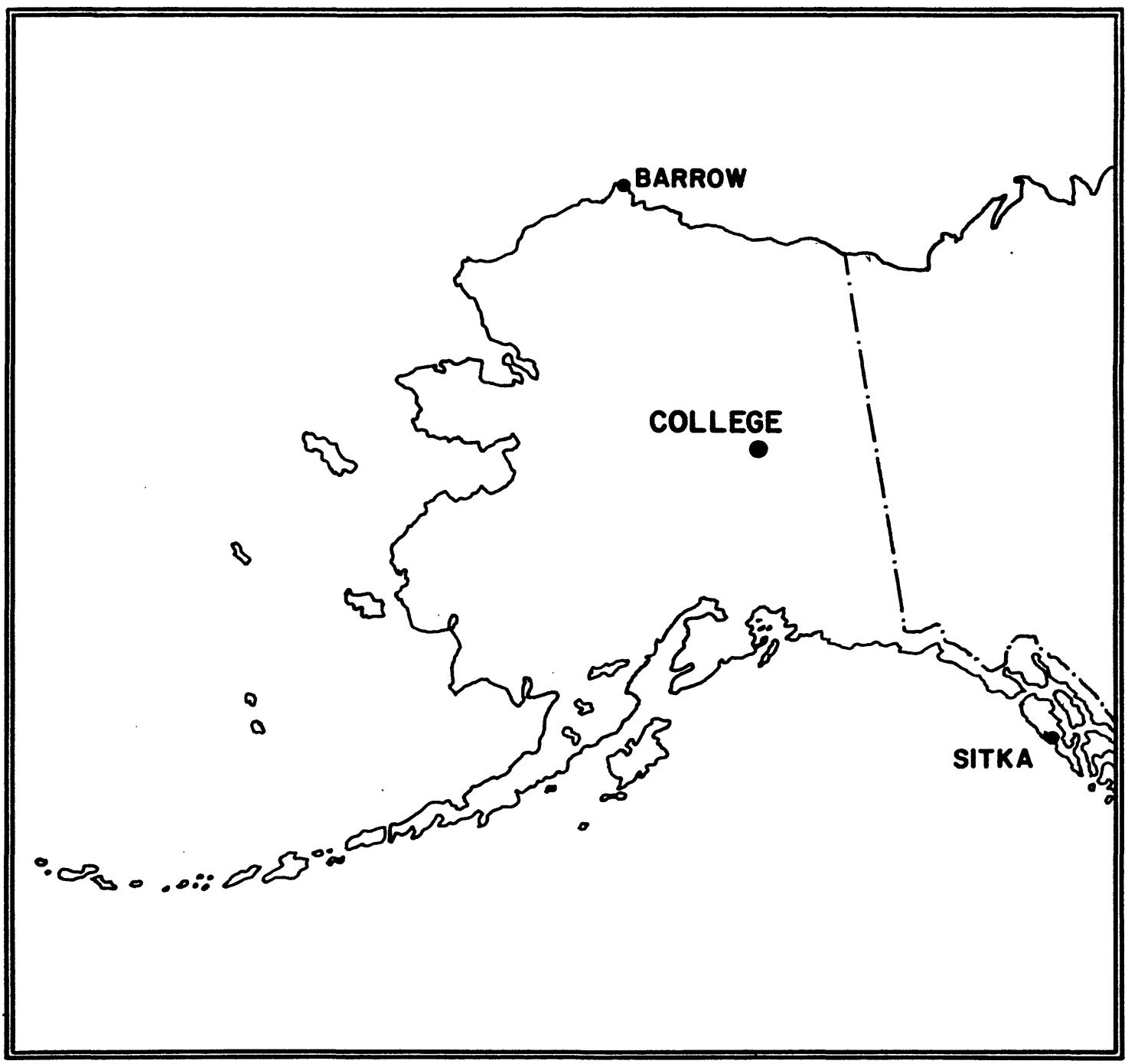
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

DECEMBER 1985

OPEN FILE REPORT 85-0300L



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, H.K. REX, L.Y. TORRENCE, P.A. FRANKLIN AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF GLOBAL SEISMOLOGY AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

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.....+256.5°
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: December 1985

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	2	1	4	4	3	2	3	3	22	15
2	4	3	4	3	5	2	3	2	26	20
3	1	2	4	4	3	3	2	1	20	13
4	1	2	1	5	3	3	3	2	20	14
5	2	0	2	4	4	3	1	2	18	12
6	1	0	2	3	3	2	2	1	14	07
7	1	0	3	4	0	0	2	1	11	07
8	0	0	0	3	2	1	1	0	07	04
9	2	0	0	0	1	1	1	0	05	02
10	1	2	2	6	7	5	3	3	29	39
11	4	2	1	1	3	3	1	1	16	10
12	1	1	0	0	1	2	1	2	08	03
13	3	3	4	7	7	6	2	3	35	55
14	2	2	3	3	4	3	3	2	22	14
15	3	1	2	0	0	1	1	2	10	05
16	1	0	1	1	2	0	0	1	06	02
17	1	1	1	3	1	1	1	0	09	04
18	0	0	3	5	6	2	1	1	18	20
19	1	4	6	7	6	5	5	4	38	57
20	3	2	3	5	5	2	0	0	20	18
21	0	1	0	4	1	0	0	0	06	04
22	0	0	2	3	3	1	1	0	10	05
23	0	0	1	2	1	0	1	1	06	02
24	1	2	4	3	3	3	1	0	17	11
25	1	0	2	1	2	0	1	2	09	04
26	2	2	0	4	3	1	1	0	13	08
27	1	1	1	4	5	1	3	3	19	15
28	3	4	5	6	5	6	5	2	36	44
29	2	1	1	2	1	1	0	1	09	04
30	3	5	7	6	6	7	4	4	42	70
31	3	3	3	5	6	5	3	3	31	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.....	675.7	322.2		(mm)
CURRENT SCALE VALUE.....	3.72	7.80		(γ/mm)
LOWER LIMIT FOR K = 9	2510	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: DECEMBER

YEAR: 1985

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
17	09XX	pi2	
18	0647	ssc*	
25	08XX	pi2	

IDENTIFIED BY: JBT

VERIFIED BY: JEP

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

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

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

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

DECEMBER 1985

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	30	02XX	..	..	..	..	30	3, 6	7	215	1580	990	Jan 86 02 21
								Jan 86 02	5	7				

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: DECEMBER 1985

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 12-1-85	2400 U.T., 12-31-85	1.0'/mm	3.7 γ/mm	27° 16.8' E
H	0000 U.T., 12-1-85	2400 U.T., 12-31-85	7.8 γ/mm		12670 γ
Z	0000 U.T., 12-1-85	2400 U.T., 12-31-85	7.6 γ/mm		55179 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASELINE
D	0000 U.T., 12-1-85	2400 U.T., 12-31-85	7.9'/mm	29.5 γ/mm	23° 46.1' E
H	0000 U.T., 12-1-85	2400 U.T., 12-31-85	43.9 γ/mm		10695 γ
Z	0000 U.T., 12-1-85	2400 U.T., 12-31-85	48.2 γ/mm		54144 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION
	FROM	TO	SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 35.3' E	12888 γ	55337 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: DEC 8, 9, 12, 15, 16, 17, 21, 23, 25, 29

Form C&GS-4044

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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

OBSY.	YEAR	MONTH	ELEMENT
CO	1985	DEC	D

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight, Hour 01 of local day (135W M.T.) is hour 09 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q or S	Ten Q	Hr. / Da.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. / Da.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	167	190	202	200	230	222	190	200	211	32	164	270	01	188	220	210	229	229	287	218	177	106	65	78	92	4327
			02	136	140	149	201	230	232	247	312	134	166	158	198	02	190	132	200	212	246	219	228	192	144	142	136	145	4489
			03	164	181	192	188	218	201	198	128	211	218	194	146	03	166	180	214	226	205	204	215	210	186	167	159	161	4522
			04	168	178	179	196	230	183	190	195	194	269	180	232	04	196	212	217	252	236	282	160	169	177	145	134	148	4717
			05	154	181	184	186	186	198	193	211	206	205	209	216	05	202	256	338	289	174	204	187	184	178	169	167	173	4850
			06	184	184	182	184	188	194	193	194	195	162	151	187	06	198	244	206	166	208	218	214	196	174	178	170	171	4541
			07	174	185	188	186	191	198	195	181	164	211	201	195	07	196	203	213	218	225	225	186	217	180	168	172	177	4649
			08	180	176	181	190	198	197	199	193	188	187	154	192	08	236	235	231	212	200	205	189	193	180	177	177	169	4639
			09	170	173	173	183	190	188	191	191	184	190	188	193	09	199	193	208	207	210	206	213	202	178	175	166	165	4536
			10	169	179	176	161	164	178	181	189	163	129	252*	252*	10	228*	418*	744*	184	210	210	198	184	161	163	168	156	5217
			11	156	141	151	170	162	227	184	198	179	182	171	194	11	205	203	216	204	200	217	216	190	192	172	147	141	4418
			12	182	186	174	186	184	203	181	179	187	187	190	181	12	189	207	208	209	206	190	191	188	174	155	159	146	4442
			13	92	97	139	145	183	196	171	198	278	23*	-112*	707*	13	87*	691*	667*	524*	221	221	248	199	180	145	163	155	5618
			14	157	170	164	164	181	166	171	207	178	176	168	177	14	205	198	198	242	275	222	245	203	179	169	150	154	4519
			15	133	150	144	168	189	180	245	194	197	199	193	196	15	200	194	203	201	208	203	214	216	193	158	126	157	4461
			16	159	171	172	185	192	189	216	260	187	188	190	175	16	196	182	194	192	198	201	207	203	184	158	173	175	4547
			17	153	149	177	188	187	197	196	200	192	214	201	200	17	190	203	193	196	194	201	206	206	194	176	166	162	4541
			18	170	179	182	192	193	198	197	211	183	172	172	151	18	71*	256	190	231	234	206	202	194	186	185	182	173	4510
			19	172	161	161	134	174	373*	145	-143*	278*	23*	-57*	159*	19	262*	226	339	252	394	214	96	140	101	134	149	184	4021
			20	140	166	144	208	207	191	171	208	266	141	152	198	20	187	190	206	181	213	210	207	193	188	178	164	157	4466
			21	161	153	154	137	178	192	199	190	200	206	184	182	21	186	198	201	194	198	201	203	198	176	171	173	173	4408
			22	163	163	181	167	173	153	163	168	192	190	198	232	22	223	200	223	235	191	201	193	197	187	176	163	159	4491
			23	173	163	163	183	191	187	204	190	183	177	200	187	23	207	196	201	207	216	231	223	206	173	165	123	103	4452
			24	112	133	166	173	163	147	248	34	214	208	180	158	24	228	246	192	189	195	192	209	181	177	173	173	174	4265
			25	179	179	177	181	192	199	188	177	167	193	187	212	25	235	193	181	197	220	206	207	185	171	161	157	121	4465
			26	125	149	143	163	186	176	198	199	193	168	186	180	26	213	202	173	179	197	193	193	194	184	173	168	166	4301
			27	173	186	193	192	186	192	185	191	216	254	192	216	27	151	206	194	216	225	224	203	156	-12	48	82	148	4216
			28	138	111	162	137	270	266	195	190	480*	321*	47	277	28	178*	266*	488*	472*	191	297	278	132	116	144	143	154	5443
			29	166	180	200	168	210	184	196	190	186	252	171	172	29	178	179	183	203	206	209	203	203	187	168	143	148	4485
			30	160	158	137	190	97	300	231	305*	480*	190	241*	131	30	180	255	321*	321*	-13*	326	271	158	122	106	113	118	4898
			31	156	158	221	190	208	319	264	276	244	148	154	238	31	241*	281*	504*	340	234	232	181	188	163	142	132	112	5326

SCALED BY	LYT
CHECKED BY	JEP, HKR
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	142,780
MONTHLY MEAN	192
DATES WITH GAPS:	

Form CGS-694e

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of nm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (135W M.T.) is hour 09 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

OBSV.	YEAR	MONTH	ELEMENT
CO	1985	DEC	Z

C	Q or S	Tes Q	Hr. Da.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Da.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	229	232	235	239	261	259	248	239	214	13	100	129	01	159	175	203	210	201	198	193	176	180	193	213	238	4737
			02	268	273	294	292	260	266	252	174	132	177	200	205*	02	154	126	189	222	203	192	198	200	217	217	216	229	5146
			03	236	239	241	236	252	243	246	133	210	189	180	124	03	124	136	185	152	128	172	176	197	198	206	213	216	4632
			04	219	231	231	226	255	242	234	221	215	255	174	120	04	173	201	170	108	39	7	48	121	204	210	217	214	4335
			05	224	235	253	239	243	246	233	236	233	224	222	163	05	113	99	67	83	147	187	203	200	200	207	207	212	4676
			06	213	218	220	216	219	218	214	214	192	159	132	134	06	150	154	145	154	186	182	181	179	180	188	194	199	4441
			07	204	207	206	206	206	204	207	213	218	166	170	203	07	219	217	212	203	200	194	173	163	168	184	194	201	4738
			08	203	206	208	208	206	205	204	206	205	207	182	142	08	173	186	186	189	189	186	190	193	190	190	192	195	4641
			09	197	201	205	207	207	213	211	211	213	207	203	207	09	204	196	188	206	206	204	203	199	193	197	196	203	4877
			10	207	207	213	221	219	227	223	227	216	168	227*	308*	10	346*	391*	-51*	93	162	188	201	197	197	201	207	207	4992
			11	220	234	252	234	234	233	228	234	217	208	207	209	11	203	190	152	131	101	132	170	183	191	193	196	200	4752
			12	223	226	216	213	216	223	228	235	235	228	218	217	12	208	197	199	199	200	193	189	186	186	190	182	183	4980
			13	176	197	223	269	267	233	224	232	219	80*	-34*	105*	13	288	434*	308*	93*	129	214	201	182	197	194	206	211	4848
			14	237	236	238	225	218	224	246	204	228	247	237	221	14	226	193	169	211	173	153	149	175	171	187	193	206	4962
			15	229	240	230	252	240	246	259	234	216	216	207	193	15	196	213	213	213	203	209	219	207	199	201	208	219	5262
			16	228	226	226	214	214	220	230	221	204	203	203	189	16	146	174	191	197	202	200	197	194	188	180	192	203	4842
			17	202	229	247	217	209	224	238	256	240	196	149	176	17	168	189	189	190	197	185	182	181	186	187	194	199	4825
			18	206	206	209	206	206	211	207	223	214	199	206	275*	18	209*	-37	143	212	187	188	193	193	194	195	196	197	4638
			19	201	210	226	239	315	240*	139*	25*	176*	164	226	525*	19	272*	130	141	138	158	113	115	58	147	160	194	216	4528
			20	246	256	275	268	241	229	262	269	144	185	222	-56	20	110	165	200	246	250	230	232	223	219	213	209	214	5052
			21	218	218	221	226	252	236	227	221	235	218	165	183	21	200	206	213	217	216	216	216	213	203	203	210	214	5147
			22	216	218	216	218	226	228	254	273	261	231	207	166	22	150	149	202	195	206	203	190	193	203	199	199	207	5010
			23	219	216	216	217	217	220	233	229	229	227	223	203	23	163	200	213	216	212	207	203	197	186	179	169	173	4967
			24	199	220	253	223	216	238	281	260	295	262	222	204	24	195	178	141	116	172	207	201	203	210	213	216	218	5143
			25	218	216	214	221	219	219	223	242	246	248	226	211	25	158	191	203	211	207	205	199	193	197	197	203	201	5068
			26	213	221	236	252	291	290	242	220	211	203	188	162	26	163	133	181	207	210	206	207	213	207	203	207	211	5077
			27	211	207	209	209	220	229	231	232	239	213	194	191	27	124	116	200	214	206	191	187	173	93	113	166	202	4570
			28	213	252	266	263	270	298	255	229	39*	-188*	-118*	192	28	438	407*	205*	318*	179	177	130	166	211	203	217	214	4836
			29	219	223	223	224	263	234	217	211	217	215	196	212	29	211	210	194	203	205	206	206	207	199	201	203	213	5112
			30	217	211	294	178*	192*	261*	284	109*	-244*	8*	299*	184	30	192	287	388*	413*	-50	-3	128	169	168	193	242	244	4304
			31	235	262	276	235	235	240	250	223	91	166	174	202	31	413*	205*	71*	160	150	191	188	186	193	197	202	210	4955

SCALED BY	LYT
CHECKED BY	JEP, HKR
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	150,093
MONTHLY MEAN	202
DATES WITH GAPS:	

Form CAGS-484a

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

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

OBSY.	YEAR	MONTH	ELEMENT
CO	1985	DEC	H

Values are in tenths of gam. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (135W M.T.) is hour 09 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

C	Q or S	Tens Q	Hr. Dy.	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Dy.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	282	296	288	280	246	264	281	281	284	147	249	202	01	228	228	230	266	260	272	265	262	216	198	230	270	6025
			02	264	297	363	352	310	317	346	286	275	278	274	242	02	190	174	279	276	244	268	270	249	261	266	272	276	6563
			03	283	291	300	288	277	293	298	268	302	272	174	178	02	170	206	255	200	195	281	280	272	280	282	275	272	6187
			04	285	297	290	288	298	299	301	287	293	112	56	237	04	296	284	247	187	180	135	213	287	304	280	256	272	5984
			05	284	300	283	290	297	290	290	283	308	317	283	105	06	200	107	66	200	286	297	281	289	290	283	280	279	6188
			06	290	285	280	292	292	287	293	287	309	286	258	251	06	269	231	141	272	293	290	295	290	293	291	287	289	6651
			07	293	293	297	295	290	290	297	306	336	386	323	318	07	303	291	292	287	281	269	270	279	283	287	289	290	7145
			08	290	290	293	291	288	289	290	286	291	297	276	224	08	296	290	283	287	287	280	280	290	295	290	290	293	6866
			09	297	299	290	288	293	297	293	290	291	287	284	281	08	283	280	285	293	289	293	289	289	289	280	282	283	6925
			10	283	279	290	299	310	306	308	297	311	344	230	-305*	10	-254*	-524*	-141*	366	373	352	313	277	279	279	268	280	4820
			11	290	288	332	313	320	297	297	285	287	278	292	281	11	270	258	166	196	200	256	283	273	275	273	261	273	6544
			12	300	299	297	283	287	285	294	292	299	295	290	281	12	271	278	283	279	283	280	276	263	269	287	281	285	6837
			13	275	303	316	379	347	323	347	456	448	490*	164*	-224*	13	23*	-382*	-450*	136*	348	299	284	286	270	276	267	281	5260
			14	298	221	306	302	315	300	319	381	362	336	290	280	14	268	192	266	259	212	210	243	279	279	280	282	263	6683
			15	306	302	283	320	300	313	306	280	271	268	263	261	15	272	267	272	266	261	279	277	281	267	247	267	279	6708
			16	268	279	279	281	282	280	279	297	286	280	279	263	16	260	274	293	283	284	284	279	270	267	271	272	261	6646
			17	282	288	308	292	293	292	287	297	297	291	263	268	17	259	270	272	273	280	260	279	283	277	273	270	275	6729
			18	279	283	289	290	283	279	286	288	274	124	-44	99	18	-347*	138	361	316	304	304	287	289	283	281	281	270	5497
			19	289	263	268	273	356	443	481*	288*	154*	-82*	-173*	-432*	19	29*	319	193	204	94	187	31	178	283	270	311	301	4528
			20	322	297	356	334	289	301	334	371	354	316	258	43	20	64	273	315	323	284	284	288	284	273	272	271	279	6785
			21	275	279	290	298	273	288	282	280	270	282	206	273	21	267	270	277	280	277	273	273	269	270	271	270	280	6573
			22	279	287	291	291	290	288	292	315	292	278	269	278	22	230	264	282	268	271	261	270	283	280	279	277	274	6689
			23	277	284	287	285	283	288	290	290	283	279	272	260	23	252	282	284	275	273	272	271	273	287	276	267	263	6653
			24	287	299	292	308	303	331	456	570	436	291	254	251	24	189	196	165	199	277	275	271	269	269	269	267	265	6989
			25	271	275	280	280	277	271	270	281	297	274	267	250	25	235	278	277	272	268	273	278	280	280	279	248	263	6524
			26	261	279	300	320	311	300	273	266	266	280	252	192	26	205	237	277	289	275	269	267	275	278	279	275	279	6505
			27	280	282	282	280	263	259	283	285	281	291	269	224	27	60	252	293	286	284	286	291	230	180	260	261	280	6242
			28	296	294	330	337	517	292	291	331	233*	-71*	132*	-52	28	-109*	-121*	-50	-31*	319	250	182	303	291	291	276	285	4816
			29	279	273	278	287	274	292	280	272	263	261	272	266	29	263	249	250	265	269	266	270	273	269	275	281	282	6509
			30	273	258	336	622*	612*	515*	409	172*	-144*	381*	-92*	70	30	281	166	-233*	-688*	-182*	138	272	300	266	260	261	279	4532
			31	288	315	317	298	312	332	311	315	244	280	254	71*	31	-262*	-200*	-245*	74	163	235	324	274	266	264	261	277	4768

SCALED BY	LYT
CHECKED BY	JEF, HKR
SIGNS REVIEWED BY	JEF
PUNCHED BY	

Preliminary base-line and scale values:

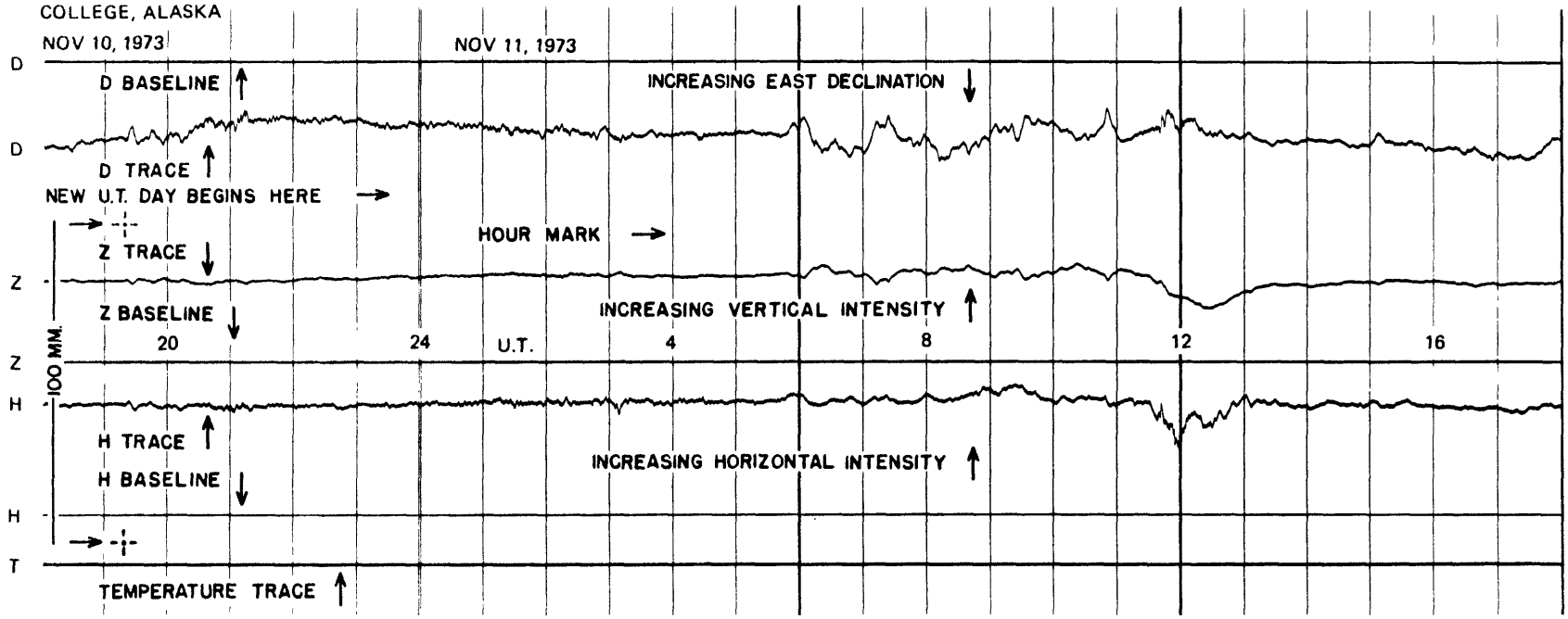
Interval Beginning	Base-line Value	Scale Value

( ) 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 in given, curve was estimated for missing part.
• Derived from STORM Mgph., converted to Normal Mgph.

MONTHLY SUM	192,371
MONTHLY MEAN	259
DATES WITH GAPS:	

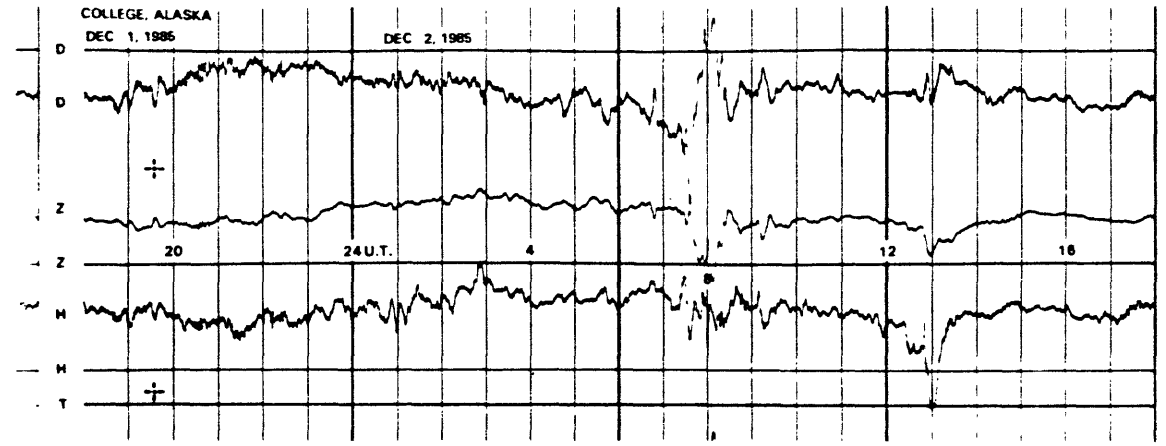
01

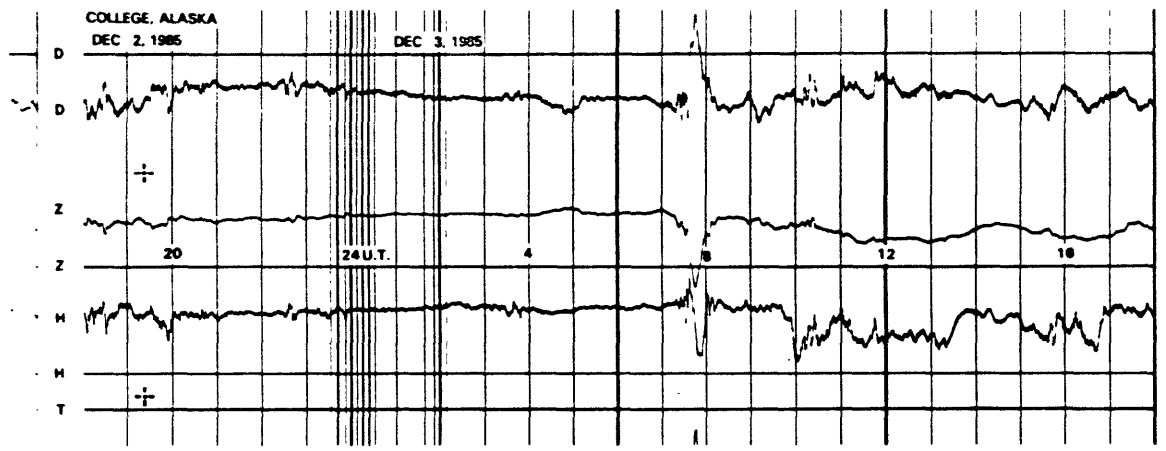
FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

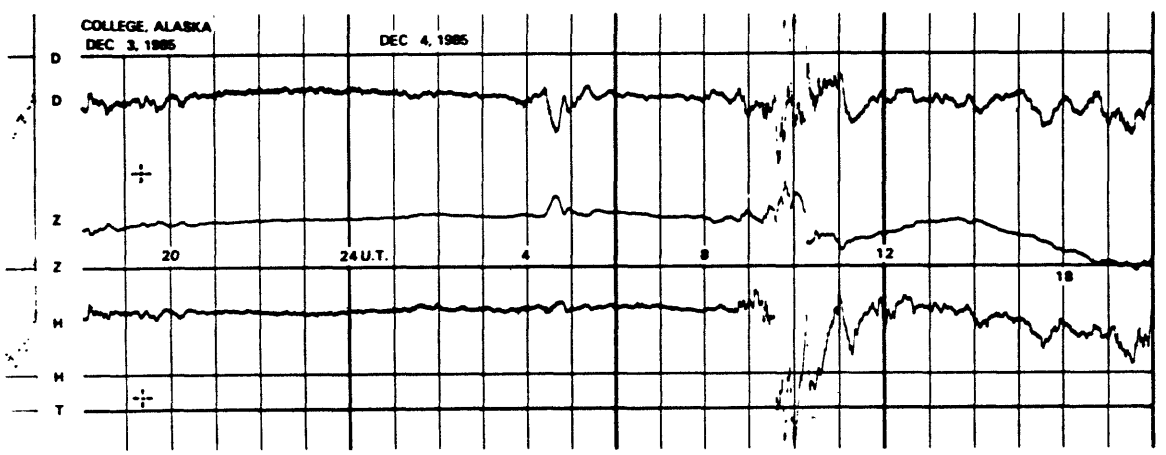


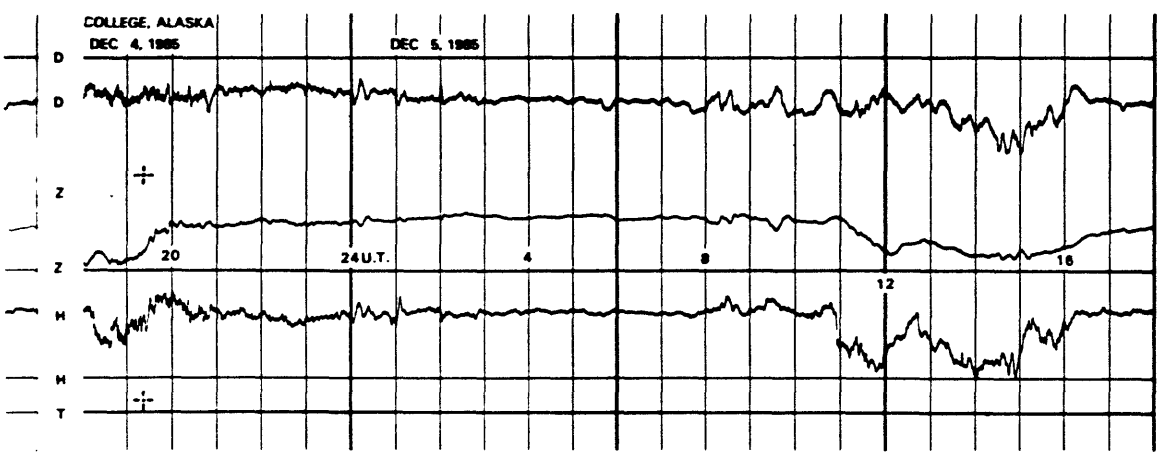
SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS

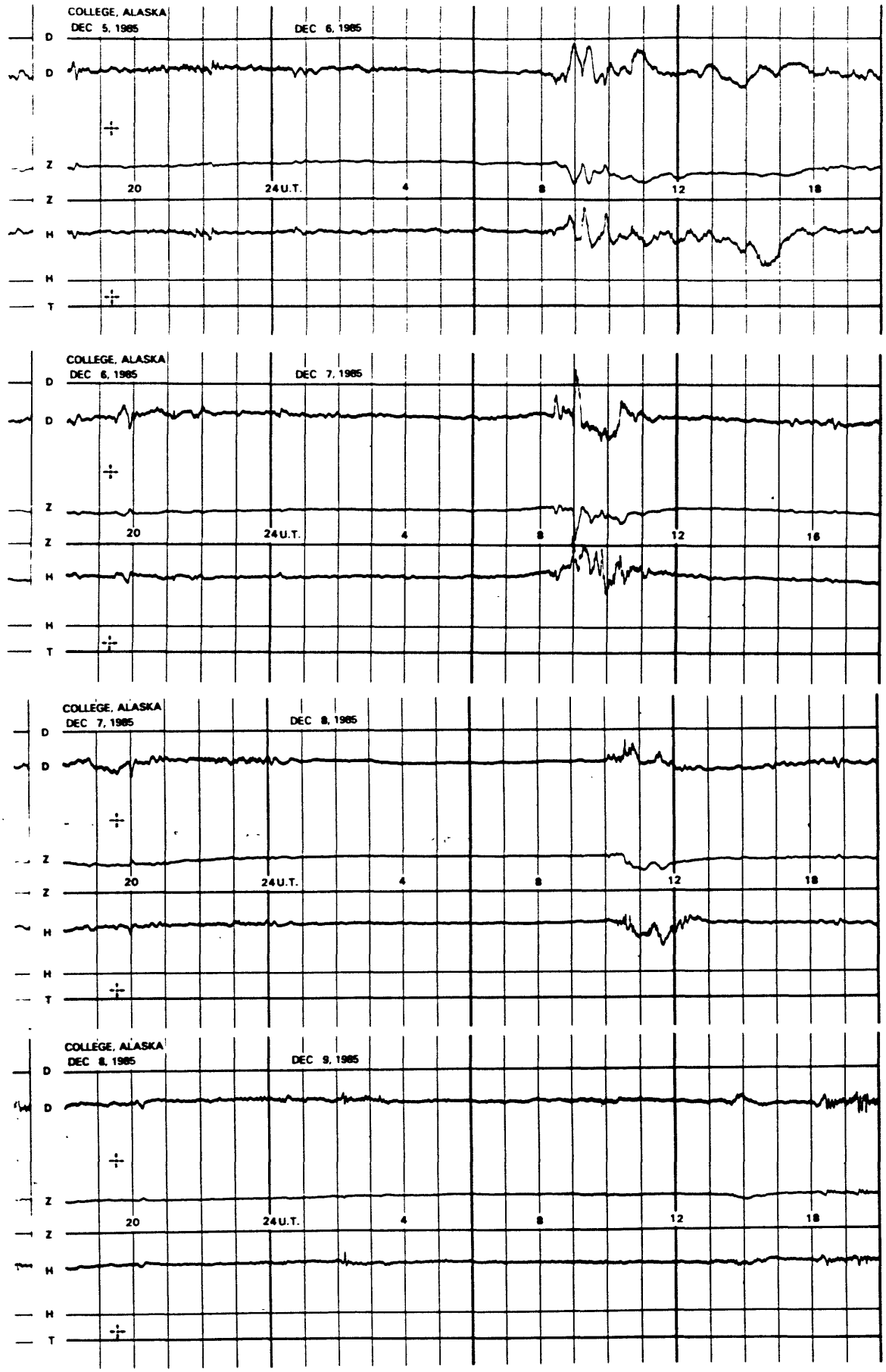




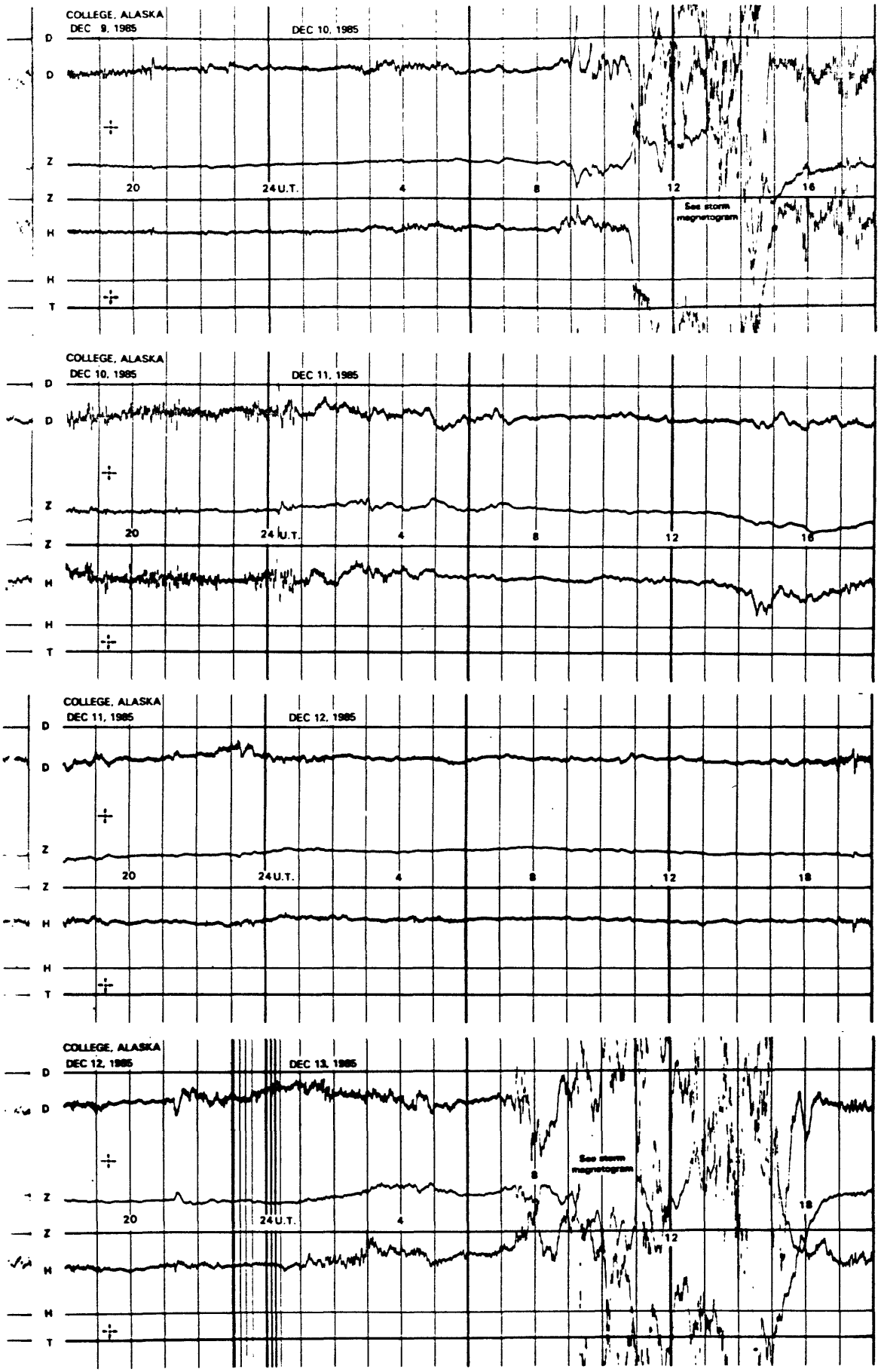




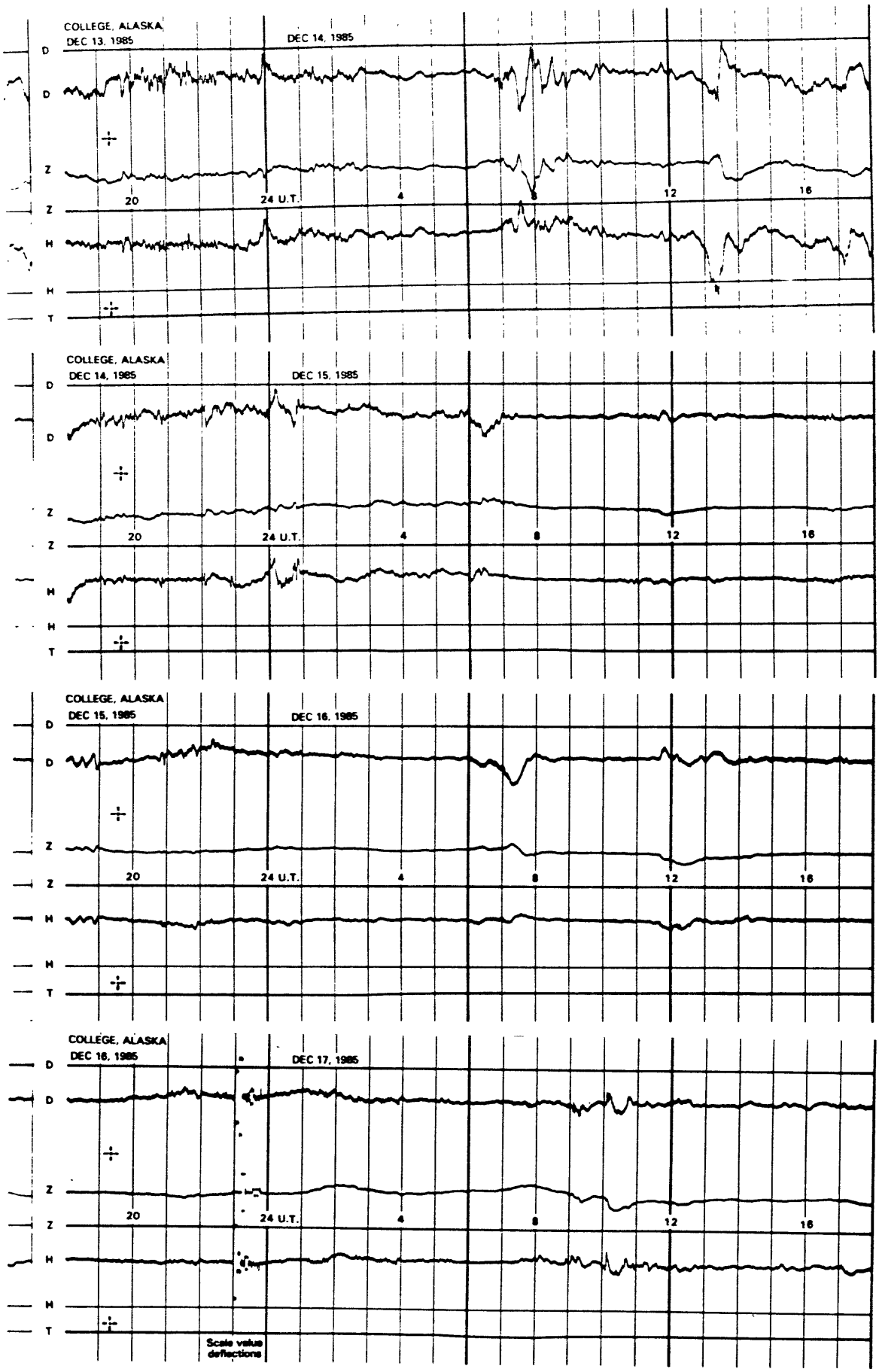
NORMAL MAGNETOGRAMS



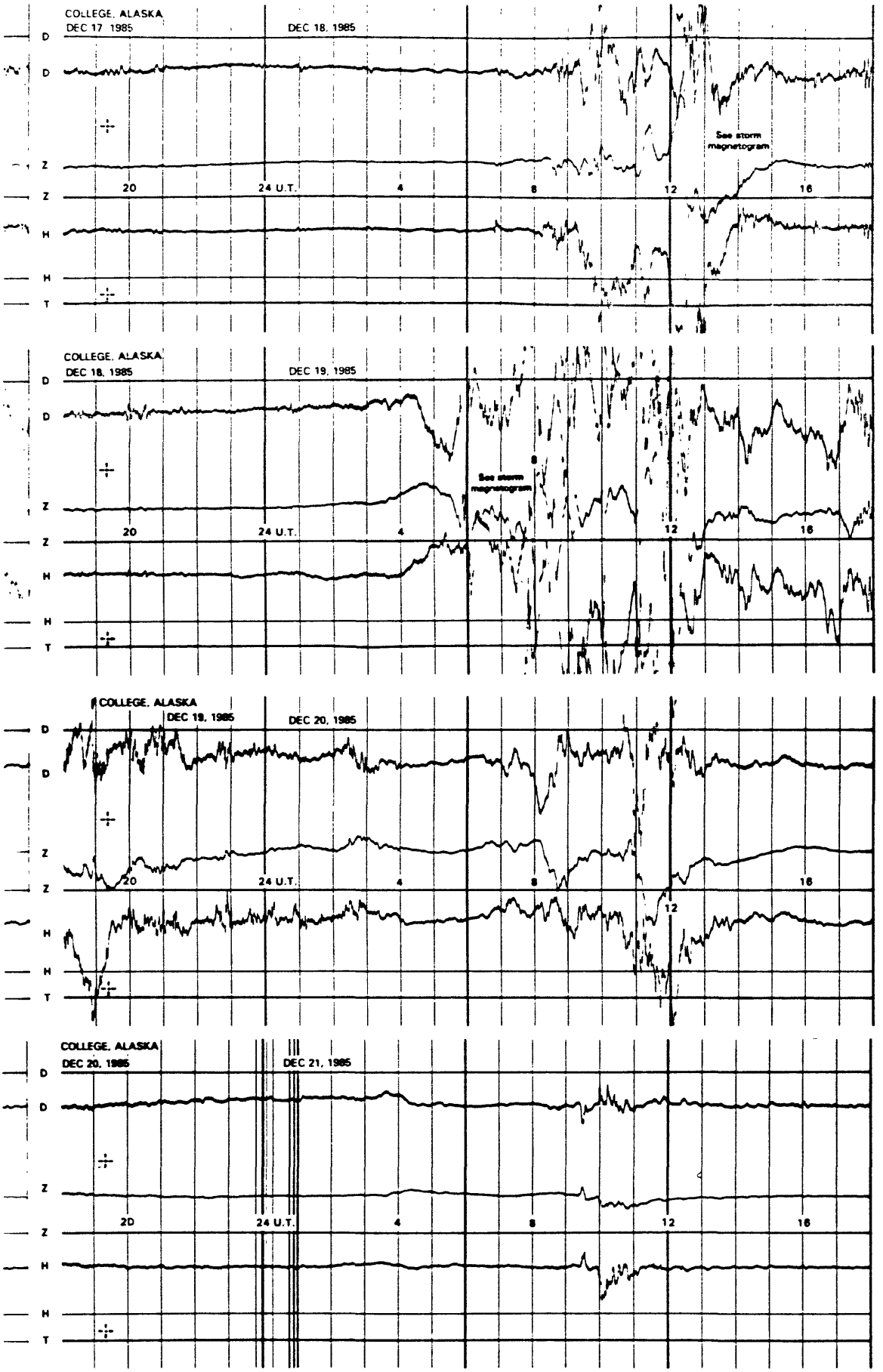
NORMAL MAGNETOGRAMS



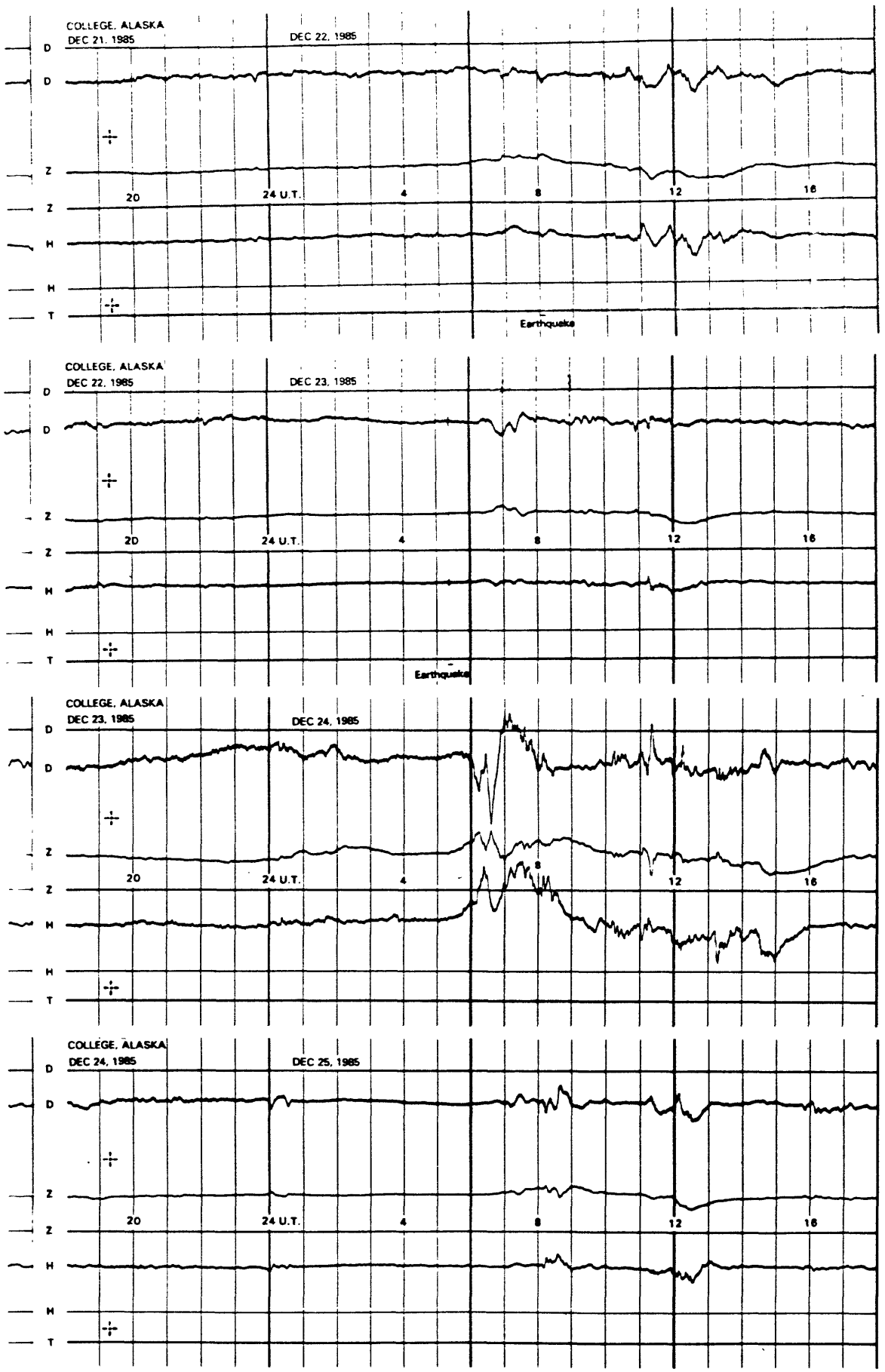
NORMAL MAGNETOGRAMS



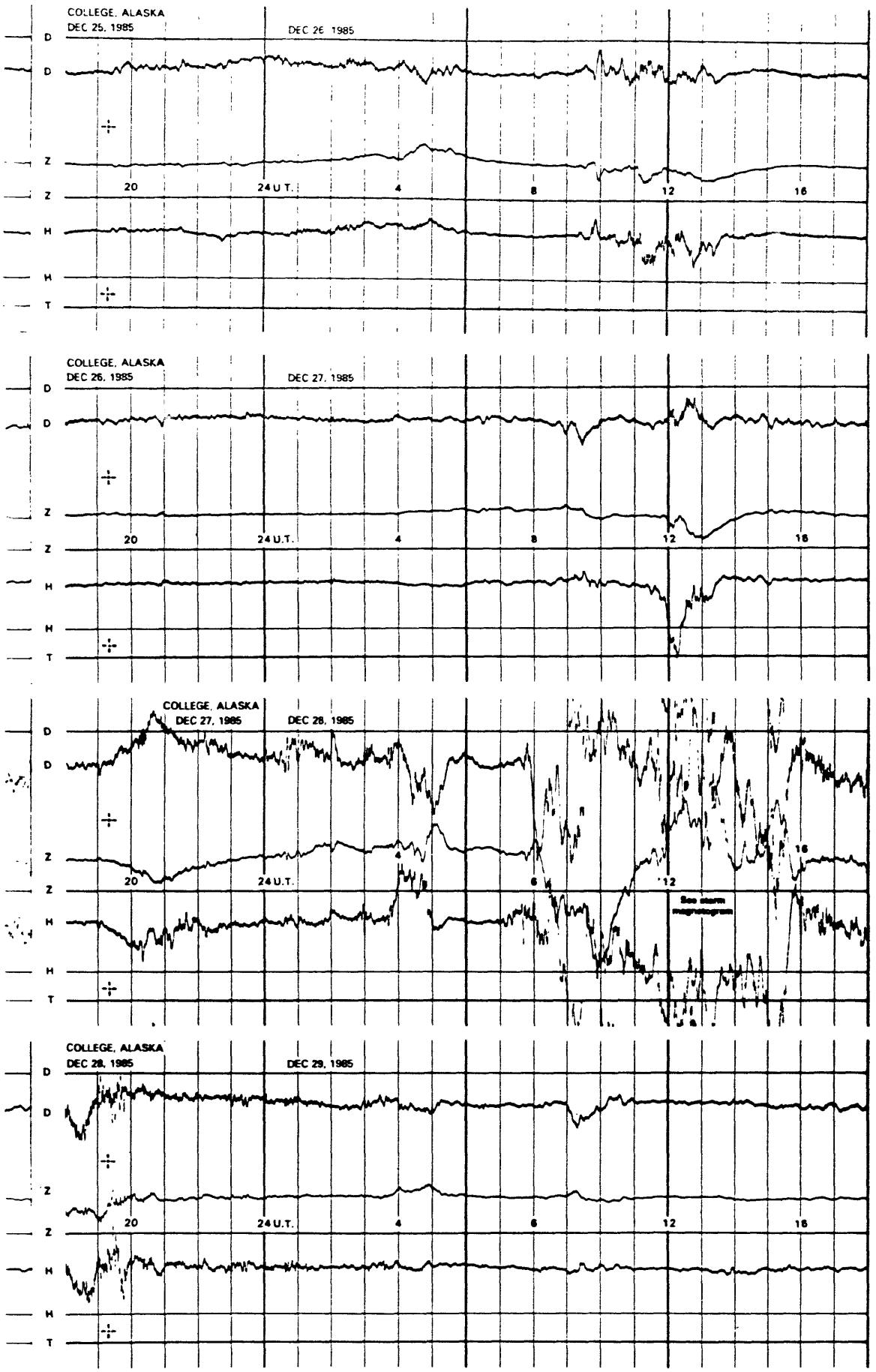
NORMAL MAGNETOGRAMS



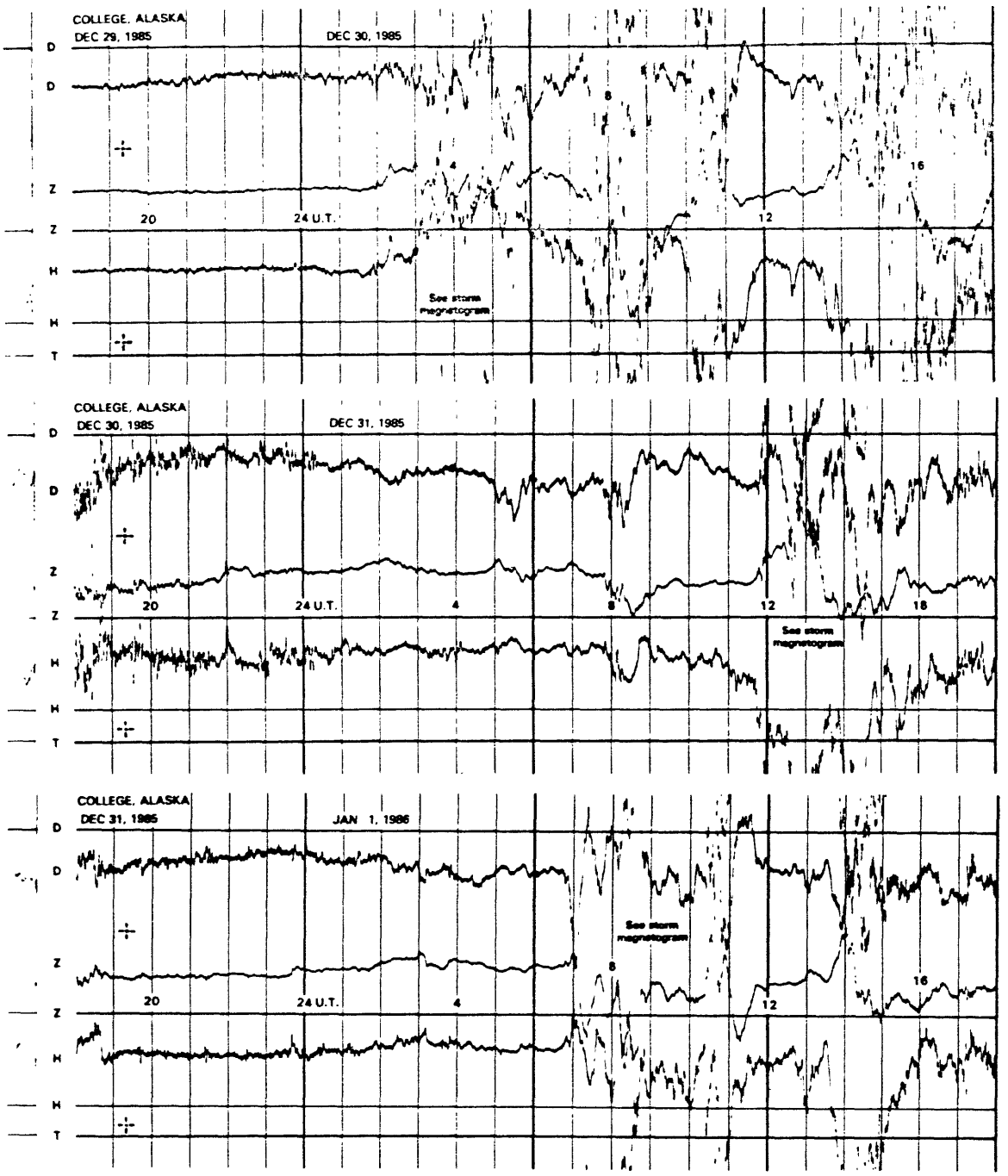
NORMAL MAGNETOGRAMS



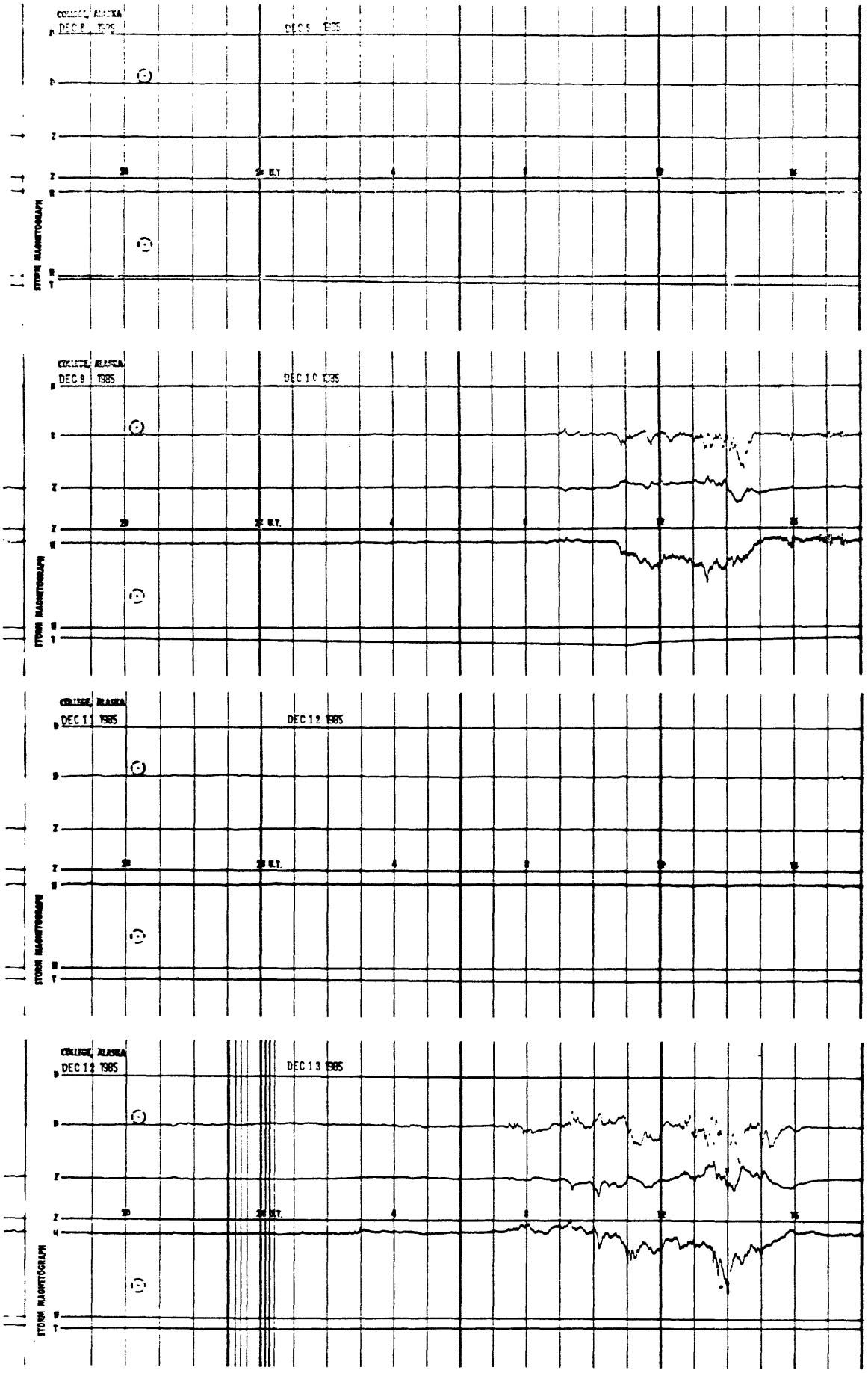
NORMAL MAGNETOGRAMS



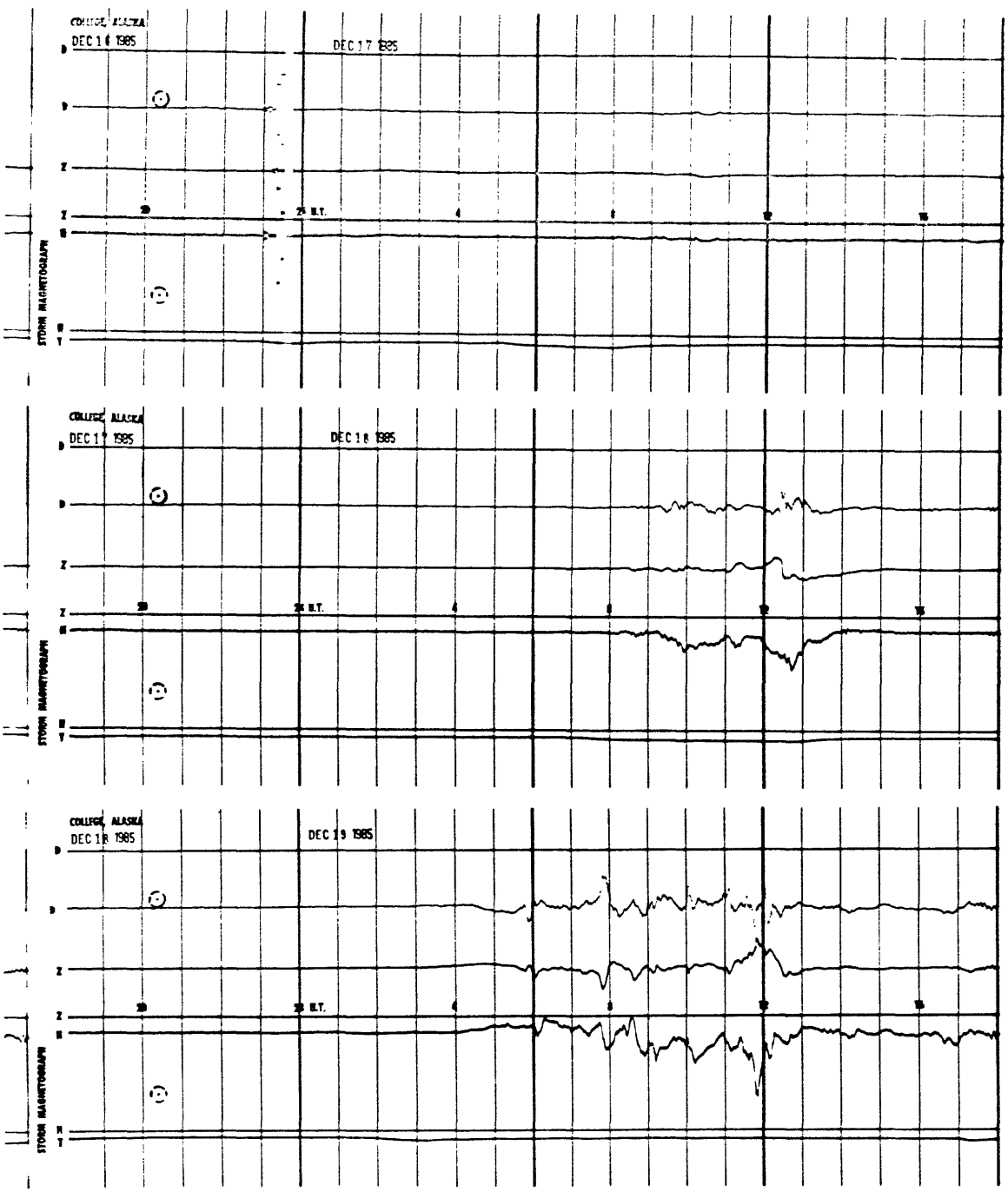
NORMAL MAGNETOGRAMS



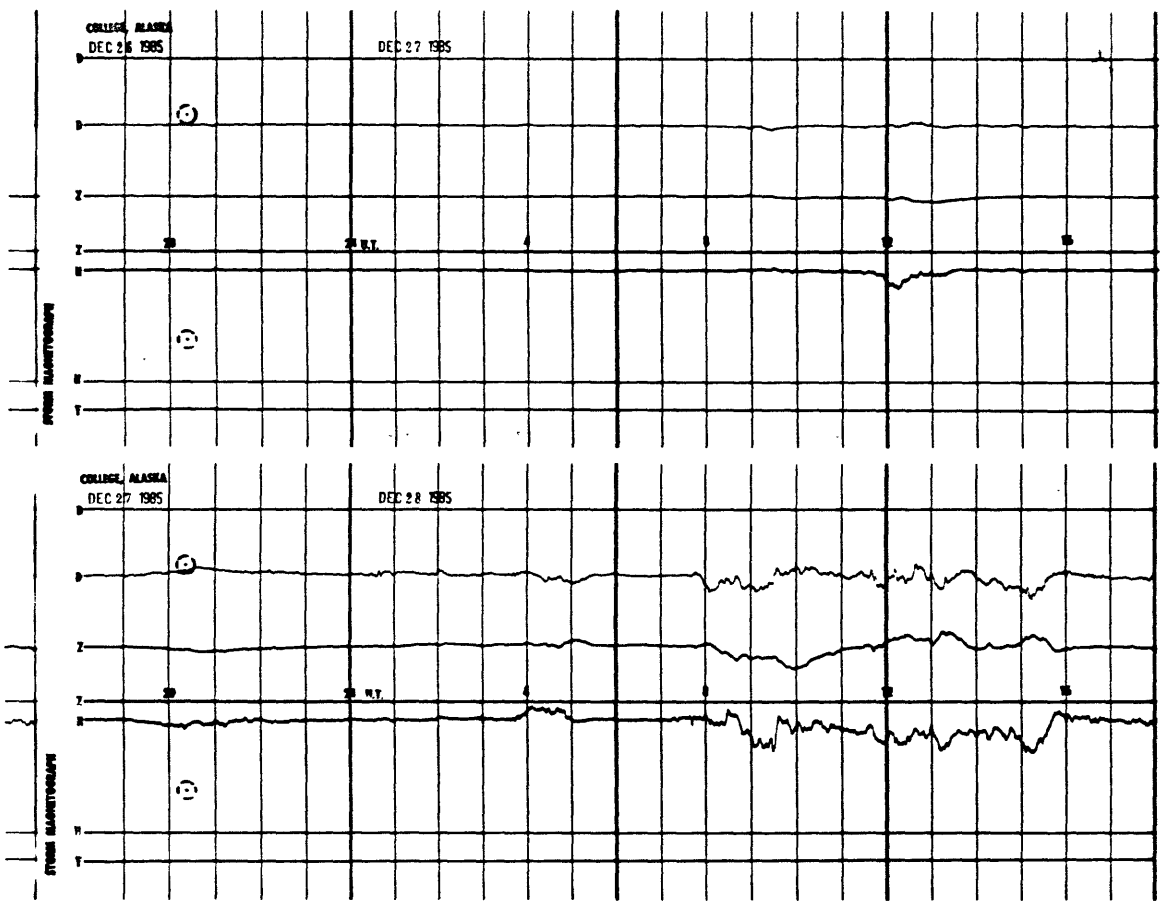
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS