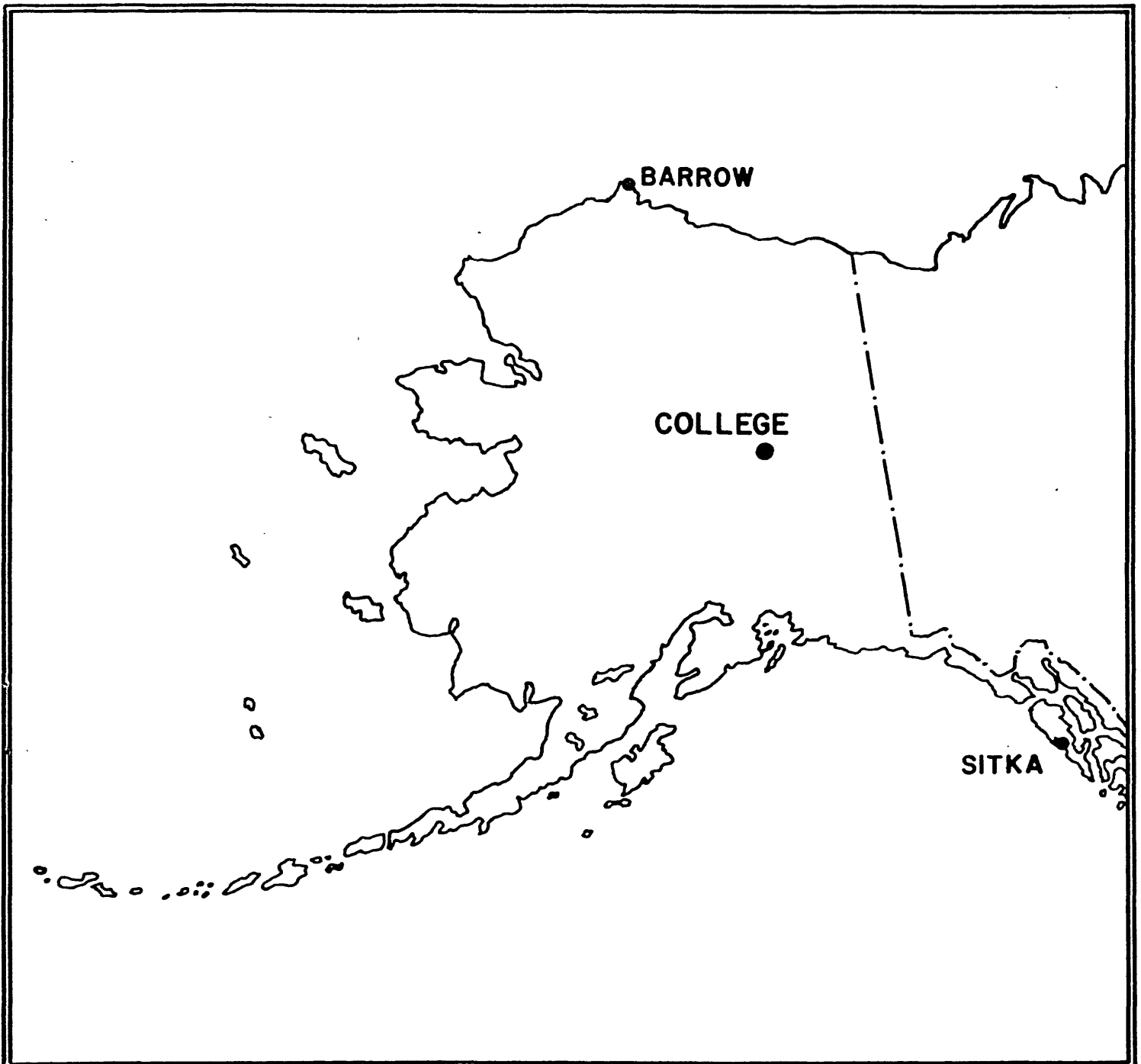


UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

DECEMBER 1984

OPEN FILE REPORT 84-0300L



THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSEND, CHIEF OF THE COLLEGE OBSERVATORY; WITH THE ASSISTANCE OF THE OBSERVATORY STAFF MEMBERS: J.E. PAPP, E.A. SAUTER, 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.

Explanation of Data and Reports

Magnetic Activity Report

Outstanding Magnetic Effects

Principal Magnetic Storms

Preliminary Calibration Data and Monthly Mean Absolute Values

Magnetogram Hourly Scalings

Sample Format for Normal and Storm Magnetograms

Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

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..... $64^{\circ}51.6'N$
Geographic longitude..... $147^{\circ}50.2'W$
Geomagnetic latitude..... $+64.6^{\circ}$
Geomagnetic longitude..... $+256.5^{\circ}$
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.

COLLEGE, ALASKA

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

MONTH AND YEAR

DECEMBER 1984

DATE	K-INDICES								AK	TIME SCALE ON MAGNETOGRAMS
	00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24		
1	3	4	3	5	4	1	2	2	19	SUDDEN COMMENCEMENTS d h m
2	3	4	5	4	4	5	4	2	28	
3	3	3	4	5	5	6	4	3	34	
4	3	2	5	6	4	6	3	4	37	
5	3	3	5	6	4	4	3	3	30	
6	3	4	3	5	6	5	3	3	33	
7	3	3	2	4	5	5	3	2	23	
8	2	2	1	4	2	1	0	0	07	
9	1	0	0	2	0	1	1	1	02	
10	1	1	1	3	5	2	2	1	11	
11	0	1	0	4	6	5	3	5	28	
12	4	3	2	5	4	2	1	1	17	
13	3	4	4	6	6	4	3	3	36	
14	0	1	1	4	5	5	1	2	17	
15	2	1	4	5	6	3	3	4	28	
16	3	4	5	6	5	5	5	5	45	POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)
17	4	3	6	6	6	6	5	3	53	
18	3	3	4	5	5	4	2	2	24	
19	1	1	3	4	5	1	1	1	13	
20	0	1	0	1	2	3	1	0	04	
21	0	1	2	4	5	2	2	2	13	
22	2	1	1	3	2	3	2	2	08	
23	2	2	2	6	4	3	1	1	19	
24	0	0	1	2	1	1	0	0	02	
25	1	2	4	2	0	0	0	0	06	
26	1	4	5	7	5	5	4	4	46	BEGIN d h m END d h m
27	2	0	0	2	6	4	3	4	20	
28	4	2	5	5	5	6	3	4	38	
29	3	3	2	6	4	4	4	3	27	
30	3	3	4	6	6	3	4	3	34	
31	3	2	2	6	6	5	4	3	35	

K SCALE USED:

LOWER LIMIT FOR K = 9.....

CURRENT SCALE VALUE.....

LOWER LIMIT FOR K = 9

D

675.7

3.72

2510

H

322.2

7.83

2520

Z

(mm)

(γ/mm)

(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSEND, CHIEF, COLLEGE OBSERVATORY

OBSERVER IN CHARGE

OUTSTANDING MAGNETIC EFFECTS			OBSERVATORY COLLEGE, ALASKA	
			MONTH	YEAR
			DECEMBER	1984
DATE	TIME U.T.	NATURE OF PHENOMENON ¹	REMARKS	
13	0100	ssc*		
19	17xx	pc3,pc4,pc5	Mixed	
20	14xx	pi 2		
22	2119	si*		
IDENTIFIED BY: JEP			VERIFIED BY: JBT	

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

PRINCIPAL MAGNETIC STORMS
Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA
DECEMBER 1984WDC-A FOR SOLAR-TERRRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80502 U.S.A.

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H(Y)	Z(Y)	day	(3 hr - period)	K	D(')	H(Y)	Z(Y)	day	hr
C0	64°6 N	13	0100	s.c.*	+7	+106	+14	13	4, 5	6	86	950	420	13	22
		15	18XX	..	..	..	..	16 17	4 3, 4, 5, 6	6 6	239	1290	760	19	00
		26	02XX	..	..	..	..	26	4	7	190	1400	610	27	02

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASLINE
D	0000 U.T., 12-1-84	2400 U.T., 12-31-84	1.6/mm	3.78/mm	27° 16.8 E
H	0000 U.T., 12-1-84	2400 U.T., 12-31-84	7.88/mm		126678
Z	0000 U.T., 12-1-84	2400 U.T., 12-11-84	7.68/mm		551818
	0000 U.T., 12-12-84	2400 U.T., 12-31-84	"		551868

STORM MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION		
	FROM	TO	SCALE VALUE		BASLINE
D	0000 U.T., 12-1-84	2400 U.T., 12-31-84	7.9/mm	29.68/mm	23° 44.0 E
H	0000 U.T., 12-1-84	2400 U.T., 12-31-84	43.98/mm		107798
Z	0000 U.T., 12-1-84	2400 U.T., 12-31-84	48.38/mm		540788

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD		CALIBRATION	
	FROM	TO	SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 42.6 E	129098	553548

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: DEC 8, 9, 10, 12, 19, 20, 21, 22, 24, 25

[illegible]

Form CAG-4046

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 (135W M.T.) is hour 02 of the BANG universal day.

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

C	O	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MONTH	YEAR	OBT.	U.S. DEPARTMENT OF INTERIOR Geological Survey Denver Federal Center Denver, CO 80215	
																													DATE	TIME
01	241	247	255	249	255	326	193	245	266	242	149	162	01	175	195	224	233	231	235	229	238	224	230	244	244	5513				
02	281	283	342	313	310	199	179	258	150	199	176	236	02	264	170	193	219	206	170	174	165	188	190	237	260	5362				
03	270	299	270	275	290	269	256	239	41	134	170	170	03	210	227	217	97	129	134	130	144	140	243	241	240	4815				
04	256	261	269	266	256	260	277	194	70	261	185	34	04	62	203	179	275	195	170	140	210	209	230	244	4956					
05	293	298	300	294	257	263	260	253	95	158	185	187	05	267	198	162	210	201	149	147	178	183	211	202	241	5182				
06	261	274	258	246	248	280	257	250	260	115	-38	181	06	211	234	179	129	143	220	211	219	210	232	231	260	5111				
07	270	280	300	281	291	300	281	243	241	233	-48	70	07	201	234	160	117	219	202	173	158	170	213	224	234	5047				
08	237	252	257	259	284	292	260	257	253	221	200	148	08	233	246	247	242	243	244	240	227	226	229	236	243	5776				
09	245	248	253	252	249	247	244	243	235	234	221	238	09	237	238	236	233	217	190	178	186	193	213	217	228	5475				
10	233	237	237	241	247	305	256	253	252	247	162	191	10	166	97	197	214	242	216	206	207	203	214	225	233	5262				
11	239	238	236	240	253	254	242	227	219	227	196	156	11	199	223	73	49	134	173	110	125	203	181	263	292	4752				
12	310	307	287	333	276	254	262	241	233	315	112	187	12	214	198	223	214	227	235	222	217	223	226	231	240	5787				
13	249	256	273	333	333	297	270	246	166	-73	23	215	13	183	117	183	213	190	225	214	197	193	207	201	223	4934				
14	247	251	252	247	244	246	239	232</																						

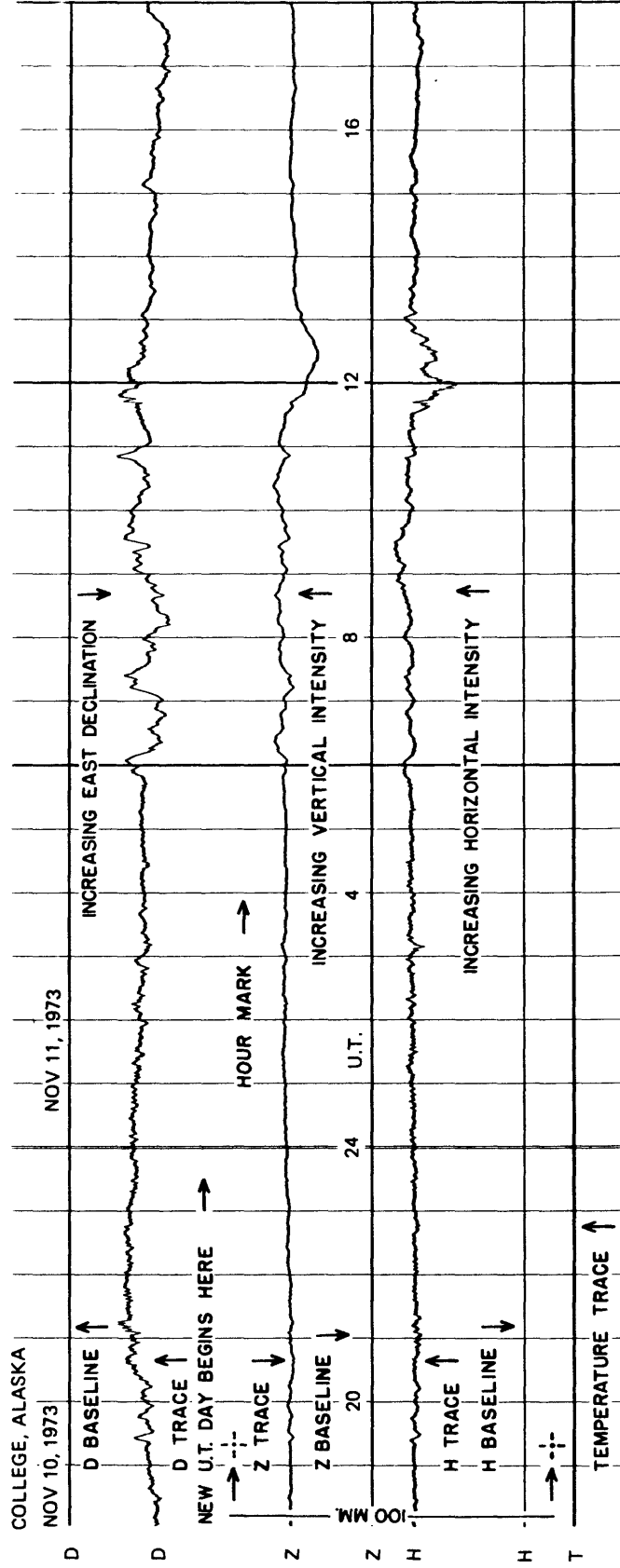
MAGNETOGRAM HOURLY SCALINGS

(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 (1200 M.T.) is hour 09 of the same universal day. Chirge corrections have been applied. Negative values are in red, with minus signs shown.

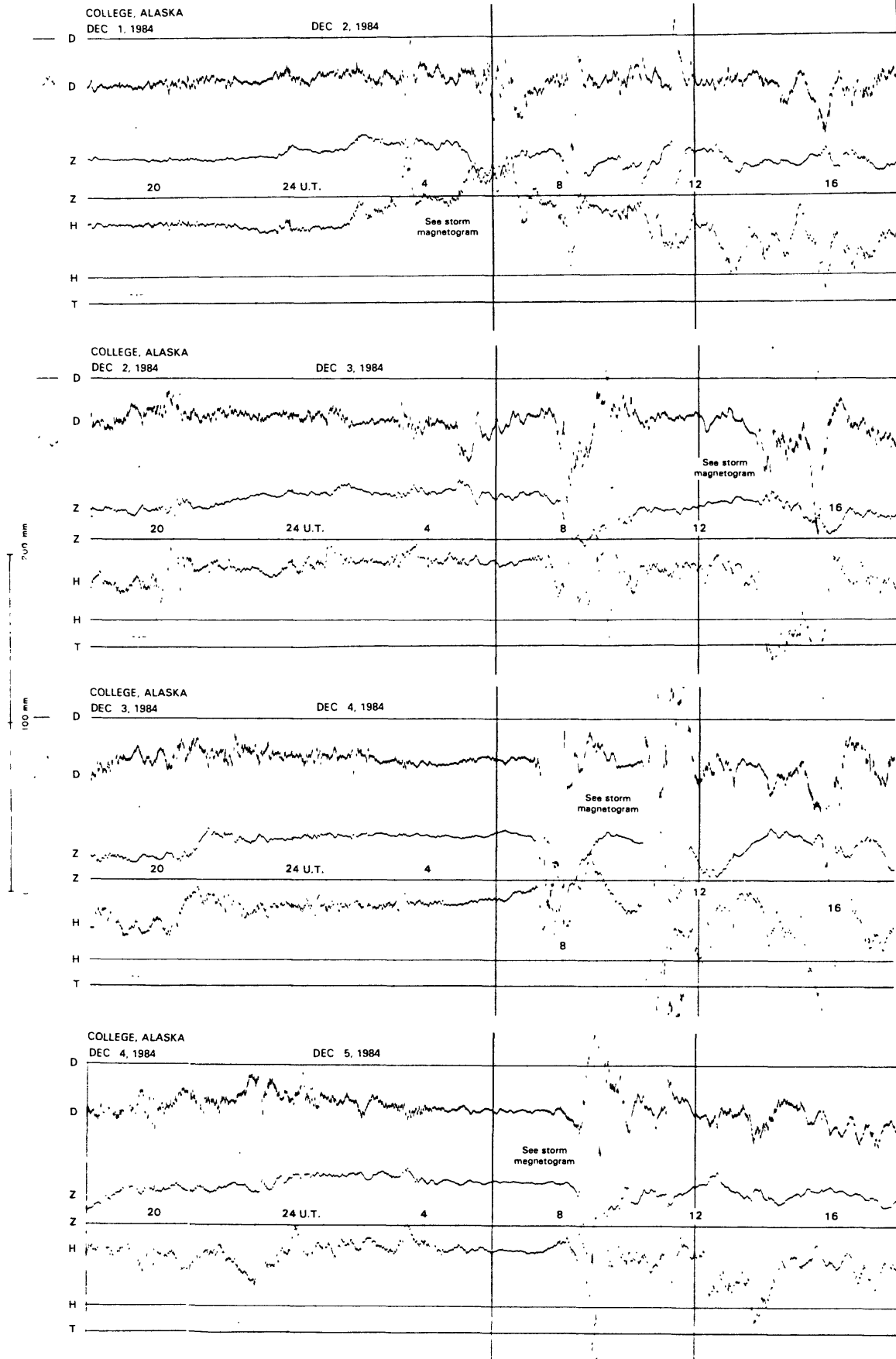
FORM CAGS-404a		MAGNETOGRAM HOURLY SCALINGS (UNIVERSAL TIME)																								U.S. DEPARTMENT OF INTERIOR Geological Survey, Geologic Division Denver Federal Center Denver, CO 80215		OBSV.		YEAR		MONTH		ELE- MENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
C		Q		S		T		U		V		W		X		Y		Z		AA		AB		AC		AD		AE		AF		AG		AH		AI		AJ		AK		AL		AM		AN		AO		AP		AQ		AR		AS		AT		AU		AV		AW		AX		AY		AZ		BA		BB		BC		BD		BE		BF		BG		BH		BI		BJ		BK		BL		BM		BN		BO		BP		BQ		BR		BS		BT		BU		BV		BW		BX		BY		BZ		CA		CB		CC		CD		CE		CF		CG		CH		CI		CJ		CK		CL		CM		CN		CO		CP		CQ		CR		CS		CT		CU		CV		CW		CX		CY		CZ		DA		DB		DC		DD		DE		DF		DG		DH		DI		DJ		DK		DL		DM		DN		DO		DP		DQ		DR		DS		DT		DU		DV		DW		DX		DY		DZ		EA		EB		EC		ED		EE		EF		EG		EH		EI		EJ		EK		EL		EM		EN		EO		EP		EQ		ER		ES		ET		EU		EV		EW		EX		EY		EZ		FA		FB		FC		FD		FE		FF		FG		FH		FI		FJ		FK		FL		FM		FN		FO		FP		FQ		FR		FS		FT		FU		FV		FW		FX		FY		FZ		GA		GB		GC		GD		GE		GF		GG		GH		GI		GJ		GK		GL		GM		GN		GO		GP		GQ		GR		GS		GT		GU		GV		GW		GX		GY		GZ		HA		HB		HC		HD		HE		HF		HG		HH		HI		HJ		HK		HL		HM		HN		HO		HP		HQ		HR		HS		HT		HU		HV		HW		HX		HY		HZ		IA		IB		IC		ID		IE		IF		IG		IH		II		IJ		IK		IL		IM		IN		IO		IP		IQ		IR		IS		IT		IU		IV		IW		IX		IY		IZ		JA		JB		JC		JD		JE		JF		JG		JH		JI		JJ		JK		JL		JM		JN		JO		JP		JQ		JR		JS		JT		JU		JV		JW		JX		JY		JZ		KA		KB		KC		KD		KE		KF		KG		KH		KI		KJ		KL		KM		KN		KO		KP		KQ		KR		KS		KT		KU		KV		KW		KX		KY		KZ		LA		LB		LC		LD		LE		LF		LG		LH		LI		LJ		LK		LM		LN		LO		LP		LQ		LR		LS		LT		LU		LV		LW		LX		LY		LZ		MA		MB		MC		MD		ME		MF		MG		MH		MI		MJ		MK		ML		MM		MN		MO		MP		MQ		MR		MS		MT		MU		MV		MW		MX		MY		MZ		NA		NB		NC		ND		NE		NF		NG		NH		NI		NJ		NK		NL		NM		NN		NO		NP		NQ		NR		NS		NT		NU		NV		NW		NX		NY		NZ		OA		OB		OC		OD		OE		OF		OG		OH		OI		OJ		OK		OL		OM		ON		OO		OP		OQ		OR		OS		OT		OU		OV		OW		OX		OY		OZ		PA		PB		PC		PD		PE		PF		PG		PH		PI		PJ		PK		PL		PM		PN		PO		PP		PQ		PR		PS		PT		PU		PV		PW		PX		PY		PZ		QA		QB		QC		QD		QE		QF		QG		QH		QI		QJ		QK		QL		QM		QN		QO		QP		QQ		QR		QS		QT		QU		QV		QW		QX		QY		QZ		RA		RB		RC		RD		RE		RF		RG		RH		RI		RJ		RK		RL		RM		RN		RO		RP		RQ		RR		RS		RT		RU		RV		RW		RX		RY		RZ		SA		SB		SC		SD		SE		SF		SG		SH		SI		SJ		SK		SL		SM		SN		SO		SP		SQ		SR		SS		ST		SU		SV		SW		SX		SY		SZ		TA		TB		TC		TD		TE		TF		TG		TH		TI		TJ		TK		TL		TM		TN		TO		TP		TQ		TR		TS		TU		TV		TW		TX		TY		TZ		UA		UB		UC		UD		UE		UF		UG		UH		UI		UJ		UK		UL		UM		UN		UO		UP		UQ		UR		US		UT		UU		UV		UW		UX		UY		UZ		VA		VB		VC		VD		VE		VF		VG		VH		VI		VJ		VK		VL		VM		VN		VO		VP		VQ		VR		VS		VT		VU		VV		VW		VX		VY		VZ		WA		WB		WC		WD		WE		WF		WG		WH		WI		WJ		WK		WL		WM		WN		WO		WP		WQ		WR		WS		WT		WU		WV		WW		WX		WY		WZ		XA		XB		XC		XD		XE		XF		XG		XH		XI		XJ		XK		XL		XM		XN		XO		XP		XQ		XR		XS		XT		XU		XV		XW		XX		XY		XZ		YA		YB		YC		YD		YE		YF		YG		YH		YI		YJ		YK		YL		YM		YN		YO		YP		YQ		YR		YS		YT		YU		YV		YW		YX		YY		YZ		ZA		ZB		ZC		ZD		ZE		ZF		ZG		ZH		ZI		ZJ		ZK		ZL		ZM		ZN		ZO		ZP		ZQ		ZR		ZS		ZT		ZU		ZV		ZW		ZX		ZY		ZZ	
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.		Signage corrections have been applied. Negative values are in red, with minus signs shown.		Scale		Base-line		Preliminary baseline and scale values:		Interpolated		Significant portion of hour interpolated.		No record; or no values available because of finally record.		* Derived from STORM		Mph., converted to Normal Mph.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
SCALED BY		CHECKED BY		SIGNALS RE- VIEWED BY		PUNCHED BY		JEP LHT		EAS JTB		JTB		MONTHLY SUM		MONTHLY MEAN		DATES WITH GAPS:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
01	309	311	337	321	360	331	371	327	331	307	-28	-66	01	121	252	319	320	311	311	310	317	314	298	281	6676																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
02	282	309	394	516	452	572	562	446	329	379	366	200	02	236	193	179	174	155	180	224	214	280	317	307	289	7495																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
03	323	382	347	384	365	347	339	311	168	268	279	305	03	319	204	-135	-61	275	201	252	189	237	370	310	321	6290																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
04	332	333	322	341	337	352	390	342	438	397	23	125	04	204	354	177	-156	199	144	330	300	282	294	232	246	6338																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
05	357	354	361	391	346	339	331	339	298	147	275	382	05	190	90	192	290	260	280	298	289	286	290	304	6801																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
06	323	368	350	344	334	376	381	361	311	342	259	394	06	318	193	-83	207	297	302	312	271	302	310	314	7152																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
07	334	304	397	400	381	350	333	308	312	355	329	274	07	295	195	0	200	321	245	262	300	313	311	314	7121																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
08	310	317	323	323	330	340	350	327	318	311	310	288	08	331	311	307	305	310	303	302	303	306	308	306	307	7463																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
09	293	310	323	324	329	328	323	320	315	317	317	307	09	315	312	313	300	289	293	319	320	303	307	303	313	7493																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
10	330	331	334	323	320	327	338	319	321	323	270	303	10	35	247	323	319	310	309	311	310	311	321	328	323	7286																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
11	325	327	330	333	314	310	320	320	317	300	247	305	11	113	-368	-177	250	311	277	257	313	260	210	340	336	5870																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
12	586	359	376	434	323	330	317	322	300	90	170	190	12	187	237	261	280	320	317	311	309	310	311	309	314	7233																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
13	327	358	357	390	449	347	377	410	380	324	303	167	13	-101	90	348	200	306	369	331	308	290	313	303	316	7263																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
14	317	312	313	323	330	313	311	313	312	180	92	187	14	70	59	34	19	207	314	347	330	317	280	299	307	5886																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
15	321	350	363	363	359	336	330	305	157	138	125	17	15	70	-146	278	300	284	346	340	338	257	200	337	311	6079																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
16	321	332	339	382	377	417	400	502	302	336	80	-79	16	-197	90	60	220	320	309	197	337	226	283	327	378	6259																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
17	360	334	340	340	407	373	397	359	134	28	258	190	17	-51	-595	-337	-23	-185	170	257	370	310	293	333	329	4397																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
18	339	340	344	343	353	390	375	385	321	297	229	160	18	-145	145	302	250	210	200	315	337	333	320	317	310	6775																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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27	303	330	330	326	320</																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

FORMAT FOR NORMAL & STORM MAGNETOGRAMS (SAMPLE ONLY)

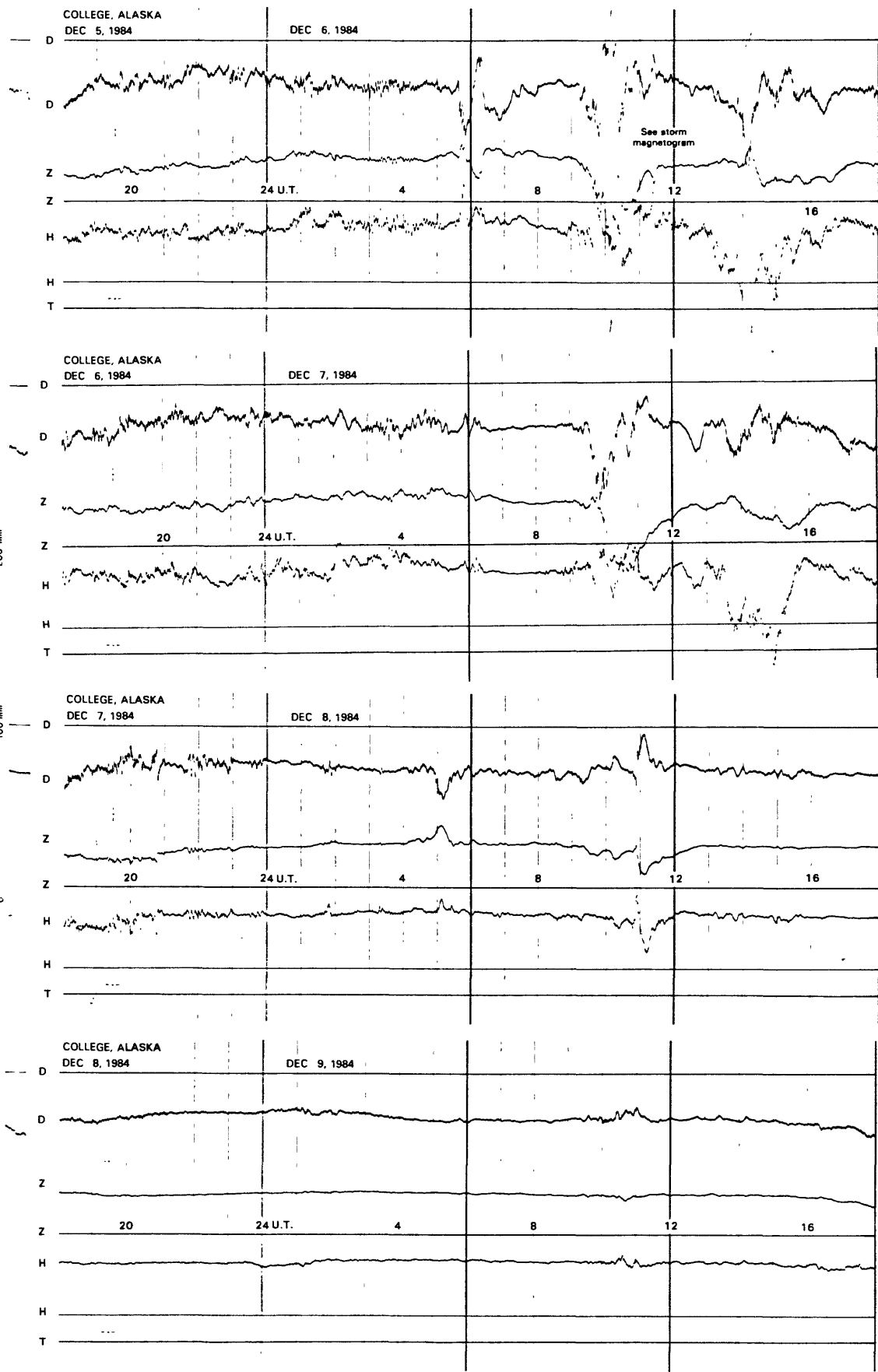


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

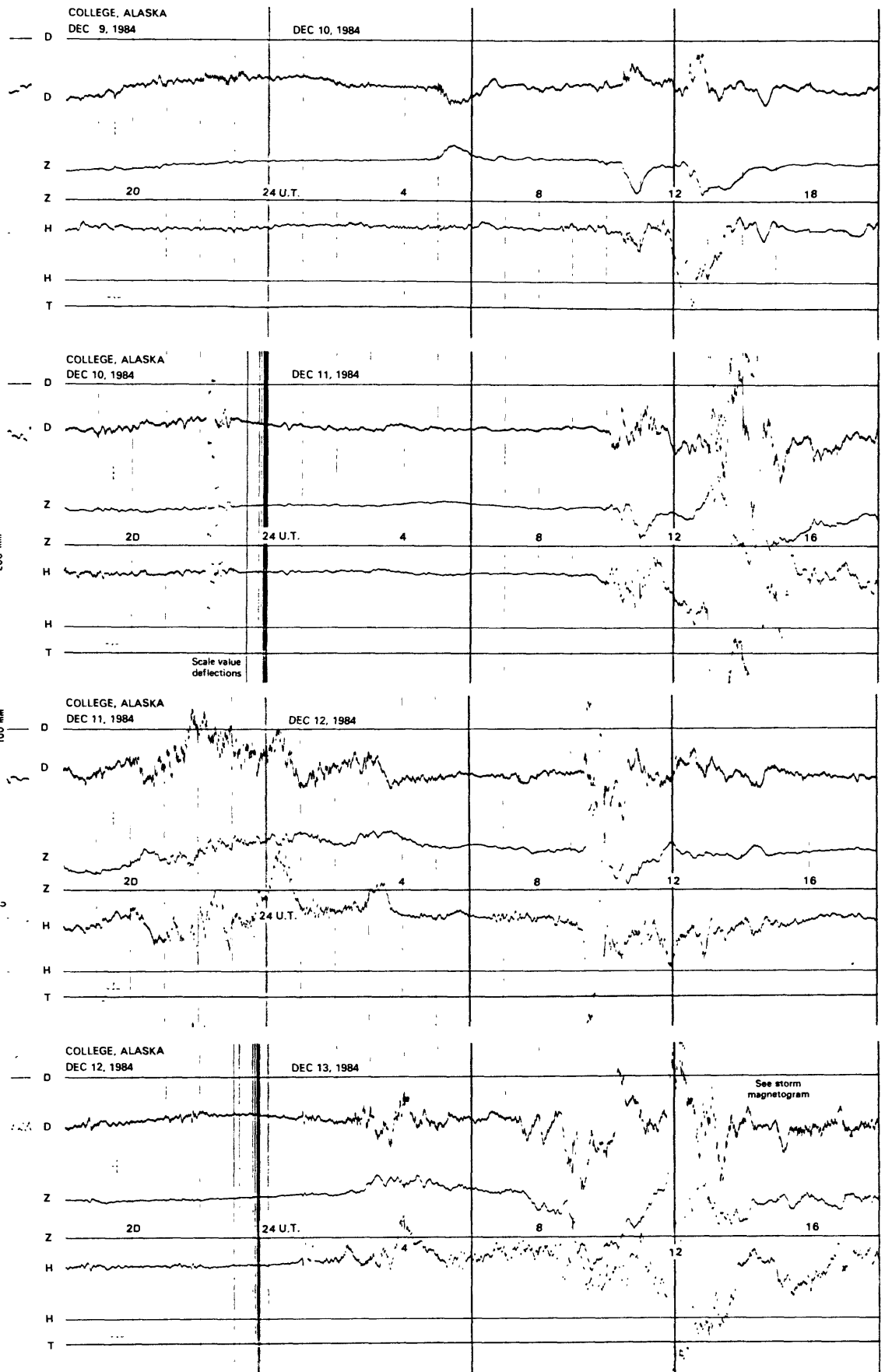
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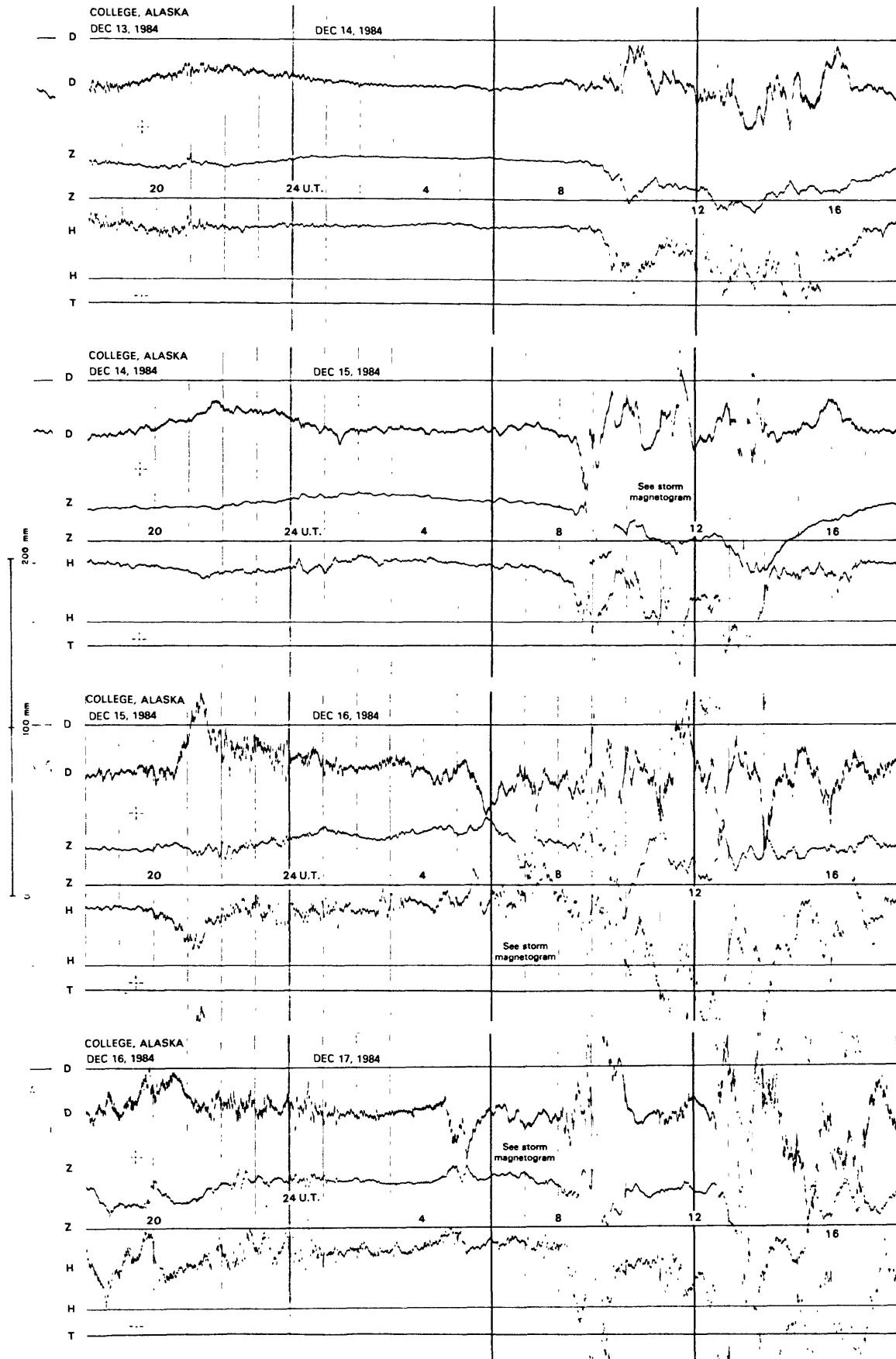
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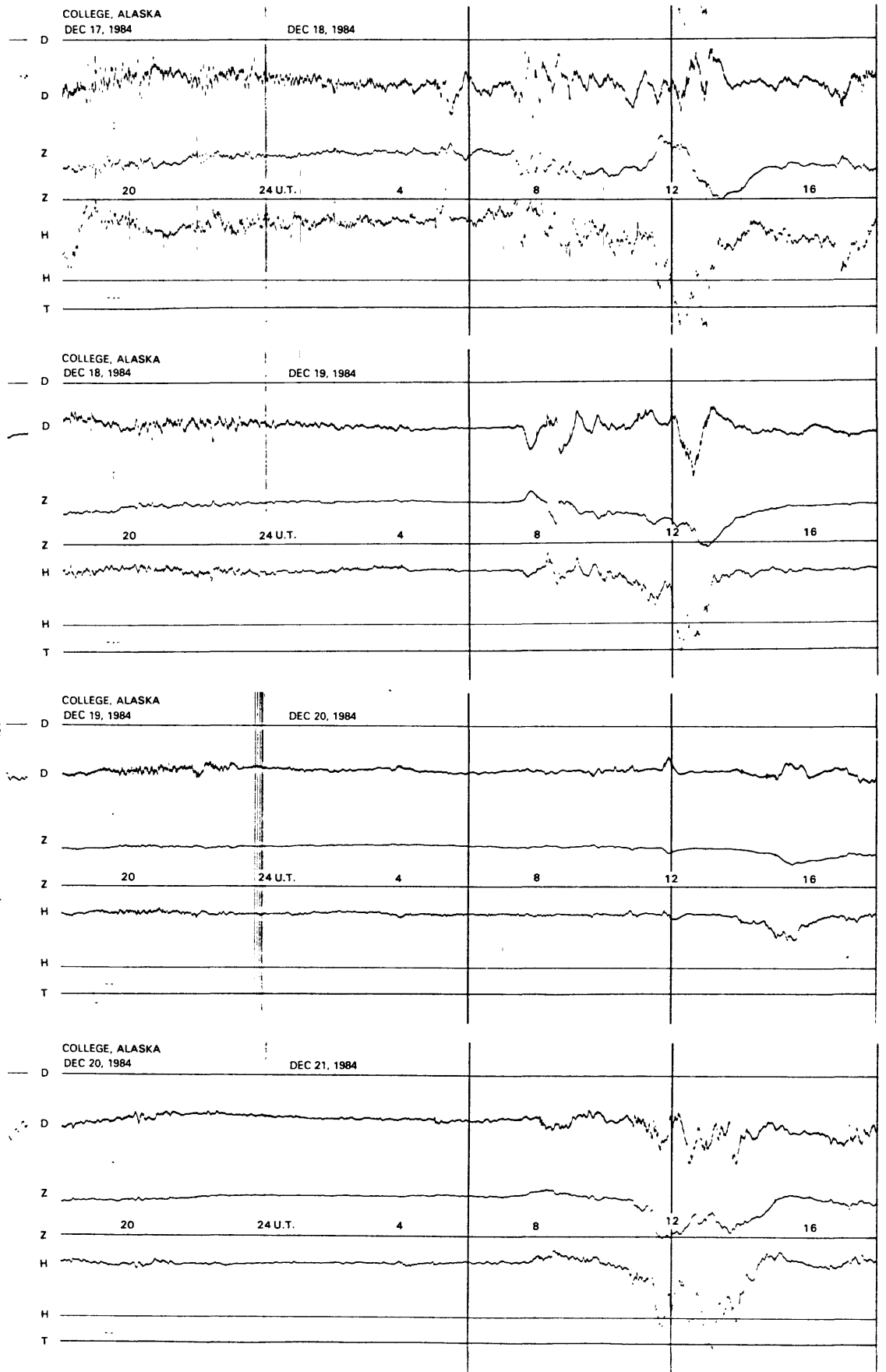
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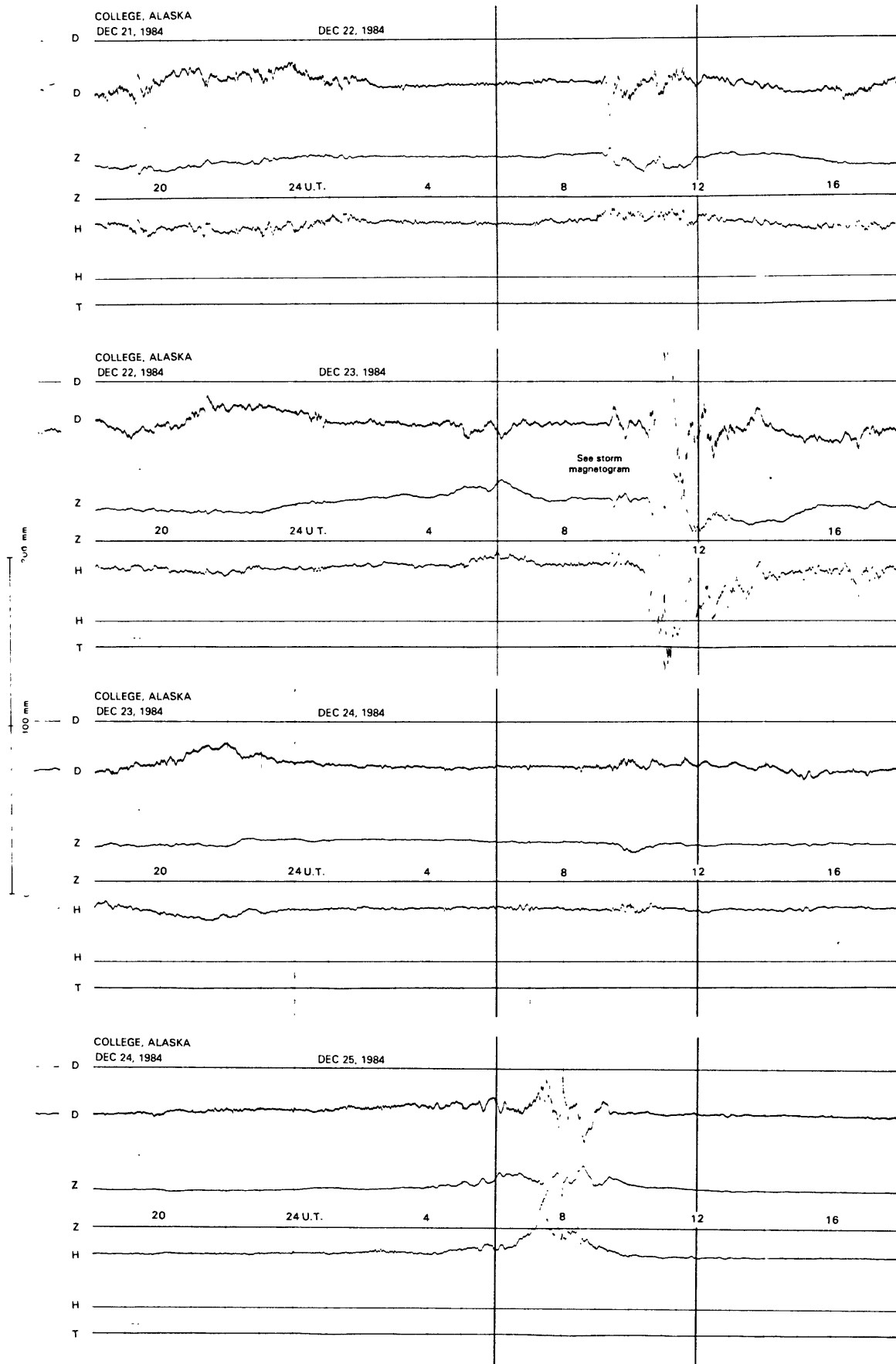
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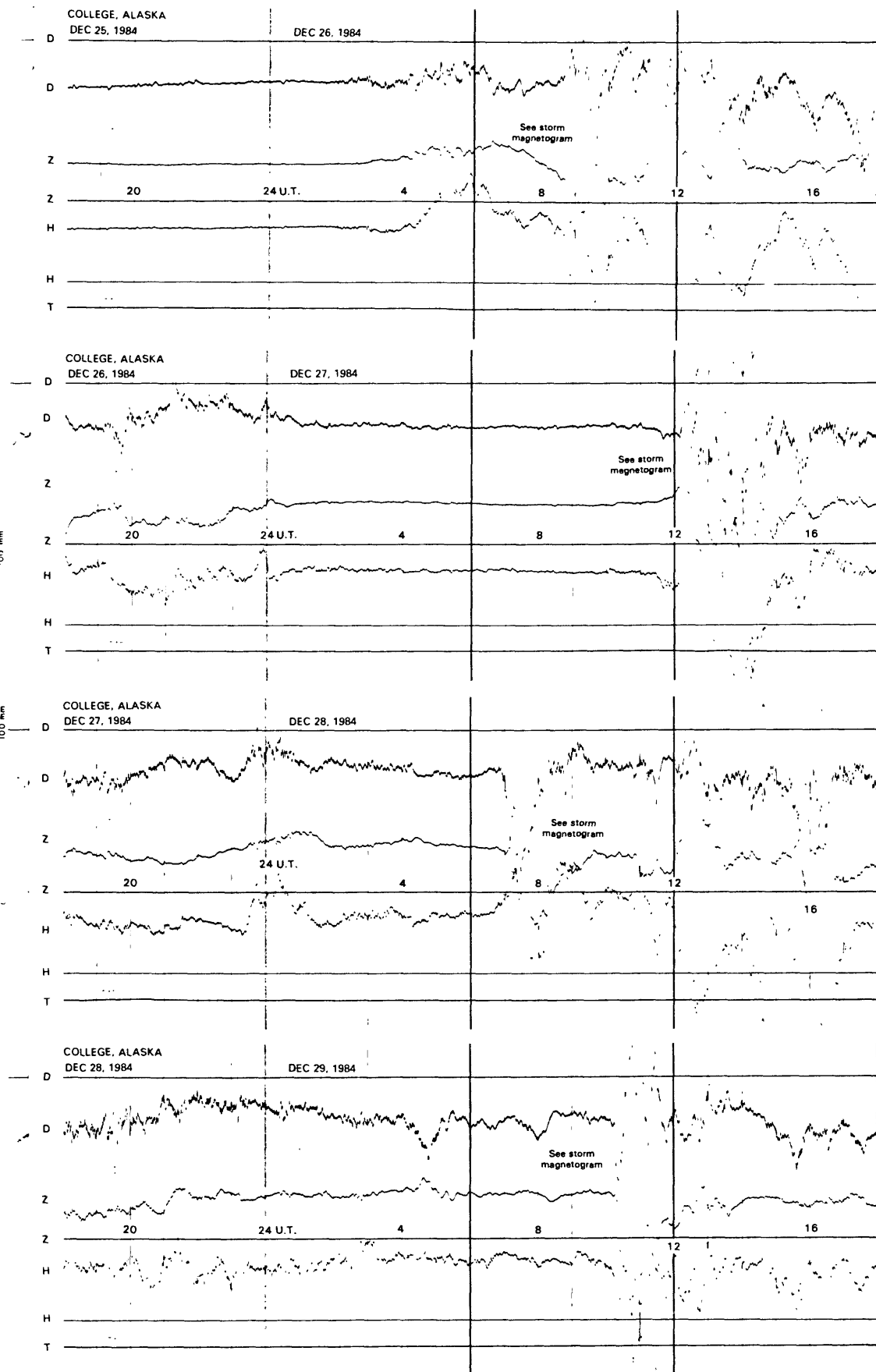
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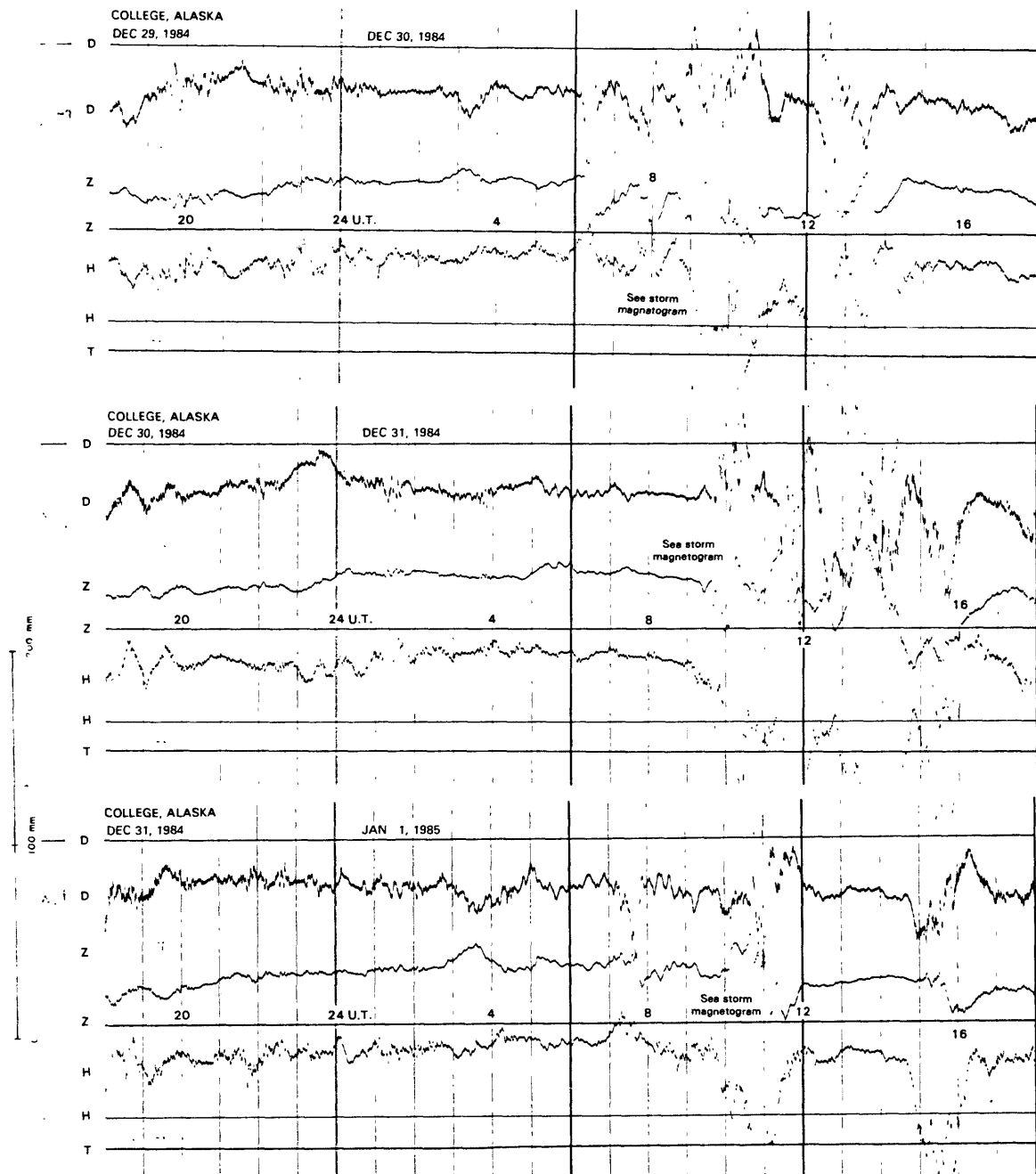
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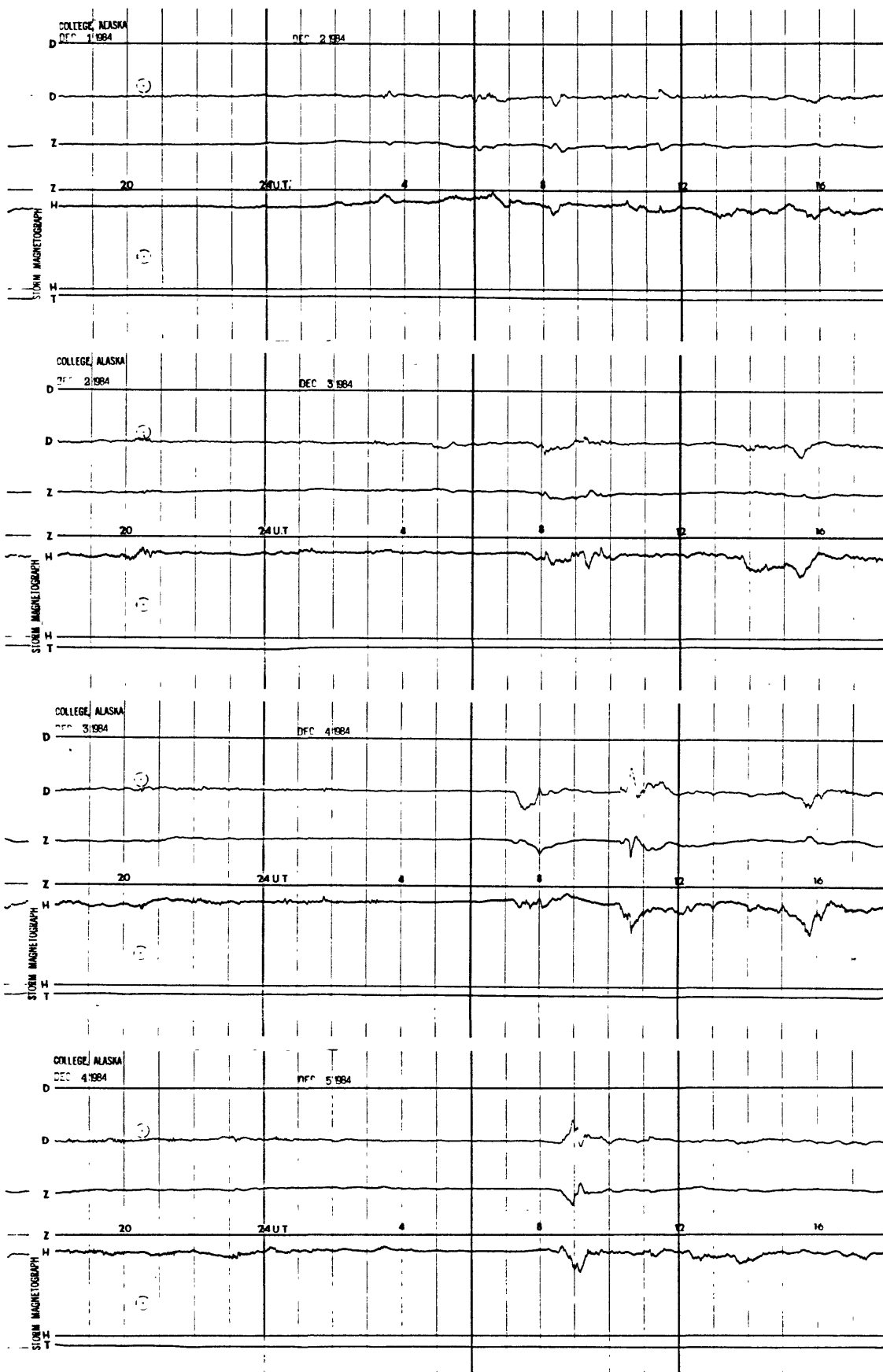


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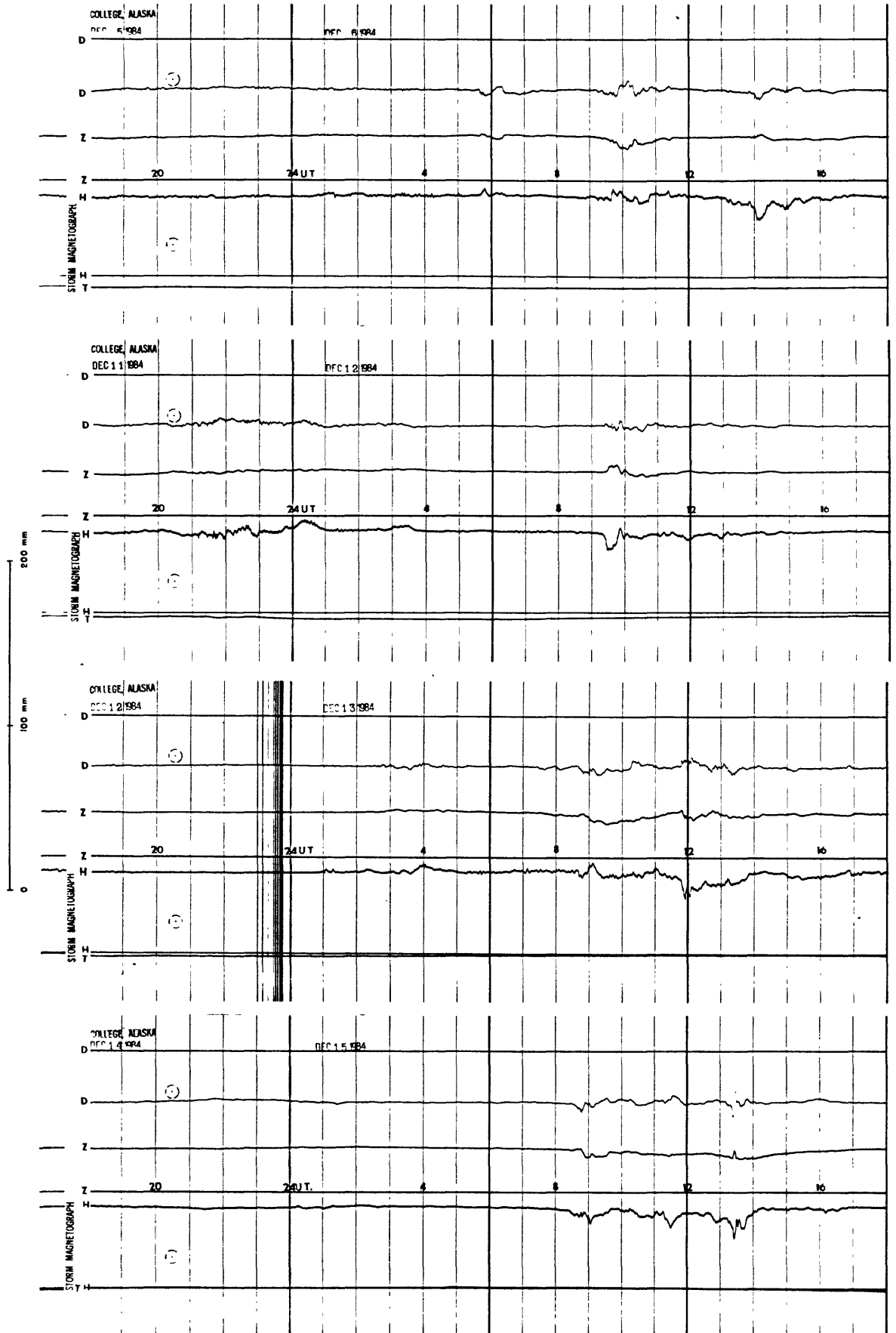


STORM MAGNETOGRAMS

200 mm
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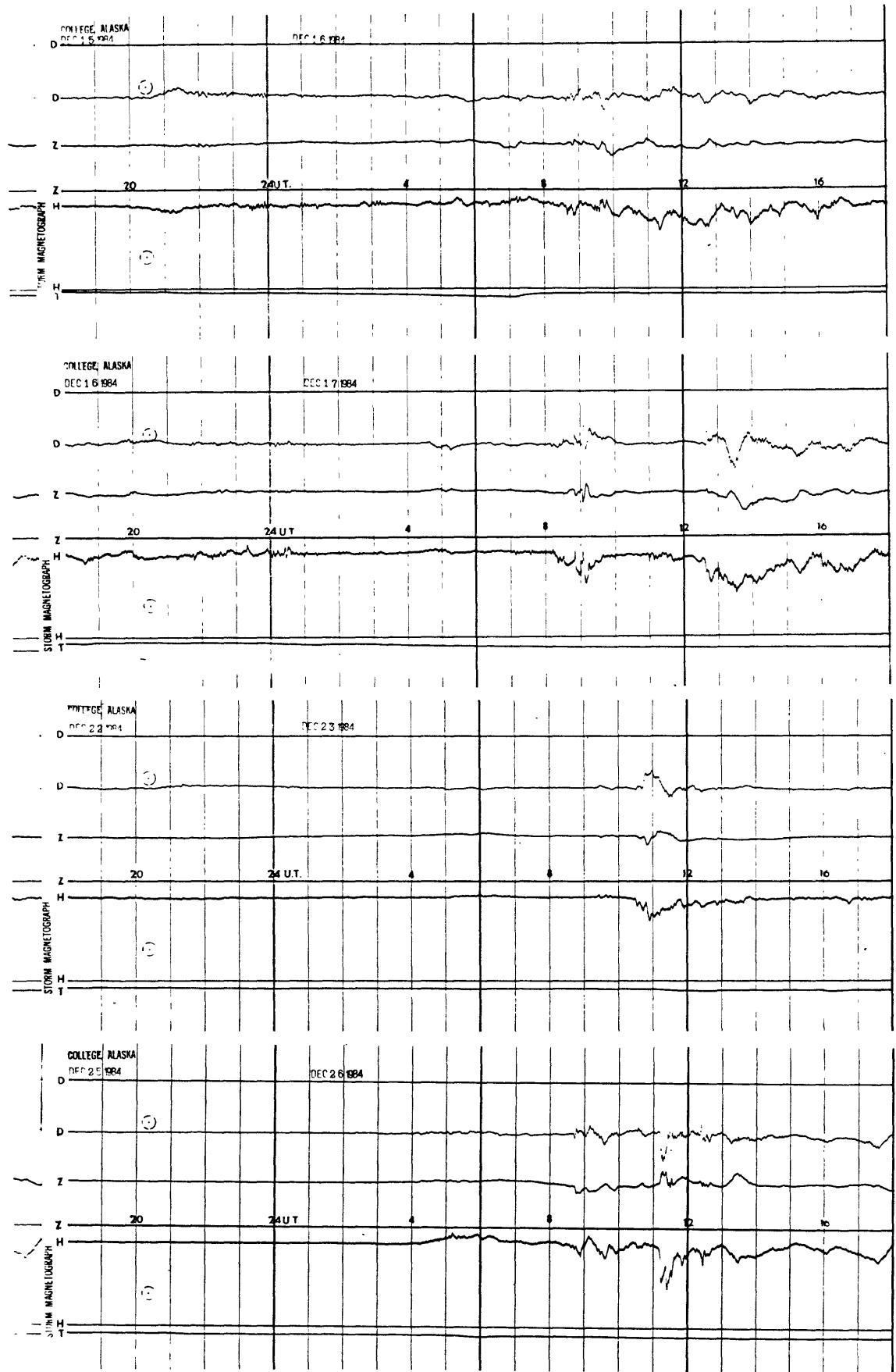


STORM MAGNETOGRAMS



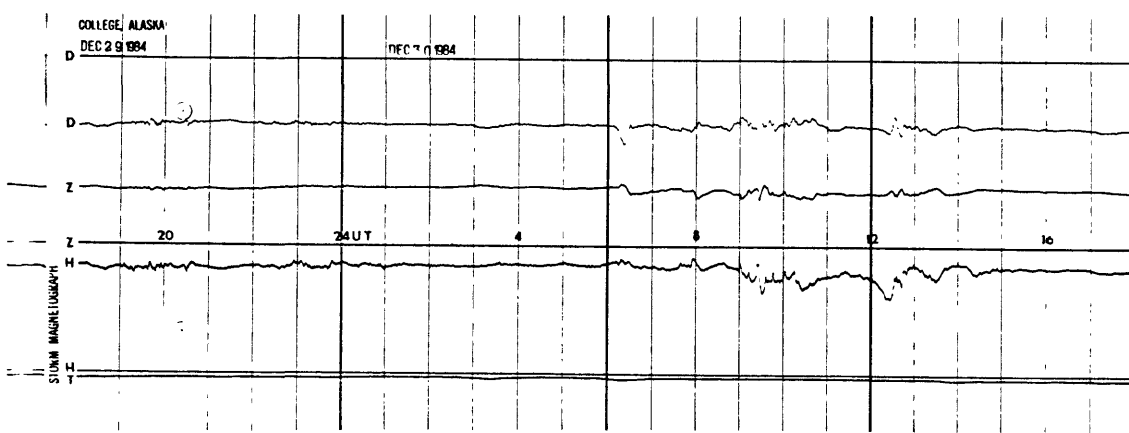
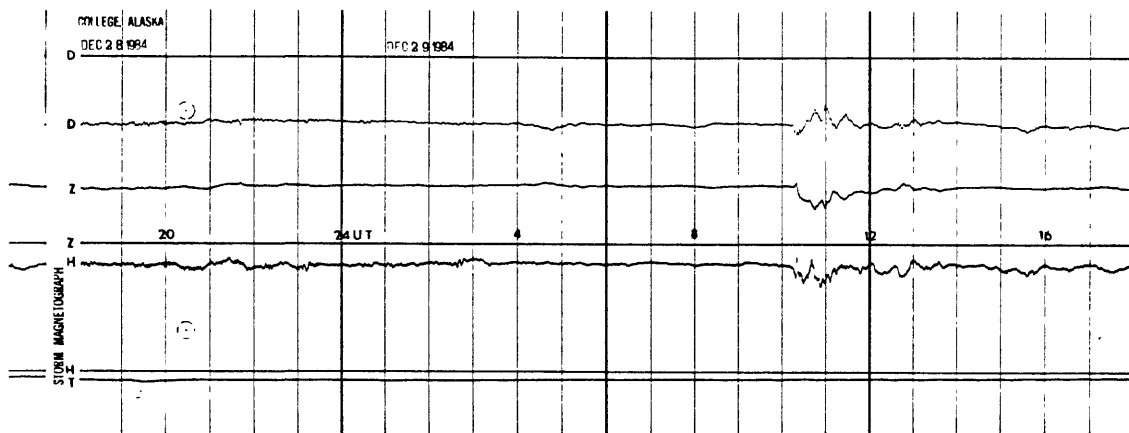
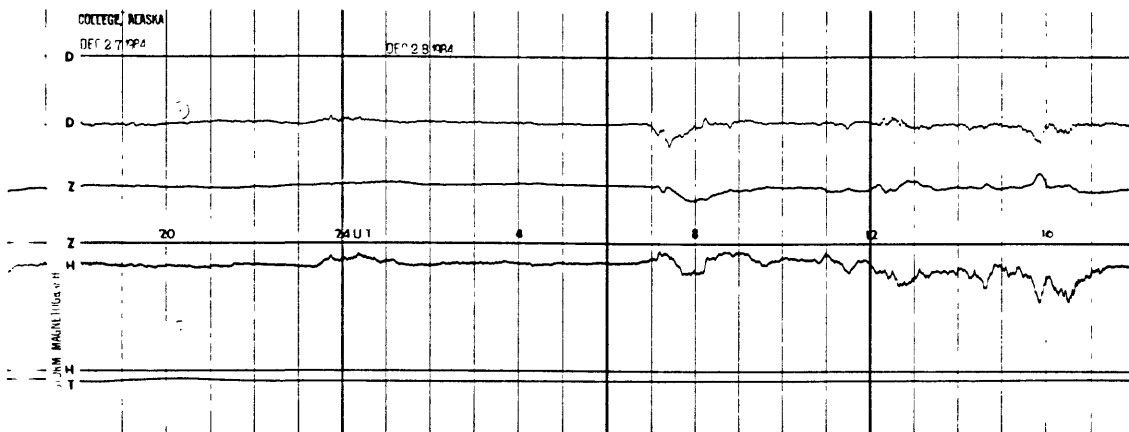
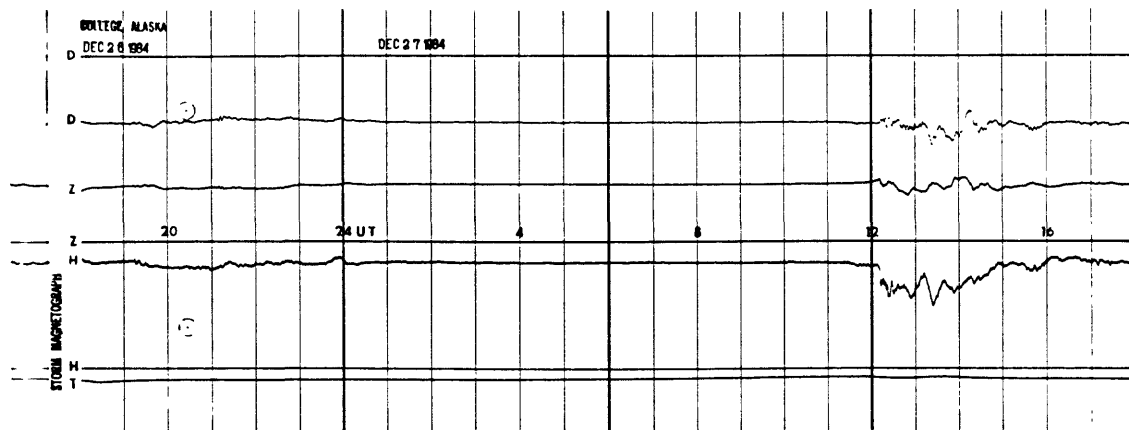
STORM MAGNETOGRAMS

200 mm
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STORM MAGNETOGRAMS

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STORM MAGNETOGRAMS

