I.O.S.

UK CONTINENTAL SLOPE EXPERIMENT (CONSLEX) 1982/83 OFFSHORE BOTTOM PRESSURE RECORDS

by

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REPORT NO 216

1985

NATURAL ENVIRONMENT RESEARCH COUNCIL

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INSTITUTE OF OCEANOGRAPHIC SCIENCES

BIDSTON

UK Continental Slope Experiment (CONSLEX) 1982/83 Offshore bottom pressure records

Rockall Trough
Hebrides Shelf
West Shetland Shelf
Færoe-Shetland Shelf

by

A.D. Banaszek & D.C.C. MacDonald

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ABSTRACT

This report describes the results obtained from eighteen Pressure Recorders deployed at thirteen stations as part of the UK Continental Slope Experiment (CONSLEX) during the winter of 1982/83. The position of the deployment stations are shown in Fig.1 and lie on the Hebrides Shelf, Rockall Trough, West Shetland Shelf and the Faroe Shetland Channel as far as 63 08N line of latitude. Each line of stations is identified by a reference code A-G and each station on the line given a number from 1-6.

A brief description of the instruments is given followed by details of data reduction and tidal analysis. The details of the launch and recovery phases of each deployment are included and the measurements made by each sensor presented in graphical form and tables of harmonic constants.

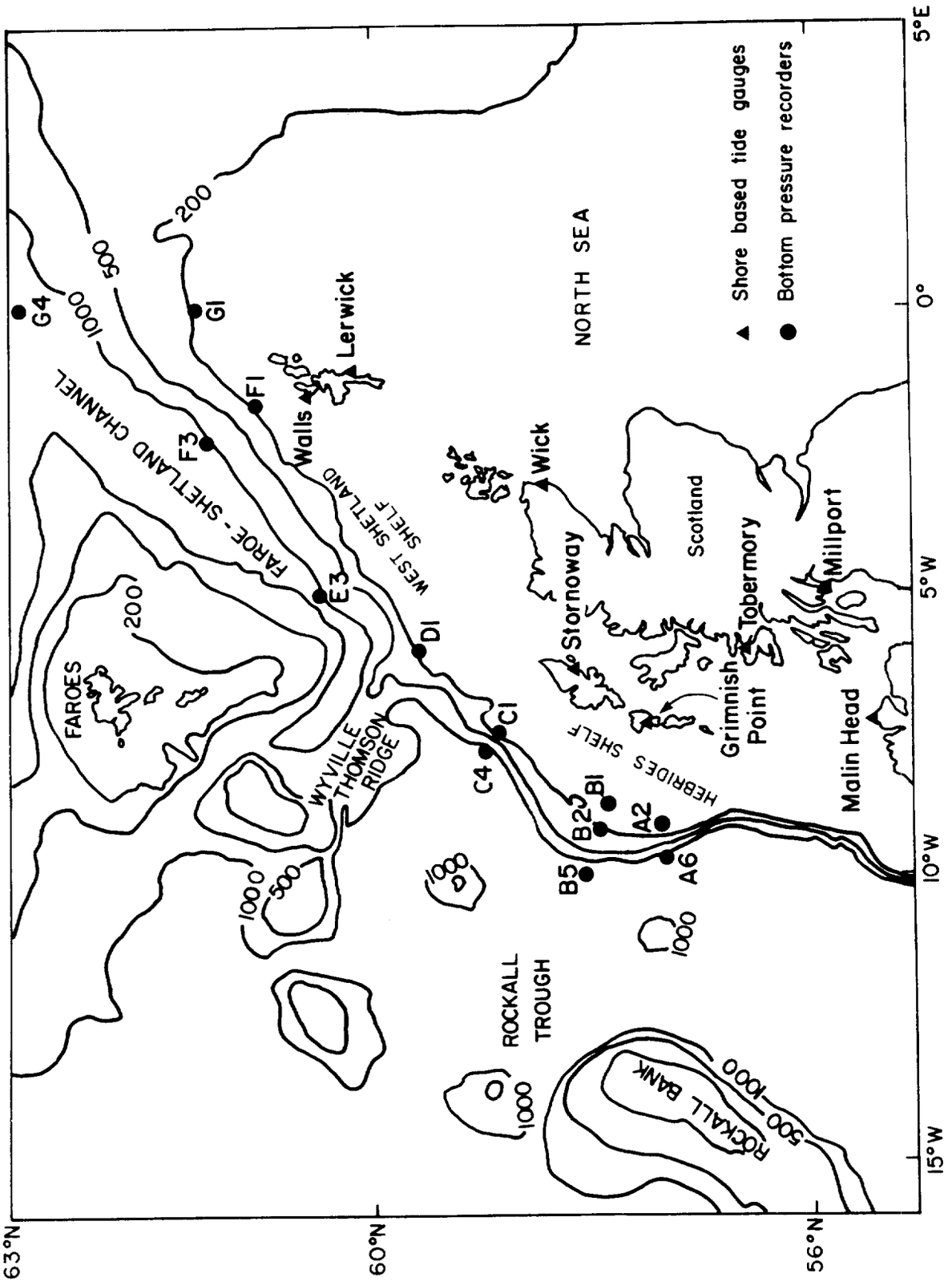


FIG 1. DEPLOYMENT POSITIONS

1. INTRODUCTION

Eighteen Pressure Recorders were deployed by staff from the Institute of Oceanographic Sciences, (IOS Bidston) as part of the CONSLEX exercise which took place between August 1982 and March 1983 in the North East Atlantic. The Pressure Recorders were placed at the ends of the lines A-G in order to provide evidence of offshore events and to relate these to the sea level changes at the shore based tide gauges. For the duration of the experiment, several Aanderaa Water Level Recorders were installed as temporary shore based tide gauge stations.

2. INSTUMENTS

The instruments are of five types each with a different sampling interval.

Aanderaa 4A 30 minutes (27 second integration period)

Aanderaa WLR500 30 minutes (56 second integration period)

Bottom Mounted Current Meter/Pressure Recorder (Harrison 1981) 15.0 minutes integration time.

Mark 1V 3.75 minutes

Teleost 15.0 minutes

The Mark 1V, Teleost and BMCM/PR instruments integrate the pressure signal continuously over the sampling period whereas the Aanderaas have a short integration period at the end of each sampling interval. With the Aanderaa instruments this integration period will vary slightly over the full pressure range due to the way in which the electronics is designed.

The Mark 1V has two pressure sensors and one temperature sensor. The Teleost, Aanderaa 4A and BMCM/PR have one pressure and one temperature

TABLE 1

STATION	SENSOR Ser.No	SENSOR TYPE	PRESSURE SENSITIVITY Hz/decibar	TEMPERATURE SENSITIVITY Hz/degree C
A2	WLR500	DQ	*1562.38	$ +0.477
A6	TG291	KSG	-1.089	+0.500
B1	CM/TG7	DQ	-13.800	+0.060
B2	CM/TG6	DQ	-15.900	0
B5/1	TG283	KSG	-0.8695	-0.4094
B5/2	TG4A/281	DQ	*26.675	$+13.500
C1	TG281	BHSG	-14.0229	+1.260
C4/1	TG4A/282	DQ	*26.492	$+10.570
C4/2	TG292	KSG	-0.7939	-0.3893
D1	TG287	DQ	-12.805	0
E3	B/H 2	BH	-1.5969	-1.4700
	DQ2262	DQ	-0.8865	+0.0990
F1	TG284	BHSG	-11.110	+1.660
F3	B/H 5	BH	-1.3616	+0.0900
	DQ3845	DQ	-1.1597	+0.2010
G1	TG289	DQ	-15.198	+0.100
G4	B/H 4	BH	-1.8019	+0.0502
	DQ5997	DQ	-1.1939	+0.2370

KEY:

* COUNTS/DECIBAR $ COUNTS/DEGREE C.

PRESSURE TRANSDUCER TYPES.

DQ ABSOLUTE DIGIQUARTZ
KSG KULITE SEMICONDUCTOR STRAIN GAUGE
BH BELL-HOWELL THIN FILM STRAIN GAUGE
BHSG BELL-HOWELL "BOXING RING" STRAIN GAUGE

sensor but the Aanderaa 4A samples the temperature and pressure signals on alternate scans. The Aanderaa WLR500 has a pressure sensor only.

Details of the primary sensitivity in Hertz/decibar and the temperature sensitivity in Hertz/degree C, for each sensor, is given in Table 1.

3. DATA PROCESSING

The raw data has been checked, edited and then converted to pressure (millibars) and temperature (degrees C) by applying laboratory calibrations. Where relevant, the pressure and temperature signal have been sample rate reduced to approximately hourly values using an appropiate low pass filter (Fig. 2). All data, whether hourly or sample rate reduced to hourly values has been interpolated to cardinal hours using a cubic spline function (Alcock G.A, Vassie J.M 1975).

At this point the data contained instrumental drift which was later removed by fitting a "plastic creep equation" (Filloux 1980) and an exponential function which has the form

$$DRIFT = A1 \exp(-A2t) + B0 + B1(t+B2)^{B3}$$

where A1= Amplitude of exponential drift

A2= Reciprocal of time constants of exponential drift

B0= Constant term

B1= Amplitude of plastic creep term

B2= Delay term

B3= Slope of plastic creep term (B3~0.33)

t= Time in hours

The coefficients "A" refer to the exponential part of the instrumental drift which occurs immediately following a deployment. The "B" coefficients refer to the less severe plastic deformation of the diaphragm under high

static loads. This has a form of time raised to the power one third, approximately, which is represented by the coefficient B3 in the equation.

4. TIDAL ANALYSIS

Harmonic constituents have been derived from each pressure record by the harmonic analysis method. The records are generally of six months duration so 55 constituents have been extracted with 2 related constituents. For shorter records 27 constituents with 8 related was all that was possible and for data from A2 which was only 14 days in length 15 constituents and 15 related were derived.

Depending on the location of the instrument, either Lerwick in the Shetlands or Station YN, 57 9.4N 10 5.9W, deployed near Anton Dohrn for 1 year has been used as a reference station.

Where two sensors were present on the same instrument, the one with the lower noise level and /or instrumental drift is identified by an asterisk in the following data sheets.

Variance estimates for Species 1 and Species 2 tide have been included, derived from the observed data and from a residual series. These can be used to derive error estimates for the harmonic constants.

The amplitude of each harmonic constant in the tables is in units of pressure (millibars) and this can be converted to sea level elevation using the hydrostatic relation

$$h = P/(\rho g)$$

where h = elevation in metres

P = pressure in Pascals

ρ = sea water density in kilograms per cubic metre

g = acceleration due to gravity in metres per second squared.

5. LOW FREQUENCY VARIATIONS

The drift free series have been low passed filtered using a "HILOW" type filter FLP21 (CARTWRIGHT 1970). The frequency response of this filter is shown in Fig 2. Each low passed time series has been plotted and is reproduced in Appendix 4.

6. TEMPERATURE VARIATIONS

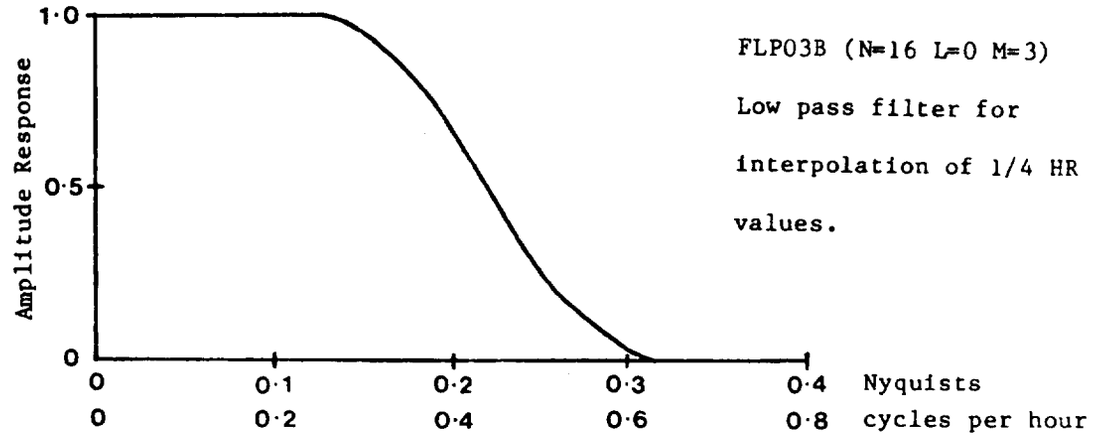
The temperature signals from each location are shown in Appendix 3. Note that the temperature signal from C4/1 and C4/2 disagree by approximately 1 degree C. This is caused by interference between the pressure and temperature channels on C4/2. Therefor C4/1 should be concluded as providing the better temperature signal.

7. INSTRUMENTAL DRIFT

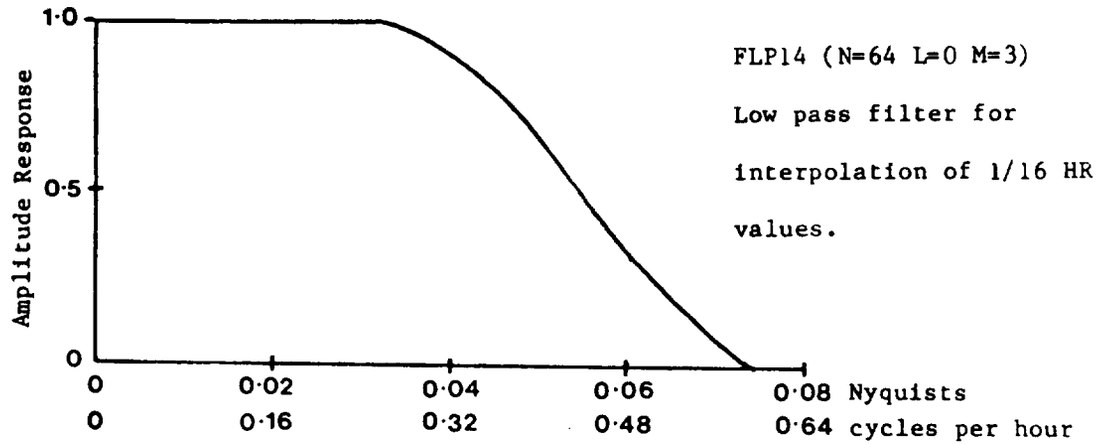
The low frequency drift signal removed from the pressure sensors by means of the plastic creep and exponential drift equation for each instrument, is shown in Appendix 5.

8. REPORT FORMAT

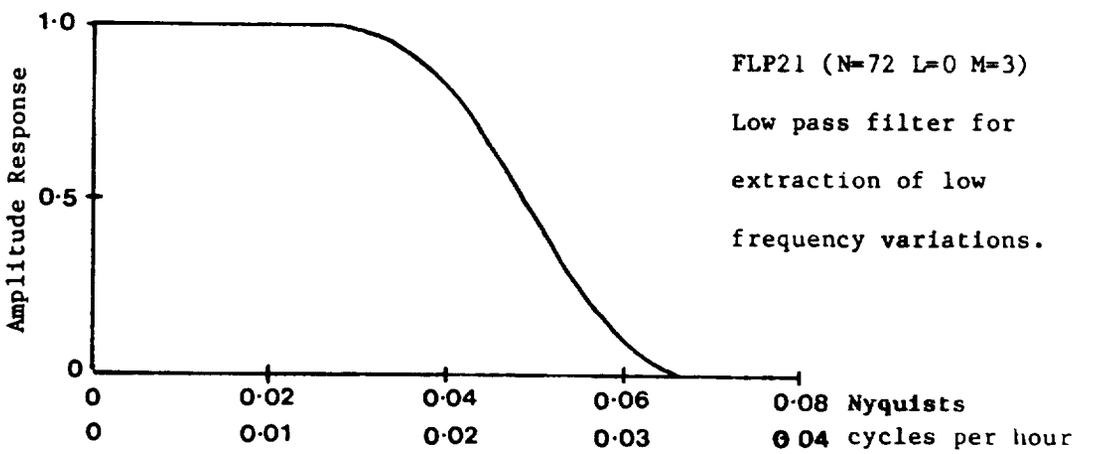
The report is split into two parts, part one being split into sections, one for each deployment. Each section comprising a page of launch and recovery details, a page of data reduction details and a table of tidal constituents obtained by analysis of the tidal record. Part two shows computer plots of drift free pressure data, temperature signals at each station, low frquency variation for each sensor and the instrumental drift associated with each sensor.



FLP03B (N=16 L=0 M=3)
Low pass filter for interpolation of 1/4 HR values.



FLP14 (N=64 L=0 M=3)
Low pass filter for interpolation of 1/16 HR values.



FLP21 (N=72 L=0 M=3)
Low pass filter for extraction of low frequency variations.

FIG 2. FILTER CHARACTERISTICS

8.1 LAUNCH AND RECOVERY DETAILS

Pressure Recorder	Station Identification. General Area. Year.
Position.	Latitude and Longitude.
Water Depth.	Measured at launch by Precision Depth Recorder. Uncorrected for sound velocity.
Pressure Recorder Details.	Type, Logger No. Sensor(s) type and number(s).
Time of Deployment.	Time of launch of instrument from ship, time that recorder was on the sea bed.
Time of Recovery.	Time that the instrument surfaced or was brought on board ship.
Comments.	Comments on the launch and recovery.

8.2 DATA REDUCTION DETAILS.

Sampling Interval	Sampling interval calculated from beginning and end timing data.
Temperature Data.	Time of start and end of raw sea bed temperature data.
Pressure Data.	Time of start and end of sea bed bed pressure data.
Drift free data.	Time of start and end of drift free hourly pressure record. FLP21 filter used to produce drift free data.
Tidal Analysis.	Method used, period analysed, station used for related constituents. Recorded variance and residual variance.

Low Frequency	Sampling interval. Start and end times for filtered pressure data.
Comments	Comments on data reduction.

8.3 ANALYSIS

Table of amplitude and phases (G related to lunar transit at Greenwich and time zone Z=0).

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APPENDIX 1. PRESSURE RECORDER DEPLOYMENT INFORMATION.

A1.1 STATION A2

Pressure Recorder	STATION A2 Hebrides Shelf. CONSLEX 1982/83
Position.	Aug/82-Sept/83. Lat. 57 18.1N Long. 09 19.1W
Water Depth.	202 metres
Pressure Recorder Details	Aanderaa WLR500 Digiquartz
Time of Deployment.	In water 1936 GMT Day 233 1982
	On sea bed 1943 GMT
Time of recovery.	Instrument rig trawled.
Comments.	Instrument washed ashore in Norway.
	CTD cast at 2102 GMT Day 233 1982.

Sampling Interval	30.00 minutes.
Temperature Data	No temperature sensor fitted.
Pressure Data.	Record No 213 at 1959.533 GMT Day 233 1982
	Record No 901 at 0359.533 GMT Day 248 1982
Tidal Analysis.	TIRA 14 days of data 16 constants and 15
	related constituents from YN.
Low Frequency.	Insufficient data for analysis.
Comments.	Because of the limited size of these data,
	analysis was done on the half hourly data.

TABLE 2

STATION A2 CONSLEX LAT.57 18.12N 09 19.05W
AANDERAA WLR500/4
16 CONSTANTS + 15 RELATED TO YN
INITIAL OBSERVATION 20.00 GMT DAY 233 1982
FINAL OBSERVATION 0400 GMT DAY 248 1982
OBSERVED MEAN 0.7403D03 STANDARD DEVIATION 0.7634D 02
RESIDUAL MEAN 0.5433D-05 STANDARD DEVIATION 0.1499D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	SIG1	2Q1	0.2936	314.868
2	Q1	O1	2.4451	314.110
3	RHO1	O1	0.4862	311.610
4	PI1	K1	0.2537	78.535
5	P1	K1	3.0974	113.435
6	S1	K1	0.6131	51.535
7	PSI1	K1	0.1057	167.835
8	PHI1	K1	0.2220	146.835
9	J1	OO1	0.5513	140.412
10	2N2	MU2	2.5133	146.923
11	N2	M2	21.2083	147.777
12	NU2	M2	3.9040	152.077
13	L2	M2	2.8489	183.877
14	T2	S2	2.2034	198.841
15	K2	S2	11.5380	201.241

MAJOR CONSTITUENTS

1	ZO	741.0985	0.0
2	MSF	2.2404	278.366
3	2Q1	0.2080	300.368
4	O1	7.1495	358.810
5	K1	10.5713	122.635
6	OO1	0.1496	252.712
7	MU2	3.3244	132.523
8	M2	105.5139	169.077
9	S2	40.0626	203.541
10	M3	0.8486	75.466
11	M4	0.9291	52.443
12	MS4	0.7134	145.883
13	S4	0.0735	296.012
14	M6	0.3249	206.478
15	2MS6	0.2080	267.810
16	2SM6	0.0720	327.183

A1.2 STATION A6/1, A6/2

Pressure Recorder	STATION A6/1 Rockall Trough.Apr/82-Aug/82.
Position.	A6/2 CONSLEX Aug/82-Feb/83.
	Lat. 57 19.0N Long. 09 52.5W
Water Depth.	2004 metres
Pressure Recorder Details	Teleost TG291P Kulite Strain Gauge. TG291T
	Platinum Resistance temperature sensor.
Time of Deployment.	In water at 0335 GMT Day 118 1982
	On sea bed at 0420 GMT
Time of recovery.	On surface 1300 GMT Day 234 1982
Time of Redeployment.	1534 GMT Day 234 1982
	On sea bed at 1612 GMT Day 234 1983
Time of Recovery.	On surface at 0917 GMT Day 048 1983
Comments.	Instruments A6/1 and A6/2 were consecutive
	deployments at the same site.
	CTD cast No 7 at 1345 GMT Day 234 1982

Sampling Interval	A6/1 14.999954 minutes A6/2 14.999982
Temperature data	Record No 79 at 0437.496 GMT Day 118 1982
	Record No 11243 at 1136.983 GMT Day 234 1982
	Record No 9 at 1652.50 GMT Day 234 1982
	Record No 17159 at 0822.191 GMT Day 048 1983
Pressure Data	Record No 79 at 0437.496 GMT Day 118 1982
	Record No 11243 at 1136.983 GMT Day 234 1982
	Record No 9 at 1652.50 GMT Day 234 1982
	Record No 17159 at 0822.191 GMT Day 048 1983
Drift Free Data	Record No 10 at 0900 GMT Day 118 1982
	Record No 2792 at 0700 GMT Day 234 1982
	Record No 22 at 2100 GMT Day 234 1982
	Record No 4301 at 0400 GMT Day 048 1983
Tidal Analysis	TIRA 55 major constituents and 3 related constituents from YN. Recorded variances 97.123 mb^2 and 6295.292 mb^2
	Residual variances 0.577 mb^2 and 0.652 mb^2
Low Frequency	Sampling interval 1 hour.
	Record No 1 at 0800 GMT Day 121 1982
	Record No 6934 at 0500 GMT Day 048 1983
Comments	The low frequency data is a combination of A6/1 and A6/2 produced by interpolating the gap from 0700 GMT Day 234 1982 to 2300 GMT Day 234 1982 with tidal predictions.

TABLE 3

STATION A6 ANTON DOHRN SITE (COMBINED SA6/1 + SA6/2)
TELEOST TG291 LAT. 57 19.0N LONG. 09 52.5W
60 MAJOR CONSTITUENTS FROM YN ANALYSIS
INITIAL OBSERVATION 0900 GMT DAY 118 1982
FINAL OBSERVATION 0400 GMT DAY 048 1983
OBSERVED MEAN 0.9999D 02 STANDARD DEVIATION 0.8010D 02
RESIDUAL MEAN -0.8358D-06 STANDARD DEVIATIN 0.3356D 01

NO	NAME	H (MBS)	G (DEGREES)
1	Z0	99.9634	0.0
2	SA	0.1778	212.094
3	SSA	0.1263	290.014
4	MM	1.1893	152.986
5	MSF	0.5830	132.220
6	MF	1.0093	155.538
7	2Q1	0.4830	240.630
8	SIG1	0.5683	262.174
9	Q1	2.4209	310.264
10	RO1	0.4420	276.948
11	O1	7.6490	356.382
12	MP1	0.1498	138.823
13	M1	0.7839	303.550
14	CHI1	0.0618	49.715
15	PI1	0.3471	86.033
16	P1	3.2678	115.728
17	S1	0.6267	42.285
18	K1	10.0746	126.305
19	PSI1	0.2213	40.422
20	PHI1	0.1700	224.182
21	TH1	0.0818	112.281
22	J1	0.5475	164.030
23	SO1	0.1121	51.903
24	OO1	0.2116	231.576
25	OQ2	0.2677	113.044
26	MNS2	0.9036	93.324
27	2N2	2.7568	130.933
28	MU2	3.6815	117.253
29	N2	20.6573	147.965
30	NU2	3.8680	149.773
31	OP2	0.4536	17.006
32	M2	102.9216	169.382
33	MKS2	0.2765	180.620
34	LAM2	0.5545	193.477
35	L2	2.6777	183.609
36	T2	2.1071	201.884
37	S2	38.8455	203.742
38	R2	0.3690	208.924
39	K2	11.3032	201.650
40	MSN2	0.0690	91.540
41	KJ2	0.5854	45.666
42	2SM2	0.0853	167.527

NO	NAME	H (MBS)	G (DEGREES)
43	MO3	0.4503	62.998
44	M3	0.8452	88.151
45	SO3	0.0967	159.949
46	MK3	0.1782	208.267
47	SK3	0.2821	222.357
48	MN4	0.2964	349.415
49	M4	0.8213	34.922
50	SN4	0.0693	84.274
51	MS4	0.6911	122.222
52	MK4	0.1825	120.375
53	S4	0.0756	233.278
54	SK4	0.0484	245.259
55	2MN6	0.1851	161.523
56	M6	0.2960	191.474
57	MSN6	0.0474	162.020
58	2MS6	0.2095	243.598
59	2MK6	0.0579	229.026
60	2SM6	0.0656	262.353
61	MSK6	0.0083	229.878

A1.3 STATION B1

Pressure Recorder	STATION B1 Hebrides Shelf CONSLEX 1982/83
Position.	Oct/82-Feb/83 Lat. 57 54.7N Long. 08 48.5W
Water Depth	146 metres
Pressure Recorder Details	Bottom Mounted Current Meter/Tide Gauge No 7.
	Digiquartz DQ6740
Time of Deployment.	In water at 1134 GMT Day 298 1982
	On sea bed at 1137 GMT
Time of Recovery.	Day 049 1983
Comments.	BMCM/TG7 damaged by trawler activities.
	Recovered by dragging. Top sensor unit
	containing the pressure sensor lost with the
	current meter and logger recovered in the
	frame. No CTD casts made.
Sampling Interval	BMCM/TG7 15.00 minutes
Pressure Data	DQ6740 Record No 2 at 1207.5 GMT Day 298 1982
	Record No 9878 at 0852.5 GMT Day 036 1983
Drift Free Data	Record No 22 at 1700 GMT Day 298 1982
	Record No 2461 at 0500 GMT Day 036 1983
Tidal Analysis	TIRA BMCM/TG7 101 days. 27 major and 8 related
	constituents from YN analysis.
Low Frequency	B1+B2 Record No 6 at 0000 GMT Day 242 1982
	Record No 3611 at 0500 GMT Day 028 1983
Comments	Tape ran out before end of deployment.
	B1 and B2 separated by 20 nautical miles
	so for the low frequency variation they can
	be considered the same.

TABLE 4

STATION B1 CONSLEX LAT. 57 55N LONG. 08 49W
BMCM/TG 7
27 CONSTANTS + 8 RELATED TO YN
INITIAL OBSERVATION 0000 GMT DAY 299 1982
FINAL OBSERVATION 2200 GMT DAY 035 1983
OBSERVED MEAN=0.1687D 03 STANDARD DEVIATION=0.7464D 02
RESIDUAL MEAN=0.2616D-04 STANDARD DEVIATION=0.5275D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.22	81.554
2	P1	K1	2.66	116.454
3	S1	K1	0.53	54.554
4	PHI1	K1	0.19	149.854
5	2N2	N2	2.61	139.125
6	NU2	N2	3.54	159.225
7	T2	S2	1.96	205.906
8	K2	S2	10.25	208.306

MAJOR CONSTITUENTS

1	Z0	168.62	0.0
2	MM	1.61	15.126
3	MSF	1.51	296.022
4	Q1	2.47	311.916
5	O1	6.62	355.512
6	M1	0.73	315.461
7	K1	9.07	125.654
8	J1	0.55	158.890
9	OO1	0.35	207.887
10	MU2	3.64	125.172
11	N2	18.95	154.925
12	M2	94.54	176.565
13	L2	2.67	187.306
14	S2	35.60	210.606
15	2SM2	0.07	93.706
16	MO3	0.42	72.652
17	M3	0.76	102.173
18	MK3	0.16	215.411
19	MN4	0.23	8.023
20	M4	0.55	53.392
21	SN4	0.07	138.728
22	MS4	0.51	143.761
23	2MN6	0.20	150.951
24	M6	0.37	169.389
25	MSN6	0.10	142.457
26	2MS6	0.24	199.925
27	2SM6	0.08	220.681

A1.4 STATION B2

Pressure Recorder	STATION B2 Hebrides Shelf CONSLEX 1982/83
Position.	Aug/82-Oct/82 Lat. 58 00.8N Long. 09 09.0W
Water Depth	205 metres
Pressure Recorder Details	Bottom Mounted Current Meter/Tide Gauge No 6.
Time of Deployment.	In water at 1317 GMT Day 240 1982
	On sea bed at 1347 GMT
Time of Recovery.	1902 GMT Day 298 1982
Comments.	No CTD cast made.

Sampling Interval	BMCM/TG6 15.000018 minutes
Pressure Data	Record No 2 at 1407.5 GMT Day 240 1982
	Record No 5586 at 1807.51 GMT Day 298 1982
Drift Free Data	See B1
Tidal Analysis	TIRA BMCM/TG6 57 days. 27 major and 8 related
	constituents from YN analysis.
Low Frequency	See B1
Comments	B1 and B2 low frequency data concatenated.
	B2 low frequency data suspect due to presence
	of numerous small steps in the pressure data.
	Data not plotted.

TABLE 5

STATION B2 CONSLEX LAT. 58 01N LONG. 09 09W
BMCM/TG 6
DAYS 241 1982-297 1982 57 DAYS.
27 CONSTANTS + 8 RELATED TO YN
INITIAL OBSERVATION 0000 GMT DAY 241 1982
FINAL OBSERVATION 2100 GMT DAY 297 1982
OBSERVED MEAN=0.1455D 03 STANDARD DEVIATION=0.8125D 02
RESIDUAL MEAN=0.1596D-04 STANDARD DEVIATION=0.8577D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.27	86.627
2	P1	K1	3.35	121.527
3	S1	K1	0.66	59.627
4	PHI1	K1	0.24	154.927
5	2N2	N2	2.73	139.964
6	NU2	N2	3.70	160.064
7	T2	S2	2.13	205.218
8	K2	S2	11.14	207.618

MAJOR CONSTITUENTS

1	Z0	145.42	0.0
2	MM	4.22	189.487
3	MSF	0.93	164.766
4	Q1	2.31	304.133
5	O1	7.84	358.076
6	M1	0.73	307.532
7	K1	11.44	130.727
8	J1	0.49	230.680
9	OO1	0.89	284.200
10	MU2	3.38	120.476
11	N2	19.79	155.764
12	M2	100.64	176.746
13	L2	2.31	213.894
14	S2	38.70	209.918
15	2SM2	0.50	231.286
16	MO3	0.28	67.929
17	M3	1.15	97.757
18	MK3	0.26	278.421
19	MN4	0.28	331.087
20	M4	0.72	57.640
21	SN4	0.41	120.354
22	MS4	0.65	141.987
23	2MN6	0.12	133.658
24	M6	0.31	182.923
25	MSN6	0.16	226.480
26	2MS6	0.25	203.334
27	2SM6	0.16	231.459

A1.5 STATION B5/1, B5/2

Pressure Recorder	STATION B5/1,B5/2 Rockall Trough. CONSLEX 1982/83
Position.	Aug/82-Jan/83. Lat. 58 12.0N Long. 09 58.0W
Water Depth.	1870 metres
Pressure Recorder Details	Teleost TG283/P Kulite Strain Gauge. TG283T Platinum Resistance temperature sensor. Aanderaa TG4A/281P Digiquartz. Aanderaa TG4A/281T Thermistor temperature sensor.
Time of Deployment.	In water 2319 GMT Day 234 1982
	On sea bed 2353 GMT
Time of recovery.	On surface 1737 GMT Day 042 1983
Comments.	Two pressure recorders on the Teleost frame.
	CTD cast No 8 at 2342 GMT Day 234 1982

Sampling Interval	TG283P and TG283T 15.000 minutes
	Aanderaa TG4A/281P and TG4A/281T 60.00 minutes
Temperature Data	TG283T Record No 11 at 0007.5 GMT Day 235 1982
	Record No 14680 at 1922.5 GMT Day 022 1983
	TG4A/281T Record No 6 at 2369.776 GMT Day 234 1982
	Record No 4150 at 1600.613 GMT Day 042 1983
Pressure Data	TG283P Record No 11 at 0007.5 GMT Day 235 1982
	Record No 14680 at 1922.5 GMT Day 022 1983
	TG4A/281P Record No 6 at 2359.776 GMT Day 234 1982
	Record No 4150 at 1600.613 GMT Day 042 1983
Drift Free Data	TG283P Record No 5 at 0400 GMT Day 235 1982
	Record No 3664 at 1500 GMT Day 022 1983
	TG4a/281P Record No 1 at 0000 GMT Day 235 1982
	Record No 4152 at 2300 GMT Day 042 1983
Tidal Analysis	TIRA TG283P 152 Days, TG4A/281P 174 Days. 55 major constituents and 3 related constituents from YN.
	TG283P Recorded variances 105.35 mb^2 and 5502.935 mb^2
	Residual variances 0.617 mb^2 and 0.220 mb^2
	TG4A/281P Recorded variance 104.791 mb^2 5560.388 mb^2
	Residual variance 0.733 mb^2 0.727 mb^2
Low Frequency	TG283P Record No 1 at 0300 GMT Day 238 1982
	Record No 3518 at 0800 GMT Day 019 1983
	TG4A/281P Record No 1 at 2300 GMT Day 237 1982
	Record 4010 at 0000 GMT Day 040 1983
Comments	TG283 battery supplies ran out before recovery
	TG4A/281 Sampling interval 1 hour. Temperature and pressure interlaced every half hour. Integration time 27 seconds. Instrumental drift large (300 mb)

TABLE 6

CONSLEX STATION B5/1,B5/2 LAT. 58 12.0N LONG. 09 58.0W
TELEOST TG283/5 AND AANDERAA TG4A/281/3. 55 CONSTANTS AND 3 RELATED TO YN.
TG283/5 INITIAL OBS. 0400 GMT DAY 235 1982 FINAL OBS.0700 GMT DAY 22 1983
OBS.MEAN. 0.1000D 03 SD=0.7528D 02 RES M=0.1184D-06 SD=0.3543D 01
TG4A/282 INITIAL OBS.=0000 GMT DAY 235 1982 FINAL OBS. 2300 GMT DAY 42 1983
OBS.MEAN=0.1001D 02 SD=0.7584D 02 RES M=-0.4442D-03 SD=0.8753D 01

RELATED CONSTITUENTS

NO	REL CONST	REF CONST	TG283 H (MBS)	TG283 G (DEGREES)	TG4A/281 H (MBS)	TG4A/281 G (DEGREES)
1	PI1	K1	0.26	88.829	0.26	91.100
2	S1	K1	0.62	61.829	0.62	64.100
3	T2	S2	20.10	204.928	20.10	204.877

MAJOR CONSTITUENTS

1	Z0	100.21	0.0	100.15	0.0
2	SSA	1.45	308.535	0.19	172.048
3	MM	1.34	163.864	1.25	158.584
4	MSF	0.03	178.559	0.73	109.549
5	MF	1.28	179.265	0.86	144.100
6	2Q1	0.49	261.341	0.83	265.474
7	SIG1	0.54	281.136	0.63	323.943
8	Q1	2.66	314.229	3.01	313.177
9	RO1	0.44	297.959	0.39	322.655
10	O1	7.90	2.101	8.25	4.427
11	MP1	0.21	135.384	0.65	159.195
12	M1	0.92	320.796	0.91	297.200
13	CHI1	0.18	73.061	0.53	316.064
14	P1	3.31	121.149	3.80	122.270
15	K1	10.84	132.929	10.74	135.200
16	PHI1	0.14	257.175	0.48	208.886
17	TH1	0.14	140.980	0.62	245.286
18	J1	0.65	168.000	0.10	274.427
19	SO1	0.13	30.950	0.35	16.476
20	OO1	0.20	233.425	0.47	265.837
21	OQ2	0.30	128.932	0.67	84.756
22	MNS2	0.73	104.342	1.15	124.297
23	2N2	2.67	139.286	2.78	130.866
24	MU2	3.58	126.756	3.69	127.220
25	N2	19.30	154.843	19.77	155.452
26	NU2	3.74	156.551	3.60	159.754
27	OP2	0.45	347.878	0.36	306.891
28	M2	96.54	175.501	96.76	175.441
29	MKS2	0.16	26.441	0.46	275.676
30	LAM2	0.41	197.285	0.38	161.476
31	L2	2.60	188.380	2.66	189.440
32	S2	36.82	209.628	36.46	209.577
33	K2	10.93	207.055	10.99	209.770
34	MSN2	0.08	127.077	0.44	146.210

NO	NAME	TG283		TG4A/281	
		H (MBS)	G (DEGREES)	H (MBS)	G (DEGREES)
35	KJ2	0.60	47.418	0.36	355.466
36	2SM2	0.12	163.766	0.36	90.996
37	MO3	0.37	70.407	0.50	27.296
38	M3	0.79	94.331	1.11	102.146
39	SO3	0.08	128.208	0.20	115.800
40	MK3	0.14	181.720	0.35	210.184
41	SK3	0.22	212.815	0.47	277.152
42	MN4	0.23	350.266	0.15	63.358
43	M4	0.65	42.411	0.40	16.851
44	SN4	0.09	106.267	0.10	238.782
45	MS4	0.59	138.874	0.33	146.360
46	MK4	0.17	158.553	0.32	205.992
47	S4	0.09	275.547	0.10	99.029
48	SK4	0.09	267.704	0.23	341.041
49	2MN6	0.16	146.571	0.34	136.494
50	M6	0.30	172.005	0.46	184.732
51	MSN6	0.09	174.206	0.22	183.589
52	2MS6	0.27	218.378	0.33	256.559
53	2MK6	0.04	223.812	0.27	213.555
54	2SM6	0.06	254.396	0.19	353.268
55	MSK6	0.05	209.066	0.21	275.748

A1.6 STATION C1

Pressure Recorder	STATION C1 Hebrides Shelf. CONSLEX 1982/83.
Position.	Aug/82-Oct/82. Lat. 58 59.2N Long. 07 23.9W
Water Depth.	206 metres
Pressure Recorder	Teleost TG281P Bell-Howell Strain Gauge.
Details.	TG281T Platinum Resistance temperature sensor.
Time of Deployment.	In water 0534 GMT Day 236 1982
	On sea bed 0544 GMT
Time of recovery.	
Comments.	Instruments not recovered from site.
	CTD cast No 14 at 0317 GMT Day 236 1982

Sampling Interval	15.00 minutes
Temperature Data	Record No 28 at 0552.5 GMT Day 236 1982
	Record No 5751 at 2037.5 GMT Day 295 1982
Pressure Data	Record No 28 at 0552.5 GMT Day 236 1982
	Record No 5751 at 2037.5 GMT Day 295 1982
Drift Free Data	Record No 11 at 1000 GMT Day 236 1982
	Record No 1433 at 1600 GMT Day 295 1982
Tidal Analysis	TIRA 59 days. 27 major constituents and 8 related constituents from YN analysis.
	Recorded variances 69.812 mb^2 and 6070.70 mb^2
	Residual variances 0.439 mb^2 and 0.652 mb^2
Low Frequency	Record No 1 at 0900 GMT Day 239 1982
	Record No 1281 at 1700 GMT Day 292 1982
Comments	Instrument rig trawled.

TABLE 7

STATION C1 CONSLEX LAT. 58 59.2 LONG. 07 23.9W
TELEOST TG281
27 CONSTANTS + 8 RELATED TO YN
INITIAL OBSERVATION 1000 GMT DAY 236 1982
FINAL OBSERVATION 1600 GMT DAY 295 1982
OBSERVED MEAN=0.2218D 03 STANDARD DEVIATION=0.7872D 02
RESIDUAL MEAN=0.2353D-03 STANDARD DEVIATION=0.2742D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.24	101.552
2	P1	K1	2.91	136.452
3	S1	K1	0.58	74.552
4	PHI1	K1	0.21	169.852
5	2N2	N2	2.76	156.887
6	NU2	N2	3.75	176.987
7	T2	S2	2.09	221.598
8	K2	S2	10.92	223.998

MAJOR CONSTITUENTS

1	Z0	221.62	0.0
2	MM	2.85	182.620
3	MSF	1.62	222.783
4	Q1	2.30	316.053
5	O1	8.45	4.984
6	M1	1.11	319.423
7	K1	9.94	145.652
8	J1	0.50	177.153
9	OO1	0.23	270.667
10	MU2	3.56	144.432
11	N2	20.03	172.687
12	M2	99.05	193.188
13	L2	2.15	206.675
14	S2	37.93	226.298
15	2SM2	0.20	184.184
16	MO3	0.38	94.645
17	M3	1.01	102.851
18	MK3	0.12	218.162
19	MN4	0.23	353.516
20	M4	0.34	74.600
21	SN4	0.23	129.230
22	MS4	0.64	205.495
23	2MN6	0.18	101.040
24	M6	0.34	150.253
25	MSN6	0.17	162.421
26	2MS6	0.48	185.705
27	2SM6	0.17	220.309

A1.7 STATION C4/1, C4/2

Pressure Recorder	STATION C4/1,C4/2 Rockall Trough. CONSLEX 82/83.
Position.	Aug/82-Feb/83. Lat. 59 11.8N Long. 07 41.3W
Water Depth.	1095 metres
Pressure Recorder Details	Teleost TG292P Kulite Strain Gauge.
	TG292T Platinum Resistance temperature sensor
	Aanderaa TG4A/282P Digiquartz
	TG4A/282T Thermistor temperature sensor.
Time of Deployment.	In water 1915 GMT Day 235 1982
	On sea bed 1935 GMT
Time of recovery.	On surface at 0835 GMT Day 043 1983
Comments.	Two pressure recorder instruments fitted to the
	Teleost frame. CTD cast No 11 at 1836 GMT
	Day 235 1982.

Sampling Interval	TG292P,TG292T 15.000092 minutes.
	TG4A/282P,TG4A/282T 59.999825 minutes.
Temperature Data	TG292T Record No 12 at 1952.501 GMT Day 235 1982
	Record No 16289 at 0908.997 GMT Day 040 1983
	TG4A/282T Record No 5 at 2029.774 GMT Day 235 1982
	Record No 4144 at 0729.050 GMT Day 043 1983
Pressure Data	TG292P Record No 12 at 1952.501 GMT Day 235 1982
	Record No 16289 at 0908.997 GMT Day 040 1983
	TG4A/282P Record No 5 at 2029.774 GMT Day 235 1983
	Record No 4144 at 0729.050 GMT Day 043 1983
Drift Free Data	TG292P Record No 1 at 0000 GMT Day 236 1982
	Record No 4062 at 0500 GMT Day 040 1983
	TG4A/282P Record No 21 at 2000 GMT Day 235 1982
	Record No 4160 at 0700 GMT Day 043 1983
Tidal Analysis	TIRA TG292P 169 days, TG4A/282P 173 days.
	55 major and 3 related constituents from YN analysis.
	TG292P Recorded variances 87.079 mb^2 and 5245.430 mb^2
	Residual variances 1.544 mb^2 and 0.924 mb^2
	TG4A/282P Recorded variances 84.068 mb^2 5250.897 mb^2
	Residual variances 2.104 mb^2 and 1.069 mb^2
Low Frequency	TG292P Record No 1 at 2300 GMT Day 238 1982
	Record No 3920 at 0600 GMT Day 037 1983
	TG4A/282P Record No 1 at 1900 GMT Day 238 1982
	Record No 3998 at 0800 GMT Day 040 1983
Comments	TG292 batteries failed before recovery.
	Instrumental drift large (300 mb). TG4A/282 sampling
	interval one hour. Temperature/pressure interlaced
	every half hour. Integration time 27 seconds.
	Instrumental drift small (40 mb).

TABLE 8

CONSLEX STATION C4/1,C4/2 LAT. 59 11.8N LONG. 07 41.3W
TELEOST TG292/1 55 CONSTANTS + 2 RELATED (SCOLPAIG BAY)
INITIAL OBS. 0000 GMT DAY 236 1982 FINAL OBS. 0500 GMT DAY 40 1983
OBS. MEAN=0.1001D 03 SD=0.7358D 02 RES.M=0.1968D-04 SD=0.6436D 01
AANDERAA TG4A/282/3 55 CONSTANTS + 3 RELATED TO YN
INITIAL OBS. 2000 GMT DAY 235 1982 FINAL OBS. 0700 GMT DAY 43 1983
OBS. MEAN=0.1001D 03 SD=0.7349D 02 RES.M=0.2024D-03 SD=0.4831D 01

RELATED CONSTUENTS (SCOLPAIG BAY)

NO	REL CONST	REF CONST	TG292 H (MBS)	TG292 G (DEGREES)	TG4A/282 H (MBS)	TG4A/282 G (DEGREES)
1	PI1	K1	0.144	54.073	-	-
2	T2	S2	2.151	221.153	-	-

RELATED CONSTITUENTS YN

1	PI1	K1	-	-	0.22	102.729
2	S1	K1	-	-	0.53	75.729
3	T2	S2	-	-	1.98	221.836

MAJOR CONSTITUENTS

1	Z0	100.411	0.0	99.95	0.0
2	SSA	4.374	293.542	0.38	217.160
3	MM	3.250	193.632	1.97	191.792
4	MSF	1.425	338.450	0.60	349.262
5	MF	2.470	154.935	1.89	162.497
6	2Q1	0.701	256.205	0.73	257.874
7	SIG1	0.758	285.363	0.93	290.080
8	Q1	2.870	322.691	2.74	322.645
9	RO1	0.436	294.934	0.50	304.337
10	O1	8.087	9.441	8.00	8.215
11	MP1	0.496	155.789	0.24	178.777
12	M1	1.115	346.291	0.88	356.332
13	CHI1	0.563	45.882	0.43	94.046
14	P1	2.393	140.808	2.64	136.505
15	K1	9.570	149.873	9.19	146.829
16	PHI1	0.477	175.572	0.47	209.502
17	TH1	0.290	246.247	0.21	248.012
18	J1	0.523	193.695	0.63	178.001
19	SO1	0.132	36.451	0.27	327.882
20	OO1	0.228	228.561	0.46	226.026
21	OQ2	0.250	102.504	0.22	119.509
22	MNS2	0.738	115.923	0.80	107.022
23	2N2	2.481	154.000	2.38	151.146
24	MU2	3.606	140.558	3.85	138.788
25	N2	18.949	171.578	19.14	171.296
26	NU2	3.623	174.279	3.84	174.887
27	OP2	0.393	30.898	0.19	4.730
28	M2	93.891	192.963	94.21	193.293

NO	NAME	TG292		TG4A/282	
		H (MBS)	G (DEGREES)	H (MBS)	G (DEGREES)
29	MKS2	0.038	147.961	0.22	107.908
30	LAM2	0.496	217.967	0.50	206.724
31	L2	2.369	207.474	2.49	204.535
32	S2	35.857	226.253	36.03	226.536
33	K2	10.843	223.804	10.88	223.943
34	MSN2	0.232	182.221	0.11	208.054
35	KJ2	0.568	49.560	0.65	59.902
36	2SM2	0.032	124.068	0.24	105.396
37	MO3	0.346	85.250	0.31	98.737
38	M3	0.884	107.533	0.81	107.115
39	SO3	0.104	189.158	0.10	260.338
40	MK3	0.212	217.670	0.21	188.695
41	SK3	0.252	238.102	0.23	202.417
42	MN4	0.140	341.887	0.26	321.156
43	M4	0.325	44.978	0.35	45.863
44	SN4	0.053	119.635	0.12	130.967
45	MS4	0.362	193.385	0.42	211.051
46	MK4	0.158	188.896	0.12	194.777
47	S4	0.095	343.876	0.14	317.374
48	SK4	0.182	320.927	0.15	290.579
49	2MN6	0.215	133.330	0.36	109.827
50	M6	0.413	148.037	0.46	154.875
51	MSN6	0.101	134.993	0.13	139.443
52	2MS6	0.417	188.649	0.31	199.946
53	2MK6	0.122	185.410	0.18	197.979
54	2SM6	0.104	212.395	0.04	162.102
55	MSK6	0.052	197.500	0.02	313.680

A1.8 STATION D1

Pressure Recorder	STATION D1 West Shetland Shelf. CONSLEX 82/83.
Position.	Aug/82-Dec/82. Lat. 59 38.7N Long. 06 00.5W
Water Depth.	200 metres
Pressure Recorder Details	Teleost TG287P Digiquartz
	TG287T Platinum Resistance temperature sensor
Time of Deployment.	In water 1454 GMT Day 239 1982
	On sea bed 1458 GMT
	Redeployed Day 034 1983
	In water 1443 GMT Day 034 1983
	On sea bed 1445 GMT
Time of recovery.	On surface at 1212 GMT Day 044 1983
Comments.	Instrument came ashore in the Shetlands.
	Redeployed for a short period.
	CTD cast No 16 at 1344 MT Day 239 1982

Sampling Interval	D1/1 and D1/2 15.00 minutes.
Temperature Data	Record No 105 at 1507.5 GMT Day 239 1982
	Record No 7902 at 2022.5 GMT Day 320 1982
	Record No 16 at 1637.5 GMT Day 034 1983
	Record No 957 at 1152.5 GMT Day 044 1983
Pressure Data	Record No 105 at 1507.5 GMT Day 239 1982
	Record No 7902 at 2022.5 GMT Day 320 1982
	Record No 16 at 1637.5 GMT Day 034 1983
	Record No 957 at 1152.5 GMT Day 044 1983
Drift Free Data	Record No 20 at 1900 GMT Day 239 1982
	Record No 1961 at 1600 GMT Day 320 1982
	Record No 22 at 2100 GMT Day 034 1983
	Record No 249 at 0800 GMT Day 044 1983
Tidal Analysis	TIRA 91 days. 27 major and 8 related constituents from YN analysis.
	Recorded variances 61.989 mb^2 and 4257.505 mb^2
	Residual variances 0.730 mb^2 and 0.860 mb^2
Low Frequency	Record No 1 at 1800 GMT Day 242 1982
	Record No 1800 at 1700 GMT Day 317 1982
	Record No 1 at 2000 GMT Day 037 1983
	Record No 86 at 0900 GMT Day 041 1983
Comments	Tidal analysis includes the 10 days of data from D1/2.

TABLE 9

STATION D1 CONSLEX LAT. 59 38.7 LONG. 06 00.5W
TELEOST TG287/4
27 CONSTANTS + 8 RELATED TO YN
INITIAL OBSERVATION 1900 GMT DAY 239 1982
FINAL OBSERVATION 0800 GMT DAY 44 1983
OBSERVED MEAN=0.9982D 02 STANDARD DEVIATION=0.6683D 01
RESIDUAL MEAN=0.1713D-02 STANDARD DEVIATION=0.3253D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.22	101.878
2	P1	K1	2.63	136.778
3	S1	K1	0.52	74.878
4	PHI1	K1	0.19	170.178
5	2N2	N2	2.37	172.441
6	NU2	N2	3.22	192.541
7	T2	S2	1.81	237.808
8	K2	S2	9.47	240.208

MAJOR CONSTITUENTS

1	Z0	99.67	0.0
2	MM	1.62	213.434
3	MSF	1.22	260.649
4	Q1	2.42	331.183
5	O1	7.59	10.163
6	M1	0.95	325.952
7	K1	8.99	145.978
8	J1	0.53	191.979
9	OO1	0.34	245.000
10	MU2	3.37	154.761
11	N2	17.21	188.241
12	M2	85.69	209.759
13	L2	2.05	221.663
14	S2	32.87	242.508
15	2SM2	0.28	228.245
16	MO3	0.31	93.783
17	M3	0.97	124.435
18	MK3	0.29	211.379
19	MN4	0.25	346.753
20	M4	0.45	309.463
21	SN4	0.11	169.402
22	MS4	0.77	294.166
23	2MN6	0.24	102.050
24	M6	0.40	132.466
25	MSN6	0.20	130.180
26	2MS6	0.57	162.694
27	2SM6	0.22	184.022

A1.9 STATION E3

Pressure Recorder	STATION E3 Faroe Shetland Channel CONSLEX 82/83
Position.	Sep/82-Apr/83. Lat. 60 31.7N Long. 04 58.8W
Water Depth.	1027 metres
Pressure Recorder Details	MARK 4 Tide Gauge No 1.
	2T10 Platinum Resistance temperature sensor
	B/H2 Bell-Howell Thin Film Strain Gauge.
	DQ2262 Digiquartz
Time of Deployment.	In water 1814 GMT Day 282 1982
	On sea bed 1833 GMT
Time of recovery.	On surface at 1634 GMT Day 082 1983
Comments.	CTD cast No 11 at 1823 GMT Day 282 1982

Sampling Interval	E3 3.750014 minutes
Temperature Data	2T10 Record No 7024 at 1858.223 GMT Day 282 1982
	Record No 70339 at 1610.359 GMT Day 082 1983
Pressure Data	B/H2 Record No 7024 at 1858.223 GMT Day 282 1982
	Record No 69008 at 0459.090 GMT Day 079 1983
	DQ2262 Record No 7024 at 1858.223 GMT Day 282 1982
	Record No 70339 at 1610.359 GMT Day 082 1983
Drift Free Data	B/H2 Record No 24 at 2300 GMT Day 282 1982
	Record No 3890 at 0100 GMT Day 079 1983
	DQ2262 Record No 24 at 2300 GMT Day 282 1982
	Record No 3973 at 1200 GMT Day 082 1983
Tidal Analysis	TIRA 165 days. 55 major and 2 related constituents from Lerwick analysis 1966-1971.
	* Recorded variances 66.766 mb^2 and 2120.500 mb^2
	* Residual Variances 0.621 mb^2 and 0.217 mb^2
Low Frequency	B/H2 Record No1 at 2200 GMT Day 285 1982
	Record No 3725 at 0200 GMT Day 076 1983
	DQ2262 Record No 1 at 2200 GMT Day 285 1982
	Record No 3808 at 1300 GMT Day 079 1983
Comments	Battery supplies on B/H2 ran down before recovery.

* Values quoted for sensor DQ2262.

TABLE 10

STATION E3 CONSLEX LAT. 60 31.7N LONG. 04 58.8W
DQ2262 (CHANNEL 6)
55 CONSTANTS + 2 RELATED TO LERWICK 1966-1971 ANALYSIS
INITIAL OBSERVATION 2300 GMT DAY 282 1982
FINAL OBSERVATION 1200 GMT DAY 82 1983
OBSERVED MEAN=0.9992D 02 STANDARD DEVIATION=0.4709D 02
RESIDUAL MEAN=0.1503D-03 STANDARD DEVIATION=0.5586D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.21	81.776
2	T2	S2	1.09	242.705

MAJOR CONSTITUENTS

1	Z0	100.18	0.0
2	SSA	2.53	32.906
3	MM	0.24	304.664
4	MSF	0.85	265.521
5	MF	1.00	260.589
6	2Q1	0.46	251.246
7	SIG1	0.61	278.566
8	Q1	2.07	322.601
9	RO1	0.52	296.004
10	O1	6.20	6.943
11	MP1	0.12	13.539
12	M1	0.76	351.358
13	CHI1	0.22	100.584
14	P1	2.70	130.147
15	K1	8.50	141.296
16	PHI1	0.37	242.546
17	TH1	0.21	217.439
18	J1	0.44	175.498
19	SO1	0.25	63.008
20	OO1	0.21	222.059
21	OQ2	0.05	175.715
22	MNS2	0.62	137.307
23	2N2	1.47	187.665
24	MU2	2.63	169.541
25	N2	12.13	203.299
26	NU2	2.64	208.962
27	OP2	0.35	61.423
28	M2	59.40	225.183
29	MKS2	0.19	157.032
30	LAM2	0.32	274.834
31	L2	1.50	233.206
32	S2	22.52	257.305
33	K2	6.78	255.486
34	MSN2	0.04	206.154
35	KJ2	0.36	97.175
36	2SM2	0.09	210.651

	NAME	H (MBS)	G (DEGREES)
37	MO3	0.15	106.846
38	M3	0.74	133.315
39	SO3	0.12	230.620
40	MK3	0.19	210.011
41	SK3	0.14	198.428
42	MN4	0.22	314.764
43	M4	0.32	321.281
44	SN4	0.05	8.027
45	MS4	0.42	307.673
46	MK4	0.21	301.594
47	S4	0.16	30.827
48	SK4	0.15	349.011
49	2MN6	0.24	128.447
50	M6	0.44	146.556
51	MSN6	0.15	129.871
52	2MS6	0.54	181.958
53	2MK6	0.13	174.749
54	2SM6	0.14	210.555
55	MSK6	0.08	187.147

A1.10 STATION F1

Pressure Recorder	STATION F1 West Shetland Shelf. CONSLEX 82/83.
Position.	Oct/82-Mar/83. Lat. 61 07.9N Long. 01 33.1W
Water Depth.	185 metres
Pressure Recorder Details	Teleost TG284P Bell-Howell Strain Gauge.
	TG284T Platinum Resistance temperature sensor
Time of Deploymnt.	In water 1929 GMT Day 273 1982
	On sea bed 1932 GMT
Time of recovery.	On surface at 1119 GMT Day 075 1983
Comments.	No CTD data available.

Sampling Interval	TG284P,TG284T 14.999963 minutes.
Temperature Data	Record No 46 at 1952.498 GMT Day 276 1982
	Record No 15755 at 1106.918 GMT Day 075 1983
Pressure Data	Record No 46 at 1952.498 GMT Day 276 1982
	Record No 15755 at 1106.918 GMT Day 075 1983
Drift Free Data	Record No 1 at 0000 GMT Day 277 1982
	Record No 3920 at 0700 GMT Day 075 1983
Tidal Analysis.	TIRA 163 days. 55 major and 2 related
	constituents from Lerwick 1966-1971 analysis.
	Recorded variances 64.182 mb^2 1896.259 mb^2
	Residual variances 0.765 mb^2 0.174 mb^2
Low Frequency	TG284P Record No 1 at 2300 GMT Day 279 1982
	Record No 3778 at 0800 GMT Day 072 1983
Comments	Instrumental Drift (30 mb)

TABLE 11

STATION F1 CONSLEX LAT. 61 07.9N LONG. 01 33.1W
TELEOST TG284
55 CONSTANTS + 2 RELATED TO LERWICK 1966-1971 ANALYSIS
INITIAL OBSERVATION 0000 GMT DAY 277 1982
FINAL OBSERVATION 0700 GMT DAY 75 1983
OBSERVED MEAN=0.1001D 03 STANDARD DEVIATION=0.4467D 02
RESIDUAL MEAN=0.4782D-02 STANDARD DEVIATION=0.5536D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.19	94.665
2	T2	S2	0.98	285.553

MAJOR CONSTITUENTS

1	Z0	100.18	0.0
2	SSA	1.05	21.880
3	MM	0.82	290.362
4	MSF	0.34	243.273
5	MF	2.39	176.466
6	2Q1	0.42	260.209
7	SIG1	0.55	293.799
8	Q1	2.17	334.873
9	RO1	0.47	319.347
10	O1	6.79	20.282
11	MP1	0.10	91.468
12	M1	0.77	352.226
13	CHI1	0.15	83.950
14	P1	2.55	142.560
15	K1	7.80	154.185
16	PHI1	0.31	230.148
17	TH1	0.13	315.336
18	J1	0.48	187.759
19	SO1	0.16	27.111
20	OO1	0.26	249.855
21	OQ2	0.17	197.501
22	MNS2	0.45	183.018
23	2N2	1.48	223.027
24	MU2	2.07	215.201
25	N2	11.46	245.171
26	NU2	2.47	246.351
27	OP2	0.25	88.835
28	M2	56.23	266.904
29	MKS2	0.21	188.133
30	LAM2	0.33	277.871
31	L2	1.50	276.341
32	S2	20.21	300.153
33	K2	6.12	297.438
34	MSN2	0.06	155.807
35	KJ2	0.29	133.806
36	2SM2	0.07	201.364

	NAME	H (MBS)	G (DEGREES)
37	MO3	0.16	166.608
38	M3	0.53	148.660
39	SO3	0.11	252.379
40	MK3	0.10	285.536
41	SK3	0.05	88.746
42	MN4	0.13	345.151
43	M4	0.11	342.995
44	SN4	0.01	279.335
45	MS4	0.34	317.791
46	MK4	0.14	322.008
47	S4	0.15	51.269
48	SK4	0.09	28.324
49	2MN6	0.25	179.531
50	M6	0.40	208.163
51	MSN6	0.10	181.462
52	2MS6	0.38	244.385
53	2MK6	0.10	248.138
54	2SM6	0.08	262.851
55	MSK6	0.05	255.751

A1.11 STATION F3

Pressure Recorder	STATION F3 Faroe Shetland Channel CONSLEX 82/83
Position.	Oct/82-Mar/83. Lat. 61 24.2N Long. 02 05.6W
Water Depth.	1025 metres
Pressure Recorder Details	MARK 4 Tide Gauge No 2.
	2T2 Platinum Resistance temperature sensor
	B/H5 Bell-Howell Thin Film Strain Gauge.
	DQ3845 Digiquartz
Time of Deployment.	In water 0048 GMT Day 277 1982
	On sea bed 0107 GMT
Time of recovery.	On surface at 2221 GMT Day 074 1983
Comments.	CTD cast No 4 at 0341 GMT Day 277 1982

Sampling Interval	F3 3.7500166 minutes
Temperature Data	2T3 Record No 4793 at 0116.954 GMT Day 277 1982
	Record No 67332 at 2159.235 GMT Day 074 1983
Pressure Data	B/H5 Record No 4793 at 0116.954 GMT Day 277 1982
	Record No 58224 at 0444.084 GMT Day 051 1983
	DQ3845 Record No 4793 at 0116.954 GMT Day 277 1982
	Record No 67332 at 2159.235 GMT Day 074 1983
Drift Free Data	B/H5 Record No 7 at 0600 GMT Day 277 1982
	Record No 3337 at 0000 GMT Day 051 1983
	DQ3845 Record No 7 at 0600 GMT Day 277 1982
	Record No 3907 at 1800 GMT Day 074 1983
Tidal Analysis	TIRA 162 days. DQ3845 55 major and 2 related
	constituents from Lerwick analysis 1966-1971.
	* Recorded variances 65.841 mb^2 and 1520.698 mb^2
	* Residual Variances 0.818 mb^2 and 0.148 mb^2
Low Frequency	B/H5 Record No 1 at 0500 GMT Day 280 1982
	Record No 3189 at 0100 GMT Day 048 1983
	DQ3845 Record No 1 at 0500 GMT Day 280 1982
	Record No 3759 at 1900 GMT Day 071 1983
Comments	Battery supplies on B/H5 ran down before recovery.
	Sensor much noisier than DQ3845 for first 10 days.
	* Values quoted for sensor DQ3845. Drift small (12 mb)

TABLE 12

STATION F3 CONSLEX LAT. 61 24.2N LONG. 02 05.6W
DQ3845
55 CONSTANTS + 2 RELATED (EQUILIBRIUM-6MONTHS)
INITIAL OBSERVATION 0600 GMT DAY 277 1982
FINAL OBSERVATION 1800 GMT DAY 74 1983
OBSERVED MEAN=0.9990D 02 STANDARD DEVIATION=0.4021D 02
RESIDUAL MEAN=0.1059D-04 STANDARD DEVIATION=0.4180D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.1996	90.993
2	T2	S2	0.8819	282.525

MAJOR CONSTITUENTS

1	Z0	100.0671	0.0
2	SSA	1.4648	23.779
3	MM	0.5637	291.510
4	MSF	0.7913	230.961
5	MF	1.5048	212.537
6	2Q1	0.4364	246.537
7	SIG1	0.5698	278.957
8	Q1	2.0417	337.080
9	RO1	0.4368	301.457
10	O1	6.5707	19.504
11	MP1	0.1141	57.742
12	M1	0.7498	345.958
13	CHI1	0.2798	54.089
14	P1	2.7383	138.791
15	K1	8.1688	150.513
16	PHI1	0.4213	226.878
17	TH1	0.2478	292.193
18	J1	0.3900	179.542
19	SO1	0.2033	7.192
20	OO1	0.3079	242.509
21	OQ2	0.1470	191.985
22	MNS2	0.4417	183.543
23	2N2	1.3502	220.930
24	MU2	1.8272	210.621
25	N2	10.2808	242.001
26	NU2	2.2540	245.046
27	OP2	0.2013	89.335
28	M2	50.5875	264.099
29	MKS2	0.1280	201.403
30	LAM2	0.3561	287.928
31	L2	1.3428	274.504
32	S2	18.1540	297.125
33	K2	5.4354	295.364
34	MSN2	0.0813	174.498
35	KJ2	0.2561	121.961
36	2SM2	0.0693	203.669

	NAME	H (MBS)	G (DEGREES)
37	MO3	0.1390	167.117
38	M3	0.5028	142.506
39	SO3	0.1028	251.529
40	MK3	0.0822	276.213
41	SK3	0.0603	111.626
42	MN4	0.1074	355.782
43	M4	0.0876	49.530
44	SN4	0.0070	261.509
45	MS4	0.2389	294.368
46	MK4	0.1106	297.519
47	S4	0.1195	44.431
48	SK4	0.0848	2.828
49	2MN6	0.1909	176.836
50	M6	0.3024	202.585
51	MSN6	0.0748	173.359
52	2MS6	0.2909	233.662
53	2MK6	0.0793	237.937
54	2SM6	0.0629	253.165
55	MSK6	0.0433	241.964

A1.12 STATION G1

Pressure Recorder	STATION G1 Shetland Shelf. CONSLEX 82/83.
Position.	Oct/82-Mar/83. Lat. 61 30.0N Long. 00 01.3W
Water Depth.	190 metres
Pressure Recorder Details	Teleost TG289P Digiquartz
	TG289T Thermistor temperature sensor
Time of Deployment.	In water 2114 GMT Day 278 1982
	On sea bed 2117 GMT
Time of recovery.	On surface at 0734 GMT Day 076 1983
Comments.	Evidence of trawler damage to Teleost frame
	Cable marks on all four legs, outer frame
	twisted. CTD cast No 8 at 2228 GMT Day 076 1983

Sampling Interval	G1 15.000018 minutes
Temperature Data	TG289T Record No 245 at 2137.504 GMT Day 278 1982
	Record No 15834 at 0252.785 GMT Day 076 1983
Pressure Data	TG289P Record No 245 at 2137.504 GMT Day 278 1982
	Record No 15834 at 0252.785 GMT Day 076 1983
Drift Free Data	TG289P Record No 3 at 0200 GMT Day 279 1982
	Record No 3892 at 0300 GMT Day 076 1983
Tidal Analysis	TIRA 162 days. 55 major and 2 related constituents from Lerwick analysis 1966-1971.
	Recorded variances 63.104 mb^2 and 1636.630 mb^2
	Residual variances 0.881 mb^2 and 0.153 mb^2
Low Frequency Data	Record No 1 at 0100 GMT Day 282 1982
	Record No 3748 at 0400 GMT Day 073 1983
Comments	This instrument was moved to a new position at record 11323 which was evident from a datum shift in the data. The data before and after the change are of good quality. The analysis covers both sections of the data as the change in position was small. Instrumental drift zero.

TABLE 13

STATION G1 CONSLEX LAT. 61 30.0N LONG. 00 01.3E
TELEOST TG289
55 CONSTANTS + 2 RELATED TO LERWICK ANALYSIS 1966-1971
INITIAL OBSERVATION 0200 GMT DAY 279 1982
FINAL OBSERVATION 0100 GMT DAY 76 1983
OBSERVED MEAN=0.7150D 02 STANDARD DEVIATION=0.4196D 02
RESIDUAL MEAN=-0.1251D-02 STANDARD DEVIATION=0.6432D 01

RELATED CONSTITUENTS

NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.18	97.909
2	T2	S2	0.91	301.395

MAJOR CONSTITUENTS

1	Z0	70.95	0.0
2	SSA	4.79	171.420
3	MM	0.99	304.204
4	MSF	0.75	236.448
5	MF	2.67	185.076
6	2Q1	0.37	261.666
7	SIG1	0.38	285.075
8	Q1	2.22	342.066
9	RO1	0.48	323.705
10	O1	7.16	25.810
11	MP1	0.07	356.746
12	M1	0.72	347.413
13	CHI1	0.25	58.764
14	P1	2.50	146.522
15	K1	7.31	157.429
16	PHI1	0.31	248.908
17	TH1	0.21	346.490
18	J1	0.58	199.827
19	SO1	0.29	24.884
20	OO1	0.45	266.490
21	OQ2	0.18	199.195
22	MNS2	0.42	203.533
23	2N2	1.43	237.706
24	MU2	1.88	233.360
25	N2	10.70	259.709
26	NU2	2.29	260.868
27	OP2	0.22	81.920
28	M2	52.55	281.482
29	MKS2	0.23	223.519
30	LAM2	0.35	288.991
31	L2	1.46	291.536
32	S2	18.76	315.995
33	K2	5.66	313.552
34	MSN2	0.09	187.847
35	KJ2	0.27	156.722
36	2SM2	0.12	213.026

	NAME	H (MBS)	G (DEGREES)
37	MO3	0.15	205.694
38	M3	0.42	160.548
39	SO3	0.10	290.435
40	MK3	0.09	337.051
41	SK3	0.11	88.805
42	MN4	0.07	47.502
43	M4	0.14	206.759
44	SN4	0.02	50.906
45	MS4	0.36	322.780
46	MK4	0.15	335.679
47	S4	0.11	86.615
48	SK4	0.07	66.960
49	2MN6	0.24	209.862
50	M6	0.41	243.564
51	MSN6	0.08	242.217
52	2MS6	0.40	293.178
53	2MK6	0.13	299.914
54	2SM6	0.08	335.137
55	MSK6	0.05	335.611

A1.13 STATION G4

Pressure Recorder	STATION G4 Faroe Shetland Channel CONSLEX 82/83
Position.	Oct/82-Mar/83. Lat. 63 07.9N Long. 00 00.4W
Water Depth.	1579 metres
Pressure Recorder Details	MARK 4 Tide Gauge No 3.
	2T3 Platinum Resistance temperature sensor
	B/H4 Bell-Howell Thin Film Strain Gauge.
	DQ5997 Digiquartz
Time of Deployment.	In water 2105 GMT Day 277 1982
	On sea bed 2135 GMT
Time of Recovery	0600 GMT Day 077 1983
Comments.	CTD cast No 5 at 2212 GMT Day 277 1982

Sampling Interval	G4 3.7500182 minutes
Temperature Data	2T2 Record No 5099 at 2139.468 GMT Day 277 1982
	Record No 68193 at 0503.16 GMT Day 077 1983
Pressure Data	B/H4 Record No 5099 at 2139.468 GMT Day 277 1982
	Record No 68193 at 0503.116 GMT Day 077 1983
	DQ5997 Record No 5099 at 2139.468 GMT Day 277 1982
	Record No 68193 at 0503.116 GMT Day 077 1983
Drift Free Data	B/H4 Record No 3 at 0200 GMT Day 278 1982
	Record No 3938 at 0100 GMT Day 077 1983
	DQ5997 Record No 3 at 0200 GMT Day 278 1982
	Record No 3938 at 0100 GMT Day 077 1983
Tidal Analysis	TIRA 164 days DQ5997. 55 major and 2 related constituents from Lerwick analysis 1966-1971.
	* Recorded variances 59.107 mb^2 and 1184.124 mb^2
	* Residual variances 0.824 mb^2 and 0.106 mb^2
Low Frequency	B/H4 Record No 1 at 0100 GMT Day 281 1982
	Record No 3794 at 0200 GMT Day 074 1983
	DQ5997 Record No 1 at 0100 GMT Day 281 1982
	Record No 3794 at 0200 GMT Day 074 1983
Comments	* Values quoted are for sensor DQ5997.

TABLE 14

STATION G4 CONSLEX LAT. 63 07.87N LONG. 00 00.37E
DQ5997
55 CONSTANTS + 2 RELATED TO LERWICK ANALYSIS 1966-1971
INITIAL OBSERVATION 0200 GMT DAY 278 1982
FINAL OBSERVATION 0100 GMT DAY 77 1983
OBSERVED MEAN=0.9994D 02 STANDARD DEVIATION=0.3574D 02
RESIDUAL MEAN=-0.2529D-04 STANDARD DEVIATION=0.5162D 01

RELATED CONSTITUENTS

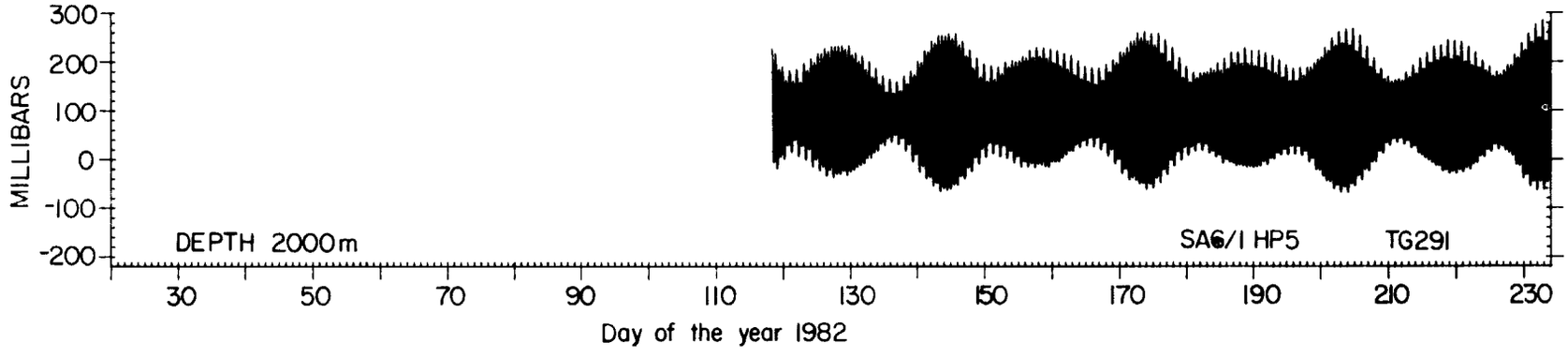
NO	REL CONST.	REF CONST.	H (MBS)	G (DEGREES)
1	PI1	K1	0.187	97.029
2	T2	S2	0.749	308.255

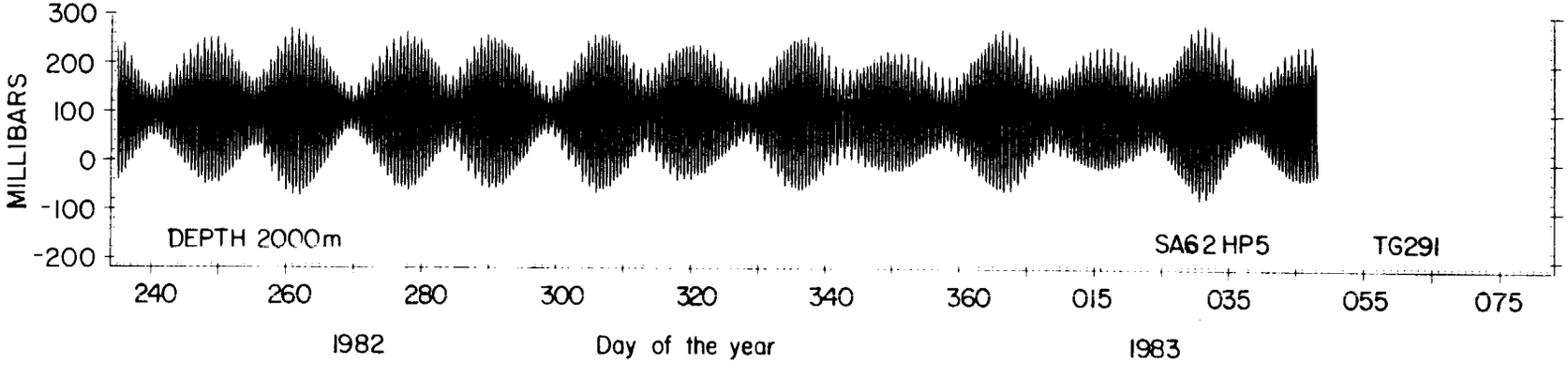
MAJOR CONSTITUENTS

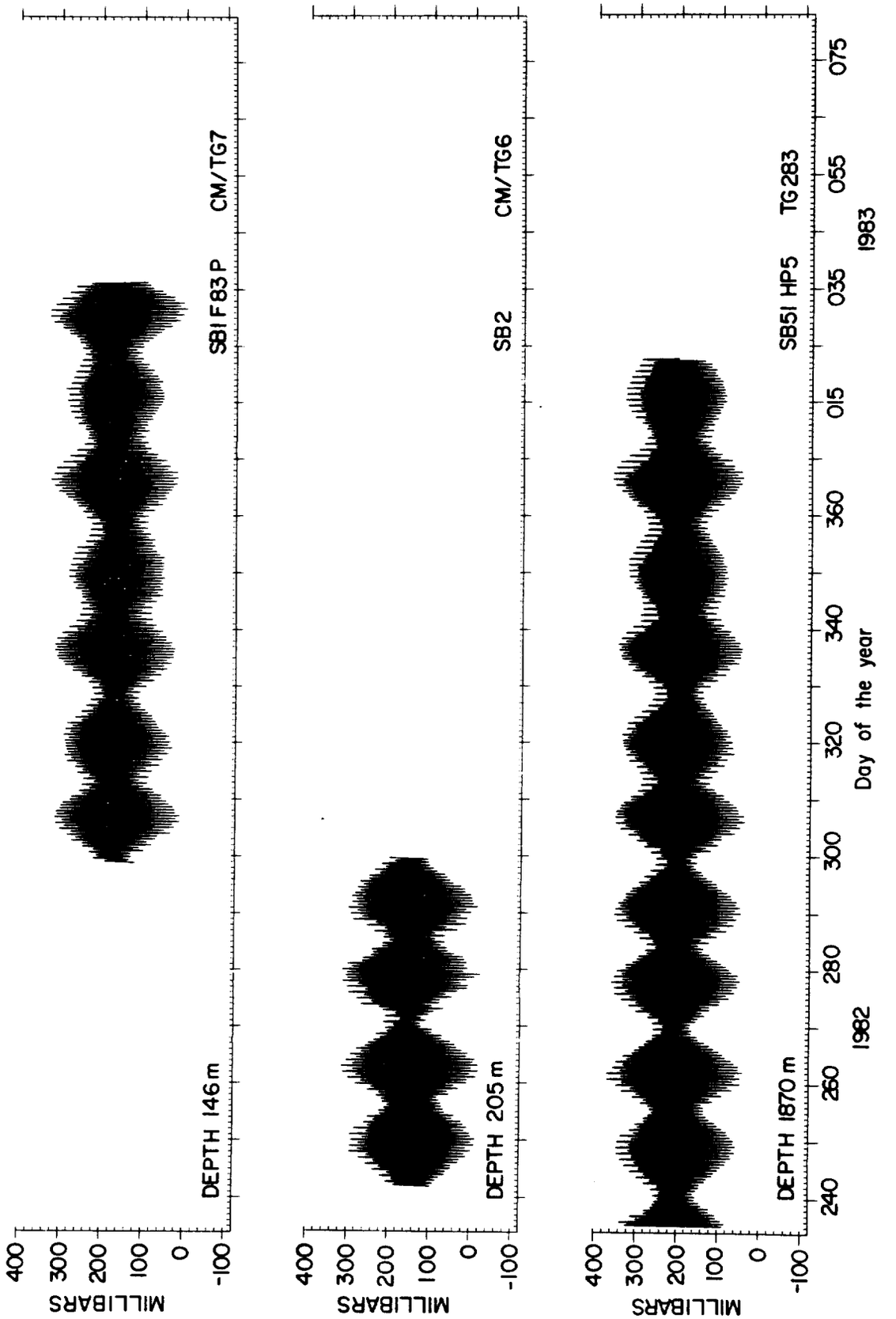
1	Z0	100.125	0.0
2	SSA	1.917	53.926
3	MM	0.528	227.164
4	MSF	1.088	197.712
5	MF	1.160	208.348
6	2Q1	0.385	260.366
7	SIG1	0.701	267.957
8	Q1	1.753	345.652
9	RO1	0.495	311.216
10	O1	6.268	35.211
11	MP1	0.207	40.476
12	M1	0.805	352.495
13	CHI1	0.398	80.203
14	P1	2.549	150.736
15	K1	7.642	156.549
16	PHI1	0.275	237.818
17	TH1	0.094	18.752
18	J1	0.471	208.861
19	SO1	0.224	42.207
20	OO1	0.348	288.559
21	OQ2	0.180	219.122
22	MNS2	0.328	207.281
23	2N2	1.246	243.312
24	MU2	1.466	236.866
25	N2	9.093	264.950
26	NU2	2.000	267.489
27	OP2	0.266	94.806
28	M2	44.724	287.713
29	MKS2	0.168	247.223
30	LAM2	0.340	299.149
31	L2	1.205	301.634
32	S2	15.426	322.855
33	K2	4.652	320.831
34	MSN2	0.073	194.419
35	KJ2	0.193	158.408
36	2SM2	0.092	217.234

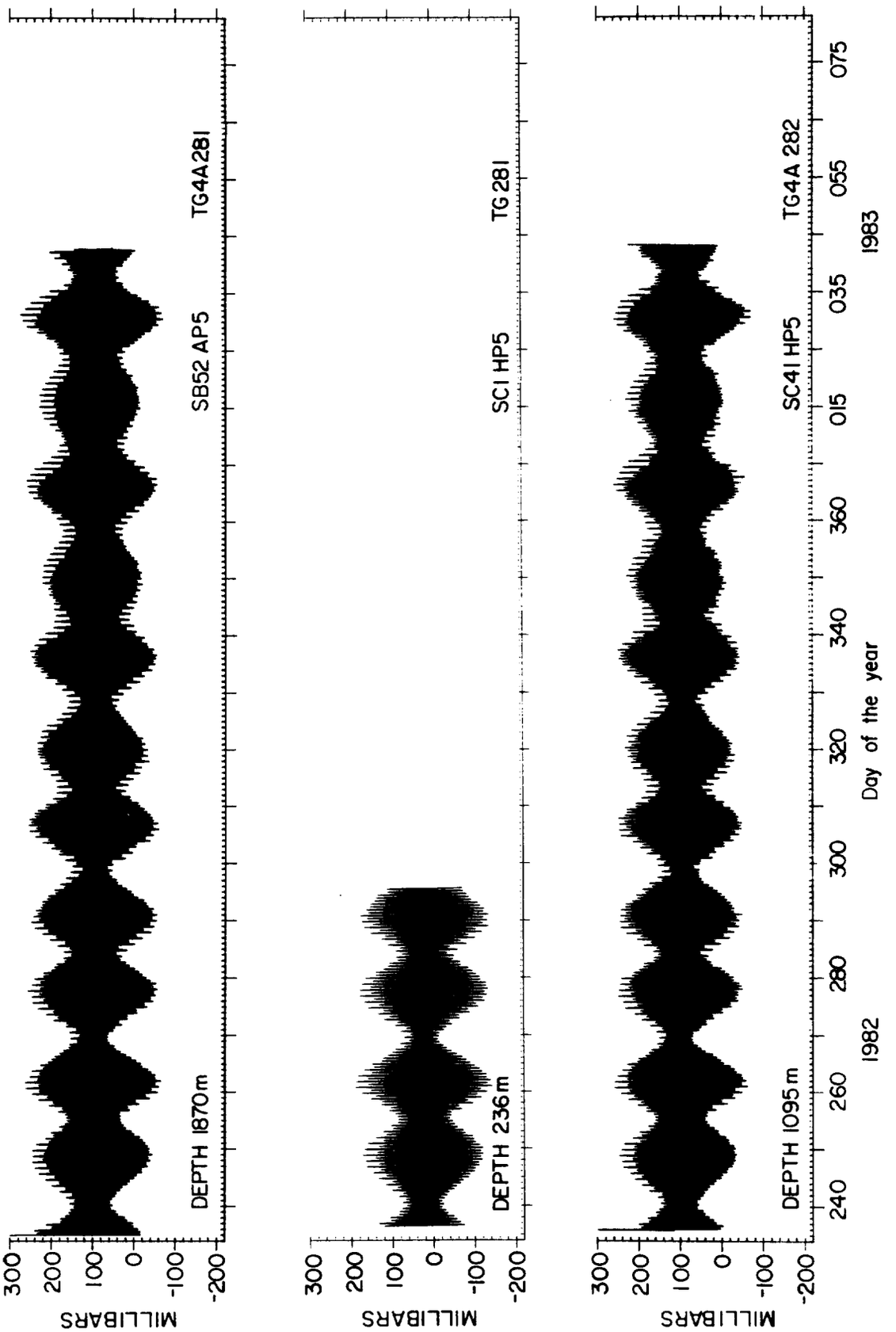
	NAME	H (MBS)	G (DEGREES)
37	MO3	0.103	205.205
38	M3	0.305	141.309
39	SO3	0.069	273.755
40	MK3	0.038	321.506
41	SK3	0.145	90.904
42	MN4	0.100	82.097
43	M4	0.271	127.747
44	SN4	0.021	243.358
45	MS4	0.197	240.156
46	MK4	0.078	253.489
47	S4	0.063	53.879
48	SK4	0.029	349.801
49	2MN6	0.121	253.540
50	M6	0.212	286.145
51	MSN6	0.046	298.327
52	2MS6	0.191	341.237
53	2MK6	0.061	340.569
54	2SM6	0.045	36.599
55	MSK6	0.021	37.479

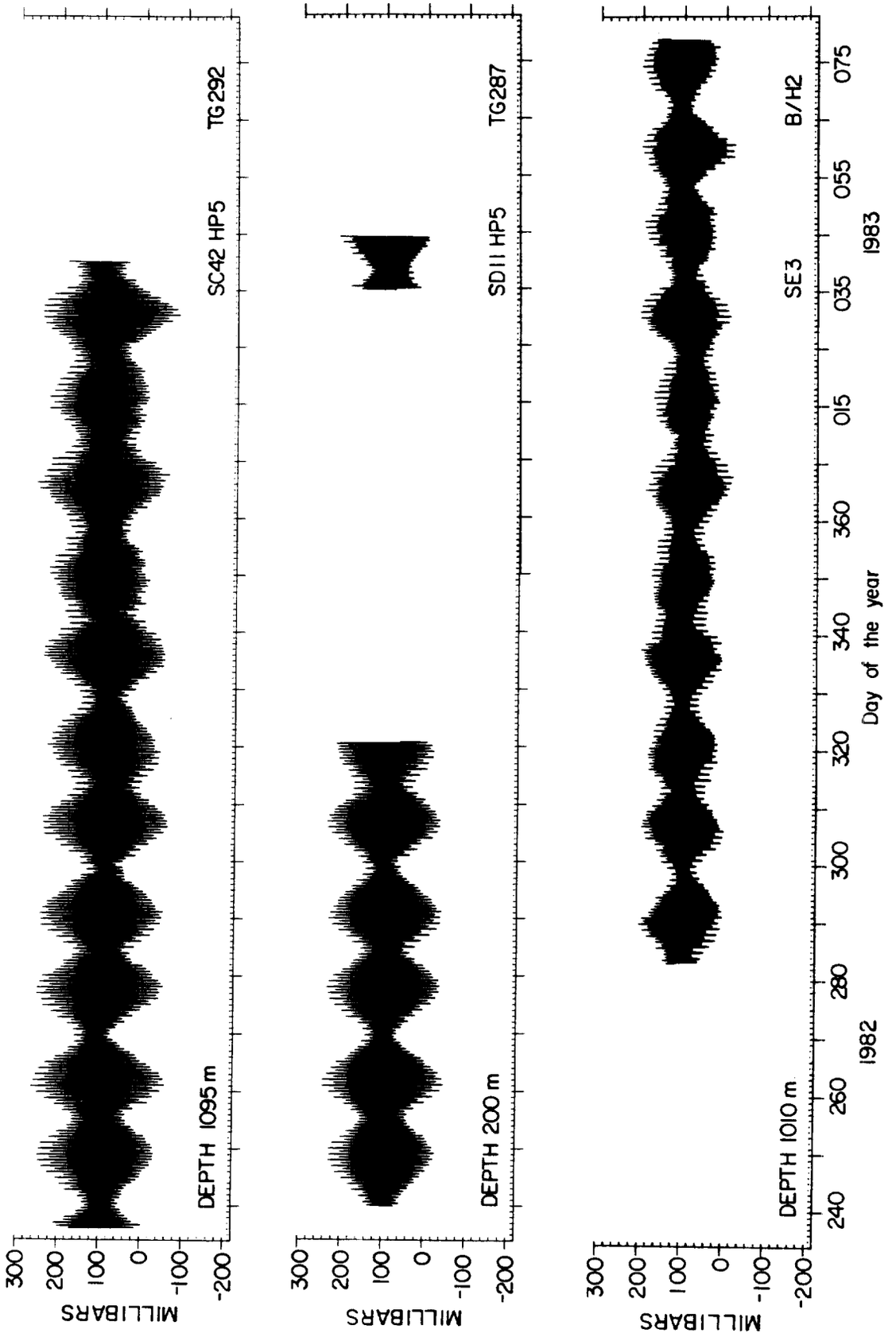
APPENDIX 2. DRIFT FREE TEMPERATURE CORRECTED PRESSURE DATA

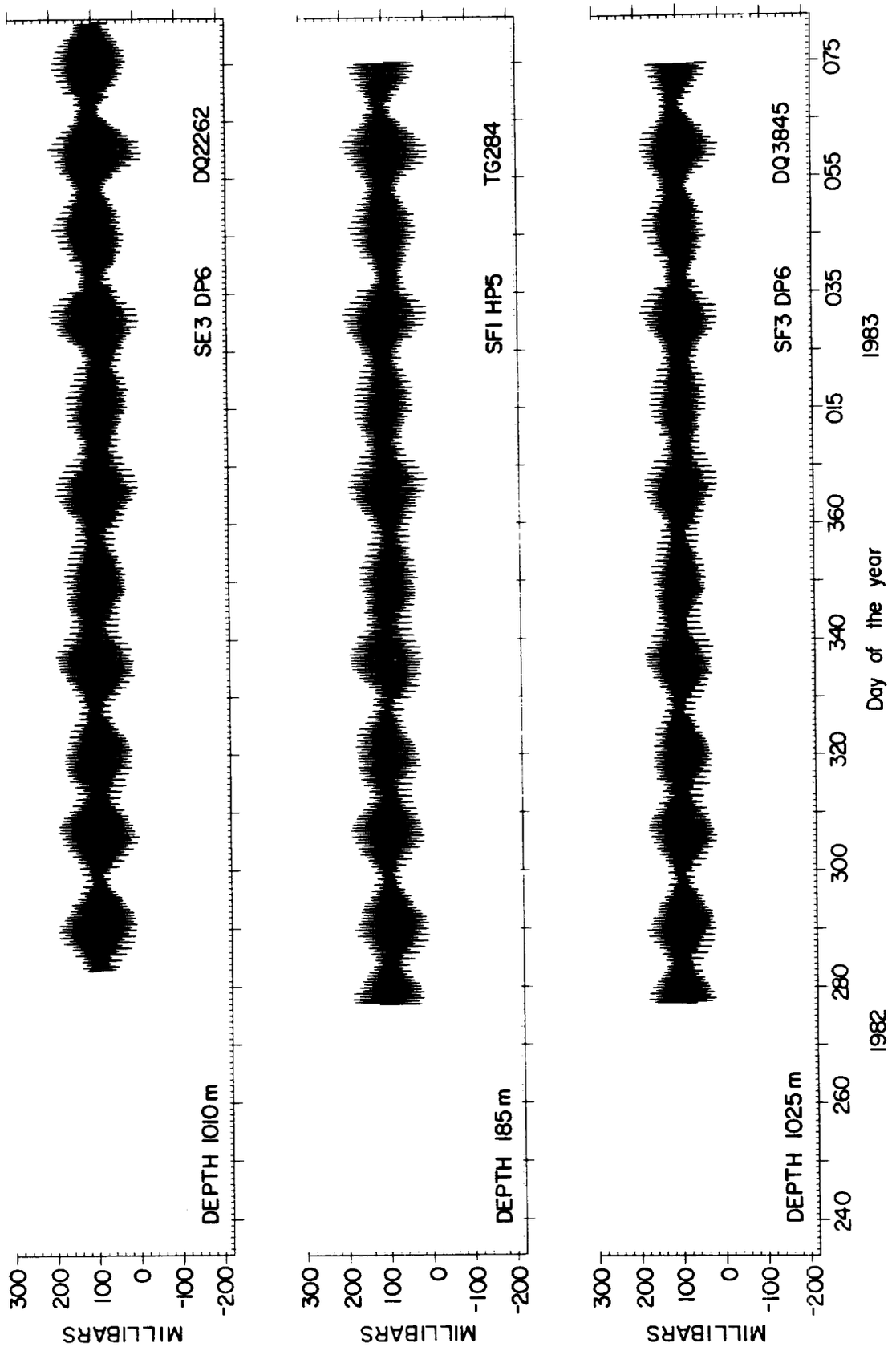


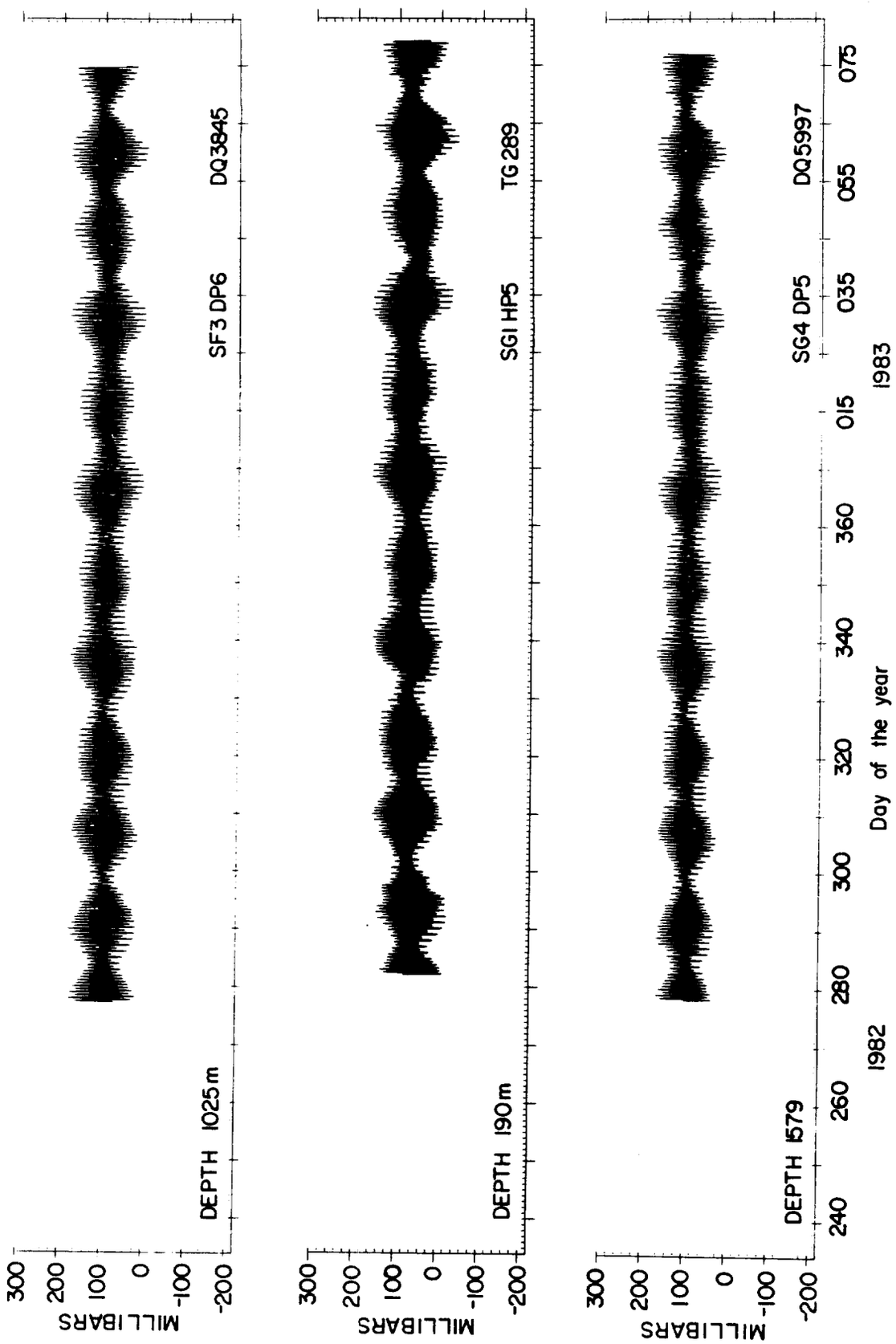



SB1 F83 P CM/TG7
DEPTH 146 m
SB2 CM/TG6
DEPTH 205 m
SB51 HP5 TG283
DEPTH 1870 m
MILLIBARS
400
300
200
100
0
-100
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year


DEPTH 1870m
SB52 AP5
TG4A281
DEPTH 236m
SC1 HP5
TG 281
DEPTH 1095m
SC41 HP5
TG4A 282
MILLIBARS
300
200
100
0
-100
-200
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year

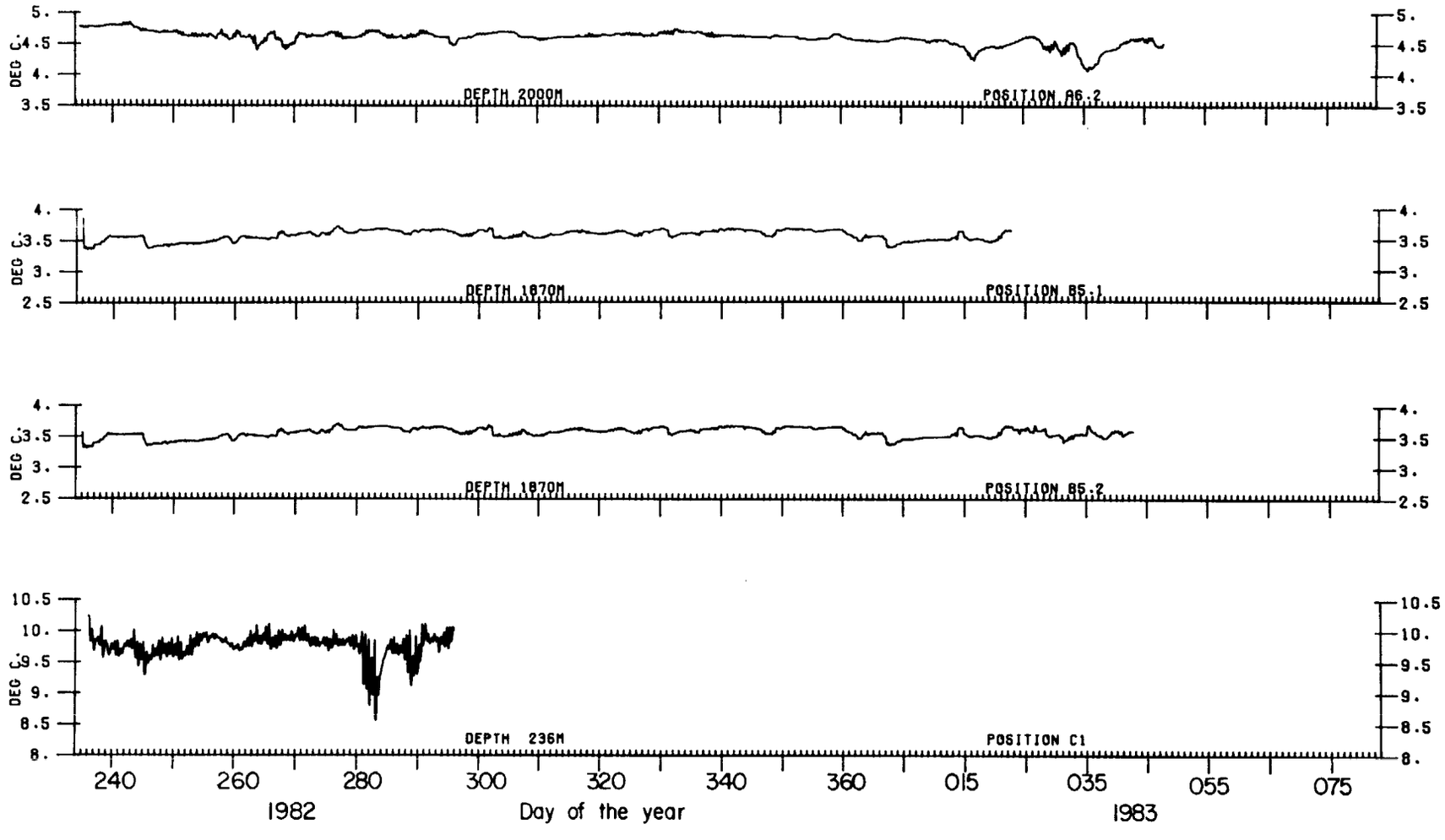

SC42 HP5 TG292
DEPTH 1095 m
SD11 HP5 TG287
DEPTH 200 m
SE3 B/H2
DEPTH 1010 m
MILLIBARS
300
200
100
0
-100
-200
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year

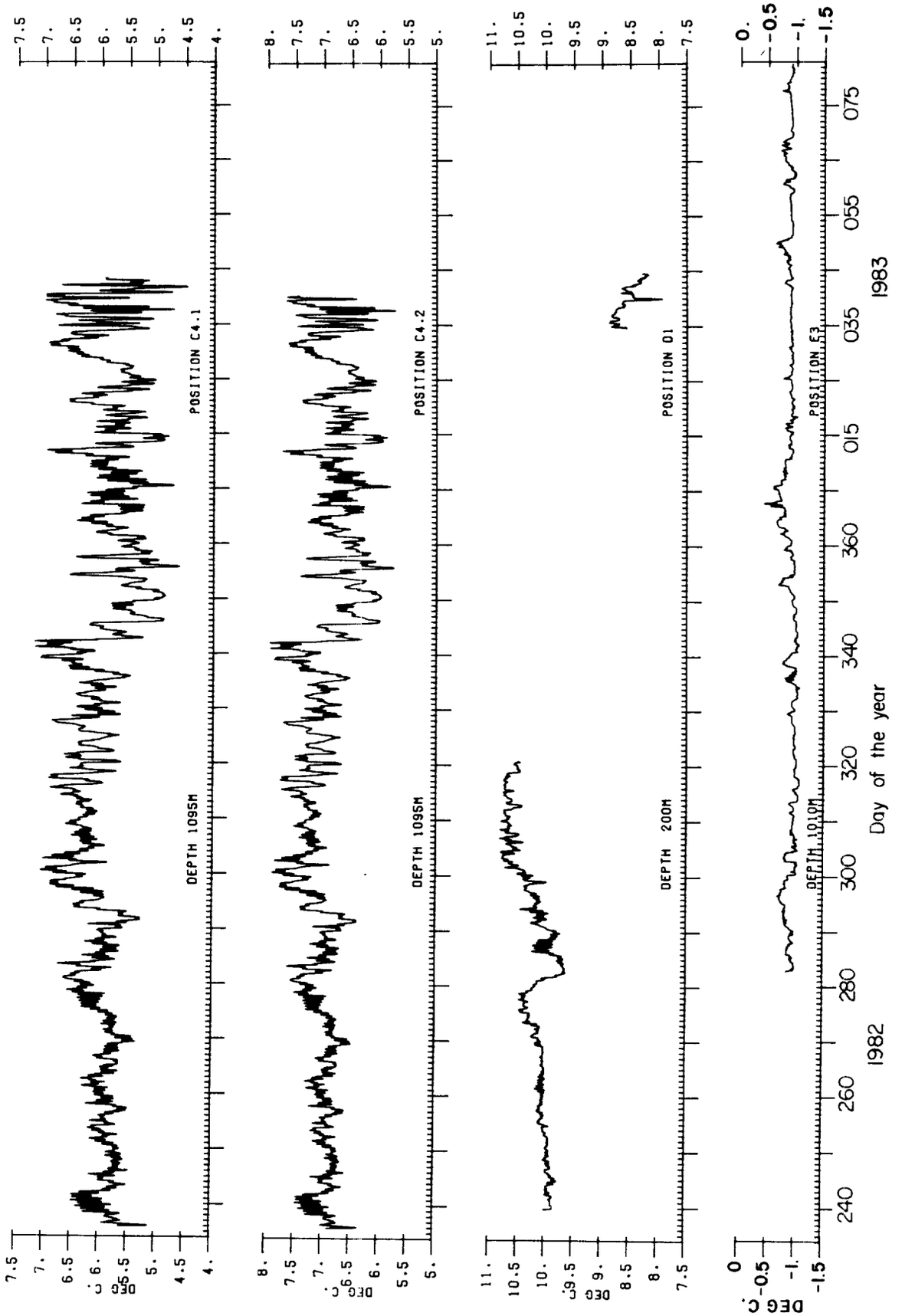

MILLIBARS
300
200
100
0
-100
-200
DEPTH 1010 m
SE3 DP6 DQ2262
DEPTH 185 m
SF1 HP5 TG284
DEPTH 1025 m
SF3 DP6 DQ3845
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year

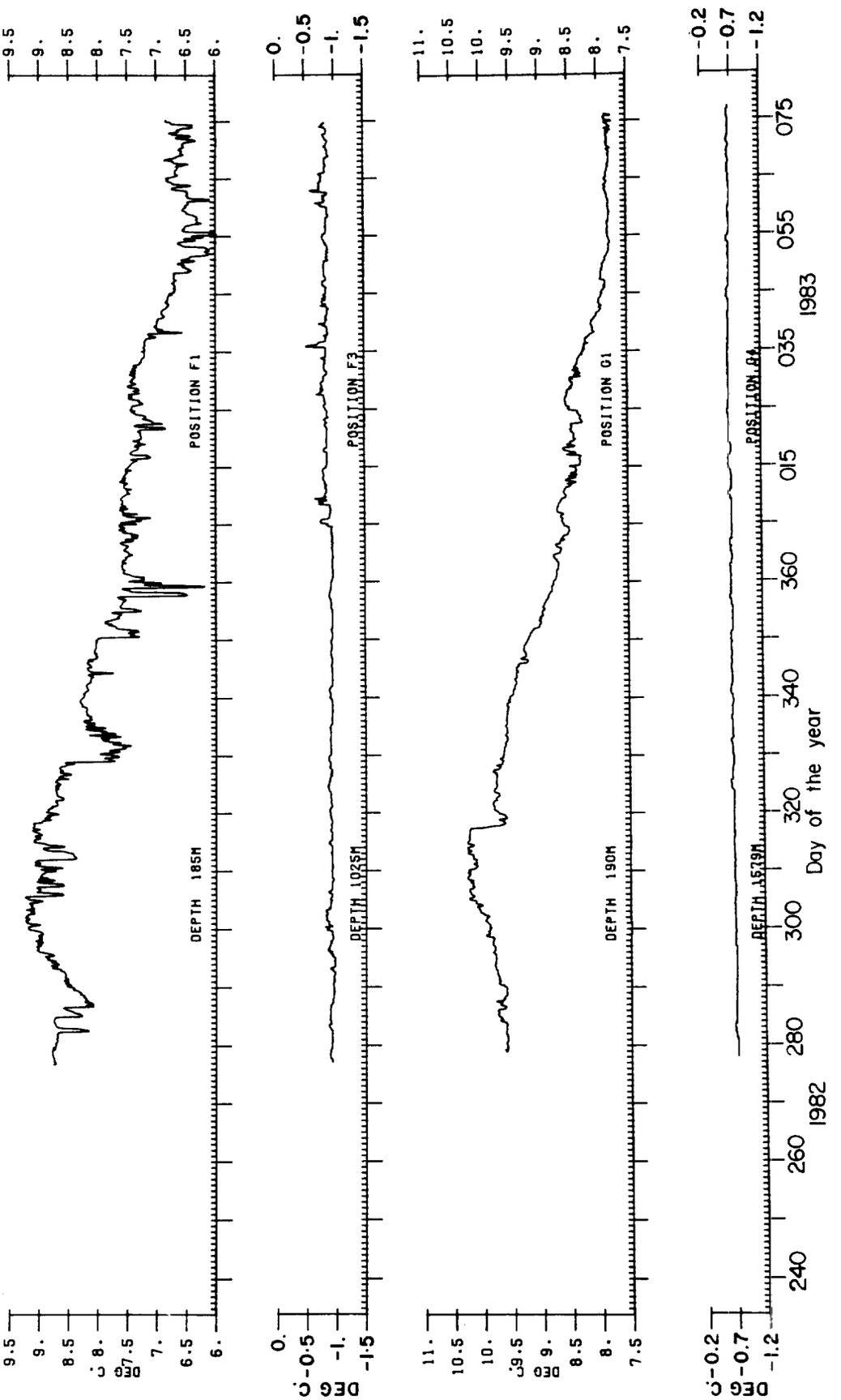

SF3 DP6 DQ3845
DEPTH 1025m
SG1 HP5 TG289
DEPTH 190m
SG4 DP5 DQ5997
DEPTH 1579
MILLIBARS
300
200
100
0
-100
-200
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year

APPENDIX 3.

CONSLEX TEMPERATURE DATA

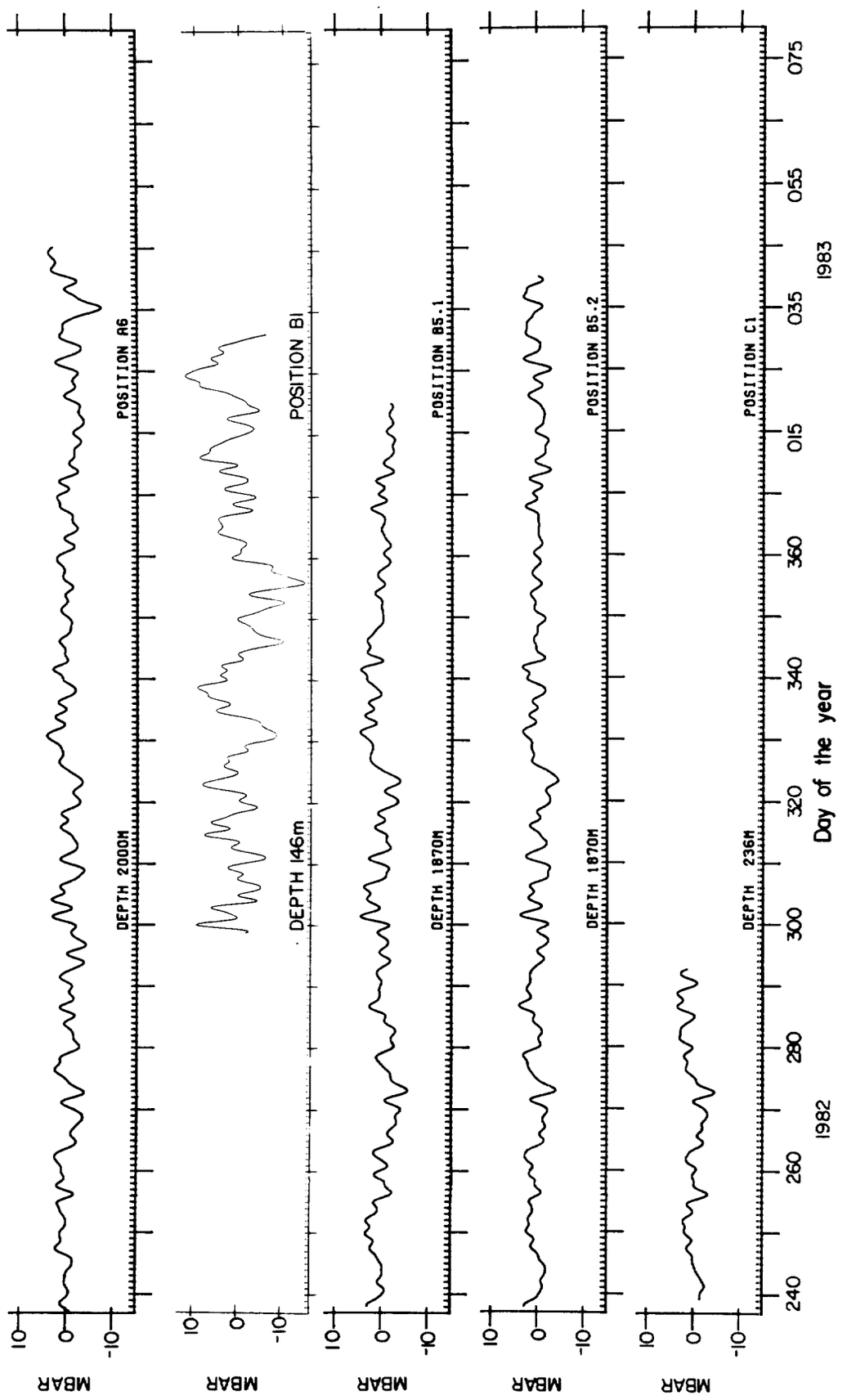


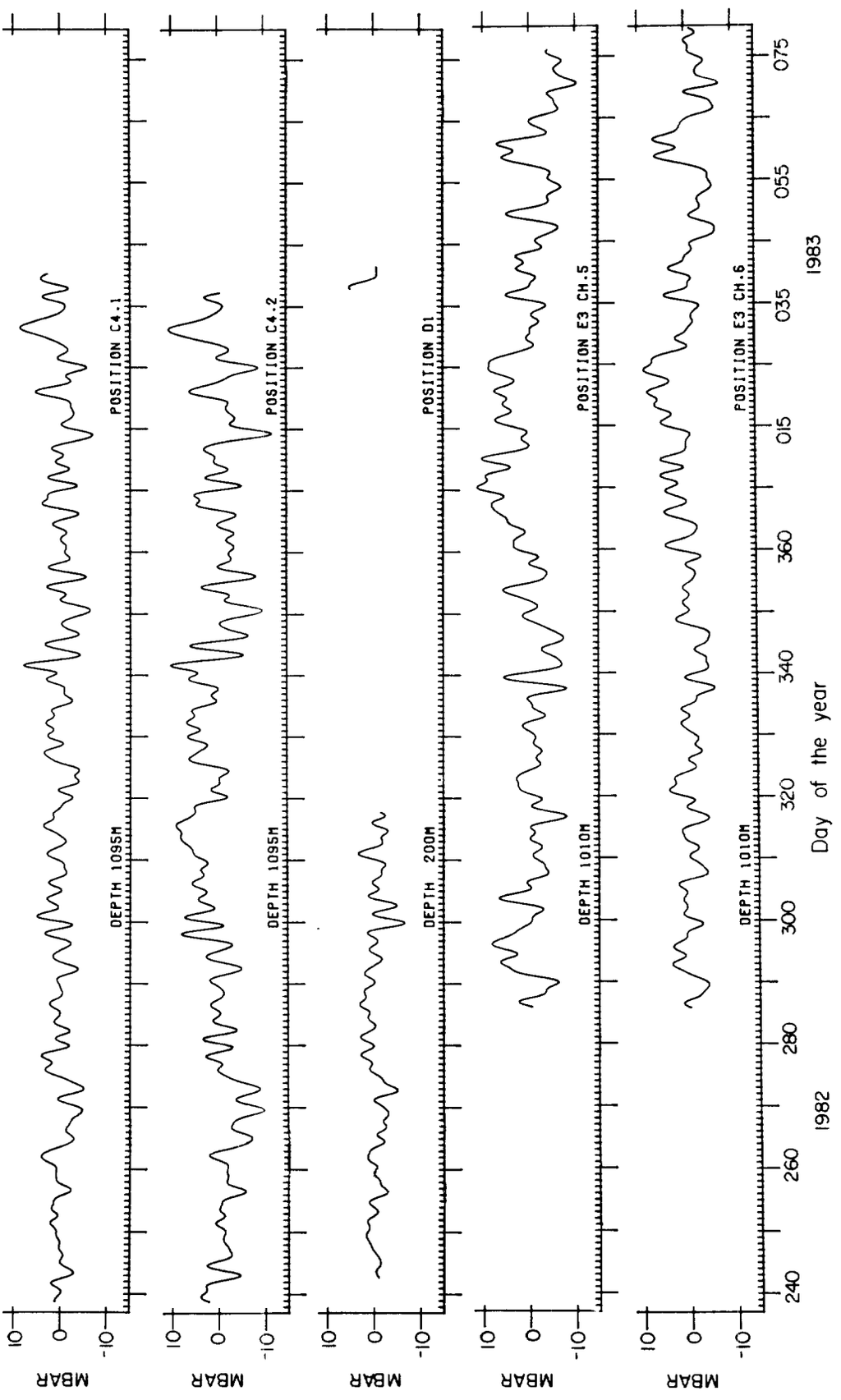

POSITION C4.1
DEPTH 1095M
POSITION C4.2
DEPTH 1095M
POSITION D1
DEPTH 200M
POSITION E3
DEPTH 1010M
DEG C.
Day of the year
1982
1983
240
260
280
300
320
340
360
015
035
055
075

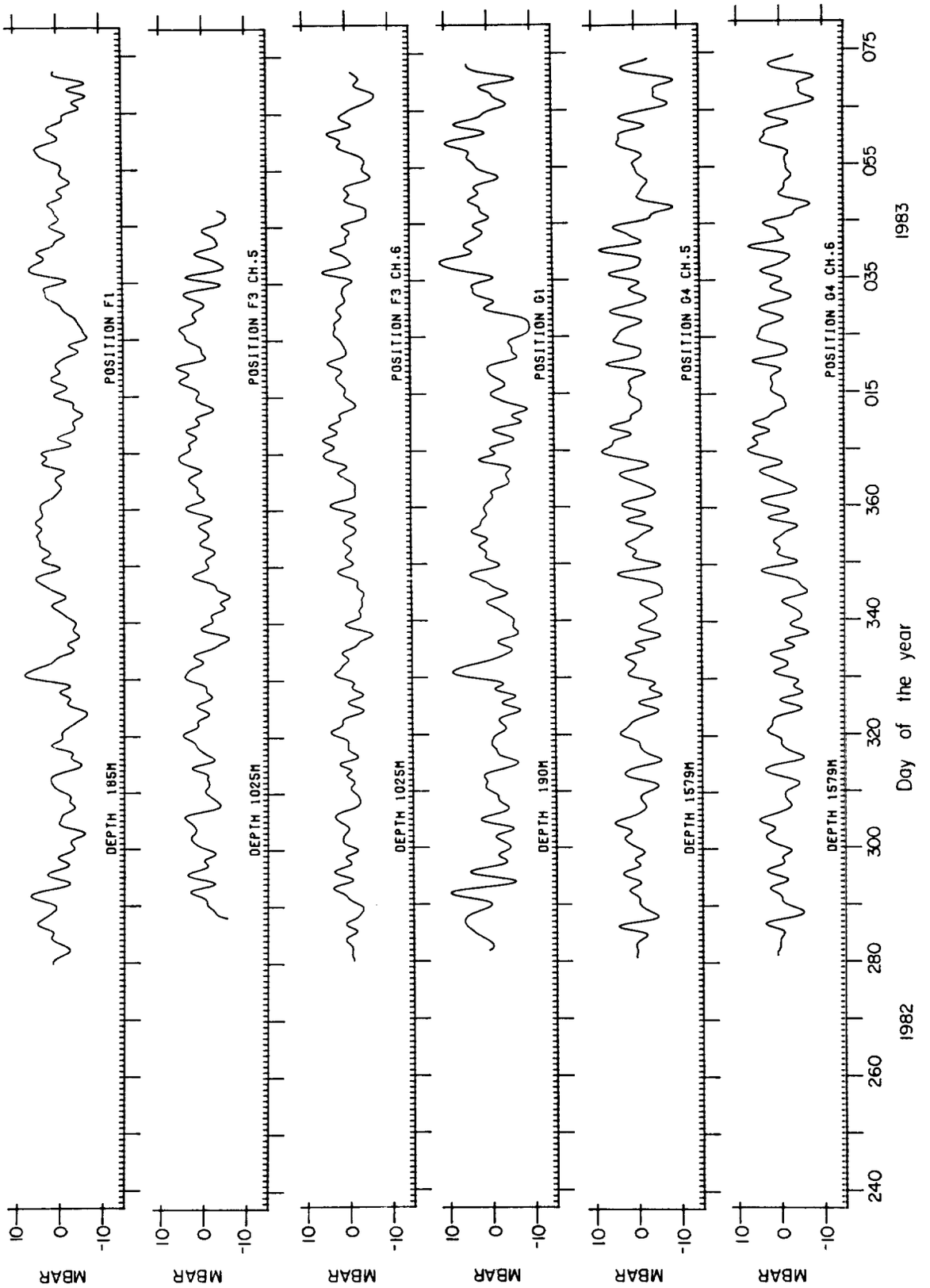

POSITION F1
DEPTH 185M
POSITION F3
DEPTH 1025M
POSITION G1
DEPTH 190M
POSITION G4
DEPTH 1579M
DEG C
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year

APPENDIX 4.

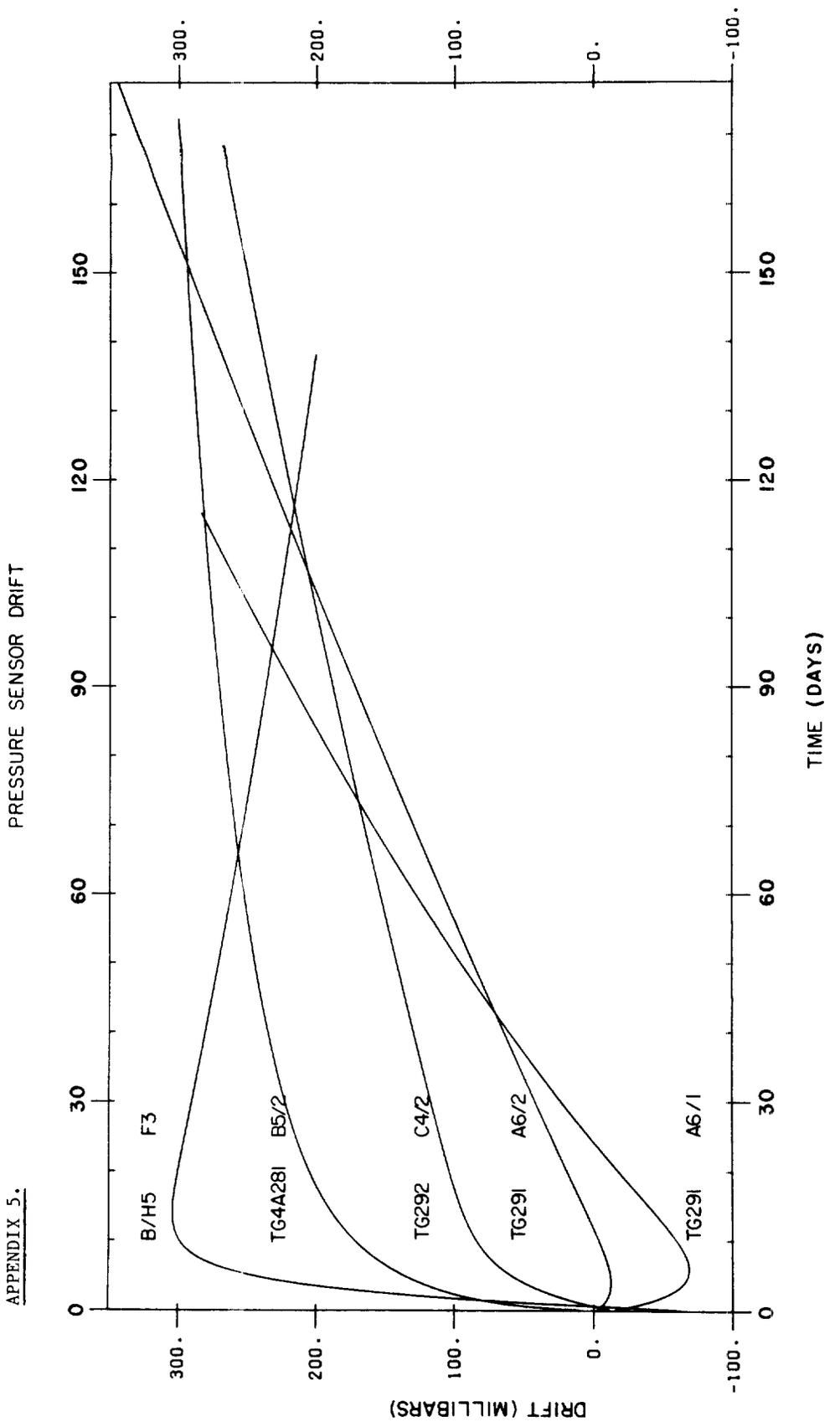
CONSLEX LOW FREQUENCY VARIATIONS

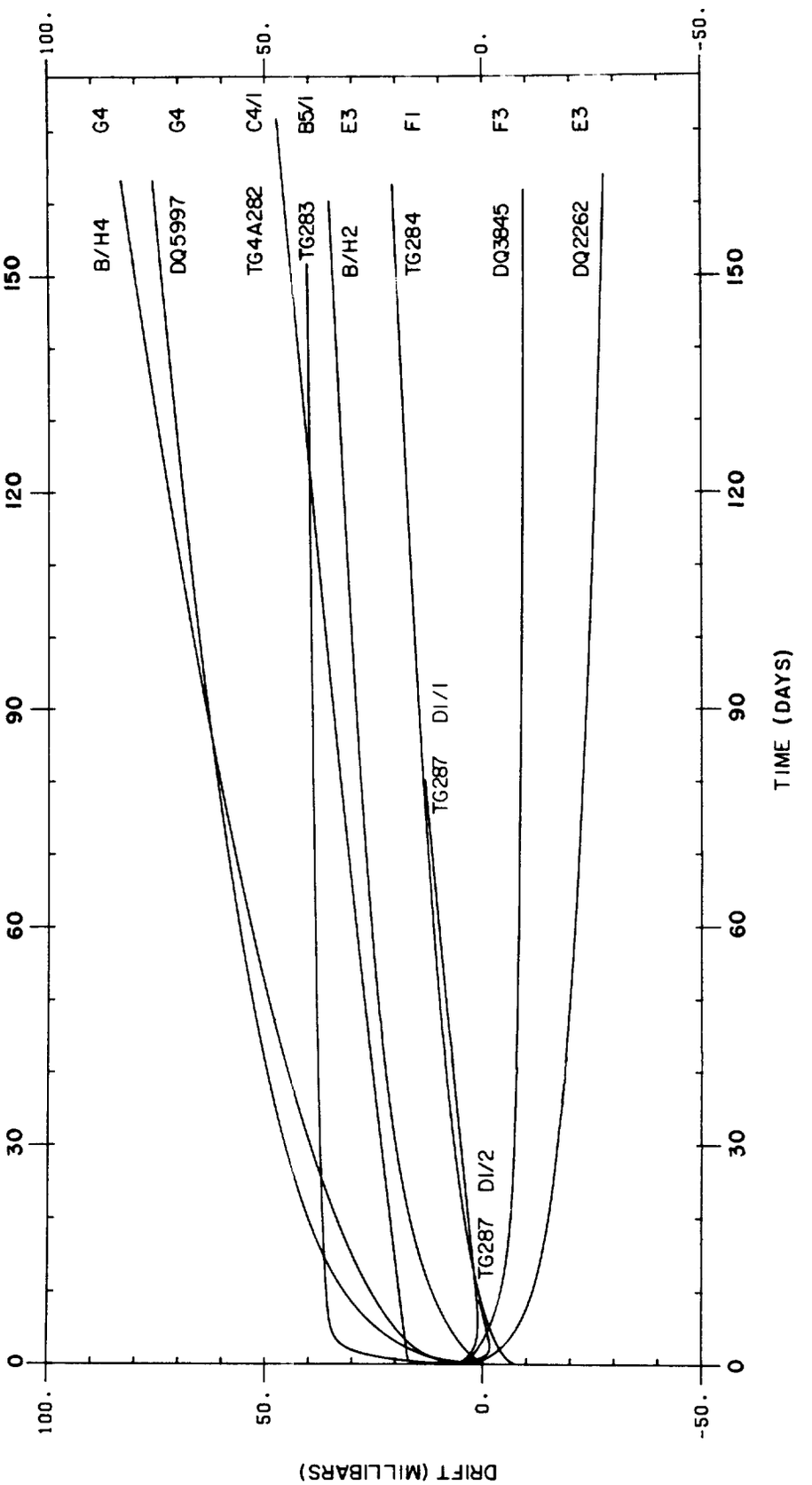



MBAR
10
0
-10
POSITION C4.1
DEPTH 1095M
POSITION C4.2
DEPTH 1095M
POSITION D1
DEPTH 200M
POSITION E3 CH.5
DEPTH 1010M
POSITION E3 CH.6
DEPTH 1010M
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year


MBAR
10
0
-10
POSITION F1
DEPTH 185M
POSITION F3 CH.5
DEPTH 1025M
POSITION F3 CH.6
DEPTH 1025M
POSITION G1
DEPTH 190M
POSITION G4 CH.5
DEPTH 1579M
POSITION G4 CH.6
DEPTH 1579M
240
260
280
300
320
340
360
015
035
055
075
1982
1983
Day of the year

APPENDIX 5.


PRESSURE SENSOR DRIFT
DRIFT (MILLIBARS)
TIME (DAYS)
300.
200.
100.
0.
-100.
0
30
60
90
120
150
B/H5 F3
TG4A28I B5/2
TG292 C4/2
TG29I A6/2
TG29I A6/I


100.
50.
0.
-50.
0
30
60
90
120
150
TIME (DAYS)
DRIFT (MILLIBARS)
B/H4
G4
DQ5997
G4
TG4A282
C4/1
TG283
B5/1
B/H2
E3
TG284
F1
TG287
D1/1
TG287
D1/2
DQ3845
F3
DQ2262
E3