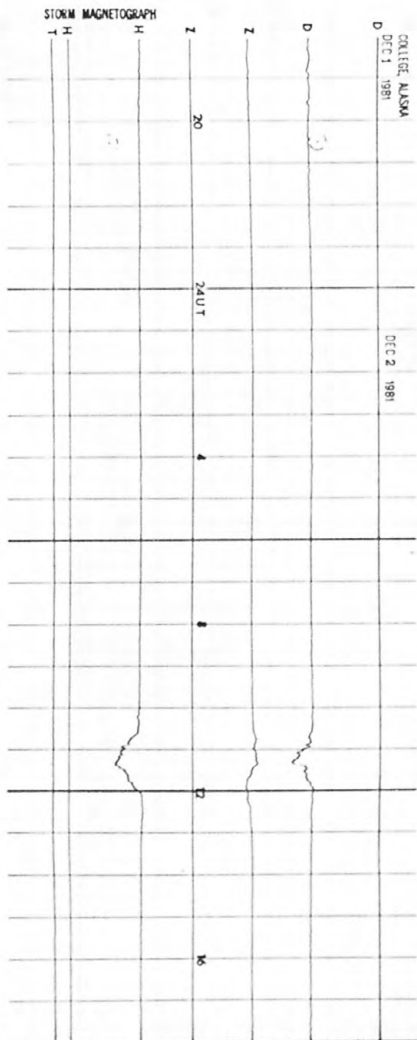
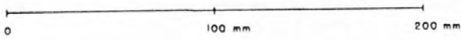
NORMAL MAGNETOGRAMS



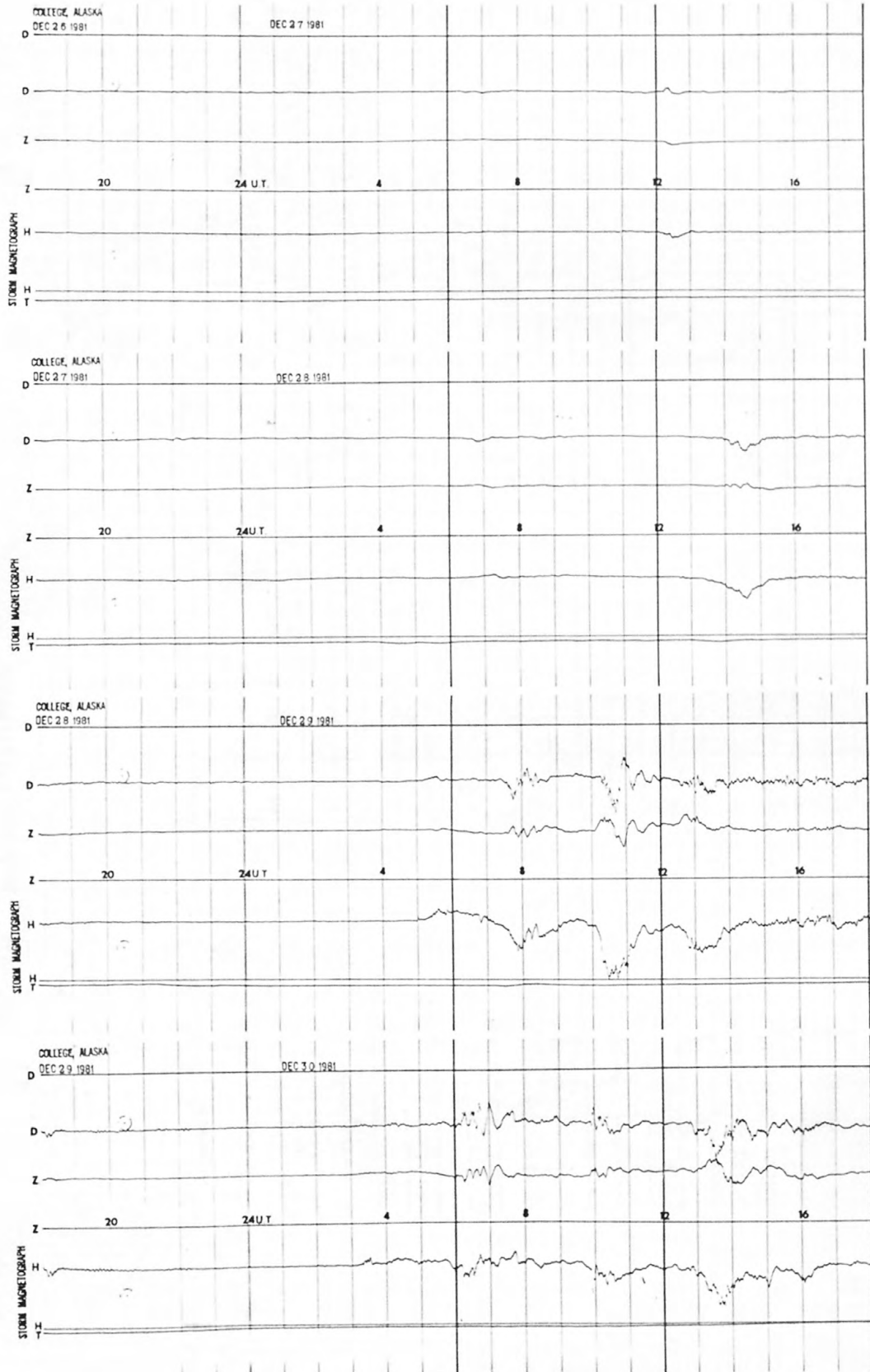
NORMAL MAGNETOGRAMS



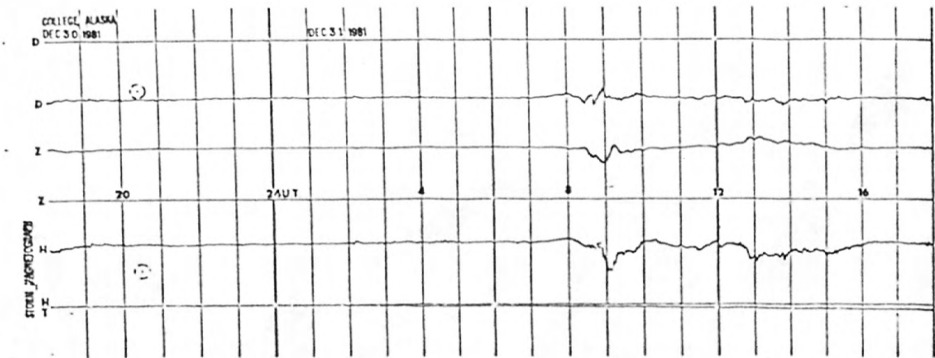
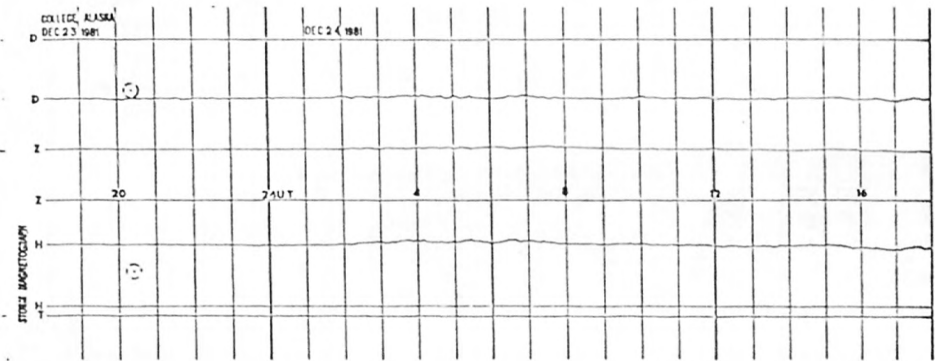
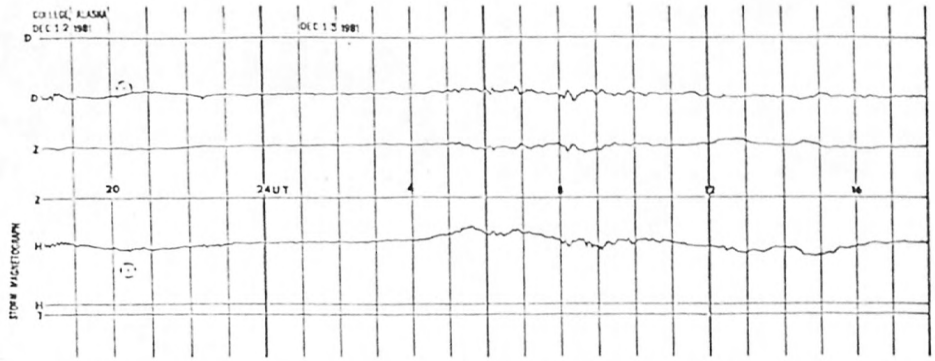
# STORM MAGNETOGRAMS



# STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



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