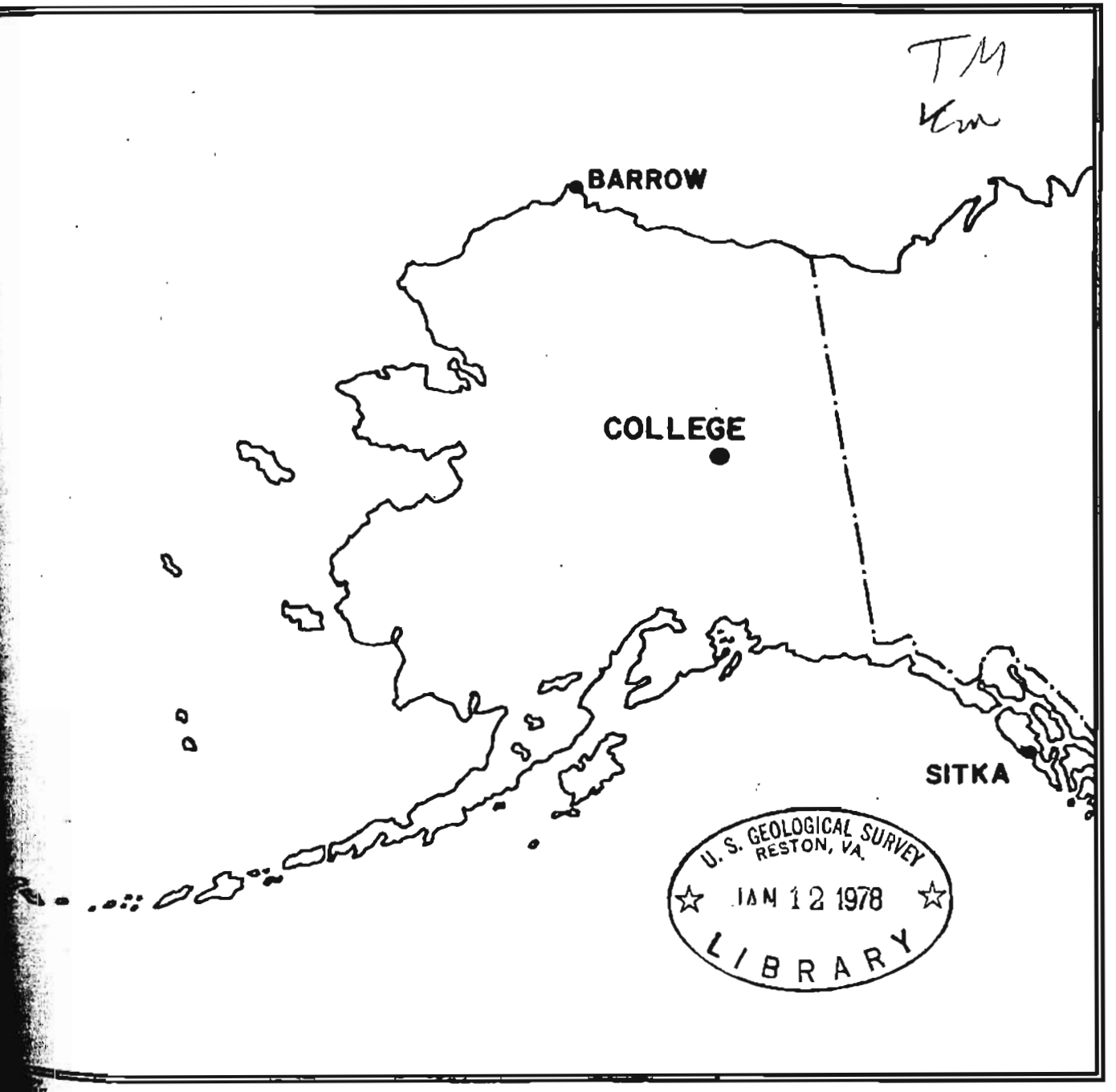
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

[Reports - Open file series]

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

NOVEMBER 1977 OPEN FILE REPORT 77-300K



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Normal Magnetograms

Storm Magnetograms(When Normal is too disturbed to read)

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, 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 10 γ 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.

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: NOVEMBER 1977

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	0	0	1	1	0	0	1	1	04	02
2	1	1	1	0	1	0	1	1	06	02
3	0	1	2	2	1	0	0	0	06	03
4	0	0	0	1	3	4	2	2	12	07
5	2	2	3	4	1	2	0	1	15	09
6	1	1	2	4	5	3	1	0	17	13
7	0	1	3	4	4	1	0	0	13	09
8	0	0	3	4	2	0	0	0	09	06
9	0	0	1	1	1	1	0	0	04	02
10	0	0	2	3	5	5	1	1	17	16
11	1	0	0	1	1	1	1	0	05	02
12	2	4	3	5	4	4	2	2	26	21
13	3	3	4	6	5	5	2	2	30	31
14	2	4	6	7	6	6	5	4	40	61
15	4	3	2	7	5	4	2	2	29	35
16	3	3	5	6	6	2	2	1	28	32
17	2	2	1	4	1	0	0	2	12	07
18	1	1	2	2	3	3	0	1	13	07
19	0	1	1	3	1	1	1	2	10	05
20	1	0	0	2	1	0	0	0	04	02
21	1	1	0	0	1	0	0	0	03	01
22	0	0	0	1	0	0	0	0	01	00
23	0	0	0	0	0	0	0	0	00	00
24	0	0	1	2	0	0	0	0	03	01
25	0	0	0	2	3	1	4	4	14	10
26	2	2	3	6	5	3	1	2	24	23
27	2	2	3	3	3	1	1	1	16	09
28	1	1	3	3	1	1	0	0	10	05
29	0	0	0	3	2	2	1	1	09	05
30	2	2	4	5	4	1	1	1	20	16
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	h	m	END d	h	m

K SCALE USED:

	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.76	7.82		(γ/mm)
LOWER LIMIT FOR K = 9	2570	2520		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

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

NOAA FORM 76-133 SUPERSEDES C&GS FORM 818

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-857

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: NOVEMBER

YEAR: 1977

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
01	18XX	pc3, pc4, pc5	
03	00XX	pc3, pc4, pc5	
03	21XX	pc3, pc4	
04	21XX	pg	
07	14XX	pc4	
10	16XX	pg	
20	10XX	pi2	
21	00XX	pc5	
21	13XX	pi2	
23	12XX	pi2	
26	1713	si	
29	14XX	pi2	With small bay.

IDENTIFIED BY: JEP

VERIFIED BY: JBT

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

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

NOVEMBER 1977

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	12	03XX	..	..	..	..	14	4	7	332	1600	1030	16	15
								15	4	7					

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: NOVEMBER 1977

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 11-1-77	2400 U.T., 11-30-77	1.0'/mm	3.8γ/mm	27° 47.2 E
H	0000 U.T., 11-1-77	2400 U.T., 11-8-77	7.8 γ/mm		12760 γ
	0000 U.T., 11-9-77	2400 U.T., 11-30-77	"		12751 γ
Z	0000 U.T., 11-1-77	2400 U.T., 11-30-77	7.7 γ/mm		55136 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 11-1-77	2400 U.T., 11-30-77	7.9'/mm	29.8γ/mm	24° 20.5 E
H	0000 U.T., 11-1-77	2400 U.T., 11-8-77	44.1 γ/mm		11525 γ
	0000 U.T., 11-9-77	2400 U.T., 11-30-77	"		11500 γ
Z	0000 U.T., 11-1-77	2400 U.T., 11-30-77	48.9 γ/mm		54008 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D	0000 U.T., 11-1-77	2400 U.T., 11-30-77	0.3'/mm	1.0 γ/mm
H	0000 U.T., 11-1-77	2400 U.T., 11-30-77	1.0 γ/mm	
Z	0000 U.T., 11-1-77	2400 U.T., 11-30-77	2.4 γ/mm	

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 17.7 E	13049 γ	55373 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: NOV 1, 2, 3, 9, 11, 20, 21, 22, 23, 24

Form C&GS-554g
10-57

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
GEOMAGNETISM DIVISION

OBSV.	YEAR	MONTH	ELEMENT
CO	77	NOV.	D

Values are in tenths of gam, and are averages for successive periods of one hour beginning at midnight. (Hour 01 of local day (1500 G.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 m s	Tau 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	291	291	293	292	298	300	293	294	276	288	297	319	01	310	323	328	322	329	333	338	339	327	311	394	283	7457
			02	281	284	297	308	306	304	313	309	314	301	317	324	02	322	329	330	331	340	341	353	352	312	316	297	272	7543
			03	284	291	293	294	295	288	292	293	289	318	296	301	03	308	311	322	333	347	356	344	332	321	307	298	299	7412
			04	299	293	291	296	299	301	303	302	301	300	304	298	04	333	301	307	374	383	271	291	291	226	203	261	259	7087
			05	251	236	219	195	211	301	293	303	327	386	321	330	05	331	319	327	338	359	337	347	308	284	282	281	287	7169
			06	289	290	301	293	299	290	294	331	296	310	401	391	06	341	319	397	329	371	368	347	324	298	274	280	288	7741
			07	283	293	284	272	291	287	293	263	272	308	379	382	07	418	347	337	342	360	342	321	321	312	307	279	303	7605
			08	307	309	309	303	294	294	297	299	299	310	329	402	08	309	312	331	348	359	346	338	316	305	292	290	288	7693
			09	292	299	293	300	307	311	292	294	277	285	310	308	09	311	323	330	339	366	342	319	298	299	294	294	299	7988
			10	301	301	295	299	299	298	293	294	353	299	316	321	10	315	384	542	615	446	363	321	330	282	291	281	293	8132
			11	296	297	301	298	292	292	297	299	298	291	301	309	11	321	348	339	340	339	334	319	307	300	296	293	292	7399
			12	290	279	256	242	223	241	279	284	278	298	448	375	12	333	341	457	472	424	338	253	232	268	258	263	288	7420
			13	293	263	269	340	276	311	300	317	407	175*	358	409	13	564*	581	661	531	482	430	327	256	213	232	254	259	8508
			14	242	253	261	319	298	421	241	435	143*	-31*	213	516	14	363	444*	1454*	492*	402	407	319	200	125	151	230	243	8162
			15	232	266	292	281	284	364	341	314	293	183*	167*	265	15	321	504	423	397	334	359	297	276	287	254	264	263	7261
			16	263	272	292	321	303	281	217	322	301	247	286*	461*	16	175*	412	271	541	346	338	331	306	267	264	256	261	7154
			17	274	301	303	314	319	311	303	321	310	284	223	304	17	310	309	319	323	326	331	331	330	327	321	261	250	7305
			18	270	291	291	293	310	291	291	316	292	340	292	311	18	306	330	349	313	391	351	321	276	261	260	270	278	7294
			19	285	285	284	305	328	320	291	310	322	306	316	330	19	300	310	323	320	318	309	324	323	310	276	237	241	7273
			20	259	280	265	279	297	300	297	300	300	293	302	318	20	340	338	328	323	317	320	319	316	299	281	281	281	7233
			21	290	290	300	306	305	309	304	305	298	299	306	309	21	318	316	312	326	315	319	315	304	306	293	296	291	7337
			22	296	298	300	304	305	300	298	300	300	332	306	315	22	320	318	326	329	332	327	320	319	310	301	301	300	7447
			23	294	291	294	300	302	301	300	300	300	300	301	306	23	320	314	311	320	323	327	322	314	312	306	307	298	7363
			24	291	291	297	304	306	307	303	303	299	273	298	300	24	300	310	319	315	331	320	321	317	301	297	294	289	7286
			25	287	285	292	299	299	300	301	300	297	310	276	291	25	300	391	409	397	381	357	359	131	180	159	296	272	7169
			26	201	221	272	311	370	303	306	347	403	333	347	394*	26	348	291	322	337	319	297	370	336	299	287	281	272	7587
			27	282	280	310	312	301	272	287	308	310	312	321	315	27	310	321	327	327	331	334	326	311	297	290	276	277	7337
			28	289	301	295	294	291	300	283	294	308	267	268	332	28	311	312	313	311	329	323	322	311	310	310	298	284	7256
			29	290	297	300	277	287	300	301	311	311	318	260	291	29	321	288	331	300	340	341	339	317	252	200	212	250	7034
			30	281	261	240	250	287	291	240	316	289	271	357	347	30	387	298	346	350	376	368	349	323	300	286	281	284	7378
			31													31													

SCALED BY	SPT, JEP
CHECKED BY	HKR, JEP
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

(source) 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 Magn., converted to Normal Magn.

{ } Scaling uncertain because of magnetic storm.

<> Record all short for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM	223430
MONTHLY MEAN	310
DATES WITH GAPS:	

FORM C&GS-####
10-####

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
GEOMAGNETISM DIVISION

OBSY.	YEAR	MONTH	ELEMENT
CO	77	NOV.	H

Values are in tenths of min. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (1546 M.T.) is hour 11 of the Entire universal day.
Shearage corrections have been applied. Negative values are scaled, with minus signs shown.

C	Q of S	Fro 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	363	362	363	369	370	370	380	386	404	391	374	376	01	376	371	370	373	373	371	369	361	360	359	360	361	8912
			02	359	360	370	378	377	373	373	376	379	378	375	371	02	367	359	376	367	363	356	370	367	359	359	361	362	8835
			03	362	363	369	377	382	376	373	382	370	346	381	376	03	369	364	379	372	372	364	361	369	369	361	360	361	8858
			04	364	371	376	380	379	377	377	378	377	377	379	377	04	353	306	369	361	224	260	270	320	336	340	362	380	8393
			05	371	379	429	465	476	420	420	436	350	194	179	319	05	363	379	363	340	324	383	372	363	364	370	379	367	8805
			06	360	379	366	370	366	368	382	412	390	353	201	253	06	176	26*	310	229	360	386	380	372	371	373	378	380	7941
			07	380	373	372	384	379	383	422	464	457	329	242	257	07	153	337	399	390	376	373	370	370	372	371	370	376	8499
			08	379	378	377	372	367	369	371	374	387	364	263	251	08	390	391	376	379	379	384	380	372	373	376	377	377	8806
			09	377	377	380	380	376	377	381	369	386	380	377	372	09	374	376	363	363	367	369	364	363	364	370	375	376	8976
			10	377	379	379	379	380	380	381	383	392	382	385	374	10	373	164	30	172	366	376	381	374	376	378	386	366	8313
			11	376	386	386	388	387	386	390	389	391	393	393	393	11	378	371	383	379	380	375	367	369	374	380	380	381	9175
			12	390	386	369	413	562	483	396	396	424	402	282	261	12	181	223	209	241	291	294	356	379	393	386	379	371	8461
			13	371	397	431	513	433	501	462	470	379	-169*	-158*	-62*	13	-79*	-136	-107	-39	93	291	369	380	390	392	396	391	5909
			14	376	386	404	470	593	493	490	453	244*	96*	203	-152*	14	-181	-424*	-565*	-5*	286	76	176	331	273	333	409	399	5124
			15	471	427	406	420	451	426	393	392	377	237*	-436*	140	15	206	-56	-153*	221	329	373	352	369	367	366	359	361	6798
			16	372	409	420	413	397	423	391	415	264	288	-158*	-153*	16	-181*	-115*	338	389	385	391	375	361	347	358	353	347	6829
			17	356	383	406	394	391	400	400	401	381	361	241	393	17	386	380	380	380	380	381	381	376	371	361	326	353	8962
			18	373	375	381	390	381	382	391	391	391	381	385	341	18	330	332	293	281	321	361	380	380	381	365	368	376	8730
			19	380	380	373	382	399	400	390	389	399	388	382	340	19	390	389	380	380	374	370	376	377	367	367	369	376	9047
			20	380	390	390	383	386	386	389	384	381	390	381	376	20	370	381	381	381	380	380	378	381	383	380	380	380	9173
			21	380	380	388	384	380	383	383	384	390	388	381	380	21	377	362	380	379	376	379	380	380	379	377	376	378	9124
			22	379	383	381	382	390	388	379	382	384	390	383	370	22	380	382	380	380	380	377	376	375	379	380	380	380	9132
			23	383	386	389	389	387	387	384	385	384	384	386	381	23	377	389	380	383	386	386	382	382	382	382	380	380	9213
			24	380	384	384	388	384	384	385	387	393	399	391	394	24	387	383	384	379	376	379	380	379	379	377	378	380	9209
			25	381	387	390	390	390	388	383	386	388	393	393	386	25	393	354	417	424	411	407	321	190	221	223	277	393	8686
			26	410	398	390	410	376	393	379	339	340	276	173	-206*	26	0	333	397	380	370	384	399	400	392	388	390	403	7914
			27	388	383	399	398	391	426	490	441	391	382	342	344	27	288	356	389	370	375	370	369	359	360	361	371	371	9114
			28	383	389	394	397	390	382	399	394	428	414	396	404	28	399	382	383	386	380	383	379	379	378	379	373	370	9341
			29	373	376	380	383	375	380	386	381	389	400	393	391	29	380	353	335	361	378	391	386	371	360	361	372	374	9029
			30	396	407	420	407	420	421	597	592	446	447	310	316	30	78	280	314	352	362	398	394	387	379	370	374	390	9257
			31													31													

SCALED BY	SPT, JEP
CHECKED BY	HKR, JEP
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[ ] Scaling uncertain because of magnetic storm.

☐ Significant portion of hour interpolated.

< > Record all sheet for part or all of hour; if value is given, curve was estimated for missing part.

☐ No record; or no values available because of faulty record.

* Derived from Storm Mgh., converted to Normal Mgh.

MONTHLY SUM	254765
MONTHLY MEAN	354
DATES WITH GAPS	

Form C&GS-0844
(10-71)

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
GEOMAGNETISM DIVISION

OBSV.	YEAR	MONTH	ELEMENT
CO	77	NOV.	Z

Values are in gamma of min. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day 1 (150°W M.T.) is hour 11 of the 83336 universal day.
Shrinkage corrections have been applied. Negative values are underlined with minus signs shown.

			DY	01	02	03	04	05	06	07	08	09	10	11	12	DY	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	328	327	328	321	320	320	320	332	330	333	333	329	01	324	320	313	314	317	321	319	320	318	318	316	317	7723
			02	317	318	314	326	329	328	330	326	320	328	321	319	02	317	306	306	315	310	300	282	290	293	316	321	320	7552
			03	321	320	319	318	319	321	337	336	310	240	298	310	03	307	295	307	310	310	310	301	302	306	308	310	310	7425
			04	311	311	313	311	311	311	310	309	308	311	309	297	04	272	248	249	286	221	187	127	142	199	230	283	297	6459
			05	316	337	344	377	417	416	379	352	306	288	226	231	05	242	280	287	271	223	261	293	292	291	299	309	315	7372
			06	318	324	326	321	322	321	334	351	332	326	310	238	06	299	191	187	199	231	276	291	298	304	306	311	316	7032
			07	320	321	327	318	360	357	373	328	290	316	343	333	07	307	233	294	327	320	302	305	304	310	314	317	320	7389
			08	319	320	320	321	323	325	326	321	293	290	279	286	08	267	314	315	307	299	290	293	301	307	311	313	316	7360
			09	316	315	315	315	319	321	319	328	326	319	306	288	09	293	303	294	273	274	276	280	289	298	306	311	313	7297
			10	313	310	310	309	306	306	307	321	336	293	280	276	10	290	302	240	151	167	241	275	290	296	299	300	311	6829
			11	310	309	308	306	305	309	313	313	316	314	313	317	11	309	293	291	295	301	306	301	297	301	302	304	306	7339
			12	306	305	307	361	399	423	371	356	287	312	199	194	12	231	156	199	181	189	238	220	229	271	289	311	316	6650
			13	328	328	348	423	404	441	414	395	306	94	389	250	13	320	307	403	331	127	115	143	187	240	277	310	323	7203
			14	337	361	386	401	361	387	372	276	206	81*	286	641	14	447	642*	310*	-47*	83	196	166	153	200	297	330	346	7218
			15	352	341	346	336	377	376	338	334	323	250	215*	98	15	119	191	257	228	257	271	264	257	290	302	313	330	6765
			16	346	359	356	356	334	336	282	350	317	260	115	187	16	354	206	231	254	282	297	315	295	287	301	309	320	7049
			17	331	342	344	346	337	337	347	353	339	247	229	293	17	320	320	317	314	313	313	311	311	314	318	311	306	7035
			18	334	321	331	323	338	329	335	335	291	277	293	284	18	263	281	267	247	223	240	230	235	260	280	300	310	6917
			19	322	323	327	340	349	333	340	349	336	308	205	205	19	270	310	309	308	310	300	290	296	301	296	300	310	7337
			20	324	328	330	329	322	319	313	317	316	313	319	319	20	298	301	309	310	310	310	309	308	304	303	305	309	7525
			21	320	320	315	318	315	310	310	310	310	323	323	312	21	296	289	288	286	290	292	292	293	297	300	303	309	7310
			22	310	310	313	312	310	316	321	327	320	305	305	287	22	290	299	300	301	304	305	306	304	301	303	303	304	7356
			23	306	304	306	307	307	307	307	306	305	304	306	304	23	296	297	299	298	303	305	300	299	300	300	300	301	7247
			24	301	302	304	306	305	306	304	306	306	310	317	309	24	312	309	306	301	300	300	299	298	297	300	300	300	7297
			25	301	301	302	302	302	304	303	303	306	311	309	310	25	300	369	259	276	279	273	270	119	56	169	266	296	6588
			26	337	353	370	371	371	343	319	321	261	253	266	207*	26	65	139	232	293	297	291	299	295	288	296	299	306	6902
			27	314	317	327	320	319	313	312	332	316	296	261	263	27	236	262	303	308	297	299	299	296	291	296	300	307	7184
			28	313	315	313	310	312	321	327	337	314	273	274	306	28	317	310	304	299	301	300	300	301	301	301	301	301	7351
			29	306	310	312	310	327	330	323	323	331	321	256	300	29	306	282	253	262	288	296	287	283	267	253	276	294	7096
			30	316	320	318	325	325	326	281	316	369	323	298	325	30	287	183	224	237	259	269	280	277	277	274	300	310	7019
			31													31													

SCALED BY	SPT, JEP
CHECKED BY	HKR, JEP
SIGNS RESTORED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

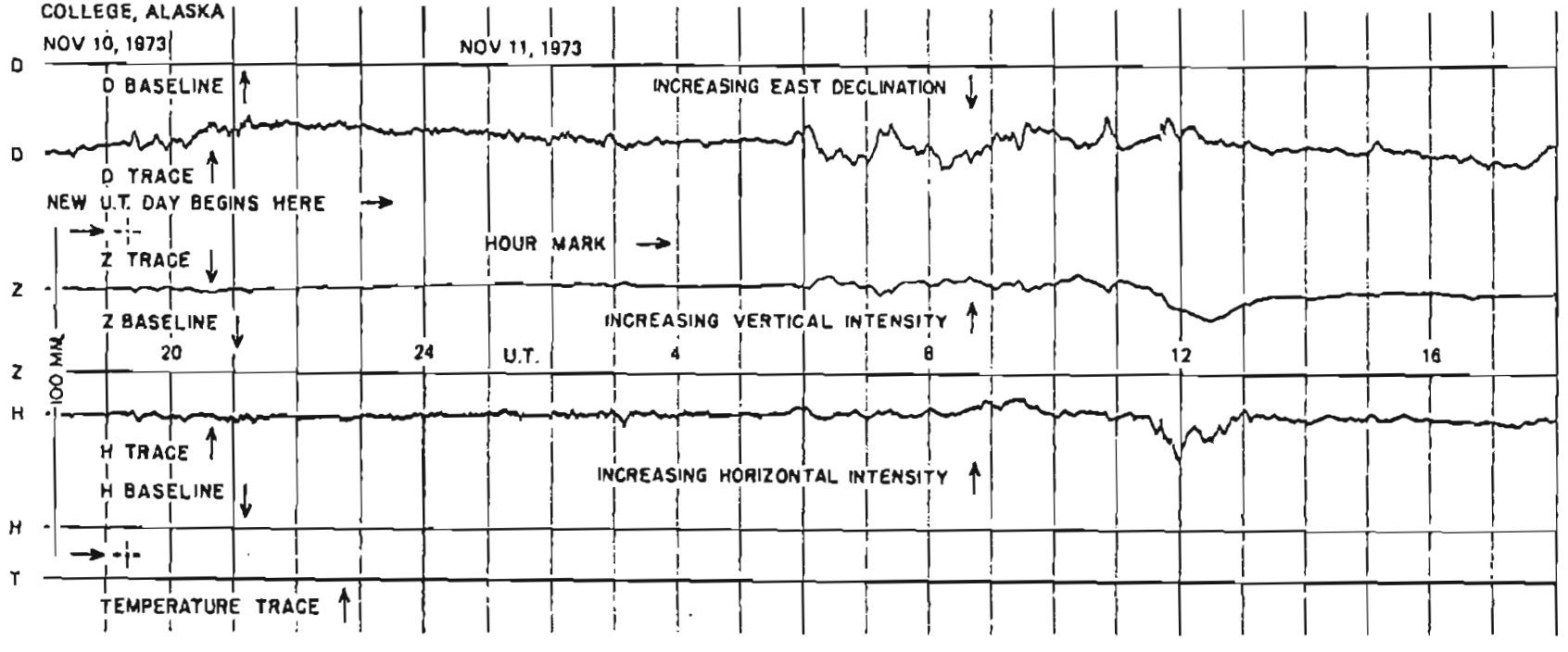
( ) Interpolated
[ ] Significant portion of hour interpolated.
▢ No record; or no values available because of faulty record.
[ ] Scaling uncertain because of magnetic storm.
< > Record all absent for part or all of hour; if value is given, curve was estimated for missing part.
* Derived from Storm Mgph.,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

MONTHLY SUM	215730
MONTHLY MEAN	300
DATES WITH CAPS:	

USCOMM-DC 56966-P67

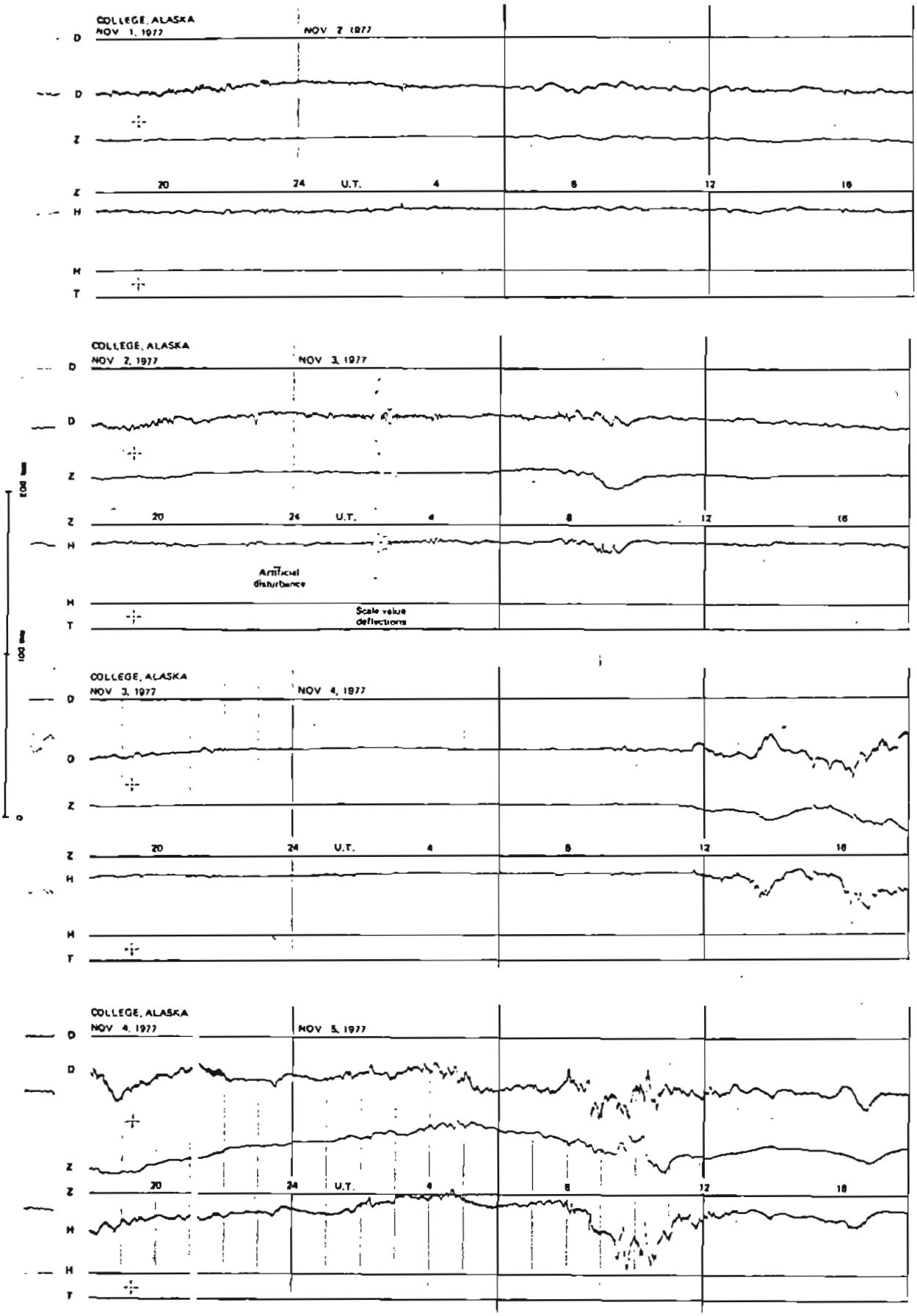
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

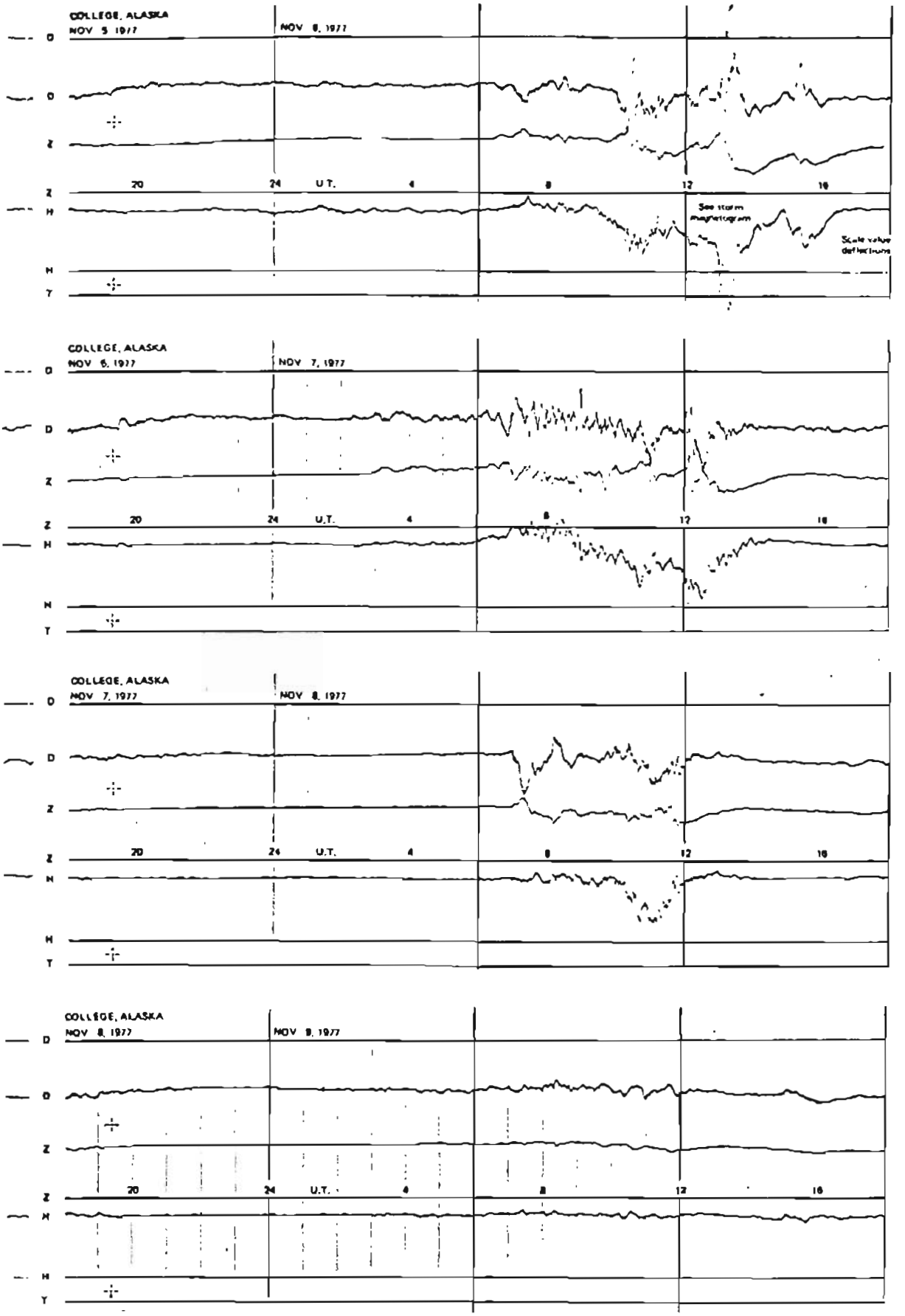


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

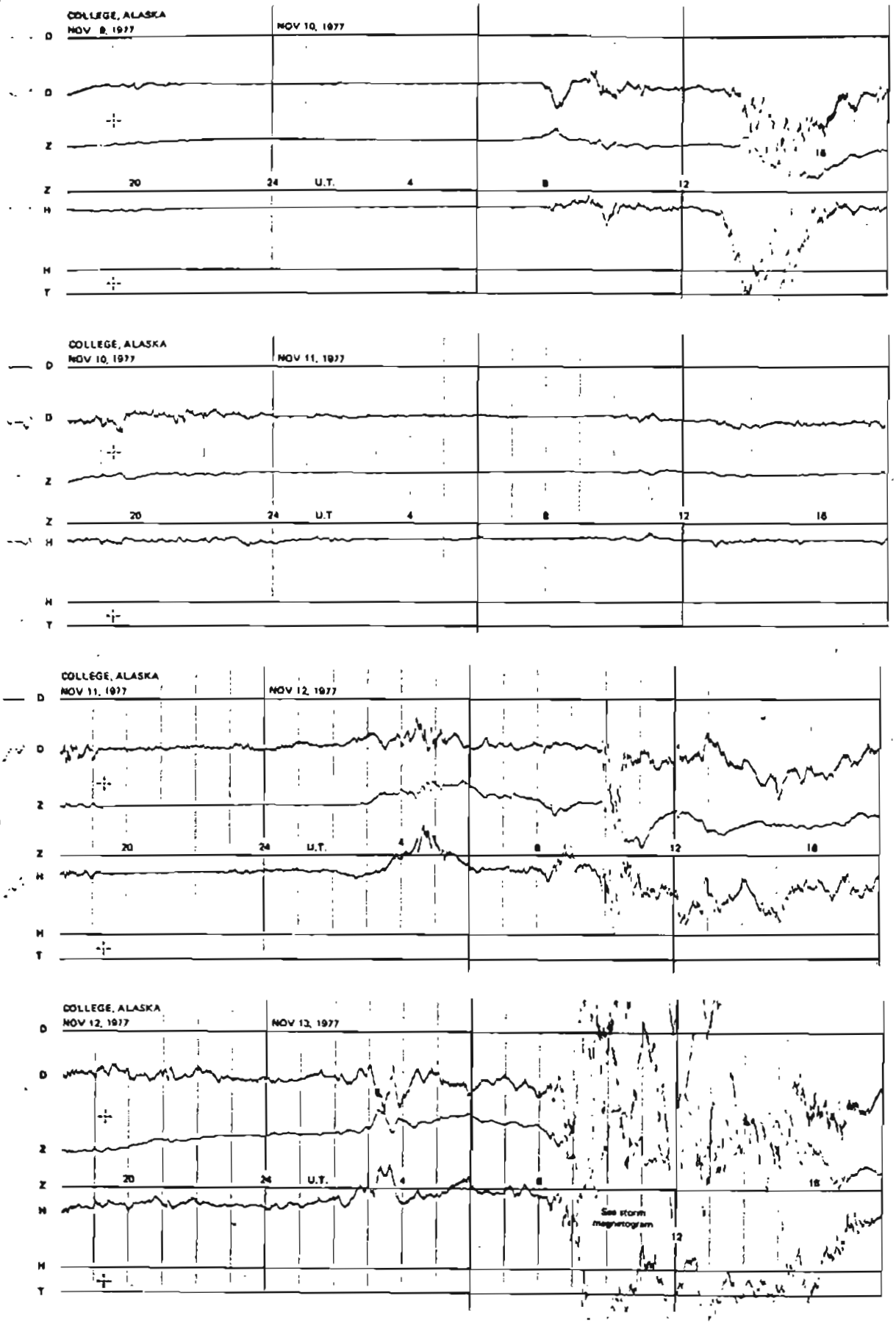
NORMAL MAGNETOGRAMS



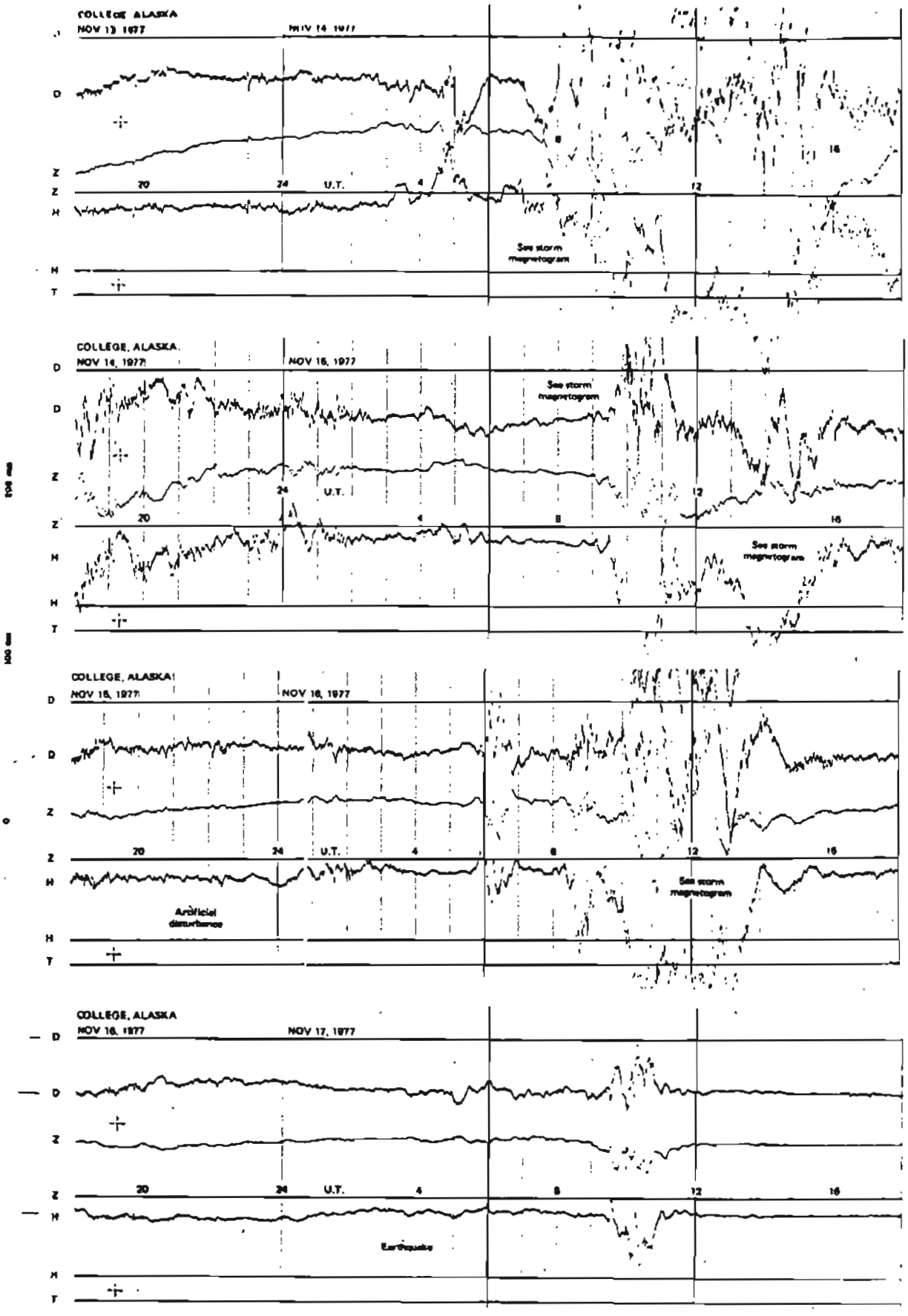
NORMAL MAGNETOGRAMS



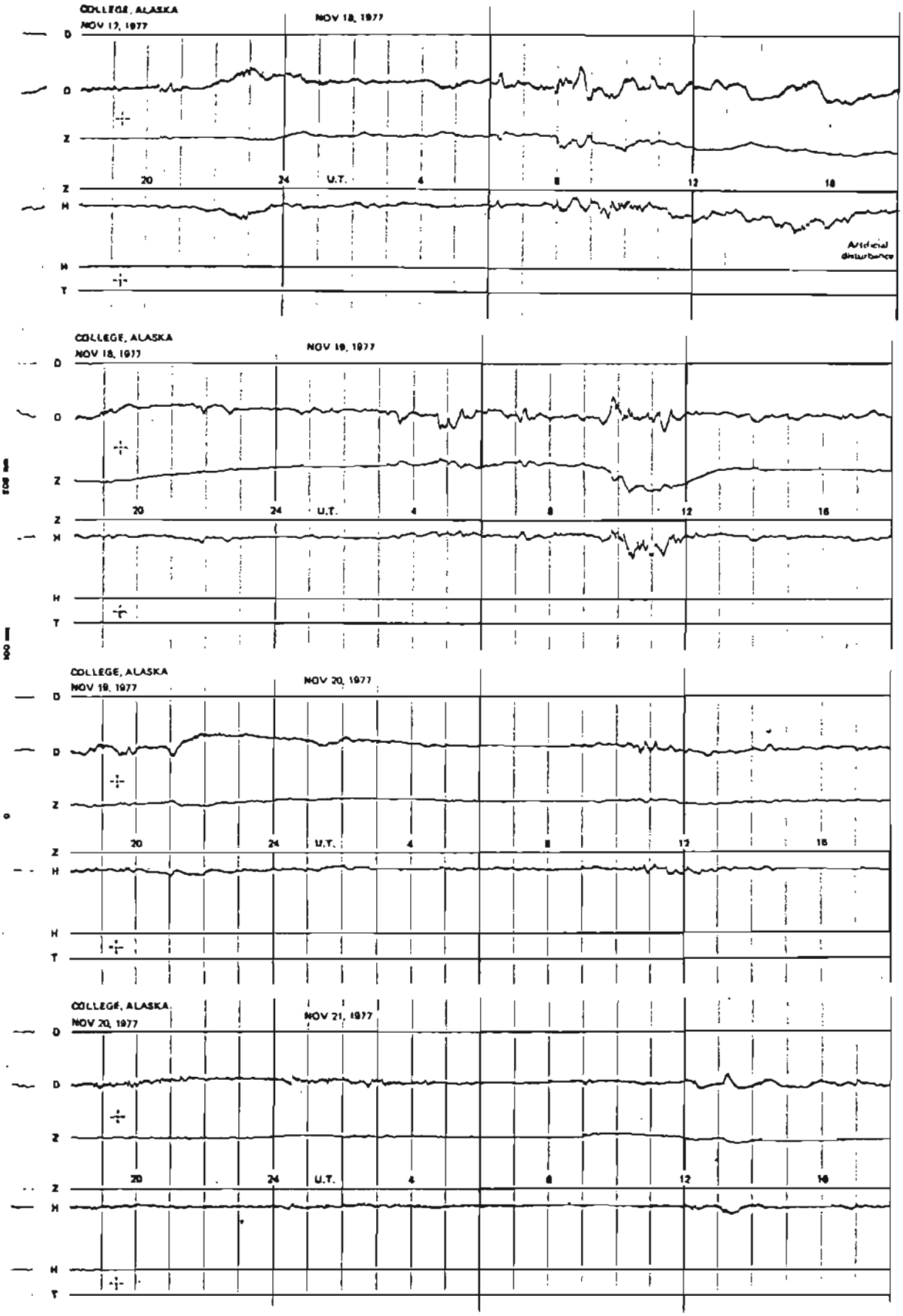
NORMAL MAGNETOGRAMS



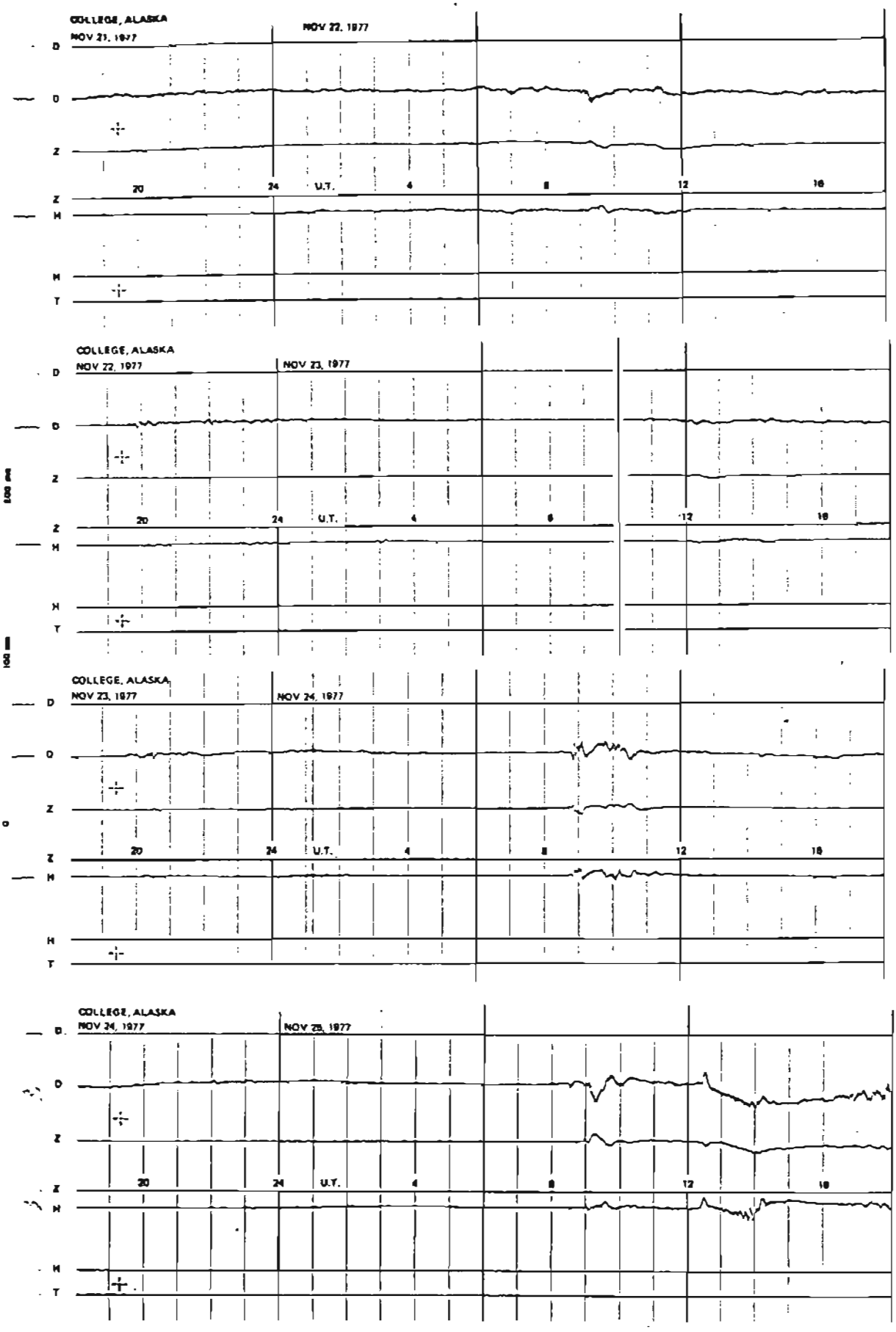
NORMAL MAGNETOGRAMS



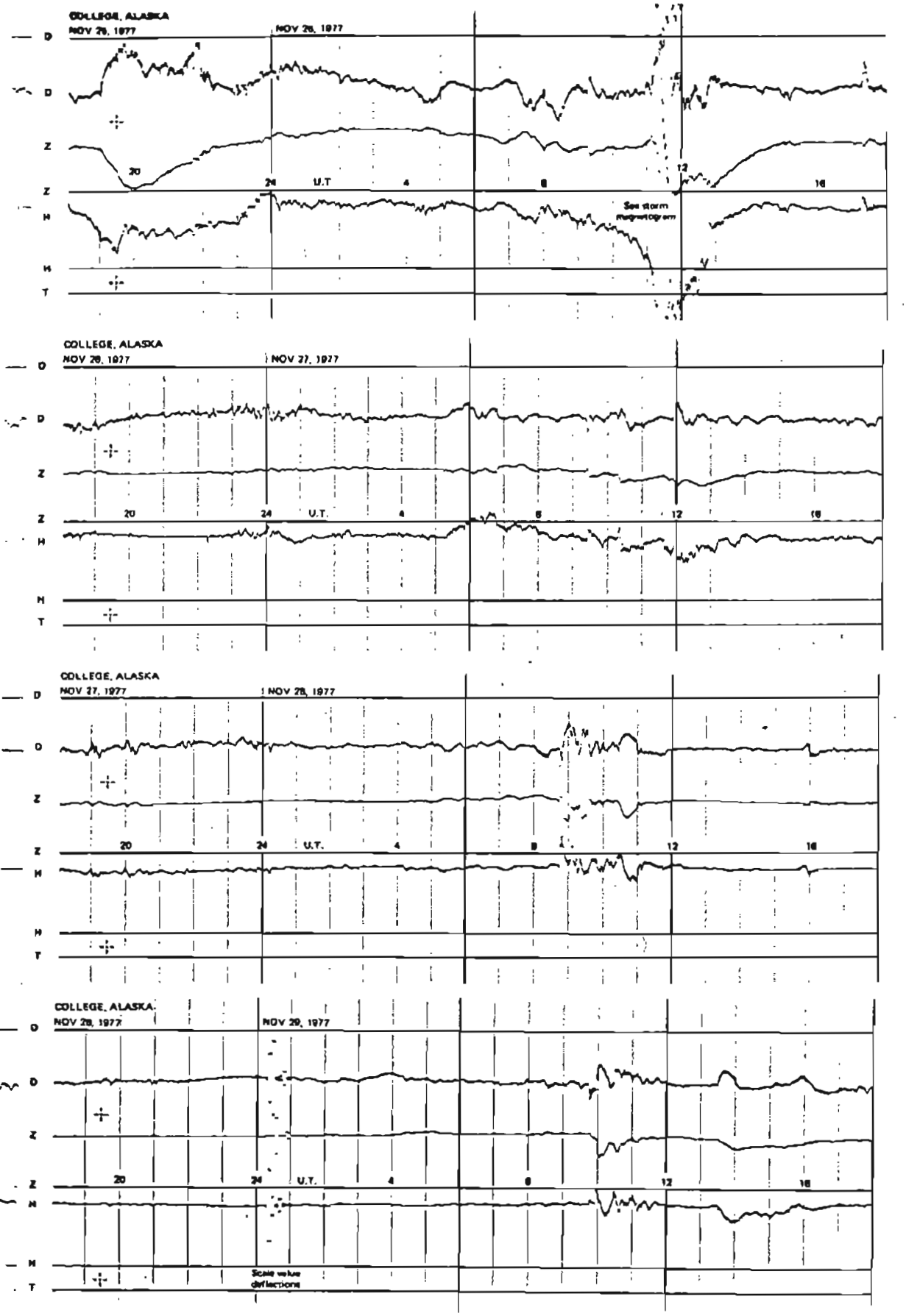
NORMAL MAGNETOGRAMS



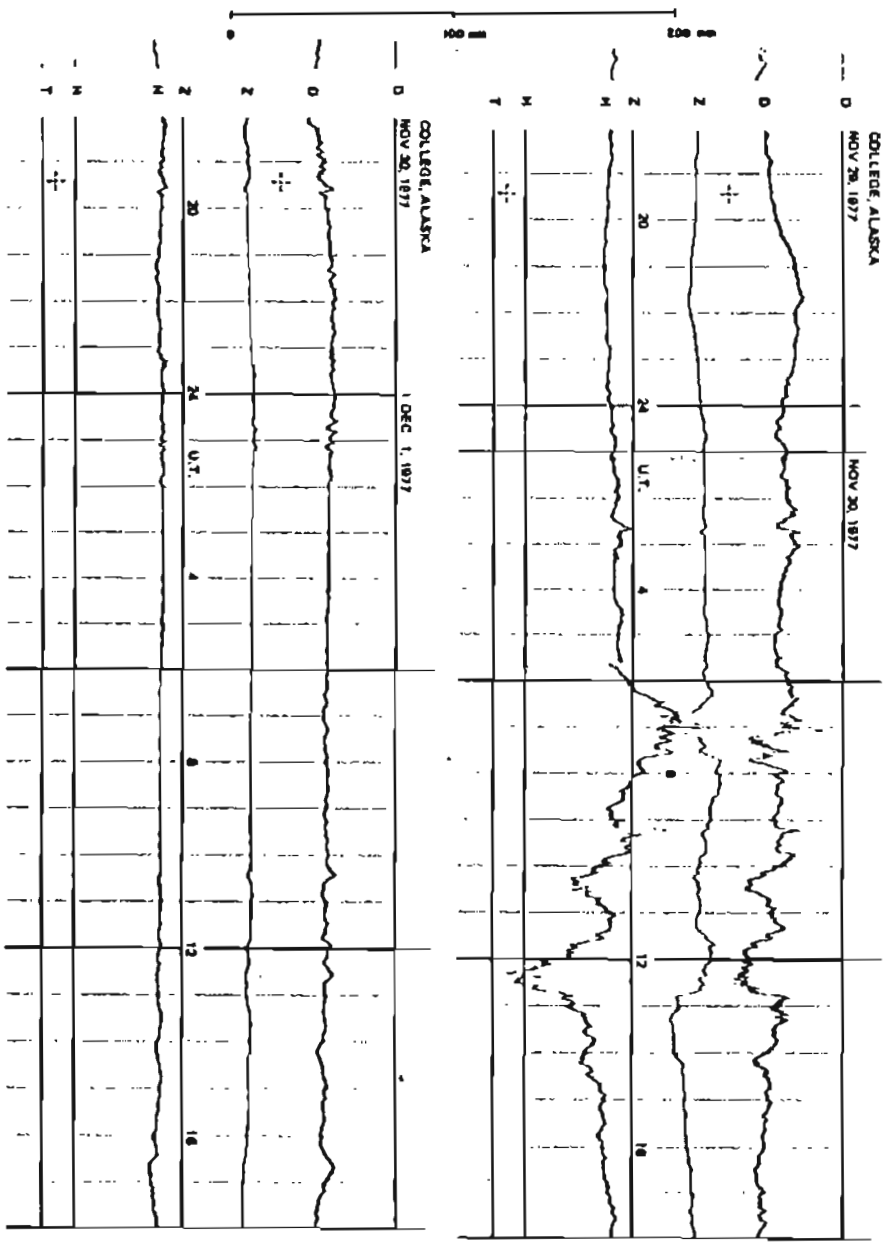
NORMAL MAGNETOGRAMS



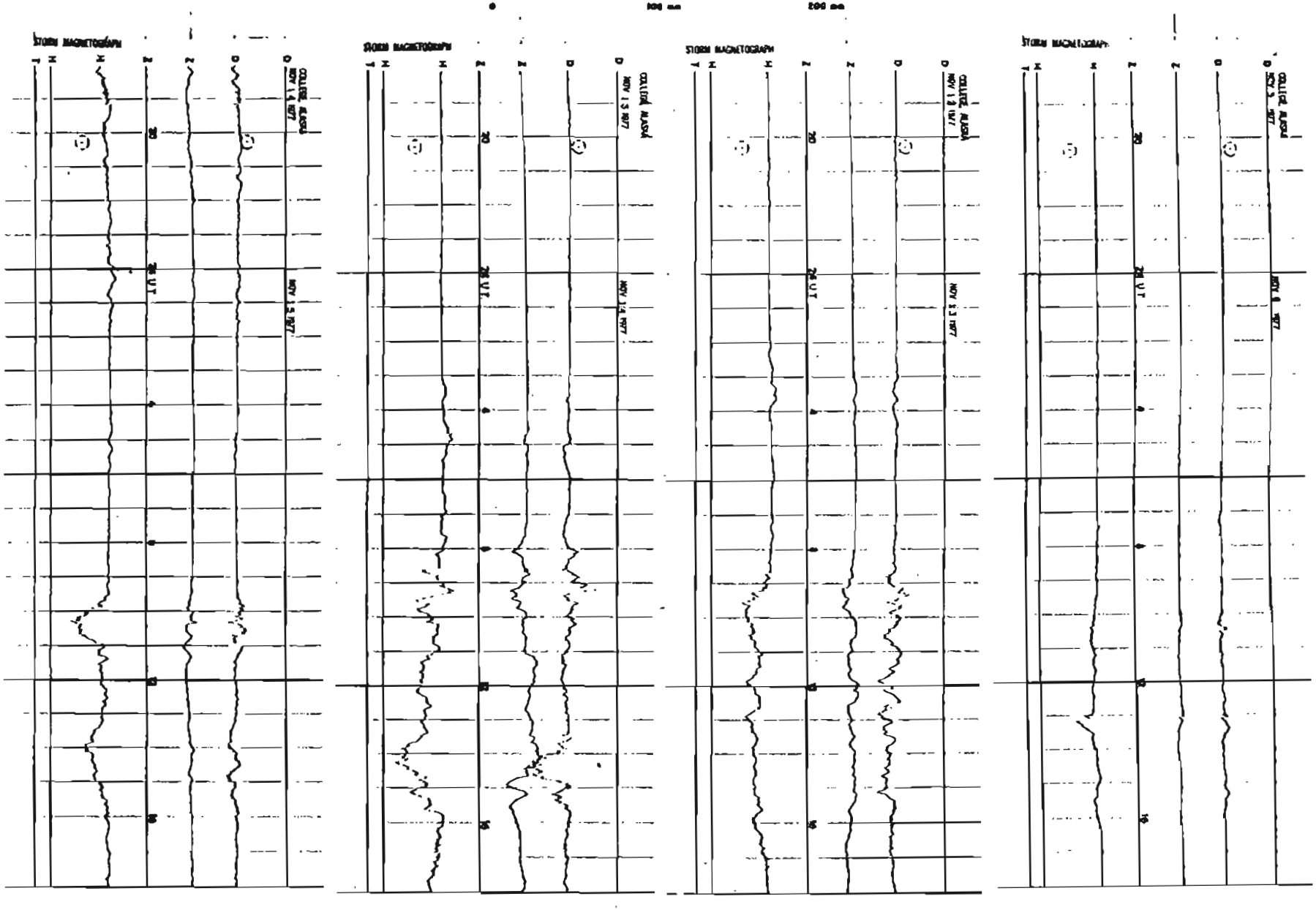
NORMAL MAGNETOGRAM



NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS