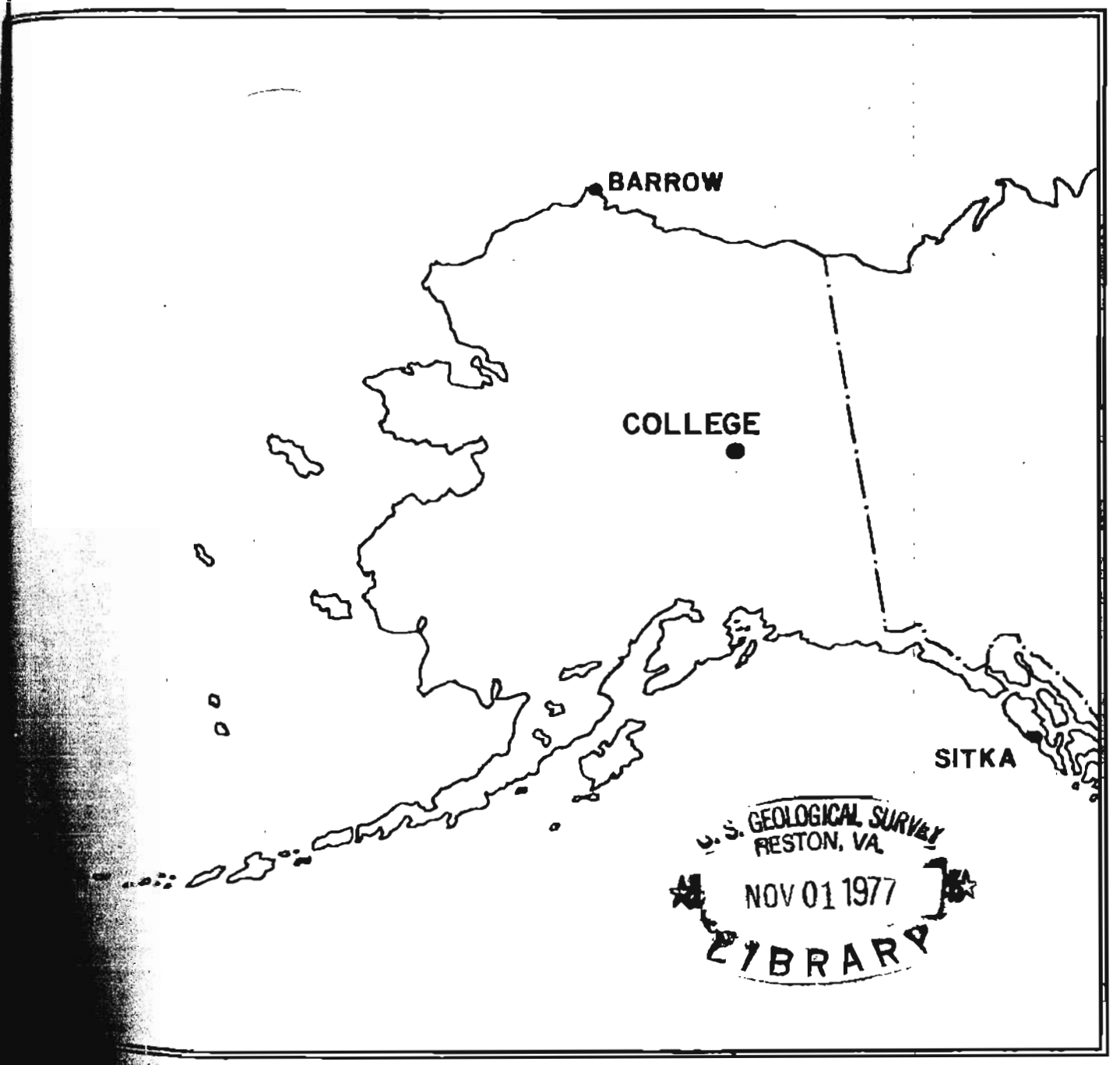
NITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

77-300-I

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

SEPTEMBER 1977 OPEN FILE REPORT 77-300 I



U.S. GEOLOGICAL SURVEY
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TM

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

The routine assignment of C was discontinued at [illegible] 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: SEPTEMBER 1977

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	1	0	1	0	0	0	0	0	02	01
2	1	1	0	0	1	2	1	1	07	03
3	3	4	1	1	0	1	0	1	11	07
4	1	1	3	5	3	1	0	0	14	11
5	1	1	0	0	1	0	0	0	03	01
6	0	0	0	0	1	0	0	0	01	00
7	1	1	1	1	0	1	1	2	08	03
8	3	1	3	1	0	1	1	1	11	06
9	1	2	3	5	5	3	2	1	22	18
10	2	3	4	6	4	3	1	1	24	22
11	3	5	3	6	5	4	4	1	31	33
12	1	1	1	1	1	1	0	1	07	03
13	3	2	4	7	6	5	6	3	36	52
14	3	3	0	1	1	2	1	1	12	06
15	1	3	4	6	2	1	0	0	17	17
16	0	1	2	3	2	1	1	1	11	05
17	2	3	4	5	3	2	0	0	19	15
18	1	2	2	2	1	0	0	0	08	03
19	0	0	2	1	6	6	5	5	25	33
20	5	5	6	6	6	5	3	3	39	52
21	3	5	7	8	6	3	3	5	40	75
22	5	4	5	6	7	7	7	3	44	80
23	3	1	0	6	6	5	3	2	26	31
24	2	3	3	5	2	4	1	1	21	16
25	2	2	3	4	3	2	2	2	20	12
26	1	1	2	5	5	5	3	4	26	25
27	4	5	4	3	2	0	1	0	19	16
28	1	1	4	5	4	5	1	0	21	20
29	0	1	3	0	0	0	1	1	06	03
30	0	1	1	3	3	1	0	0	09	05
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

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

DATA AND COMPUTATIONS HAVE BEEN CHECKED.

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

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-887

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY	
COLLEGE	
MONTH	YEAR
SEPTEMBER	1977

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
02	14XX	Pc 5	Giant Pulsations
28	14XX	Pc 5	
30	07XX	Pi 2	

TIFIED BY: JBT

VERIFIED BY: JBT

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

PRINCIPAL MAGNETIC STORMS

Data From Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

SEPTEMBER 1977

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

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	13	06XX	. .	. .	. .	. .	13	4	7	220	1040	740	14	06
		19	08XX	. .	. .	. .	. .	21	4	8	362	2010	1280	23	03

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

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 9-1-77	2400 U.T., 9-30-77	1.0 mm	3.8'/mm	27° 46.6' E
H	0000 U.T., 9-1-77	2400 U.T., 9-30-77	7.8 γ/mm		12777 γ
Z	0000 U.T., 9-1-77	2400 U.T., 9-30-77	7.7 γ/mm		55125 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 9-1-77	2400 U.T., 9-30-77	7.9'/mm	29.8'/mm	24° 20.2' E
H	0000 U.T., 9-1-77	2400 U.T., 9-30-77	44.1 γ/mm		11530
Z	0000 U.T., 9-1-77	2400 U.T., 9-30-77	48.9 γ/mm		54012 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D	0000 U.T., 9-1-77	2400 U.T., 9-30-77	0.3'/mm	1.0'/mm
H	0000 U.T., 9-1-77	2400 U.T., 9-30-77	1.0 γ/mm	
Z	0000 U.T., 9-1-77	2400 U.T., 9-30-77	2.4 γ/mm	

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 17.9' E	13052 γ	55366 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: SEP 1, 2, 5, 6, 7, 12, 16, 18, 29, 30

Form C&GS-[illegible]

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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

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

OBSV.	YEAR	MONTH	ELEMENT
CO	77	SEPT	D

	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	250	248	258	260	270	269	289	285	299	300	310	320	01	336	350	363	384	398	413	407	393	353	306	279	272	7632
02	262	267	280	291	293	290	288	289	294	303	312	324	02	333	341	371	392	400	403	360	312	306	299	292	263	7565
03	241	217	181	110	159	250	283	289	292	302	330	332	03	336	351	350	363	370	380	370	369	348	328	300	288	7139
04	279	268	251	262	263	287	263	270	372	322	415	413	04	363	332	348	357	383	441	403	385	347	311	285	283	7903
05	276	287	284	297	299	295	293	290	291	296	303	317	05	339	364	363	370	396	393	379	347	303	274	277	280	7613
06	282	287	285	284	289	292	292	294	282	297	317	318	06	327	334	354	366	373	388	372	353	333	307	293	293	7612
07	292	287	273	264	272	283	297	297	293	293	304	324	07	331	337	351	365	381	379	373	361	338	319	283	240	7537
08	256	249	267	247	280	276	266	418	313	288	308	317	08	323	340	363	386	400	417	399	377	347	313	283	281	7714
09	279	290	278	241	284	266	285	316	330	322	347	464	09	482	368	393	426	467	388	347	323	298	284	277	292	8047
10	285	267	274	203	234	262	317	297	184	289	349	671*	10	342	339	382	387	369	362	350	317	290	258	268	267	7563
11	243	232	203	211	242	304	299	339	272	297*	268	305	11	302	367	517	553	449	467	412	246	256	246	247	232	7514
12	271	297	290	299	310	311	297	284	287	311	326	311	12	309	311	332	356	389	406	391	371	320	317	253	258	7607
13	256	217	226	271	313	307	291	475	119	217	261	527*	13	646*	332	734*	519*	560*	583*	302	219	277	166	211	253	8282
14	258	230	229	201	253	296	296	291	296	301	311	321	14	324	330	339	378	396	389	362	333	258	259	263	262	7176
15	277	286	284	286	311	303	317	358	260	393*	297*	321	15	376	326	359	396	389	391	381	349	317	300	290	287	7854
16	293	307	292	274	283	282	279	290	267	272	290	319	16	335	356	380	377	377	369	351	328	318	276	256	258	7435
17	279	283	278	307	267	271	314	484	201	287	318	356	17	365	341	318	371	371	380	361	337	320	299	293	290	7692
18	274	276	287	280	271	301	281	311	298	305	321	351	18	343	342	352	364	376	387	393	376	335	292	266	266	7648
19	276	281	297	300	306	301	297	291	287	297	317	311	19	310	479*	789*	765*	781*	621*	311	469	262	94	267	305	9014
20	263	262	261	250	231	214	177	407*	386	463*	193*	301	20	336*	670*	908*	360*	479*	352	355	313	260	304	195	253	8193
21	280	271	269	313	292	431*	222	773*	1	289*	415*	178*	21	433	526*	350	474	478	447	389	349	340	411	376	304*	8611
22	297	263	246	444	300	259	281	480	329	185	265*	542*	22	395	511*	868*	947*	479*	360*	511*	368*	360*	189	200	261	9330
23	266	289	302	310	312	310	309	300	298	300	308	296*	23	248*	672	345	421	475	268	266	263	221	256	267	280	7586
24	286	291	277	351	393	391	289	267	312	340	304	317	24	311	333	317	351	360	347	367	321	283	257	227	226	7508
25	257	264	240	253	281	259	349	373	240	361	367	281	25	299	341	340	347	351	351	337	342	238	222	250	269	7212
26	271	287	291	297	298	312	316	303	292	286	309	305	26	342	384	392*	733*	524	367	303	232	247	236	211	221	7759
27	251	201	205	236	288	201*	81	221	404	260	228	316	27	347	316	332	341	357	367	371	371	349	309	288	281	6861
28	273	271	276	294	291	293	299	288	334	257	239	363	28	400	439*	567*	519	391	381	359	340	311	289	268	270	8012
29	281	283	289	289	284	267	301	228	302	201	293	303	29	313	320	327	347	361	367	370	370	341	329	309	294	7469
30	283	287	287	289	293	294	293	301	296	307	330	306	30	367	349	321	339	357	367	358	386	350	339	304	300	7703
31													31													

SCALED BY	MJM, SPT
CHECKED BY	JEP, MJM, JBT, HKR
SIGNS REVIEWED BY	JBT
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 Mph., converted to Normal Mph.

MONTHLY SUM	232791
MONTHLY MEAN	323

DATES WITH GAPS:

USCOMM-DC 68056-P67

FORM C&GS-434a (1-63)

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

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of gms 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 0800 universal day.
Stricker corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	77	SEPT	H

C			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	350	349	358	369	367	360	368	370	369	372	372	381	01	380	371	370	370	366	350	339	329	324	323	330	349	8586
			02	357	362	357	357	360	368	370	370	373	379	377	381	02	382	381	377	383	374	361	356	346	340	334	337	347	8729
			03	361	362	432	517	541	400	364	356	353	366	351	356	03	341	347	353	351	346	340	336	329	320	329	334	350	8865
			04	347	353	360	357	357	350	360	391	401	436	273	220	04	293	367	367	373	369	333	327	330	330	334	332	334	8294
			05	347	344	350	347	346	359	359	360	360	362	362	360	05	351	359	356	351	346	342	329	320	327	333	333	331	8334
			06	336	342	343	353	354	354	357	357	364	360	359	364	06	360	354	350	351	350	346	336	336	339	337	333	334	8369
			07	337	337	343	353	357	351	357	360	369	374	363	360	07	359	353	344	347	341	342	334	324	330	329	323	334	8327
			08	333	367	321	340	354	371	373	419	335	379	357	357	08	367	356	359	359	361	347	340	340	331	334	321	333	8514
			09	341	330	343	360	331	354	369	440	408	380	314	66	09	20	291	329	351	289	317	291	320	343	351	354	364	7656
			10	364	376	417	469	401	391	383	422	247	363	240	-133*	10	210	357	330	336	283	333	335	343	342	336	320	344	7919
			11	349	367	420	705	601	543	472	413	410	-21*	3*	285	11	291	78	-28	90	70	119	57	270	337	347	359	337	6874
			12	359	363	381	372	366	380	380	359	347	346	360	356	12	350	327	330	357	347	341	330	320	323	326	330	350	8400
			13	347	406	409	376	346	364	396	282	225	336	312	-253*	13	-314*	141	-156*	-145*	10	-48	-65*	243	311	330	380	383	4616
			14	333	409	460	536	487	376	350	343	351	352	345	350	14	349	356	356	353	351	339	328	319	320	320	336	343	8812
			15	347	349	353	369	411	417	402	400	391	8*	19*	352	15	321	330	328	359	364	346	339	343	343	349	354	353	7927
			16	360	356	360	354	351	361	370	410	410	458	400	430	16	390	373	360	336	340	341	340	340	320	340	347	360	8807
			17	356	357	354	370	387	402	481	332	412	416	299	161	17	291	289	240	343	376	350	350	354	359	359	356	358	8352
			18	346	340	341	356	349	377	400	359	360	362	360	347	18	350	350	353	351	347	341	337	330	326	322	333	335	8378
			19	242	354	349	351	360	361	357	367	390	384	363	370	19	297	-319*	-365*	-127*	-337*	-37*	361	71	-90	261	360	343	4766
			20	410	512	633	587	591	613	522	218	40	-376*	-337*	-10	20	12	-314*	-495*	105	189	353	330	317	269	260	317	351	5097
			21	358	370	436	437	579	512	437	-286*	210	-586*	-624*	295	21	55	-150*	313	363	348	337	310	317	342	260	472	545*	5680
			22	358	342	498	479	378	372	364	377	364*	340	127	-153*	22	159	-399*	-558*	-786*	-314*	-603*	-579*	-359*	174	366	349	337	1671
			23	342	361	347	346	350	350	347	344	350	343	342	132*	23	-183*	-162*	259	135	-68	230	235	270	320	351	340	324	6005
			24	349	327	363	383	374	399	460	463	406	231	132	353	24	381	351	321	214	124	222	326	323	330	329	323	319	7903
			25	346	353	350	373	353	380	376	386	357	196	196	276	25	320	367	346	319	277	310	339	320	279	327	339	353	7844
			26	340	343	353	357	553	357	381	368	367	271	-67	147	26	298	211	-88*	-246*	74	123	324	293	316	336	333	383	5927
			27	373	538	520	610	517	477*	491	421	383	426	380	331	27	320	346	339	343	339	339	333	329	324	316	317	330	9442
			28	336	348	351	347	348	350	350	357	334	76	355	289	28	259	129	-39	135	341	379	348	338	318	321	327	338	7036
			29	341	344	347	347	361	364	394	503	400	356	348	343	29	341	347	347	342	341	340	333	330	329	326	329	330	8483
			30	331	334	344	351	354	354	353	354	355	356	370	339	30	264	330	360	349	350	329	336	336	334	330	330	335	8178
			31													31													

SCALED BY: MJM, SPT
CHECKED BY: JEP, MJM, JRT, HKR
SIGNS REVIEWED BY: JRT
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 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: 233790
MONTHLY MEAN: 311
DATES WITH GAPS:

USCOMM-DC 68256-P63

FORM C&GS-1046

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	SEPT	Z

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

C				C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
			01	300	309	308	301	307	307	302	310	311	313	310	310
			02	307	306	307	306	302	300	301	307	308	310	309	307
			03	283	315	339	396	483	452	391	338	327	332	321	309
			04	306	303	300	303	313	318	311	337	338	338	182	154
			05	309	312	306	307	306	304	307	310	311	309	311	312
			06	316	316	311	309	314	314	317	318	318	327	321	316
			07	312	317	316	319	327	331	322	320	326	347	336	326
			08	313	321	331	344	340	334	346	361	322	350	332	321
			09	319	324	318	330	349	347	348	374	372	348	321	350
			10	329	349	383	396	416	386	377	341	278	299	260	199
			11	336	340	357	333	402	369	341	290	312	294	137	197
			12	313	318	325	356	371	344	346	344	332	326	308	307
			13	316	343	386	393	346	332	339	252	206	309	357	342*
			14	346	344	386	373	407	387	337	323	331	331	326	320
			15	319	323	337	350	408	370	386	340	248	329*	164*	232
			16	317	313	310	316	311	312	319	350	346	318	304	333
			17	320	326	330	351	346	333	348	214	229	277	326	352
			18	319	316	324	327	351	374	393	359	327	324	325	306
			19	320	316	314	310	309	314	321	323	336	348	336	309
			20	342	366	366	381	362	317	297	171	87	241*	278	439
			21	360	378	380	392	311	241*	231	183	150	686*	712*	230
			22	383	351	365	413	361	380	352	337	-65*	62*	312	318*
			23	340	350	360	352	348	340	340	339	337	340	339	329
			24	367	364	354	391	360	338	345	377	377	93	-38	194
			25	361	364	373	396	389	376	383	301	337	286	281	233
			26	339	340	341	347	351	371	367	362	361	356	278	305
			27	361	330	313	297	79	-198*	69	179	256	287	377	366
			28	323	326	332	331	327	326	329	327	290	209	265	316
			29	341	339	336	332	333	337	320	301	395	358	341	334
			30	324	326	323	321	321	320	326	333	334	336	320	316
			31												

	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	SUM
01	310	311	310	308	307	309	307	305	299	298	309	310	7371
02	306	305	307	307	291	281	284	272	279	291	290	281	7164
03	307	308	303	312	311	309	310	309	303	298	291	298	7945
04	201	278	300	321	327	317	304	309	306	304	300	308	7078
05	307	318	313	311	308	304	303	297	296	307	316	317	7401
06	316	314	315	313	311	310	308	306	307	310	315	315	7537
07	320	320	321	320	316	312	310	313	307	309	310	320	7677
08	317	316	313	320	324	326	316	309	309	306	310	311	7798
09	183	229	264	286	254	256	247	267	290	307	316	319	7318
10	96	214	274	276	262	257	270	297	307	313	324	335	7232
11	262	419	251	257	263	250	80	143	236	276	313	315	6773
12	301	297	283	303	306	297	294	296	294	300	297	301	7559
13	12*	230	349*	393*	254*	215*	6	64	275	289	297	310	6615
14	306	306	316	313	310	310	310	307	295	296	309	320	7909
15	250	264	261	283	299	316	311	309	303	304	306	310	7322
16	343	331	311	286	271	281	295	235	299	292	307	319	7479
17	250	291	267	299	326	324	316	310	310	314	316	318	7443
18	299	301	299	310	310	307	310	307	304	304	306	319	7721
19	347	355*	387	624	377	112	218	335	204	189	254	297	7555
20	598*	616*	743*	400*	294	280	311	317	320	360	313	338	8567
21	540	600	277	312	308	310	293	290	295	372	408	419*	8678
22	297	783*	362*	190*	89*	184*	413*	483*	171*	240	301	34	7423
23	155	278	298	284	241	197	236	287	326	351	361	367	7495
24	331	340	336	306	248	297	309	301	309	323	323	344	7315
25	248	298	333	323	293	291	314	323	303	399	316	338	7859
26	248	312	411	98	108	162	190	245	276	327	348	375	7218
27	337	333	340	338	338	337	339	334	327	314	323	321	6707
28	351	369	292*	231	256	306	327	329	331	333	333	341	7500
29	329	328	328	329	329	329	333	329	323	320	319	319	7982
30	248	227	297	315	312	317	303	299	290	300	306	312	7426
31													

SCALED BY	MJM, SPT
CHECKED BY	JEP, MJM, JBT, HKR
SIGNS REVIEWED BY	JBT
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.

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

[ ] Scaling uncertain because of magnetic storm.

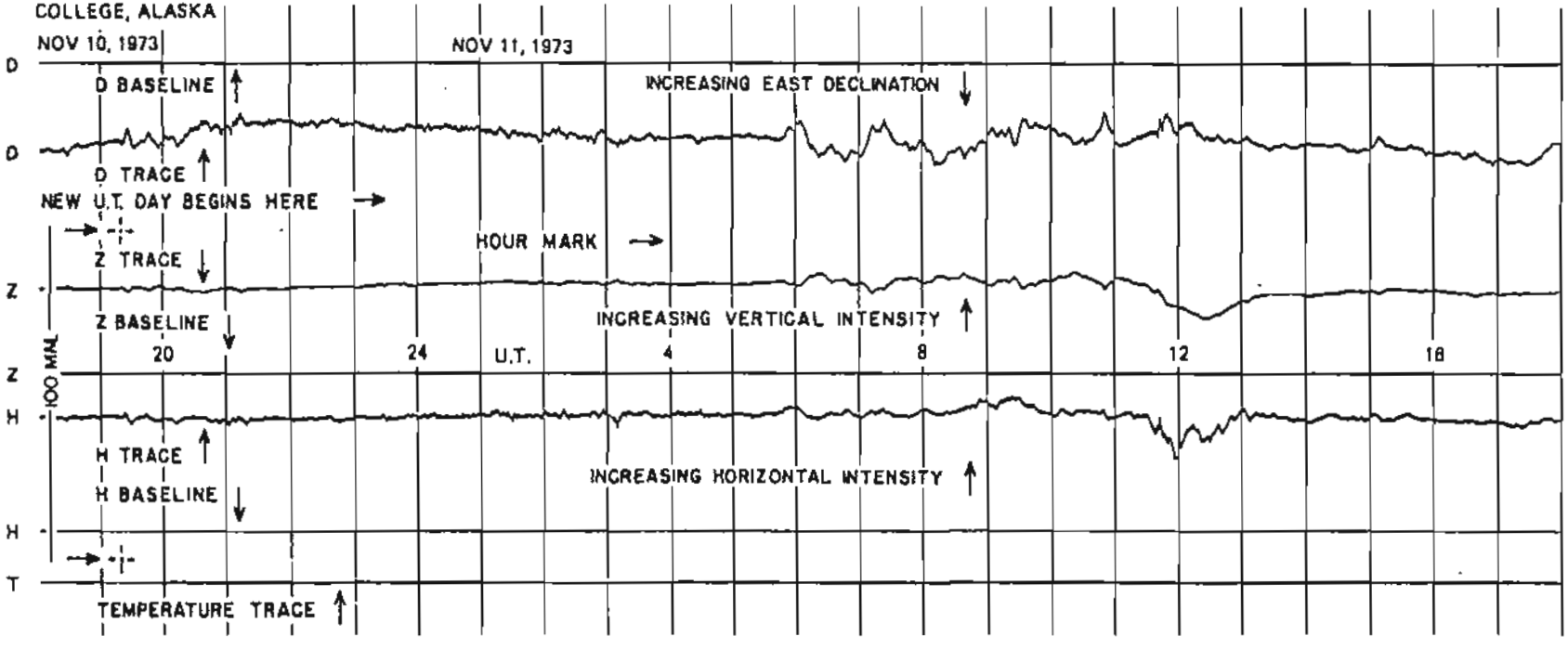
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

MONTHLY SUM	225067
MONTHLY MEAN	313

DATES WITH GAPS:

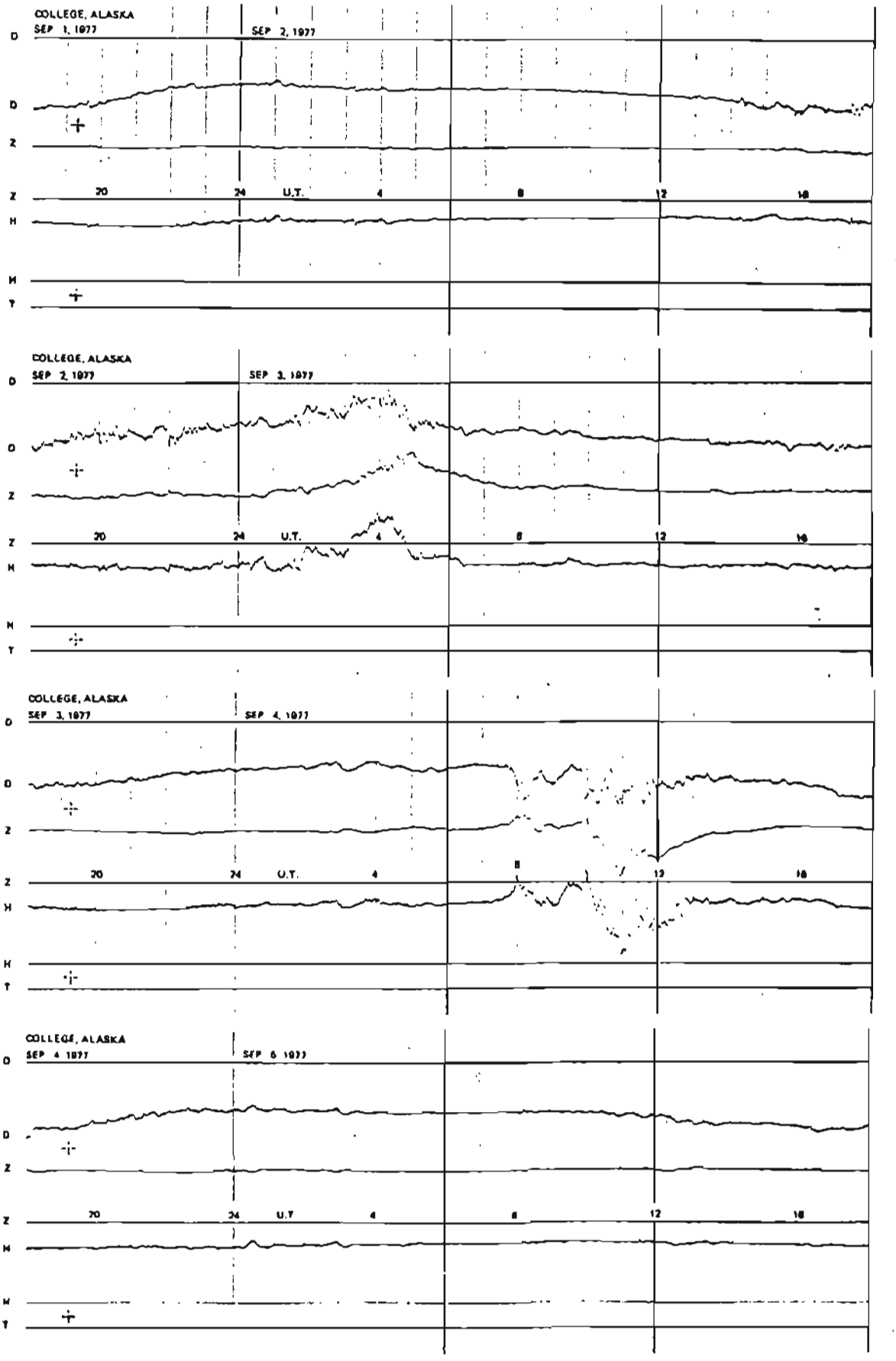
USCOMM-DC 60058-P61

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

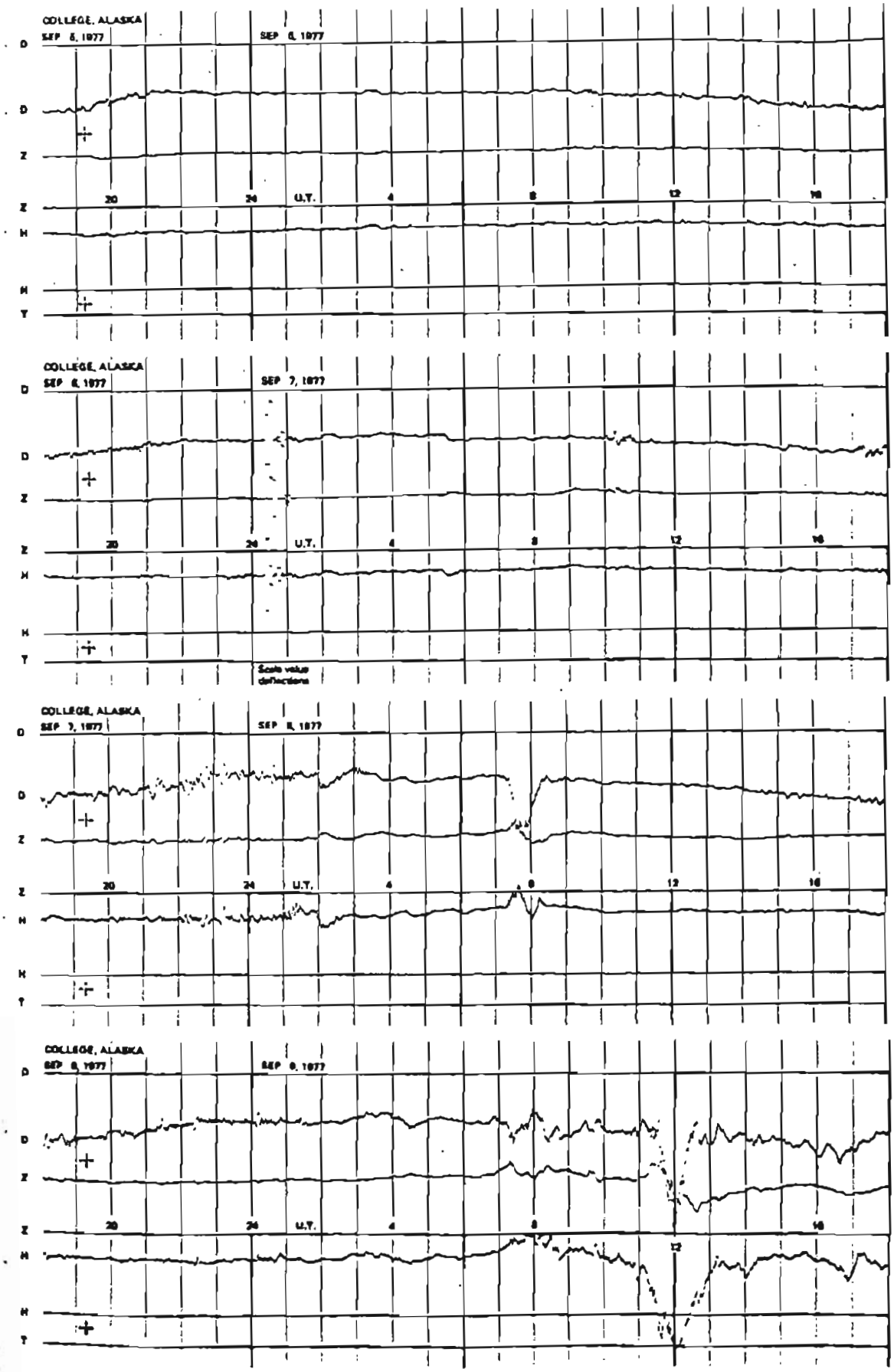


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

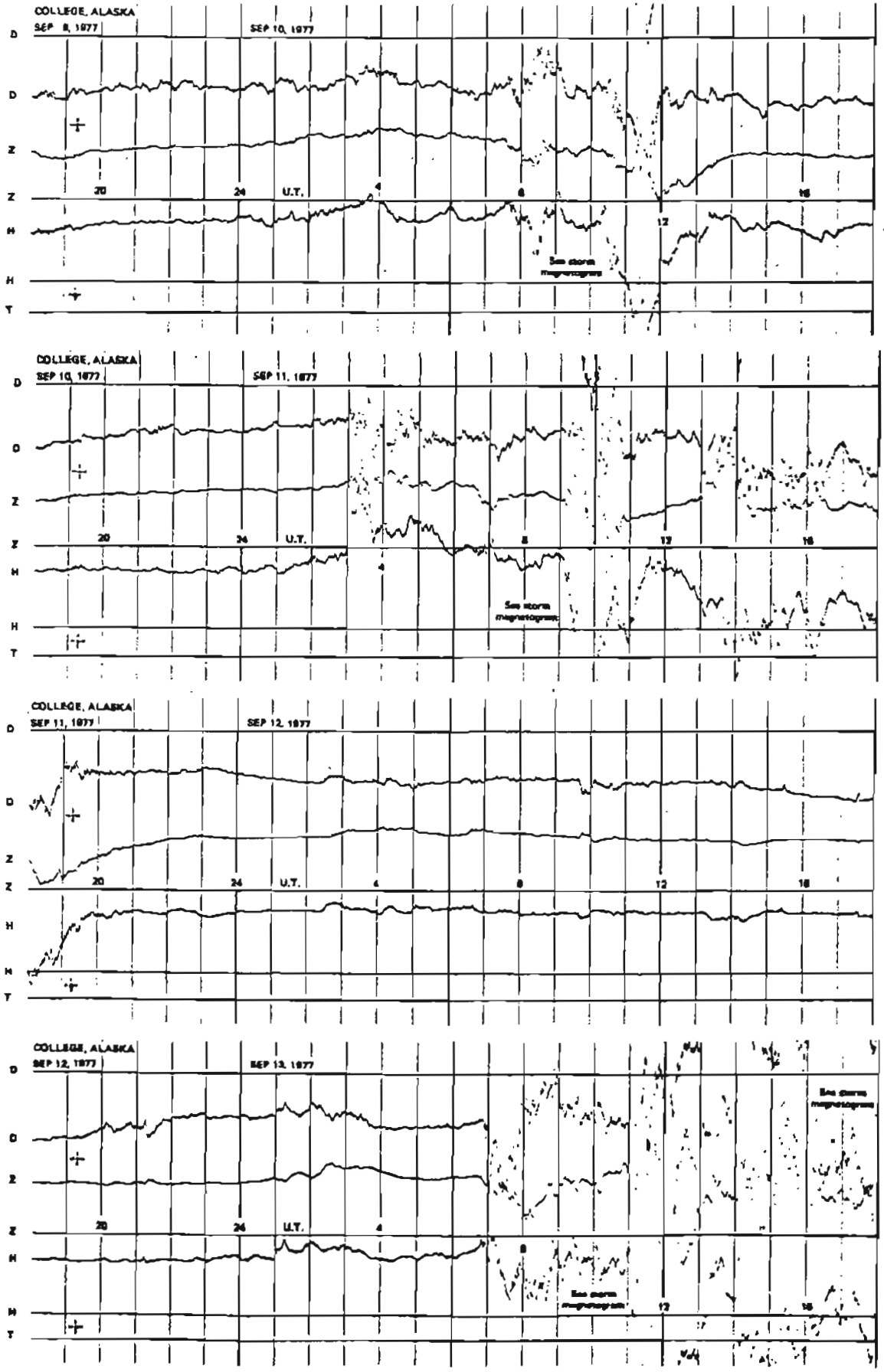
NORMAL MAGNETOGRAMS



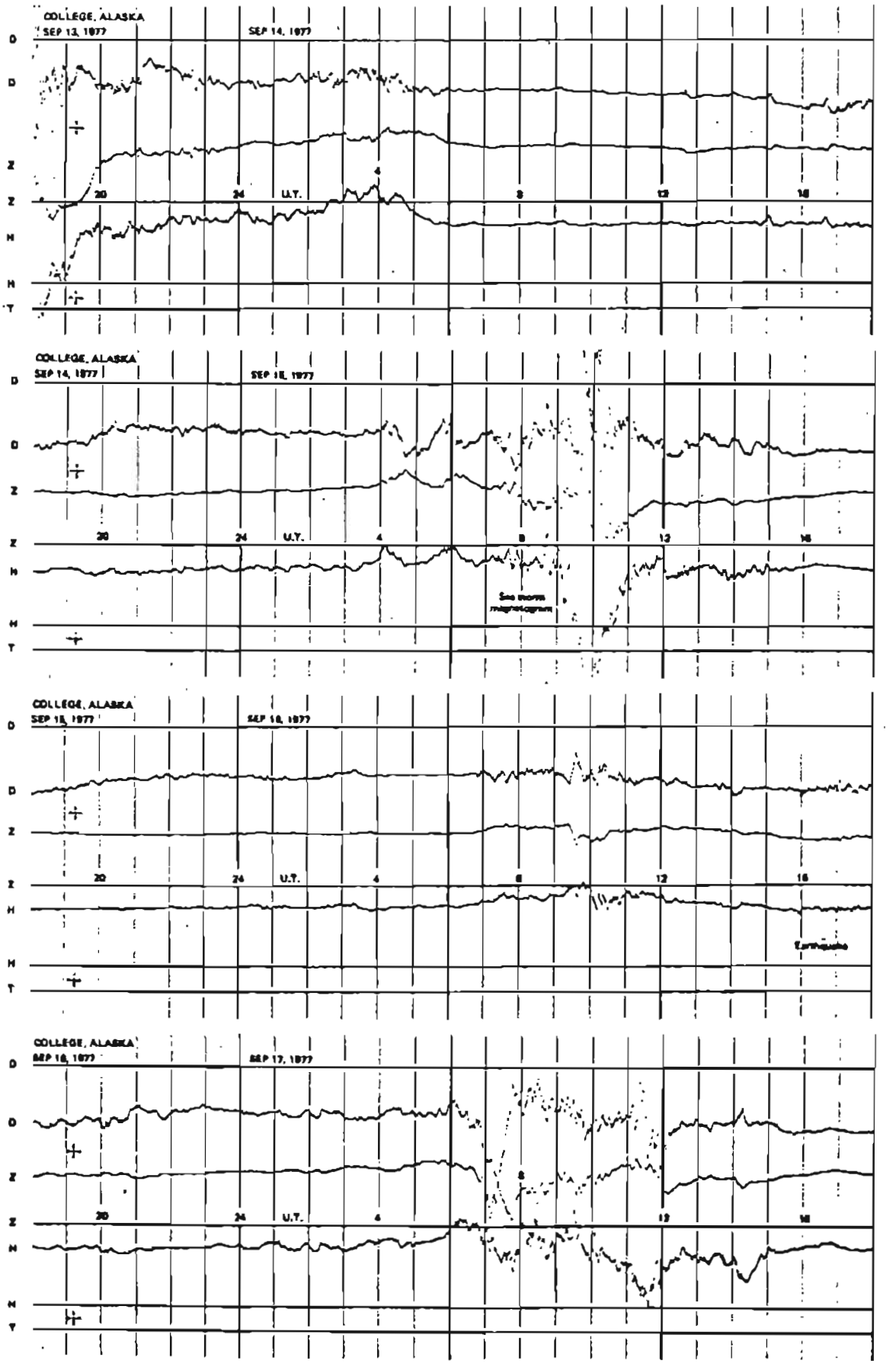
NORMAL MAGNETOGRAMS



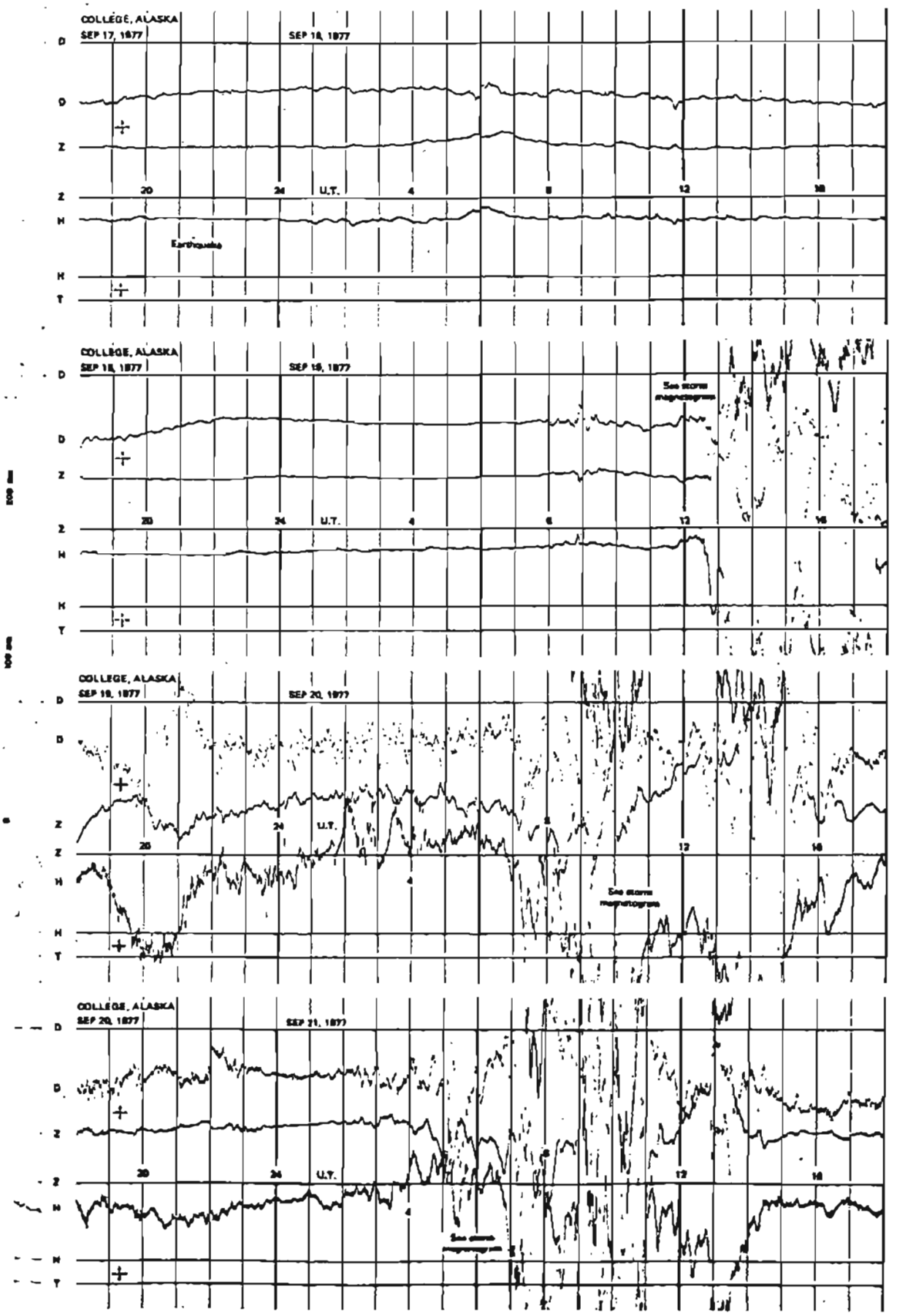
NORMAL MAGNETOGRAMS



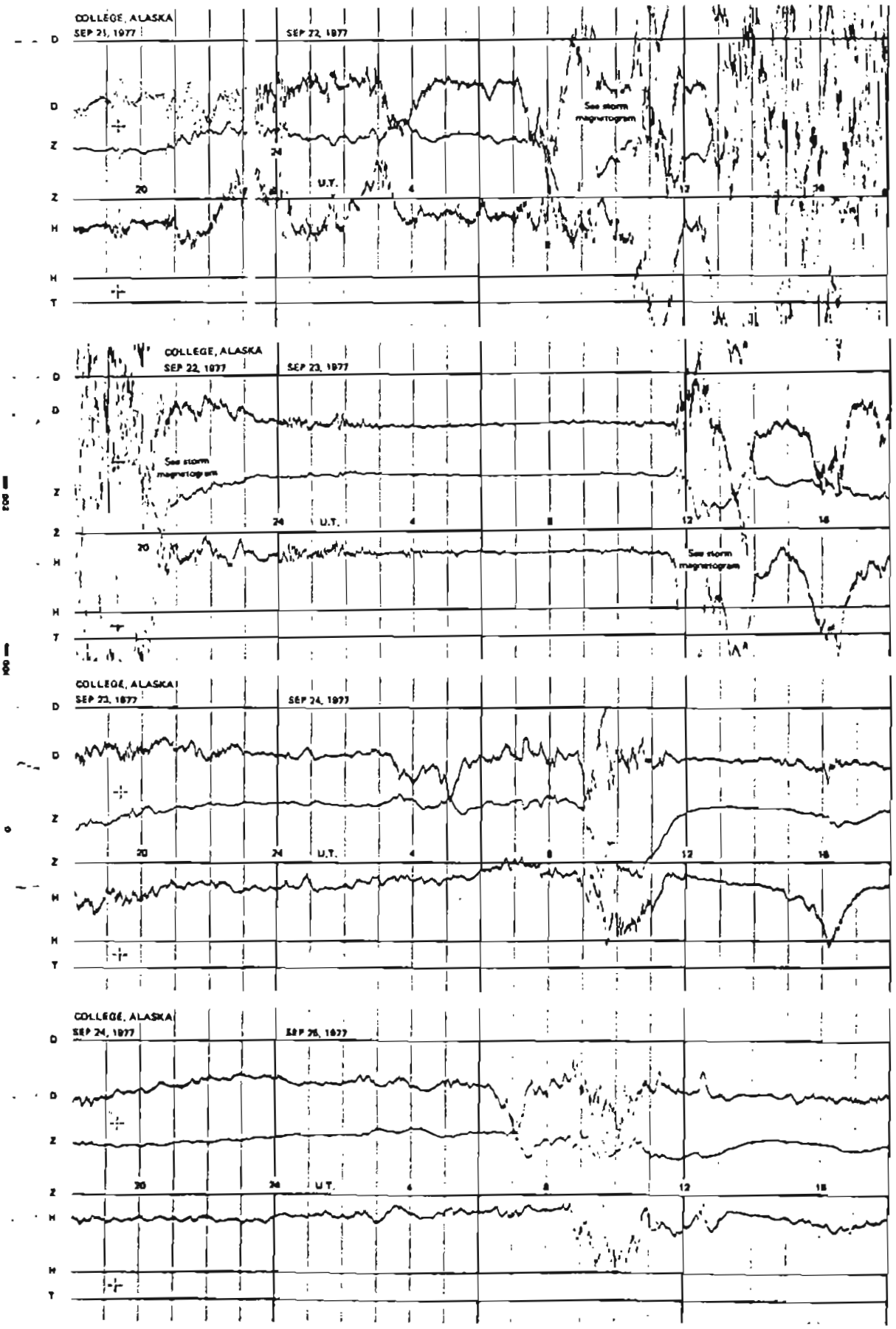
NORMAL MAGNETOGRAMS



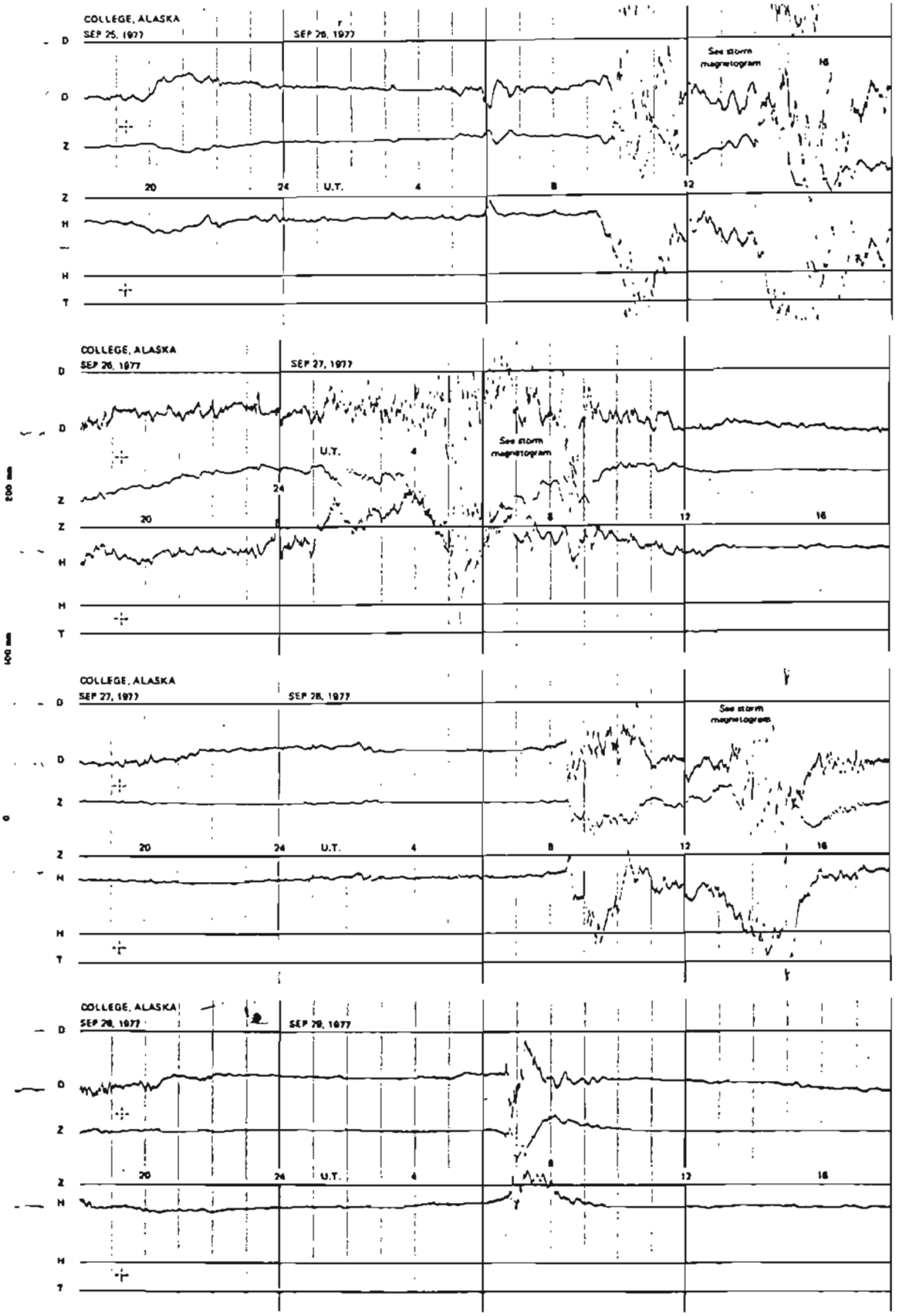
NORMAL MAGNETOGRAMS



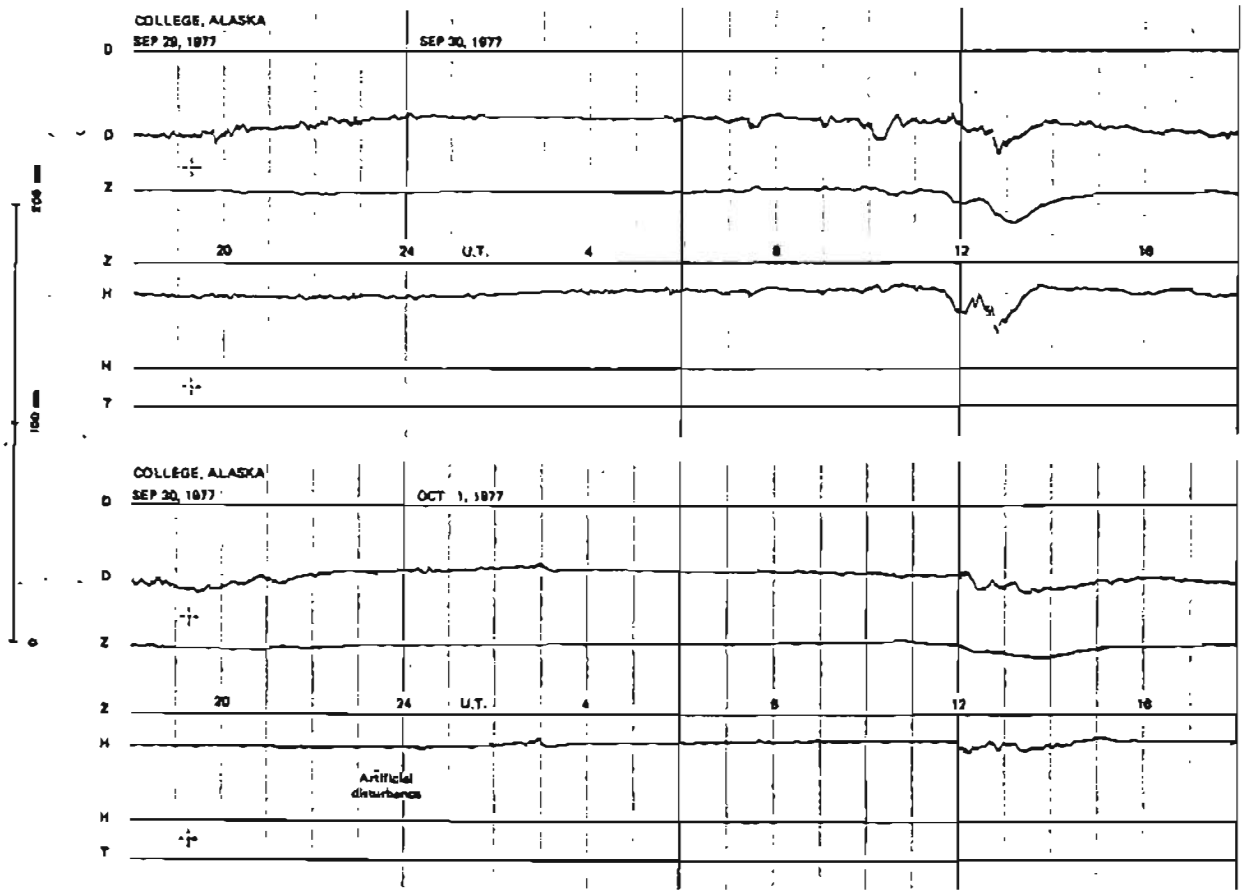
NORMAL MAGNETOGRAMS



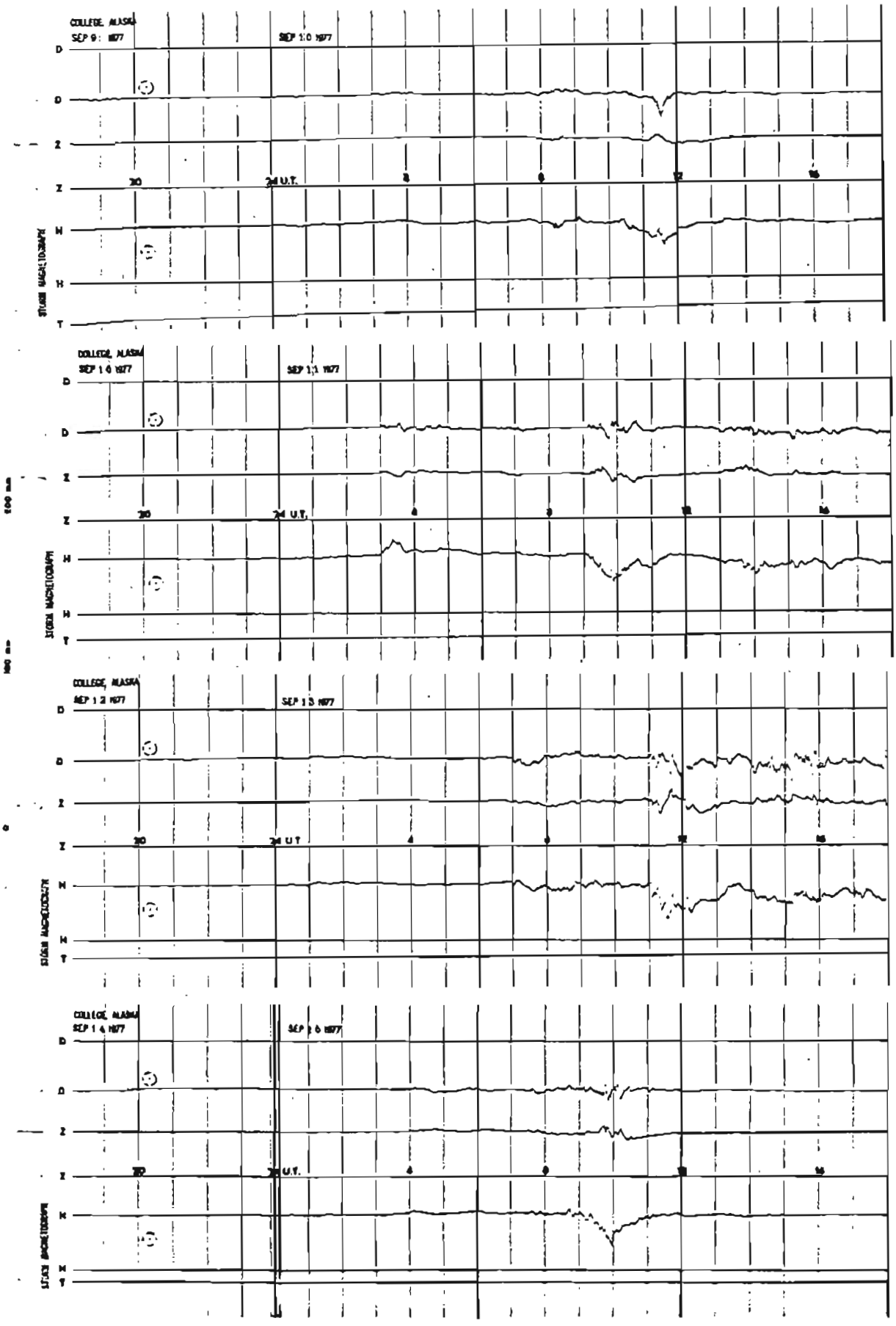
NORMAL MAGNETOGRAMS



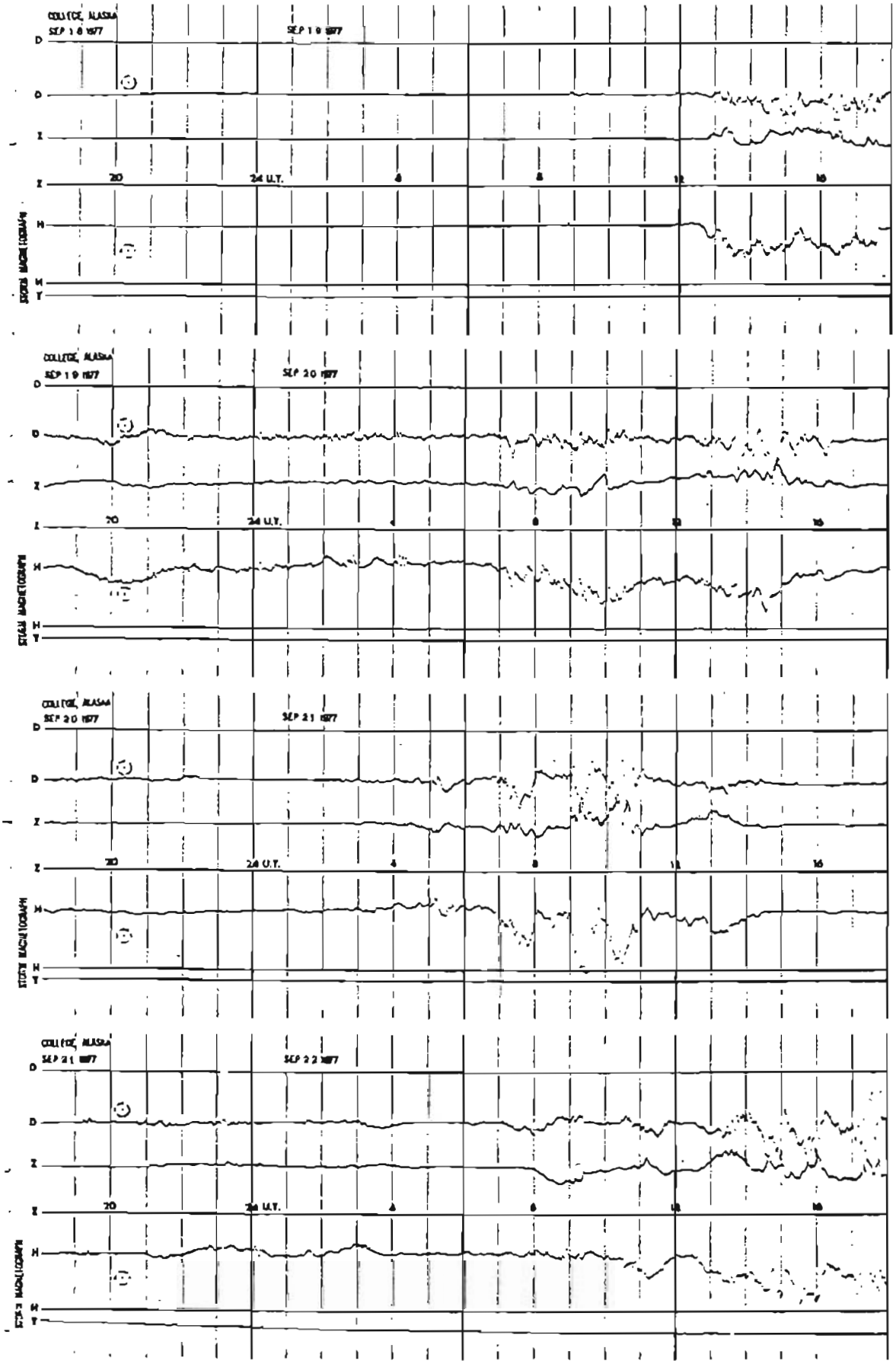
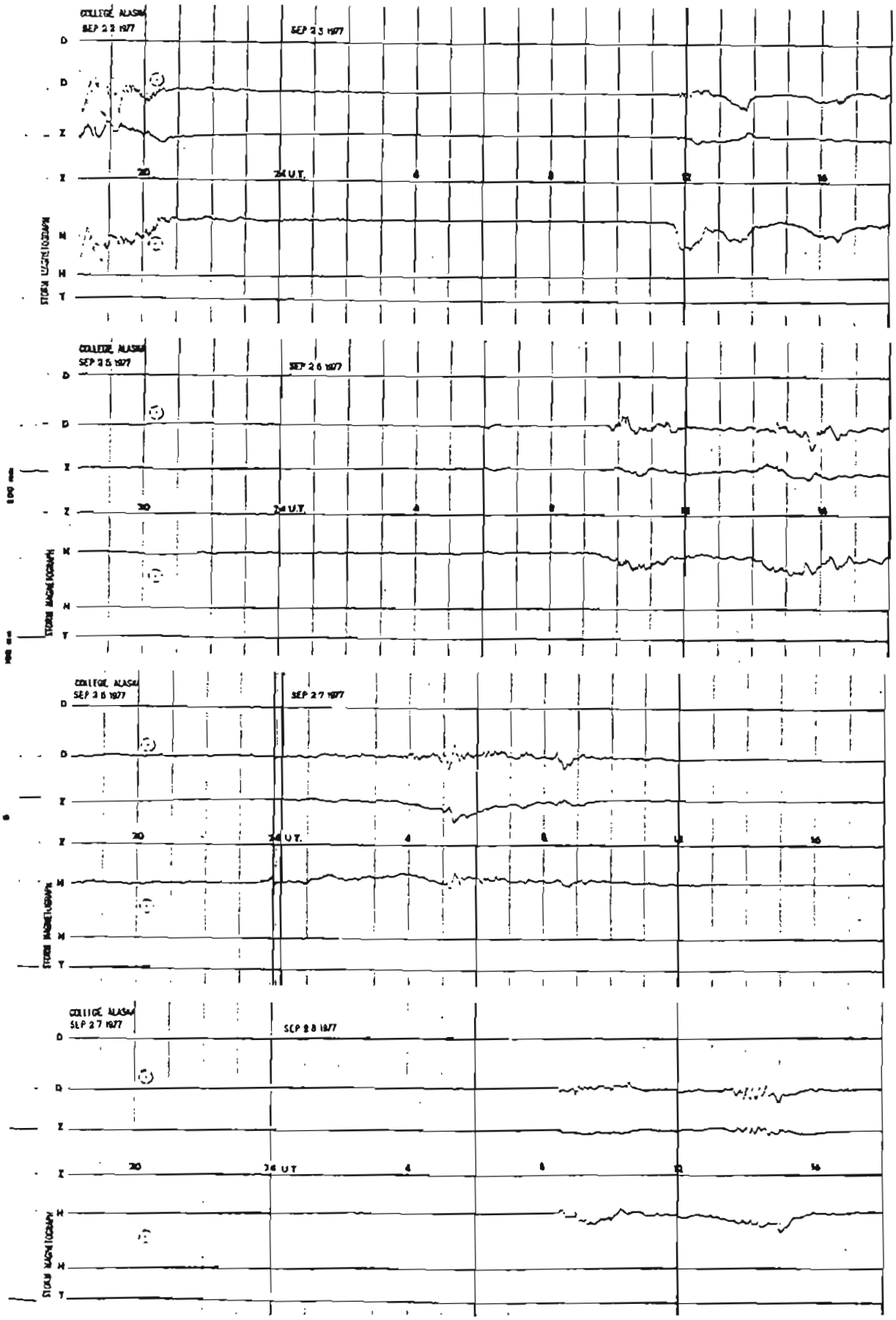
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS