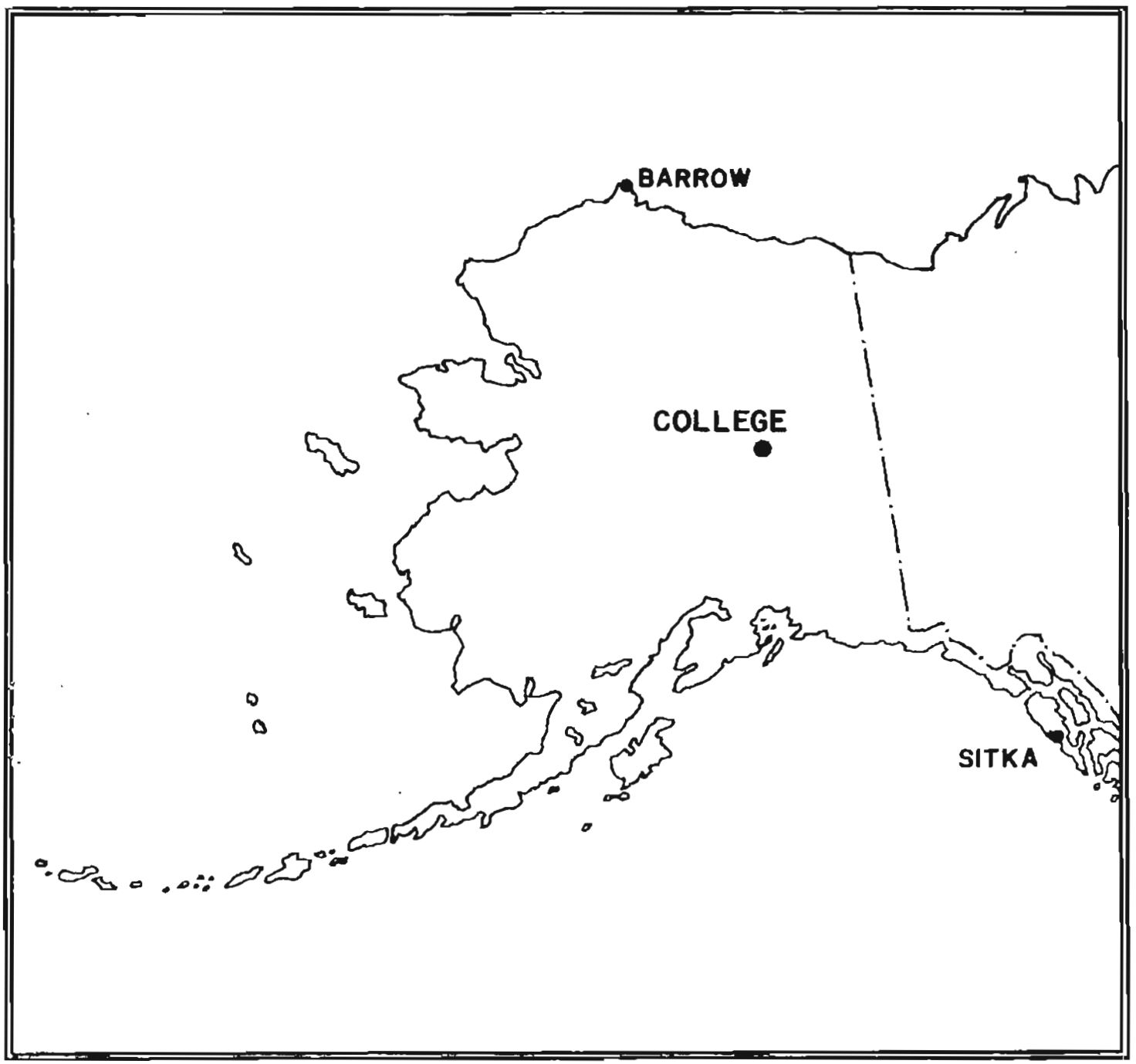
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

NOVEMBER 1982

OPEN FILE REPORT 82-0300K



THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY, WITH THE ASSISTANCE OF THE OBSERVATORY STAFF MEMBERS: J.E. PAPP, E.A. SAUTER, L.Y. TORRENCE, T.K. CUNNINGHAM 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.

ORDER OF CONTENTS

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

EXPLANATION OF DATA AND REPORTS

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.....+256.9°
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: NOVEMBER 1982

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	4	3	6	5	7	5	5	3	38	53
2	3	2	3	6	7	6	5	4	36	52
3	4	3	7	6	5	2	0	1	28	40
4	0	0	4	5	3	4	2	1	19	16
5	2	2	2	4	4	5	2	1	22	17
6	0	2	4	4	3	4	1	0	18	13
7	0	1	1	2	2	1	1	1	09	04
8	0	0	2	2	2	4	4	2	16	10
9	2	2	1	1	1	0	1	1	09	04
10	1	0	3	4	5	3	3	3	22	17
11	3	3	3	5	5	5	3	2	29	26
12	3	2	2	4	5	3	3	2	24	18
13	4	3	2	6	3	4	3	2	27	24
14	1	1	3	5	5	5	2	1	23	22
15	1	2	0	6	5	5	3	3	25	27
16	1	2	3	3	0	0	1	1	11	06
17	1	0	0	1	0	1	2	2	07	03
18	2	2	1	5	6	5	1	1	23	25
19	2	2	0	2	3	3	2	2	16	08
20	0	1	0	2	1	0	2	1	07	03
21	2	5	4	6	5	4	4	5	35	39
22	3	5	4	4	1	1	2	0	20	16
23	0	1	0	3	6	6	5	4	25	32
24	3	3	2	6	9	7	6	4	40	96
25	4	4	7	6	5	5	5	3	39	54
26	2	4	5	6	6	7	3	3	36	52
27	2	3	4	7	7	4	4	2	33	49
28	4	4	4	6	5	5	5	2	35	39
29	3	3	2	6	6	7	6	4	37	56
30	3	3	5	1	4	3	1	0	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	BEGIN h	BEGIN m	END d	END h	END m

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: NOVEMBER

YEAR: 1982

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
17	15xx	pc5	
23	0917	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 80301 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA
NOVEMBER 1982

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	21	04XX	..	..	..	..	21	4	6	94	970	610	22	12
		23	0917	s.c.*	..	+109	-29	24	5	9	831	3290	1680	30	18

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

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 11-1-82	2400 U.T., 11-30-82	1.0'/mm	3.78'/mm	27° 47.2' E
H	0000 U.T., 11-1-82	2400 U.T., 11-30-82	7.8 γ/mm		12754 γ
Z	0000 U.T., 11-1-82	2400 U.T., 11-15-82	7.6 γ/mm		55138 γ
	0000 U.T., 11-16-82	2400 U.T., 11-30-82	"		55142 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 11-1-82	2400 U.T., 11-30-82	7.9'/mm	29.6 γ/mm	23° 42.2' E
H	0000 U.T., 11-1-82	2400 U.T., 11-30-82	44.0 γ/mm		11513 γ
Z	0000 U.T., 11-1-82	2400 U.T., 11-30-82	48.5 γ/mm		54059 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 56.8' E	12948 γ	55386 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: Nov 4, 6, 7, 8, 9, 16, 17, 19, 20, 22

FORM 24-70A

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

U.S. Department of Commerce
Geological Survey, Geologic Division
Denver Federal Center
Denver, Co. 80225

Values are in tenths of min. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (190 M.T.) is hour 11 of the base universal day.
Skeletage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	82	NOV	D

C	Q or S	Type Q	Hr	01	02	03	04	05	06	07	08	09	10	11	12	Hr	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	4	76	74	41	67	74	53	69	-13*	122*	116	126	01	146*	511*	519*	297*	34*	-22	15	84	123	4	22	56	2598
			02	80	57	57	70	82	80	204	91	71	84	156*	187*	02	325	195*	584*	187*	20*	187*	-9	139	62	-16	74	89	3056
			03	32	44	54	0	71	-29	48	-91*	92*	36*	106	110	03	186	95	70	95	97	118	132	139	136	112	102	98	1855
			04	94	94	88	89	97	91	95	70	124	97*	105*	226	04	206	260	210	112	120	154	180	148	72	42	54	64	2892
			05	58	61	74	67	70	89	74	81	108	99	122	120	05	251	137	142	82	93	137	155	122	118	120	97	86	2563
			06	78	60	62	59	55	36	46	39	217	78	36	154	06	150	180	164	136	119	99	175	162	128	108	93	99	2533
			07	68	54	58	62	71	82	75	74	84	107	104	112	07	119	122	150	120	131	138	154	159	136	117	95	98	2490
			08	77	79	74	68	67	64	64	69	69	84	94	102	08	135	130	140	140	204	289	113	81	92	88	75	57	2455
			09	68	82	82	78	62	81	98	96	77	81	92	81	09	90	96	101	106	113	120	134	130	128*	124	97	88	2305
			10	95	50	65	82	84	71	86	70	108	170	130	147	10	159	96	127	149	123	171	222	176	103	105	111	82	2782
			11	30	5	8	-14	30	33	59	65	102	144	237	74	11	147	204	139	371	103	130	170	157	116	137	78	1	2526
			12	5	26	24	56	46	52	87	96	96	117	173	163	12	177	96	76	117	136	117	134	118	118	74	99	87	2290
			13	39	30	-25	25	58	96	91	86	85	-70*	-125*	110	13	95	132	110	130	164	104	163	191	70	70	60	62	1751
			14	60	72	70	80	66	69	71	48	73	166	86	60	14	126	167	177	210	111	123	157	133	97	74	71	58	2425
			15	70	61	65	78	84	89	89	84	88	21	9*	187	15	123	115	212	322	258	70	140	141	97	13	8	41	2465
			16	83	76	62	57	68	64	68	188	82	63	106	64	16	94	94	99	103	110	119	123	116	99	79	91	78	2192
			17	62	66	80	81	88	88	86	86	87	93	91	92	17	100	98	106	111	125	135	160	160	98	20	16	33	2162
			18	48	34	31	64	74	88	103	94	76	76	21*	127	18	116	337	298	291	207	88	93	107	88	86	82	77	2706
			19	55	43	44	44	65	78	92	94	96	91	88	108	19	121	122	126	138	150	161	157	135	116	60	80	67	2351
			20	61	68	68	81	86	87	84	87	88	86	98	126	20	122	102	102	110	107	111	136	98	84	88	81	84	2245
			21	42	27	54	42	36	-22	44	90	120	92	88	315*	21	282	194	238	231	265	172	130	140	107	16	70	94	2869
			22	82	67	46	-9	18	-98*	-3*	66	-66*	52	90	36	22	105	116	120	118	119	120	117	125	131	118	90	79	1639
			23	70	76	76	82	83	86	87	84	80	65	32	-15*	23	38	235*	271*	386*	481*	370*	242*	267*	-27*	-91*	-4*	28*	3002
			24	37	48	70	64	84	82	77	70	48	-22	-27*	107*	24	115*	226*	592*	164*	448*	417*	267*	84*	-138*	96	133	247	3289
			25	134	45	106	70	18	20*	162	187*	-385*	-194*	-91*	71	25	81	163	267	231	306	227	82	71	107	111	96	97	1982
			26	84	96	57	68	90	43	103	40	52*	22	52*	123*	26	153	128	322*	362*	-27*	98	116	109	140	85	74	85	2475
			27	92	74	67	62	124	94	94	155	52	4	48	131*	27	115*	362*	345	223	96	150	111	75	40	67	85	89	2755
			28	48	71	68	52	81	-30	6	103	164	60*	44*	12*	28	57	320	277	303	137	235*	120	41	132	109	82	60	2552
			29	49	65	42	59	72	144	103	95	82	74	94	68*	29	66	386*	298*	401*	179*	139*	234*	68*	-4*	24	32	76	2846
			30	54	66	67	70	74	94	-19*	-19*	132	94	98	98	30	129	149	104	147	120	126	121	118	110	105	99	89	2226
			31													31													

SCALED BY	TKC, LYT
CHECKED BY	EAS, JEP, TKC
FINAL 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, it was estimated for missing part.
* Derived from STORM Mgph., converted to Normal Mgph.

MONTHLY SUM	74277
MONTHLY MEAN	103
DATES WITH GAPS:	

FORM 9-1181

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in counts of one-half mm, 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 8826 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

U.S. Department of the Interior
Geological Survey, Geomagnetism Division
Denver Federal Center
Denver, CO 80225

OBSV.	YEAR	MONTH	ELEMENT
CO	82	NOV	Z

C	D M S	T H O	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	372	385	347	366	379	377	338	356	309	430	376	334	01	405	-15	315	380	181	68	158	287	371	352	368	393	7632
			02	382	382	405	388	366	382	364	358	378	284	64	32	02	290	532	227	105	386	304	130	231	296	276	374	370	7306
			03	381	384	358	353	385	330	296	285	535	463	498	472	03	637	414	293	344	361	366	369	365	360	359	360	359	9331
			04	359	356	354	353	354	353	378	372	367	379	338	448	04	461	408	431	308	281	331	334	323	312	324	341	354	8619
			05	366	372	367	360	364	382	366	374	362	356	339	385	05	323	366	357	235	275	304	324	342	352	353	354	353	8331
			06	350	346	346	348	354	374	330	231	284	335	347	344	06	378	315	296	318	252	287	333	326	325	334	341	346	7840
			07	346	340	339	349	348	349	350	362	364	340	344	324	07	304	288	286	303	321	331	339	326	331	329	334	337	7984
			08	337	340	336	334	340	341	352	350	362	380	344	341	08	336	310	312	324	314	264	162	176	262	295	315	323	7550
			09	328	334	332	333	348	357	338	330	320	318	311	321	09	324	321	321	326	327	327	328	324	326	330	322	331	7877
			10	338	326	332	333	334	340	348	341	326	323	266	284	10	353	275	283	278	292	308	290	230	262	303	314	324	7403
			11	336	343	364	358	361	361	408	372	370	306	256	294	11	450	281	232	177	252	344	341	348	322	334	329	327	7886
			12	364	364	356	362	348	368	366	352	340	339	234	336	12	475	231	296	313	326	329	306	307	334	329	339	346	8060
			13	359	360	355	383	396	375	354	348	340	165	118	229	13	308	330	318	286	281	311	325	298	249	301	316	328	7453
			14	340	345	343	337	336	339	357	335	319	254	328	341	14	250	312	355	280	232	323	326	317	316	319	327	340	7671
			15	345	337	339	336	341	340	335	331	325	219	271	138	15	270	299	226	139	168	172	273	294	287	307	301	336	6729
			16	350	349	346	349	354	360	367	358	339	340	319	264	16	329	331	330	329	330	331	330	332	330	336	345	339	8089
			17	340	336	335	330	330	328	328	328	329	333	328	335	17	331	326	323	320	320	320	318	314	286	266	280	306	7690
			18	329	330	346	351	370	376	355	332	342	366	306	306	18	326	372	124	-57	-72	76	268	304	308	312	333	339	6752
			19	341	340	341	344	355	350	333	330	334	330	342	340	19	362	310	273	221	198	271	288	283	303	308	313	319	7529
			20	322	327	325	323	321	320	319	319	319	318	298	295	20	265	270	296	315	318	321	330	316	314	321	325	325	7522
			21	328	345	351	347	375	276	250	252	310	324	316	399	21	360	446	275	255	288	243	195	286	312	316	405	393	7649
			22	305	218	154	126	60	-2	160	117	179	352	432	398	22	338	340	332	327	323	328	326	336	339	342	341	339	6510
			23	341	341	340	337	336	337	339	338	337	320	321	282	23	336	462	565	491	635	393	289	380	409	279	279	314	8685
			24	326	351	363	345	354	355	355	357	335	324	318	552	24	858	501	852	1183	1164	858	641	246	244	313	351	326	11872
			25	282	364	365	367	309	110	236	310	329	290	530	547	25	636	455	539	280	267	342	209	294	320	358	364	361	8464
			26	364	371	361	396	376	338	299	282	121	239	342	302	26	267	296	507	679	189	190	289	329	351	359	346	356	7949
			27	354	360	365	383	407	363	367	311	289	260	320	534	27	507	163	224	289	288	289	290	321	306	326	345	349	8030
			28	359	403	410	393	377	338	211	196	255	274	530	350	28	266	186	288	302	292	266	171	169	259	328	347	354	7324
			29	364	372	366	369	364	390	374	395	362	309	367	365	29	279	590	304	-79	310	221	252	348	296	316	311	336	7881
			30	326	334	345	369	380	357	197	255	320	341	344	336	30	326	350	278	276	301	323	330	332	333	336	336	338	7763
			31													31													

SCALED BY	TKC, LYT
CHECKED BY	ERS, JEP, TKC
SIGNS RE-VIEWED BY	JEP
PUNCHED BY	

Preliminary baseline and scale values:

	Interval Beginning	Baseline 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 STURM Magn., converted to Normal Magn.

MONTHLY SUM	237381
MONTHLY MEAN	330
DATES WITH GAPS:	

FORM 76-106

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

OBSY.	YEAR	MONTH	ELEMENT
CO	82	NOV	H

C	Day $	Year D	Hr. M	01	02	03	04	05	06	07	08	09	10	11	12	Hr. M	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	252	283	328	278	268	320	309	311	246*	8*	78	122	01	-338*	-332*	-461*	-310*	-140*	-158*	15*	270	242	243	232	243	2310
			02	220	281	276	280	284	271	332	290	280	109	-341*	-414*	02	-131*	-426*	-494*	-692*	-308*	-291*	58	122	152	191	272	298	619
			03	262	302	452	499	537	569	495	115	-109*	-234*	11	-72	03	-134	-78	264	287	274	264	258	253	242	243	239	241	5180
			04	244	245	247	255	261	262	270	308	252	121*	61	-63	04	-14	-10	41	75	252	294	268	222	216	241	236	230	4514
			05	247	264	266	272	274	294	302	304	309	263	165	64	05	-156	113	-30	91	246	258	262	287	275	255	247	244	5116
			06	246	250	266	280	284	332	400	398	306	303	175	201	06	112	69	126	119	54	268	278	270	261	250	242	240	5730
			07	242	255	258	255	261	266	268	282	280	256	258	245	07	220	204	234	251	268	268	262	251	243	240	240	232	6039
			08	240	247	258	270	276	282	276	292	316	328	298	284	08	264	263	278	282	216	120	167	230	238	242	241	248	6156
			09	258	264	264	262	268	260	257	262	252	242	250	262	09	266	266	271	270	271	271	270	266	254	248	256	256	6267
			10	246	255	265	268	266	272	269	273	218	158	165	234	10	62	84	269	273	262	211	208	192	250	262	227	215	5404
			11	263	298	363	374	330	316	371	379	311	186	60	47	11	43	-19	116	-21	316	302	274	267	265	238	212	200	5491
			12	269	261	302	286	304	299	286	281	265	206	134	-2	12	-35	74	246	252	234	260	208	262	244	243	229	253	5381
			13	270	228	346	338	313	278	268	264	303	-21*	-77*	272	13	296	242	252	169	186	284	242	142	165	252	242	240	5494
			14	254	257	265	268	268	268	279	330	362	256	194	86	14	177	183	114	-34	268	279	250	241	249	251	239	252	5556
			15	255	261	266	255	281	282	270	262	261	182	-349*	141	15	268	238	-35	-42*	-174*	166	269	263	201	259	242	251	4273
			16	265	261	264	272	270	302	342	296	284	264	271	278	16	266	260	259	260	260	253	252	250	236	240	230	230	6355
			17	240	253	263	269	268	262	262	261	264	269	270	269	17	269	267	266	268	269	263	256	243	235	233	248	261	6228
			18	243	248	284	285	303	282	269	275	292	258	204	241	18	235	-135*	-322*	-55	76	234	311	292	266	246	242	252	4828
			19	252	242	274	306	292	264	276	271	272	270	273	275	19	259	233	157	148	211	275	287	246	239	203	238	238	6023
			20	248	260	272	274	270	269	269	267	262	262	242	256	20	250	260	277	276	276	272	275	268	249	255	250	246	6307
			21	243	268	266	278	351	602	581	501	404	309	237	-152*	21	-169*	-124*	170	221	100	3	18	-16	-30	-8	205	295	4553
			22	298	420	298	254	284	342	278	259	368	294	158	220	22	245	250	248	246	240	241	240	231	226	221	222	226	6309
			23	232	240	250	252	259	259	258	255	256	272	315	383	23	351	71	-152*	-152*	-242*	-152*	-77*	-230*	-84*	152	141	228	3085
			24	282	269	264	272	269	246	245	241	247	211	29	-208*	24	-605*	-1301*	-485*	-740*	-435*	-525*	98	-117*	96	172	164	201	-1108
			25	317	260	259	297	386	256	233	-219*	-378*	-117*	-95*	27	25	-130	-197	-134	-100*	-67*	-95*	69	240	236	243	221	249	1755
			26	258	238	273	304	319	369	370	359	382	167	-15*	-95*	26	38	88	-304*	-627*	8*	293	278	286	269	240	212	267	3977
			27	235	265	254	272	321	290	313	306	336	367	226	-327*	27	-647*	-152*	-82	89	241	226	232	239	265	258	261	252	4020
			28	305	354	309	324	277	406	410	354	322	296*	-77*	-169*	28	-35	-126	-35	33	220	98	-68	191	254	240	272	289	4444
			29	230	296	294	290	324	330	327	342	330	265	131	-225*	29	145	-429*	-304*	-247*	-407*	81*	18*	-275*	263*	266	265	247	2557
			30	270	265	275	284	343	308	279*	279*	300	258	246	240	30	197	158	39	228	286	273	274	261	256	249	244	242	6054
			31													31													

SCALED BY	TKC, LYT
CHECKED BY	DAS, JEP, TKC
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

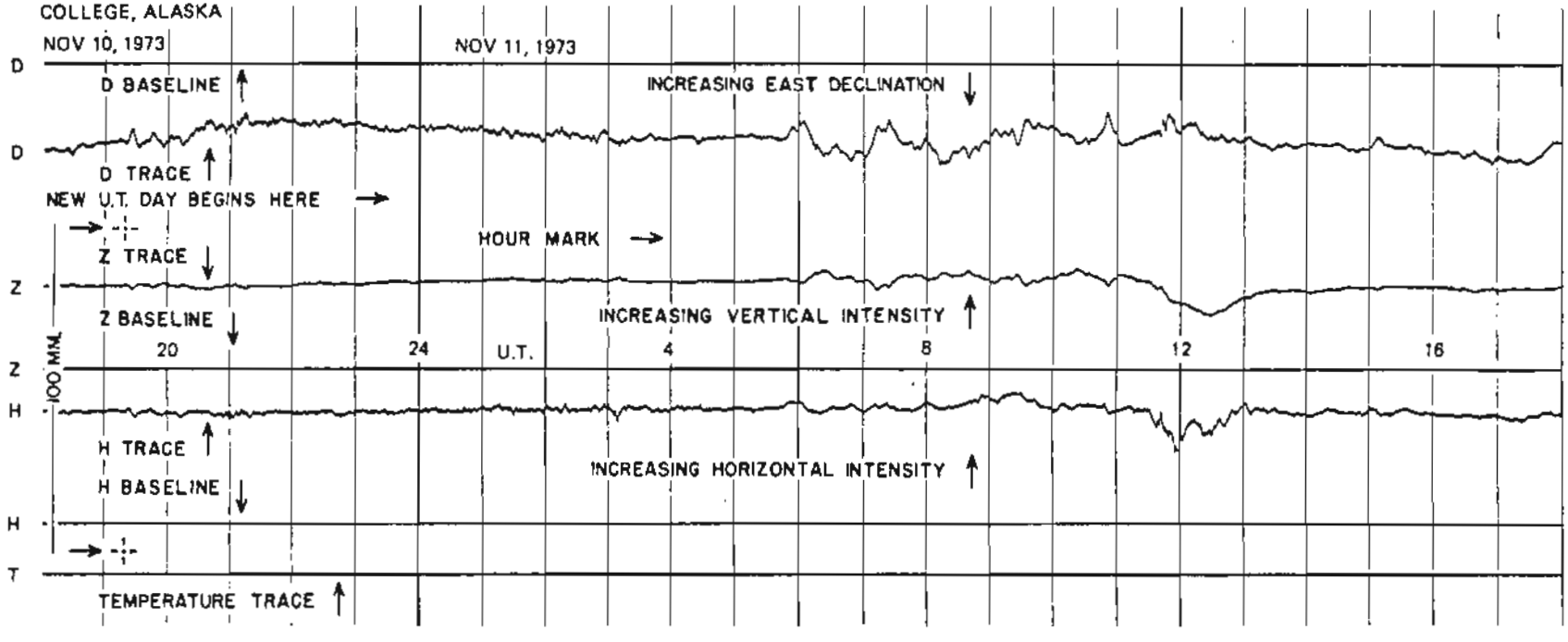
Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
[ ] Scaling uncertain because of magnetic storm.
□ No record; or no values available because of faulty record.
< > 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	138917
MONTHLY MEAN	193
DATES WITH GAPS	

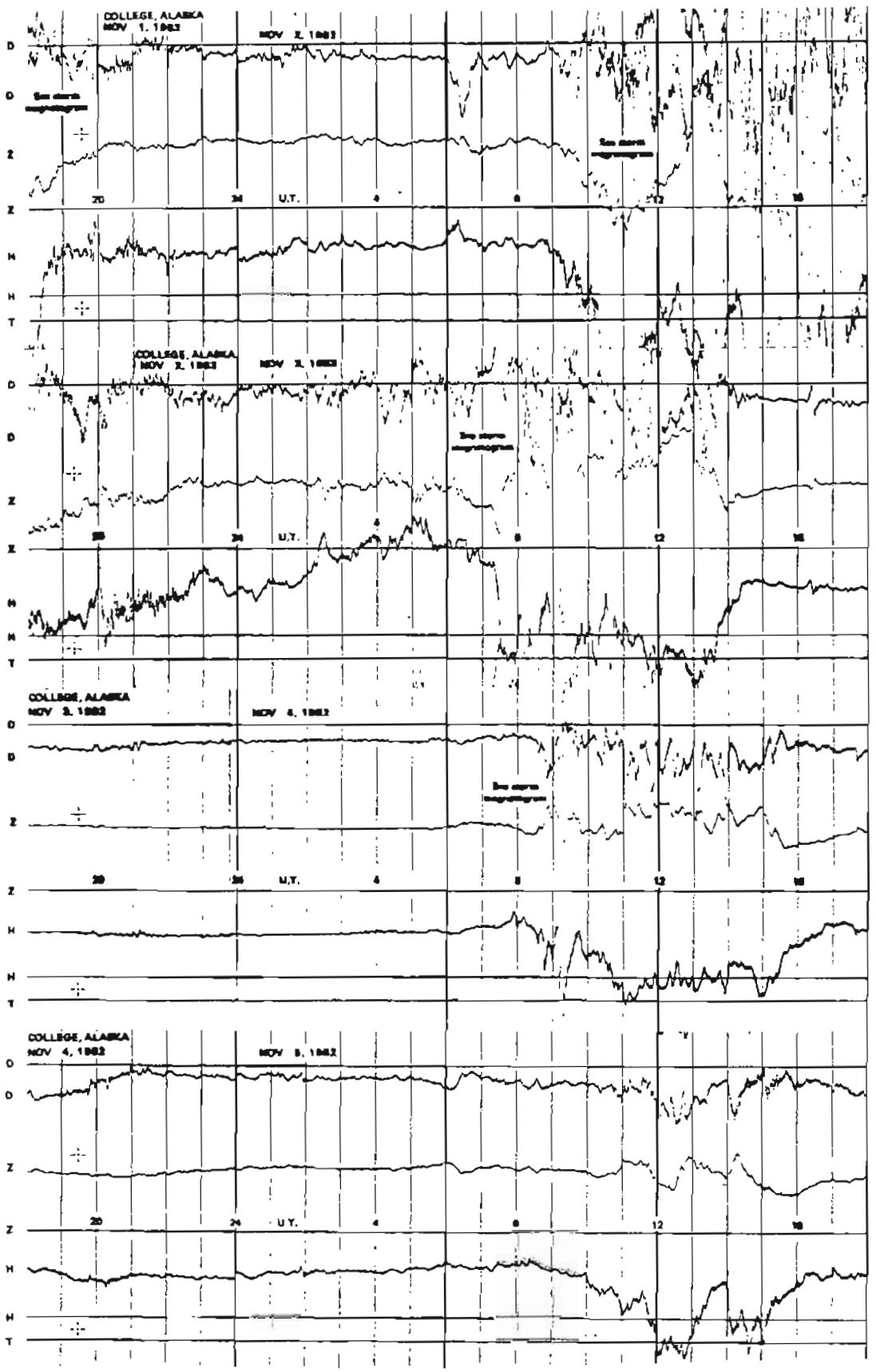
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

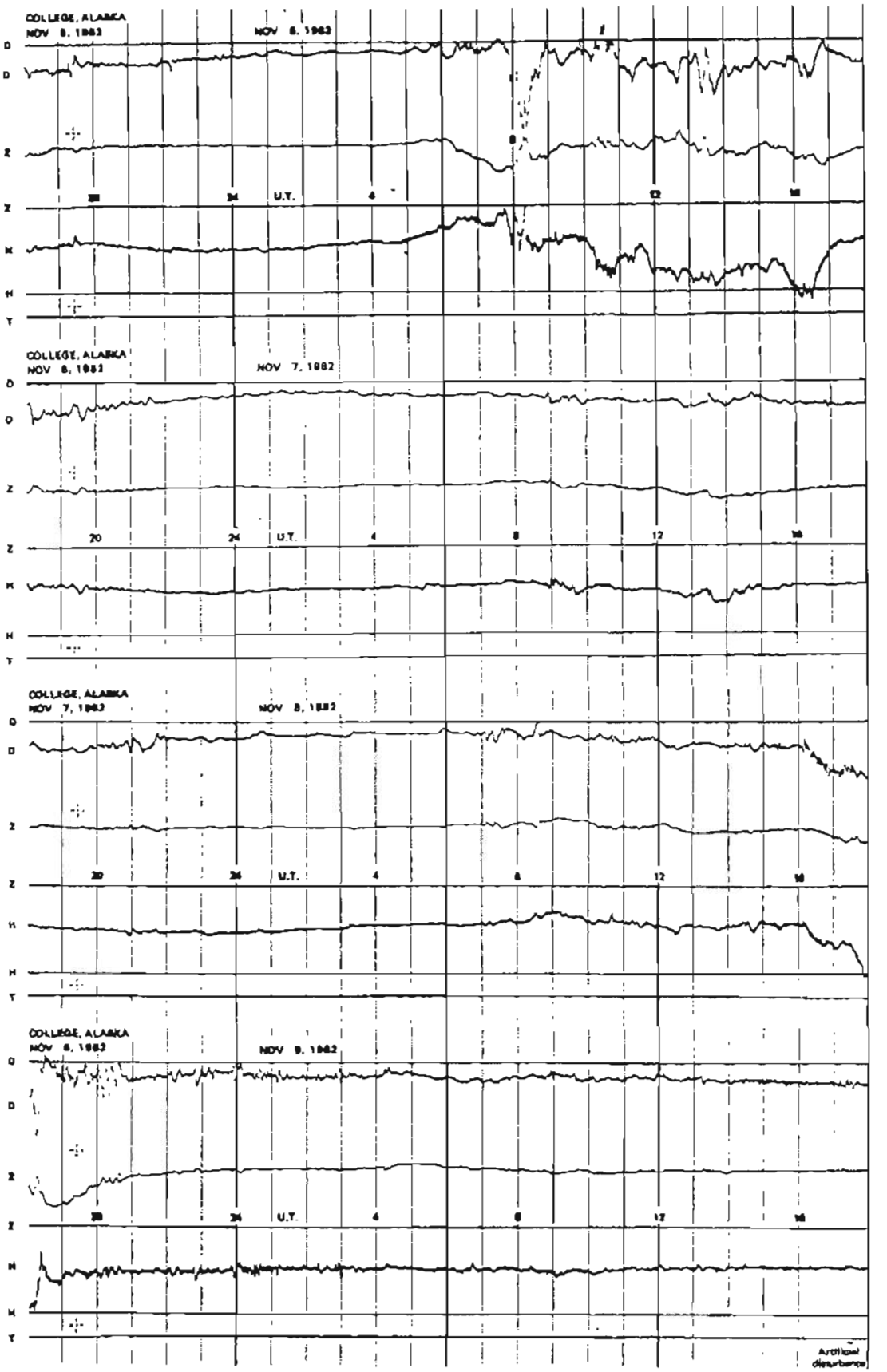


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS

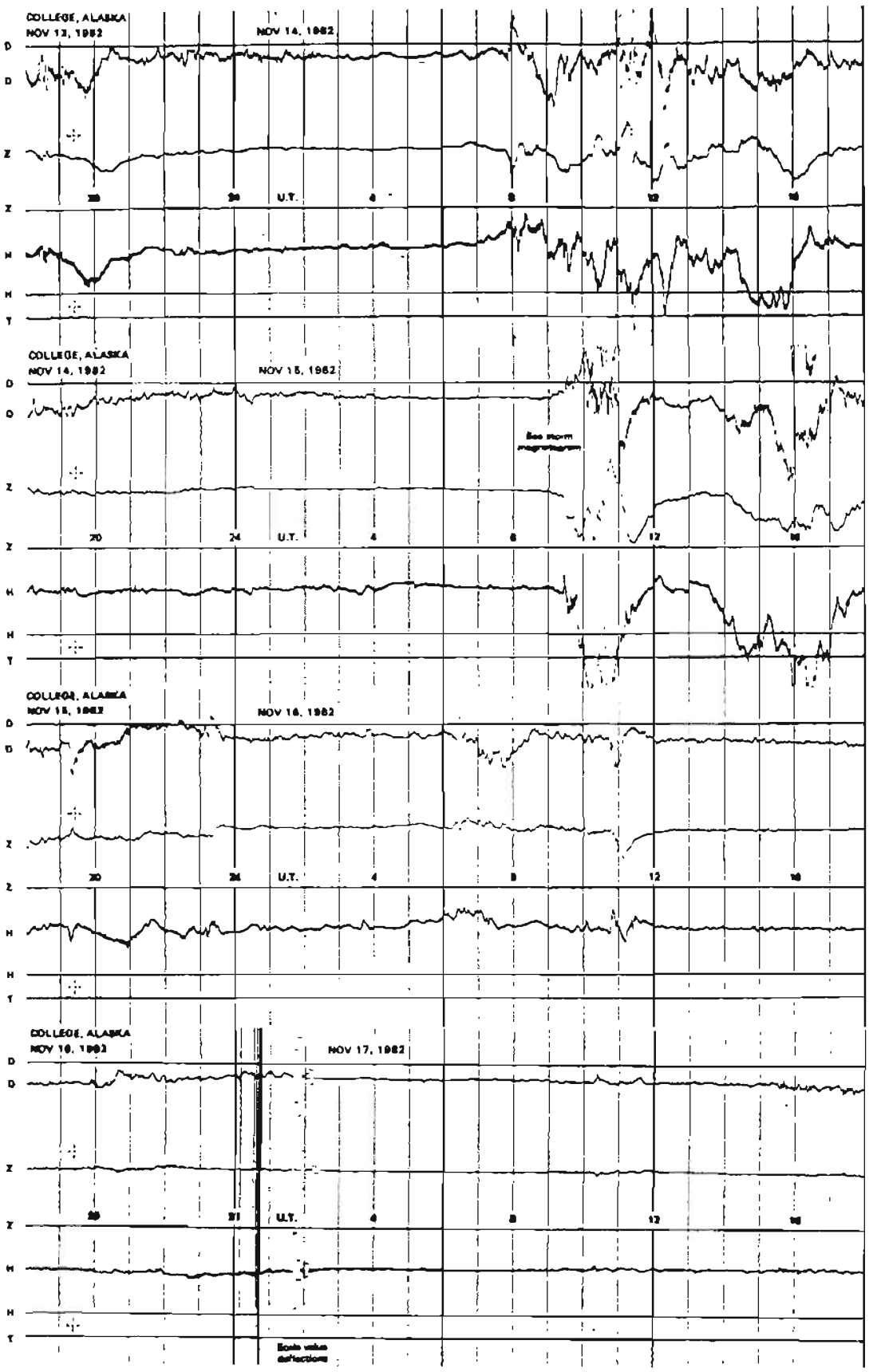


NORMAL MAGNETOGRAMS

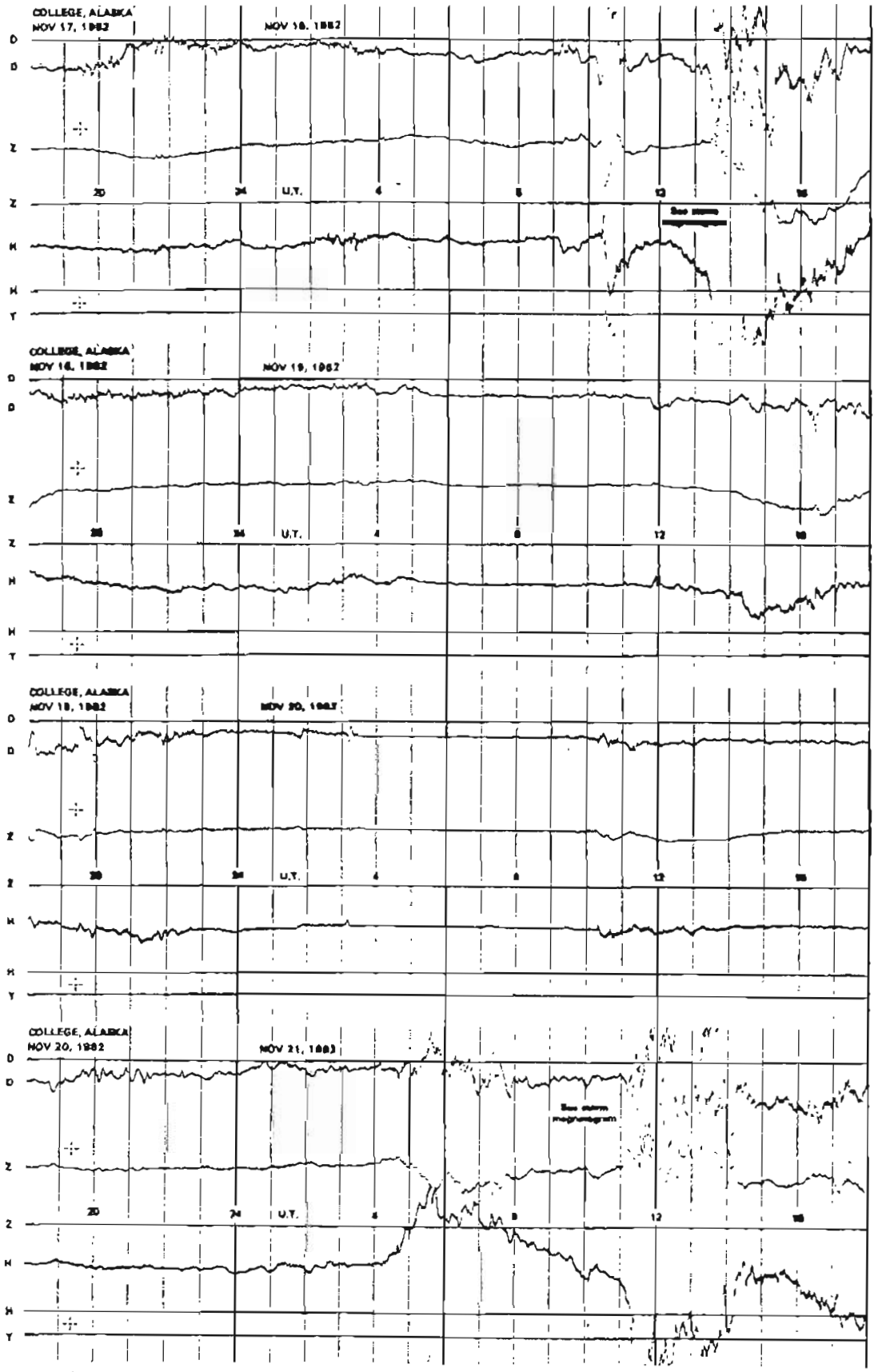


NORMAL MAGNETOGRAMS

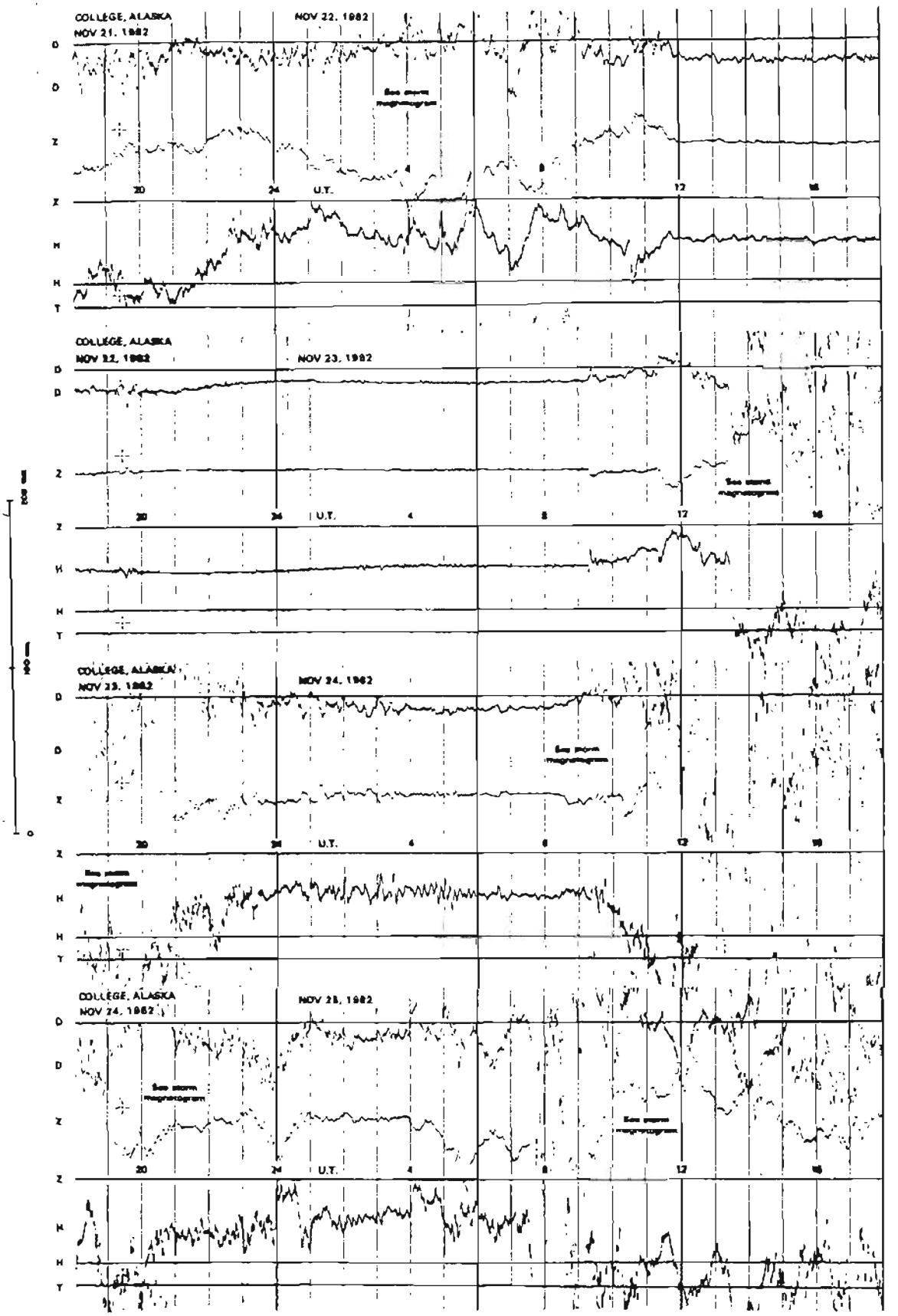
NORMAL MAGNETOGRAMS



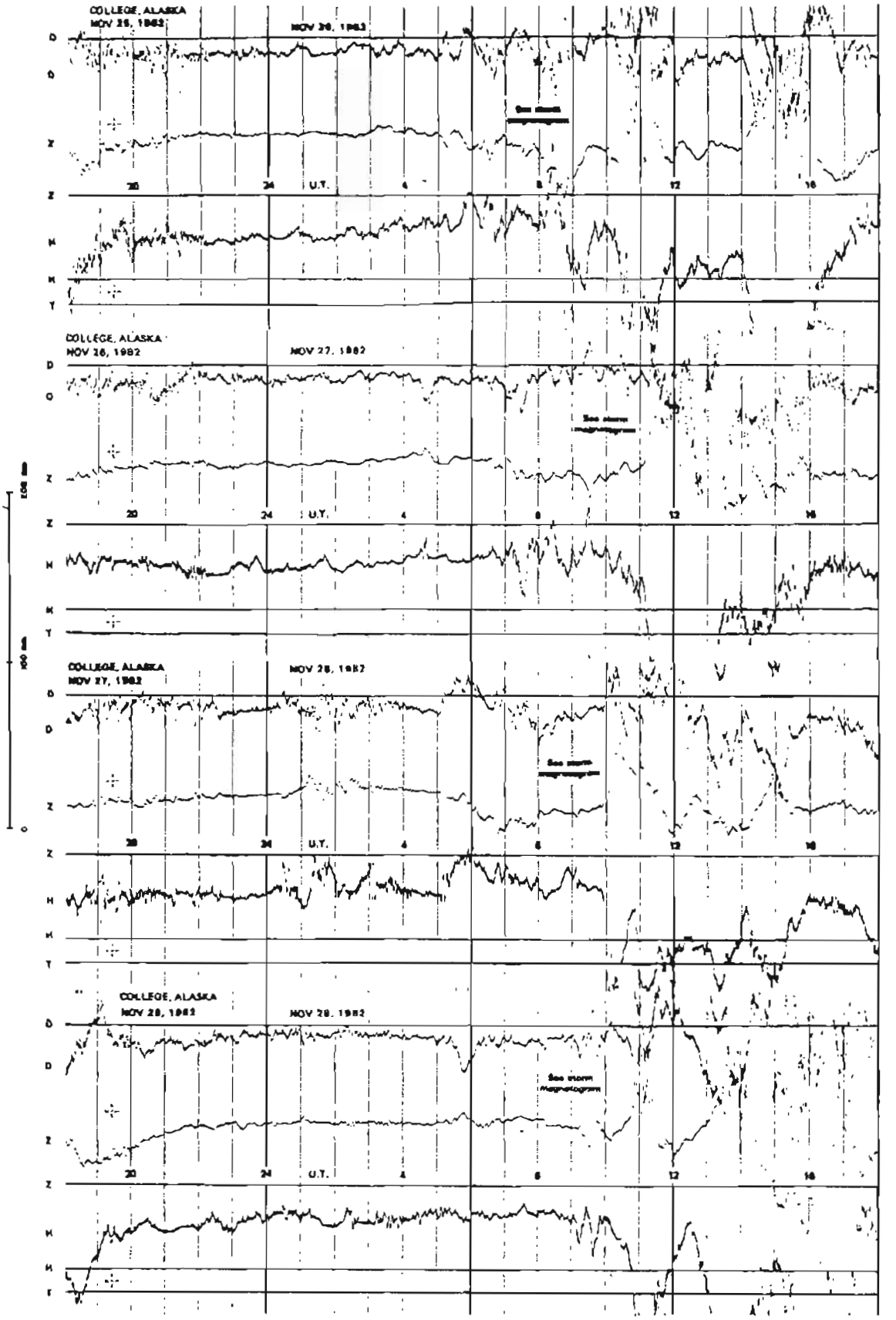
NORMAL MAGNETOGRAMS



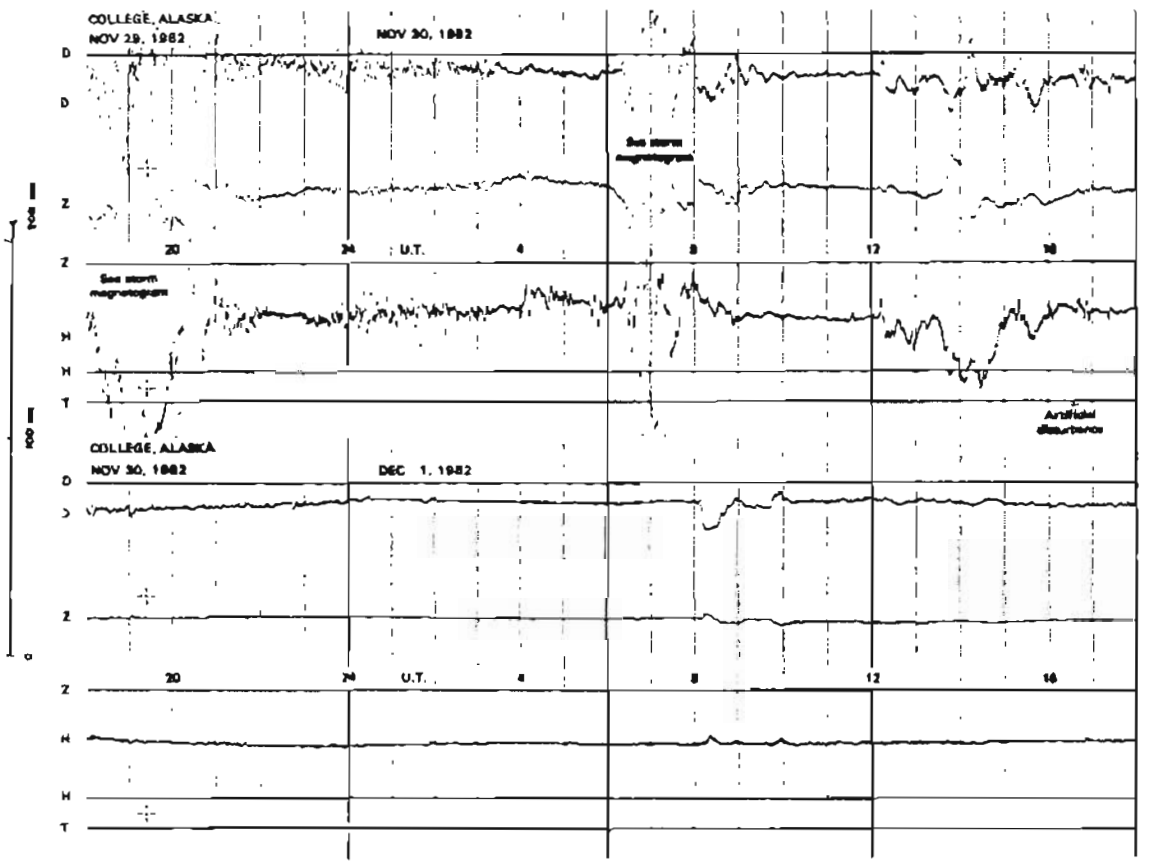
NORMAL MAGNETOGRAMS



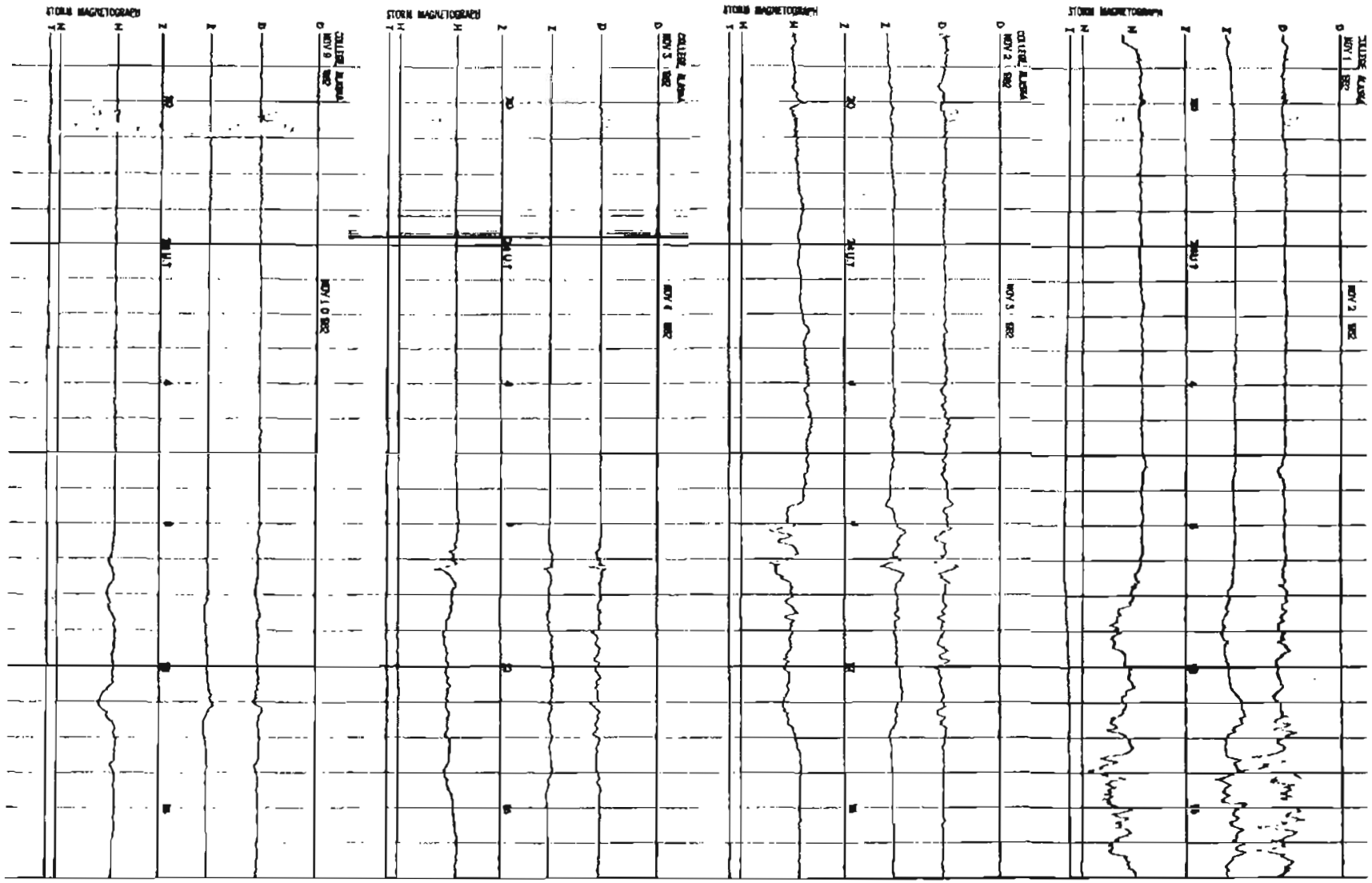
NORMAL MAGNETOGRAMS



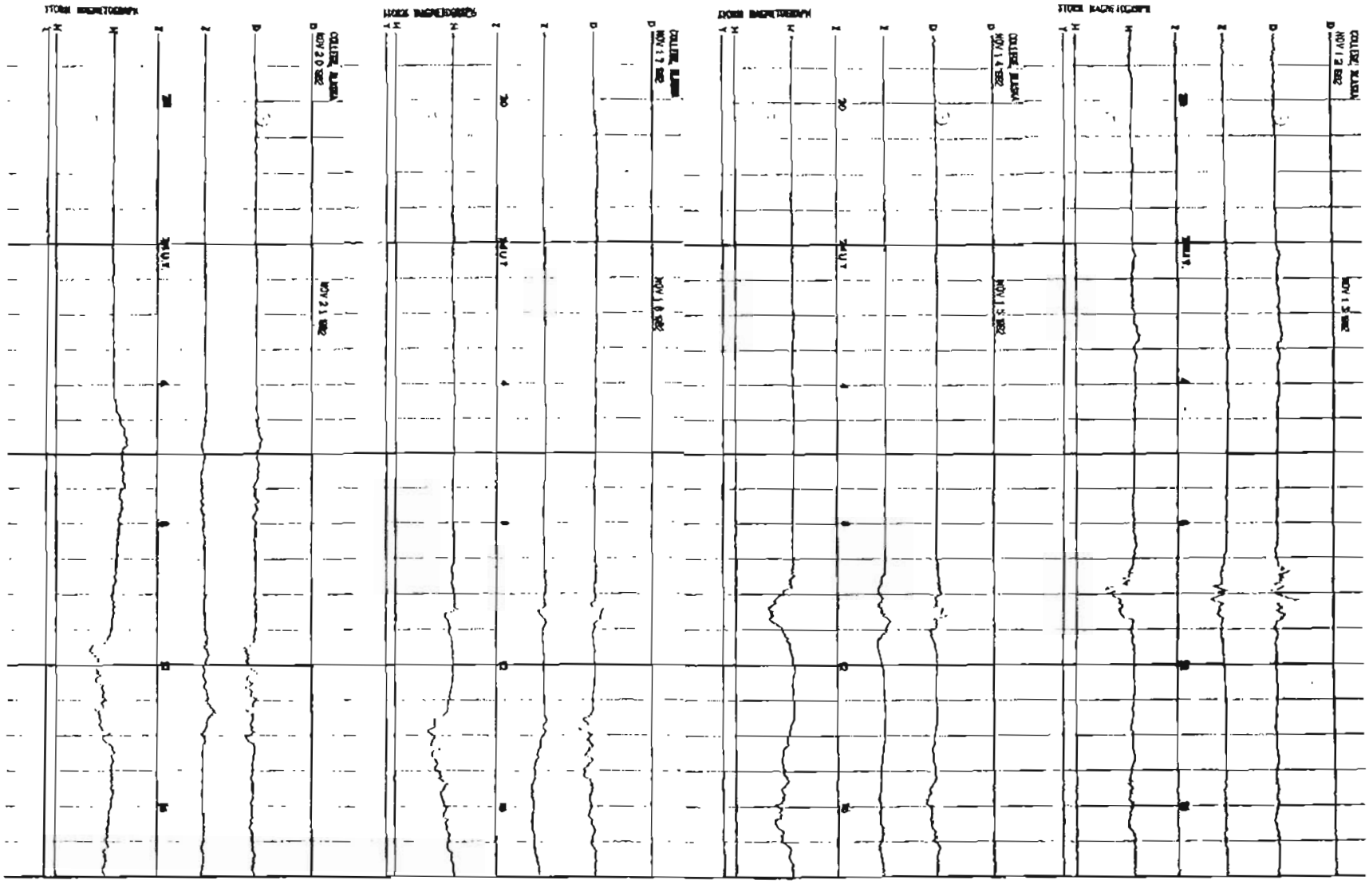
NORMAL MAGNETOGRAMS



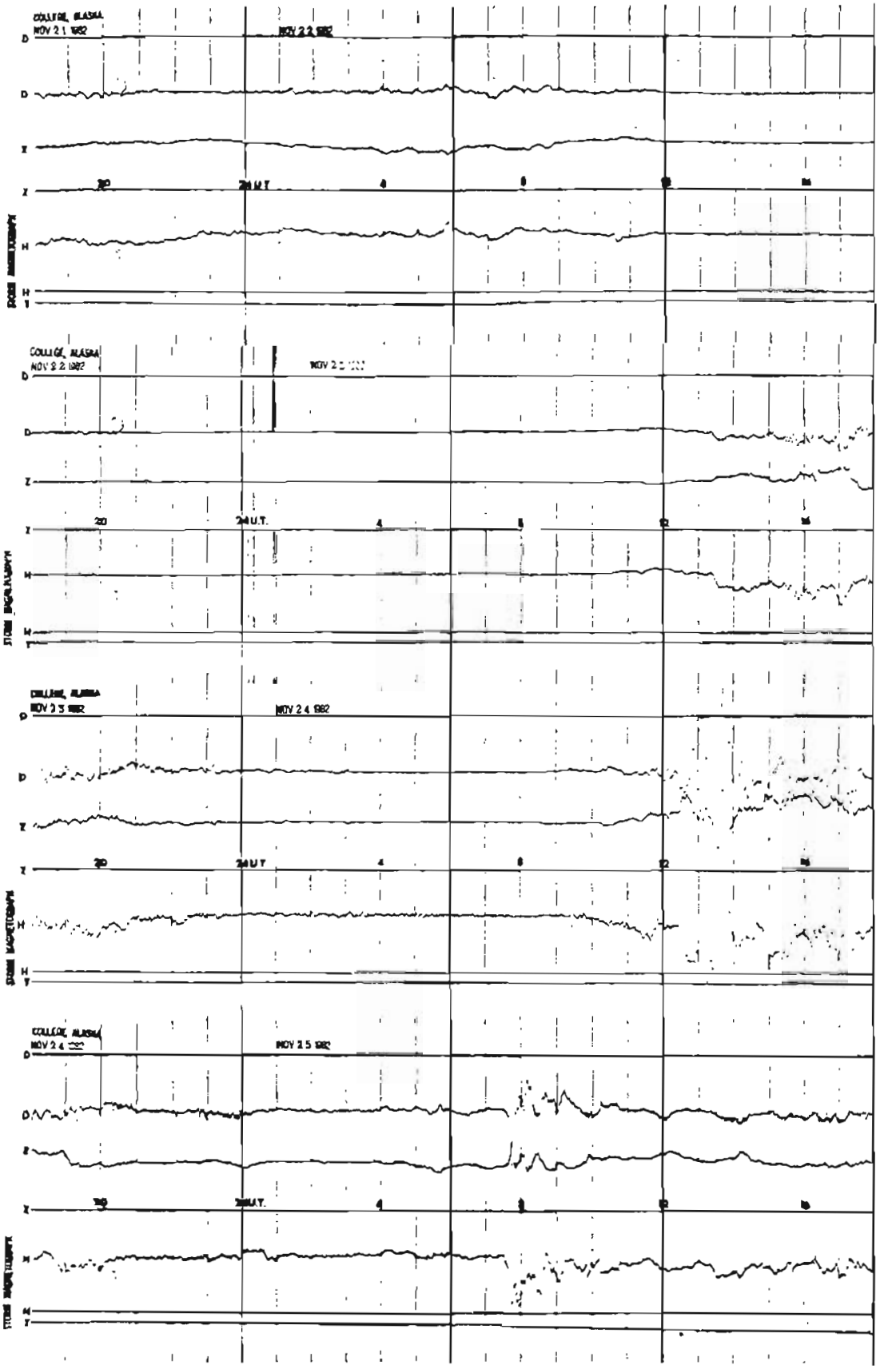
STORM MAGNETOGRAMS



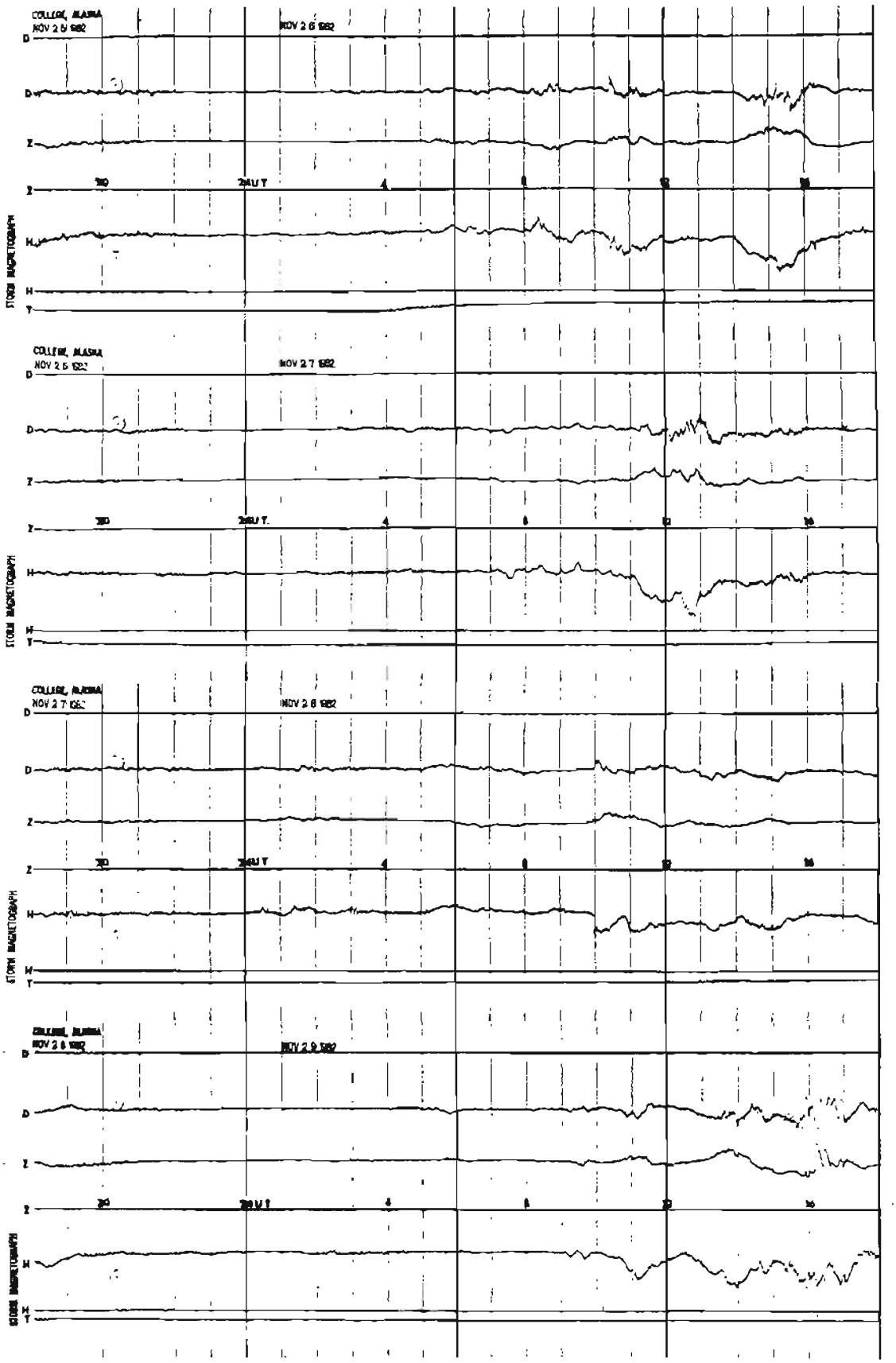
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS