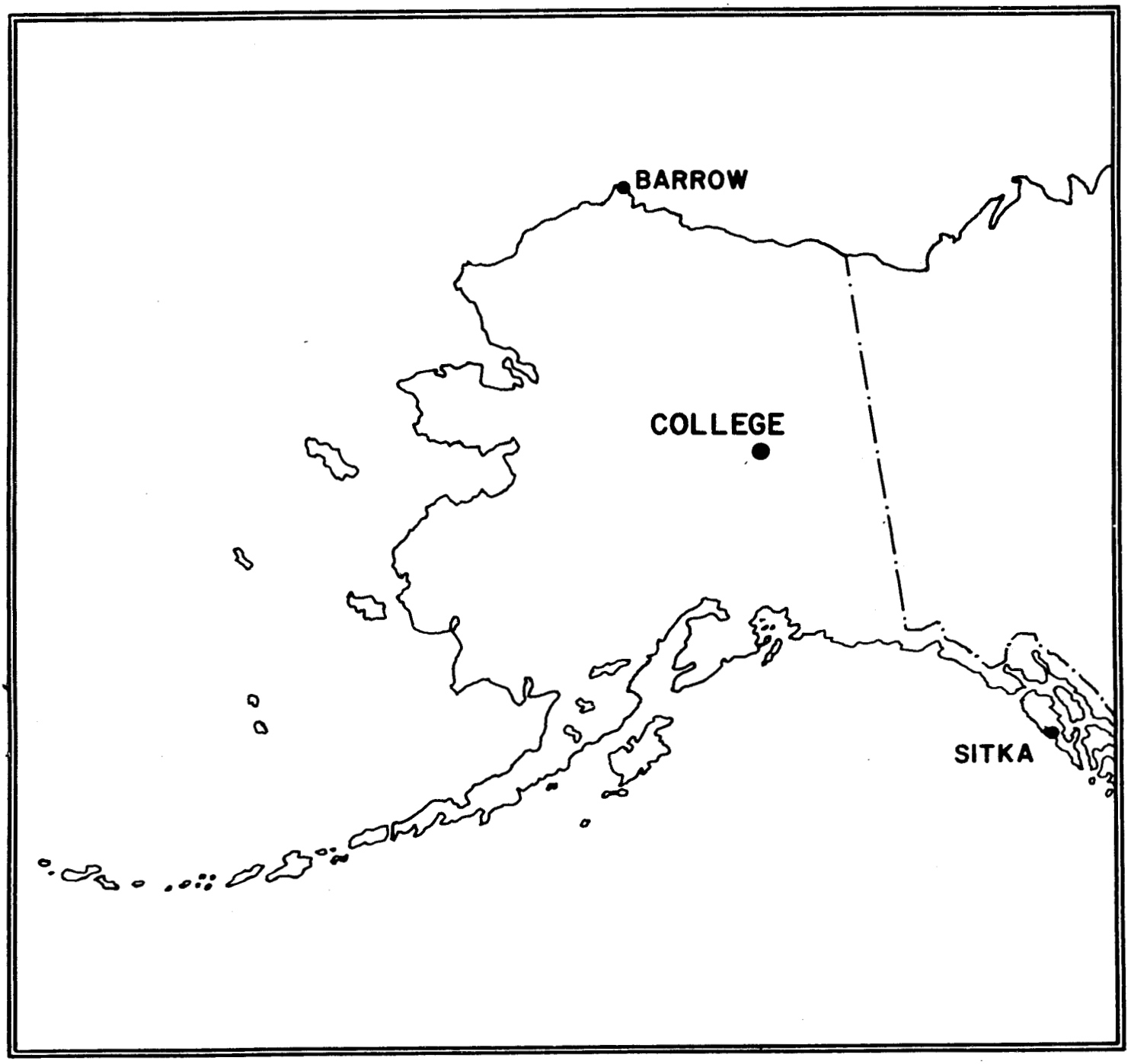
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

AUGUST 1980 **OPEN FILE REPORT** 80-300H



ORDER OF CONTENTS

THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY WITH THE ASSISTANCE OF OBSERVATORY STAFF MEMBERS J.E. PAPP, E.A. SAUTER, AND S.P. TILTON, AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations, as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory
U.S. Geological Survey
Yukon Drive on West Ridge
Fairbanks, Alaska 99701

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

World Data Center A-NOAA
Environmental Data Service
Boulder, Colorado 80302

OBSERVATORY LOCATION

The College Observatory, operated by the U. S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitude.....64°51.6'N
Geographic longitude.....147°50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

GEOMAGNETIC DATA

Normal, Storm, and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available are mean hourly scalings, K-Indices, selected magnetic phenomena reports, and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

Magnetic Activity

The K-Index. The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK. The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as 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 & 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: AUGUST 1980

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	1	2	2	1	1	1	0	0	08	03
2	0	1	1	3	2	2	1	2	12	06
3	4	4	6	6	6	3	2	1	32	40
4	1	2	2	3	5	1	1	1	16	11
5	1	1	1	3	4	0	1	1	12	07
6	4	3	1	2	2	3	3	2	20	12
7	2	3	3	5	5	1	1	2	22	18
8	2	2	0	0	0	1	0	0	05	02
9	2	1	0	0	1	2	3	2	11	05
10	3	5	4	5	1	1	1	1	21	19
11	1	2	2	2	1	1	2	2	13	06
12	3	2	1	2	0	0	1	1	10	05
13	2	1	0	1	1	1	0	1	07	03
14	1	1	5	5	2	1	1	1	17	15
15	2	3	1	3	4	3	0	0	16	10
16	1	1	1	3	6	6	4	2	24	27
17	2	1	2	3	4	1	2	2	17	10
18	2	4	6	6	4	2	1	2	27	30
19	3	3	3	4	4	5	2	2	26	20
20	2	1	0	3	4	3	3	2	18	11
21	3	3	3	2	1	0	1	1	14	08
22	3	2	3	5	3	2	2	2	22	15
23	2	1	0	2	2	0	0	0	07	03
24	1	2	1	0	0	1	1	0	06	02
25	0	1	0	0	0	1	0	2	04	02
26	4	4	3	2	2	1	2	2	20	13
27	2	3	5	6	6	4	3	1	30	34
28	2	1	1	2	1	2	0	0	09	04
29	0	0	0	0	0	1	2	2	05	02
30	2	2	1	2	2	3	1	1	14	07
31	3	2	2	3	0	0	1	1	12	06

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	h	m	END d	h	m

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.81		(γ/mm)
LOWER LIMIT FOR K = 9	2560	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: AUGUST

YEAR: 1980

DATE	TIME U.T.	NATURE OF PHENOMENON [1]	REMARKS
06	0008	ssc*	
13	10XX	pi2	
23	10XX	pi2	

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.

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

AUGUST 19 80

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	02	20XX	..	..	..	..	03	3, 4, 5	6	156	1120	560	03	19

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: AUGUST 1980

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 8-1-80	2400 U.T., 8-31-80	1.'0/mm	3.7 γ/mm	27° 47.'2 E
H	0000 U.T., 8-1-80	2400 U.T., 8-31-80	7.8 γ/mm		12774 γ
Z	0000 U.T., 8-1-80	2400 U.T., 8-31-80	7.3 γ/mm		55162 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 8-1-80	2400 U.T., 8-31-80	7.'8/mm	29.7 γ/mm	23° 46.'8 E
H	0000 U.T., 8-1-80	2400 U.T., 8-31-80	44.0 γ/mm		11539 γ
Z	0000 U.T., 8-1-80	2400 U.T., 8-31-80	48.5 γ/mm		54032 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 06.'9 E	13009 γ	55381 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: AUG 1, 8, 9, 12, 13, 23, 24, 25, 28, 29

NOAA FORM 76-106 (3-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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 (150W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	80	AUG	D

C	Q or S	Tea 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	126	139	161	142	153	171	158	116	181	185	196	181	01	170	192	237	282	320	327	308	291	256	196	157	149	4784
			02	137	142	150	163	178	185	185	196	171	152	198	176	02	160	170	222	324	387	347	312	305	292	152	185	122	5011
			03	118	140	105	41	7	141	-35*	-138*	52*	195*	60	136	03	187*	416*	337*	209	284	319	315	264	237	185	143	116	3834
			04	103	109	124	135	143	149	129	157	150	166	179	149	04	221	339	295	288	307	295	282	269	230	198	164	147	4728
			05	131	121	137	152	171	178	180	181	174	181	194	199	05	198	241	243	267	298	300	296	269	250	214	177	143	4895
			06	122	99	60	163	157	139	149	157	184	149	202	161	06	186	193	280	327	348	390	378	308	202	198	153	157	4862
			07	133	112	97	103	201	147	161	152	146	146	155	223	07	161	162	202	264	325	305	296	256	224	186	165	100	4422
			08	93	90	90	150	168	177	185	181	171	169	165	175	08	188	212	242	272	295	305	278	245	208	183	142	122	4506
			09	112	128	138	158	168	168	157	170	169	172	174	178	09	186	206	259	261	302	318	330	345	207	105	150	116	4677
			10	88	137	150	171	126	30	199	160	145	175	198	179	10	166	193	239	252	319	316	305	266	190	140	110	107	4361
			11	111	124	158	163	162	178	242	166	165	213	172	166	11	163	169	229	295	335	327	320	302	234	179	173	174	4920
			12	159	93	116	132	162	181	188	209	190	173	167	161	12	165	167	199	250	303	337	329	319	273	189	118	77	4657
			13	97	110	123	143	173	185	182	180	183	187	184	180	13	165	132	191	225	287	353	313	295	254	227	153	122	4644
			14	95	118	134	157	172	178	190	164	93	122	197	172	14	193	163	243	291	317	335	301	279	265	241	221	160	4801
			15	137	119	125	134	137	175	160	182	175	169	165	172	15	186	177	214	270	299	330	335*	345	309	236	180	147	4878
			16	126	111	94	102	122	157	161	134	137	132	161	166	16	208*	398*	288*	224*	589*	517*	317	245	189	155	138	117	4988
			17	130	135	139	144	151	158	175	177	132	103	135	145	17	143	215	213	250	307	352	405	313	231	194	135	139	4621
			18	117	113	137	122	115	64	115	-70*	61	89*	149	157	18	188	180	223	272	292	322	307	277	216	189	176	136	3947
			19	108	80	71	79	64	56	139	163	154	135	96	66*	19	168	217	304	410	292	322	360	387	296	229	170	133	4499
			20	103	89	119	155	190	203	195	188	184	179	182	174	20	188	195	221	262	302	369	369	333	222	197	135	86	4840
			21	80	59	61	58	126	130	118	95	114	207	187	183	21	187	210	247	261	274	292	301	289	249	203	159	126	4216
			22	109	125	100	119	118	154	162	148*	173*	181*	181*	140*	22	165*	212*	260*	276*	371*	418*	363*	282	269	209	108	111	4754
			23	130	137	153	171	178	180	177	171	181	172	152	191	23	221	227	242	272	309	328	318	269	236	203	167	157	4942
			24	146	139	140	156	155	179	168	167	170	180	182	188	24	193	211	235	258	278	289	285	254	195	155	147	139	4609
			25	132	135	140	163	174	172	172	177	178	187	188	192	25	200	212	240	265	306	348	357	331	260	186	159	123	4997
			26	34	40	74	65	70	180	165	149	160	193	155	175	26	172	202	264	317	334	341	339	308	238	191	72	89	4327
			27	85	90	100	159	165	122	116	53	47	183*	223*	349*	27	143	246*	165	289	316	337	306	285	234	194	153	143	4503
			28	139	136	149	164	177	194	187	182	181	174	190	201	28	193	206	221	270	308	313	289	253	214	178	153	146	4818
			29	148	157	161	166	165	172	180	187	192	195	201	202	29	200	217	242	275	304	318	323	324	318	189	180	149	5165
			30	136	124	125	71	80	137	150	181	155	161	179	184	30	200	193	230	280	314	319	330	301	223	208	165	131	4577
			31	98	73	64	92	128	168	161	153	148	86	182	174	31	182	207	239	267	300	321	322	271	249	209	149	126	4369

SCALED BY	PEF, SPT
CHECKED BY	JEP, EAS, SPT
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	144152
MONTHLY MEAN	194
DATES WITH GAPS:	

☆ U.S G.P.O. 1973-769-571/832 REG.#6

FORM 76-106

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	80	AUG	H

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150W M.T.) is hour 11 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. Day	01	02	03	04	05	06	07	08	09	10	11	12	Hr. Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	287	305	318	366	370	357	348	305	319	319	325	312	01	310	303	305	309	329	333	302	275	262	266	279	280	7484
			02	278	288	300	316	306	315	306	318	331	326	325	275	02	343	326	287	263	297	327	312	294	263	269	279	288	7232
			03	342	467	422	473	646	706	571	300*	230	-62*	265	143	03	72	-248*	96	359	422	372	343	311	295	290	292	301	7408
			04	289	305	310	309	299	309	384	366	350	327	316	307	04	156	-19	211	324	302	293	318	295	293	279	275	288	6886
			05	284	296	283	293	308	302	309	318	331	338	335	283	05	162	317	329	326	318	308	290	274	273	270	269	278	7094
			06	356	360	421	343	324	308	318	312	313	346	347	306	06	315	321	367	354	321	274	246	202	245	268	300	312	7579
			07	335	341	356	408	430	359	429	416	377	229	192	143	07	55*	299	298	263	271	287	255	271	247	258	299	329	7147
			08	318	301	308	260	290	300	311	319	322	322	323	318	08	321	318	321	322	310	304	282	270	260	259	278	301	7238
			09	290	301	315	305	300	308	333	331	331	338	338	342	09	349	340	342	332	322	308	298	262	262	264	283	258	7452
			10	251	296	333	328	440	636	443	320	361	256	145	325	10	332	328	329	312	328	312	292	263	259	258	273	299	7719
			11	314	318	300	299	325	354	360	328	338	339	320	329	11	331	321	303	315	332	330	304	282	260	276	277	323	7578
			12	301	270	301	315	314	329	329	332	342	334	318	309	12	311	320	316	318	326	324	299	258	225	234	250	270	7245
			13	300	301	289	303	305	308	295	302	308	318	325	336	13	330	317	340	342	335	338	336	300	270	246	263	276	7383
			14	295	289	298	303	310	321	328	341	250	244	336	310	14	262	268	283	317	311	291	307	282	280	264	262	275	7027
			15	283	286	319	337	351	313	329	316	340	337	317	286	15	292	206	130	213	317	328	311*	282	268	258	253	268	6940
			16	280	292	311	328	347	349	357	376	385	406	372	309	16	-158*	-299*	-49	77	-243*	-146*	281	374	313	313	305	279	5159
			17	307	306	302	299	302	303	320	301	342	380	361	300	17	149	103	239	264	261	258	228	199	242	236	246	266	6514
			18	288	269	288	353	447	565	502	484	395	74*	285	194	18	128	270	322	272	303	328	322	292	257	240	274	270	7422
			19	274	351	434	407	392	449	466	436	401	384	260	234	19	196	249	155	9	240	311	300	260	259	263	260	248	7238
			20	252	268	272	286	296	296	307	315	315	330	332	254	20	142	276	337	327	247	191	172	191	237	243	233	276	6395
			21	335	404	361	419	365	361	442	473	436	325	293	298	21	303	281	270	307	308	298	292	282	267	254	257	261	7892
			22	261	259	323	332	365	336	322	407*	334*	311*	294*	85*	22	277*	272*	226*	193*	261*	254*	226*	213	231	262	276	292	6612
			23	269	249	279	289	300	310	311	311	313	316	329	294	23	303	319	323	319	310	296	280	268	261	258	267	280	7054
			24	285	291	306	296	345	310	308	310	310	309	318	319	24	317	318	315	316	306	289	274	256	256	253	260	268	7135
			25	279	289	298	306	300	308	310	311	316	315	320	325	25	321	323	333	344	330	313	288	267	253	260	301	303	7313
			26	342	417	456	488	363	309	293	337	401	348	334	319	26	312	282	328	320	335	318	284	268	251	238	241	265	7849
			27	295	333	363	289	303	387	519	463	222	-118*	-118*	-231*	27	104	-146*	43	66	252	341	330	274	310	298	292	288	5159
			28	304	294	303	305	304	321	316	320	339	348	289	294	28	292	300	284	259	251	293	283	274	258	259	268	274	7032
			29	286	288	292	297	302	300	300	302	307	312	313	319	29	313	310	310	312	312	298	274	258	238	241	266	262	6912
			30	277	301	309	360	362	326	352	340	339	352	320	311	30	303	276	310	287	204	139	242	260	254	250	245	267	6986
			31	303	304	373	349	313	290	308	322	346	224	320	312	31	311	298	303	308	308	302	281	260	246	245	256	269	7151

SCALED BY	PEF, SPT
CHECKED BY	JEP, EAS, SPT
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	219235
MONTHLY MEAN	295
DATES WITH GAPS:	

GPO 844-809

FORM 74-106

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	80	AUG	Z

Values are in tenths of gms. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (L50W M.T.) is hour 11 of the same universal day.
Shipokage corrections have been applied. Negative values are inked, with minus signs shown.

Day	01	02	03	04	05	06	07	08	09	10	11	12	Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
01	316	317	318	313	338	353	336	294	338	319	313	308	01	294	304	304	300	300	300	303	296	289	288	292	299	7432
02	300	302	308	314	309	308	305	305	296	308	317	243	02	279	295	281	246	250	260	266	265	272	268	294	291	6882
03	319	381	354	362	351	209	189	270	326	453*	334	394	03	460*	540*	306*	263	319	330	300	287	290	289	290	293	7909
04	288	295	300	305	307	302	313	335	316	298	308	294	04	225	189	150	235	277	249	258	273	278	282	292	301	6670
05	307	303	307	300	306	300	299	299	299	295	297	281	05	204	245	297	308	305	291	290	284	275	280	287	288	6947
06	293	314	347	380	338	318	306	300	304	282	269	291	06	292	290	307	303	284	274	269	242	220	251	300	333	7107
07	347	347	341	381	363	341	371	366	340	256	264	272	07	142	232	268	257	258	263	276	295	312	315	326	331	7264
08	327	317	324	342	318	312	308	303	297	294	292	293	08	296	296	298	302	305	298	292	290	288	300	306	312	7310
09	309	300	293	309	300	293	297	308	302	300	292	288	09	290	295	300	298	298	298	295	303	277	268	287	298	7098
10	301	301	301	319	351	332	466	362	343	307	246	259	10	293	313	318	316	302	300	293	281	280	287	289	292	7452
11	299	310	322	315	318	345	351	330	323	310	269	282	11	297	316	318	312	305	305	300	289	284	281	290	308	7379
12	332	344	323	297	305	318	321	325	312	316	305	291	12	282	297	308	308	311	318	315	314	300	290	287	289	7408
13	304	314	305	300	306	304	301	298	299	299	301	306	13	281	250	280	301	317	300	287	288	287	294	295	302	7119
14	309	318	300	297	298	300	308	307	275	232	298	273	14	274	255	272	298	299	283	274	272	268	278	282	287	6857
15	300	311	322	322	336	328	310	311	306	308	281	275	15	273	254	200	189	250	282	291*	295	291	287	279	278	6879
16	289	306	318	328	350	358	356	344	349	334	316	302	16	330	359*	565*	805*	718*	319*	190	282	286	303	309	314	8730
17	312	316	311	308	306	305	312	312	302	284	304	310	17	268	204	219	269	288	267	259	236	235	281	304	315	6827
18	329	324	317	315	370	273	213	108	275	351	304	375	18	360	248	313	323	305	302	297	301	300	303	310	323	7239
19	327	324	357	373	391	423	451	387	351	309	308	293	19	330	318	353	196	163	274	302	302	267	270	279	289	7637
20	297	310	320	317	314	311	304	299	300	302	287	281	20	261	213	276	313	303	263	220	215	226	247	267	273	6719
21	311	343	381	373	372	414	362	321	329	350	309	296	21	304	301	290	288	300	302	302	292	280	278	280	285	7663
22	297	309	302	323	347	375	319	327*	320*	306*	273*	234*	22	240*	253*	253*	220*	220*	213*	187*	207	239	297	317	314	6692
23	323	295	300	299	293	297	297	297	300	297	299	295	23	269	293	303	303	300	300	297	290	289	290	290	298	7114
24	305	308	318	308	318	335	310	292	292	293	290	290	24	290	292	298	299	305	302	300	291	279	281	291	295	7182
25	295	292	290	292	292	291	295	295	295	292	288	288	25	290	291	297	301	302	299	291	281	263	255	259	261	6895
26	265	353	367	357	379	397	323	317	291	297	307	307	26	298	295	300	288	293	295	289	281	279	275	260	289	7402
27	306	329	366	388	343	328	305	270	341	633*	680*	780*	27	512	519*	207	244	175	273	297	289	274	298	307	310	8774
28	317	327	331	338	332	337	329	327	346	338	316	303	28	301	299	303	292	270	280	288	291	300	306	305	305	7481
29	305	308	303	303	298	298	298	300	300	300	300	293	29	296	305	310	310	307	302	292	294	295	274	289	289	7169
30	285	292	301	299	356	364	348	342	322	327	324	307	30	297	235	287	301	275	178	173	205	227	264	281	288	6878
31	305	323	348	369	353	323	302	298	300	269	304	297	31	295	292	302	301	299	300	299	283	284	288	290	291	7315

SCALED BY	PEF, SPT
CHECKED BY	JEP, EAS, SPT
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.

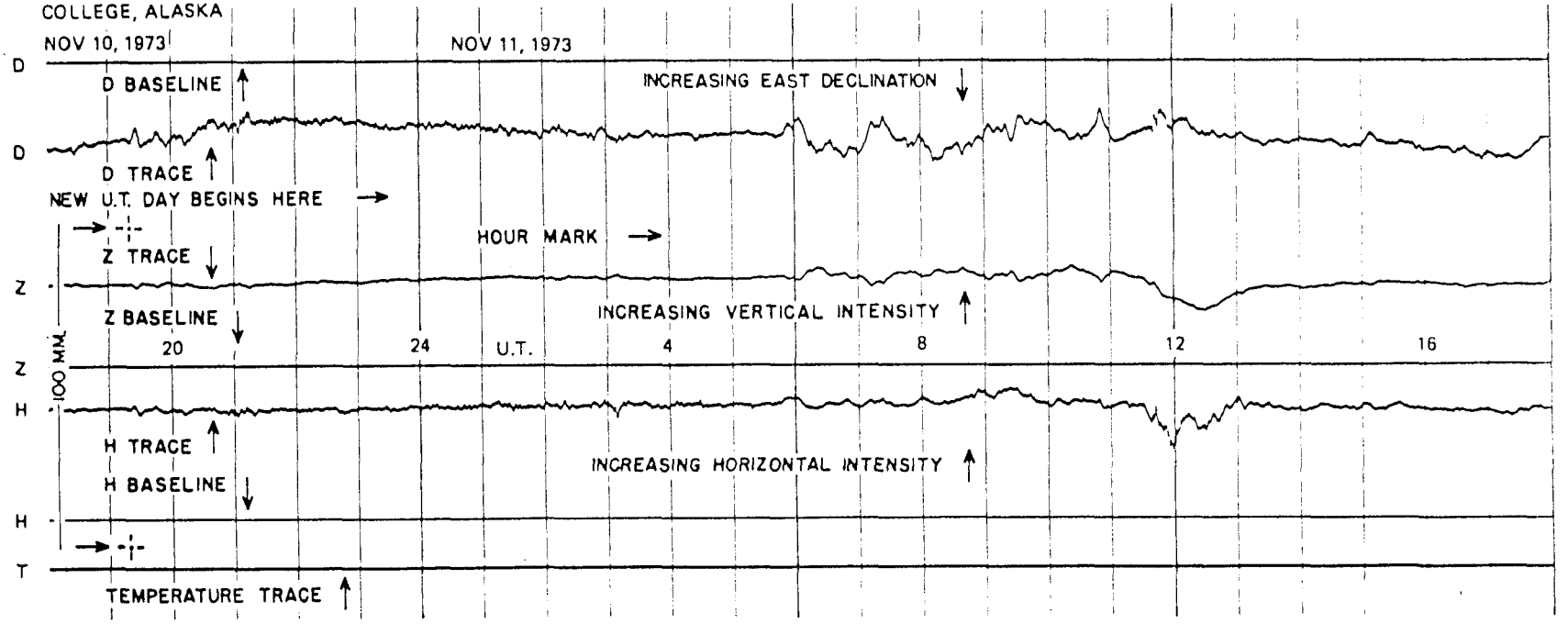
* Derived from Storm Mgph., converted to Normal Mgph.

MONTHLY SUM	225430
MONTHLY MEAN	303
DATES WITH GAPS:	

GPO 844-203

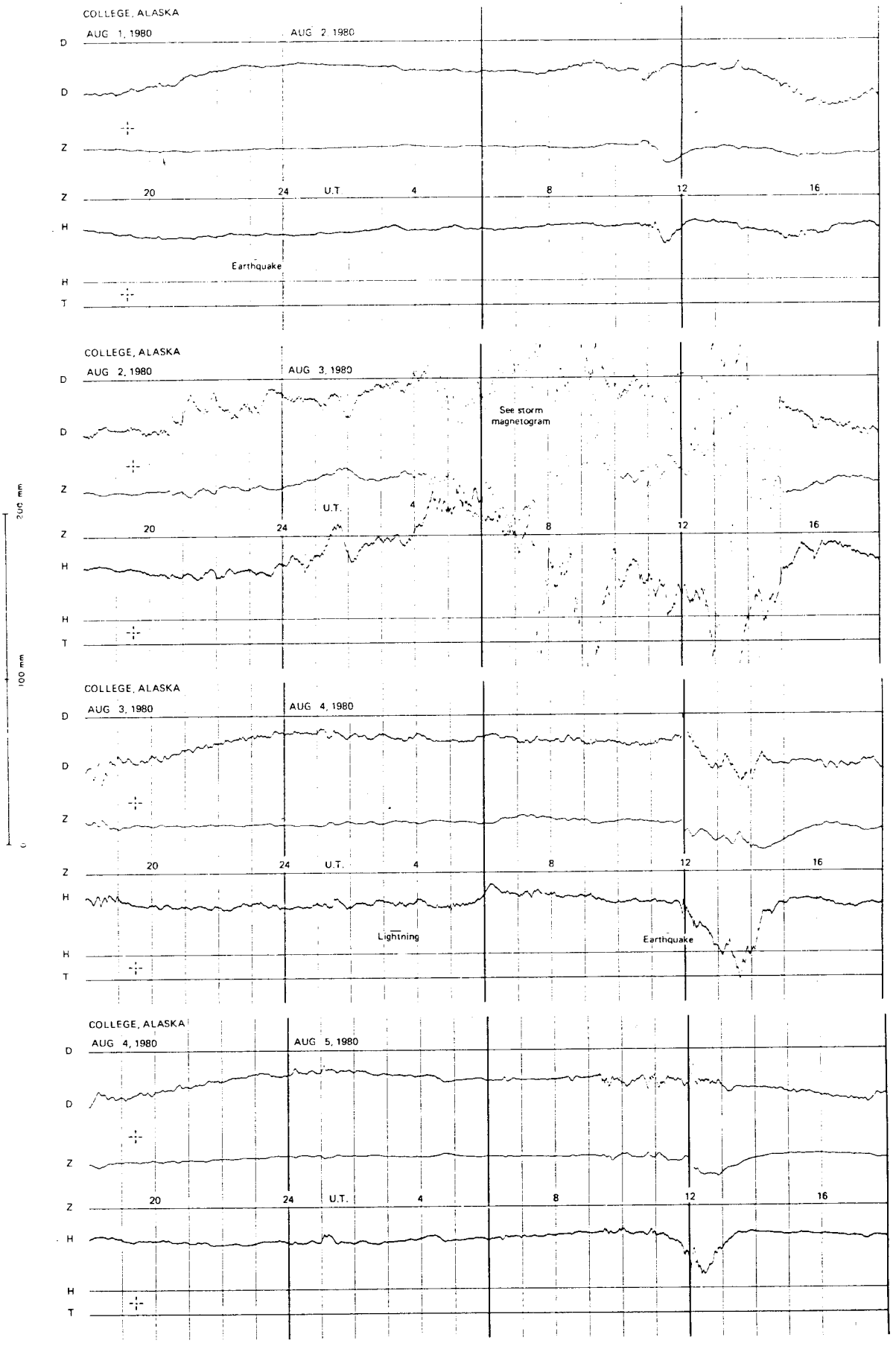
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

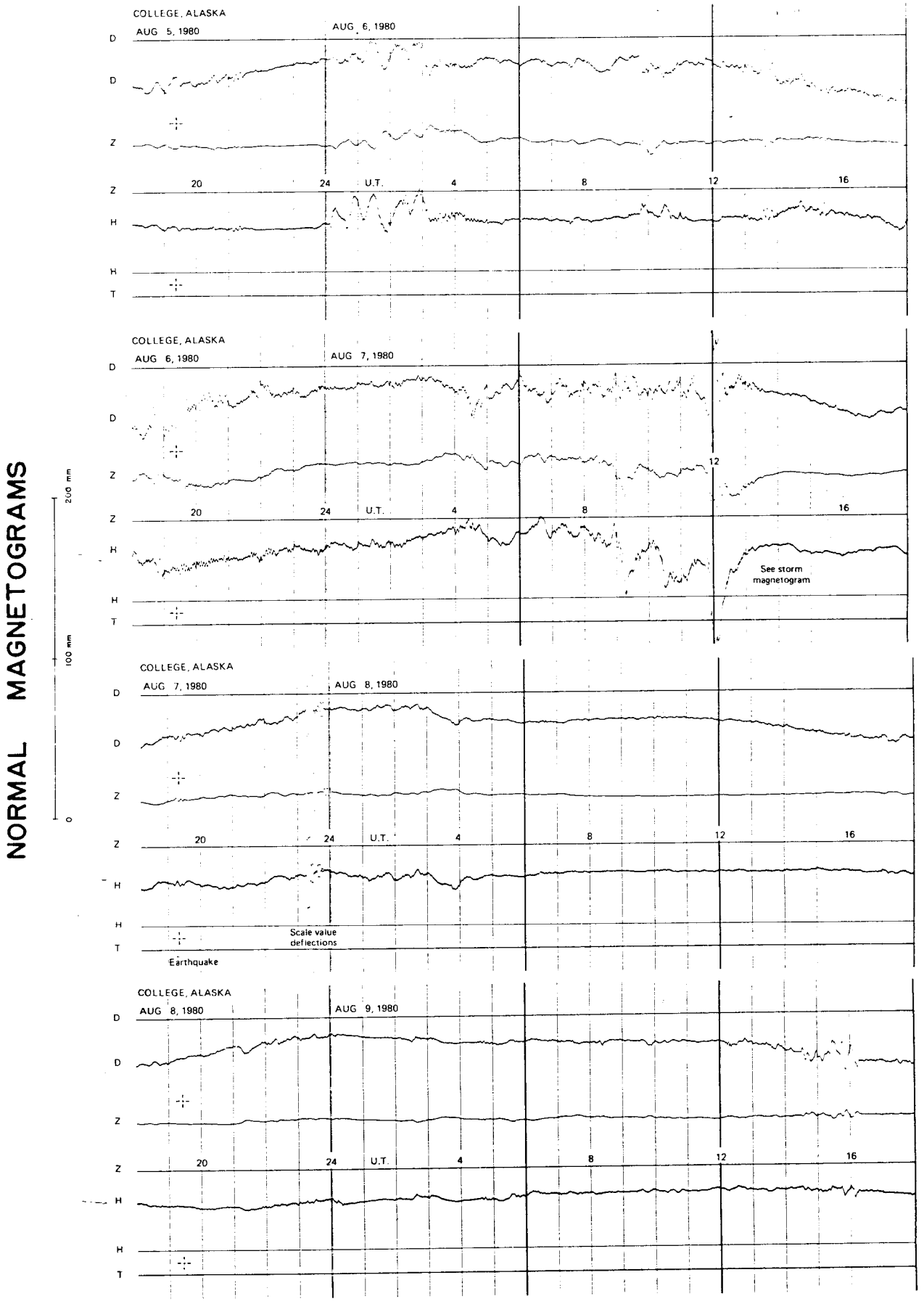


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

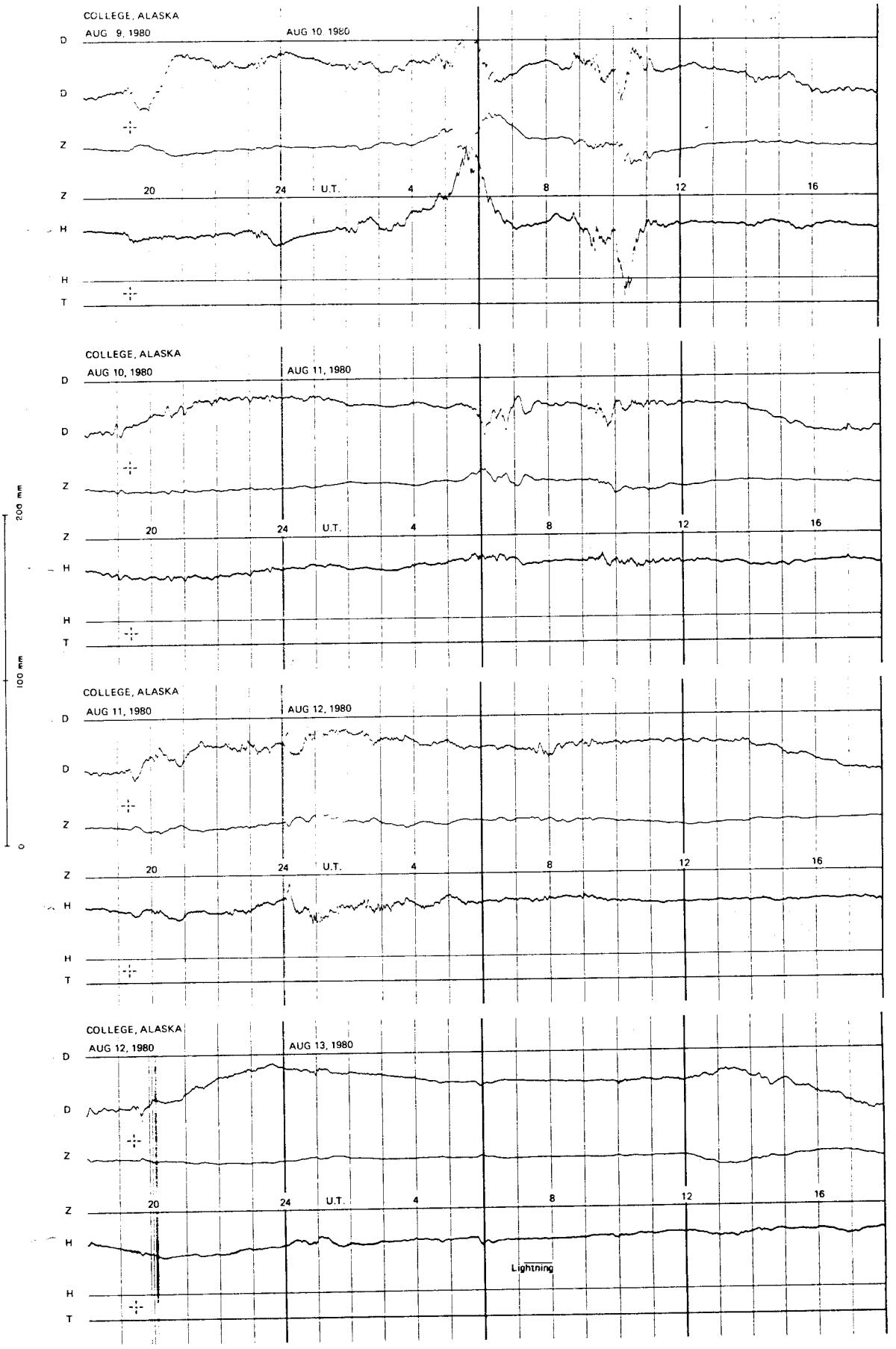
NORMAL MAGNETOGRAMS



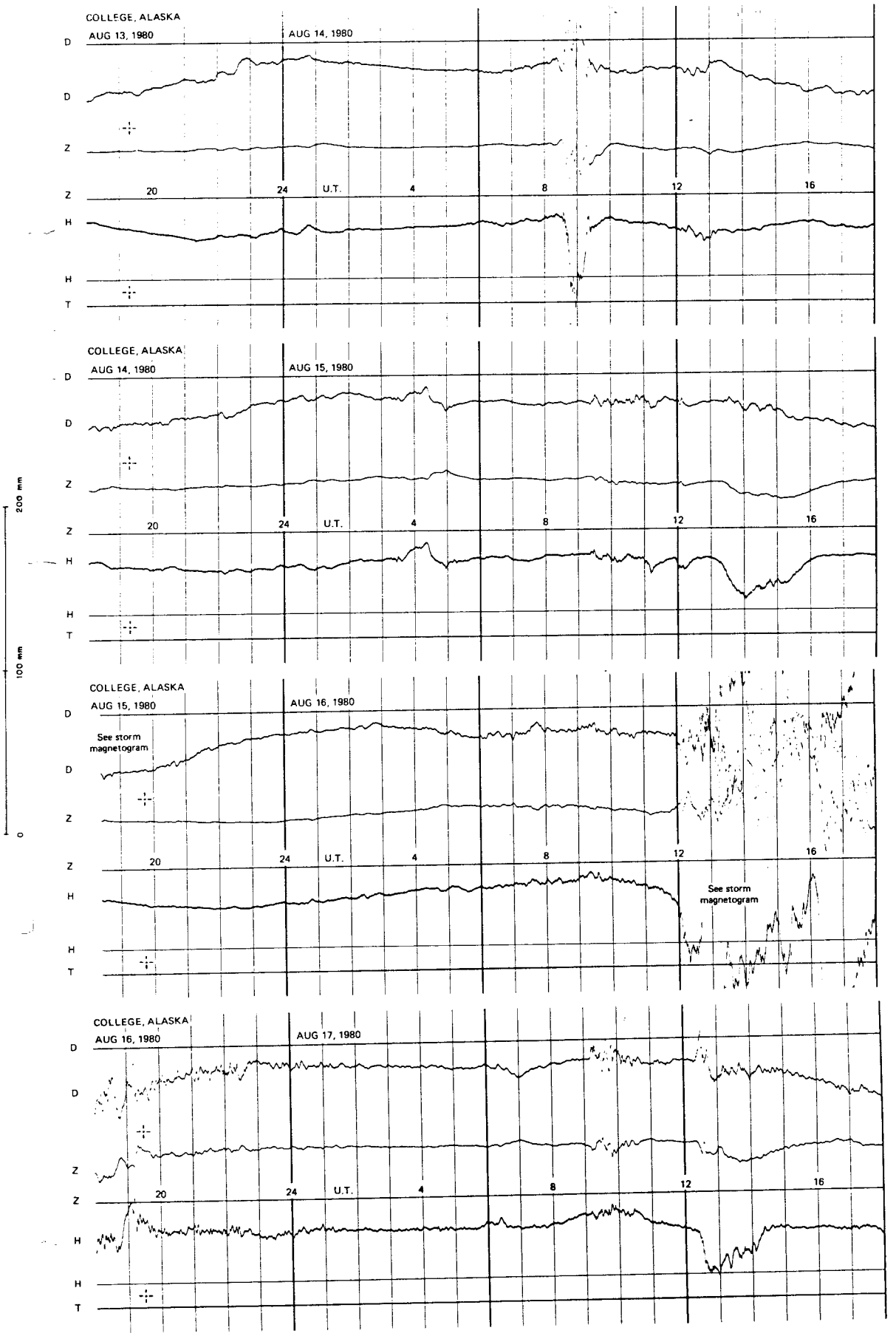
NORMAL MAGNETOGRAMS



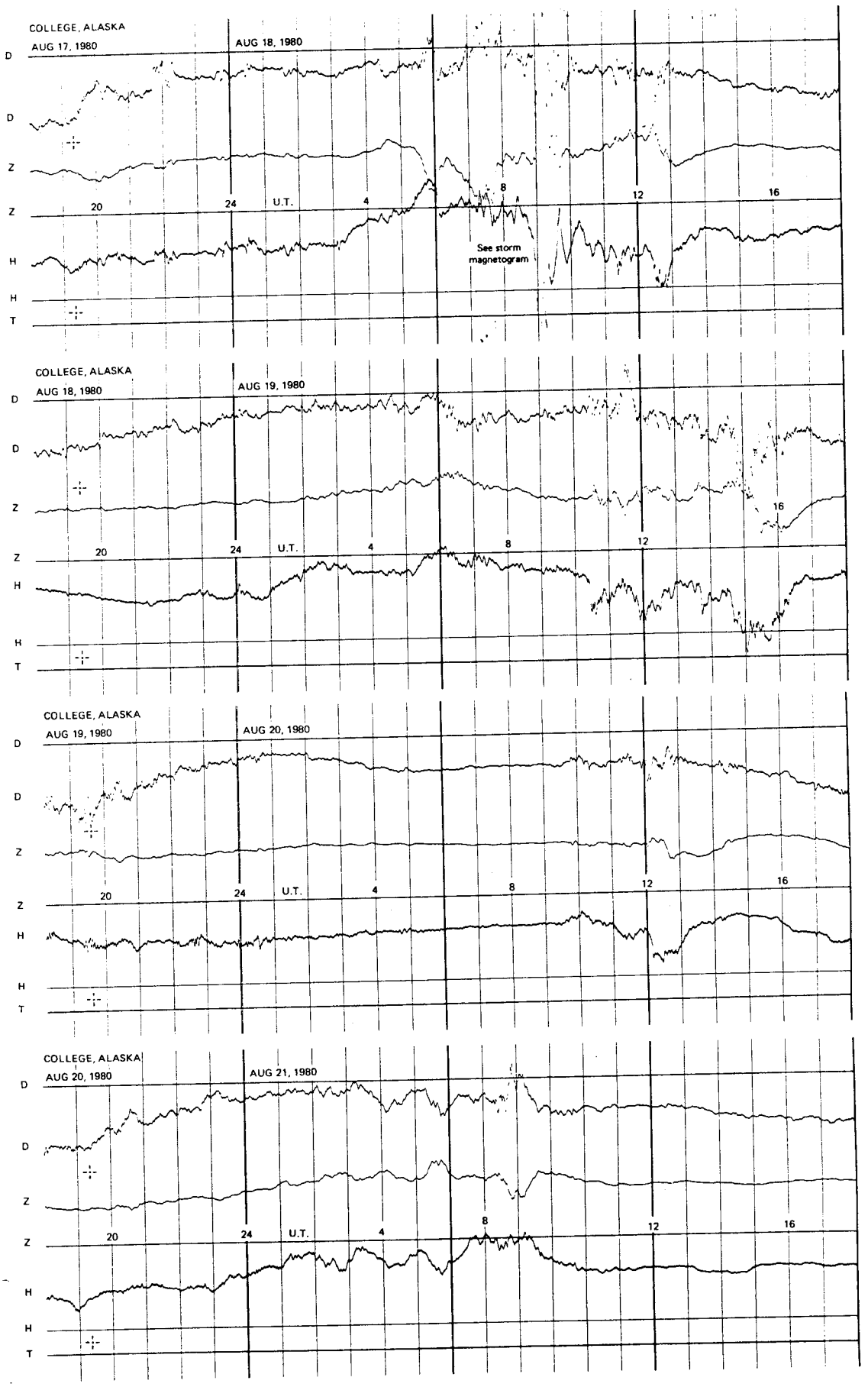
NORMAL MAGNETOGRAMS



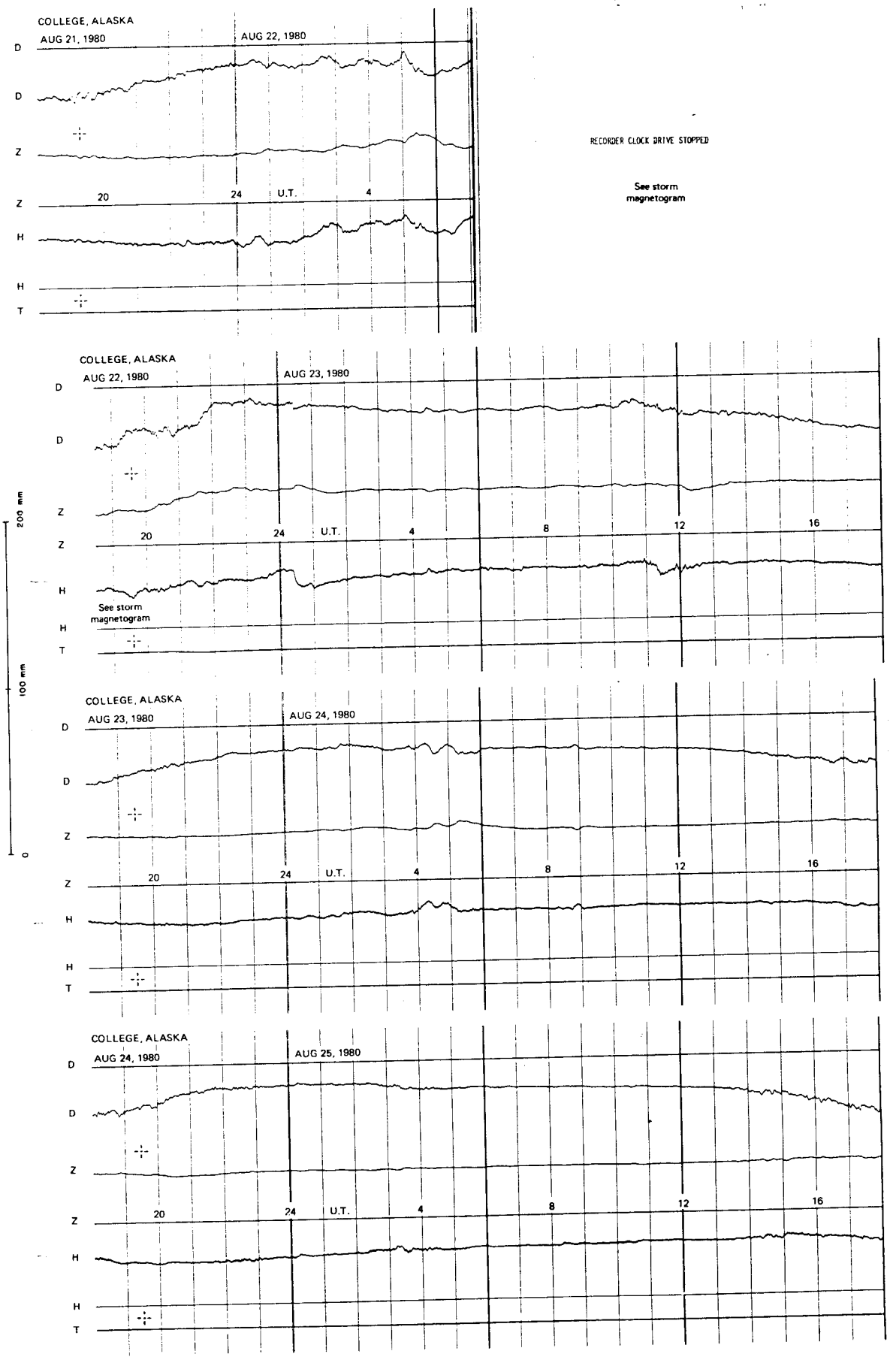
NORMAL MAGNETOGRAMS



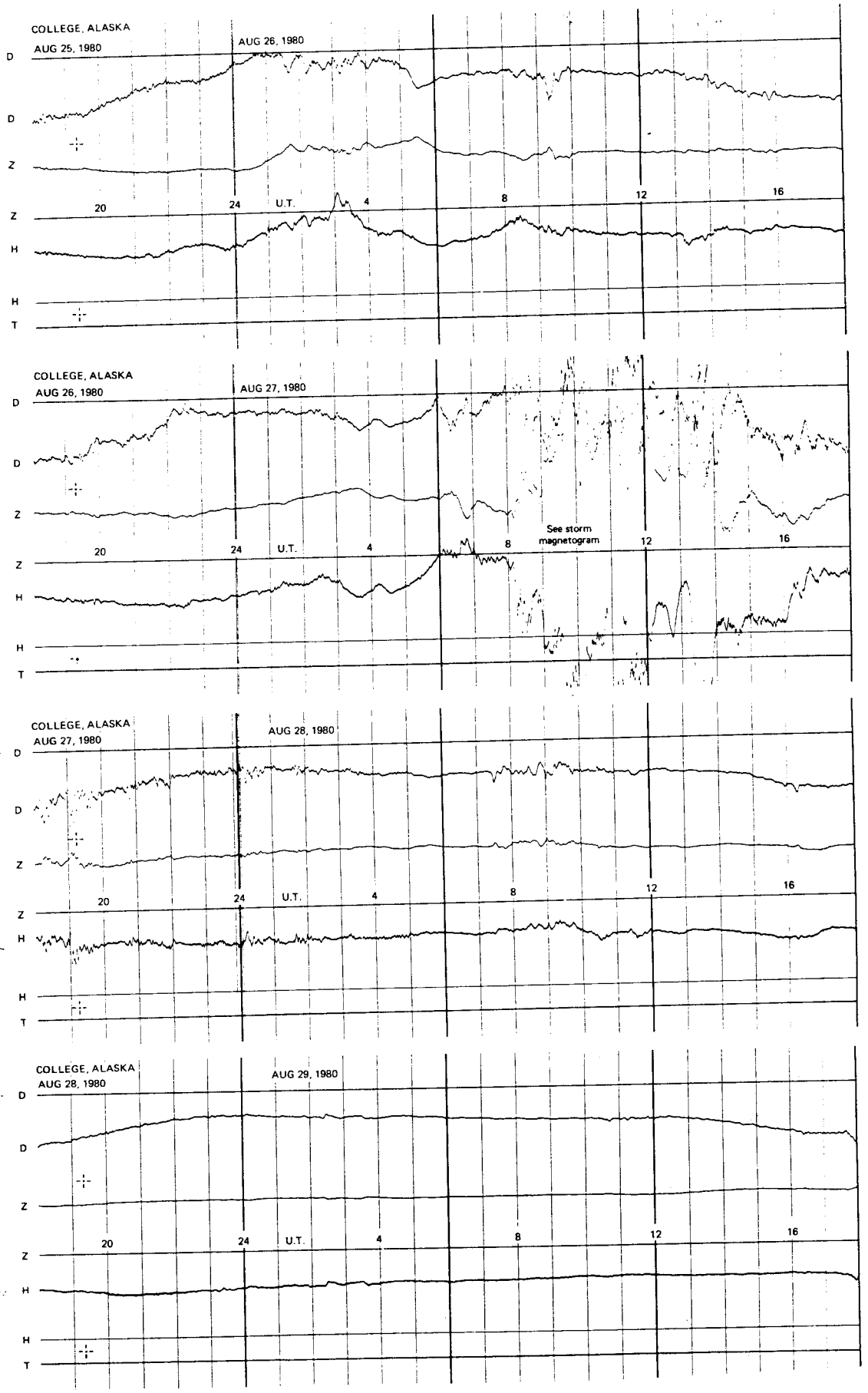
NORMAL MAGNETOGRAMS



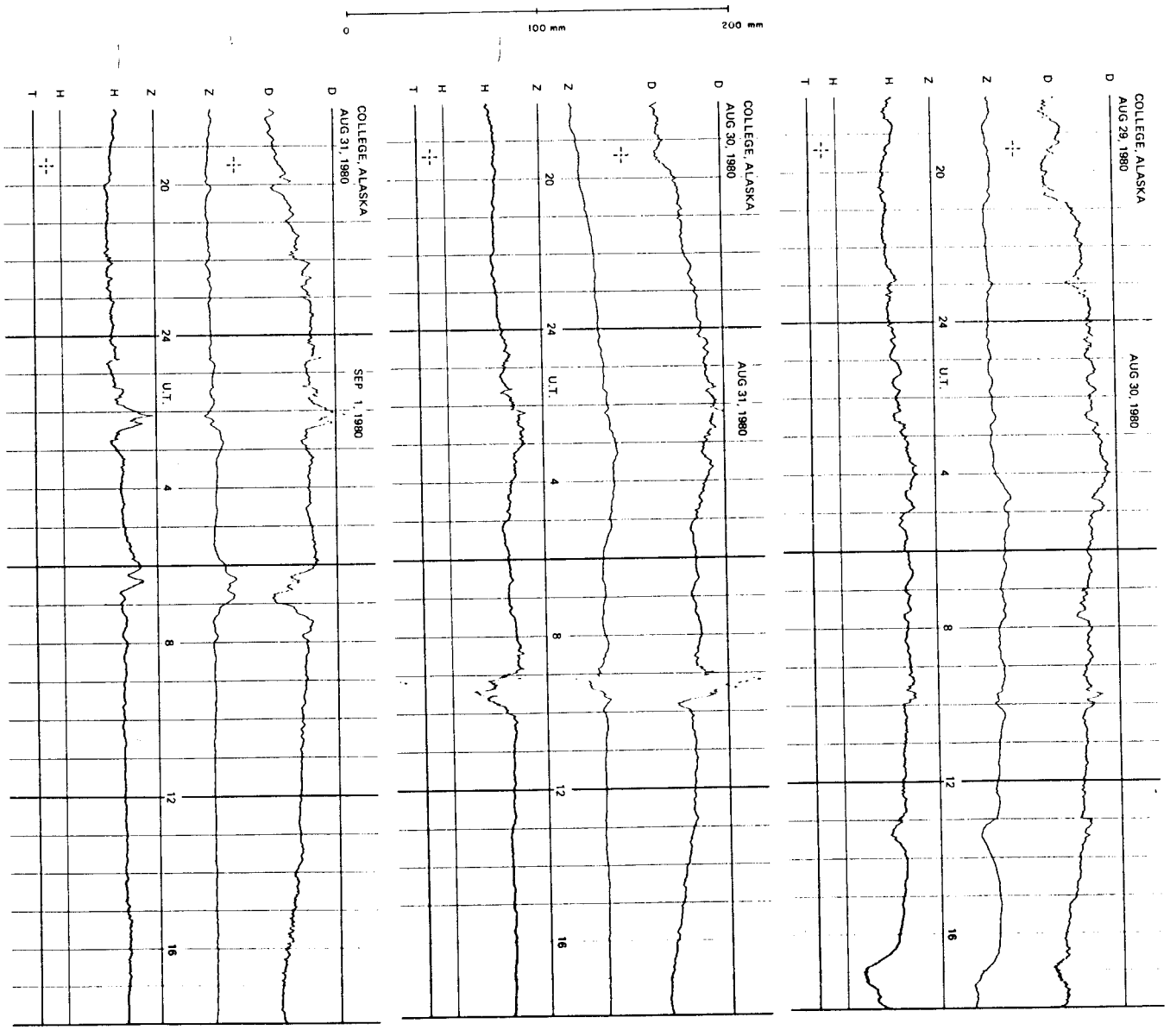
NORMAL MAGNETOGRAMS



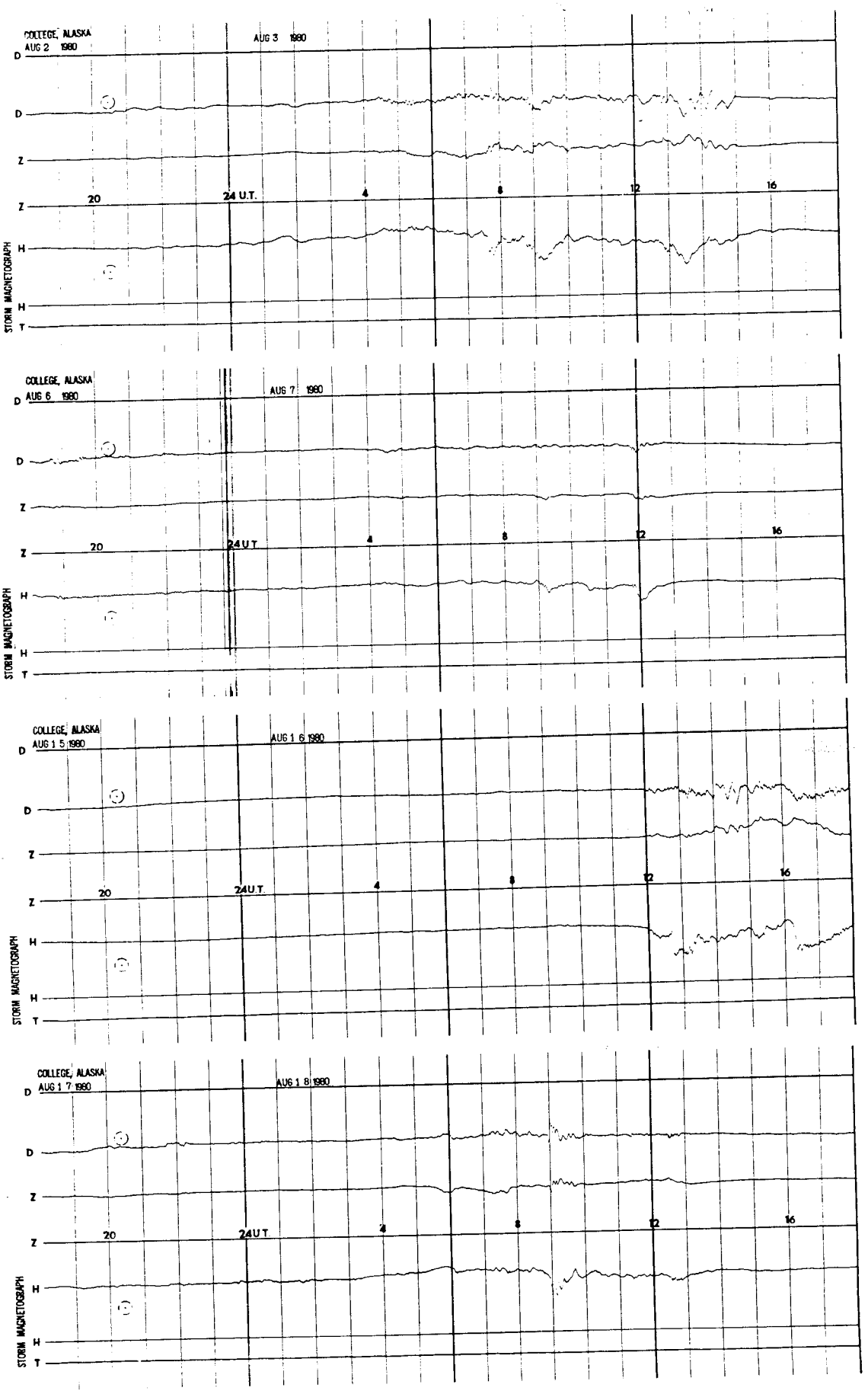
NORMAL MAGNETOGRAMS



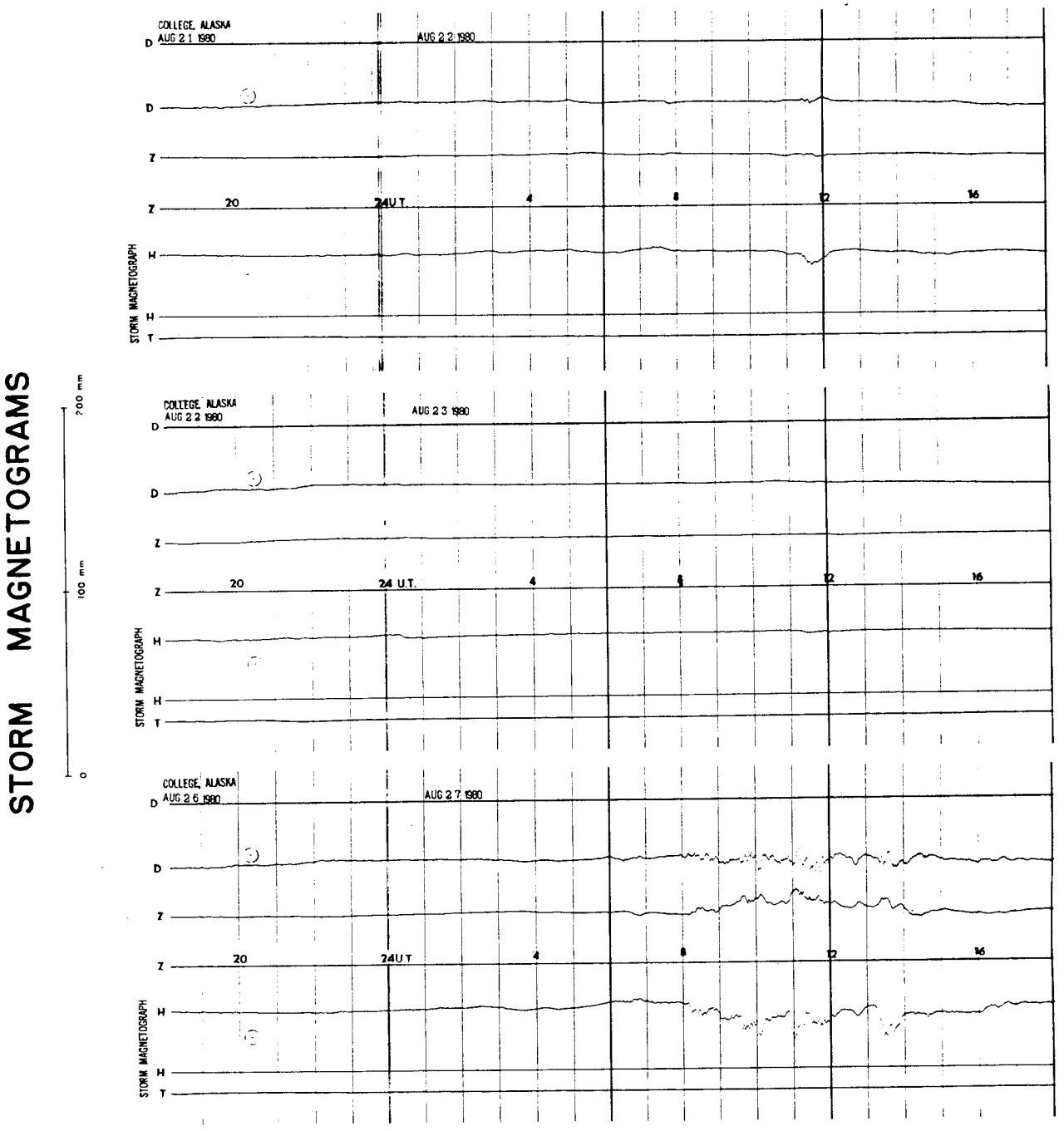
NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Preliminary Field Geotechnical and Geophysical Logs from a Drill Hole in the Capps Coal Field, Cook Inlet Region, Alaska

By

Alan F. Chleborad, Lynn A. Yehle,
Henry R. Schmoll, and Cynthia A. Gardner

Open-File Report 80-393

1980

Illustrations

In pocket

Contents

Preliminary Field Geotechnical and Geophysical Logs from a Drill Hole in the Capps Coal Field, Cook Inlet Region, Alaska

By Alan F. Chleborad, Lynn A. Yehle, Henry R. Schmoll, and Cynthia A. Gardner

Introduction

The drilling and logging activity described in this report was undertaken in August 1979, as part of the Energy Lands program of the U.S. Geological Survey. The general objectives of the project, of which this work is a part, are to provide an understanding of the nature, location, and extent of the engineering and environmental concerns in potential coal-development areas of the Cook Inlet region, Alaska. The geotechnical and geophysical logs presented in this report provide some of the basic physical-property and engineering data needed to evaluate geologic hazards, and to predict the response of geologic materials to large-scale coal mining and related development in the Capps coal field of the Beluga coal area. Specifically, the information may be used to help determine such things as natural- and cut-slope stability, spoil-pile stability, ground response to seismic activity, blasting effects, excavatability, bulking characteristics, ground-water conditions, and erosion potential.

The drill site (fig. 1) is located on an upland approximately 100 km west of Anchorage, Alaska, and 38 km from Cook Inlet. The drilling and core sampling involved strata of the lower Oligocene to middle Miocene (Wolfe and Tanai, 1980) Tyonek Formation and overlying Quaternary glacial deposits. The geology and coal resources of the Beluga coal area were described by Barnes (1966). Subsequently, the Beluga Coal Company correlated coal beds (Capps and Waterfall beds) and described overburden material in the Capps coal field by

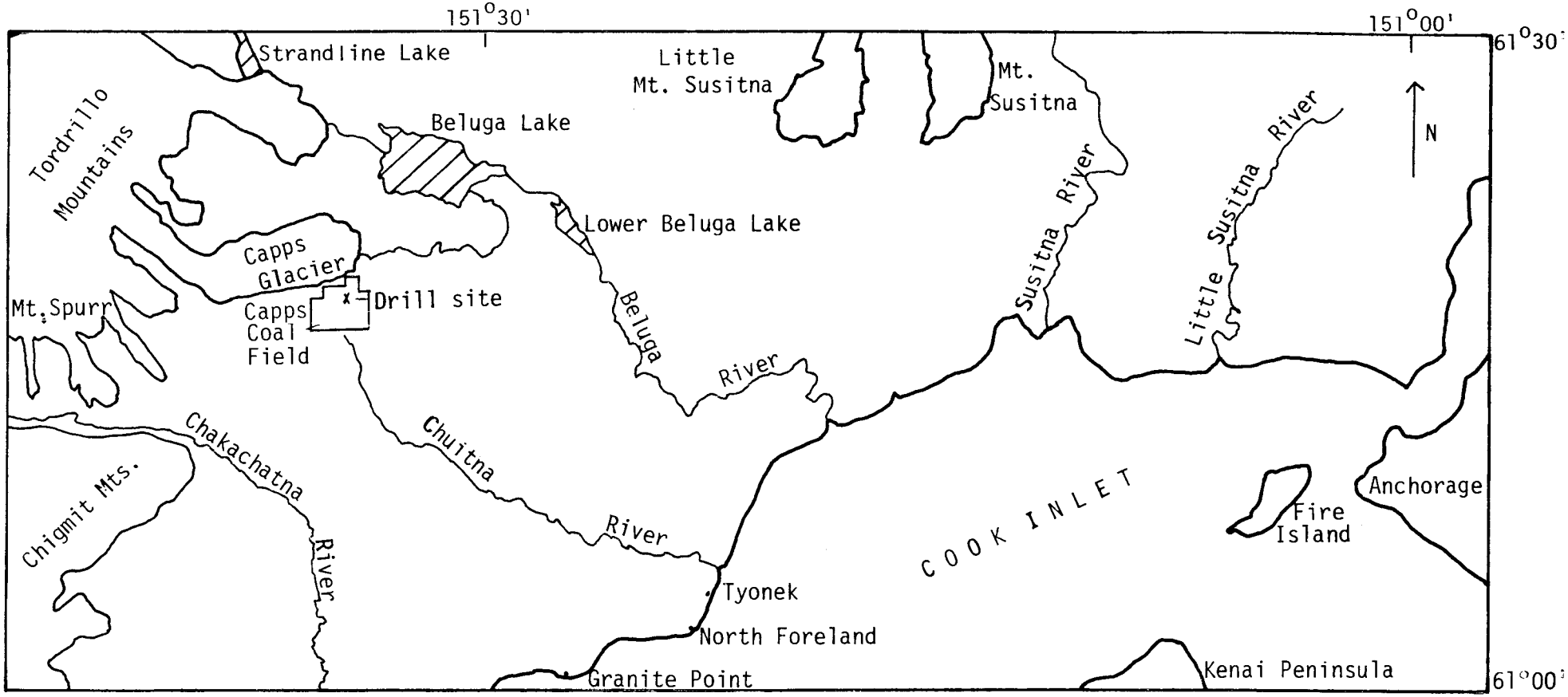


Figure 1. Index map showing the location of the drill site

detailed drilling on a one-quarter mile grid basis (Patsch, 1975). A generalized log showing lithologies in the vicinity of the drill site is presented in figure 2. The log is based primarily on the drill-hole field log supplemented by outcrop information obtained during the 1978 and 1979 field seasons.

Of the several coal fields in the Cook Inlet region, the Capps coal field appears to be one of the most likely to undergo large-scale development in the foreseeable future. A proposed open-pit mining plan (information from Placer Amex, Inc., status report of December 1977) calls for the sequential mining and reclamation of five areas in the Capps coal field (fig. 3). The drill site, also shown in figure 3, is located in the third proposed mine area where, according to the mining plan, two major coal beds (the Capps and Waterfall beds) and approximately 90 m of spoil material (mined overburden and interburden) would be involved in the mining operation.

Several large landslides near the drill site (fig. 3) involve coal-bearing strata stratigraphically equivalent to the material sampled at the drill site. Data provided in the present report and data from laboratory testing of core samples (when available) should be particularly useful in identifying factors involved in the mass movement process and in analyzing natural- and cut-slope stability.