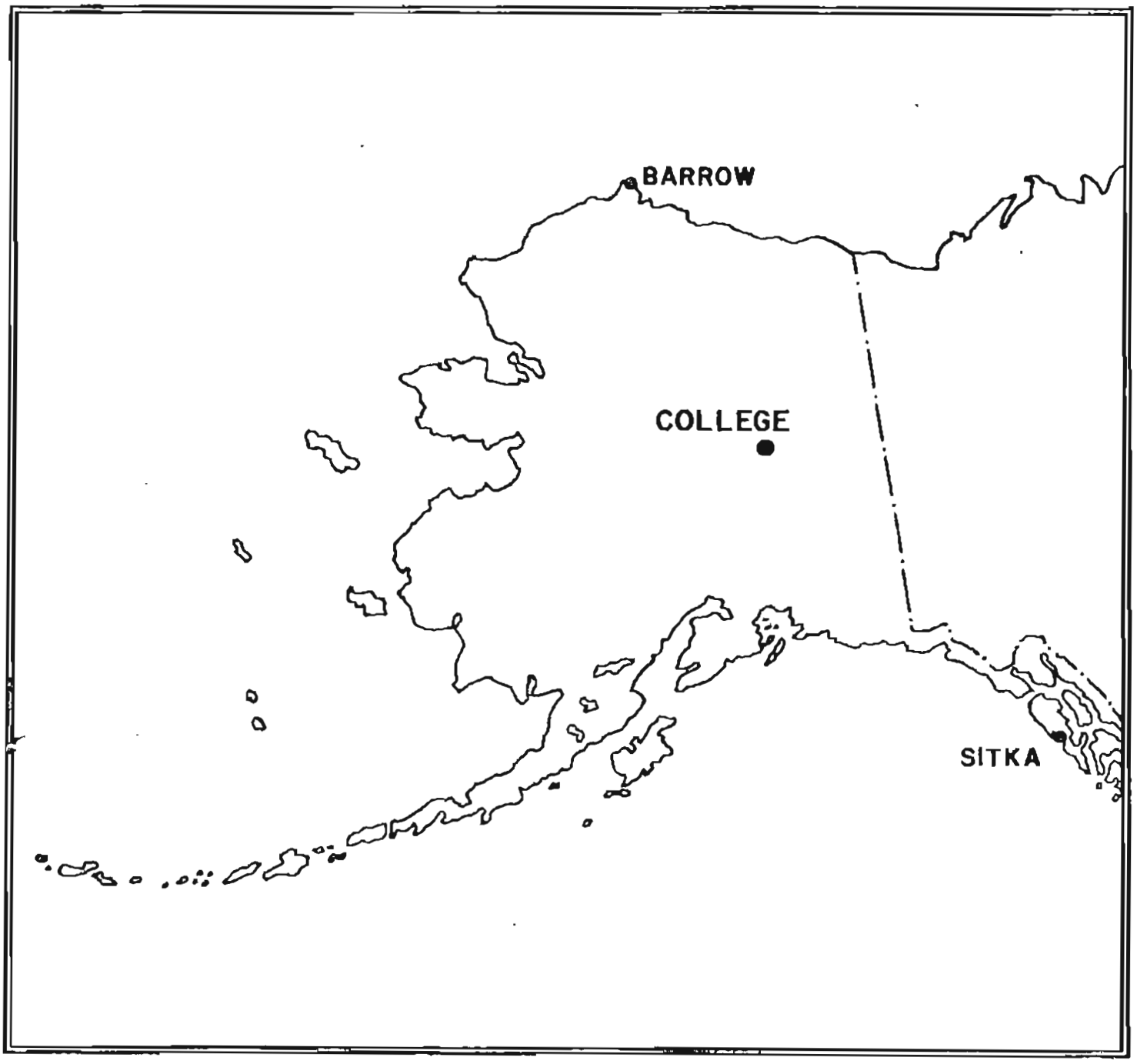
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

APRIL 1982

OPEN FILE REPORT 82-0300D



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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 L.Y. TORRENCE 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
800 Yukon Drive
Fairbanks, Alaska 99701

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A
NOAA D63, 325 Broadway
Boulder, Colorado 80303

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.....+356.5°
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
0-11	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 and 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: APRIL 1982

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	3	1	1	3	3	1	2	4	18	11
2	3	4	4	5	6	7	4	4	37	49
3	3	4	6	6	5	6	5	3	38	49
4	3	3	5	5	5	4	4	3	32	30
5	3	4	4	6	2	3	3	2	27	24
6	2	4	7	6	5	4	3	2	33	44
7	2	1	1	2	1	0	2	1	10	04
8	0	2	4	4	4	3	2	2	21	15
9	3	3	2	3	3	2	2	1	19	11
10	3	4	4	6	7	7	5	5	41	66
11	3	4	6	6	6	6	4	2	37	50
12	2	3	3	4	6	4	2	1	25	23
13	3	3	2	3	3	0	0	2	16	09
14	0	1	3	1	0	2	1	1	09	04
15	1	1	4	3	5	2	2	2	20	15
16	2	3	1	1	0	3	3	3	16	09
17	3	2	5	6	4	5	2	2	29	30
18	1	2	2	2	5	4	3	2	21	15
19	2	2	1	1	5	5	2	3	21	17
20	3	3	4	3	4	2	2	2	23	15
21	2	3	4	6	5	5	5	3	33	36
22	4	5	3	2	2	2	2	1	21	15
23	2	1	3	5	4	2	2	1	20	15
24	2	2	1	1	3	3	4	2	18	11
25	4	5	7	6	5	4	3	2	36	49
26	1	1	2	5	3	3	2	2	19	13
27	1	3	3	1	3	6	4	3	24	22
28	4	4	3	4	4	3	3	3	28	21
29	3	4	5	4	4	5	5	5	35	30
30	4	3	5	5	5	6	2	3	33	36
31										

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

BEGIN d	BEGIN h	BEGIN m	END d	END h	END m

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

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.73	7.79		(γ/mm)
LOWER LIMIT FOR K = 9	2550	2510		(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 815

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

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: APRIL

YEAR: 1982

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
16	1702	ssc*	
24	2016	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.

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80303 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA
APRIL 19 82

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	01	20XX	..	..	..	..	02 06	6 3	7 7	424	1690	1100	06	22
		10	00XX	..	..	..	..	10	5, 6	7	412	1460	1010	12	16
		16	1702	s.c.*	-20	+76	-19	17	4	6	123	730	630	17	19
		20	23XX	..	..	..	..	21	4	6	112	1030	370	22	08
		24	2016	s.c.*	+54	-148	+72	25	3	7	242	1470	830	25	24
		27	15XX	..	..	..	..	May 02	7	7	231	1570	1020	May 04	18

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: APRIL 1982

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T. 4-1-82	2400 U.T. 4-30-82	1.0/mm	3.7'/mm	27° 46.7' E
H	0000 U.T. 4-1-82	2400 U.T. 4-30-82	7.8 γ/mm		12753 γ
Z	0000 U.T. 4-1-82	2400 U.T. 4-30-82	7.7 γ/mm		55149 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T. 4-1-82	2400 U.T. 4-30-82	7.9'/mm	29.6 γ/mm	23° 42.4' E
H	0000 U.T. 4-1-82	2400 U.T. 4-30-82	44.0 γ/mm		11504 γ
Z	0000 U.T. 4-1-82	2400 U.T. 4-30-82	48.5 γ/mm		54041 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 59.4' E	12962 γ	55390 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: APR 1, 7, 8, 9, 13, 14, 15, 16, 24, 26

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of mm, and are averages for successive periods of one hour beginning at midnight. Hour UT of local day [illegible] M.T., to hour [illegible] of the same universal day. Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

U.S. DEPARTMENT OF INTERIOR, Geological Survey

OBSY.	YEAR	MONTH	ELEMENT
[illegible]	[illegible]	APR	[illegible]

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	78	40	76	76	80	93	99	96	104	73	127	164	01	135	156	211	188	200	196	212	215	271	125	179	123	3317
02	115	57	-1	-41*	14	72	45	-49*	-89*	116	76	119	02	166	411*	729*	625*	133*	451*	177	133	86	25	73	76	3521
03	72	58	41	-33	37	183	-231*	-176*	56	30*	-41*	189*	03	141	300*	451*	666*	649*	530*	308*	139	99	124	100	94	3766
04	75	26	40	24	25	98	-81*	-89*	21	78*	80	94	04	102	261	381	284	270	270	234	110	186	195	114	116	2918
05	84	36	0	-24	-25*	74	66	33	95	46*	189*	94	05	115	136	156	172	196	227	212	159	188	183	159	73	2671
06	82	76	50	21	17	45	46	-106*	61	87	88	157*	06	157	186	355*	252	352	246	207	194	146	85	102	98	3004
07	56	77	80	64	90	119	100	106	85	180	102	121	07	136	144	178	176	196	212	204	188	178	144	117	106	3163
08	64	75	69	66	72	74	42	3	37	30	127	133	08	203	194	210	196	187	212	192	232	158	105	98	103	2902
09	88	34	26	31	29	96	92	94	40	76	106	109	09	167	191	215	236	292	309	290	286	153	107	87	82	3236
10	17	-4	-43	-31	-11	-35	-45	-138*	-130*	-83*	-107*	109	10	196	608*	128*	529*	481*	362*	433*	600*	172*	160	113	-31	3649
11	96	116	0	-10	20*	-24	-114*	-170*	-19*	108*	62	130	11	140	162	164*	275*	156	216	268	188	142	120	154	112	2294
12	108	104	104	82	110	109	100	81	62	14	150	157	12	362*	192	187	204	213	227	208	166	171	160	174	136	3601
13	96	86	46	72	76	51	66	104	104	106	118	146	13	166	124	121	144	187	194	202	212	199	223	128	94	3085
14	90	87	90	92	104	110	122	98	140	111	114	117	14	124	134	122	148	190	231	225	207	182	146	108	99	3191
15	89	83	74	78	92	101	102	103	57	46	162	145	15	118	224	184	186	246	214	198	179	174	114	79	124	3172
16	71	66	56	75	65	135	76	114	116	100	109	121	16	132	146	167	165	190	170	196	139	156	101	110	113	2893
17	54	41	23	98	108	99	80	40	-135*	-191*	151*	110*	17	146	97	300	223	218	184	178	140	136	120	133	164	2517
18	102	100	99	104	103	112	114	93	115	116	119	125	18	144	227	231	261	228	231	170	185	109	156	119	100	3457
19	84	87	87	96	91	104	111	90	102	105	110	132	19	118	117	115	300	268	220	165	166	150	106	76	90	3090
20	43	29	50	34	99	40	112	48	158	77	92	99	20	150	173	196	204	206	188	159	158	161	138	110	116	2850
21	76	46	76	69	101	91	186	296	44	91	194	412*	21	163	170	164	256	242	396*	248	151	136	122	103	157	3990
22	79	68	59	34	66	68	157	121	83	84	91	109	22	110	125	143	165	191	212	216	182	147	110	84	73	2777
23	61	59	59	74	85	99	111	168	124	87	73	260*	23	49	135	151	175	218	219	193	179	143	137	65	79	3003
24	48	43	55	67	81	108	110	103	110	110	112	104	24	119	122	121	183	182	196	214	210	202	107	87	54	2848
25	28	-40	-114*	-3*	-42*	-170*	-137*	4	101*	-51*	-185*	315*	25	212*	220*	270	162	176	248	230	191	117	111	82	67	1732
26	66	72	86	104	117	132	124	114	73	92	91	98	26	102	131	145	164	184	244	226	172	172	128	109	71	3017
27	77	75	84	93	100	88	131	96	139	106	112	100	27	94	136	161	180	474*	230	192	125	178	196	158	64	3389
28	24	28	48	-12	-12	80	-2	15	-21	25	12	60	28	142	212	72	182	254	237	206	153	63	156	123	89	2134
29	69	51	-2	10	94	8	24	-42*	-28	42	86	89	29	141	234	199	320	260	298	310	103	39	45	146	189	2685
30	135	74	15	-28	-34	56	32	-69*	30	18*	110	194	30	186	166	178	160	304*	152	170	208	130	129	132	150	2598
31													31													

SCALED BY	LYT, TKC
CHECKED BY	EAS, JEP
SIGNS 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 Mgph., converted to Normal Mgph.

MONTHLY SUM	90490
MONTHLY MEAN	126
DATES WITH GAPS	

FORM 76-106

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 (___ M.T.) is hour ___ of the ___ universal day. Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

U.S. DEPARTMENT OF THE INTERIOR, Geological Survey

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	336	336	342	328	323	325	321	322	326	318	302	321	01	294	294	292	304	318	320	321	319	347	355	352	373	7769
02	348	264	312	186*	314	318	238	162	160	332	343	348	02	353	477*	572*	326*	680*	427*	238	151	203	272	322	351	7717
03	332	356	365	298	159	188	29*	97	345	309	303	622*	03	529	641*	598*	553*	432*	427*	306	179	281	341	347	344	8401
04	379	352	340	371	385	334	163	325	324	216	314	346	04	345	415	216	198	218	211	220	231	285	327	328	350	7195
05	350	366	390	379	288	391	405	311	259	324	302	263	05	296	335	319	336	343	362	342	304	303	326	334	314	7953
06	330	342	359	353	350	310	286	117*	324	302	328	363*	06	307	337	370*	268	274	200	224	271	293	303	337	352	7330
07	360	364	346	348	349	348	334	339	338	306	291	325	07	321	308	318	324	324	312	273	271	290	292	301	313	7695
08	314	310	309	309	308	309	321	226	169	185	305	316	08	229	389	263	203	270	259	292	317	301	321	320	333	7058
09	332	322	354	360	364	374	341	337	349	356	343	322	09	298	311	282	221	225	214	240	238	210	234	271	296	7194
10	298	332	358	382	393	346	164	154	183	202	310	485	10	582	788*	686*	939*	750*	952*	770*	624*	371	330	304	328	11031
11	353	342	350	373	351	271	245	231	389*	466*	377	433	11	474	458	555*	592*	320	318	324	320	318	347	356	353	8862
12	342	354	364	347	382	370	373	349	344	347	525	567	12	586*	328	442	351	345	342	340	315	323	329	330	344	9032
13	338	340	345	376	362	389	412	404	370	352	341	328	13	265	271	316	334	337	338	332	326	321	322	311	311	8141
14	319	324	329	326	323	321	322	326	254	344	332	316	14	302	310	316	319	304	288	304	309	306	298	298	304	7594
15	310	314	316	323	324	320	321	336	258	282	311	254	15	313	285	196	242	284	314	310	318	320	316	310	333	7210
16	324	318	329	336	345	376	363	361	334	322	312	314	16	314	320	320	317	320	323	268	274	270	290	304	301	7675
17	300	304	310	330	319	316	321	239	166	298	536*	479*	17	541	472	508	285	240	296	314	319	324	316	323	330	8186
18	325	323	323	324	323	324	330	333	341	330	319	304	18	318	247	212	242	262	296	316	311	305	321	338	319	7386
19	316	339	326	324	322	327	330	319	322	322	320	306	19	304	302	304	299	175	138	244	308	312	322	325	340	7246
20	334	358	366	354	418	384	399	224	256	303	313	348	20	354	228	221	276	298	309	310	315	311	299	302	325	7605
21	372	365	326	324	340	325	364	214	217	313	248	385*	21	334	473	434	430	315	286	247	305	311	316	329	369	7942
22	390	352	330	320	358	365	330	337	330	324	300	312	22	315	309	322	335	326	329	322	319	311	306	305	310	7677
23	313	316	320	323	325	327	331	336	271	270	300	314*	23	168	292	308	320	319	301	282	294	303	310	301	314	7258
24	319	330	339	332	338	350	339	328	331	330	313	306	24	302	308	306	258	210	254	299	309	313	295	294	300	7403
25	311	288	319	245*	176*	125*	99*	302	289*	400	453*	378*	25	365*	430	395	282	327	323	310	305	322	330	324	316	7414
26	320	332	340	341	340	342	342	336	314	243	283	358	26	311	307	329	324	348	313	272	280	311	328	344	333	7692
27	320	318	323	323	323	341	364	302	388	350	333	325	27	298	267	316	346	302*	105	206	216	265	302	342	347	7322
28	328	340	372	360	284	366	396	289	254	303	320	444	28	456	536	235	294	314	277	280	271	262	301	312	339	7933
29	390	382	357	366	403	372	325	222	177	212	320	353	29	476	442	441	250	190	228	149	106	197	300	326	332	7346
30	324	310	295	369	306	192	31	228	368	333	390	367	30	299	339	464	258	263*	210	282	315	298	304	332	360	7237
31													31													

SCALED BY	LYT, TKC
CHECKED BY	EAS, JEP
SIGNS 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.

* 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	233724
MONTHLY MEAN	325
DATES WITH GAPS	

FORM 74-10b

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. DEPARTMENT OF INTERIOR, Geological Survey

OBS.	YEAR	MONTH	ELEMENT
C	8_	APR.	H

Values are in tenths of mas. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (___ N T) is hour ___ of the ___ universal day. Shrinkage corrections have been applied. Negative values are in red, with minus sign 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	262	316	272	266	274	280	263	306	364	357	279	225	01	222	269	265	326	315	314	308	295	253	215	273	415	6948
02	427	504	466	553*	567	522	408	290	388	186	195	226	02	90*	-454*	-561*	-759*	-329*	-324*	-95	42	76	162	240	343	3176
03	290	401	370	363	463	317	162*	361	325	182	252	-233*	03	-57	-35*	-403*	-561*	-403*	-193*	-65	89	239	279	226	334	3073
04	219	422	409	424	461	425	408	381	380	163	234	286	04	241	-57	26	125	164	187	54	199	244	213	202	296	6364
05	258	326	310	335	513	293	342	410	303	255	-290*	260	05	256	265	260	265	274	219	161	168	265	246	222	274	6561
06	302	304	323	346	400	554	438	23*	345	267	170	-118*	06	35	-128	-97*	187	20	46	275	260	225	241	261	292	5023
07	290	272	266	284	273	250	296	281	305	300	316	290	07	276	263	276	263	245	226	219	259	258	247	245	244	6592
08	260	251	262	272	261	320	406	397	463	146	251	197	08	31	61	-116	204	303	210	285	252	234	232	278	275	5772
09	270	312	260	260	346	242	302	330	359	335	310	252	09	223	200	113	212	219	254	250	229	213	236	240	238	6454
10	265	410	377	454	513	[illegible]	523	308	292	164*	236	112	10	17	-292*	-745*	-252*	-507*	-564*	212*	-216*	-139*	119	276	300	2109
11	610	429	447	406	447	401	192	266	176*	-174*	219	245	11	222	205	104*	280*	311	324	164	115	266	292	271	240	5945
12	241	225	215	300	315	330	312	345	351	226	171	160	12	-242*	132	141	100	300	266	202	224	207	177	240	250	5622
13	255	271	[illegible]	308	305	316	292	328	289	254	266	213	13	205	200	280	252	249	281	251	275	256	267	241	221	6730
14	240	244	246	256	273	264	266	372	342	310	300	253	14	286	290	290	289	243	276	254	216	264	261	246	246	6724
15	247	254	266	276	281	270	307	316	309	249	248	216	15	222	32	136	246	304	292	310	269	268	265	237	270	6155
16	241	262	290	277	341	332	322	311	308	293	261	255	16	290	276	250	216	254	253	271	277	276	264	250	247	6547
17	260	271	292	259	276	298	336	319	112	67	27*	-206*	17	48	134	-92	22	281	331	333	335	301	291	278	268	4836
18	250	261	272	271	276	294	292	331	326	296	261	266	18	175	-90	-10	95	160	208	278	231	221	238	253	266	5421
19	287	282	269	271	265	275	276	278	289	301	302	300	19	303	268	183	-150	-48	198	295	282	286	270	262	270	5854
20	273	292	338	418	367	428	335	431	216	279	321	242	20	75	84	239	266	290	292	295	279	279	267	258	296	6860
21	268	266	270	297	279	292	375	328	323	351	112*	-48*	21	-206*	-11	72	62	135	-59	172	218	321	287	287	294	4676
22	428	444	376	544	419	314	340	311	314	298	282	264	22	274	260	293	275	255	248	248	247	244	246	240	239	7405
23	267	255	272	281	295	291	291	298	300	216	-21	-138*	23	280	309	313	303	250	261	272	279	275	251	240	252	5856
24	259	275	259	300	308	304	291	298	293	301	292	298	24	285	301	220	136	172	290	300	281	269	258	243	234	6467
25	251	452	501	667*	558*	675*	510	560	-166*	-353*	-19*	-331*	25	4*	97	164	344	297	223	251	312	300	282	271	268	6361
26	263	262	265	258	268	215	266	294	332	228	207	142	26	204	191	176	225	256	200	231	253	269	244	265	276	5879
27	248	241	248	256	275	360	435	438	301	272	269	266	27	172	182	246	63	-529*	-138*	164	252	245	230	200	232	4929
28	272	406	458	495	546	486	420	518	444	387	290	160	28	0	12	103	212	231	214	172	188	221	237	262	328	7062
29	360	325	384	383	447	397	440	427	401	306	338	272	29	127	45	-46	-14	187	126	-136	-133	74	212	313	497	5742
30	519	549	559	448	467	479	468	177	331	192	-31*	-62	30	50	54	-116*	-25	-309*	188	242	229	219	226	271	362	5486
31													31													

SCALED BY: LYT TKC
CHECKED BY: EKS JEP
SIGNS REVIEWED BY: JEP
PUNCHED BY:

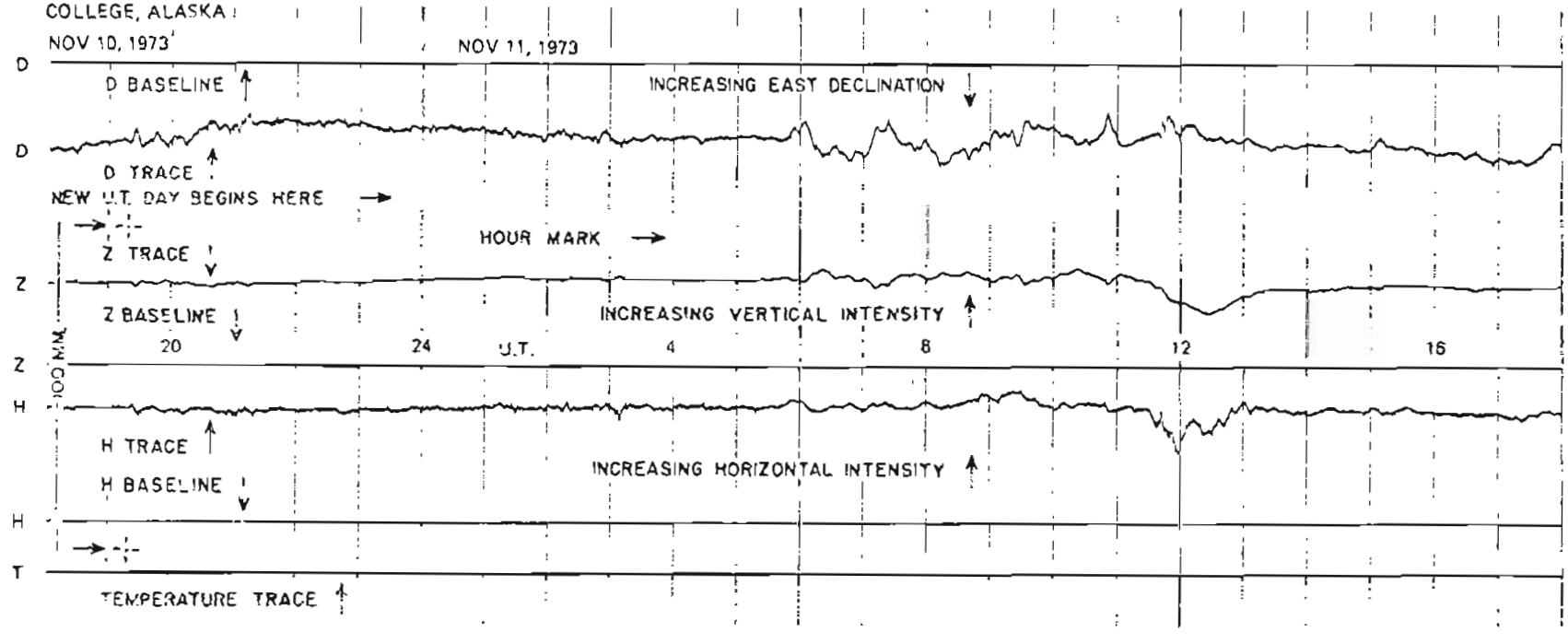
Preliminary base-line and scale values.
Interval Beginning — Base-line Value — Scale Value

( ) 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 Mgph., converted to Normal Mgph.

MONTHLY SUM: 172,937
MONTHLY MEAN: 240
DATES WITH GAPS:

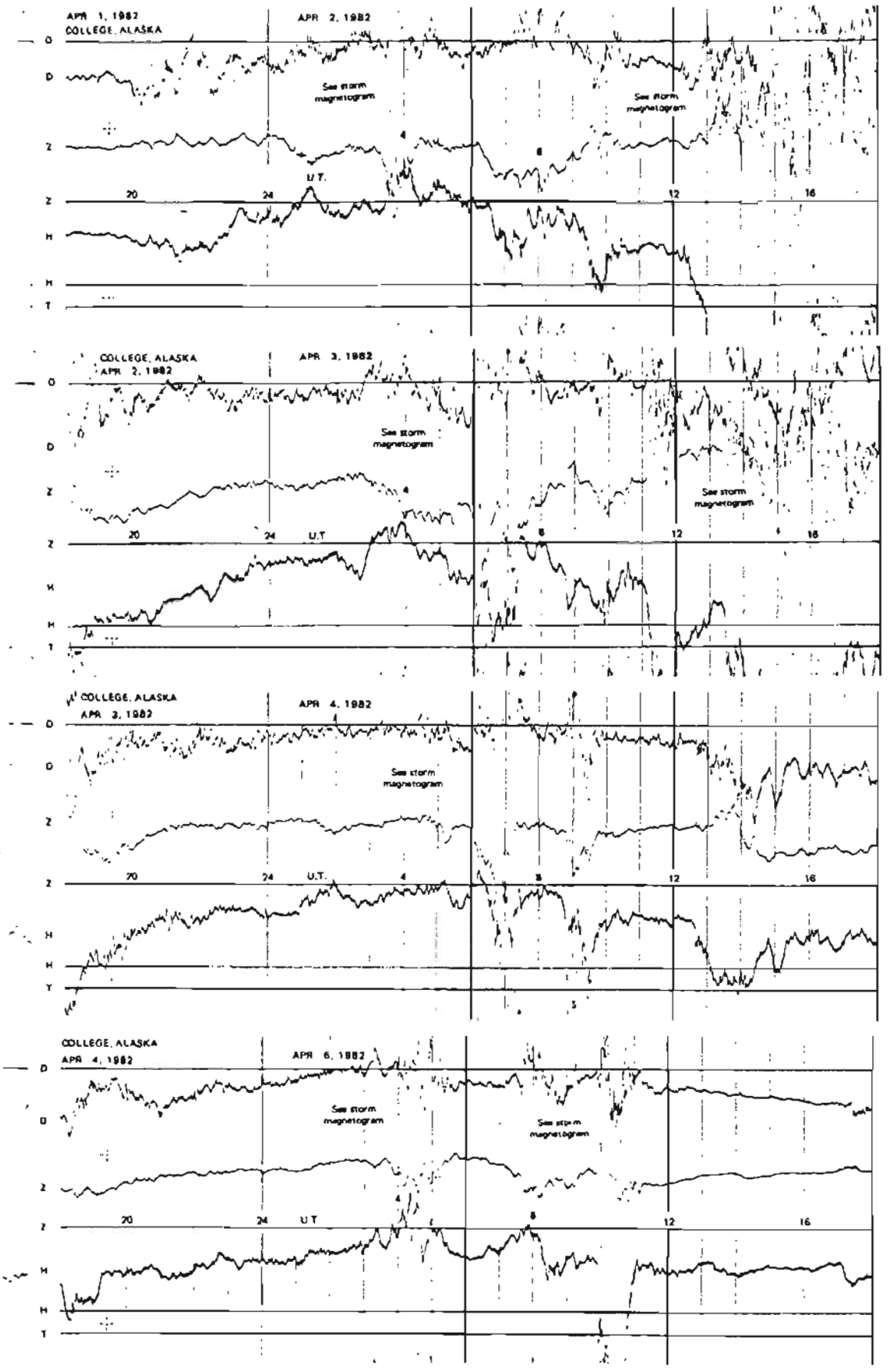
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

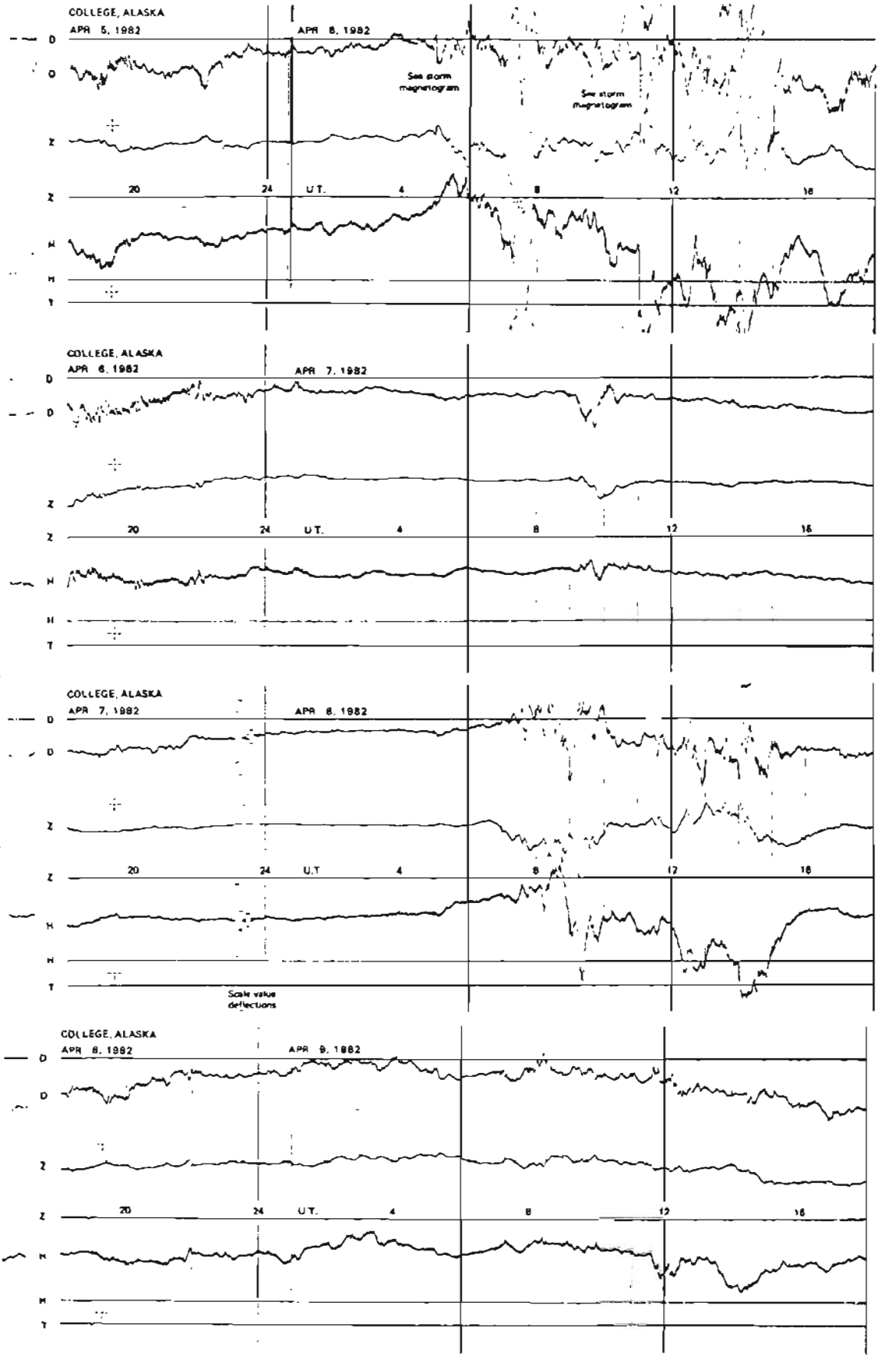


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

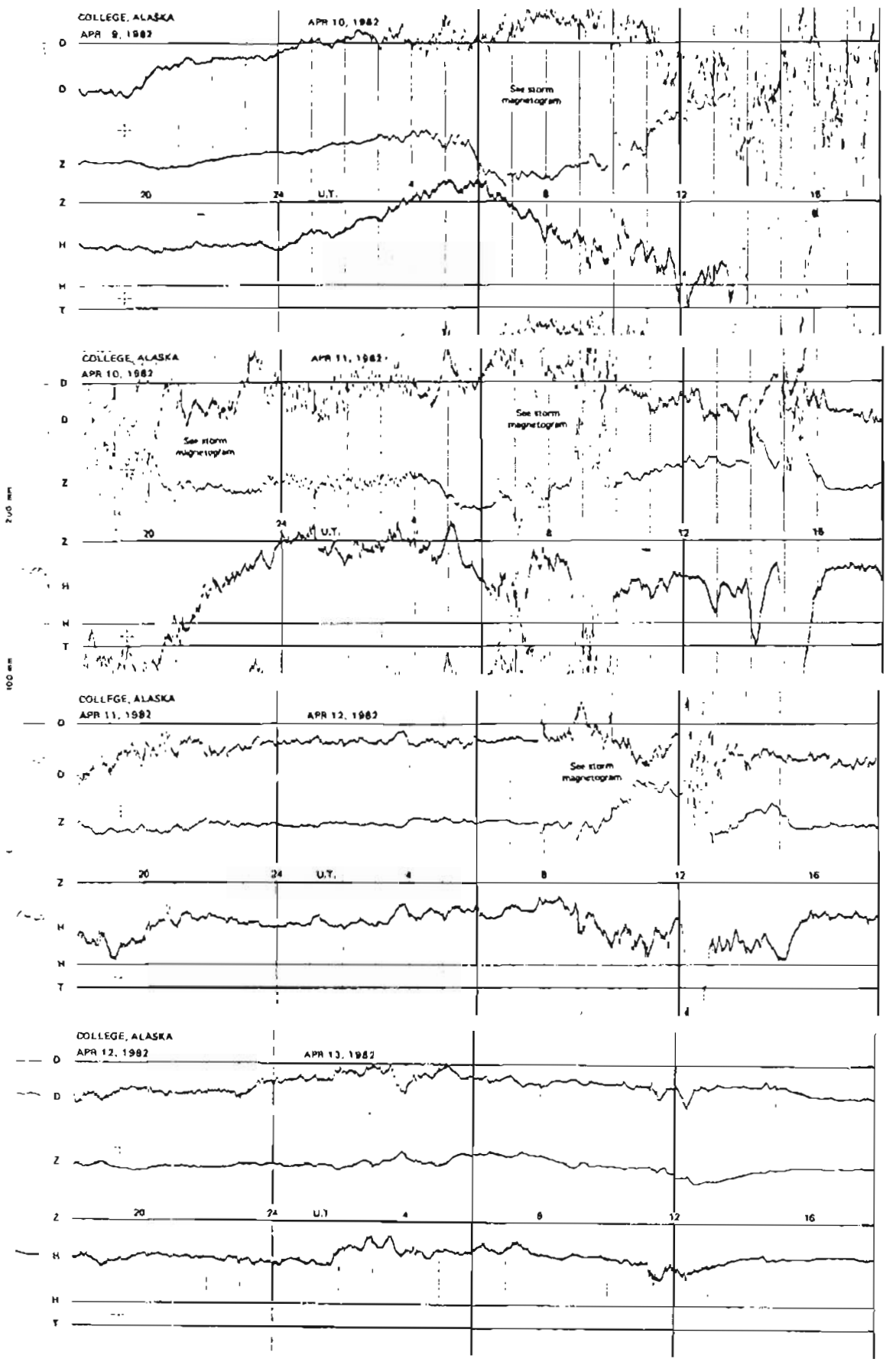
NORMAL MAGNETOGRAMS



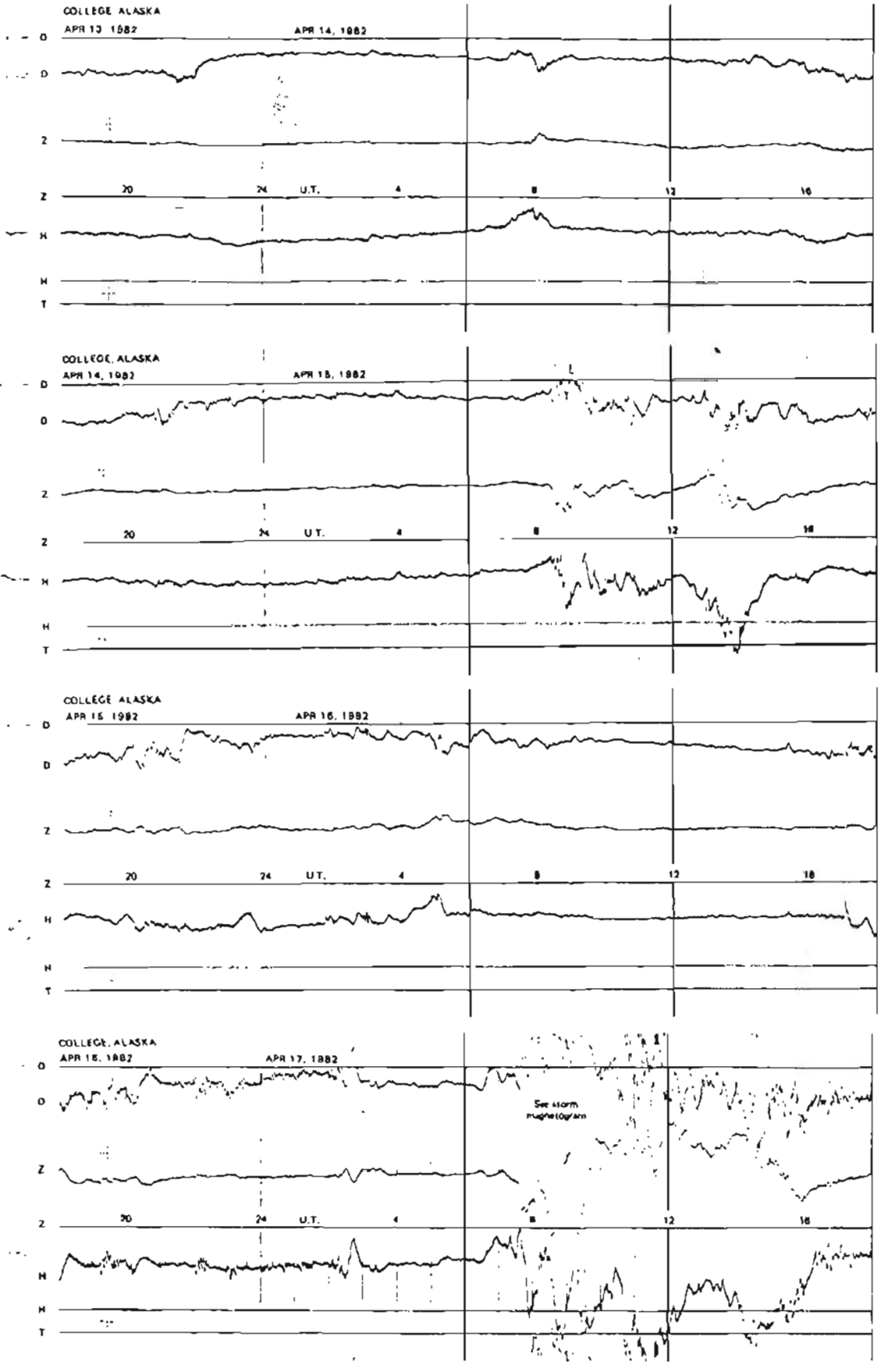
NORMAL MAGNETOGRAMS



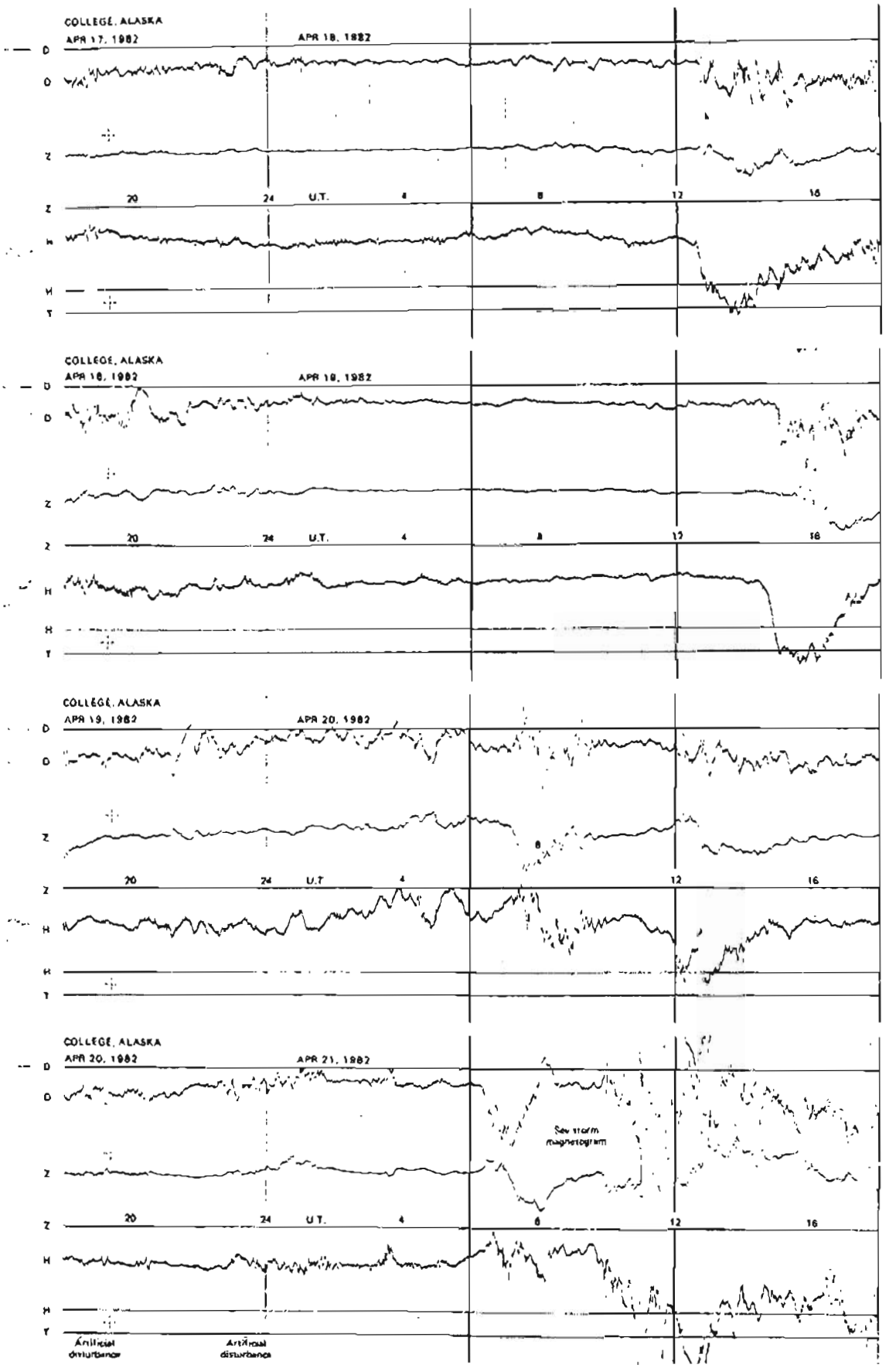
NORMAL MAGNETOGRAMS



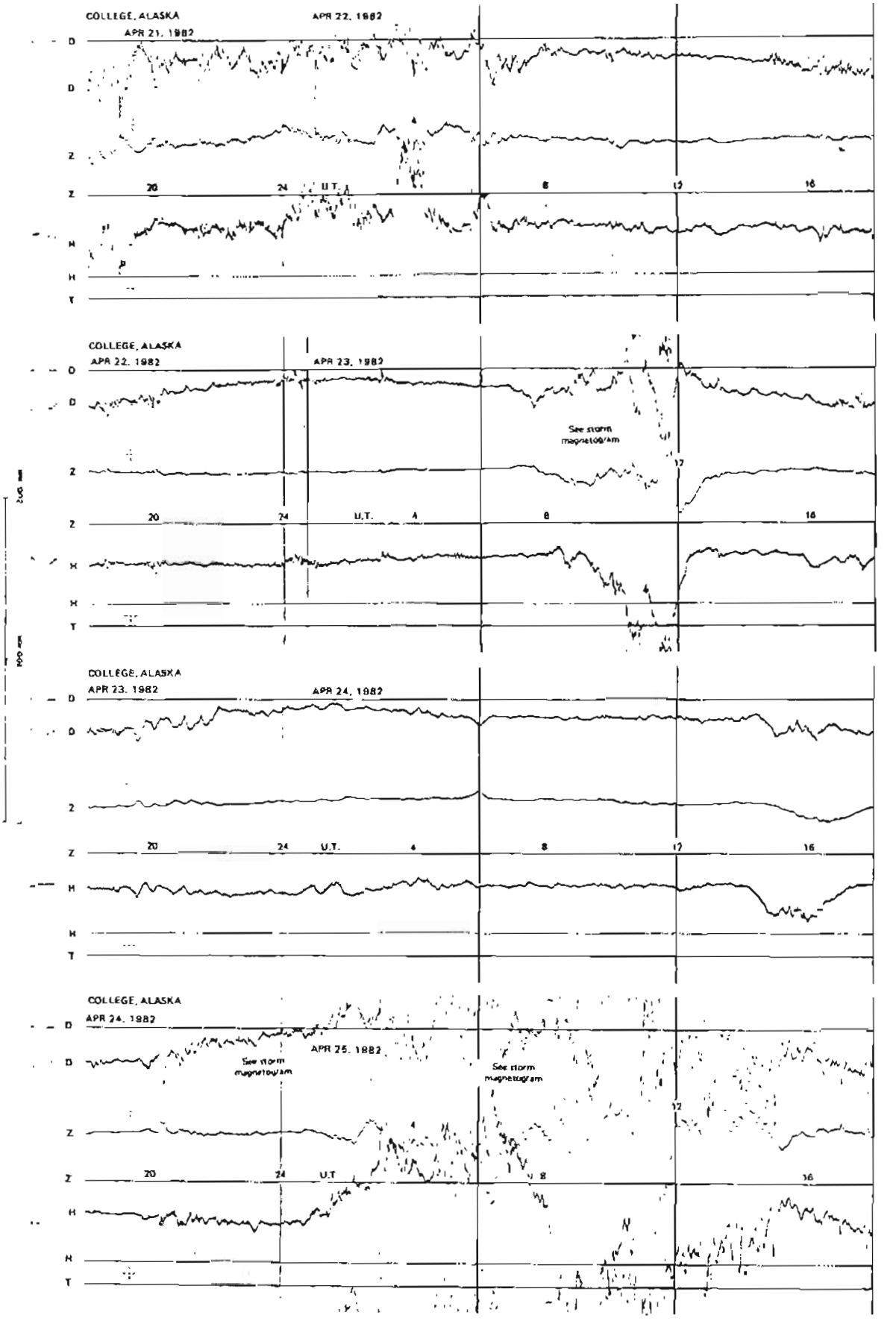
NORMAL MAGNETOGRAMS



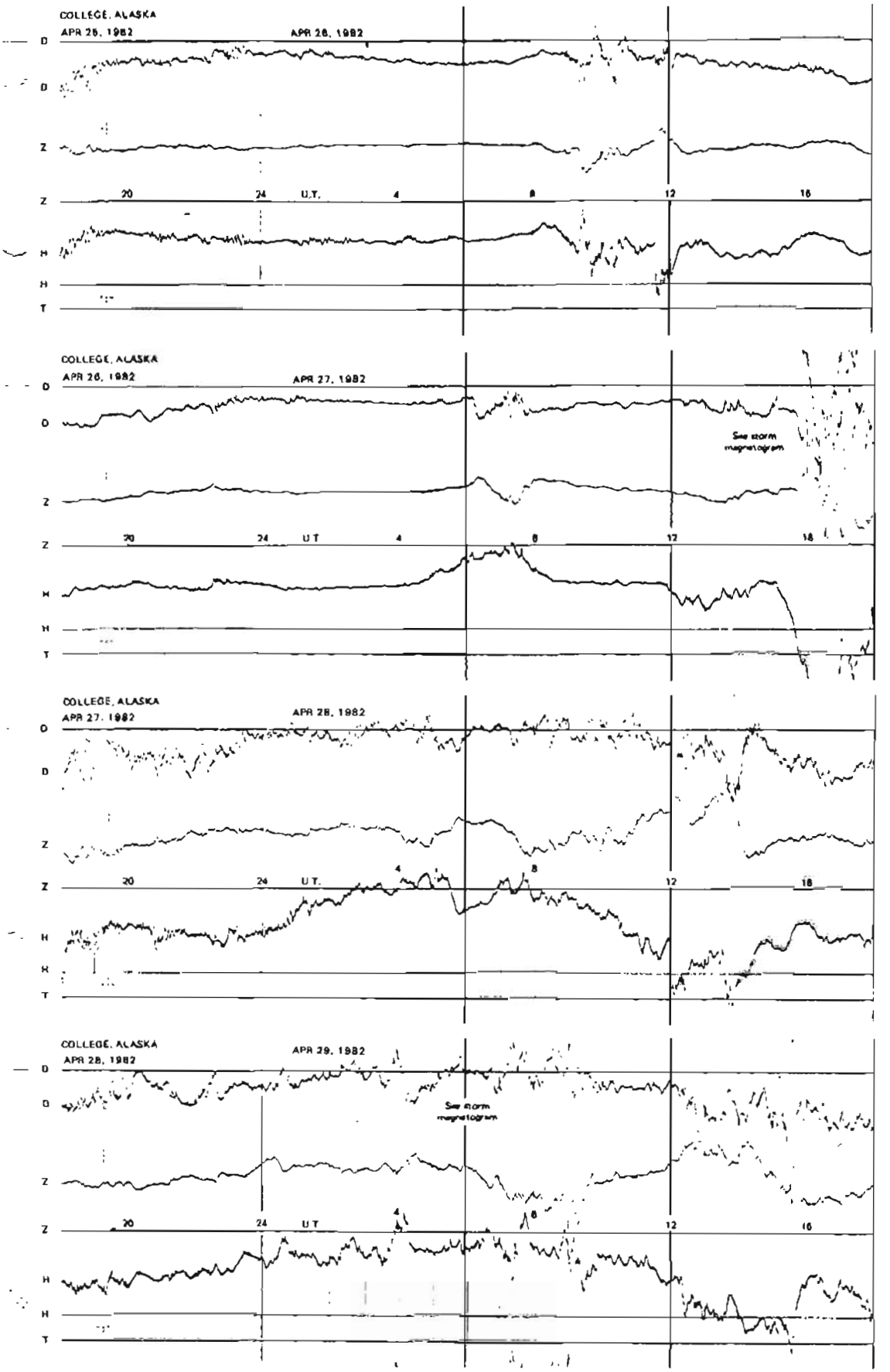
NORMAL MAGNETOGRAMS



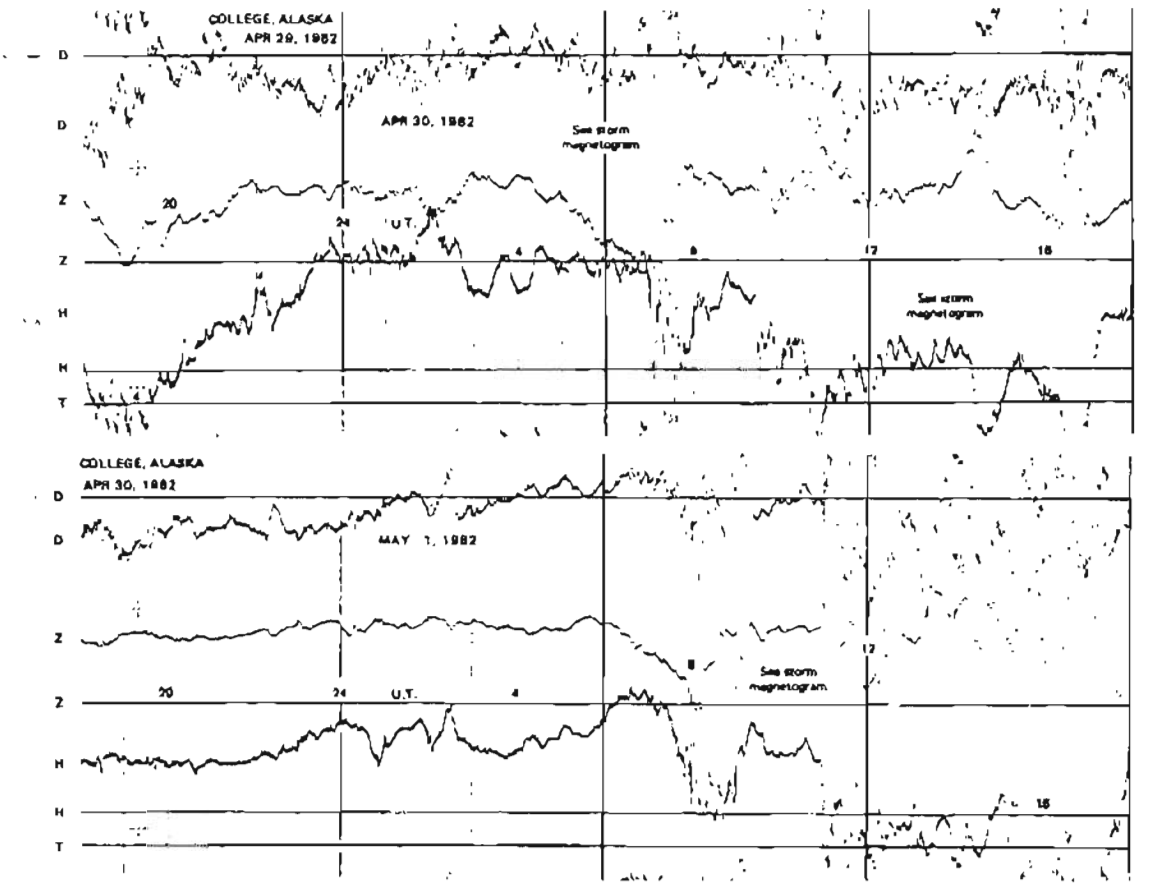
NORMAL MAGNETOGRAMS



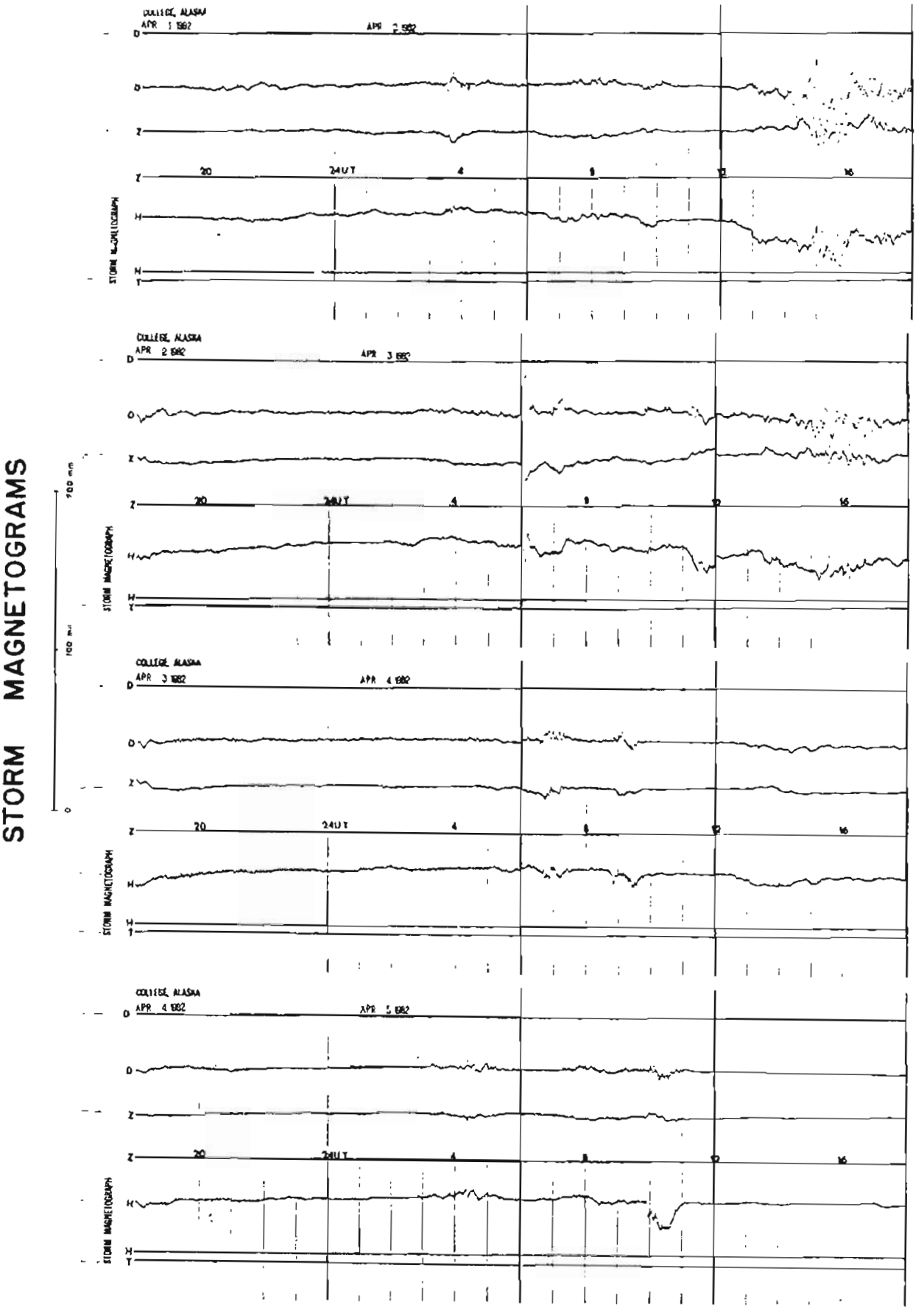
NORMAL MAGNETOGRAMS



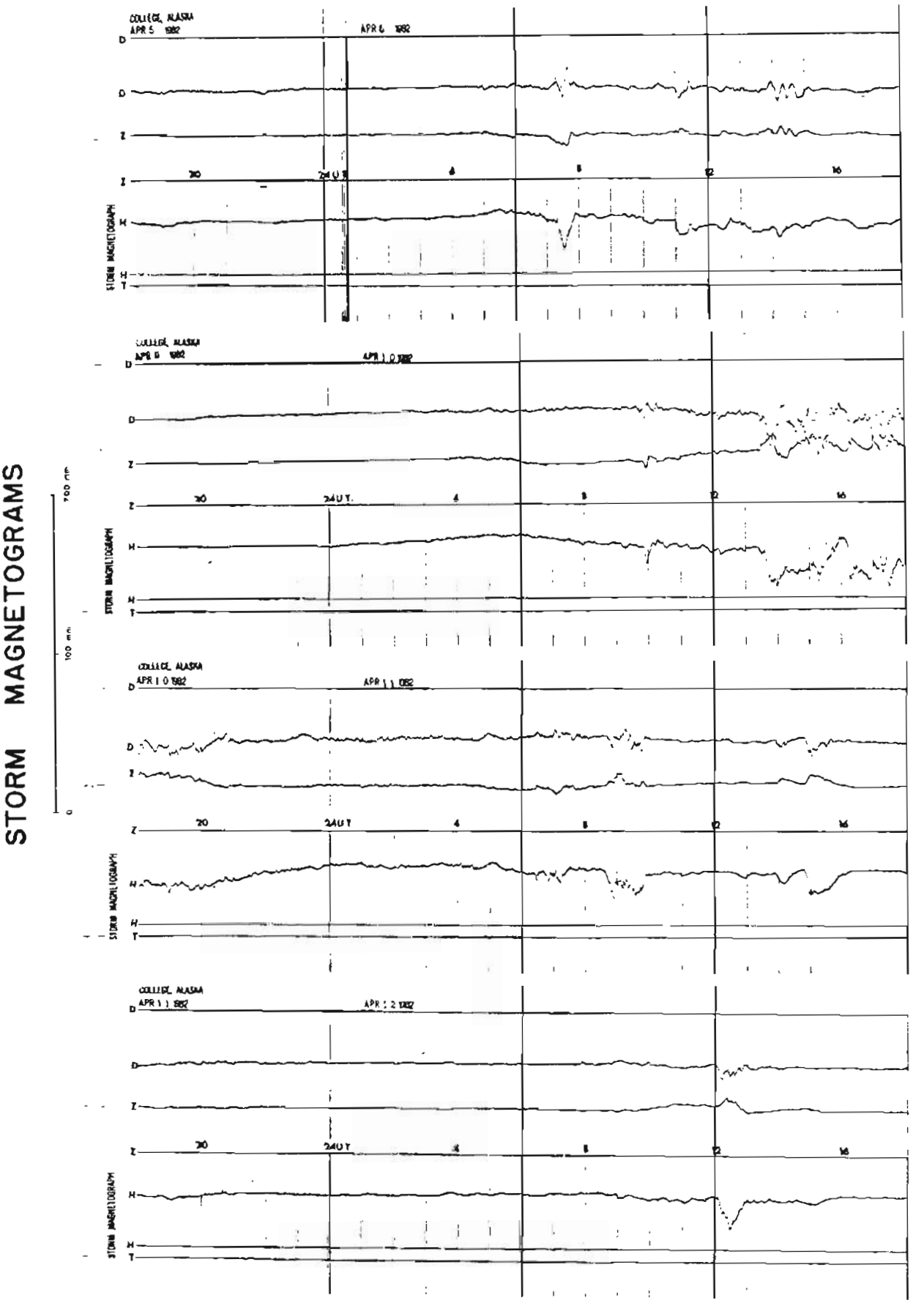
NORMAL MAGNETOGRAMS



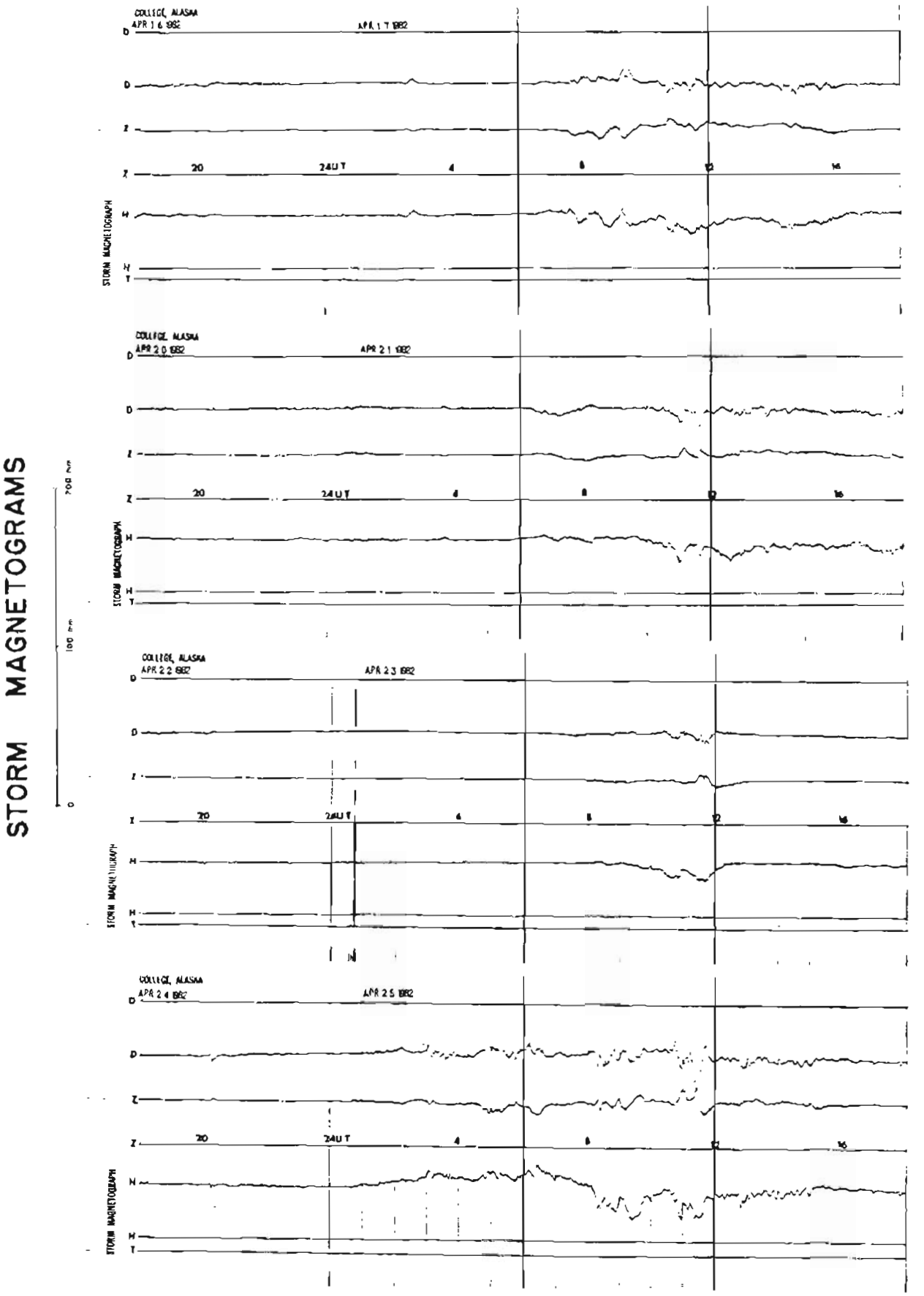
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS