

UNITED STATES (DEPARTMENT OF THE INTERIOR)

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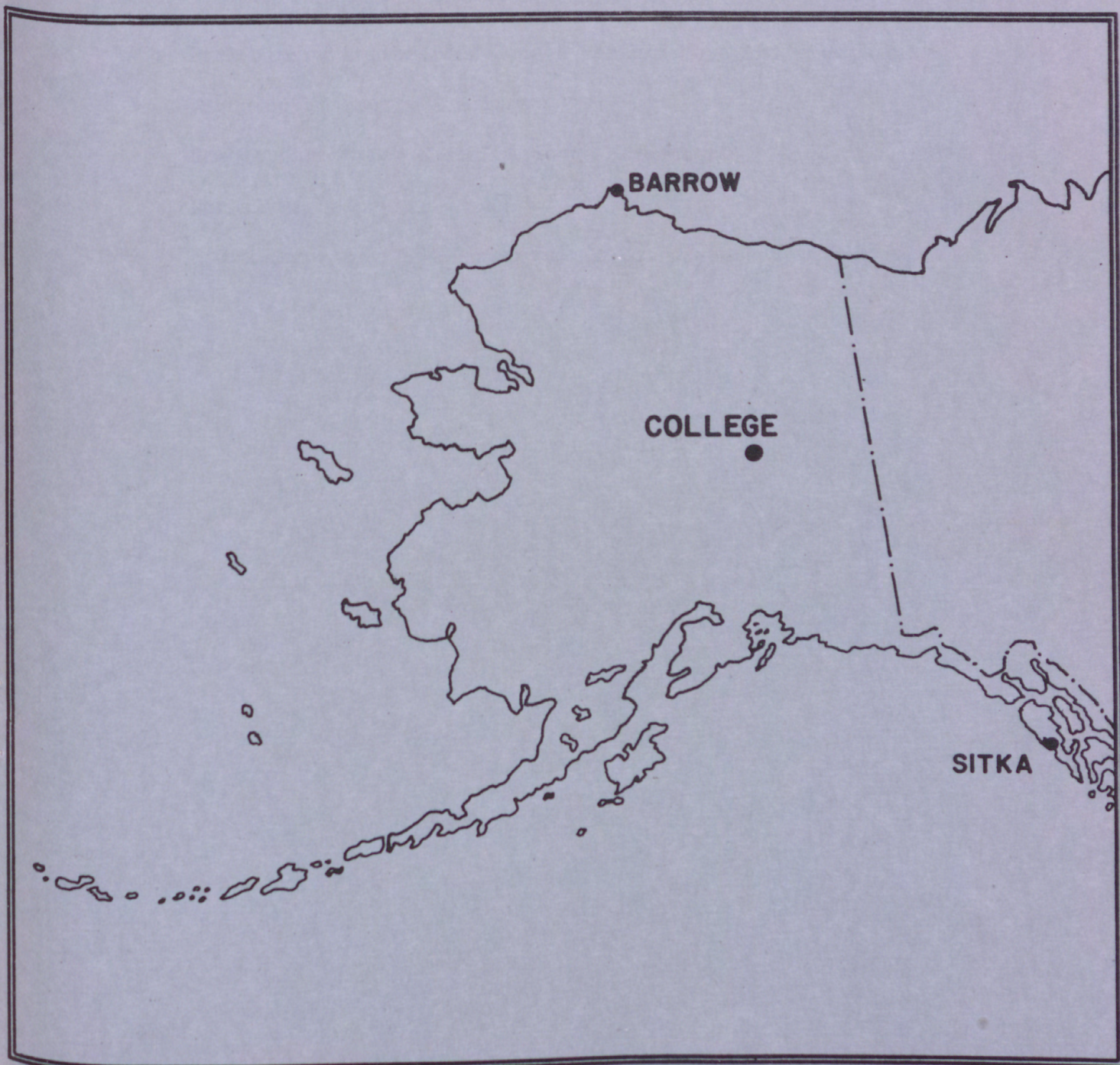
77-300-B

GEOLOGICAL SURVEY. [Reports - Open file series]

PRELIMINARY GEOMAGNETIC DATA  
COLLEGE OBSERVATORY  
FAIRBANKS, ALASKA

FEBRUARY 1977

OPEN FILE REPORT 77-300B





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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, M. J. MOORMAN, C. E. DEADMON, AND S. P. TILTON, 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.

## 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:

Chief, College Observatory  
U.S. Geological Survey  
Yukon Drive on West Ridge  
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

### 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 10 $\gamma$  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 (10 $\gamma$ )

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.

### 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

#### 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.

COLLEGE, ALASKA

## MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

FEBRUARY, 1977

DATE	K-INDICES									REMARKS	TIME SCALE ON MAGNETOGRAMS	
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM			
											<u>AK</u>	20 mm/hr
1	1	1	2	0	0	1	1	2	08	03	SUDDEN COMMENCEMENTS d h m	
2	3	4	3	6	6	1	2	3	28	30		
3	3	2	1	3	2	1	1	2	15	08		
4	1	1	2	3	2	1	0	0	10	05		
5	0	0	5	5	2	1	1	0	14	14		
6	1	1	0	4	5	5	5	3	24	24		
7	3	2	1	5	5	4	3	3	26	22		
8	3	2	3	2	5	6	5	3	29	29		
9	3	3	4	6	6	6	3	3	34	41		
10	2	2	2	5	6	4	1	2	24	23		
11	3	3	3	4	6	4	1	2	26	24	POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)	
12	1	1	1	3	3	1	1	0	11	06		
13	1	1	3	2	2	1	3	2	15	08		
14	2	2	2	2	5	4	2	1	20	14		
15	1	1	1	2	2	3	2	1	13	06		
16	2	2	2	1	1	1	0	0	09	04		
17	1	1	1	2	3	3	3	1	15	08		
18	3	5	2	2	3	2	2	1	20	14		
19	3	1	1	1	3	3	2	1	15	08		
20	1	1	1	2	2	1	1	2	11	05		
21	1	1	1	0	4	3	1	0	11	07	BEGIN	END
22	0	0	0	0	3	4	2	2	11	07		
23	1	2	3	5	6	5	3	2	27	28	d h m	d h m
24	2	1	2	3	5	3	5	3	24	20		
25	2	2	2	2	3	3	2	2	18	09		
26	2	1	0	3	2	2	0	0	10	05		
27	0	0	1	1	0	0	0	0	02	01		
28	2	1	3	3	0	0	1	1	11	06		
29												
30												
31												

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9.....

D

683.8

3.76

2570

H

321.7

7.82

2520

Z

(mm)

(γ/mm)

(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  
FEBRUARY

YEAR  
1977

DATE	TIME U.T.	NATURE OF PHENOMENON <sup>1</sup>	REMARKS
01	18XX	pc5	
04	00XX	pc4	
04	12XX	pi2	With Bay
04	20XX	pc3	
12	09XX	pi2	With Bay
17	00XX	pcl	
18	04XX	b	Positive bay in H
19	02XX	pc5	With pcl's
20	13XX	pi2	With Bay
26	13XX	pc4	
IDENTIFIED BY: MJM/JEP			VERIFIED BY: JBT

1. NATURE OF PHENOMENON: ssc, ssc\*, si, si\*, b, bp, bs, bps, pcl, 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  
FEBRUARY 1977

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End day hr
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	
CO	64° 6' N	06	0940	s.c.*	-3	+9	+6	08 09	6 4,5,6	6 6	161	1120	690	09 23

NORMAL MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASLINE
D	0000 U.T., 2-1-77	2400 U.T., 2-28-77	1.0/mm	3.88/mm	28° 06.9 E
H	0000 U.T., 2-1-77	2400 U.T., 2-28-77	7.88/mm		127488
Z	0000 U.T., 2-1-77	2400 U.T., 2-28-77	7.78/mm		551388

STORM MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASLINE
D	0000 U.T., 2-1-77	2400 U.T., 2-28-77	7.9/mm	29.88/mm	24° 24.1 E
H	0000 U.T., 2-1-77	2400 U.T., 2-28-77	44.18/mm		114888
Z	0000 U.T., 2-1-77	2400 U.T., 2-28-77	48.98/mm		540108

RAPID RUN MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		
D	0000 U.T., 2-1-77	2400 U.T., 2-28-77	0.3/mm		1.08/mm
H	0000 U.T., 2-1-77	2400 U.T., 2-28-77	1.08/mm		
Z	0000 U.T., 2-1-77	2400 U.T., 2-28-77	2.48/mm		

MONTHLY MEAN ABSOLUTE VALUES*		
D	H	Z
28° 20.2 E	130508	553648

\* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: FEB 1, 4, 12, 15, 16, 20, 22, 26, 27, 28

FORM C&GS-404a 10-67		MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)																				OBSY.		YEAR	MONTH	ELE- MENT	
		Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500M.T.) is hour 11 of the same universal day. The magnetic corrections have been applied. Negative values are in red, with minus signs shown.																				CO		77	JAN	D	
STATION	DATE	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	120	122	108	109	119	102	104	123	131	124	131	139	01	147	149	142	140	171	177	159	138	123	115	123	107	3123
	02	62	63	101	97	113	99	133	85	148	89	-119*	207	02	198	59	226	179	159	158	155	139	112	101	101	41	2706
	03	11	73	119	132	128	123	113	125	123	139	132	133	03	147	162	162	163	162	164	153	138	112	117	114	112	3057
	04	118	124	133	137	132	119	122	117	122	133	133	150	04	144	154	124	164	164	163	149	145	138	127	125	127	3264
	05	123	129	133	139	143	145	131	122	159*	123	118	122	05	163	157	163	179	173	173	159	157	137	119	118	119	3404
	06	121	130	130	132	133	133	134	128	123	125	139	152	06	146	343	271	320	286	292	193	113	71	51	60	56	3782
	07	92	41	102	125	101	137	102	122	116	110	255	228	07	141	216	133	192	234	180	163	99	64	107	91	112	3263
	08	108	94	109	125	134	115	130	135	150	132	133	129	08	134	195	228	197	304	184	292	165	59	23	69	44	3388
	09	66	82	113	110	168	122	81	202	128	123	58*	2*	09	202	360*	439*	407*	288	115	163	165	72	27	44	71	3608
	10	107	120	121	121	123	133	119	129	133	119	82	-93*	10	197	193*	161	130	161	171	173	168	148	142	97	5	2960
	11	55	91	82	87	120	101	196	122	146	116	236	230	11	196	518*	331	206	247	115	167	158	151	118	111	97	3997
	12	88	107	122	123	118	118	132	117	127	198	117	157	12	176	147	168	173	162	152	160	167	141	113	116	97	3296
	13	101	98	103	84	128	142	126	122	174	163	128	122	13	158	168	187	182	187	206	171	132	147	104	53	30	3216
	14	41	67	99	103	104	84	138	127	137	136	133	141	14	192	333	232	317	281	287	203	128	84	27	21	38	3453
	15	47	63	71	87	138	141	138	147	128	137	116	141	15	162	152	182	183	212	203	192	178	147	119	112	65	3261
	16	62	67	62	92	127	111	112	109	122	124	123	132	16	154	167	143	153	161	162	176	159	148	124	118	107	3015
	17	101	110	111	110	111	113	111	121	101	127	73	137	17	128	217	223	192	218	281	165	183	158	124	82	78	3375
	18	58	93	116	54	-5*	127	131	118	129	131	129	141	18	167	167	167	138	149	152	146	141	131	117	122	121	2940
	19	107	101	116	122	136	138	140	141	153	137	136	133	19	137	156	131	173	191	187	166	161	142	131	97	98	3330
	20	103	108	127	122	136	138	138	151	126	146	129	141	20	137	121	103	151	171	172	179	172	156	131	121	121	3300
	21	101	109	121	133	137	136	132	130	132	138	138	139	21	162	357	261	189	161	218	201	179	158	146	131	112	3821
	22	111	114	111	103	113	121	138	138	132	136	138	143	22	158	191	162	182	248	222	197	144	106	118	107	101	3434
	23	107	87	117	109	121	143	181	119	121	148	98	127	23	161	224	170	229	309	201	199	187	151	104	101	106	3620
	24	93	121	131	129	129	133	135	136	122	83	123	122	24	252	43	181	139	166	182	227	28	105	159	124	113	3176
	25	102	87	92	108	104	131	143	161	171	137	139	133	25	106	108	132	152	198	220	182	172	132	108	69	38	3125
	26	47	92	107	103	88	119	128	139	132	157	118	131	26	141	123	112	131	123	162	182	173	153	147	123	118	3049
	27	111	121	127	126	127	129	131	136	161	139	126	132	27	139	149	143	159	157	173	173	167	157	142	127	120	3372
	28	102	72	62	63	73	67	113	172	131	141	137	137	28	138	142	139	141	153	163	177	149	138	133	117	113	2973
	29													29													
	30													30													
	31													31													

SCALED BY	SPT	Preliminary base-line and scale values: Interval Beginning      Base-line Value      Scale Value	( ) Interpolated	[ ] Scaling uncertain because of magnetic storm.	MONTHLY SUM	92308
CHECKED BY	JEP, MJM		[ ] 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	137
SIGNS REVIEWED BY	JEP		[ ] No record; or no values available because of faulty record.		DATES WITH GAPS:	
PUNCHED BY			* Derived from Storm Mph., converted to Normal Mph.			

FORM CGS-404 1A-577												MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)												U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY GEOMAGNETISM DIVISION												OBSV.	YEAR	MONTH	ELE- MENT
Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1500 M.T.) is hour <u>11</u> of the <u>same</u> universal day. Scintillation corrections have been applied. Negative values are in red, with minus signs shown.																								CO	77	JAN	H												
C	Q	U	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	SUM												
			01	391	396	402	396	392	410	436	414	403	392	384	381	01	381	383	383	375	389	392	386	384	381	382	383	339	9355										
			02	335	382	422	432	540	441	485	549	446	423	215*	290	02	255*	174	320	401	401	395	383	372	376	378	372	303	9090										
			03	345	398	411	403	407	405	396	389	400	413	424	362	03	393	393	388	393	386	382	384	379	378	382	381	375	9367										
			04	389	391	402	405	403	393	393	395	398	404	398	388	04	387	361	373	411	396	394	391	389	391	395	396	396	9439										
			05	393	394	401	403	402	402	403	430	380	390	435	404	05	376	392	396	389	391	387	382	379	379	381	385	391	9465										
			06	383	388	389	398	394	389	393	397	393	399	451	361	06	249	83	49	304	238	190	45	98	325	394	422	387	7525										
			07	382	433	436	441	460	413	414	398	399	412	318	201	07	361	177	306	376	326	364	322	311	359	352	379	415	8755										
			08	383	426	454	398	389	413	392	441	411	425	388	413	08	396	332	191*	-217*	121	35	171	141	373	357	358	383	7574										
			09	419	442	456	460	451	446	477	479	417	379	174*	-109*	09	271	-86*	-515*	-1*	154	387	417	387	286	340	380	367	6878										
			10	374	379	410	411	404	406	429	449	459	397	372	97	10	55*	-205*	176	378	410	391	381	374	376	366	334	350	7973										
			11	374	377	413	410	401	439	503	469	462	497	428	373	11	190	-306*	-200*	289	322	426	390	391	383	378	373	379	8161										
			12	373	386	386	394	405	398	399	400	403	410	386	353	12	347	407	403	387	390	392	389	380	370	376	386	391	9311										
			13	389	381	379	401	413	411	399	439	449	436	400	400	13	366	366	383	381	383	380	291	360	387	357	369	384	9304										
			14	391	390	408	393	430	430	432	410	393	390	389	380	14	229	-36	157	304	352	357	370	366	344	353	360	381	8373										
			15	376	384	407	406	418	416	407	404	409	407	400	403	15	408	386	360	340	348	394	387	371	351	380	374	370	9306										
			16	379	410	383	392	418	419	453	474	410	400	397	389	16	379	374	370	374	373	381	385	386	378	378	380	389	9471										
			17	387	381	363	381	389	391	399	404	420	418	419	401	17	407	455	386	377	363	307	299	381	380	362	387	382	9239										
			18	407	402	436	437	706	513	396	421	403	392	391	379	18	369	364	340	366	341	363	390	381	382	376	381	384	9720										
			19	391	394	390	397	396	391	394	390	391	398	406	403	19	399	378	284	301	338	362	377	369	370	374	379	383	9055										
			20	390	398	400	401	394	395	390	384	400	387	359	380	20	400	359	367	401	399	391	389	380	379	376	378	376	9273										
			21	386	387	392	397	398	397	400	394	386	389	396	398	21	369	146	287	369	311	381	403	365	373	364	366	373	8647										
			22	379	386	390	381	379	389	382	380	388	386	385	384	22	373	253	208	266	356	379	362	326	349	380	378	376	8615										
			23	384	389	382	400	400	392	404	429	516	470	299	262	23	16	25	385	357	204	201	343	390	377	377	361	383	8146										
			24	384	383	390	387	386	389	389	396	439	476	469	399	24	72	-29	217	426	365	371	168	151	383	384	386	379	8160										
			25	383	365	370	410	390	389	407	404	418	406	381	389	25	294	206	319	317	366	379	390	376	364	340	356	331	8750										
			26	357	374	396	401	396	394	389	387	389	389	336	366	26	380	364	357	364	357	365	391	380	370	376	379	380	9037										
			27	377	376	380	380	381	385	390	388	384	397	383	389	27	386	386	381	384	380	388	387	390	387	380	377	376	9212										
			28	353	373	383	394	393	419	434	449	533	479	423	396	28	389	383	388	390	388	386	381	379	376	373	381	371	9614										
			29													29																							
			30													30																							
			31													31																							

SCALED BY	SPT	Preliminary base-line and scale values: Interval Beginning      Base-line Value      Scale Value	( ) Interpolated	[ ] Scaling uncertain because of magnetic storm.	MONTHLY SUM	247015
CHECKED BY	JEP, MJM		[ ] 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	368
SIGNS REVIEWED BY	JEP		[ ] No record; or no values available because of faulty record.		DATES WITH GAPS:	
PUNCHED BY			* Derived from Storm Mgh., converted to Normal Mgh.			

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day ( 1500 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 <sub>1</sub>	Q <sub>2</sub>	Q <sub>3</sub>	Q <sub>4</sub>	Q <sub>5</sub>	Q <sub>6</sub>	Q <sub>7</sub>	Q <sub>8</sub>	Q <sub>9</sub>	Q <sub>10</sub>	Q <sub>11</sub>	Q <sub>12</sub>	Q <sub>13</sub>	Q <sub>14</sub>	Q <sub>15</sub>	Q <sub>16</sub>	Q <sub>17</sub>	Q <sub>18</sub>	Q <sub>19</sub>	Q <sub>20</sub>	Q <sub>21</sub>	Q <sub>22</sub>	Q <sub>23</sub>	Q <sub>24</sub>	SUM		
	01	291	293	300	302	320	320	322	322	313	313	306	294	01	282	292	285	271	256	272	275	275	279	280	285	295	7043
	02	308	335	340	335	389	360	342	328	293	282	128*	176	02	360	269	170	257	279	288	287	286	289	282	295	293	6971
	03	291	319	320	308	313	304	302	309	305	321	318	266	03	289	298	288	278	281	280	279	280	274	282	286	291	7082
	04	303	304	299	296	298	304	312	305	311	255	301	299	04	296	274	254	274	282	283	285	284	284	288	288	288	6967
	05	290	290	290	289	288	288	284	301	282	207	304	322	05	301	287	293	292	285	285	287	287	284	288	291	292	6990
	06	295	296	293	293	293	298	294	293	298	298	248	203	06	268	368	255	199	223	220	117	12	96	247	271	285	5693
	07	319	356	346	337	346	334	328	329	303	309	164	234	07	208	368	283	296	281	285	259	240	239	272	289	328	7053
	08	328	335	364	322	313	301	323	286	273	331	312	318	08	313	296	318	258	43	80	19	67	180	218	273	297	6168
	09	319	356	352	344	338	357	264	358	309	311	261	368*	09	202	382*	286*	42	155	227	271	271	259	272	281	299	6884
	10	319	320	320	324	328	327	321	332	329	281	250	127	10	217	256	260	267	301	301	292	287	282	282	276	282	6881
	11	307	316	317	326	328	328	386	374	384	376	297	218	11	303	178*	60	173	216	268	297	287	287	293	301	309	6929
	12	303	307	310	310	312	317	312	313	333	344	272	241	12	258	270	292	295	292	292	293	296	286	287	292	291	7118
	13	293	301	309	318	346	332	316	329	316	326	320	299	13	281	262	278	280	268	268	220	172	215	236	241	261	6807
	14	272	299	321	317	316	347	354	313	311	297	297	298	14	261	174	147	171	229	218	183	173	222	246	265	282	6313
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	17	299	301	302	303	311	309	311	319	326	347	311	331	17	320	263	248	257	263	241	162	192	222	243	260	266	6707
	18	271	304	311	331	302	403	343	329	326	321	302	297	18	279	261	261	245	274	263	283	296	293	294	309	309	7207
	19	307	306	307	310	307	303	301	307	316	304	286	289	19	301	291	251	210	203	240	251	273	277	287	291	296	6814
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	22	299	303	306	307	308	306	302	299	298	297	297	293	22	288	233	138	116	178	230	257	244	237	262	287	299	6384
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	26	299	307	302	311	333	331	314	306	302	277	235	250	26	279	280	255	271	264	265	294	296	299	304	303	304	6981
	27	301	302	306	306	303	301	301	302	306	273	289	296	27	291	290	290	289	291	291	292	289	287	287	288	291	7062
	28	295	300	306	318	331	342	363	353	383	363	341	312	28	303	293	288	293	299	300	297	288	291	289	281	286	7515
	29													29													
	30													30													
	31													31													

SCALED BY	SPT
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JEP, MJM

SIGNALS RE-  
VIEWED BY

JEP

PUNCH  
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 Mph., converted to Normal Mph.

MONTHLY SUM	
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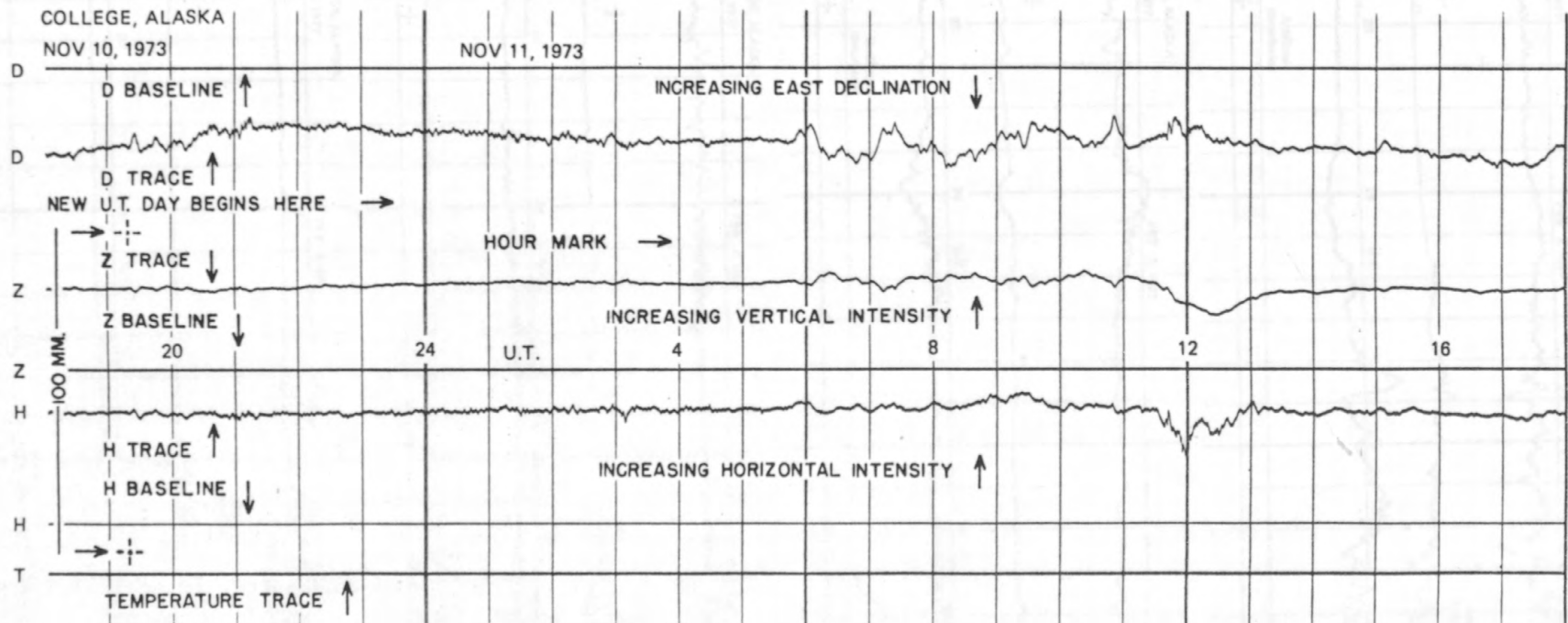
191338

MONTHLY MEAN

285

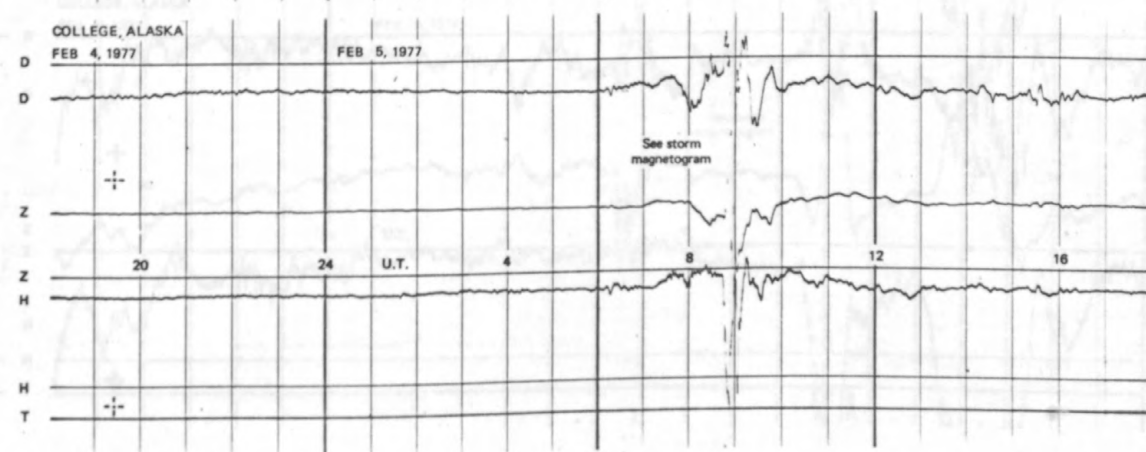
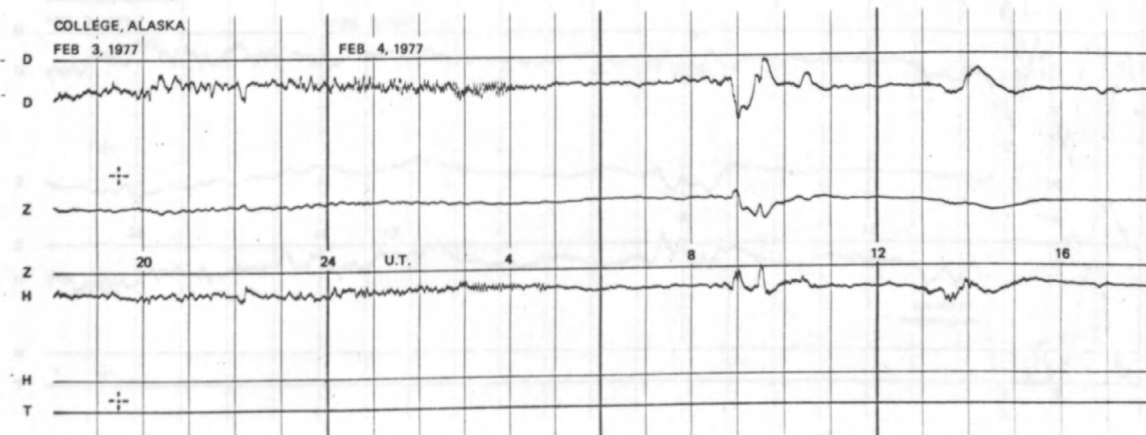
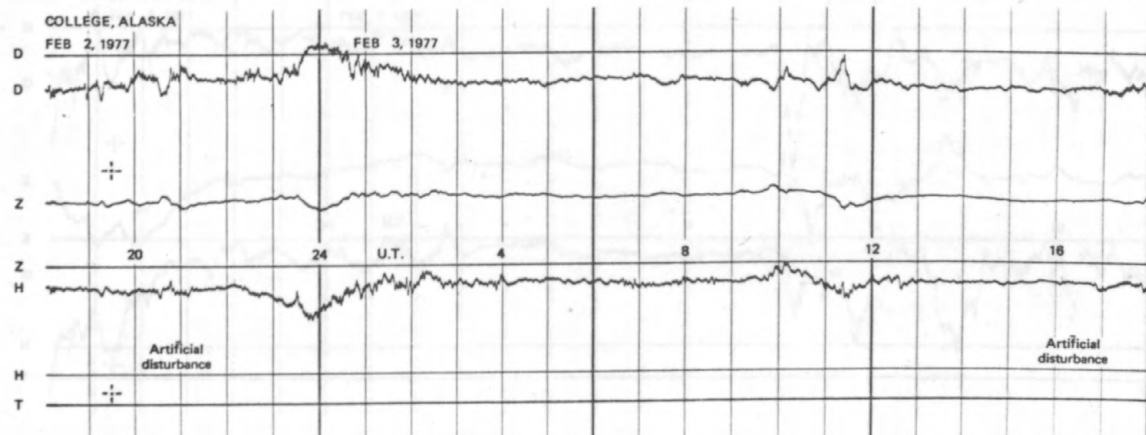
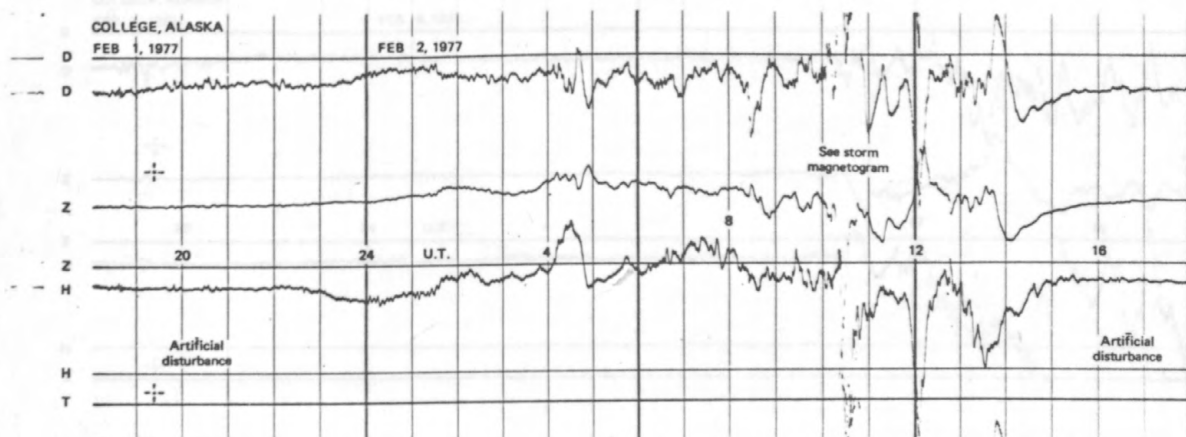
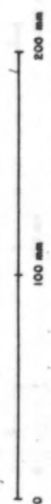
**DATES WITH GAPS:**

# FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)

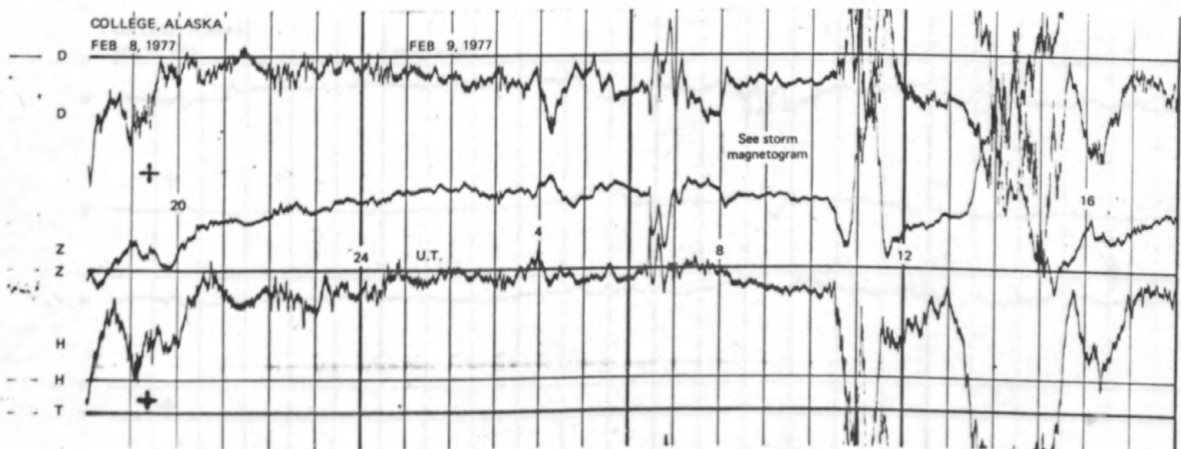
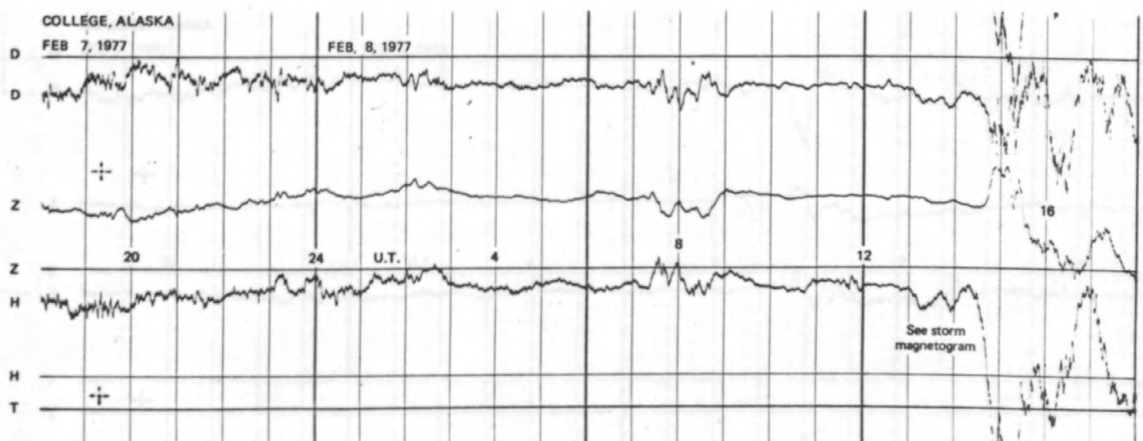
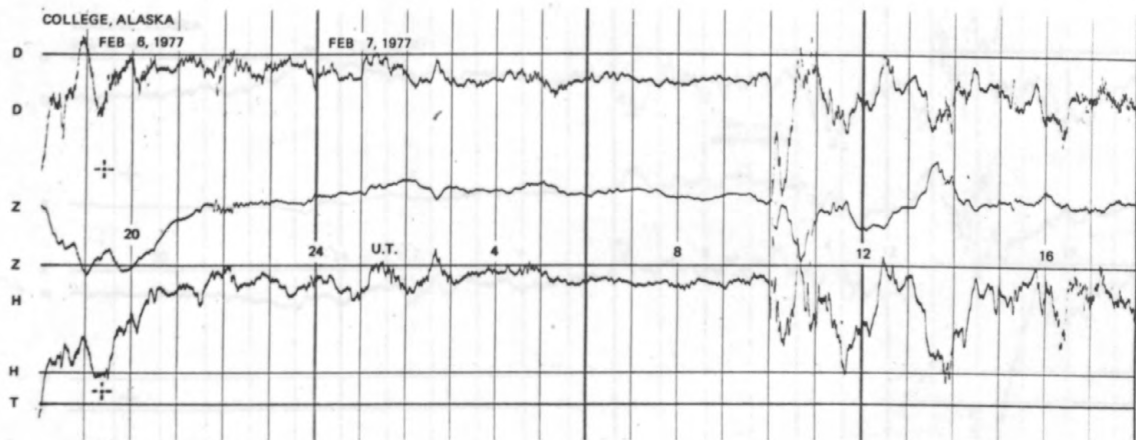
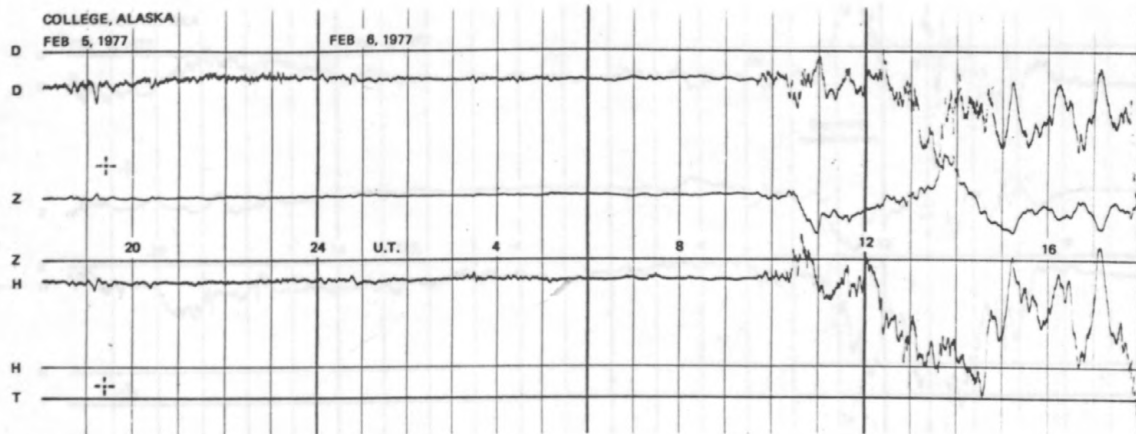


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

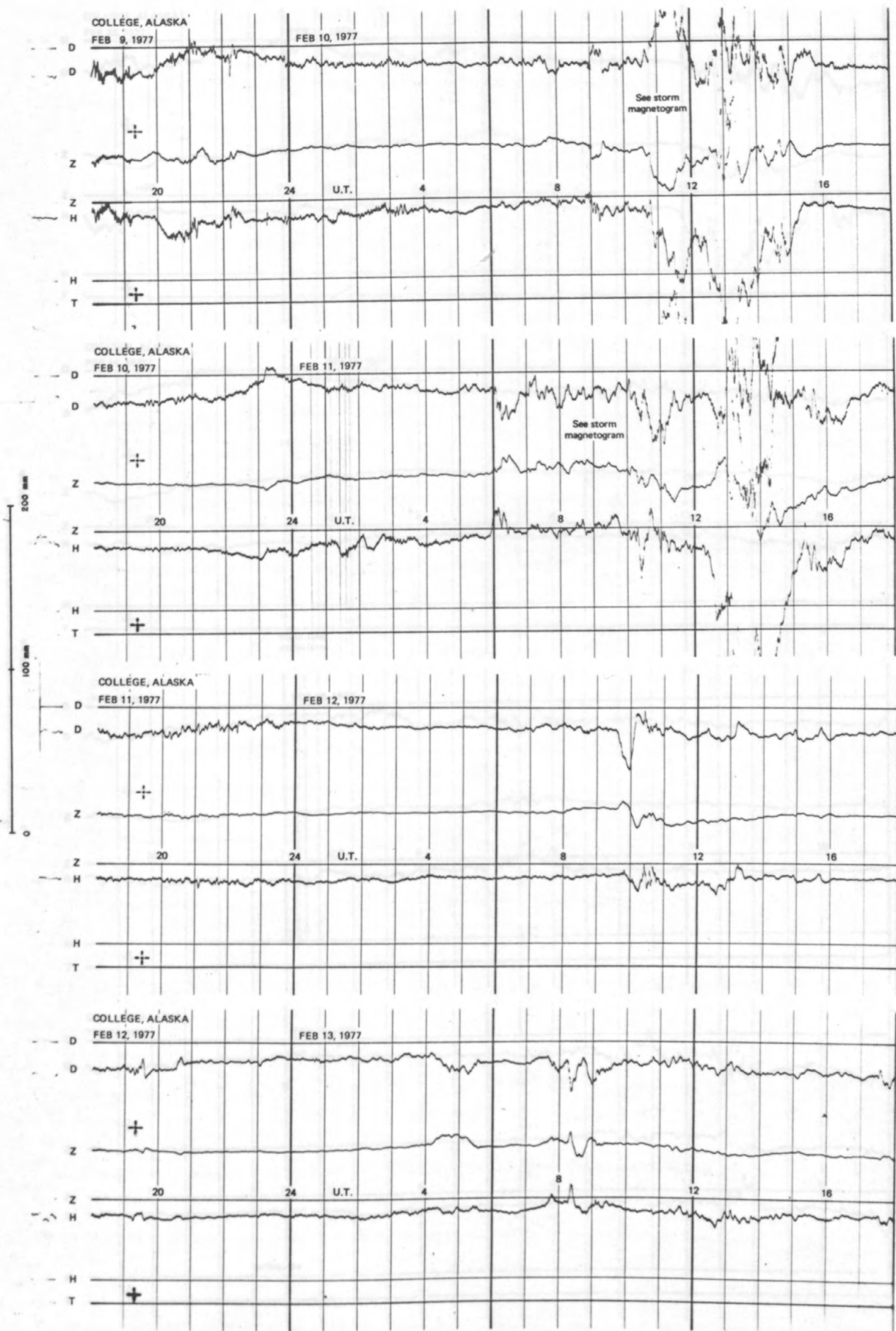
# NORMAL MAGNETOGRAMS



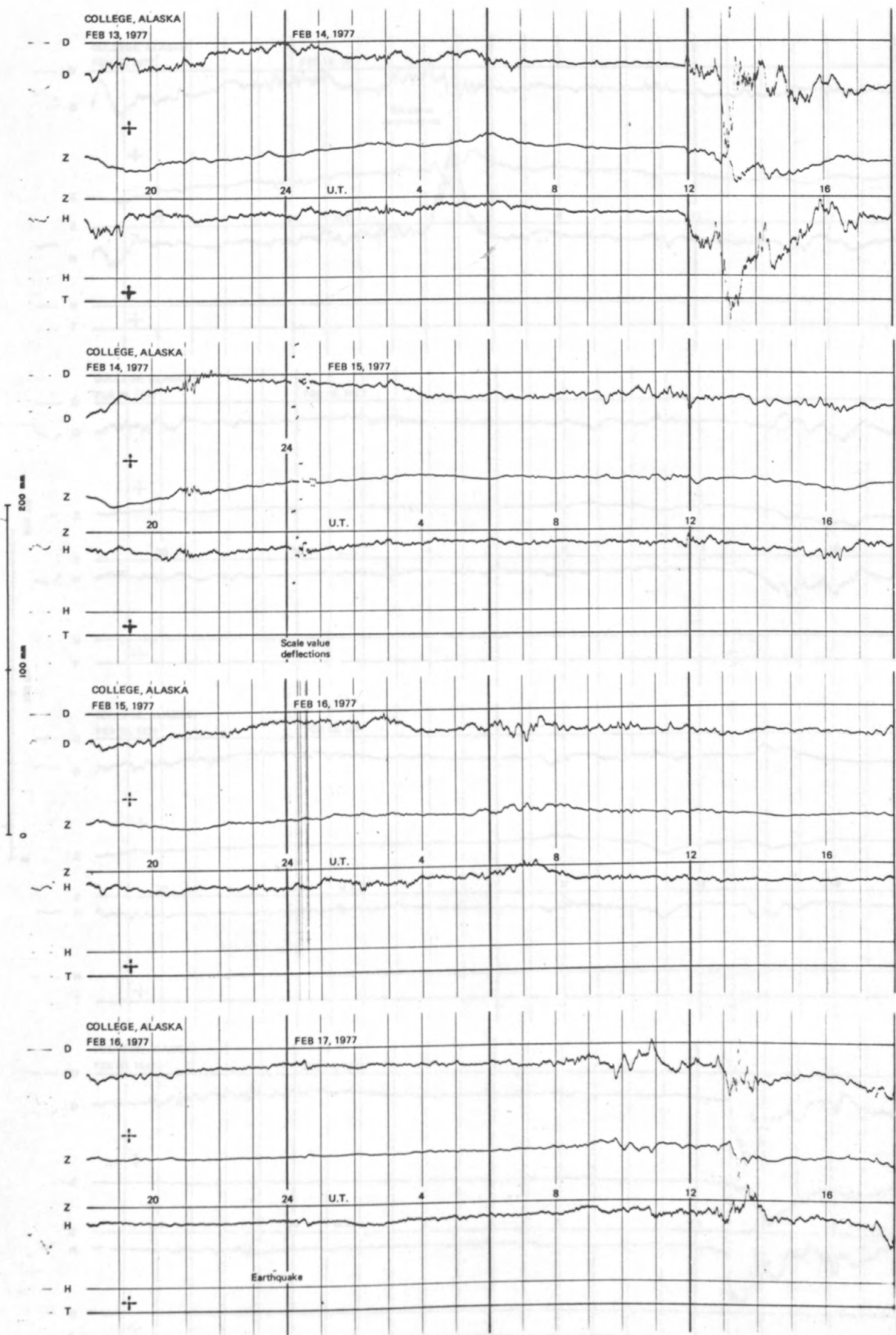
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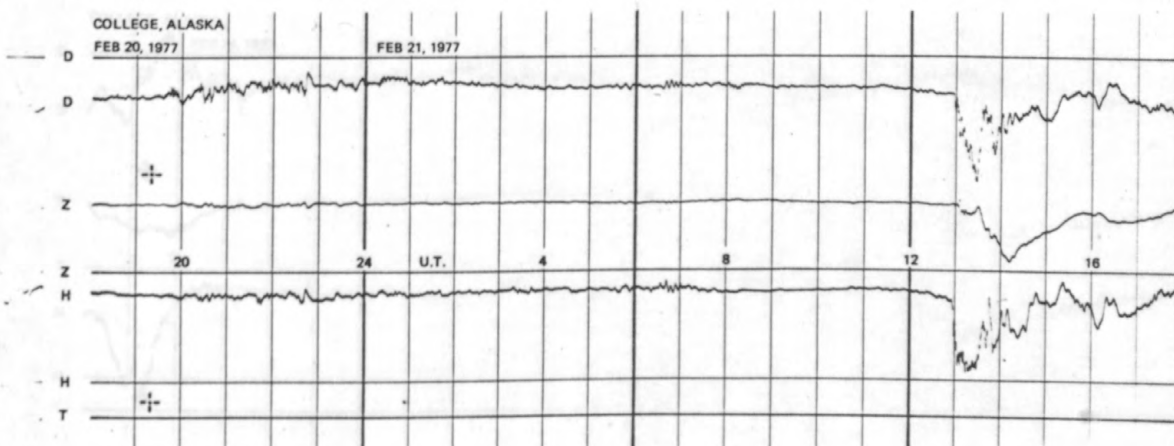
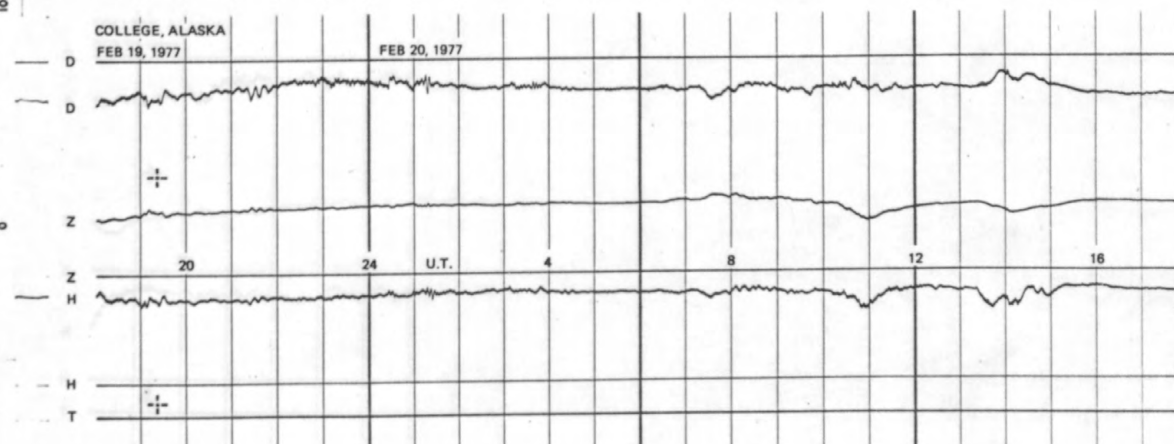
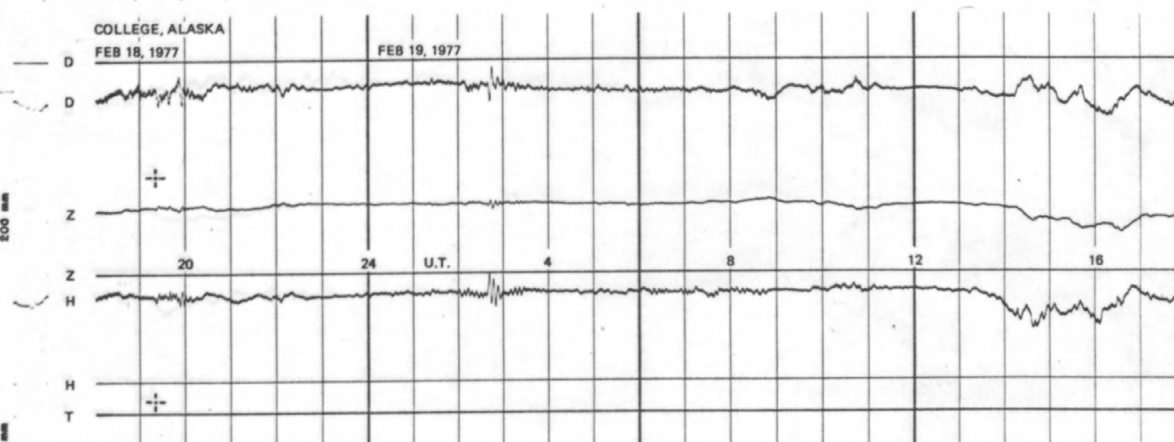
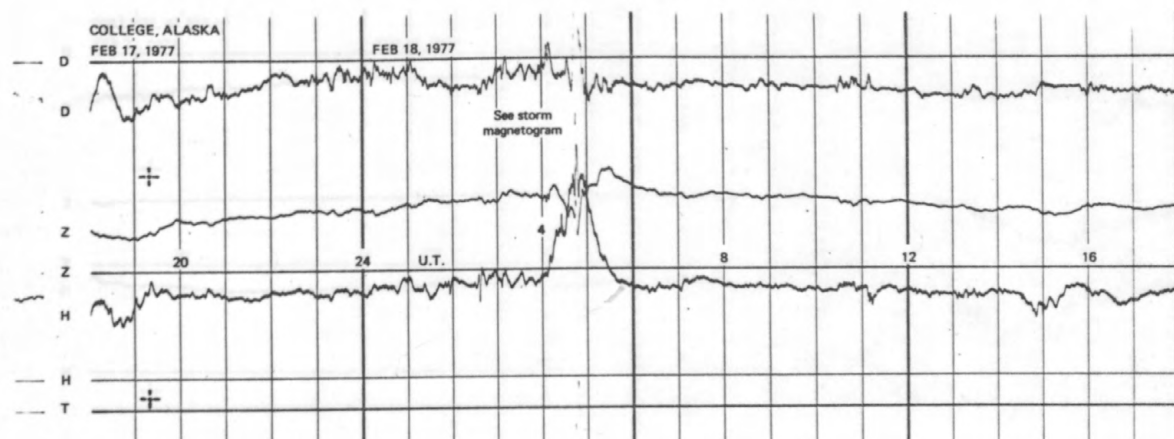
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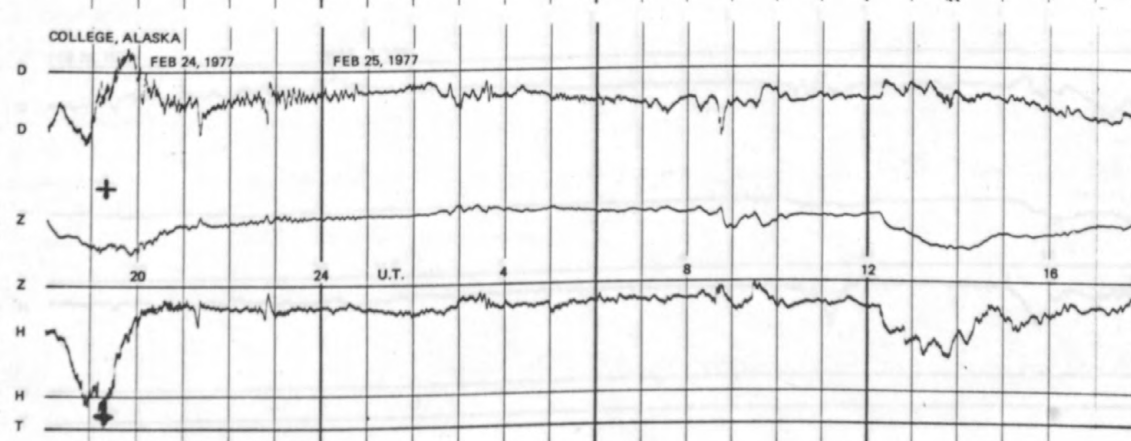
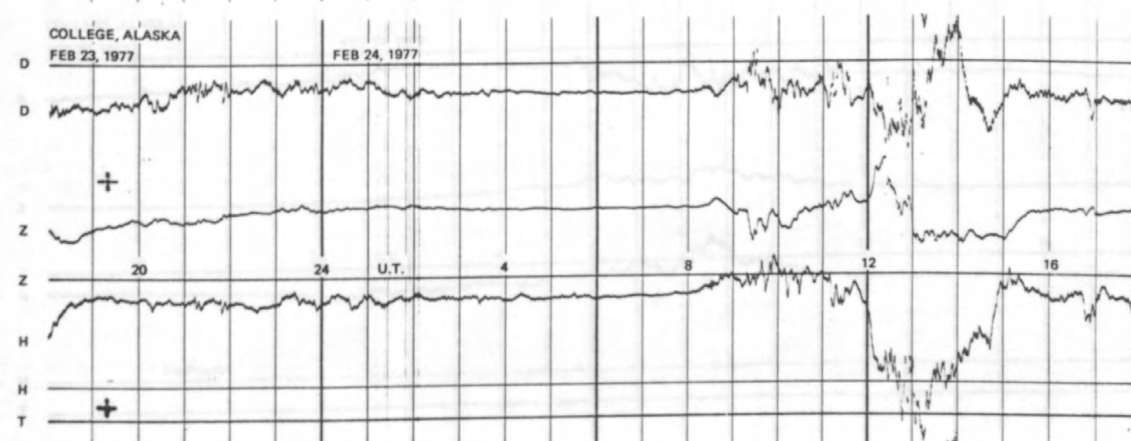
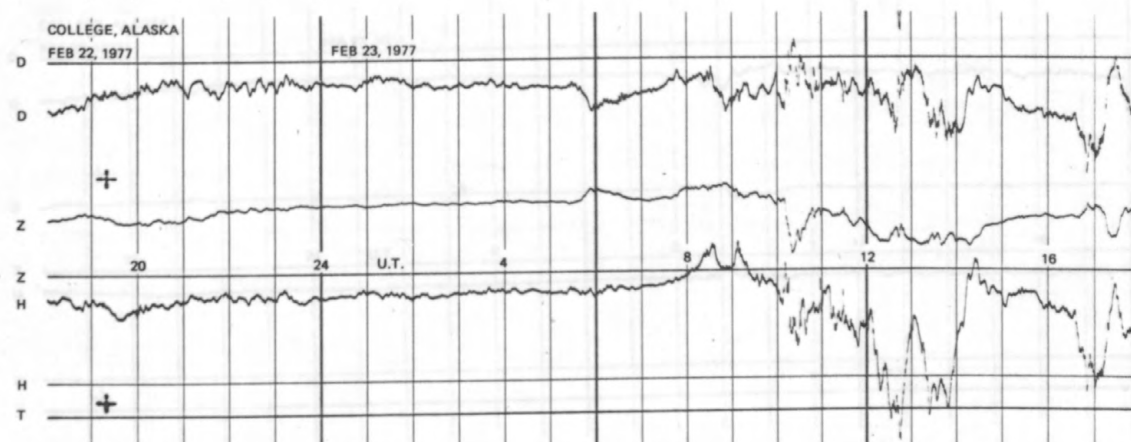
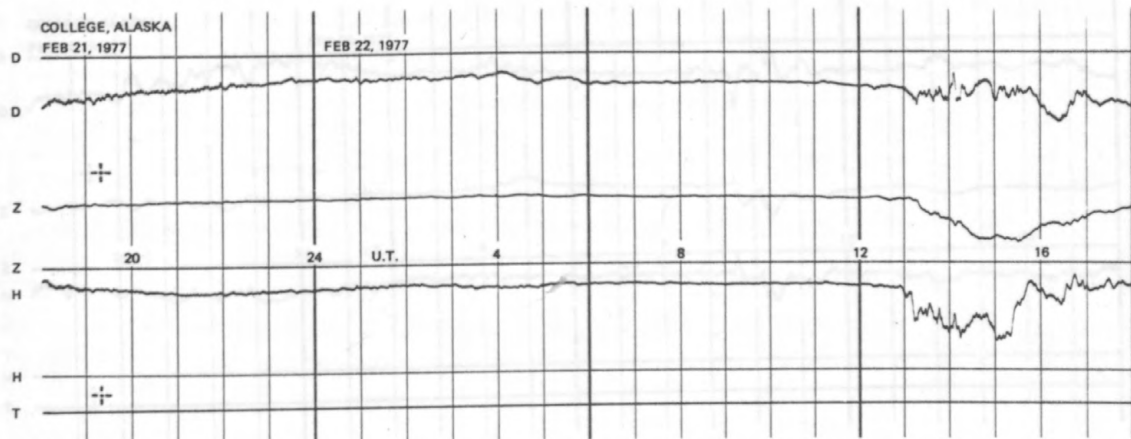
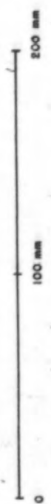
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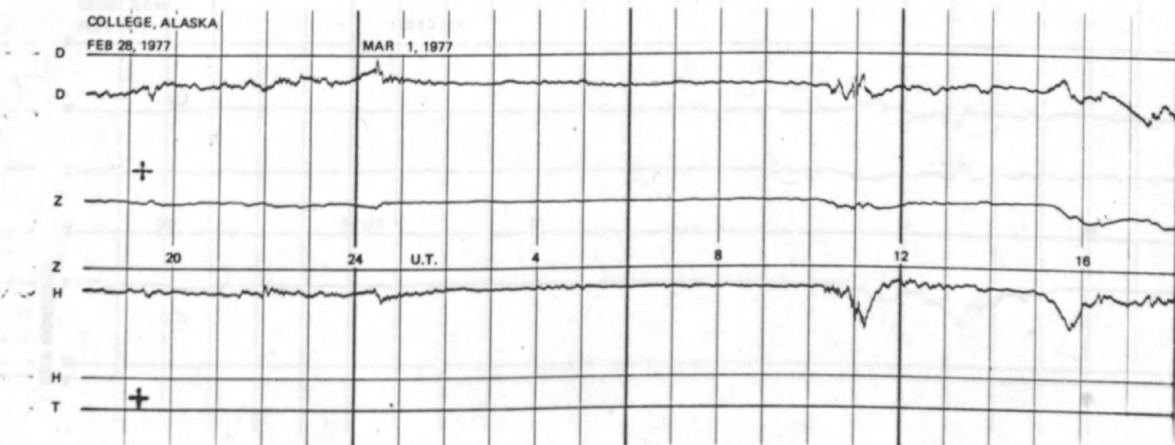
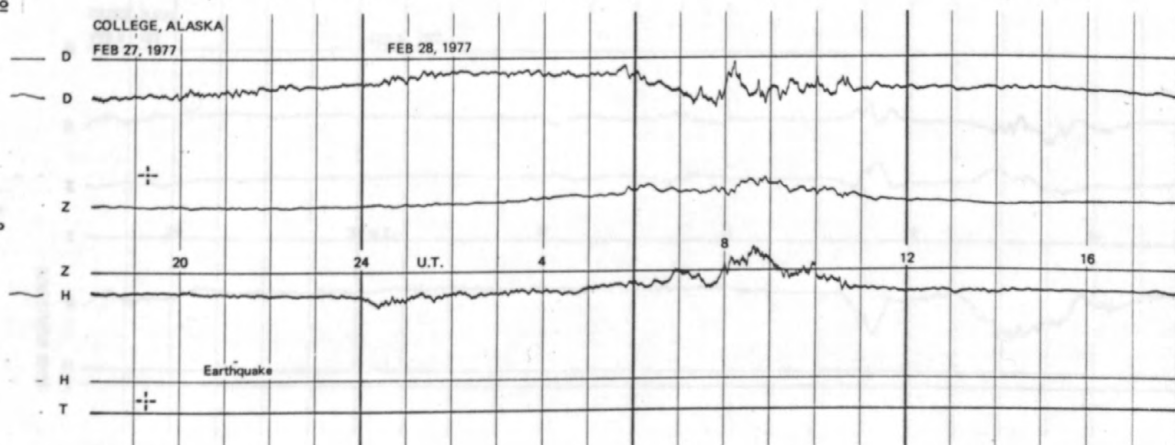
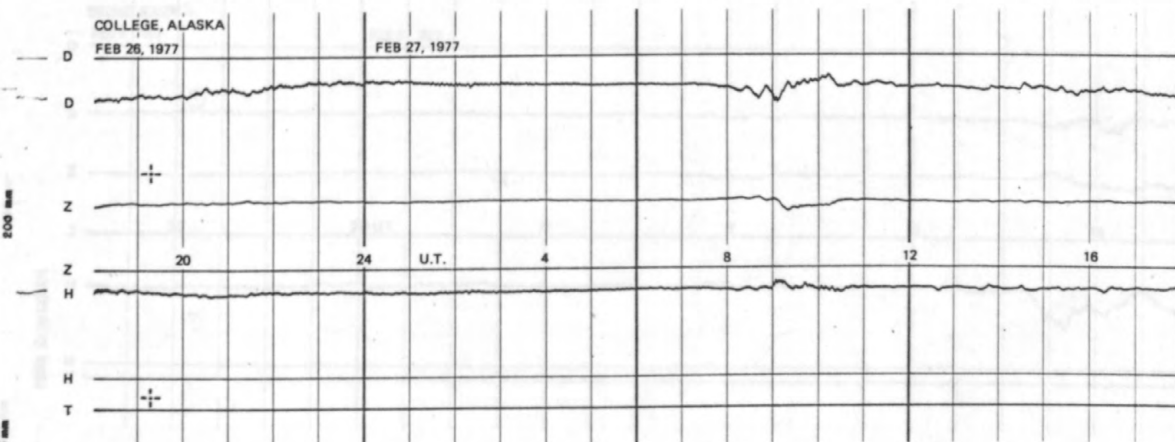
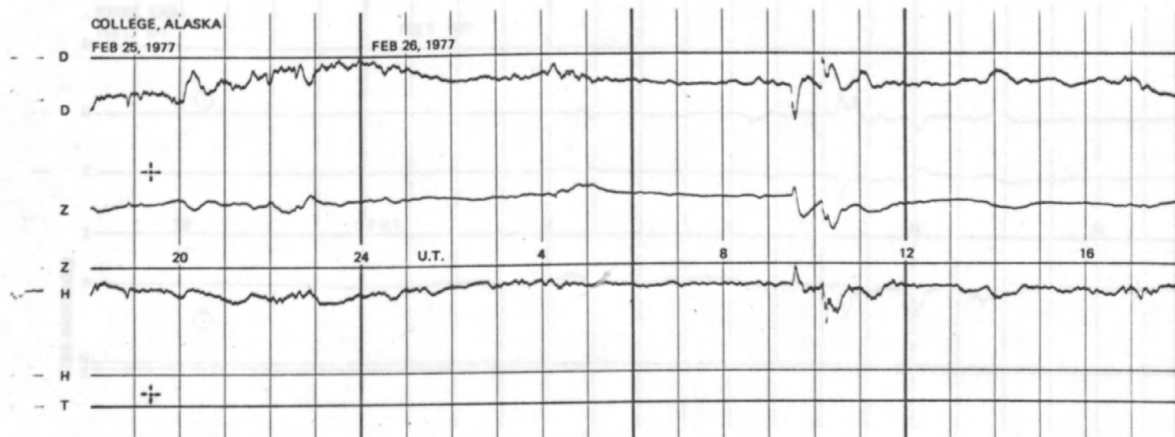
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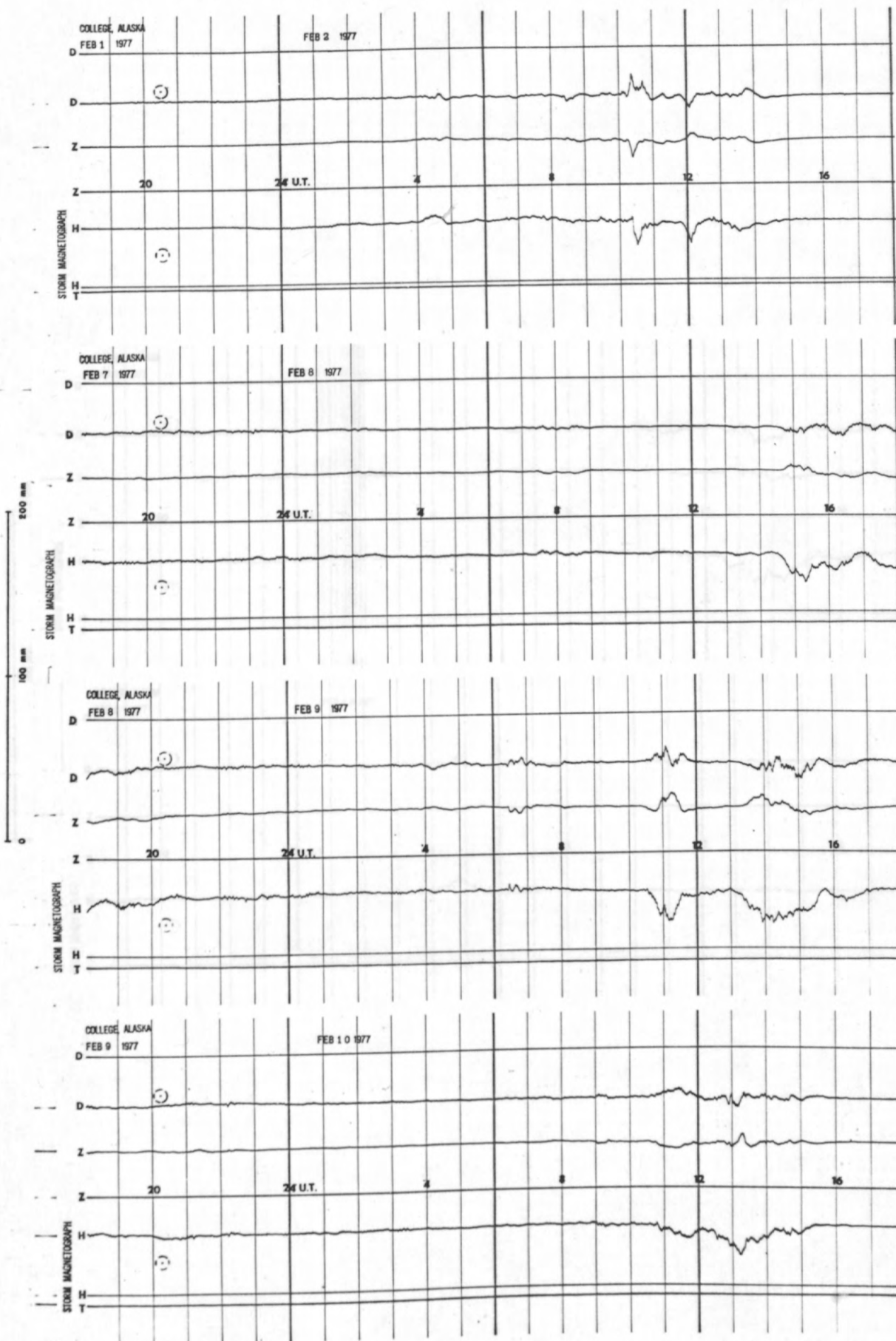
# NORMAL MAGNETOGRAMS



# NORMAL MAGNETOGRAMS



# STORM MAGNETOGRAMS



# STORM MAGNETOGRAMS

