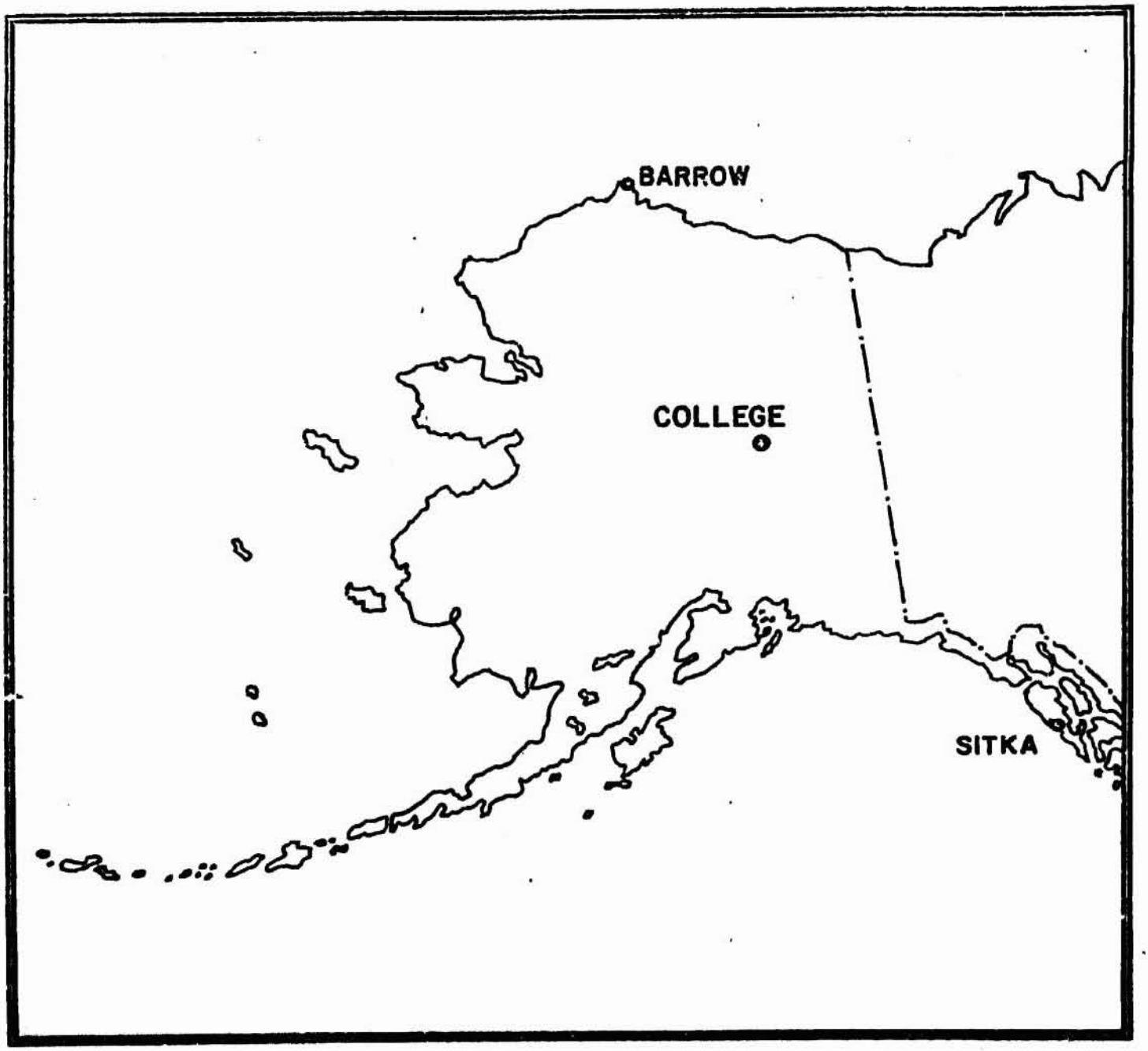
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

FEBRUARY 1980 **OPEN FILE REPORT** 80-300B



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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, E.A. SAUTER, 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 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:

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

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 to 11	0
11 to 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.

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: FEBRUARY 1980

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	1	1	2	2	3	1	2	2	14	07
2	2	1	3	3	3	1	0	0	13	07
3	0	0	1	0	1	0	0	0	02	01
4	0	0	1	1	2	0	0	0	04	02
5	0	0	0	2	2	2	0	0	06	03
6	0	1	4	6	6	7	6	2	32	52
7	3	3	3	3	5	1	3	2	23	17
8	2	2	3	6	5	5	2	2	27	27
9	1	2	2	5	5	5	3	0	23	22
10	0	0	0	0	0	0	0	0	00	00
11	0	0	0	1	0	0	0	0	01	00
12	0	0	0	1	1	0	0	0	02	01
13	0	0	0	1	0	0	0	0	01	00
14	0	2	3	5	4	6	3	1	24	24
15	1	2	4	3	3	2	4	5	24	19
16	4	5	6	6	6	5	3	2	37	48
17	1	1	1	0	2	2	1	1	09	04
18	1	0	3	4	4	2	2	2	18	12
19	3	4	2	1	0	0	0	0	10	07
20	1	0	0	3	2	2	0	0	08	04
21	0	1	0	2	0	0	0	1	04	02
22	0	0	0	0	0	1	0	1	02	01
23	0	0	1	3	2	3	3	0	12	07
24	1	1	2	4	5	5	0	0	18	17
25	1	0	0	1	2	3	3	3	13	07
26	2	2	1	3	4	4	2	1	19	12
27	1	2	3	5	7	3	2	2	25	30
28	2	2	3	6	4	1	1	2	21	19
29	2	1	1	2	2	1	0	0	09	04
30										
31										

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

d	h	m

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

BEGIN d	BEGIN h	BEGIN m	END d	END h

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.81		(γ/mm)
LOWER LIMIT FOR K = 9.....	2360	2510		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

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

NOAA FORM 76-100 SUPERSEDES C&GS FORM 818

★ U.S. GOVERNMENT PRINTING OFFICE: 1973-76

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: FEBRUARY

YEAR: 1980

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
02	19XX	pc4	
06	0320	ssc*	
14	0308	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. 4

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

FEBRUARY 1980

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	0320	s.c.*	+11	+37	+15	06	6	7	405	1440	1090	06	22
		14	0308	s.c.*	-8	+47	-12	14	6	6	108	790	530	14	23
		15	19XX	..	..	..	..	16	3, 4, 5	6	193	1430	820	16	22

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: FEBRUARY 1980

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 2-1-80	2400 U.T., 2-29-80	1.0/mm	3.7γ/mm	27° 47.2 E
H	0000 U.T., 2-1-80	2400 U.T., 2-10-80	7.8γ/mm		12751γ
	0000 U.T., 2-11-80	2400 U.T., 2-18-80	"		12759γ
	0000 U.T., 2-19-80	2400 U.T., 2-29-80	"		12753γ
Z	0000 U.T., 2-1-80	2400 U.T., 2-10-80	7.3γ/mm		55170γ
	0000 U.T., 2-11-80	2400 U.T., 2-29-80	"		55167γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 2-1-80	2400 U.T., 2-29-80	7.8/mm	29.7γ/mm	23° 50.2 E
H	0000 U.T., 2-1-80	2400 U.T., 2-29-80	44.0γ/mm		11508γ
Z	0000 U.T., 2-1-80	2400 U.T., 2-29-80	48.5γ/mm		54038γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 09.8 E	13019γ	55379γ

* OBTAINED FROM THE QUIETEST DAYS DURING MONTH.

DAYS USED: FEB 3, 4, 5, 10, 11, 12, 13, 17, 21, 22

ESSA Form 76-105
FC-523

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

OBSV.	YEAR	MONTH	ELEMENT
CO	80	FEB	D

Values are in scales of gam, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150W 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	Mgm S	Elem 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	196	178	174	175	195	208	192	192	208	218	224	220	01	221	238	230	227	238	251	259	322	285	261	248	202	5362
			02	174	178	180	168	170	177	203	184	297	220	234	250	02	239	293	218	212	222	248	272	299	290	279	257	228	5492
			03	207	191	196	199	191	189	208	210	216	219	221	238	03	229	219	210	209	209	230	259	286	297	289	274	229	5425
			04	198	190	189	196	200	196	198	202	219	239	226	236	04	227	228	220	219	226	237	259	277	277	241	245	221	5389
			05	197	189	189	198	207	209	217	216	214	264	268	238	05	266	278	305	277	231	245	270	274	267	259	244	215	5737
			06	197	195	197	198	190	200	199	135	111	159	87	267*	06	290*	457*	654*	195*	489*	219*	386*	433*	192	181	215	199	6245
			07	200	202	207	197	198	150	169	170	212	220	200	195	07	263	218	230	228	228	228	220	161	221	230	231	204	4982
			08	207	199	204	160	158	132	170	169	171	147	211	290*	08	282*	568*	393*	518	249	258	242	253	257	251	227	236	5952
			09	220	215	194	196	199	177	187	218	246	280	215	334	09	396	504	441	306	245	181	215	223	251	258	252	238	6191
			10	228	206	203	200	187	186	220	202	212	220	222	222	10	222	223	218	218	226	233	258	269	278	275	269	249	5446
			11	227	207	297	198	195	199	199	209	220	226	217	249	11	219	217	208	210	219	229	252	280	288	288	278	258	5589
			12	238	210	200	200	201	202	202	209	225	234	231	221	12	220	227	221	208	218	228	252	280	299	287	262	238	5513
			13	216	202	193	198	200	202	207	209	212	218	233	232	13	219	222	218	222	228	245	269	285	281	263	250	238	5462
			14	214	192	188	163	143	182	195	215	200	387	202	178	14	321	389	290	587*	499*	268	207	213	211	255	231	220	6150
			15	208	194	191	189	167	140	171	181	89	179	184	159	15	251	271	264	263	259	268	293	340*	289	103*	212	109	4974
			16	181	184	208	219	224	56*	-6*	15*	29	190*	238	357*	16	317*	515*	309*	277*	138	199	229	183	157	230	251	249	4949
			17	240	238	228	221	211	208	210	209	213	211	211	219	17	221	231	229	232	241	261	271	270	261	251	248	240	5575
			18	210	181	169	189	200	211	209	191	168	226	238	291	18	321	289	219	200	260	281	228	163	173	158	187	189	5151
			19	167	152	161	151	141	201	204	251	211	201	212	220	19	220	221	218	229	231	241	258	258	251	239	229	212	5079
			20	199	188	181	189	202	204	211	214	217	221	346	268	20	241	228	220	250	257	238	263	270	278	263	243	212	5603
			21	184	164	153	169	182	205	214	218	218	215	200	222	21	221	222	226	227	232	248	261	276	281	258	209	207	5212
			22	210	200	195	198	200	203	209	209	211	211	220	220	22	229	222	214	190	216	250	264	249	250	245	229	210	5254
			23	199	190	199	190	200	204	207	207	188	150	208	216	23	218	240	310	335	429	369	260	186	209	147	146	168	5375
			24	159	150	163	167	180	205	184	208	210	209	216	209	24	248	239	250	218	250	266	280	289	279	258	233	211	5310
			25	199	190	185	189	199	203	208	200	198	210	211	227	25	242	233	250	350	319	322	350	317	280	269	190	172	5743
			26	188	151	159	180	189	194	199	195	192	190	218	260	26	297	348	320	244	296	250	287	211	217	237	219	210	5451
			27	200	186	188	171	147	180	196	179	131*	108*	256	418	27	591*	440*	171*	221	278	251	267	272	270	218	195	188	5724
			28	170	157	169	161	148	190	182	171	238	239	217	251	28	224	212	227	233	238	257	252	259	261	194	179	177	5006
			29	174	162	149	180	199	189	210	204	212	221	169	197	29	238	210	208	229	248	258	249	268	261	234	241	201	5111
			30													30													
			31													31													

SCALED BY: SPT, PEF, JEP
CHECKED BY: JEP, SPT, PEF, LAS
SENT TO/VERIFIED BY: JEP
REMARKS:

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 all absent for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM: 158452
MONTHLY MEAN: 228
DATES WITH GAPS:

NOAA FORM 76-105

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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

OBSY.	YEAR	MONTH	ELEMENT
CO	80	FEB	H

Values are in tenths of nm., and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150WM.T.) is hour 11 of the same universal day. Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

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	321	342	342	349	359	371	387	380	363	358	350	363	01	325	365	356	352	352	343	345	312	317	326	334	322	6336
02	339	348	367	378	368	378	381	441	452	387	365	269	02	314	292	351	363	371	363	359	354	346	336	320	317	8559
03	321	335	347	355	362	366	367	369	359	351	349	348	03	349	347	357	359	361	367	365	355	339	319	304	304	8355
04	317	335	347	349	351	357	362	364	377	369	349	331	04	299	357	359	361	359	355	347	337	327	320	318	321	8268
05	328	337	348	352	355	357	358	357	349	349	339	341	05	329	317	307	344	359	368	367	357	339	328	315	316	8216
06	319	329	338	360	368	365	367	463	354	388	306	27	06	2	-196*	-372*	-78*	-615*	91*	227*	-175*	277	337	332	321	4135
07	329	331	329	351	338	392	455	451	399	327	314	248	07	49	300	348	344	339	331	246	247	309	295	336	309	7717
08	310	326	338	370	408	409	446	541	517	370	191	58*	08	-49	-111	-146*	31	130	298	355	349	353	350	330	303	6477
09	329	326	329	348	357	362	378	407	395	383	211	89	09	30	12	-200	94	227	231	232	328	359	342	329	308	6206
10	311	318	328	338	349	352	352	352	348	347	343	342	10	342	342	342	342	347	349	348	341	328	317	306	299	8083
11	300	309	319	328	334	339	347	341	338	337	335	337	11	344	338	337	345	349	348	350	343	330	318	301	299	7966
12	298	301	316	324	329	332	338	338	342	325	339	338	12	329	319	345	348	348	350	348	339	329	313	304	305	7897
13	308	312	320	327	330	333	338	340	340	339	335	342	13	349	349	355	356	359	362	360	349	336	323	317	311	8090
14	316	321	323	340	344	341	362	369	348	108	29	147	14	89	54	176	-181*	-272*	108	409	347	353	337	329	319	5406
15	331	340	321	321	333	361	383	459	517	486	399	407	15	333	331	357	341	339	349	344	313	149	10	216	414	8154
16	334	351	461	677	511	412	336	-56*	231	-402*	74	-119*	16	-187*	-204*	-28*	-28*	255	260	288	233	244	339	349	330	4661
17	317	316	311	314	319	324	331	321	321	321	327	330	17	330	309	301	307	336	330	329	327	327	319	317	327	7711
18	299	299	329	319	327	331	329	361	341	264	219	161	18	69	163	306	349	312	300	213	209	269	300	307	320	6696
19	324	361	404	414	481	449	341	351	347	339	333	331	19	331	329	321	336	349	341	335	321	317	311	311	311	8388
20	302	307	329	331	339	341	343	342	344	360	356	332	20	326	300	279	305	361	377	357	338	322	312	307	310	7918
21	313	322	331	338	352	356	358	358	356	371	370	352	21	354	357	358	362	362	362	360	349	340	323	319	322	8345
22	327	335	343	351	351	356	353	354	351	351	352	354	22	360	363	362	350	339	367	361	360	350	350	337	330	8407
23	339	342	341	354	355	356	360	364	374	392	378	419	23	361	340	327	320	280	290	271	301	339	326	311	311	8151
24	321	324	343	361	363	369	405	360	341	345	348	262	24	272	341	226	102	381	370	352	340	326	312	306	310	7780
25	320	329	336	346	349	350	350	357	354	349	350	349	25	320	326	331	250	322	310	201	240	277	281	293	330	7638
26	290	335	341	331	355	361	360	369	370	370	373	257	26	219	141	102	227	333	388	317	339	329	321	311	311	7450
	324	330	331	351	372	381	362	376	406	247	224	-19*	27	-171*	-476*	-6	351	324	299	304	311	319	271	320	334	5865
28	330	336	351	379	396	381	361	384	419	381	16	-92*	28	301	373	353	347	335	323	323	329	310	303	303	319	7561
29	321	307	345	351	367	350	340	353	359	374	381	366	29	318	314	335	348	326	320	311	323	317	319	303	291	8039
30													30													
31													31													

SCALED BY	SPT, PEF, JEP
CHECKED BY	JEP, SPT, PEF, EAS
BASE LINE 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 Mag'h., converted to Normal Mag'h.

MONTHLY SUM	216475
MONTHLY MEAN	311
DATES WITH GAPS:	

8

NOAA FORM 76-108

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

Values are in tenths of mm, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (120W 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. CO | YEAR 80 | MONTH FEB | ELEMENT Z

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	288	292	293	295	298	306	295	333	312	301	297	288	01	234	278	277	281	283	287	283	257	228	232	268	285	6791
02	301	288	293	298	315	338	321	329	310	304	315	248	02	236	234	242	272	297	300	299	299	298	298	298	297	7030
03	297	290	289	295	299	299	303	298	298	299	298	289	03	282	269	267	270	277	286	297	302	300	301	298	297	7000
04	296	291	287	289	294	294	307	328	332	328	297	258	04	214	249	267	277	281	287	294	289	289	268	287	287	6910
05	283	282	285	282	282	262	281	284	286	284	252	261	05	245	229	192	176	220	259	272	281	284	268	290	286	6370
06	288	288	288	288	286	297	299	276	149	226	298	503	06	361	459*	585*	319*	372*	-107*	165*	99*	111	237	268	264	6639
07	302	313	310	308	316	313	298	298	309	319	298	275	07	178	197	278	295	300	306	285	215	273	285	300	309	6880
08	319	316	320	343	380	399	401	355	276	270	313	431*	08	385*	385*	246	91	230	194	226	259	280	305	320	317	7361
09	313	314	317	315	310	306	348	347	332	331	276	273	09	254	120	124	-17	69	128	174	222	277	307	312	308	6060
10	300	300	299	298	300	310	320	303	302	300	296	293	10	293	293	292	290	296	300	302	307	308	305	303	301	7211
11	301	299	298	297	297	298	296	301	307	309	279	254	11	269	279	277	277	287	294	297	299	300	300	301	298	7014
12	299	298	298	296	296	298	298	298	300	287	291	287	12	269	235	259	287	292	297	300	300	306	305	303	302	7001
13	300	299	297	296	295	295	293	292	292	290	272	269	13	284	286	287	288	289	292	299	299	294	288	288	289	6973
14	288	290	290	284	300	320	344	330	281	282	293	370	14	411	401	370	534*	368*	46	186	241	260	278	291	303	7361
15	302	311	316	312	313	329	353	334	236	328	307	309	15	329	284	309	299	291	298	294	292	296	209	271	341	7263
16	330	320	269	111	-29	-87	100	301*	274	554*	478	647*	16	754*	614*	514*	259	209	272	300	300	276	314	324	325	7733
17	320	319	311	313	310	309	307	308	304	301	299	300	17	300	297	289	271	297	309	311	309	313	319	319	310	7345
18	318	320	324	334	328	320	319	316	272	280	297	318	18	261	140	191	251	270	249	200	149	171	247	299	308	6482
19	320	320	323	331	364	354	333	340	305	306	307	300	19	299	289	271	279	300	301	302	300	300	300	310	318	7472
20	317	317	318	321	313	307	307	306	300	310	249	249	20	251	260	257	251	254	293	303	302	307	306	304	307	7009
21	309	307	309	312	306	300	298	297	292	298	310	302	21	295	292	288	287	287	288	288	289	289	286	281	290	7100
22	290	289	287	287	287	262	283	282	262	283	282	279	22	277	272	275	262	240	265	281	280	288	290	290	290	6723
23	290	288	289	282	286	287	287	265	287	303	320	310	23	310	299	239	218	166	159	140	140	167	211	252	290	6105
24	299	309	311	320	331	330	329	313	310	309	300	245	24	213	260	256	166	230	294	300	300	300	301	300	301	6921
25	302	303	297	292	291	290	290	290	300	308	300	264	25	262	247	240	216	230	256	152	81	129	179	220	271	6030
26	300	290	301	314	303	304	305	310	318	313	318	302	26	296	317	298	195	240	282	297	267	294	300	310	309	7089
27	300	299	299	299	298	331	323	308	258	189	256	379	27	389	284*	87	213	277	287	276	230	240	257	277	289	6645
28	301	303	314	319	331	336	311	329	328	287	350	351	28	226	279	297	299	298	298	297	297	300	293	308	319	7371
29	320	315	317	332	330	314	311	307	311	310	327	320	29	294	250	261	289	290	284	274	279	278	282	304	300	7199
30													30													
31													31													

Scaled by: SPT, PEF, JEP
Checked by: JEP, SPT, PEF, EAS
Means re-viewed by: JEP
Punched by:

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

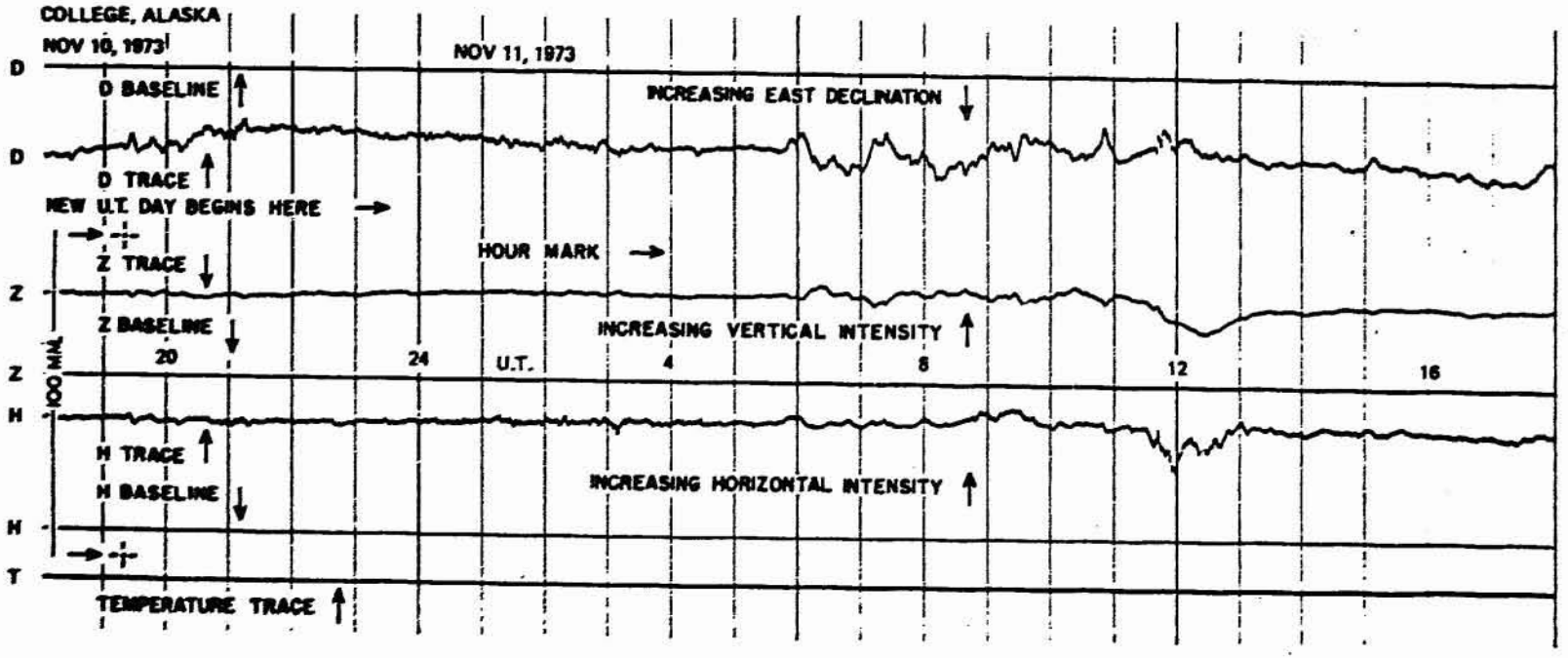
( ) Interpolated
[ ] Significant portion of hour interpolated.
☐ No record; or no values available because of faulty record.
[ ] Scaling uncertain because of magnetic storm.
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.
* Derived from Storm Mag.,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

Monthly sum: 201066
Monthly mean: 289
Dates with spikes:

U.S. G.P.O. 1973-769-574/932 REG.

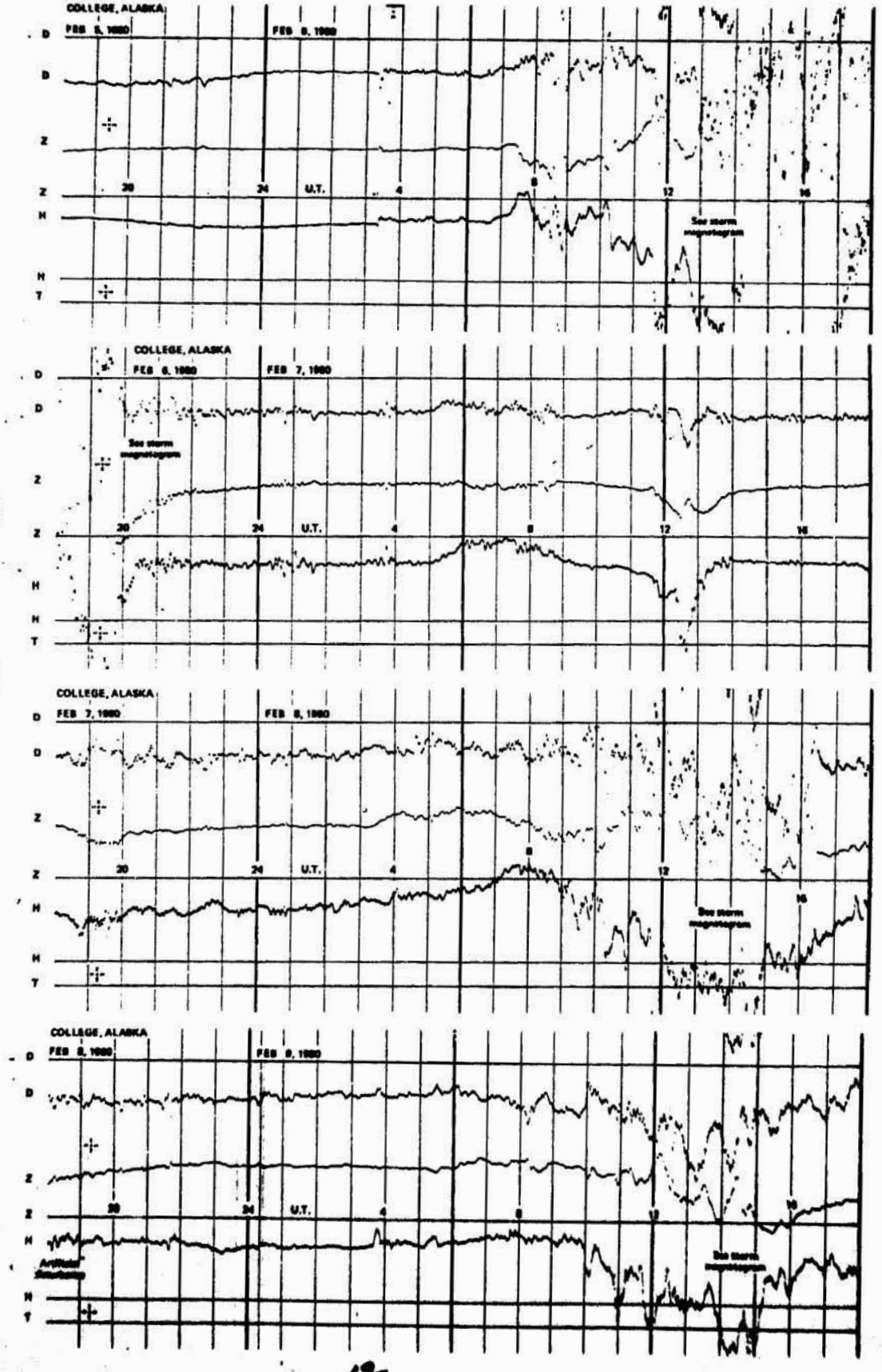
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

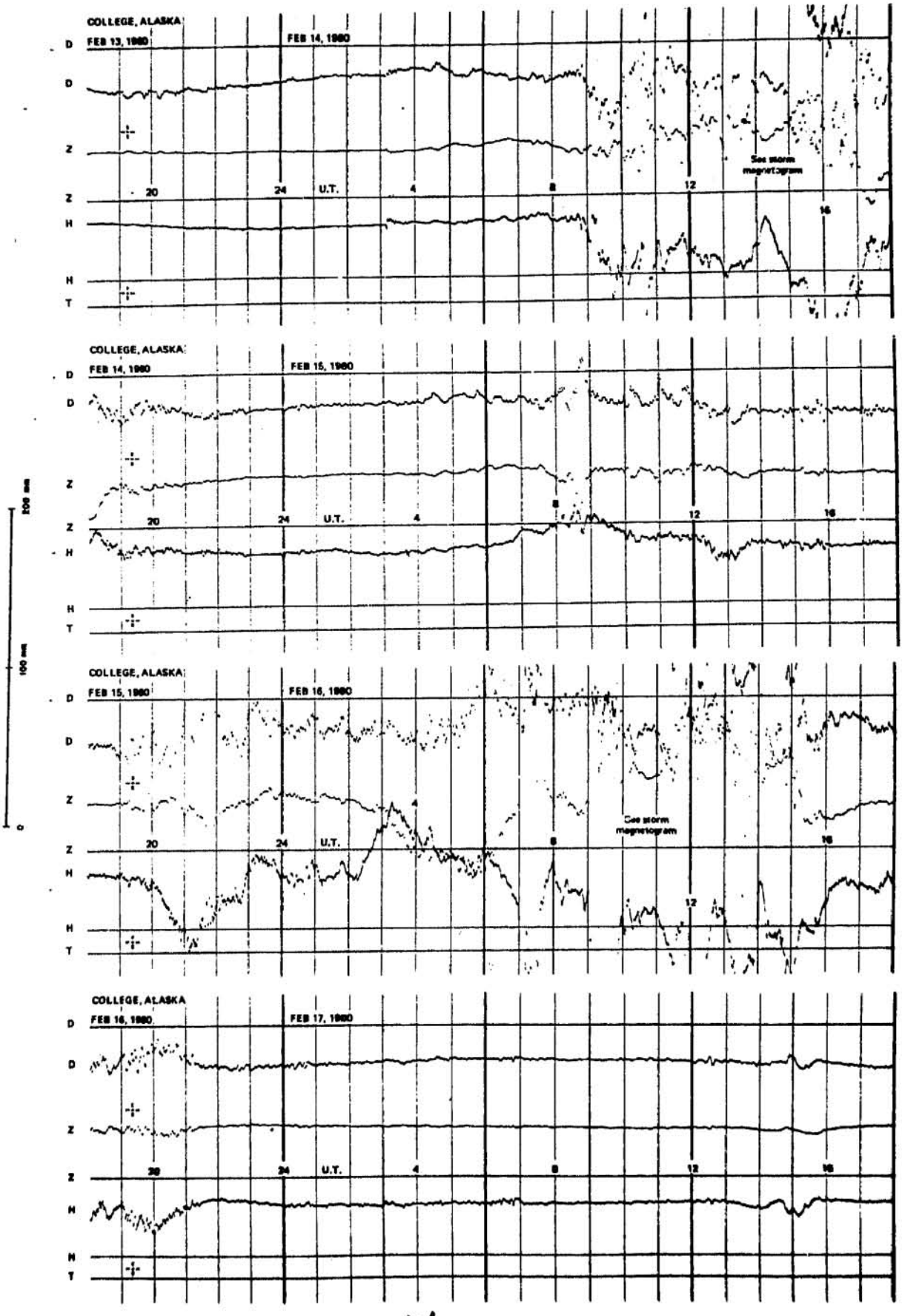


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

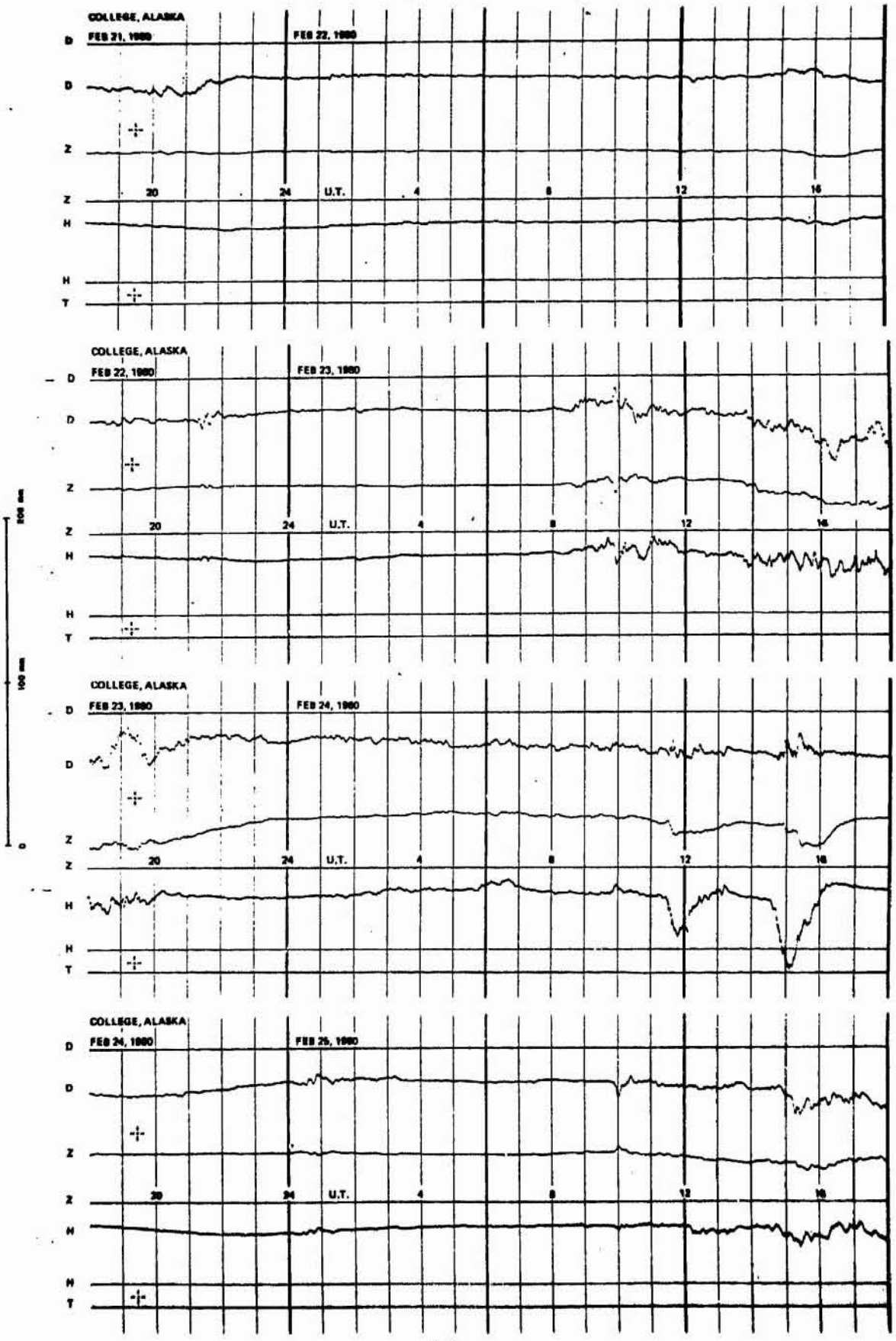
NORMAL MAGNETOGRAMS



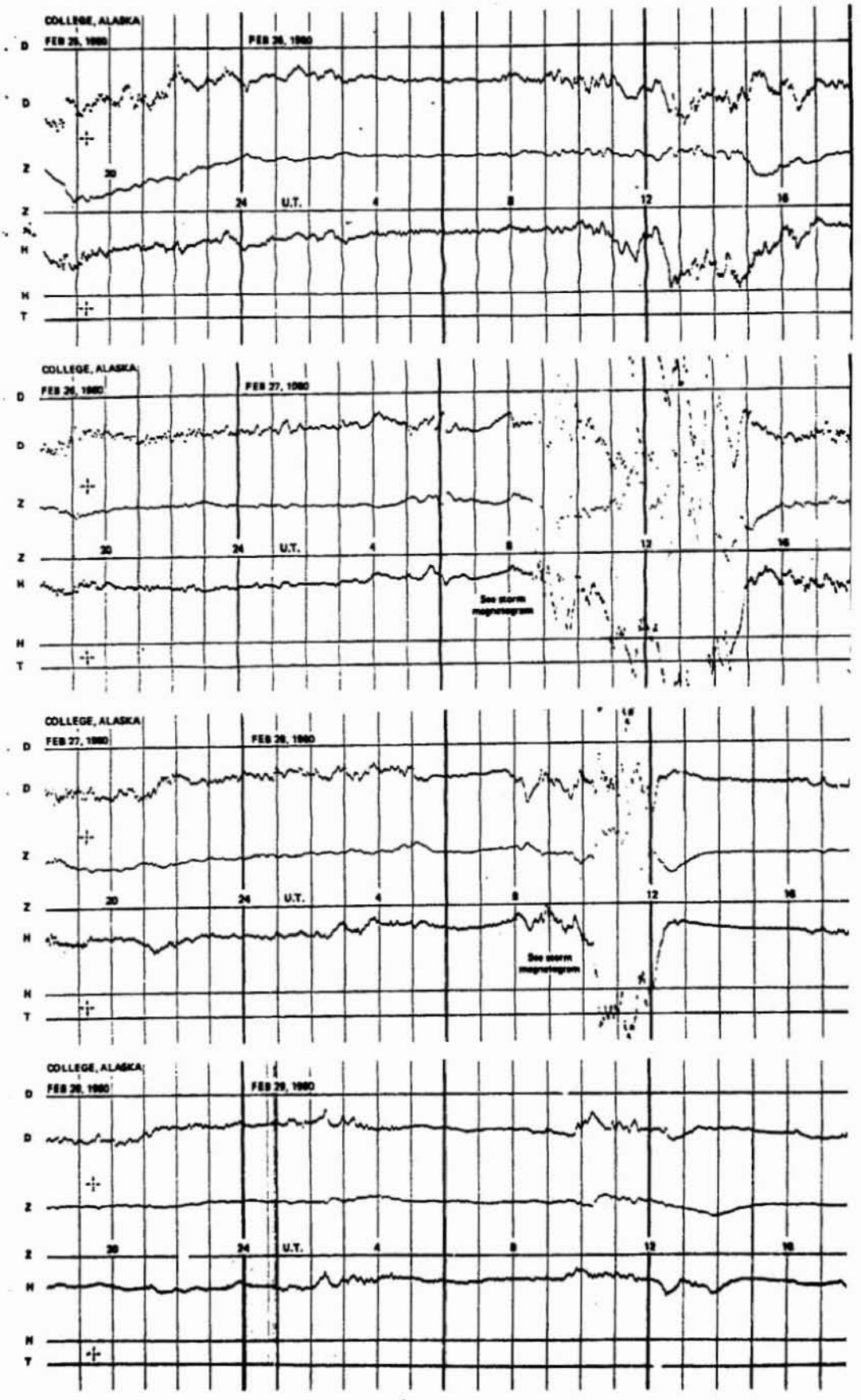
NORMAL MAGNETOGRAMS



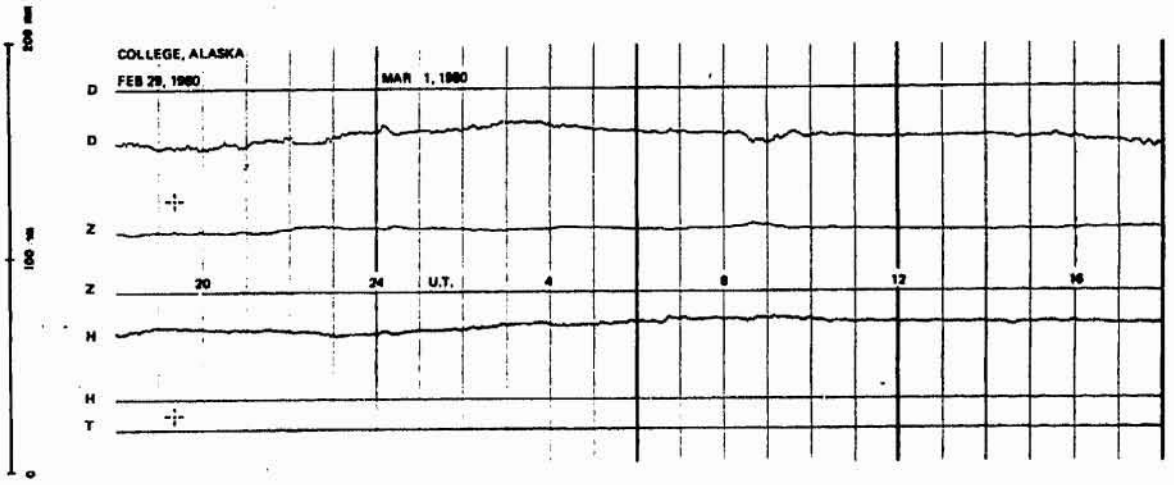
NORMAL MAGNETOGRAMS



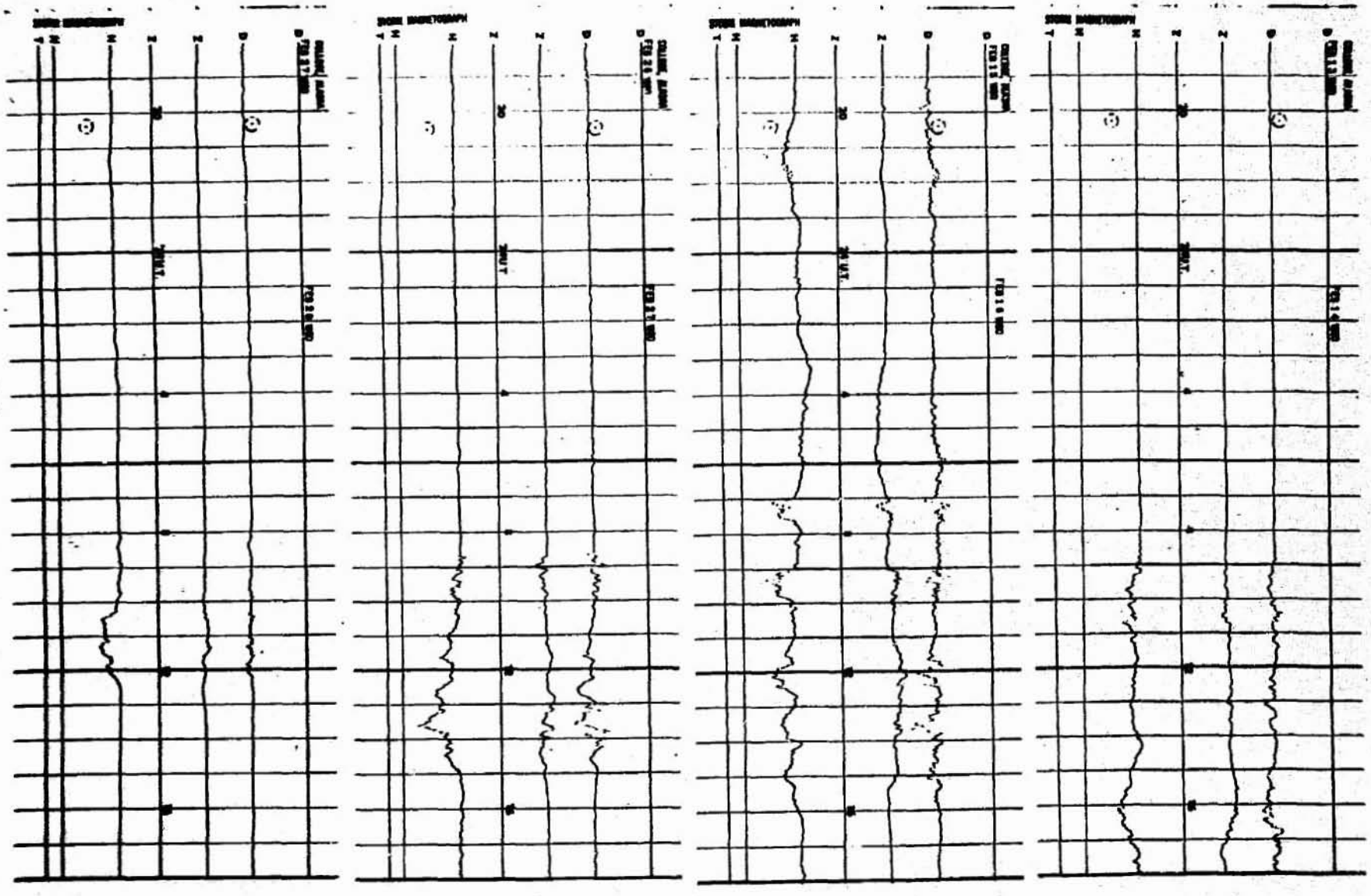
NORMAL MAGNETOGRAMS



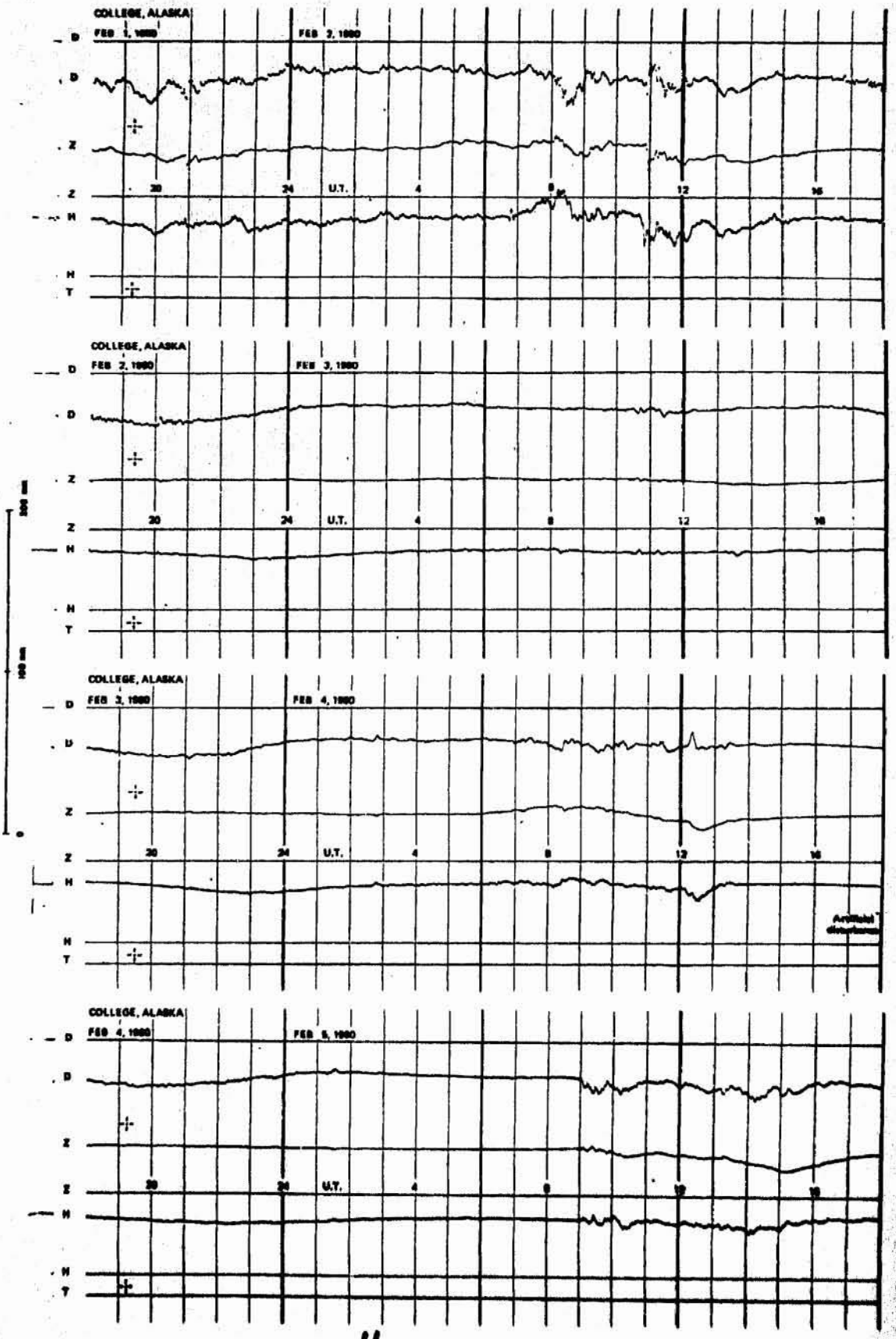
NORMAL MAGNETOGRAMS



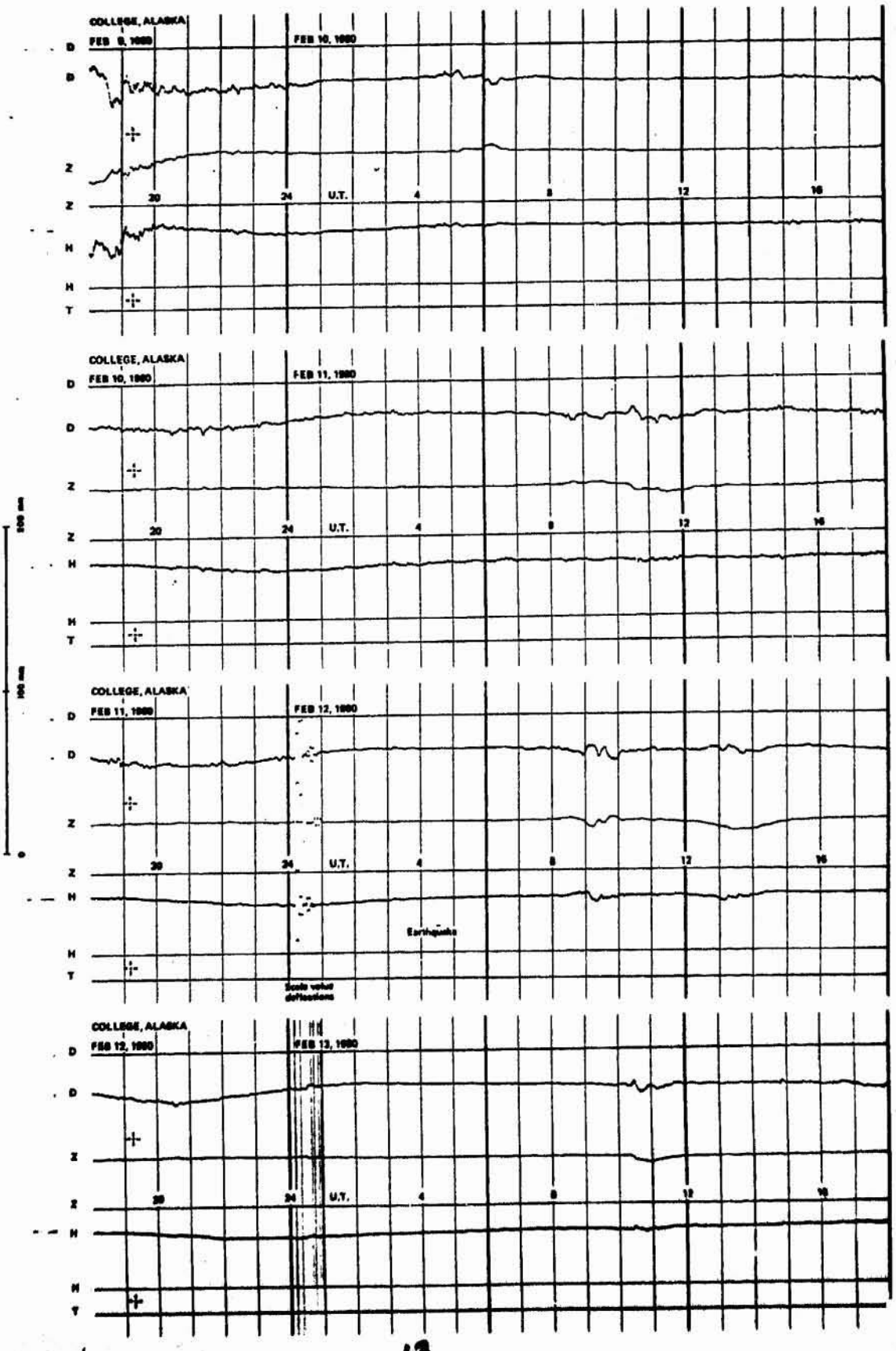
STORM MAGNETOGRAMS



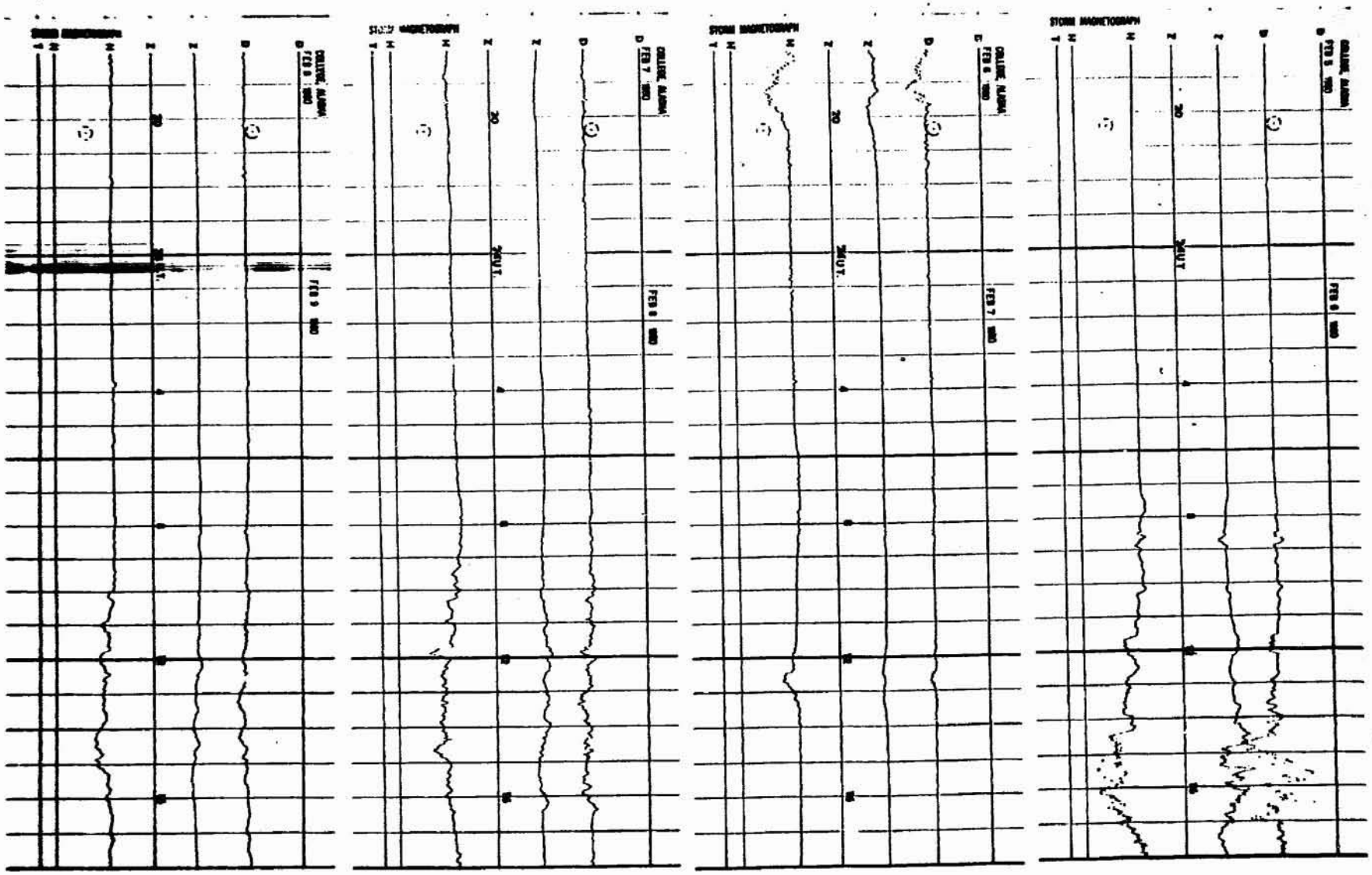
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



NORMAL MAGNETOGRAMS