

20
29

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

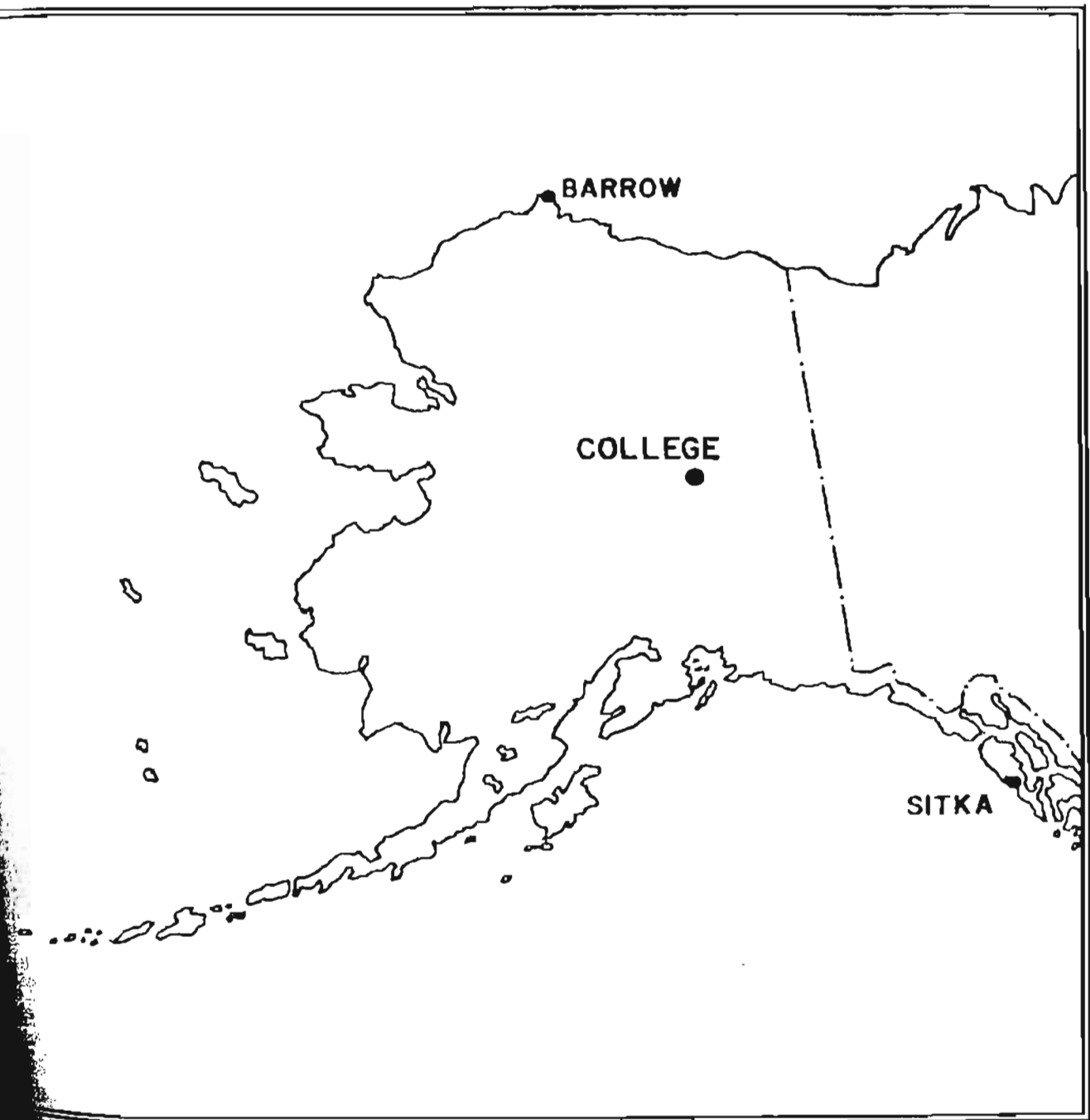
PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

TH
can
open file

U.S. Geological Survey

JUNE 1977

OPEN FILE REPORT, 77-300F



ORDER OF CONTENTS

Explanation of Data & Reports

Magnetic Activity Report

Outstanding Magnetic Effects

Principal Magnetic Storms

Preliminary Calibration Data & Monthly Mean Absolute Values

Magnetogram Hourly Scalings

Sample Format for Normal & Storm Magnetogram

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 10γ has been chosen so as 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
12-50	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:

$$D = B_D \cdot d \cdot S_D; H = B_H \cdot h \cdot S_H; Z = B_Z \cdot z \cdot S_Z$$

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

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

JUNE 1977

DATE	K-INDICES									AK	TIME SCALE ON MAGNETOGRAMS 20 mm/hr
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM		
1	2	2	2	1	2	2	2	2	15	07	SUDDEN COMMENCEMENTS d h m
2	3	4	2	4	6	3	1	2	25	23	
3	1	2	2	3	1	0	1	1	11	05	
4	2	2	1	2	2	1	1	0	11	05	
5	2	2	1	5	5	3	1	1	20	17	
6	2	1	2	0	3	0	0	1	09	04	
7	1	1	1	2	2	0	2	1	10	04	
8	1	1	2	2	3	1	1	1	12	06	
9	2	1	1	1	1	1	1	2	10	04	
10	4	2	2	3	1	0	1	1	14	08	
11	2	2	1	0	0	0	1	1	07	03	
12	2	2	1	0	0	0	1	1	07	03	
13	2	2	1	1	2	0	1	2	11	05	
14	3	3	2	3	2	1	1	1	16	09	
15	1	2	0	1	0	0	0	0	04	02	
16	1	1	2	1	3	2	2	2	14	07	
17	2	3	4	3	3	2	1	1	19	12	
18	1	2	5	4	4	4	3	2	25	20	
19	3	4	4	4	3	3	1	2	24	17	
20	3	3	5	4	4	1	1	1	22	18	
21	1	2	2	2	3	1	0	1	12	06	
22	1	2	1	2	5	3	2	1	17	12	
23	3	3	2	3	3	2	2	1	19	11	
24	2	3	4	1	0	0	1	1	12	07	
25	1	1	1	1	2	1	1	1	09	04	
26	1	2	1	1	1	3	1	1	11	05	
27	3	2	2	2	2	1	2	1	15	07	
28	2	2	2	5	2	2	2	2	19	12	
29	3	2	2	2	2	0	1	1	13	06	
30	2	2	1	3	1	2	2	2	15	07	
31											

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

BEGIN			END		
d	h	m	d	h	m

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9.....

D	M	Z
683.8	321.7	
3.76	7.82	
2570	2520	

(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
JUNE

YEAR
1977

DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS
03	13XX	pi2	
04	21XX	pc4	
06	12XX	pi2	
07	10XX	pi2	With bay
08	10XX	pi2	
10	02XX	pc5	Possible pg
10	11XX	pc5	Possible pg
12	21XX	pc5	
13	23XX	pc1	
18	15XX	pc3	
26	09XX	pi2	
26	1515	si	

IDENTIFIED BY: MJM/JEP

VERIFIED BY: JBT

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

NORMAL MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 6-1-77	2400 U.T., 6-30-77	1.0/mm	3.88/mm	27° 46.3 E
H	0000 U.T., 6-1-77	2400 U.T., 6-5-77	7.88/mm		12760 X
	0000 U.T., 6-6-77	2400 U.T., 6-30-77	7.88/mm		12765 X
Z	0000 U.T., 6-1-77	2400 U.T., 6-25-77	7.78/mm		55129 X
	0000 U.T., 6-26-77	2400 U.T., 6-30-77	7.78/mm		55124 X

STORM MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 6-1-77	2400 U.T., 6-30-77	7.9/mm	29.88/mm	24° 21.5 E
H	0000 U.T., 6-1-77	2400 U.T., 6-30-77	44.18/mm		11506 X
Z	0000 U.T., 6-1-77	2400 U.T., 6-30-77	48.98/mm		53990 X

RAPID RUN MAGNETOGRAPH					
COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		
D	0000 U.T., 6-1-77	2400 U.T., 6-30-77	0.3/mm		1.08/mm
H	0000 U.T., 6-1-77	2400 U.T., 6-30-77	1.08/mm		
Z	0000 U.T., 6-1-77	2400 U.T., 6-30-77	2.48/mm		

MONTHLY MEAN ABSOLUTE VALUES*					
D	H	Z			
28° 18.0 E	13057 X	55362 X			

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JUNE 4, 6, 7, 9, 11, 12, 13, 15, 25, 26

FORM 540-100-100		MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)																								U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY MAGNETIC TIME DIVISION				MOBY.	YEAR	MONTH	DAY																			
Values are in milli-gauss, and are averages for successive periods of one hour beginning at midnight. Hour of local time (LST) is shown in the upper right corner of each day.																																																				
Magnetic values are in gauss, with minus signs shown.																																																				
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		234	231	271	238	303	317	307	305	295	234	300	309	340	342	325	415	469	438	410	385	350	260	251	239	7778																										
02		230	230	250	222	255	350	311	280	300	326	299	275	319	528	417	437	465	479	491	454	379	360	306	251	8294																										
03		248	252	270	268	274	350	285	307	307	291	309	310	320	360	390	400	417	423	417	391	380	337	292	267	7865																										
04		250	247	254	270	288	310	311	318	309	310	310	302	360	320	356	403	412	420	419	400	383	310	281	262	7817																										
05		250	250	254	240	259	300	289	291	300	262	266	331*	458*	417	460	394	465	449	410	380	342	230	271	273	7901																										
06		281	270	250	267	262	280	310	292	301	291	301	298	295	359	377	409	433	433	410	389	315	322	300	277	7752																										
07		270	271	263	267	287	303	304	321	293	278	307	421	369	361	360	400	396	406	416	413	371	270	288	290	7922																										
08		271	270	282	300	310	310	318	321	290	281	339	320	330	329	396	429	424	440	422	409	376	350	300	280	8109																										
09		250	260	265	275	285	290	299	310	308	310	309	318	311	317	341	375	398	408	382	376	336	327	333	252	7635																										
10		234	218	221	233	313	268	316	287	277	290	260	392	336	344	378	391	390	363	363	346	334	339	297	258	7460																										
11		237	240	250	274	303	299	319	300	298	308	309	305	319	316	340	370	389	395	411	379	369	331	292	263	7604																										
12		236	210	190	201	238	306	319	319	319	318	310	303	314	331	369	382	395	407	410	371	339	321	276	258	7442																										
13		233	218	212	261	289	309	290	292	289	275	273	298	334	378	410	410	425	441	431	405	389	299	278	247	7122																										
14		226	221	202	193	206	176	320	289	232	295	343	311	351	352	358	367	381	388	403	400	363	290	262	236	7245																										
15		212	232	262	274	300	321	316	316	317	308	307	333	330	348	372	393	420	429	422	387	347	289	273	256	7776																										
16		24	224	242	250	270	271	307	293	303	287	278	290	300	332	433	432	434	452	443	422	403	284	271	253	7720																										
17		248	241	247	248	283	267	244	286	306	311	292	303	379	304	363	402	461	437	428	403	374	297	269	273	7666																										
18		272	271	276	291	293	328	297	291	248	315	311	306	312	317	331	360	379	432	444	418	346	299	281	250	7568																										
19		258	282	277	271	252	318	313	317	304	293	304	311	29	337	371	393	398	399	421	409	374	333	299	307	7832																										
20		296	246	252	221	258	271	326	296	244	311	276	344	20	334	326	350	389	399	408	416	361	346	326	297	284	7577																									
21		282	280	273	267	256	279	316	291	306	296	298	356	311	333	351	372	404	422	407	386	351	329	287	284	7737																										
22		279	249	260	281	292	304	301	292	289	284	288	339	333	320	422	439	435	457	454	387	350	321	296	271	7943																										
23		237	220	248	301	247	269	357	312	291	291	292	340	343	360	347	360	399	443	461	404	382	346	319	279	7848																										
24		248	230	232	247	270	271	339	376	322	317	292	297	319	336	347	379	400	427	419	396	343	317	289	241	7662																										
25		227	237	253	267	291	320	339	307	297	291	281	294	316	328	358	377	448	446	447	414	383	322	267	227	7737																										
26		223	227	259	281	297	301	292	275	288	287	239	283	309	311	343	391	431	441	436	412	362	273	231	247	7445																										
27		237	222	233	253	262	234	301	291	284	266	262	281	299	328	367	401	426	430	432	427	351	272	239	238	7402																										
28		207	242	262	277	301	291	333	291	274	346	224	337	318	320	408	453	486	472	458	422	322	237	224	193	7728																										
29		186	211	247	230	208	226	273	269	261	320	251	279	321	341	357	382	409	418	421	390	330	281	240	223	7074																										
30		260	266	277	269	280	290	310	296	289	290	256	374	331	330	362	402	438	470	448	419	335	296	219	227	7734																										
31																																																				
SCALED BY	SPT, MJA, JEP		Preliminary heading and scale values:																																														MONTHLY SUM	230925		
CHECKED BY	MJA, JEP, SPT		Interpolated																								Derivation		Scale		Value		Value		Value		Value		Value		Value		Value		Value		Value		Value		MONTHLY MEAN	321
REVIEWED BY	JEP		[] Significant portion of hour interpolated.																								[] Scaling uncorrected because of magnetic storm.		[] No records; or no values available because of faulty record.		[] Arrived off sheet for part or all of hour; if value is given, curve was estimated for missing part.		[] Arrived off sheet for part or all of hour; if value is given, curve was estimated for missing part.																DATES WITH GAPS			
REMARKS	* Derived from Storm Map., converted to Normal Map.																																																			

FORM NO. 50-108		MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)																				U.S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION OFFICE OF GEOPHYSICAL OBSERVATIONS WASHINGTON, D.C. 20540				YRST.	YEAR	MONTH	ELEMENT		
Name of station: <u>WDC</u>		Name of observatory: <u>WDC</u>																				Date: <u>1977</u> <u>11</u> <u>11</u>				CO	77	JUN	R		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
		357	370	370	377	373	386	401	410	408	400	399	380	01	386	334	361	351	327	351	340	352	349	331	351	339				8913	
		393	462	423	435	416	538	391	410	423	295	285	310	02	86	103	208	190	240	258	361	353	362	352	311	354				7819	
		363	372	370	401	430	425	443	440	400	326	374	380	03	390	390	399	410	403	389	371	350	318	329	346	349				9178	
		358	371	397	370	411	401	382	385	393	389	400	380	04	346	351	382	413	417	401	380	353	339	340	340	344				9063	
		360	363	370	430	410	402	408	415	418	440	352	78	05	-97*	-4	105	336	415	440	410	378	340	351	349	360				7869	
		370	400	403	394	401	410	420	410	390	390	389	394	06	370	290	390	410	416	407	401	381	370	354	350	359				9271	
		310	380	372	377	390	380	400	397	400	400	388	349	07	342	391	400	411	416	407	380	370	363	350	351	346				9120	
		350	364	386	385	382	407	411	417	429	412	387	373	08	294	320	378	391	391	397	389	360	356	350	350	346				9029	
		349	370	371	381	390	386	391	381	390	397	400	390	09	393	363	381	380	371	370	376	373	370	356	344	336				9031	
		361	389	411	451	463	441	440	397	384	400	364	359	10	388	379	374	372	381	380	366	369	351	343	359	352				9280	
		368	379	397	429	448	407	390	372	378	373	372	369	11	359	366	371	379	378	366	353	343	338	340	349	363				8988	
		380	412	427	445	433	362	353	368	367	371	371	370	12	367	367	378	380	372	368	349	319	350	333	332	343				8917	
		341	371	377	378	406	422	431	430	403	397	401	388	13	371	341	358	380	367	370	361	369	367	361	350	346				9106	
		400	396	463	503	544	555	456	431	430	407	383	334	14	313	389	399	373	370	369	350	336	350	360	373	367				9721	
		354	352	353	374	376	381	389	383	380	389	377	379	15	371	364	366	365	371	380	366	352	338	350	351	363				8824	
		374	371	370	399	383	398	378	404	413	408	400	393	16	339	279	356	431	411	393	381	361	353	353	359	372				9085	
		381	389	397	420	411	469	578	520	440	379	332	353	17	301	400	388	343	357	387	396	371	369	360	352	369				9462	
		364	374	376	380	421	422	482	364	373	269	347	373	18	364	387	335	164	320	319	360	349	374	363	363	339				8590	
		353	393	421	404	443	529	514	567	453	346	338	277	19	285	231	291	240	354	410	401	389	376	364	369	364				9112	
		384	406	372	428	405	410	464	436	353	359	375	236	20	157	360	400	411	401	396	366	364	364	369	359	360				6395	
		364	371	373	380	412	409	402	407	404	384	366	360	21	376	286	355	365	364	361	363	380	363	350	344	341				8902	
		350	360	359	383	401	393	380	389	390	399	409	369	22	404	379	159	354	387	371	379	370	361	360	356	358				8820	
		361	406	464	434	389	397	413	396	380	381	383	330	23	346	310	338	378	374	376	341	371	361	350	342	344				8915	
		350	386	394	433	447	460	452	356	384	400	383	381	24	383	385	391	369	365	369	370	371	359	340	340	345				9213	
		344	351	366	400	401	387	390	383	381	284	396	400	25	371	323	390	390	396	391	373	349	330	330	333	343				8902	
		367	364	358	373	383	379	380	401	400	396	396	392	26	386	406	384	310	370	387	376	363	341	334	340	361				8949	
		391	339	401	384	406	374	380	404	389	401	400	377	27	354	390	404	400	394	380	363	349	317	321	330	347				6995	
		371	387	382	400	381	411	420	420	412	298	-6	275	28	386	366	404	399	380	348	331	315	303	330	358	357				8428	
		360	411	447	471	496	487	444	446	422	426	400	386	29	366	349	363	359	349	347	340	333	339	350	351	359				9391	
		379	379	367	407	411	410	409	410	418	410	354	298	30	393	366	368	389	380	359	356	329	335	327	344	370				9008	
														31																	

MADE BY: SPT, MJM, JEP
 CHECKED BY: MJM, JEP, SPT
 SIGNATURE: JEP
 PURCHASED BY:

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

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

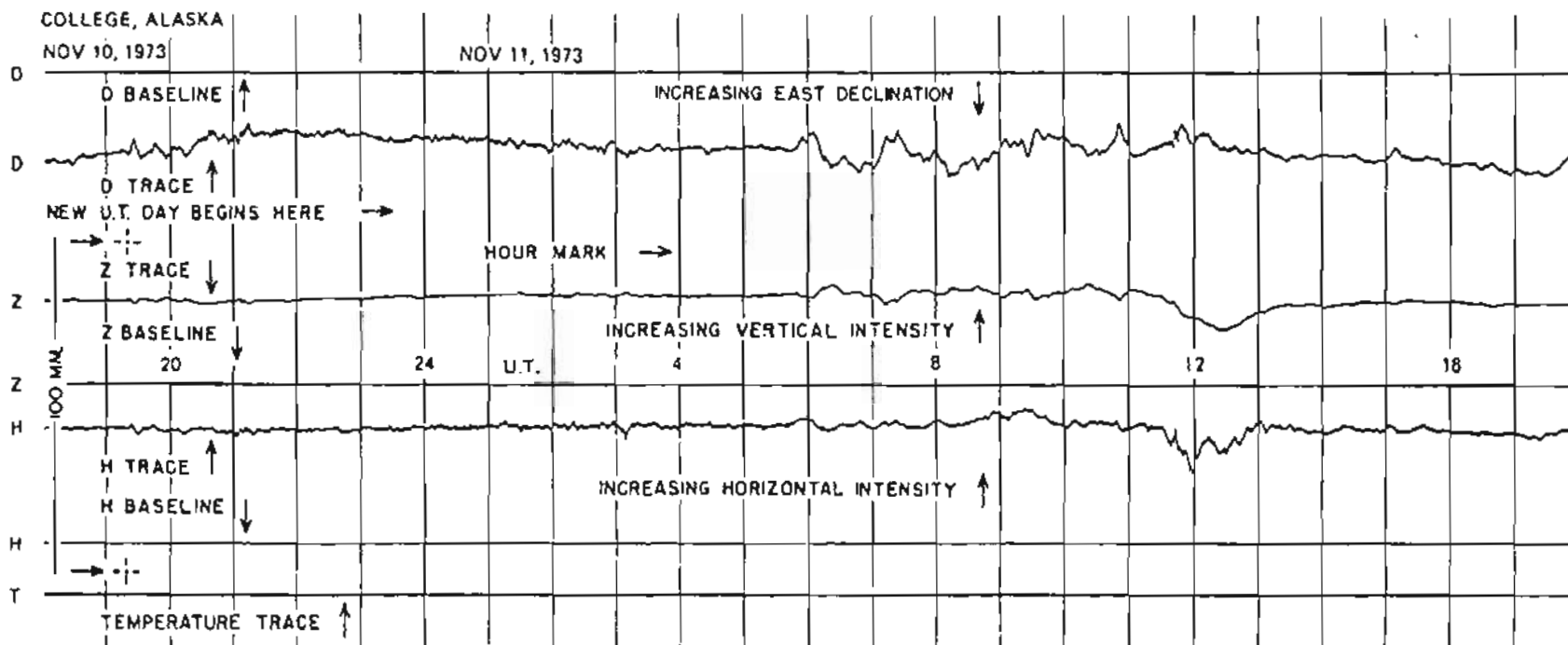
MONTHLY SUM: 26896
 MONTHLY MEAN: 373
 DATES WITH DATA:

STATION NO.	METEOROLOGICAL RECORDING INSTRUMENTS																								WIND DIRECTION	WIND VELOCITY	WIND GUST	Z
	METEOROLOGICAL RECORDING INSTRUMENTS																											
1	310	309	320	324	320	323	334	342	339	317	318	300	297	268	155	280	266	237	256	260	263	256	210	294	7068			
2	306	353	377	349	318	376	341	332	340	190	190	241	201	206	181	230	210	210	242	264	250	281	300	300	6667			
3	306	316	324	320	331	370	340	368	330	253	300	300	307	313	310	308	313	314	312	310	310	300	300	300	7544			
4	304	310	310	309	313	333	338	350	317	211	310	280	238	223	251	194	315	310	303	300	300	296	301	305	7598			
5	300	311	312	323	360	366	336	351	354	310	310	328	312	371	213	209	176	300	300	300	301	300	301	307	7500			
6	313	322	336	346	330	336	362	320	330	315	318	310	299	242	269	304	316	311	299	294	290	297	300	300	7449			
7	301	312	318	310	313	320	317	335	318	312	311	245	203	256	300	310	318	310	303	301	302	287	300	301	7202			
8	308	306	310	317	310	310	314	347	343	319	290	299	293	251	276	300	301	300	294	300	290	290	289	290	7268			
9	293	300	300	308	306	306	307	313	316	310	290	300	299	270	284	301	310	301	296	297	288	287	292	287	7163			
10	296	316	306	334	401	347	393	349	320	314	298	258	286	310	313	311	307	313	312	309	306	304	299	299	7683			
11	302	319	312	325	345	318	352	331	319	316	304	304	298	289	304	313	313	308	310	301	302	300	303	309	7551			
12	310	329	339	359	401	380	377	311	310	306	303	303	307	307	304	305	307	304	301	280	271	280	295	310	7630			
13	312	310	312	320	330	351	370	372	346	320	316	320	311	283	278	281	281	270	250	236	247	241	257	264	7233			
14	290	336	371	381	432	419	427	359	351	316	273	260	258	283	303	311	304	312	309	301	287	269	273	287	7722			
15	287	291	297	300	321	321	316	311	311	311	316	316	304	297	291	294	302	306	304	296	285	276	280	289	7224			
16	304	309	321	326	331	339	357	327	339	322	304	293	256	193	192	260	300	301	306	293	231	266	284	256	7080			
17	300	326	307	317	343	366	342	358	342	320	262	272	207	249	198	305	277	278	233	308	502	298	300	306	7269			
18	304	316	318	319	331	386	335	178	339	343	293	306	311	321	324	24	250	281	157	286	289	300	304	310	7256			
19	316	326	337	340	347	357	337	328	349	294	261	286	277	277	261	269	251	314	313	307	300	299	300	300	7371			
20	336	329	350	333	367	347	353	356	292	304	290	243	93	219	280	311	320	336	317	297	270	287	290	299	7242			
21	293	303	312	311	318	333	337	320	332	281	300	276	277	229	257	183	296	299	306	291	287	287	296	297	7141			
22	306	296	306	308	320	334	324	310	304	309	316	270	280	279	231	222	263	212	261	264	271	281	292	300	6919			
23	304	299	306	306	372	345	367	356	316	321	317	313	241	248	217	281	313	283	267	267	279	286	291	297	7207			
24	297	300	309	309	333	341	367	216	258	324	319	316	213	313	316	318	314	312	307	302	291	287	292	299	7411			
25	304	316	343	317	240	351	341	318	308	304	300	307	214	200	267	307	313	310	306	300	301	290	292	294	7273			
26	300	310	310	308	322	316	311	307	332	277	290	307	308	307	313	257	269	291	297	296	300	291	298	310	7434			
27	314	319	317	333	356	356	332	320	324	320	319	307	262	247	305	319	319	306	305	304	286	278	288	293	7423			
28	297	300	313	323	339	341	356	358	341	275	62	184	257	260	307	309	298	279	264	263	253	249	270	295	6798			
29	294	301	330	339	383	410	396	377	356	330	286	303	294	288	289	300	300	297	302	297	281	278	282	281	7574			
30	310	330	327	320	346	367	368	350	338	331	286	296	261	290	300	309	310	310	290	208	271	270	269	277	7355			
31																												

(1) Interpolated
 (2) Stationary instrument
 (3) Stationary instrument, not interpolated
 (4) No record; no value is possible because of faulty record.
 (5) Derived from SIGRZ. High, corrected to Normal Height.

(6) Scaled according to meteorological scale.
 (7) Record of observation in all of hours of value is given, but not estimated for missing part.

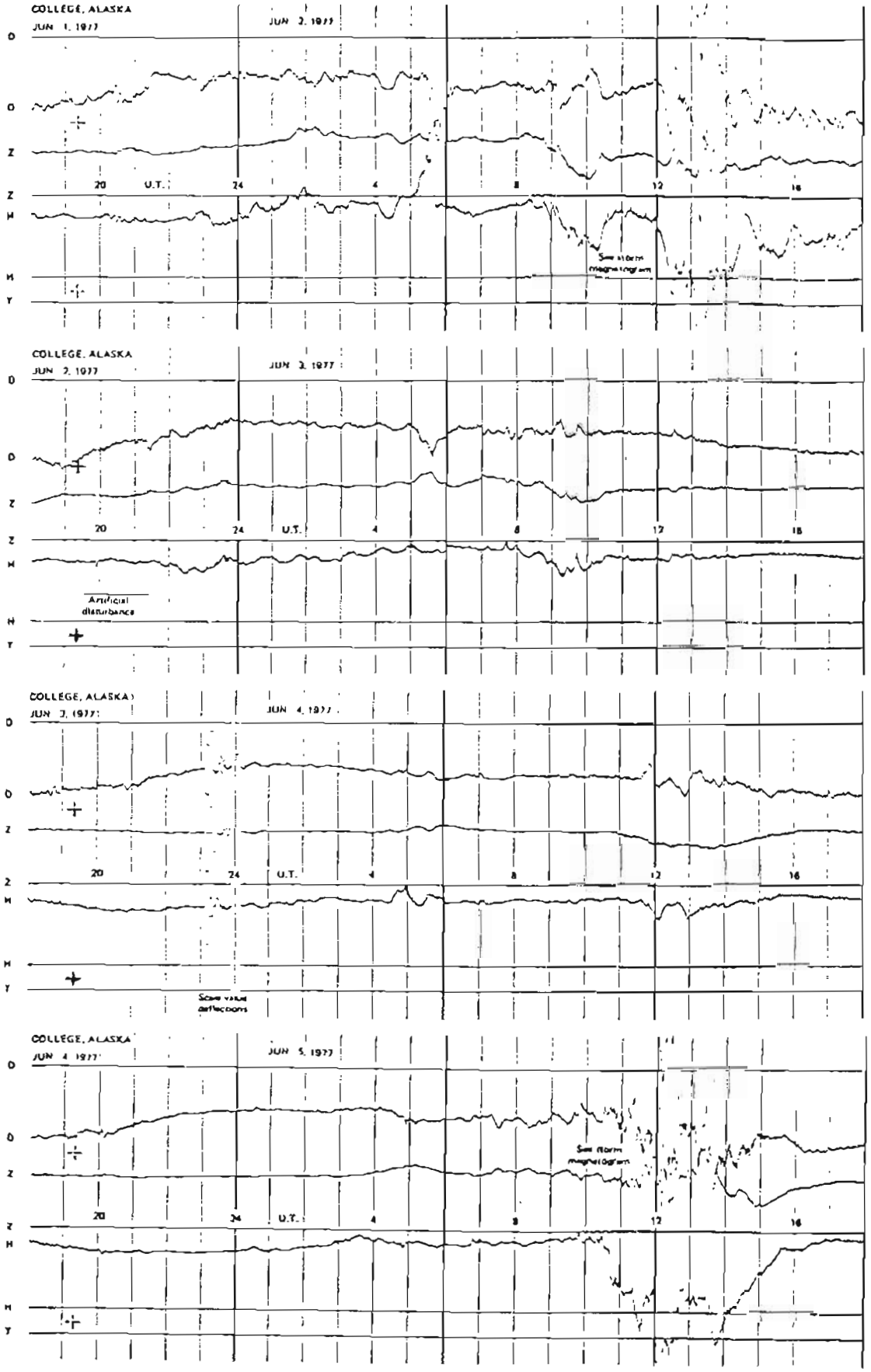
FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)



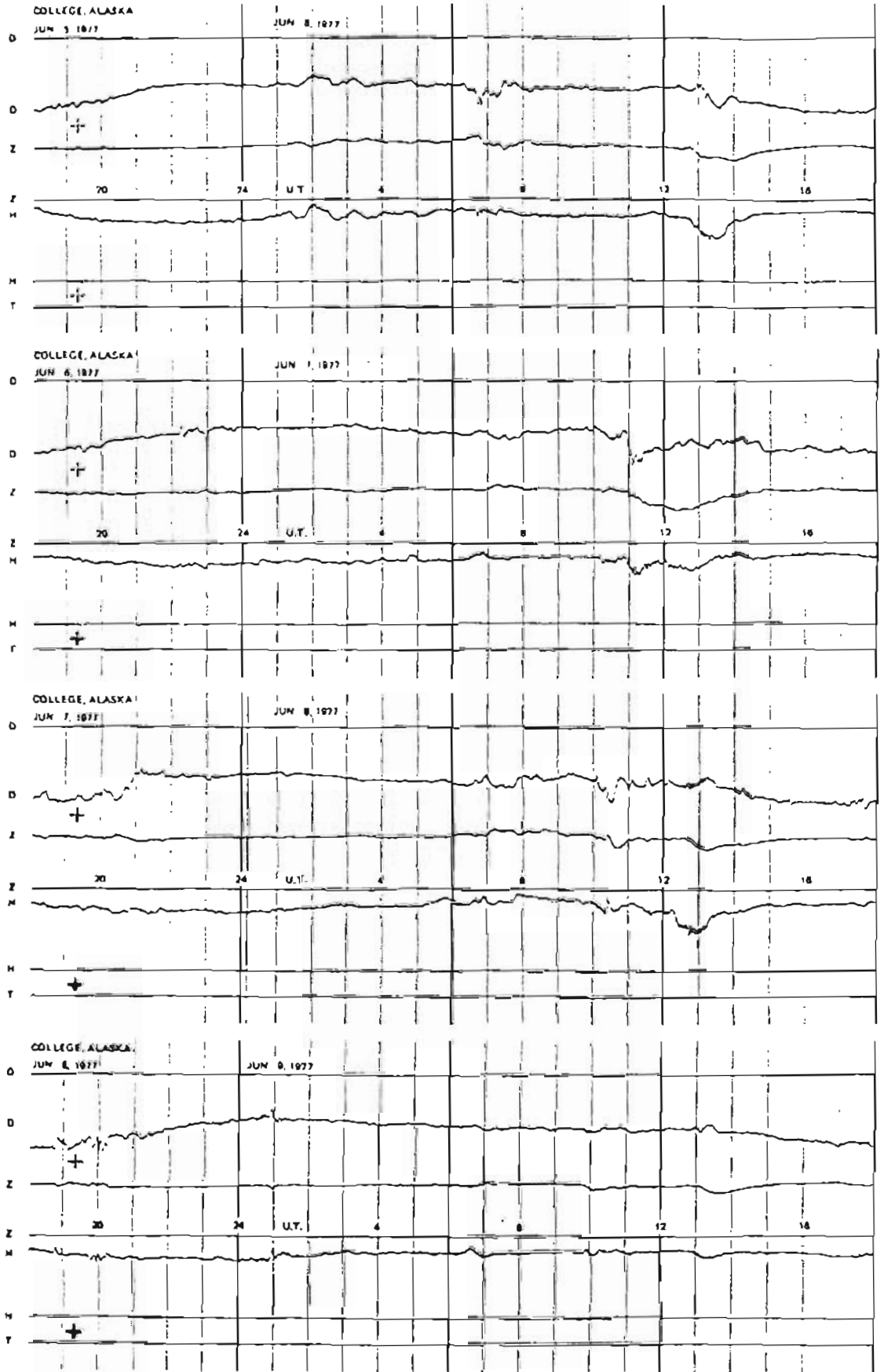
SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS

100 μV
100 μV
0

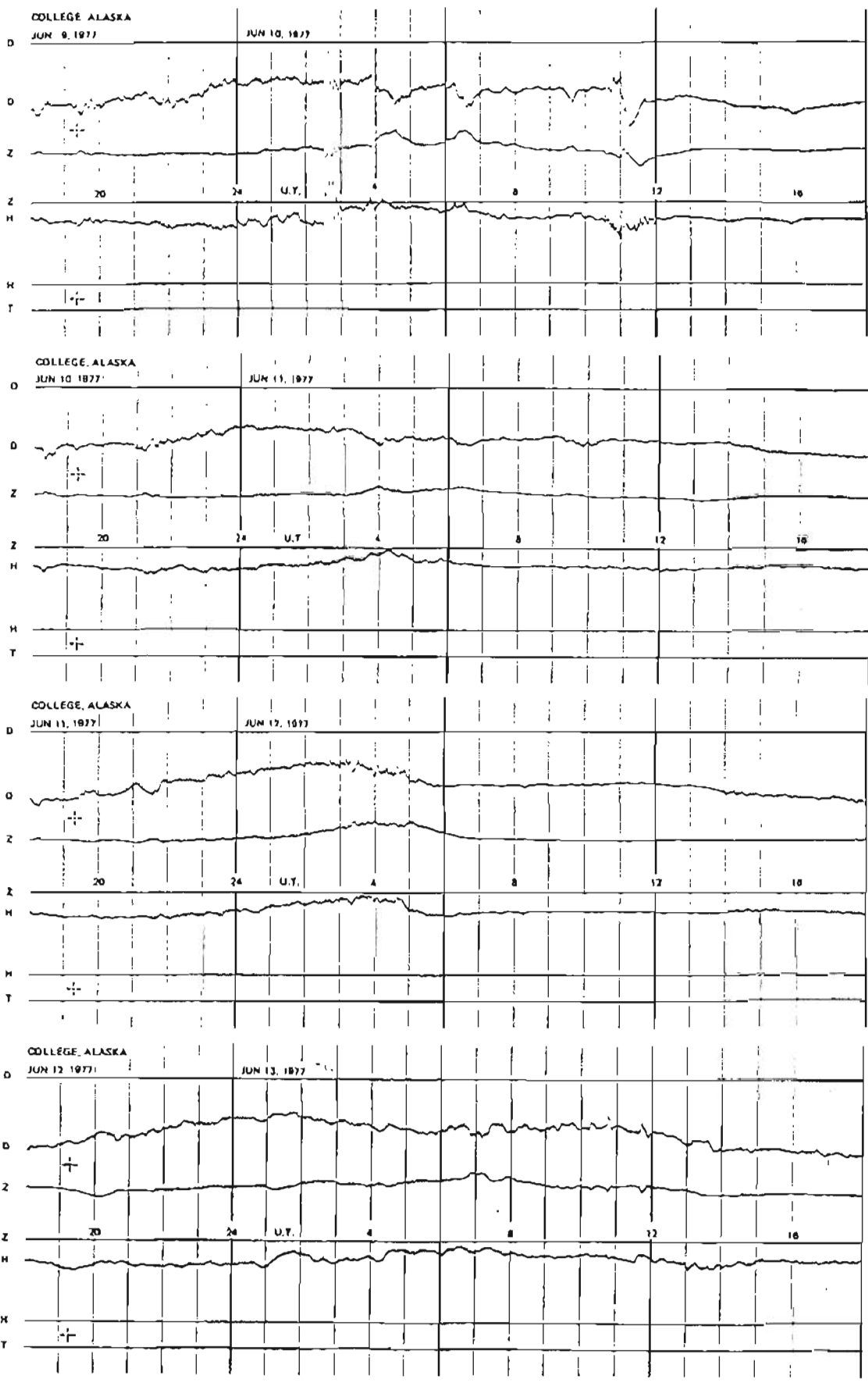


NORMAL MAGNETOGRAMS

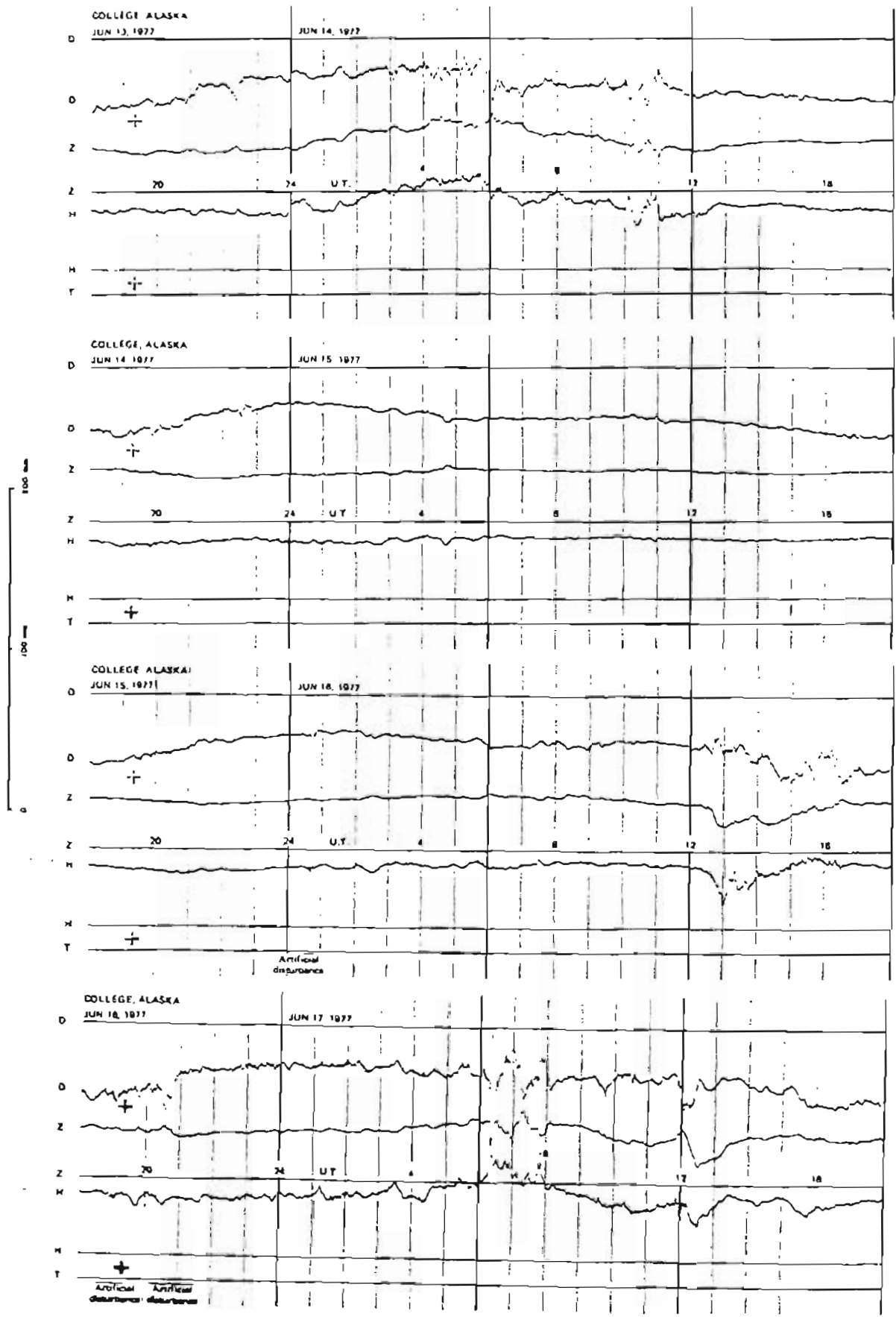


NORMAL MAGNETOGRAMS

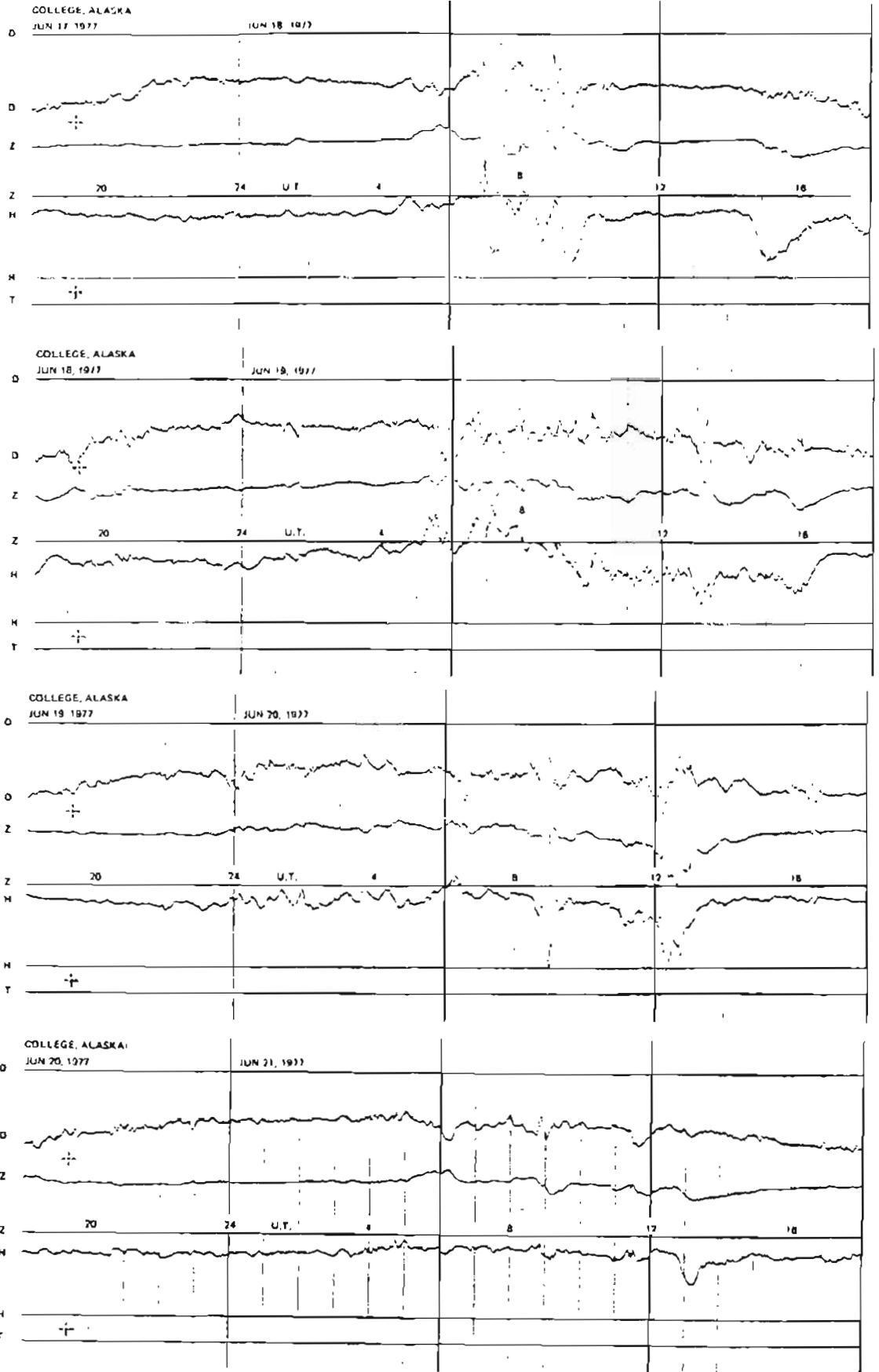
100 mm
100 mm



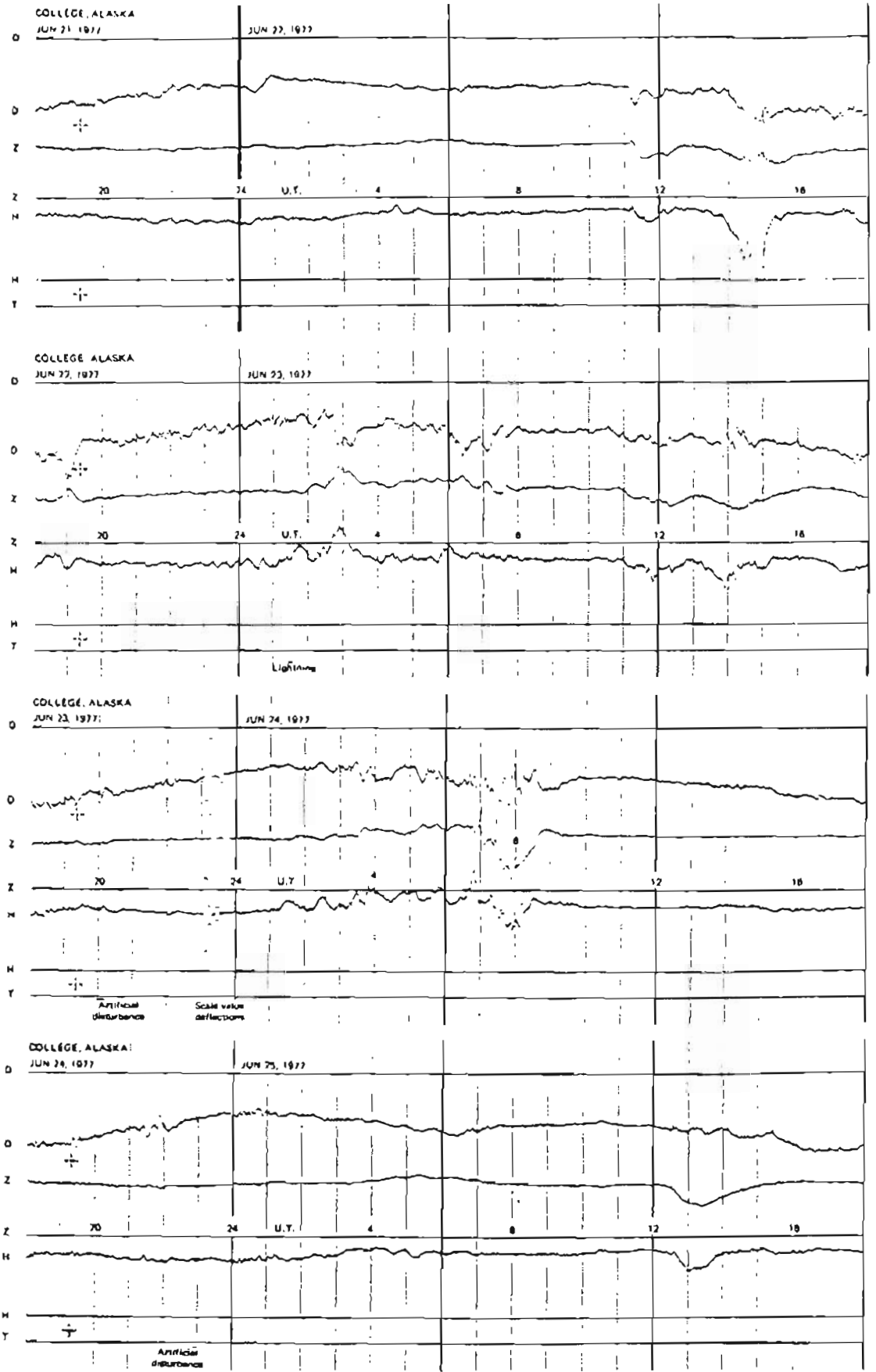
NORMAL MAGNETOGRAMS



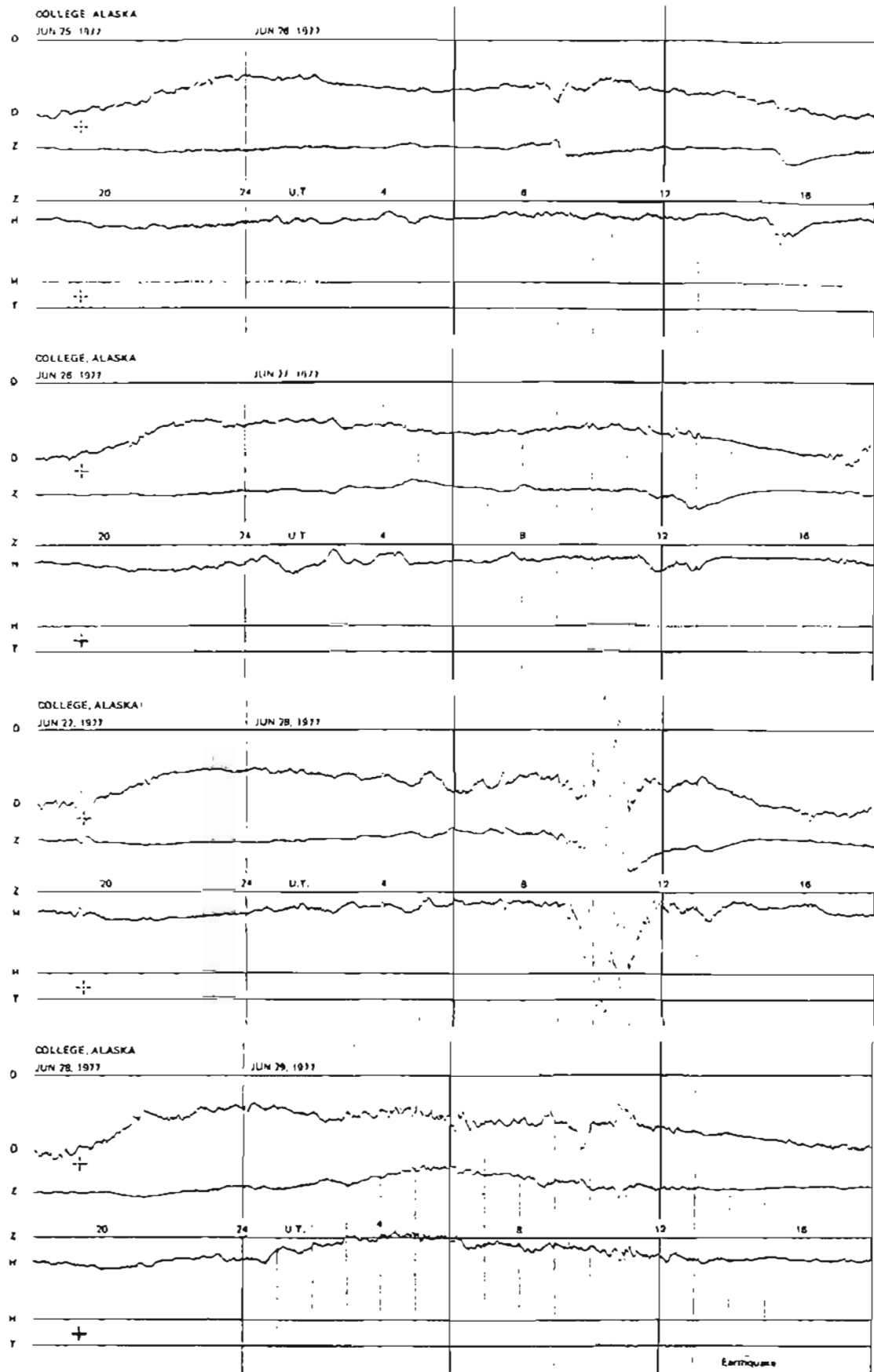
NORMAL MAGNETOGRAMS



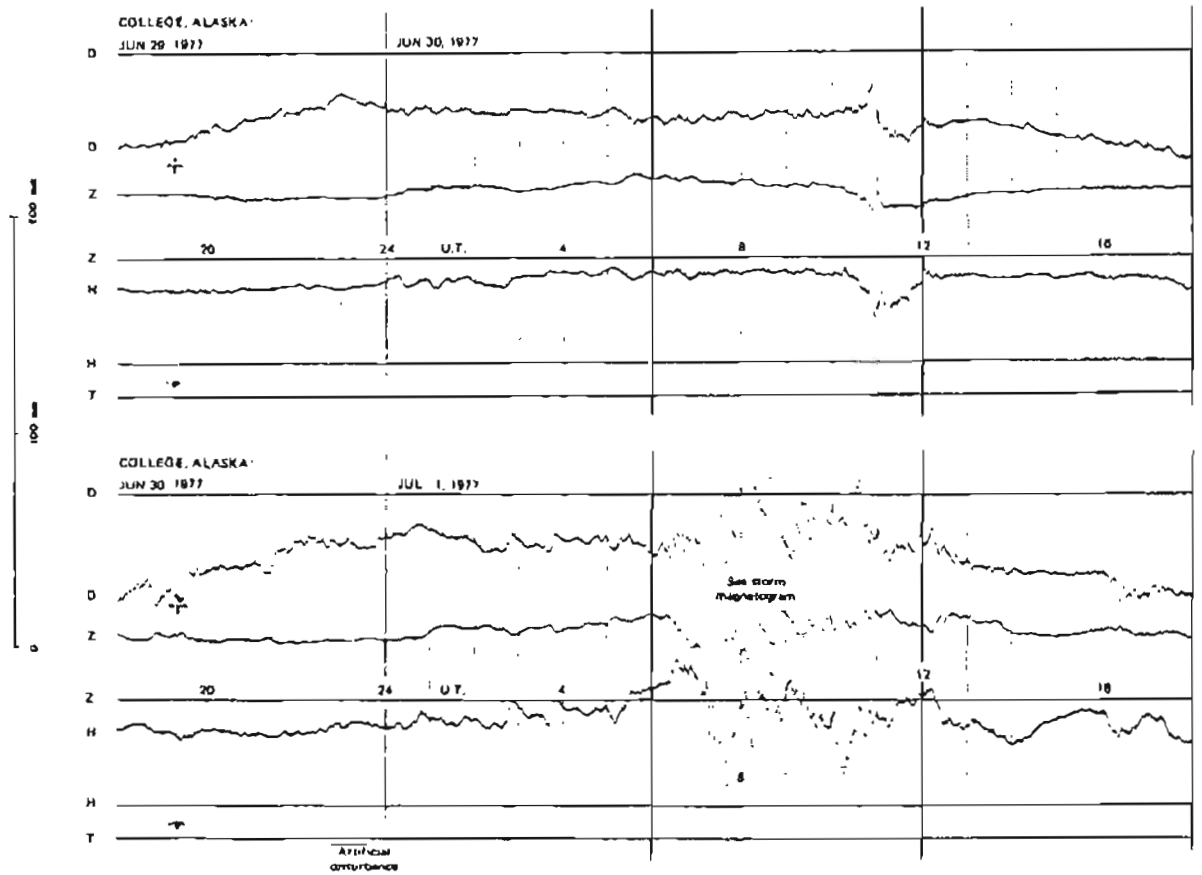
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS

