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Tittel: CURRENT MEASUREMENTS BETWEEN THE CENTRAL AND GREAT BANKS IN THE BARENTS SEA

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Seksjon: Ocean data & modelling

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Sammendrag:

The report sumarizes the results from current measurements carried out between the Central and Great Banks in the Barents Sea. The moorings were deployed in mid September 1991 and were recovered more than one year later. The residual currents had an eastward component most of the year. The current speed showed a clear seasonal variability, with highest speed during the winter season, and a much lower speed during summer.

Emneord - norsk:
1. Strømmålinger
2. Hydrografi
3. Barentshavet

Emneord - engelsk:
1. Current measurement
2. Hydrography
3. Barents Sea

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Prosjektleder

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INTRODUCTION

Hydrographic observations from the area between the Central Bank and the Great Bank indicate that Atlantic water flows eastwards in this area. In de upper 50 m where Arctic or melt water are found, there might be an other current direction. The position of the oceanic Polar front is found close to the southern slope of the Great Bank. The position of this front is rather varible in the area, which may cause changes in the current system (Loeng 1991). The Central Bank is an area with deep water formation during winter (Midttun 1985). This water mass flows along the slope of the bank to the Eastern Basin, but some of the dense water may follows the northern slope of the Central Bank to the area between the Central and the Great Banks. Little is known about the current conditions in this area. The Institute of Marine Research carried out some current measurements during two months in autumn 1982, but the results have not been published. Only the two uppermost of four current meters were recovered from these measurements. The results indicated an eastflowing current, even in the upper layer. In order to get some more information on the water circulation in the area, and especially the seasonal variability, the Institute of Marine Research deployed two moorings with eigth current meters in September 1992 (Fig. 1).

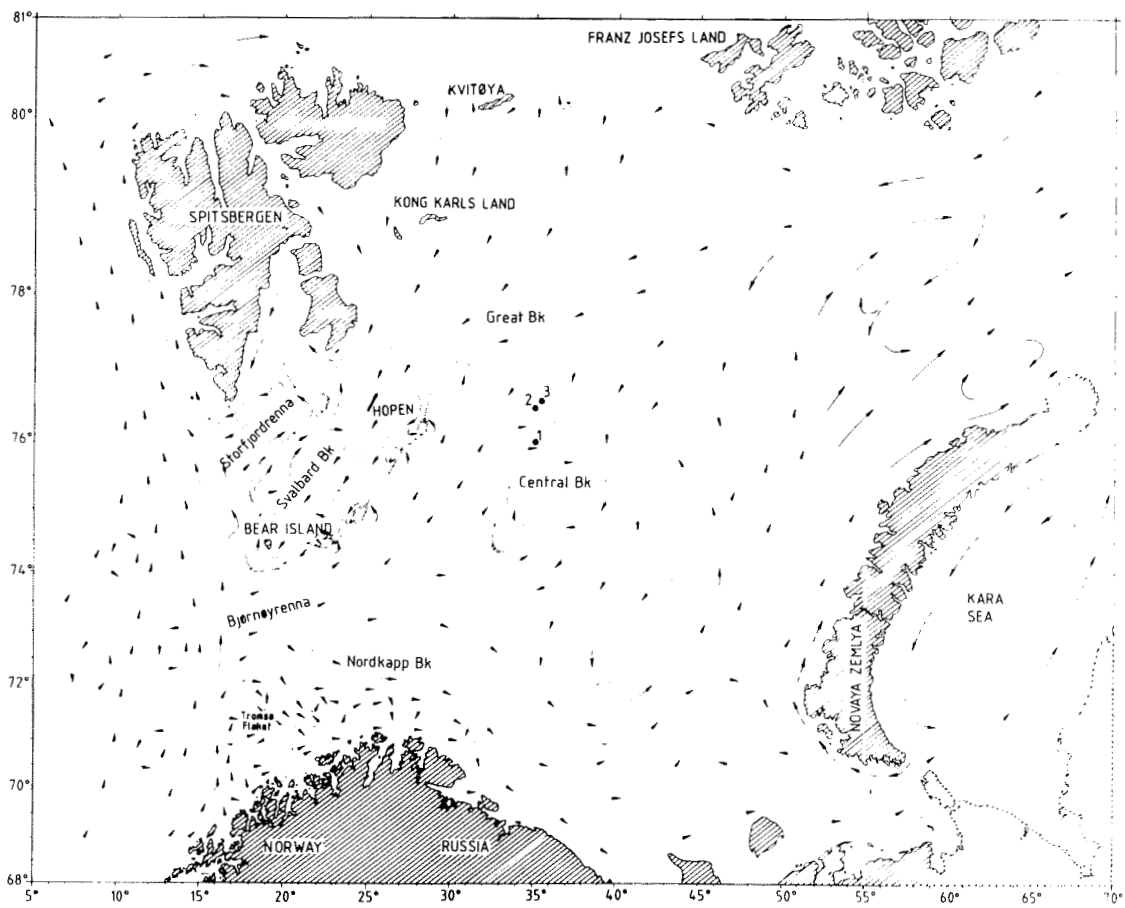

Fig. 1. Surface currents in the Barents Sea. The mooring locations between the Central and Great Banks are marked with •

Current measurements between Novaya Zemlya and Frans Josef Land from September 1991 to September 1992 revealed a clear seasonal variation in the water transport (Loeng *et al.* 1993 b). The current velocity was much higher during the winter season compared to the summer season, and a linkage between the atmospheric and oceanic circulation was indicated. The close relation between atmospheric and water transport in the Barents Sea was first pointed out by Ådlandsvik and Loeng (1991), who showed that a high volume transport to the Barents Sea was connected to low pressure over the area. New measurements over a whole year, would give a possibility to verify the findings from the previous year.

The present report decribes the results from the current measurements carried out out from the end of September 1992 to the beginning of October 1993. All data from the current meter are presented in different Figures and Tables in Appendices A and B. Since the current measurements from 1982 have not been published earlier, we have included them in Appendix C. These data support the current measurements from the last year.

The project is financially supported by Operatørkomité Nord (OKN) under research and development agreement no C 91523.

OBSERVATION PROGRAM

The current meter moorings were deployd from R/V "Johan Hjort" during a survey lasting from 4 to 17 September 1992 and recovered by the same research vessel during a cruise lasting from 29 September to 10 October 1993. The position of the moorings and the time of deployment and recovery are shown in Table 1.

Table 1. The position of moorings and time of deployment and recovery.

Mooring	Position	Bottom depth	No. of instruments	Instruments deployed	Instruments recovered
1	N 76°00.1′ E 34°59.5′	250 m	4	13.09.1992	02.10.1993
2	N 76°25.6′ E 34°59.5′	278 m	4	13.09.1992	02.10.1993
3	N 76° 34.5′ E 35° 30.3′	220 m	4 [1)]	26.08.1982	Autumn 1983

[1)] Only the two uppermost current meters were recovered

During the last measuring program, we wanted to protect the mooring system from ice and especially icebergs, and the subsurface buoy was set as deep as 55 m. Therefore, we did not obtain any information from the upper 50 m where melt water usually is found during the summer season. During the measurement period in 1982 the subsurface buoy was set at 15 m.

During the surveys both in 1992 and 1993, hydrographical observations were carried out with a Neil Brown CTD-system. The distance between the stations along a section from the Central to the Great Banks (along 35°E) was 15 or 30 nautical miles.

INSTRUMENTATION AND MOORING SYSTEM

The two moorings used in 1992/93 are shown in Fig. 2. The anchor weight was 900 kg and the buoyancy of the large subsurface buoy was about 380 kg. The smaller buoys had a buoyancy of 65 kg. 14 mm rope of type Karat was used in the moorings. In order to release the mooring from the anchor weight at recovery, acoustic releases from OCEANO were used.

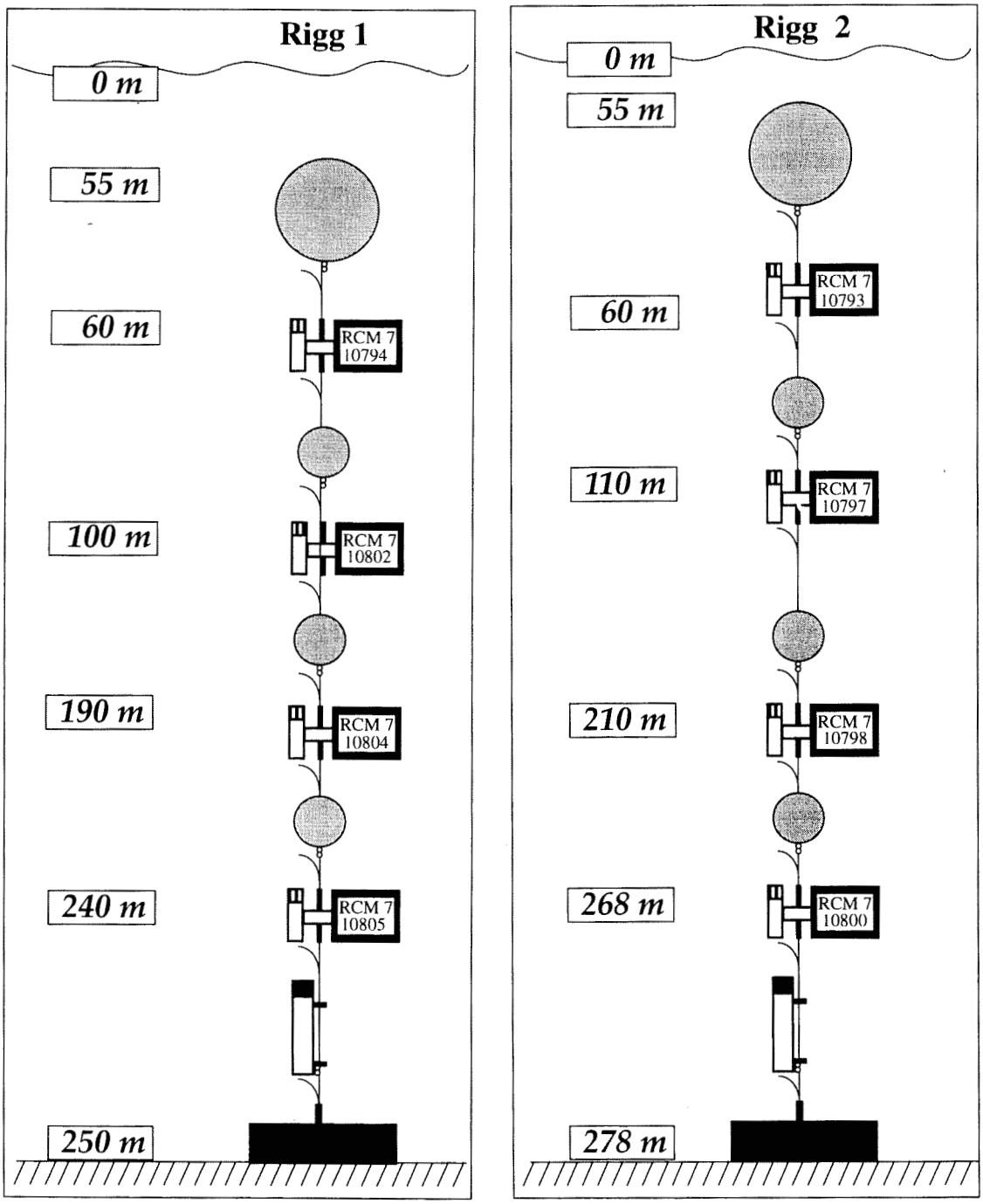

Fig. 2. Moorings no. 1 (left) and 2.

The depth of the different current meters are given in Table 2 and are also indicated in Fig. 2. Current meters of type RCM-4 and RCM-7 from Aanderaa Instruments were deployed (Aanderaa Instruments 1978, 1987). The parameters recorded by each instrument are given in Table 2. The sampling interval of all instruments was set to 20 min (10 min in 1982), and the process of vector averaging current speed was removed from all RCM-7 instruments. This means that the RCM-7's operated as the older version RCM-4, with registration of direction only at the end of the sampling interval. All RCM-7's were equipped with high activity lithium batteries with the capacity of 14Ah. After recovery it was stated that all instruments still had sufficient capacity to store data.

The instruments worked fine the entire period, only a salinity sensor failed for a shorter period at the deepest current meter at mooring no. 2. There is a discrepancy between the depth given for the uppermost current meters (Table 2), and the depth indicated by the pressure sensors (Figs. 1-1-8 and 2-1-8 in Appendices A and B, respectively). During the deployment we could see the moorings on the echo-sounder and these registrations clearly showed that the depths given in Table 2 are the correct ones. These depths are also in accordance with the construction of the mooring. We therefore conclude that the pressure sensors show wrong depth.

The two instruments which were recovered from the 1982-measurements had data only for two months.

Table 2. Observation depths and parameters recorded by the different current meters. t-temperature, S-salinity and p-pressure

Mooring no	Instrument no	type	Depth (m)	Speed	Direc-tion	t	S	p
1	1	RCM-7	60	x	x	x	x	x
	2	RCM-7	100	x	x	x	x	
	3	RCM-7	190	x	x	x	x	
	4	RCM-7	240	x	x	x	x	
2	1	RCM-7	60	x	x	x	x	x
	2	RCM-7	105	x	x	x	x	
	3	RCM-7	240	x	x	x	x	
	4	RCM-7	333	x	x	x	x	
3	1	RCM-4	20	x	x	x	x	x
	2	RCM-4	90	x	x	x	x	x

PRESENTATION OF RESULTS

The Aanderaa RCM current meter data are treated as described by Sagen (1991), and the results are presented in Appendices A, B and C in the same way as by Loeng *et al.* (1993 a). The figures have been numbered after the following system:

Fig. M - N - x

where M - the mooring number (see Table 1 and 2)
N - the instrument number on each mooring (see Table 2)
x - the figure number for each instrument. Each number represents one specific type of data presentation (see below).

The data analysis resulted in the following types of presentations:

1) Current velocity distribution presented as current roses for
   - the maximum velocity in each direction sector (15°)
   - the mean velocity in each direction sector
   - the relative flux in each direction sector
   - the number of observations in each direction sector.

2) Histogram showing
   - the number of observations in each direction sector of 15°.
   - the distribution of current speed in intervals of 2 cm s^{-1}.

3) Velocity distribution diagram showing the scattering of observations.

4) Frequency distributions of measured current velocity vs. direction.

5) Progressive vector diagram which gives an indication of the movement of the water masses.

6) Time series of N-S and E-W components of current velocity.

7) Time series of current speed and direction.

8) Time series of temperature, salinity and pressure.

9) Harmonic analysis of current. The table shows all tidal components with major axes of tidal ellipes greater than 1 cm s^{-1}. A total of 36 tidal components are included in the analysis.

10) Tidal current ellipses for M2 and K1.

11) Minimum, mean and maximum values for current speed, temperature and salinity.

RESULTS AND DISCUSSION

Hydrographic conditions in 1992 and 1993

Figs. 3 and 4 show the horizontal temperature distribution at 100 m and at bottom in autumn 1992 and 1993. South of 76°N there are small differences

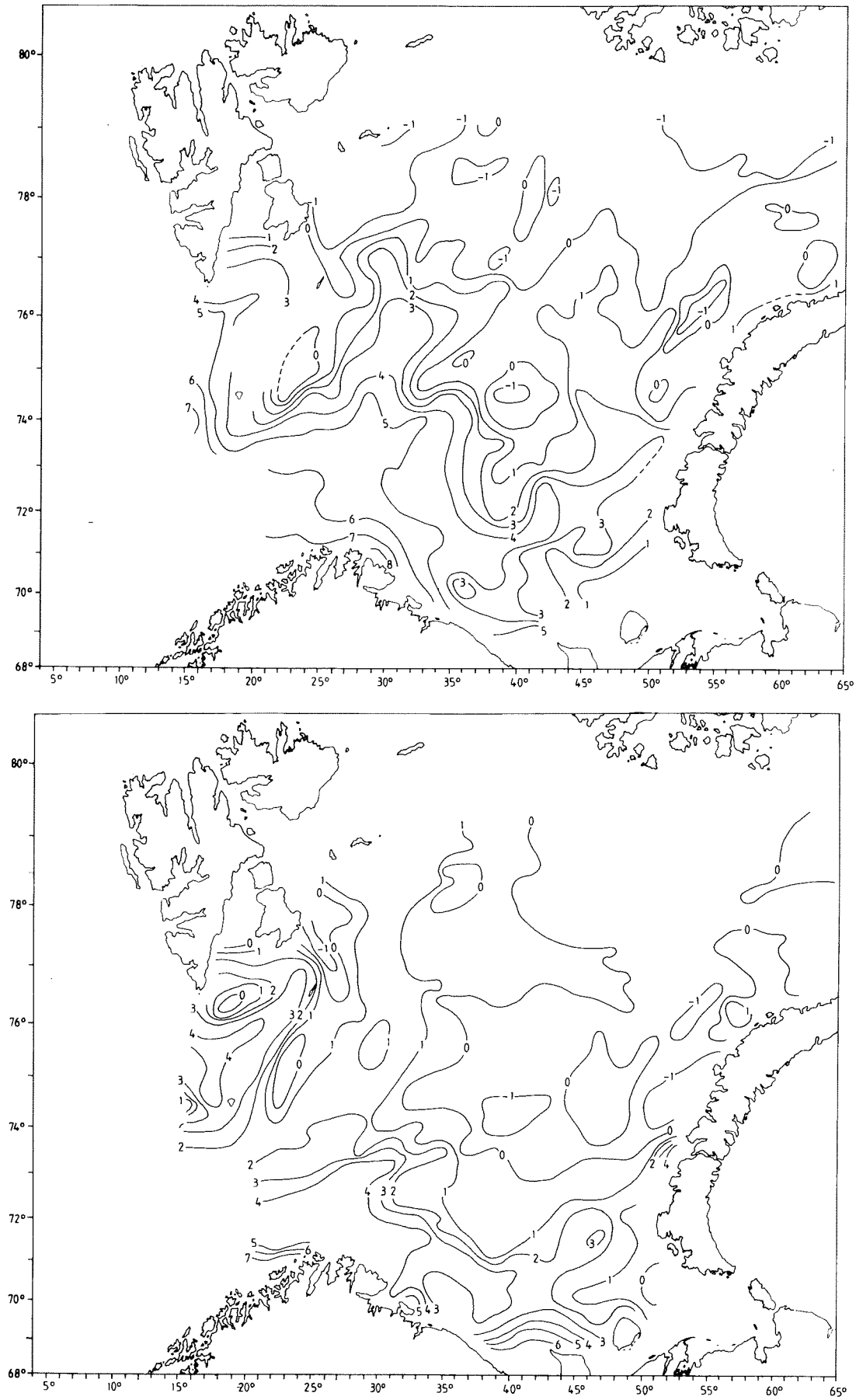

Fig. 3. Temperature at 100 m (upper) and bottom in September 1992.

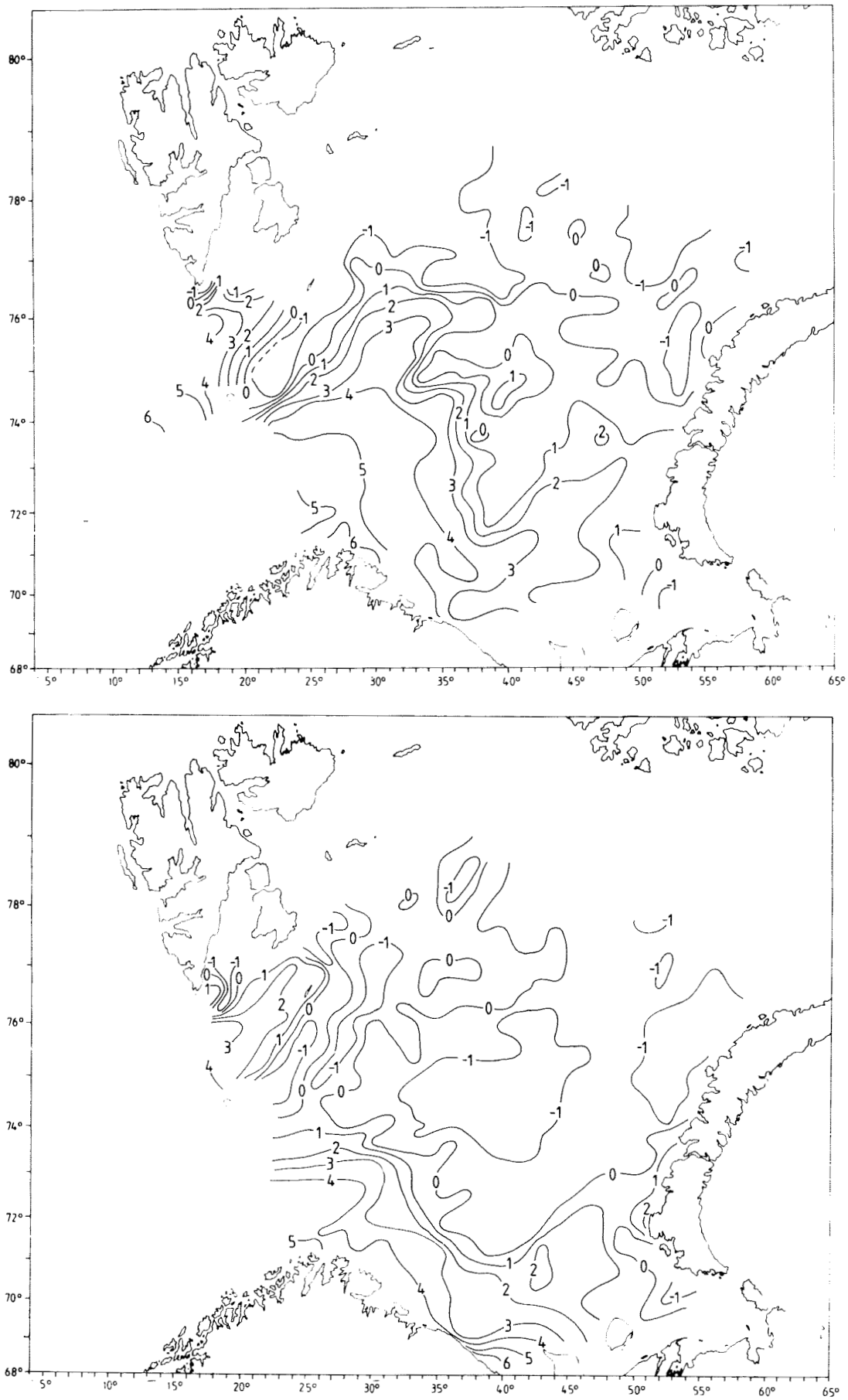

Fig. 4. Temperature at 100 m (upper) and bottom in September 1993.

between the two years in the western part of the Barents Sea. In the northern part of the Barents Sea there was a marked temperature decrease from 1992 to 1993. The most typical difference, is the cooling of the bottom water south and east of the Central Bank area from the first to the second year. The area with temperature below -1°C has clearly increased. Also in the area where the current measurements were carried out the temperature had decreased. At 100 m the position of the 0°-isoterm has changed, and at the bottom there is a change in the amount of water with temperature higher than 1°C.

Figs. 5 and 6 show a vertical section from the Central Bank to the Great Bank. Arctic water with low temperature and salinity is found above the Great Bank. Water with negative temperature was also observed close to the bottom at both the southern and northern slope of the Central Bank. This water is formed during winter time and has a salinity which is higher than the cold Arctic water above the Great Bank. In cold years the formation of bottom water above the Central Bank can be rather extensive (Midttun 1985). In the channel between the two bank areas, Atlantic water with salinity above 35 and temperature higher than 2°C was observed both years.

Comparing the two years, some differences show up. On both banks the water masses are colder in 1993 than in 1992 (Figs. 5 and 6), and the same tendency is also observed in the channel. This is in accordance with observations from other areas in the Barents Sea, indicating that a period with lower temperature is starting (ANON 1994). The temperature observations from the current meters also indicate a temperature decrease during the period, approximately 0.5°C from September 1992 to September 1993. The surface salinity above the Central Bank was lower in 1993 than in 1992, creating a stonger vertical stability the last year. The lower salininity in 1993 was due to more ice during the previous winter and consequently more melt water during summer.

The results from the temperature and salinity observations from the current meters showed a partly large variability in these two parametres. The most variable conditions were found at 60 m at mooring no. 1 (Fig. 1-1-8), especially from January 1993 to the end of the measuring period. There is clearly two different water masses in this layer during the period; water of Atlantic origin and colder and less saline water from the Central Bank. At 190 m there is a steady decrease in temperature during most of the measuring period without large fluctuations. Close to the bottom there were some fluctuations during winter, probably because of entry of cold bottom water from the Central Bank.

At mooring no. 2 there was a strong cooling of the water masses in the surface layer during late autumn and early winter. From mid February the Polar front seems to move south of the mooring for about three months. Both the temperature value (-1.8°C) and salinity value (about 34.6) are characteristic for the core of the Arctic water, which usually is found between 50 and 100 m in this area (Loeng 1991). At 110 m Arctic water showed up periodically during the months from January to March 1993 , while there was small changes during rest of the measuring period. At 210 m there were small fluctuations both in temperature and salinity, while close to the bottom periods occured where the temperature fluctuated with more than 1°C. In addition there was a trend during the entire period with a small, but steady temperature decrease.

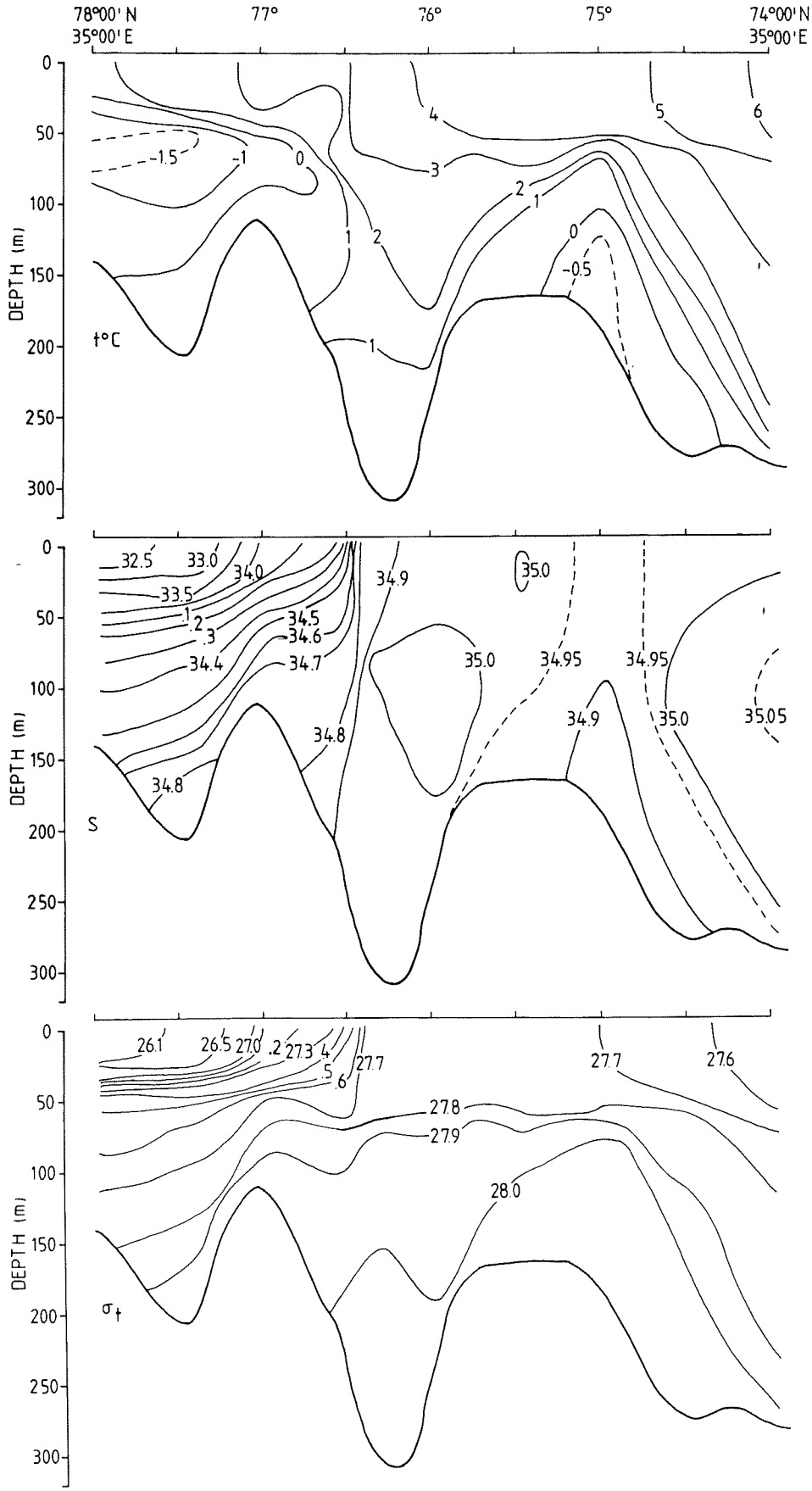

Fig. 5. Temperature, salinity and sigma-t along the section from the Central Bank to the Great Bank in September 1992.

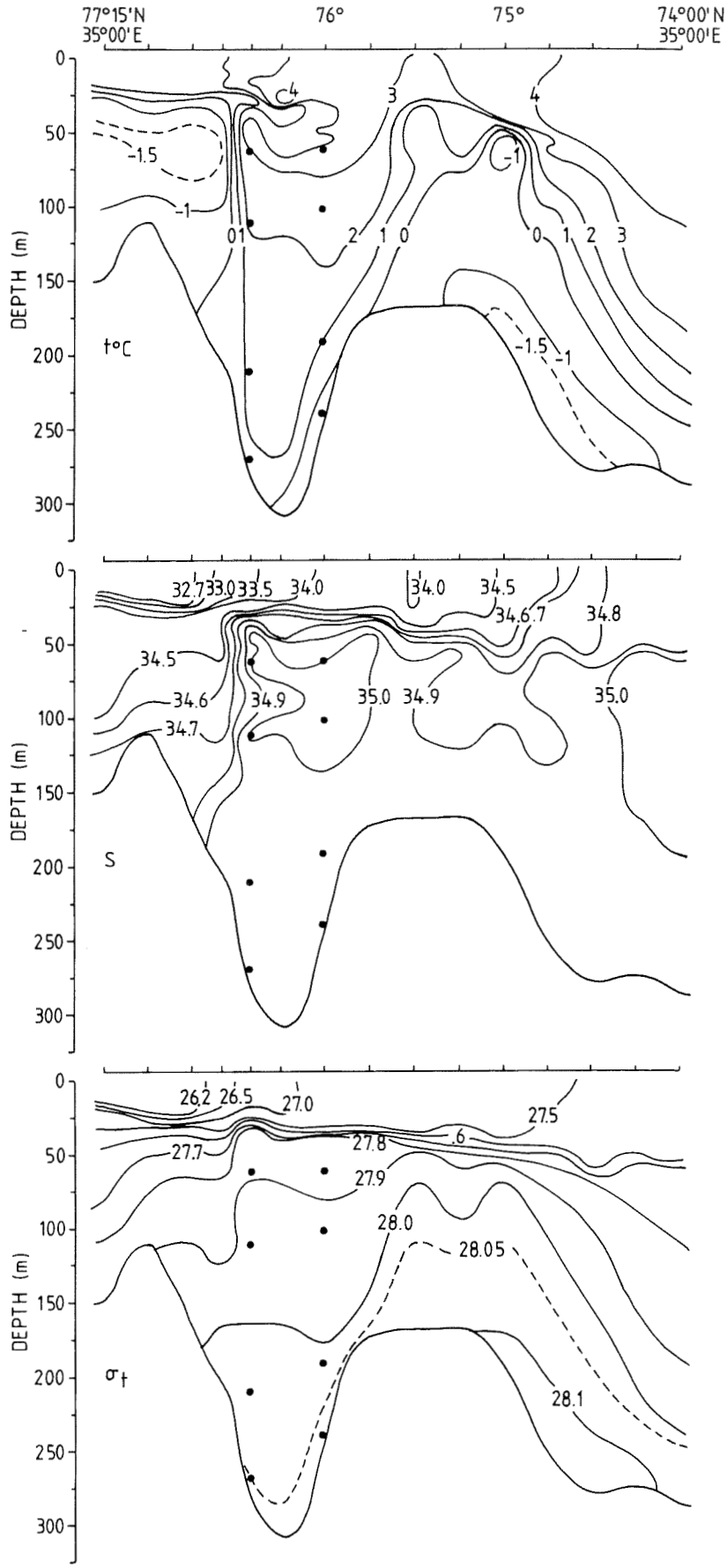

Fig. 6. Temperature, salinity and sigma-t along the section from the Central Bank to the Great Bank in September 1993. The position of the current meters are indicated by •

Aanderaa current meter data from the period 1992-1993

General features

All results from moorings no. 1 and 2 are presented in Appendices A and B, respectively. The results from all moorings show a dominating tidal influence on the current pattern (Figs. M-N-6). The same figures indicate large variability in stability of the residual current. At almost all depths there were periods where the residual current changed its direction in intervals of 3-4 days. In periods with more stable residual current direction the speed varied with intervals of the same length (3-4 days).

The stability of the current is often called B, and is usually defined as the ratio of averaged vector velocity and the averaged speed (arithmetic velocity). This ratio is expressed as:

$$B = 100\% \cdot \text{average velocity} / \text{average speed}$$

The average vectorial velocity is obtained by taking the vectorial mean value of individually observed current vectors, and the arithmetic mean velocity is obtained by averaging the speeds without regard to current direction. The stability of the current is calculated for each month, and is presented in Table 3. These results confirm what is seen from Figs. M-N-6 in the appendices. At both moorings the current stability varied from month to month. The current was usually less stable in the upper part of the water column than close to the bottom. However, a month with relatively high stability at one depth also had relatively high stability at the other depths (March 1993 at mooring no. 1 and February 1993 at mooring no. 2). An other feature which can be seen from Table 3, is the fact that high current stability at one mooring not necessarily showed the same at the other mooring, as for February 1993.

Table 3. Current stabilility, B, in %

Mooring	Depth	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.
	m	%	%	%	%	%	%	%	%	%	%	%	%	%
1	60	40.0	21.6	16.9	18.6	21.5	20.4	40.5	41.8	37.9	13.9	11.5	6.2	11.8
	100	45.2	28.9	24.1	16.7	26.8	28.1	46.0	44.9	40.9	20.2	15.9	5.3	5.4
	190	42.1	28.9	35.4	13.1	35.0	36.5	54.2	46.9	48.1	16.9	32.5	10.8	14.2
	240	41.6	51.8	44.1	73.6	35.7	50.5	60.9	73.3	72.6	30.9	67.2	42.4	28.0
2	60	48.7	14.1	74.4	50.3	12.0	67.0	35.5	30.2	9.9	22.9	31.9	11.4	33.6
	110	52.5	20.5	77.0	43.6	13.4	78.5	36.6	52.6	8.7	54.9	63.2	64.4	63.7
	210	37.1	39.3	77.8	46.9	12.7	82.8	43.5	65.5	11.5	57.3	71.0	73.3	68.2
	268	31.3	62.3	75.3	54.9	24.7	93.4	54.7	82.0	31.4	63.3	16.3	41.6	60.0

Table 4. Mean velocity, V (cm s^{-1}), and direction (°) of the current.

		September		October		November		December		January		February		March		April		May		June		July		August		September	
Mooring	Depth	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.	V	Dir.
	m	cm/s		cm/s		cm/s		cm/s		cm/s		cm/s		cm/s		cm/s		cm/s		cm/s		cm/s		cm/s		cm/s	
1	60	4.3	054	2.6	060	1.8	012	2.5	296	3.0	049	2.9	062	5.1	048	4.2	059	4.7	049	1.2	301	0.6	111	0.4	308	1.1	208
	100	4.3	060	3.1	058	2.4	027	2.1	320	3.6	061	3.7	060	5.7	055	4.2	058	4.0	047	1.8	310	1.1	081	0.4	011	0.4	170
	190	3.3	051	2.7	059	3.5	037	1.6	358	4.7	067	4.9	060	6.8	054	4.3	058	4.5	050	1.2	315	1.8	065	0.7	026	1.0	068
	240	2.0	069	3.5	067	3.5	036	1.6	009	4.3	049	5.9	042	6.8	040	5.0	049	5.7	049	1.2	052	2.1	124	1.1	154	1.0	130
2	60	5.2	077	1.9	311	7.9	065	6.8	266	1.4	316	10.2	056	4.1	042	3.0	054	1.2	059	2.1	042	2.2	044	1.0	091	3.1	057
	110	4.3	077	2.1	273	8.7	060	5.5	262	1.4	322	10.9	055	3.9	049	4.3	058	0.8	060	3.4	039	3.4	043	4.1	057	4.4	044
	210	2.6	081	4.0	246	7.7	065	5.9	266	1.4	319	12.0	055	4.9	052	5.7	055	1.0	049	3.1	035	3.8	036	4.2	047	4.3	043
	268	1.5	069	5.0	233	4.9	047	6.0	263	2.2	296	11.7	044	5.1	034	5.2	063	1.9	104	1.6	099	0.2	348	0.7	347	0.9	312

The progressive vector diagrams (Figs. M-N-5) show that the main current direction was toward east at both localities most of the time. However, in some periods the current direction was reversed. Table 4 demonstrates the variability in current direction between months. At the same time, Table 4 also shows that the main current direction was the same in the whole water column with some exceptions during the summer months.

As shown in Fig. 8 there was a decreasing mean speed with increasing depth, and there is a marked seasonality in mean speed throughout the year. The highest speed was observed during the period from December to March, while minimum was observed during summer. A comparison between the results presented in Fig. 8 and Table 3 indicate that high current speed not necessarily gives high current stability. An example is January 1993 where the average speed was high, while the current direction changed quite a lot and consequently gave low current stability.

Periods with strong current occured simultanously at both moorings, but sometimes with a time lag of one day. At mooring no. 1 there was a short period 20 December where maximum speed were obsered at all depths (Figs. 1-N-7). This event was also observed at mooring no. 2, but not quite so clearly. During the period from Januay to the beginning of May, there were several examples of similar changes in the current pattern between the two moorings.

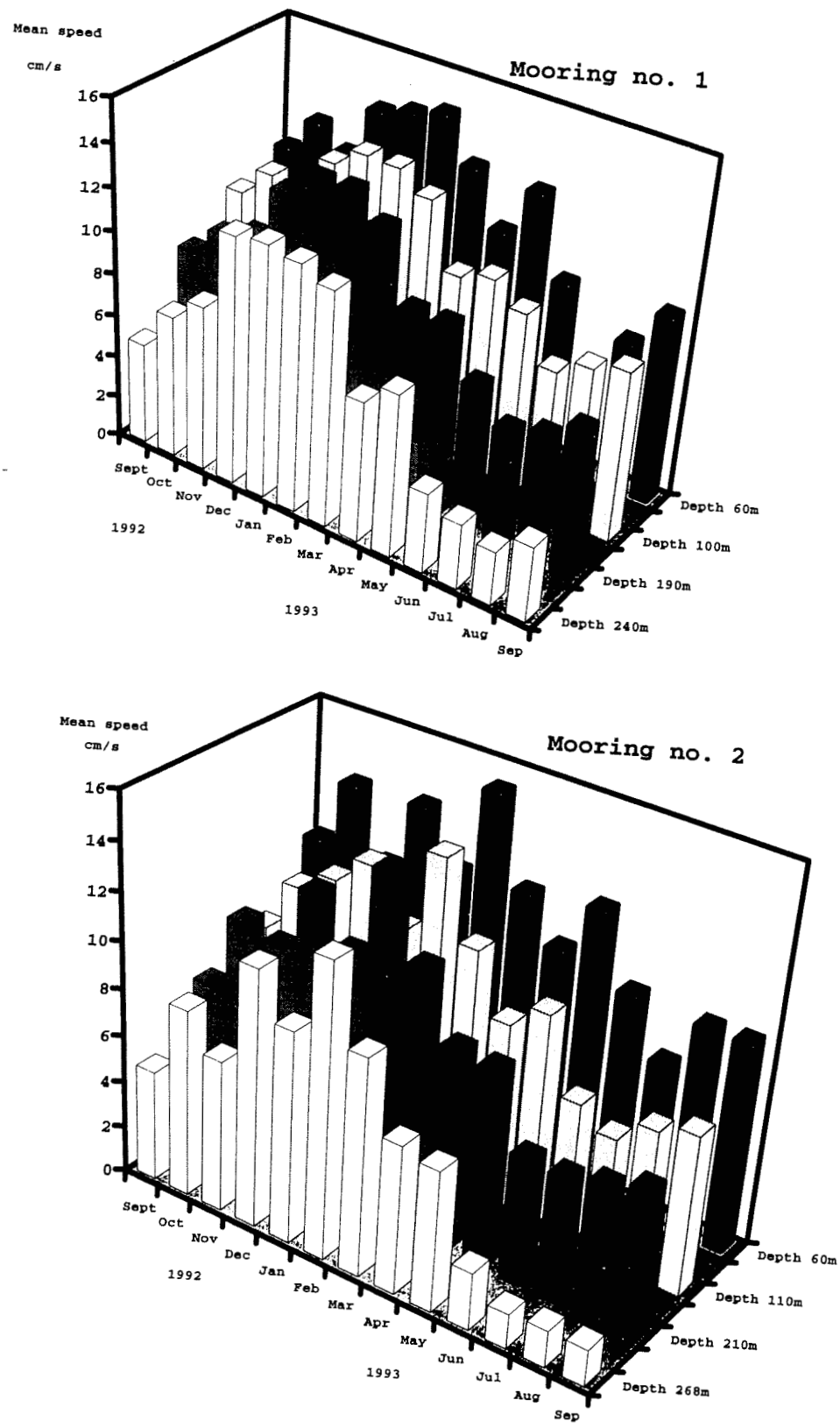

Fig. 8. Monthly mean speed at different depths at mooring no. 1 (upper) and mooring no. 2 (lower).

The tidal current was much more dominant in this area than in the area between Novaya Zemya and Frans Josef Land (Loeng *et al.* 1993 a), and the tidal current seems to determine the current direction. This is seen from the figures presenting the momentary current picture (Figs M-N-6 and M-N-7). The harmonic analysis revealed only a few tidal components with major axis larger than 1 cm s^{-1} (Figs. M-N-9 in the appendices). Among the semi-diurnal components the principal lunar component (M_2) was dominating, but also the principal solar (S_2) and the large lunar elliptic (N_2) components appeared. The only diurnal constituent was the luni-solar diurnal (K_1), and it was found only in the surface layer at mooring no. 2. In addition, fortnigthly (Mf and MSf) and monthly (Mm and MSm) constituents appeared in the results from the harmonic analysis. Of these the lunar fortnightly (Mf) was most important, and had a larger contribution to the tidal current than S_2. The constituents Sa (solar annual) and Ssa (solar semi-annual) also appeared in all time series.

Special features

Mooring no.1

The results are shown in Appendix A. The mean current direction at different depths were between 043° and 052°, with the easternmost current direction close to bottom. The mean speed was close to 10 cm s^{-1} at the three uppermost current meters, while the mean speed close to bottom was 7.3 cm s^{-1}. The maximum observed speed decreased from 66.5 cm s^{-1} at 60 m to 40.6 cm s^{-1} at 240 m. A typical feature was the simultanous occurrence of high speed. Maximum speed was observed 20 December at all depth, and there are several other examples of periods with high speed in all depths (Figs. 1-N-7). During the summer season the speed was usually below 10 cm s^{-1} and more than 90% of the recordings showed speed below 20 cm s^{-1}. The mean velocity varied between 1.4 and 2.1 cm s^{-1} with the highest value at 190 m.

Even the main direction of the residual current is towards east, the progressive vectordiagrams (Figs. 1-N-5) reveal periods where other directions occured. During winter time, December was the only month with an other direction, while during summer (June-September 1993) the main current direction was rather variable (Table 4).

Mooring no. 2

The results are shown in Appendix B. The mean current direction through the entire period was toward 45° for the three uppermost current meters, while the direction close to bottom was toward 30°. The mean speed varied from 11.0 cm s^{-1} at 60 m to 6.2 cm s^{-1} at 268 m. The maximum values were between 53.7 cm s^{-1} and 44.1 cm s^{-1} with the highest value at 60 m and the lowest at 268 m. As for mooring no. 1, periods with high speed occured at the same time at all depths, although the maximum value was observed at different occasions. At 60 and 110 m maximum was observed in the beginning of February, while maximum at 210 and 268 m was observed in mid January. From approximately 20 May 1993 and for the rest of the period, the current speed was considerably lower than during the first part of the observation period. The mean velocity varied between 1.5 cm s^{-1} and 3.1 cm s^{-1} with highest value at 110 m and lowest value at 268 m. This is

somewhat higher than at mooring no.1, and is due to higher current stability most of the measuring period.

Even if there was a northeasterly current direction for most of the period, the current direction was quite opposite in October and December 1992 (Table 4 and Figs. 2-N-5). In January the mean current direction was northwesterly, but the current stability was very low at the same time (Table 3). The stability was generally higher than at mooring no. 1, and the most stable current occured during December and February. With exception for the summer month in 1993, the current stability increased toward bottom.

Aanderaa current meter data from 1982

The results are shown in Appendix C. At both 20 and 95 m the main residual current direction was toward east-northeast. The current at 20 m was variable up to the end of September, but was rather stable during the last month. The maximum speed at 20 m was measured to 58 cm s^{-1}. A consequence of the strong current was that the subsurface buoy was forced down about 5 m (Figs. 3-1-7 and 3-1-8), so the actual current was probably somewhat stronger. The average speed was 25.5 cm s^{-1} and 7.9 cm s^{-1} at 20 and 95 m, respectively. The current stability for the entire period was 20% at the upper current meter and 51% at the lower one.

The autumn cooling process was clearly observed at 20 m. The temperature decreased from 3°C at the end of August to about 0°C at the end of the measuring period. Cold water transport from the north in the midle of October, introduced a short period with water temperaure down to -1°C and at the same time the salinity became lower. The temperature variability at 95 m was larger than at 20 m. Since the position of the mooring was close to the oceanic Polar front, this explains the temperature fluctuations at 90 m. The lowest temperature seems to occur when the current speed is low.

CONCLUSIONS

The present report provides preliminary analysis of the observations carried out during the period from September 1992 to September 1993. Some data from current measurements carried out in the same area in 1982 has also been included. The main findings may be summarized as follows:

- The current speed showed a clear seasonality with maximum speed during winter when air pressure is generally low, and lowest speed during summer when the air pressure is higher.

- The current direction was mainly the same in the whole water column. The highest speed was measured in the upper layer with a decrease towards bottom.

- There is an eastgoing current most of the time, but there are periods where the current direction is reversed.

- The tidal influence is very clear through most of the period, and is the dominating current component.

- There has been a cooling of the water masses from 1992 to 1993, but the main hydrographic features were almost similar.

ACKNOWLEDGEMENTS

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Appendix A

AANDERAA RCM CURRENT DATA

Mooring: 1

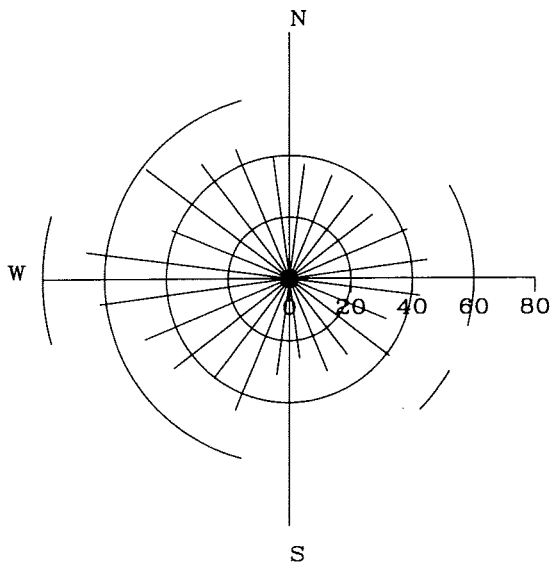
Position: N 76°00.1′ E 34°59.5′

Instrument depths: 60, 100, 190 and 240 m

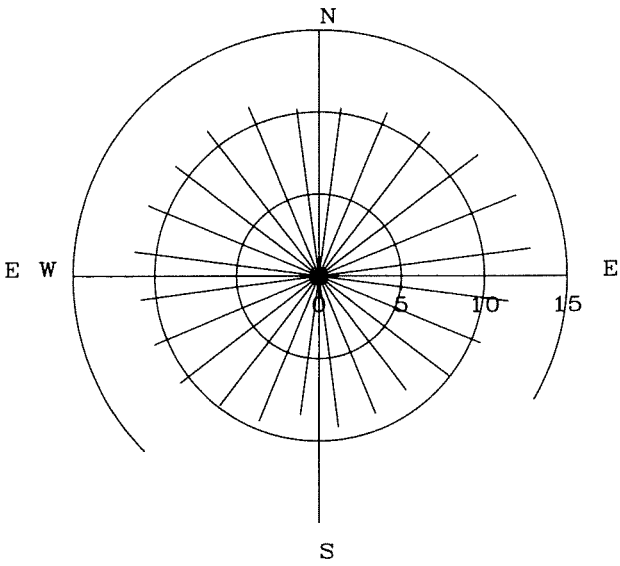
Mooring: *1*

Depth: *60 m*

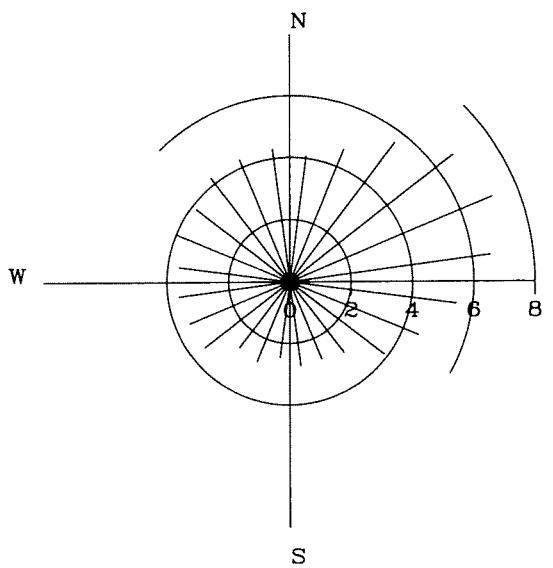
CURRENT VELOCITY DISTRIBUTION



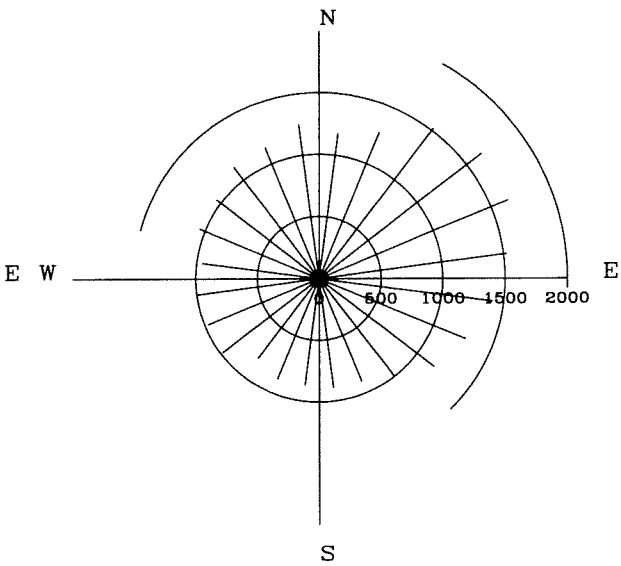
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 60.0 m Bottom depth : 250.0 m

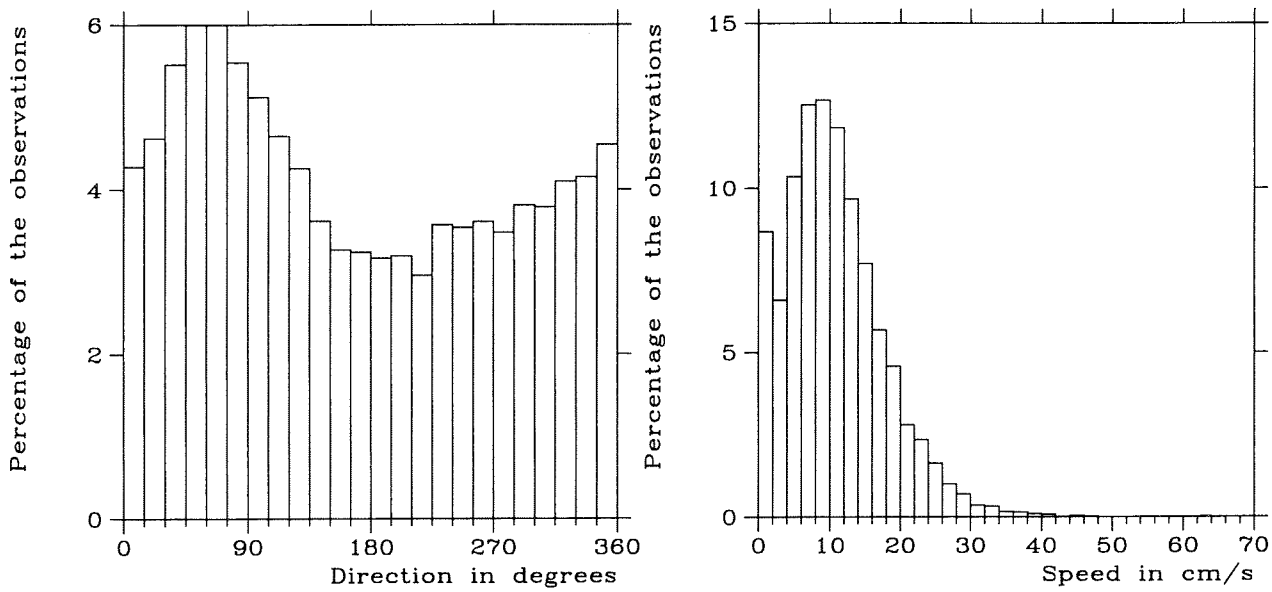
Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

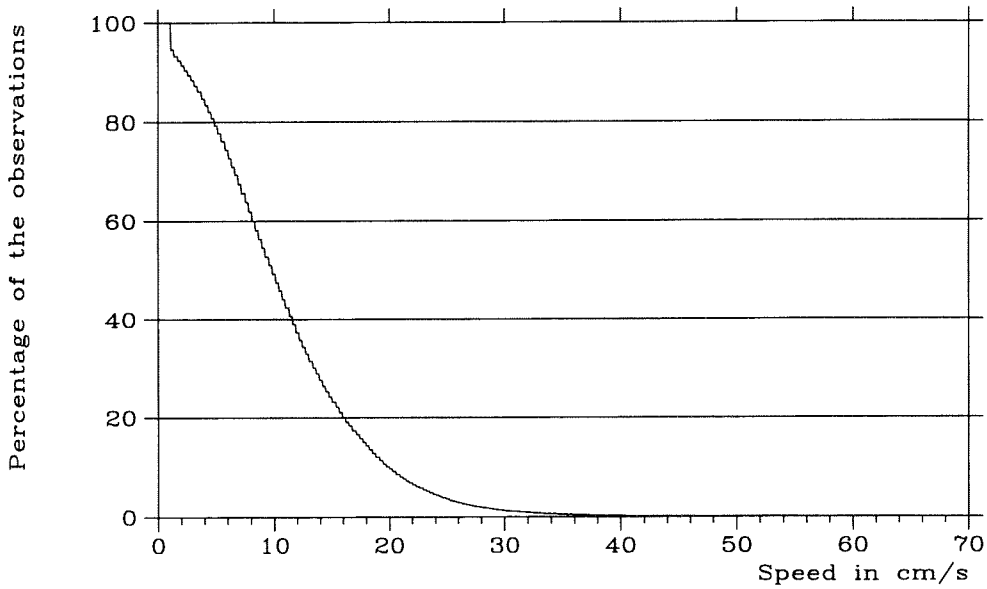
IMR

Fig. 1-1-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

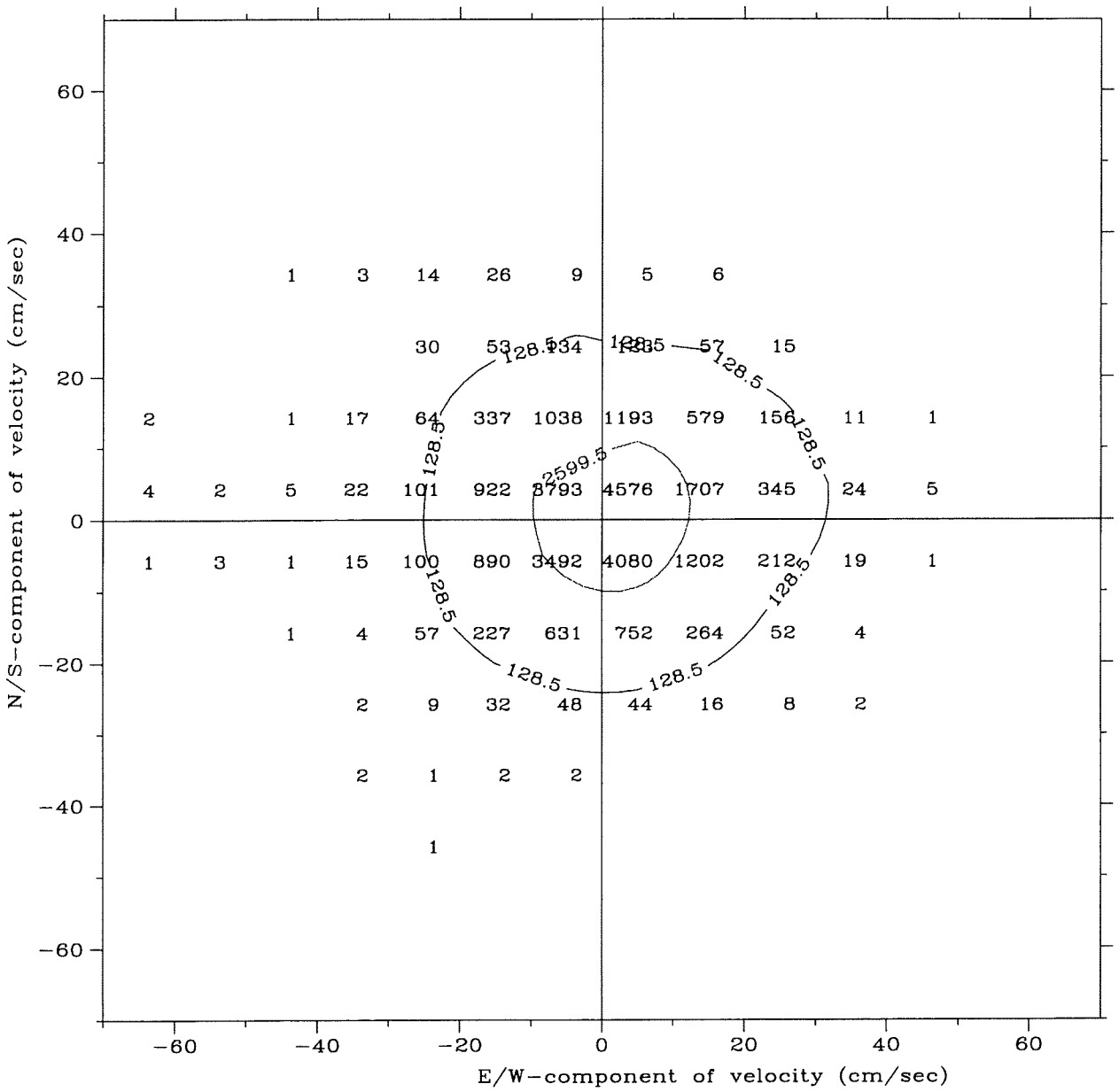
Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27558

Isoline for 50% and 96%

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

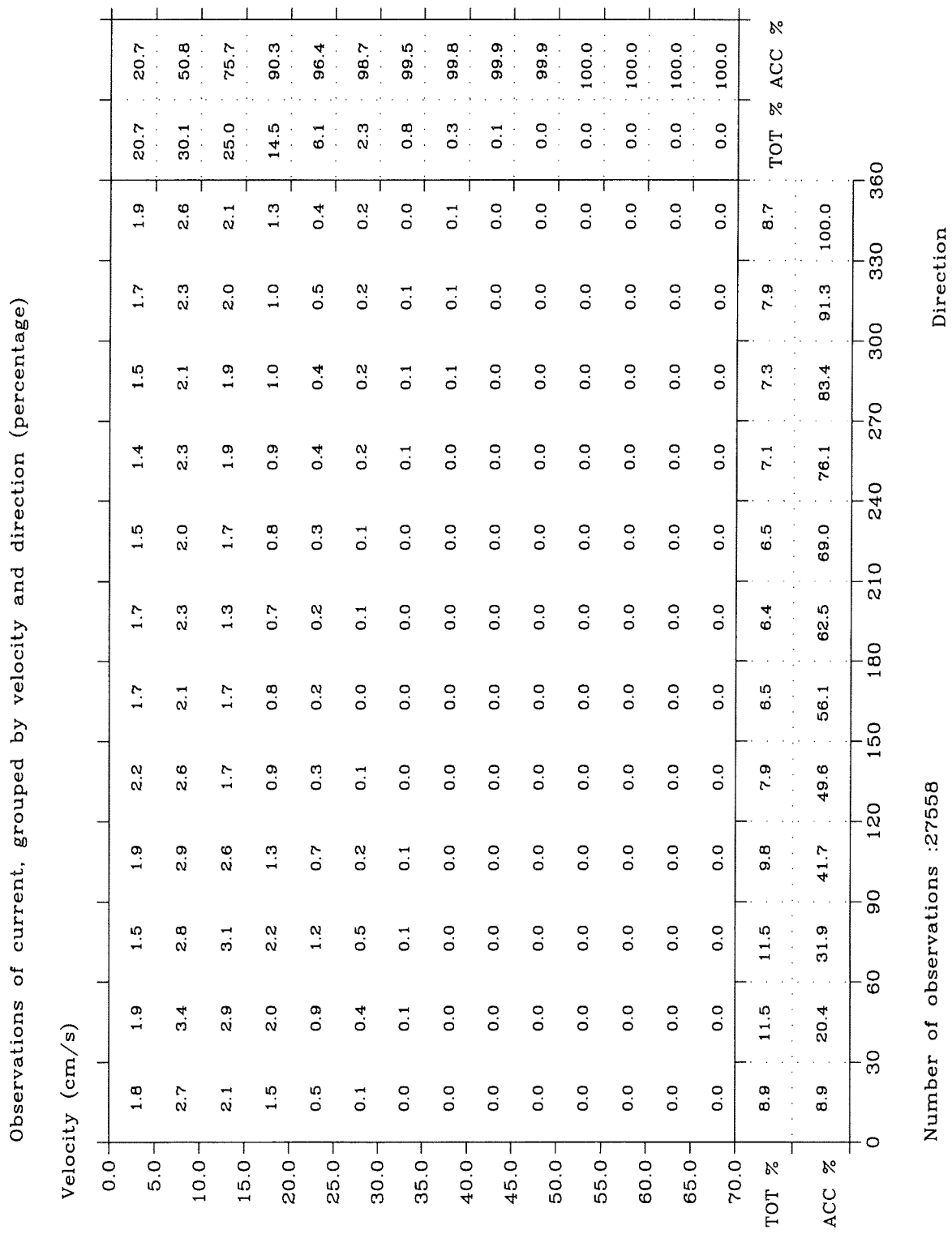
Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

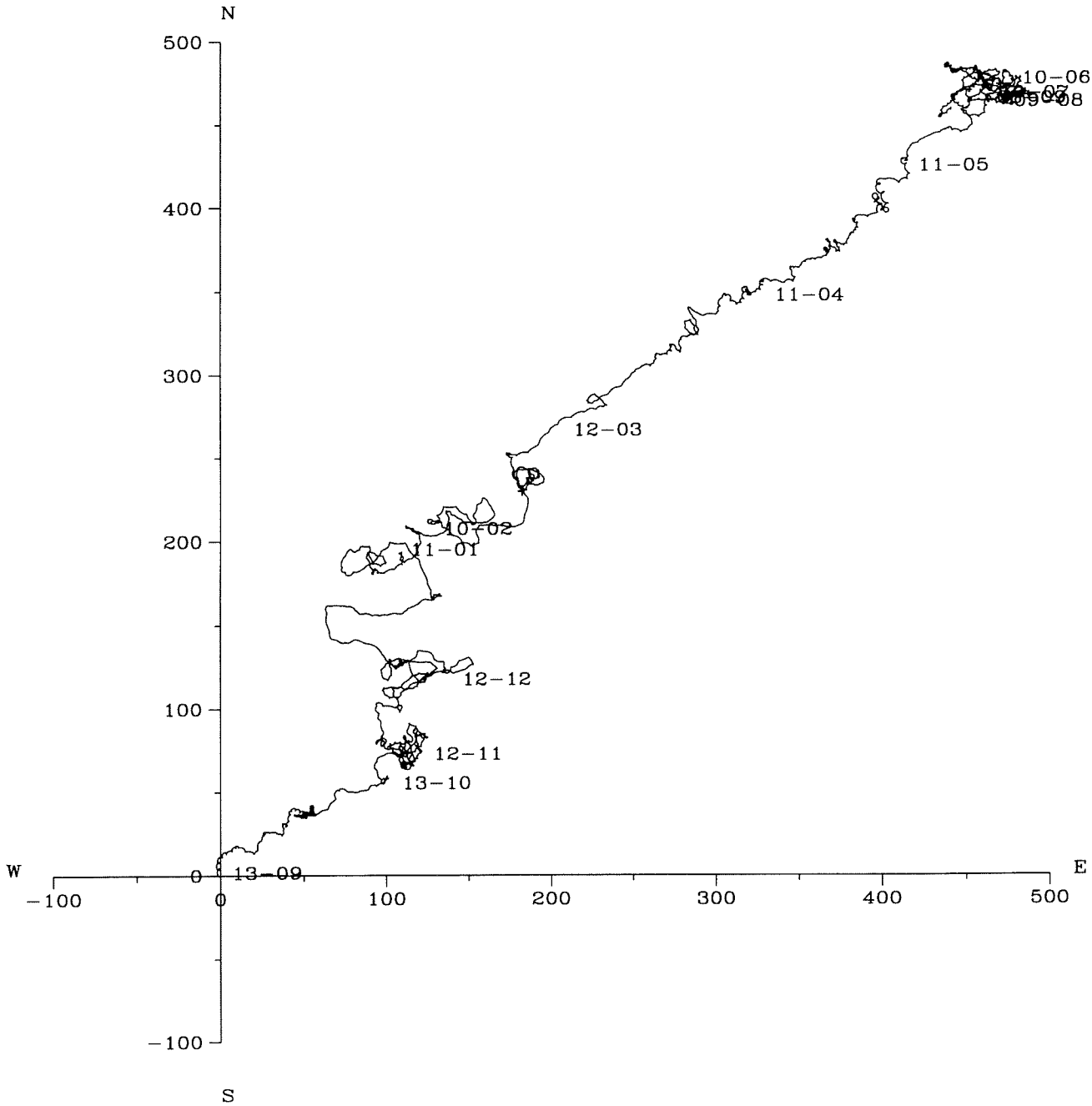
Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



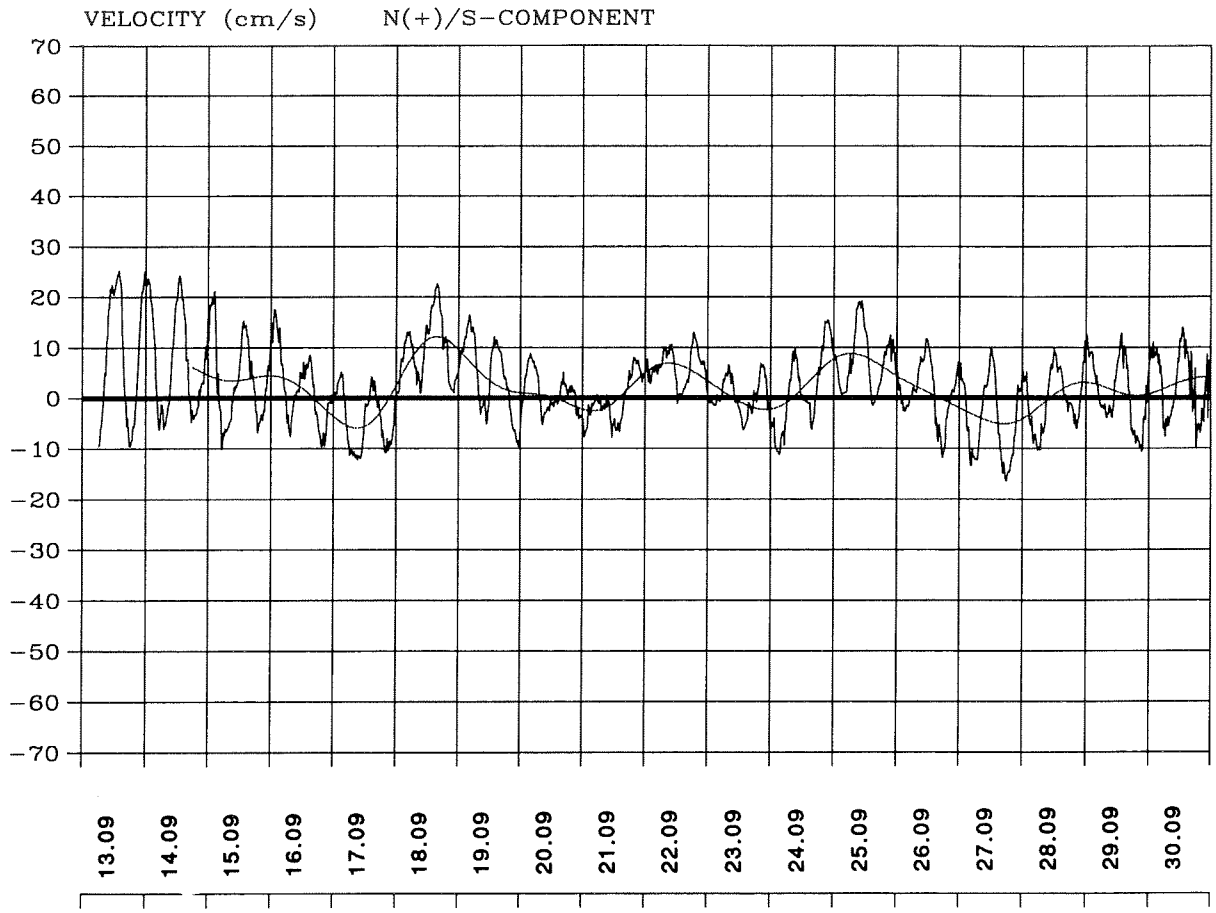
Units in km

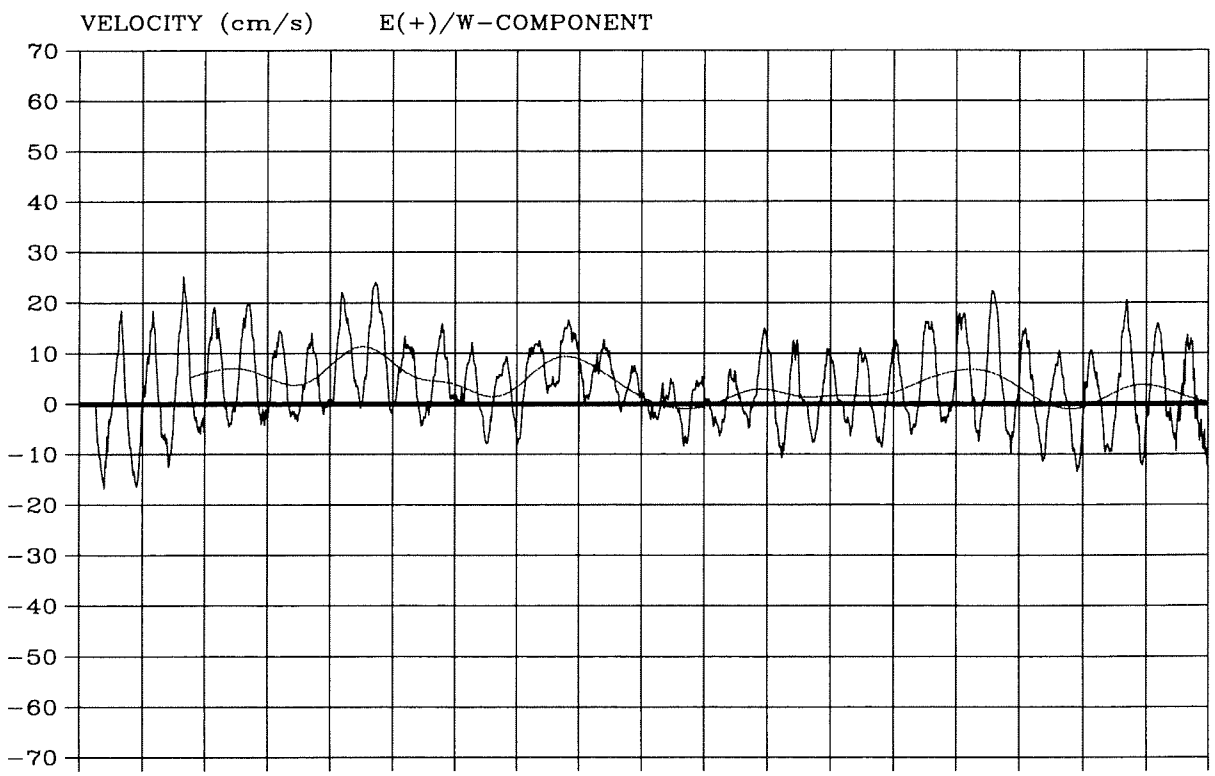
Number of observations :27558

Northern Central Bank, Barents Sea
Position : N 76° 0.07′ E 34° 59.50′
Instrument depth : 60.0 m Bottom depth : 250.0 m
Time interval : 20.00 minutes. Instrument no. : 10794
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-5 Progressive vector diagram.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

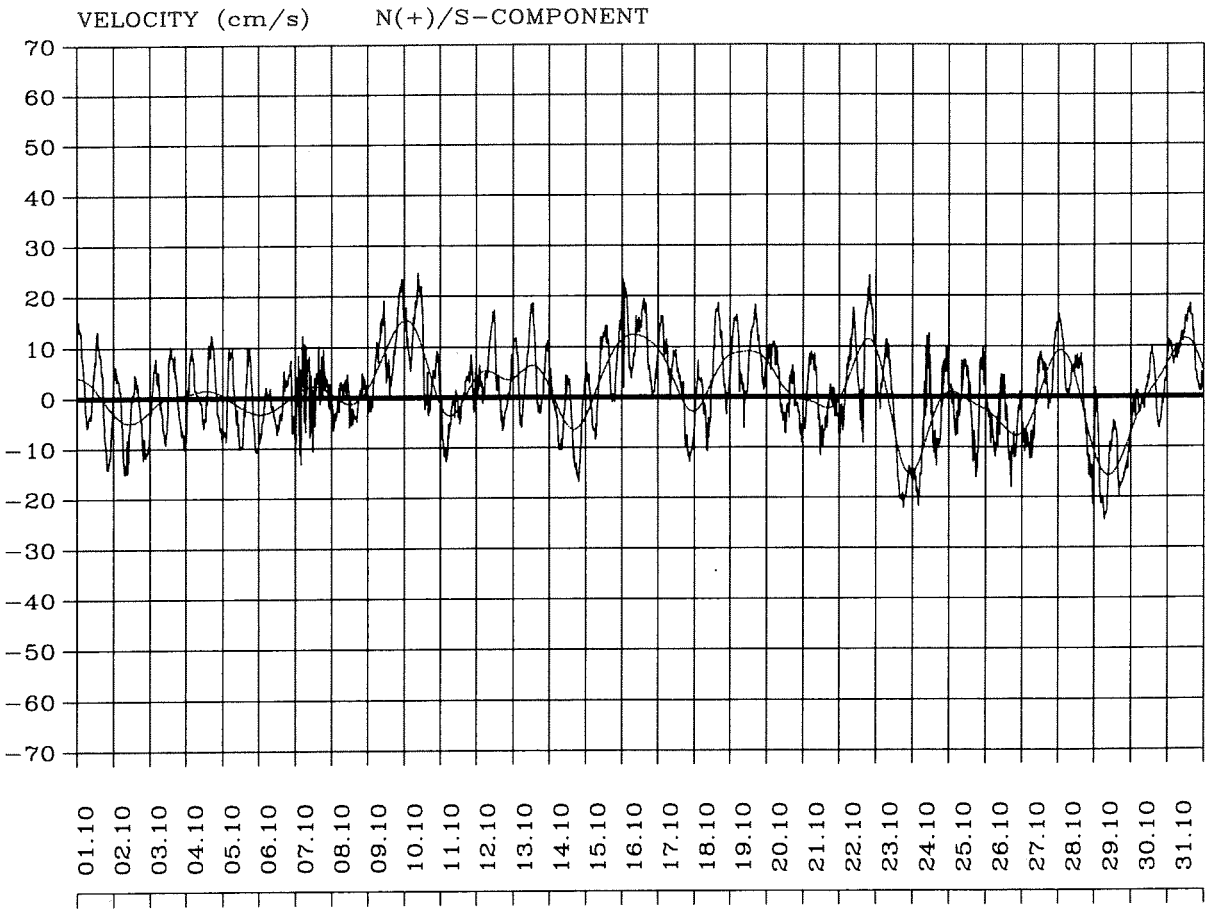
Instrument depth : 60.0 m Bottom depth : 250.0 m

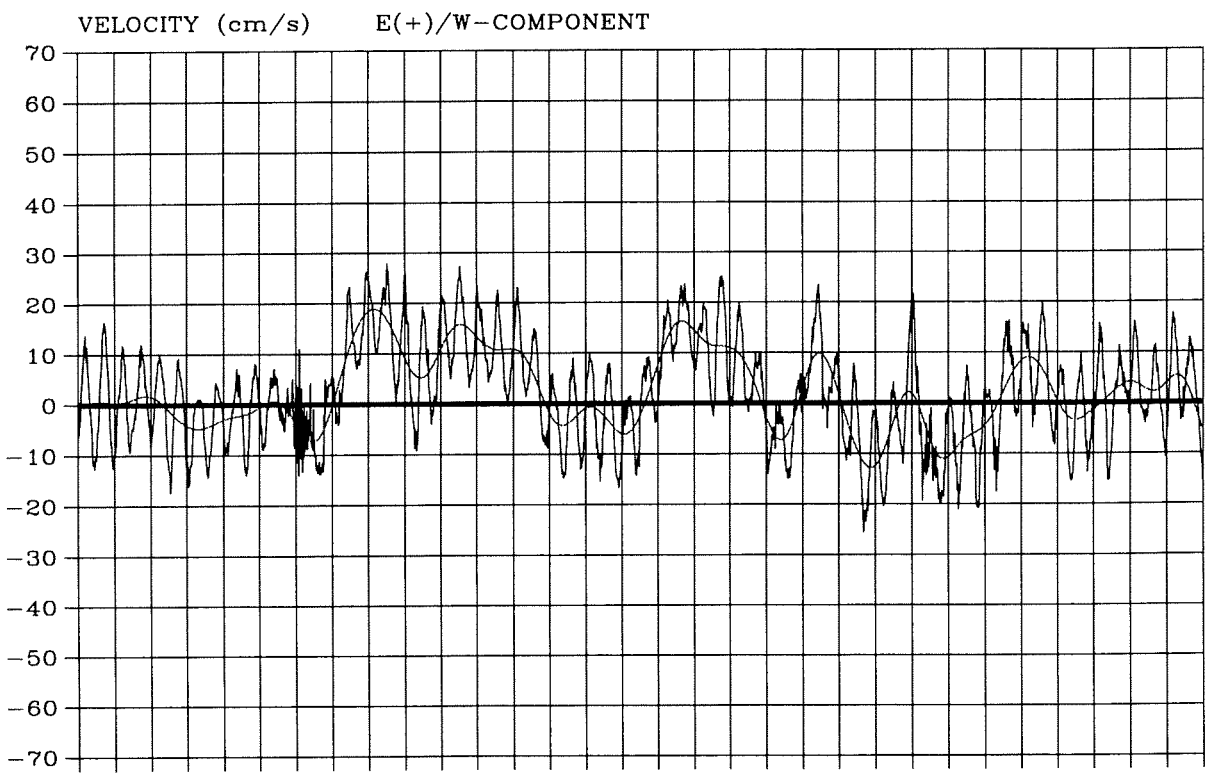
Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6 Current velocity distribution.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

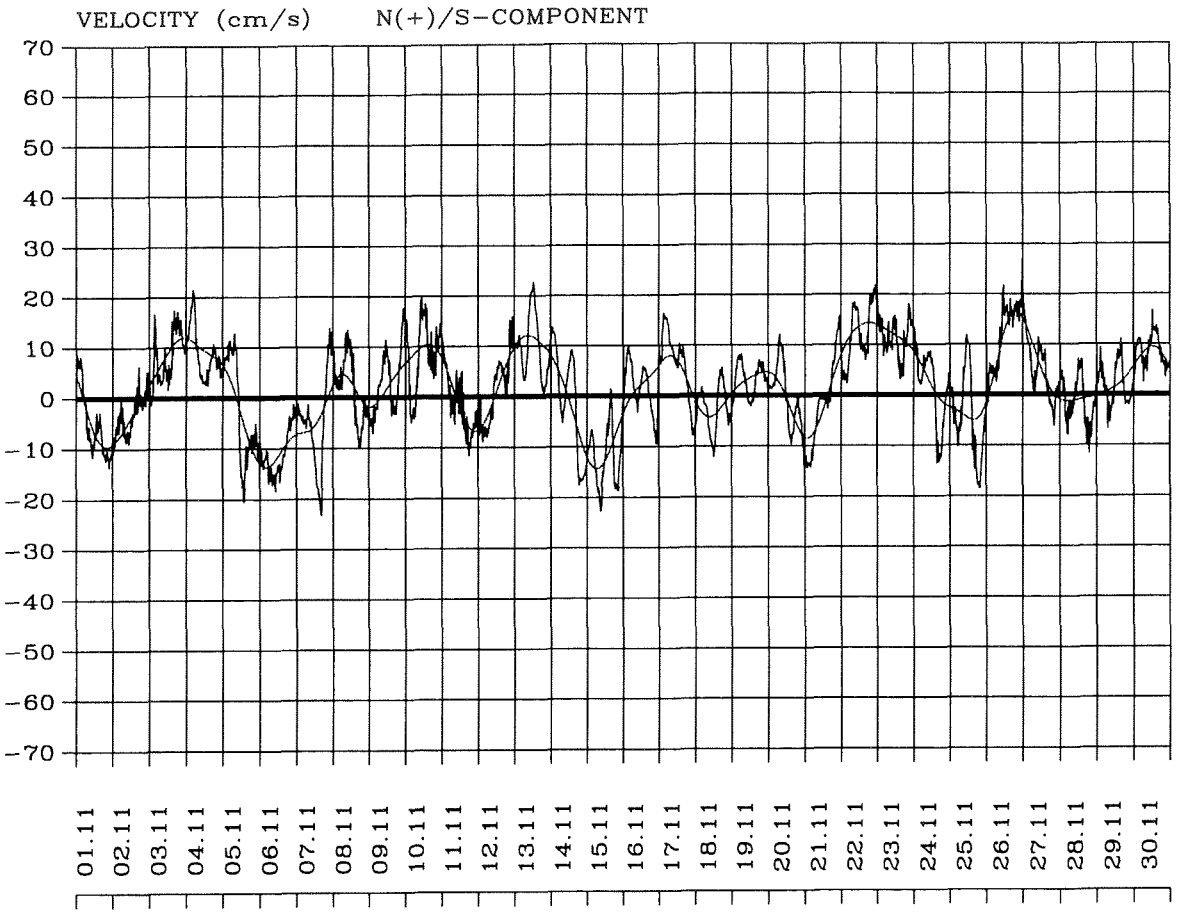
Time interval : 20.00 minutes. Instrument no. : 10794

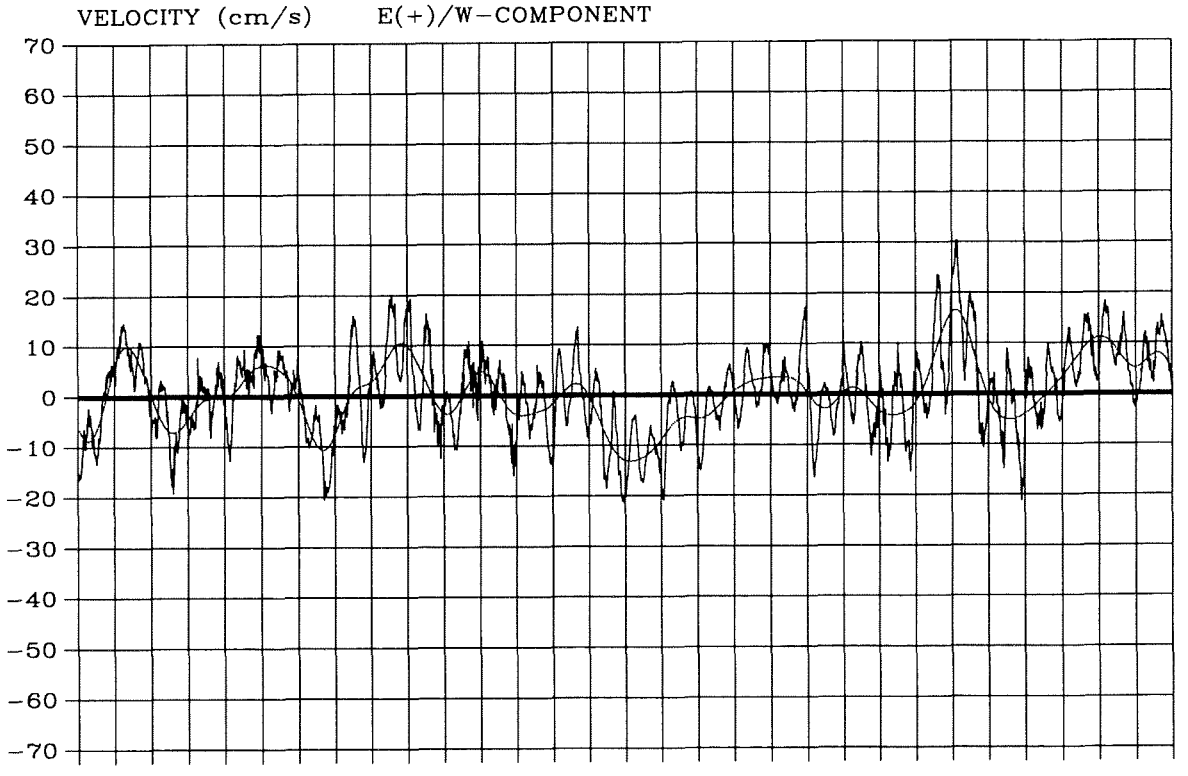
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

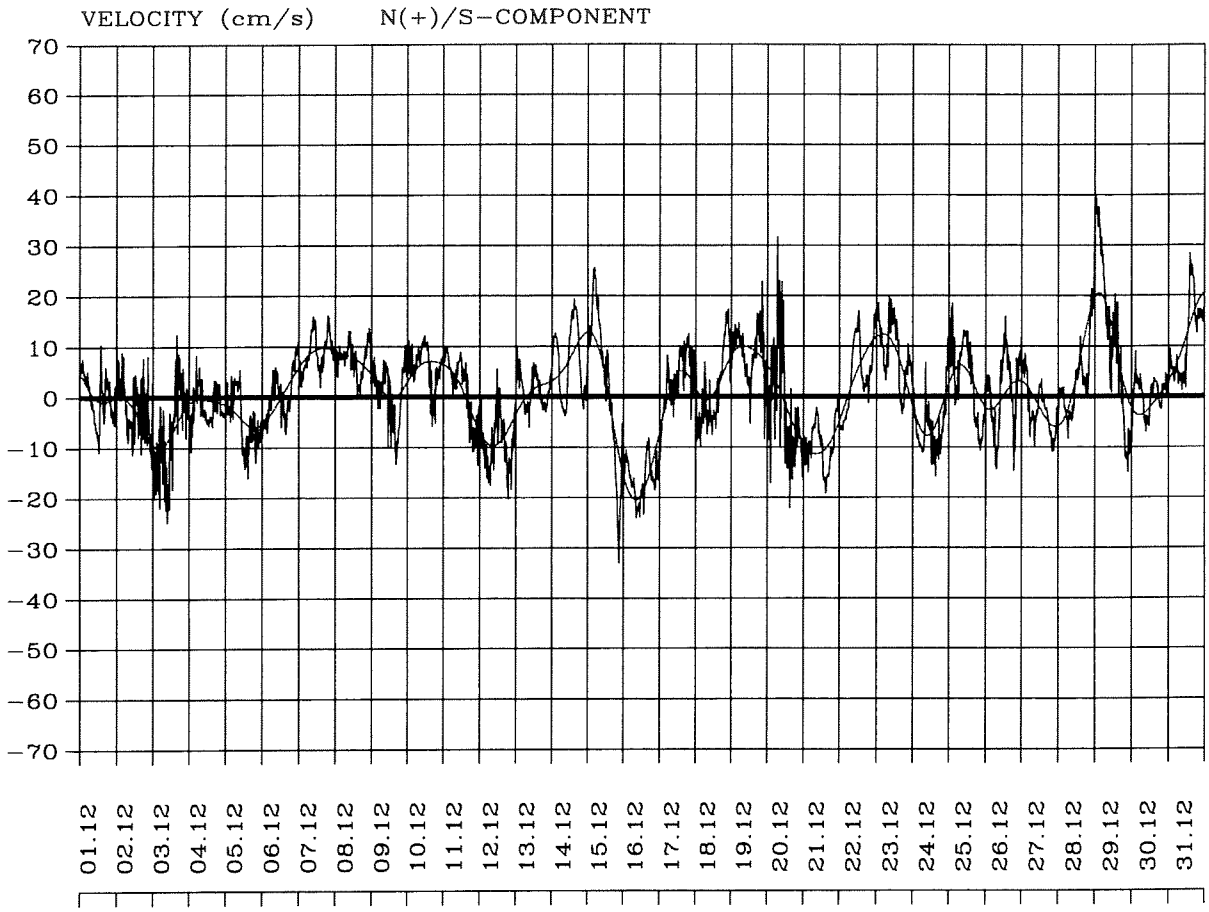
Time interval : 20.00 minutes. Instrument no. : 10794

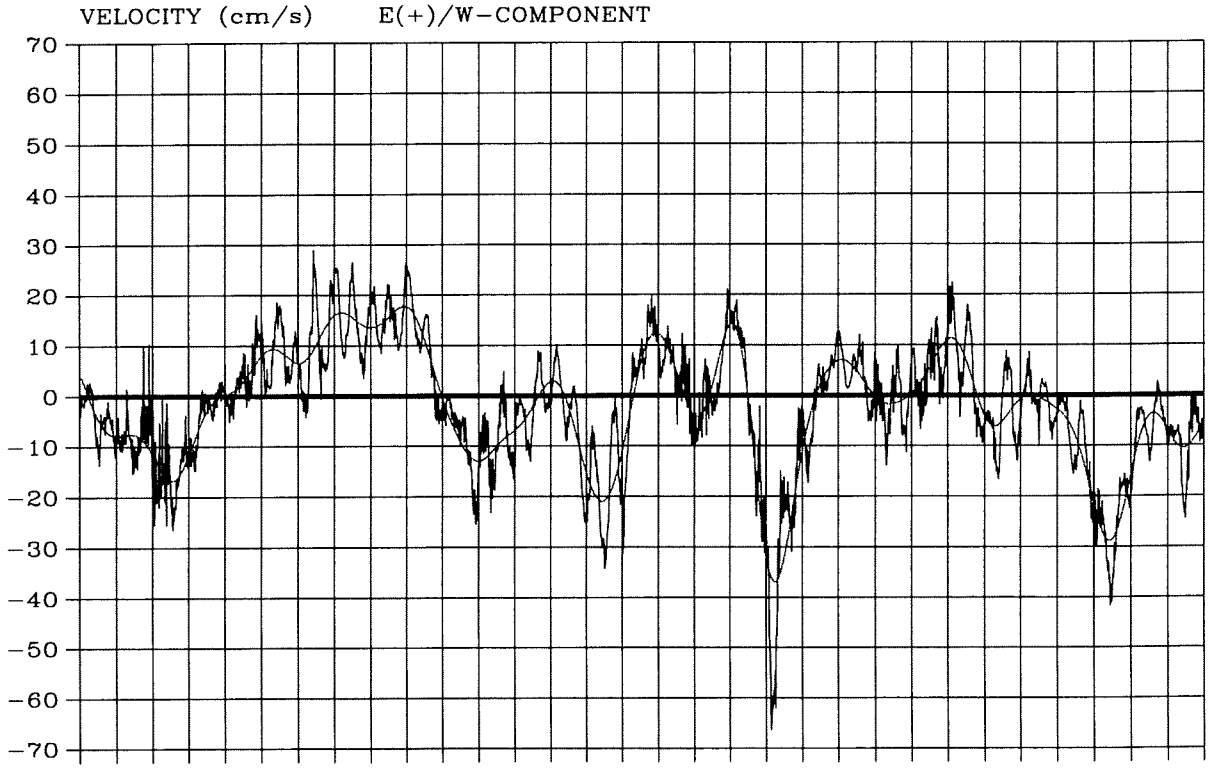
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6

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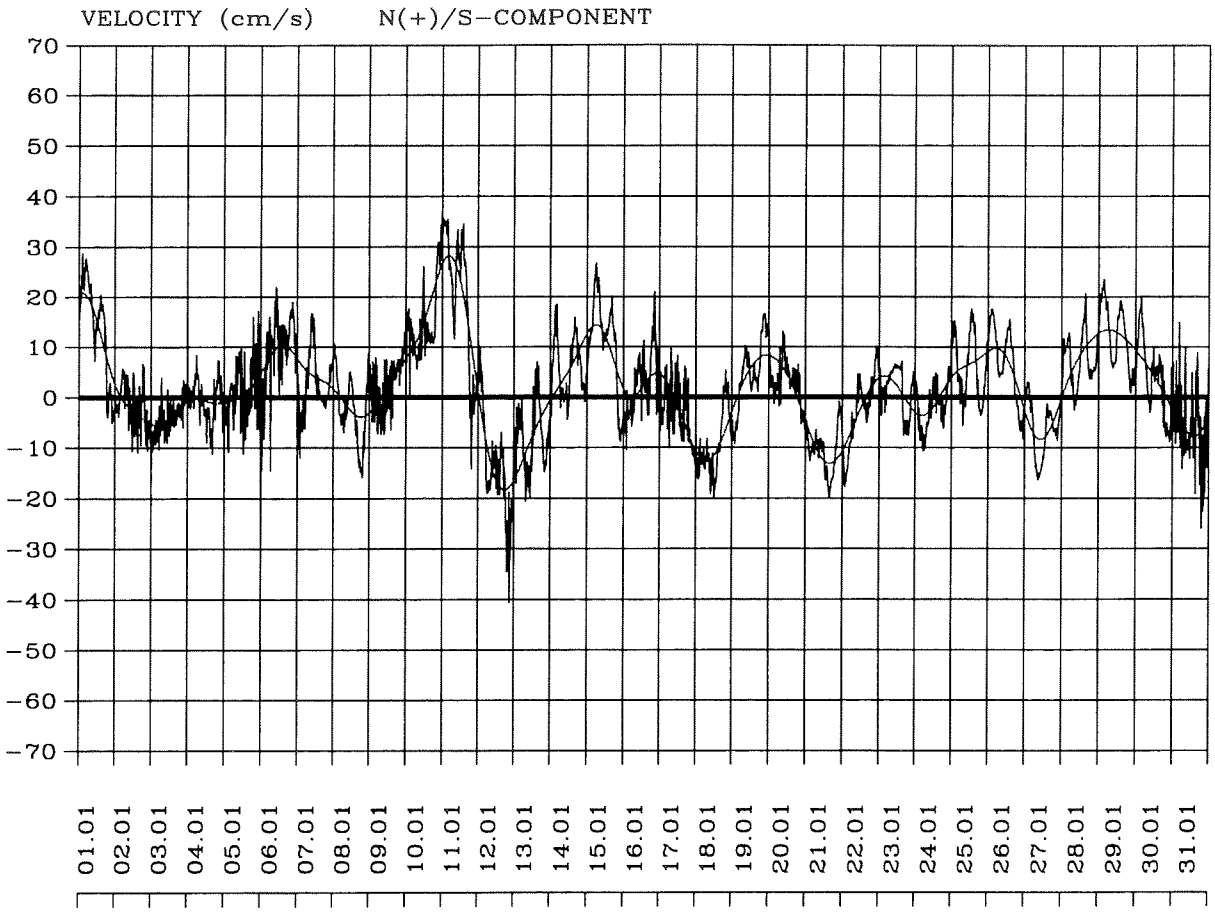

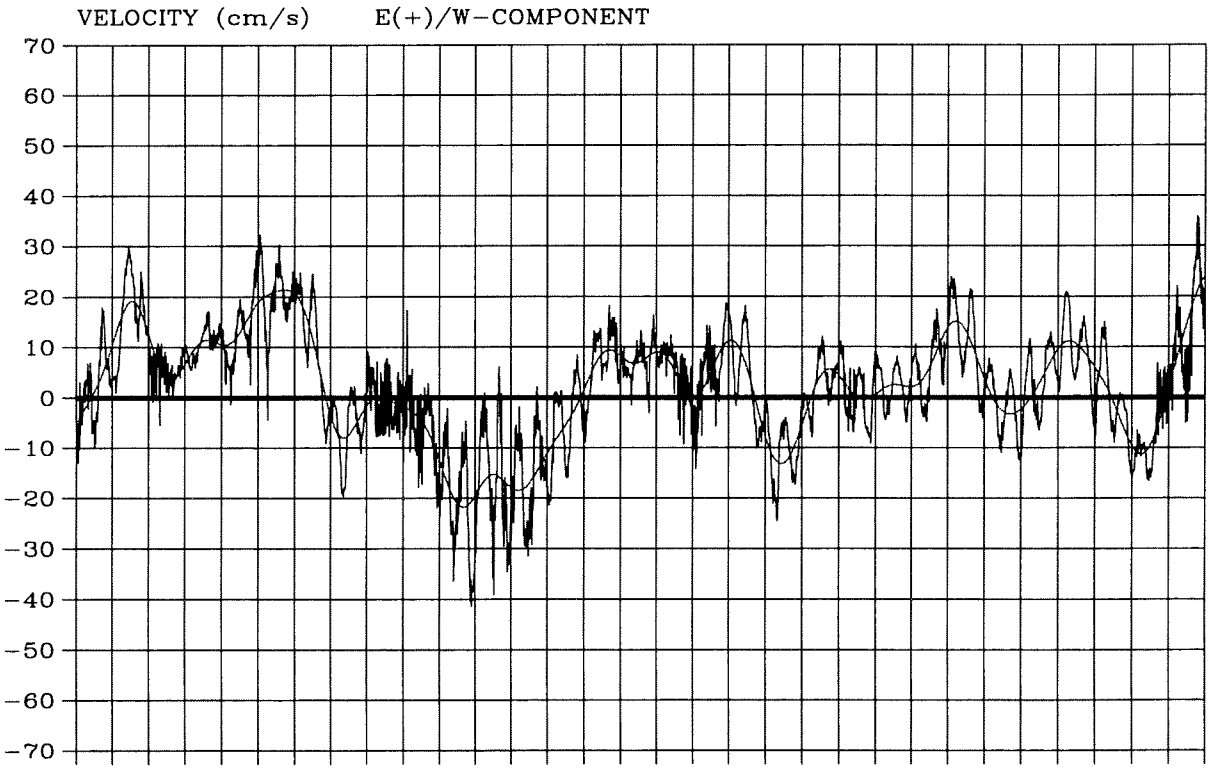

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-6

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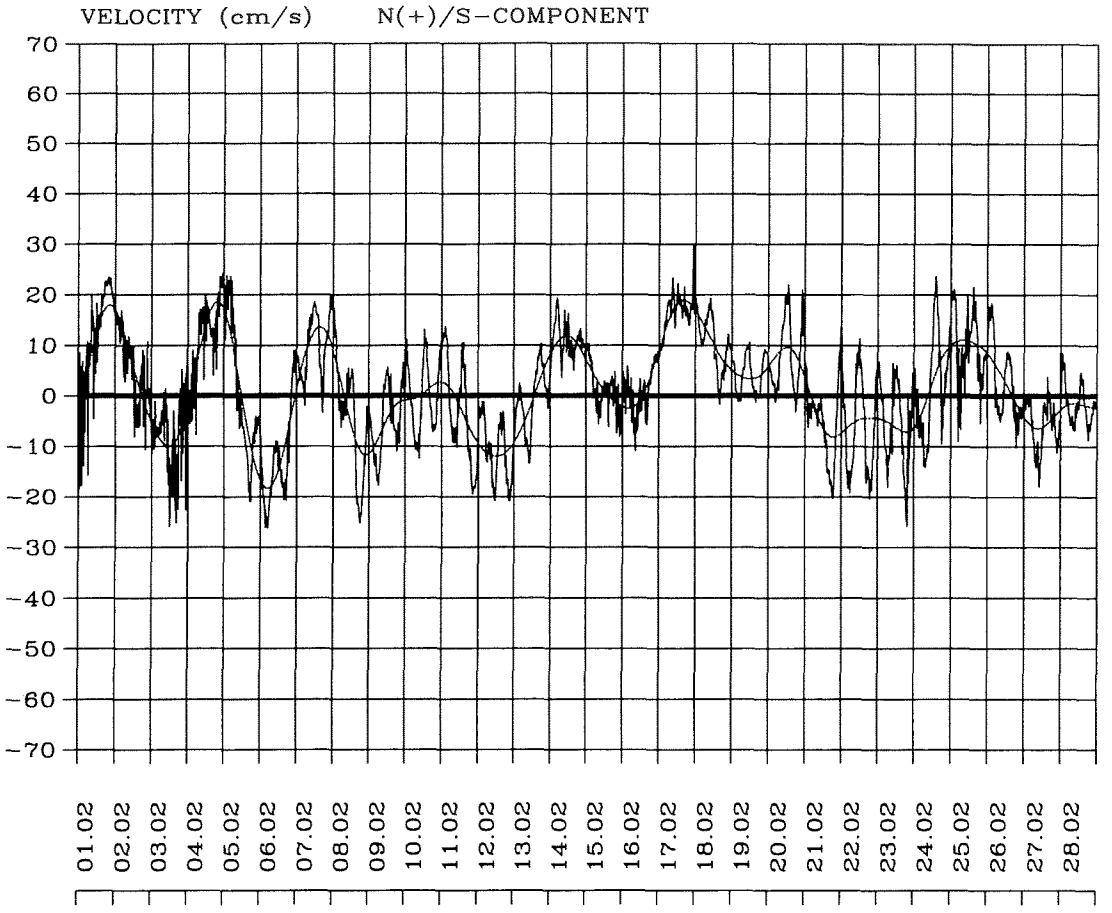
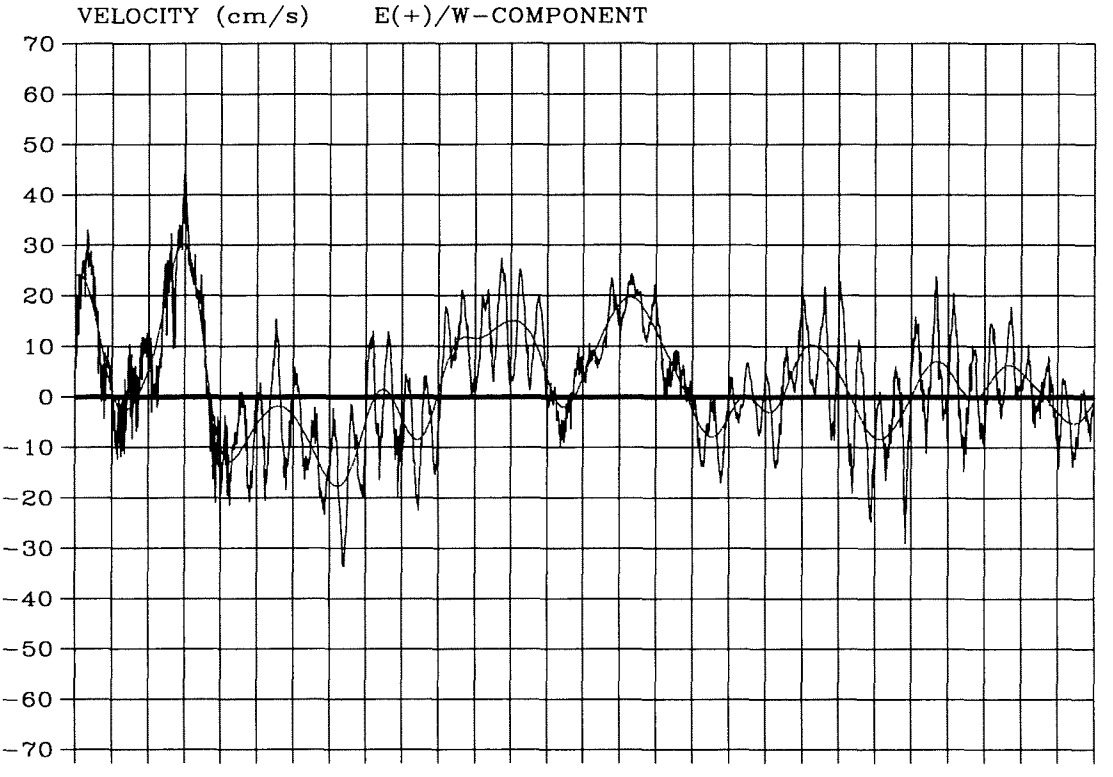




Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 60.0 m Bottom depth : 250.0 m

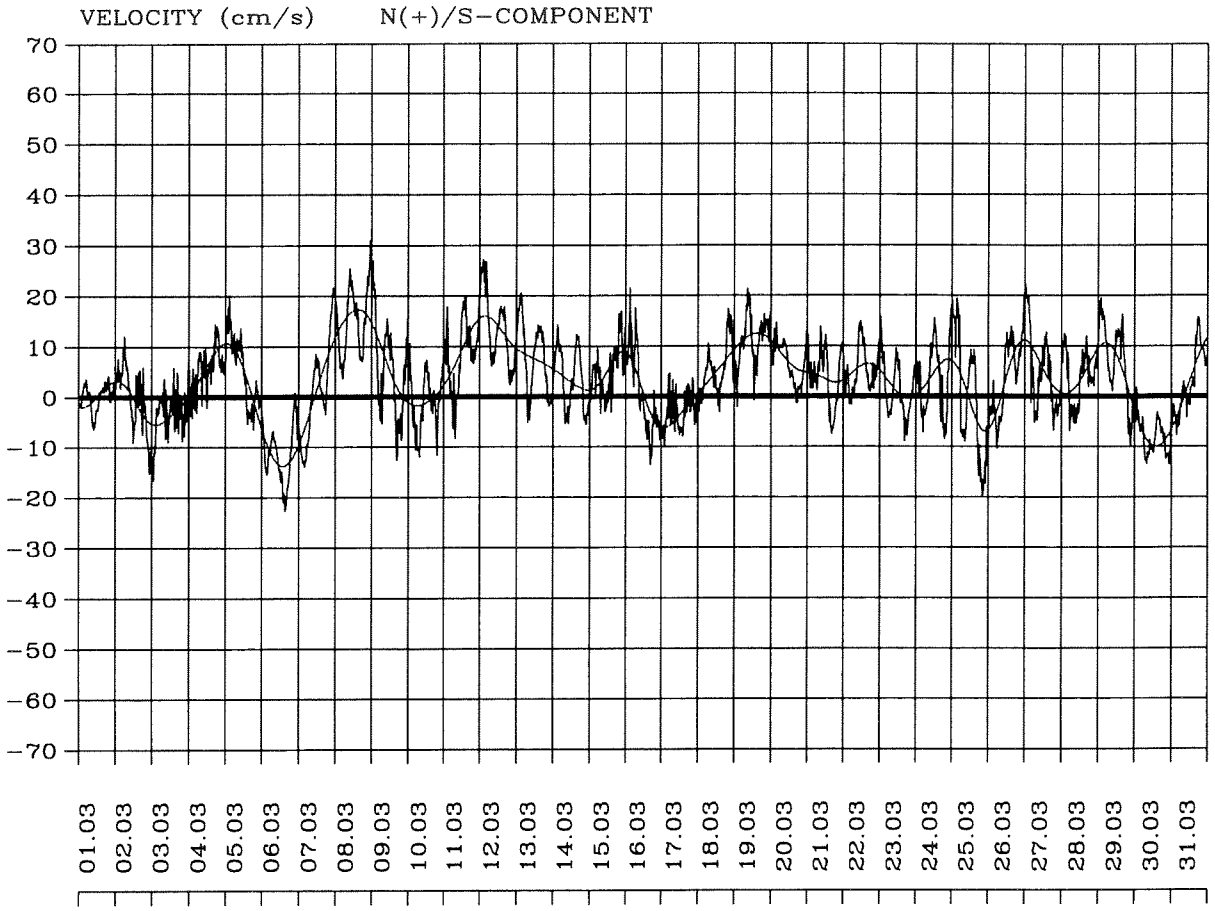
Time interval : 20.00 minutes. Instrument no. : 10794

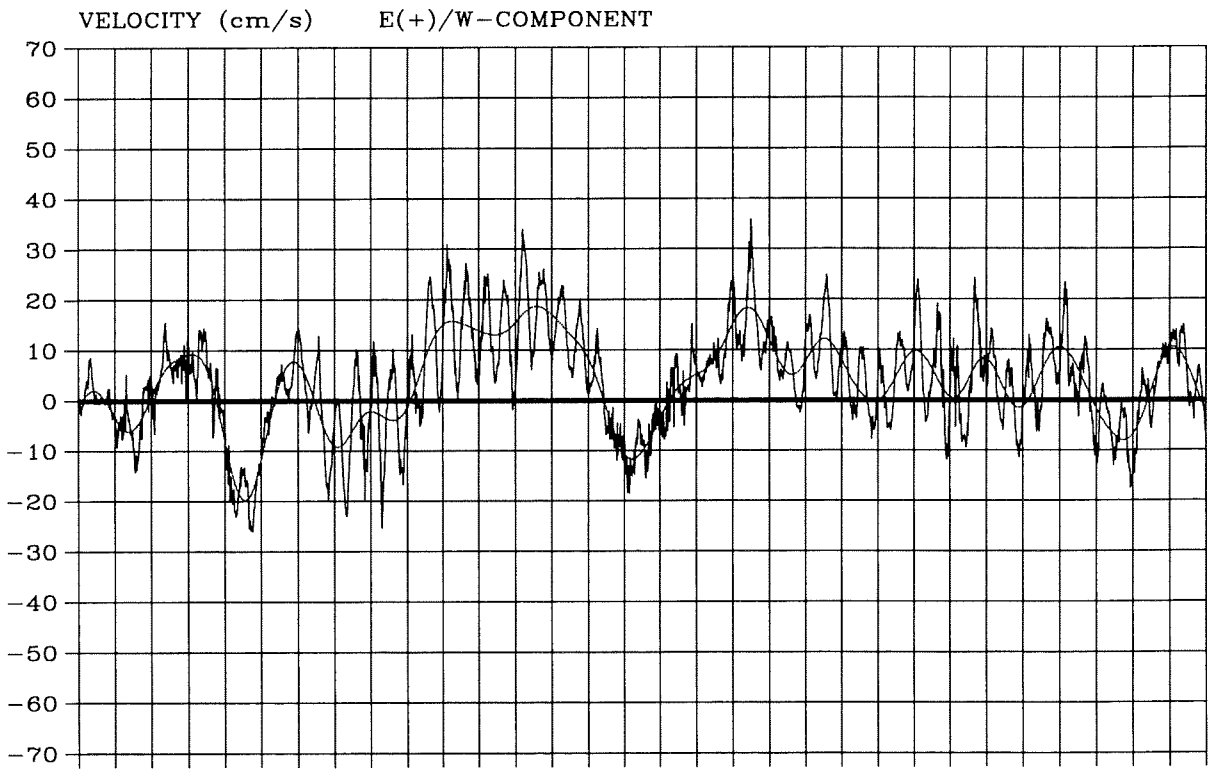
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

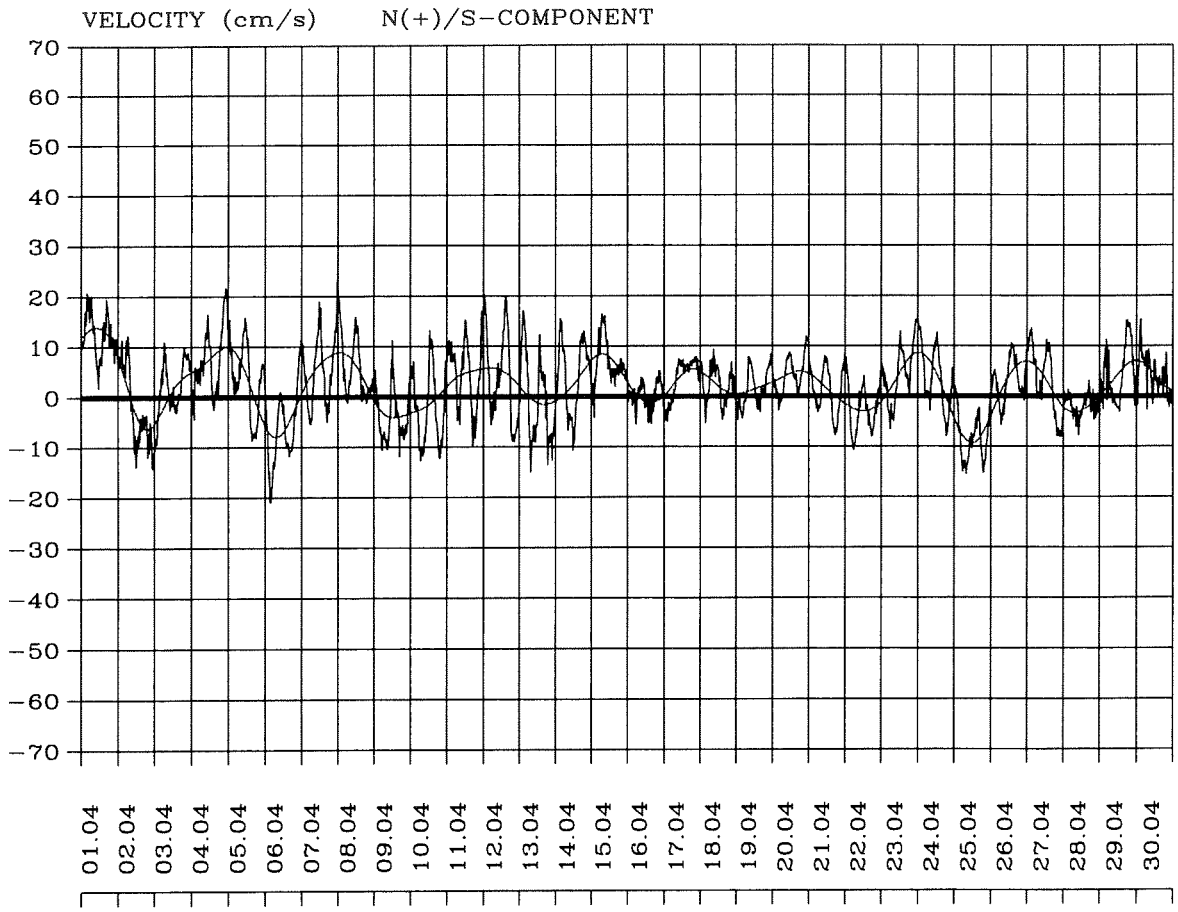
Time interval : 20.00 minutes. Instrument no. : 10794

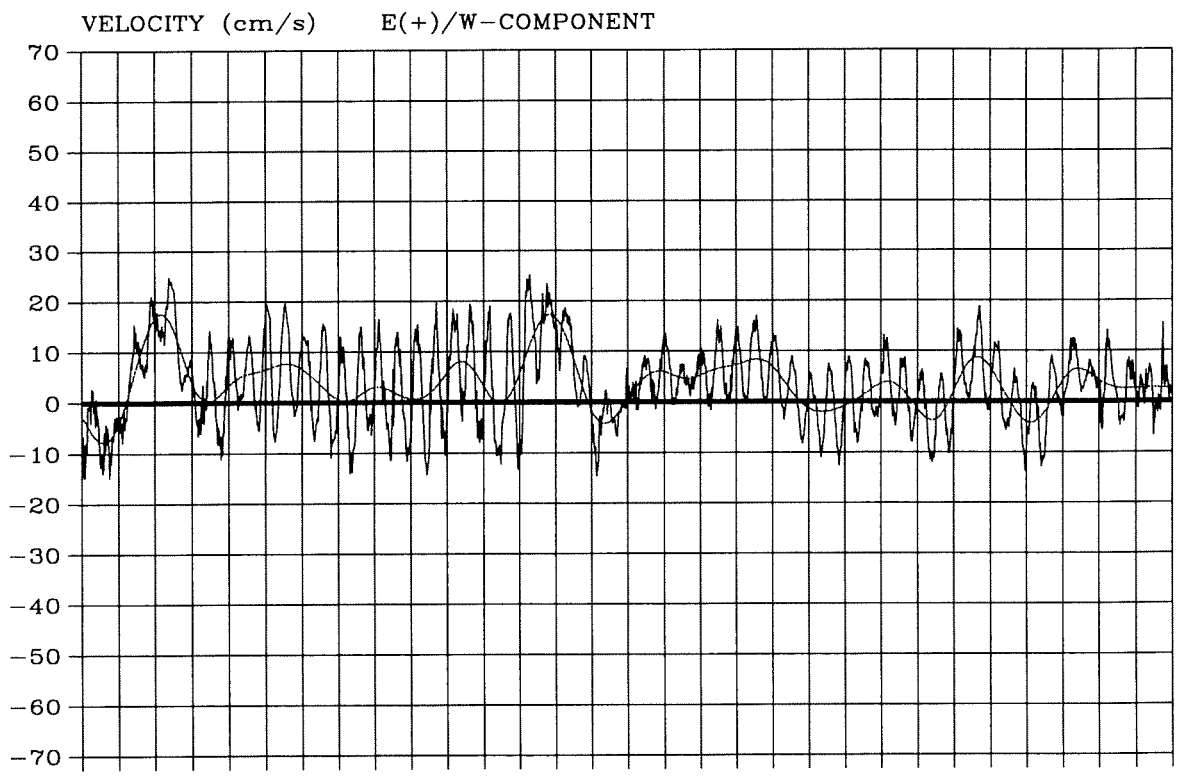
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

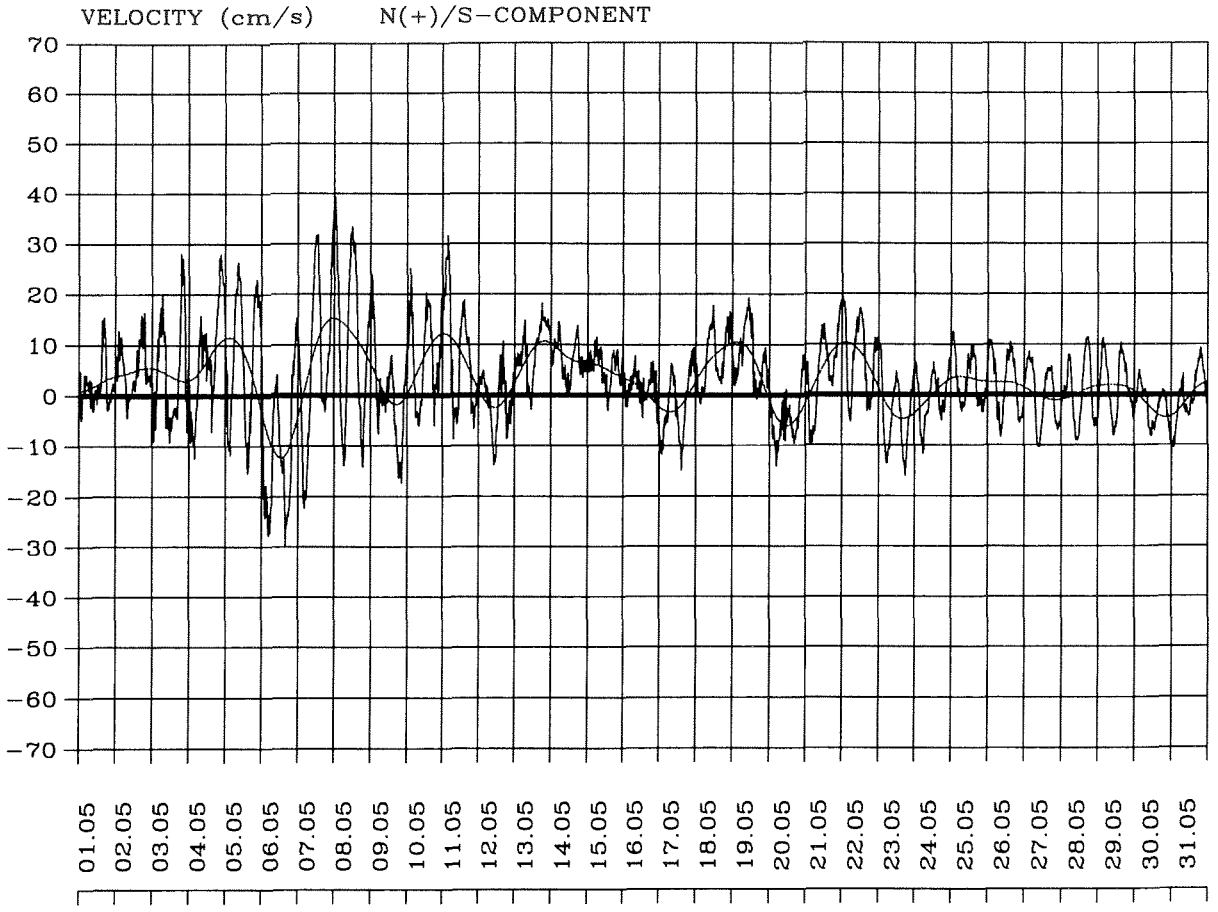
Time interval : 20.00 minutes. Instrument no. : 10794

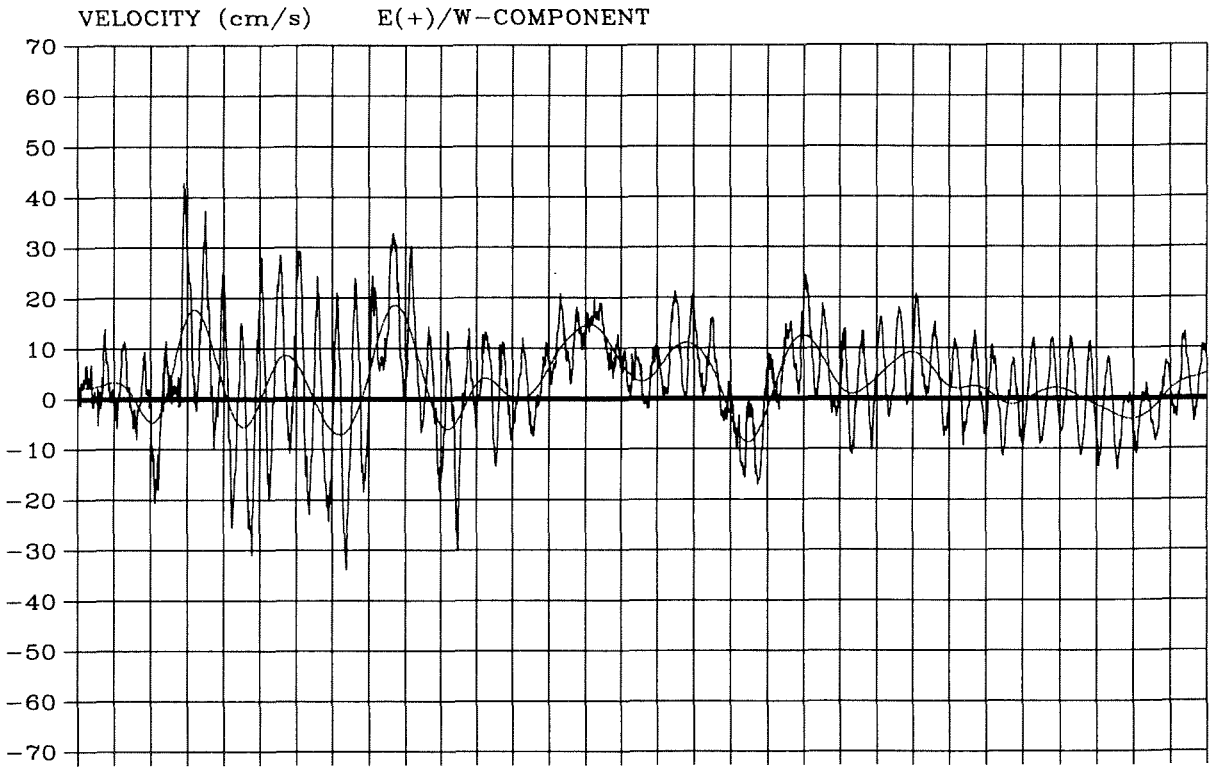
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

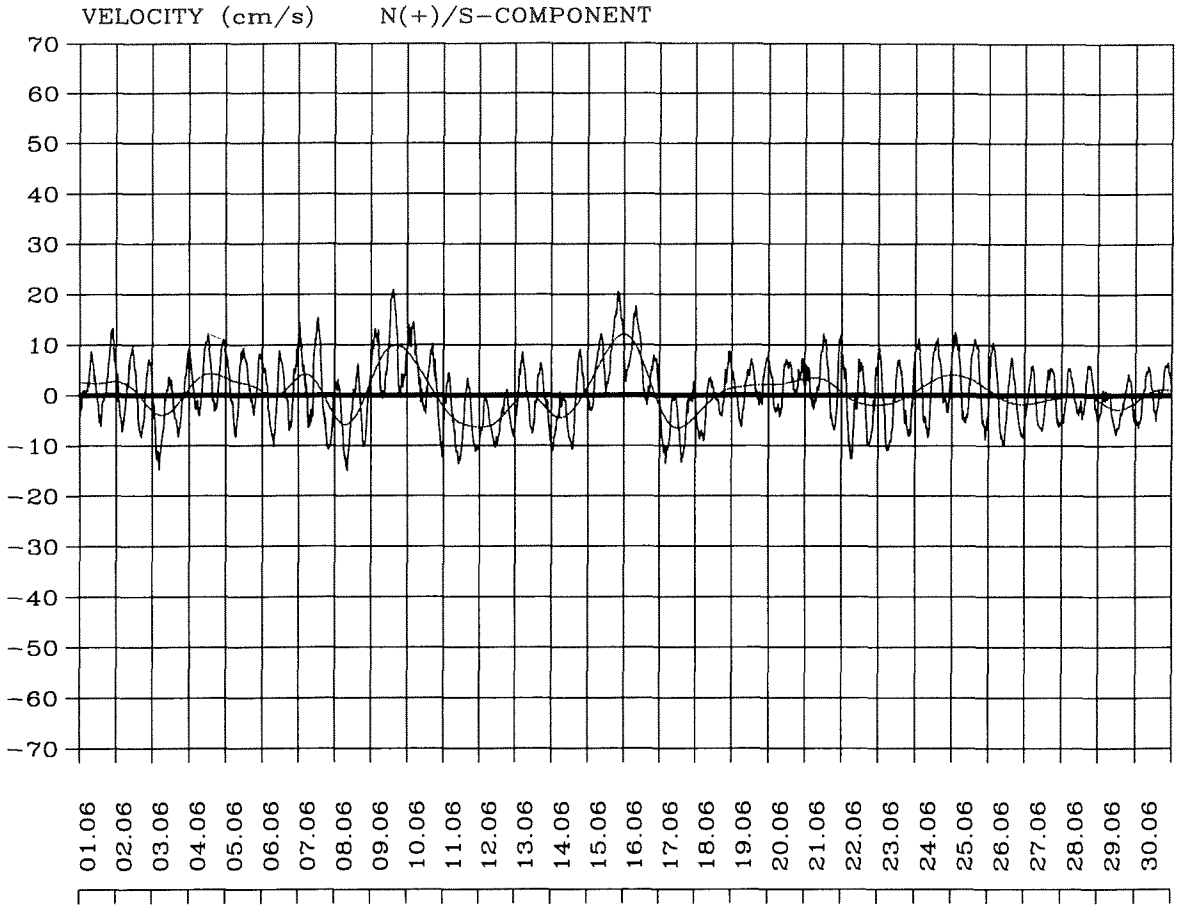
Time interval : 20.00 minutes. Instrument no. : 10794

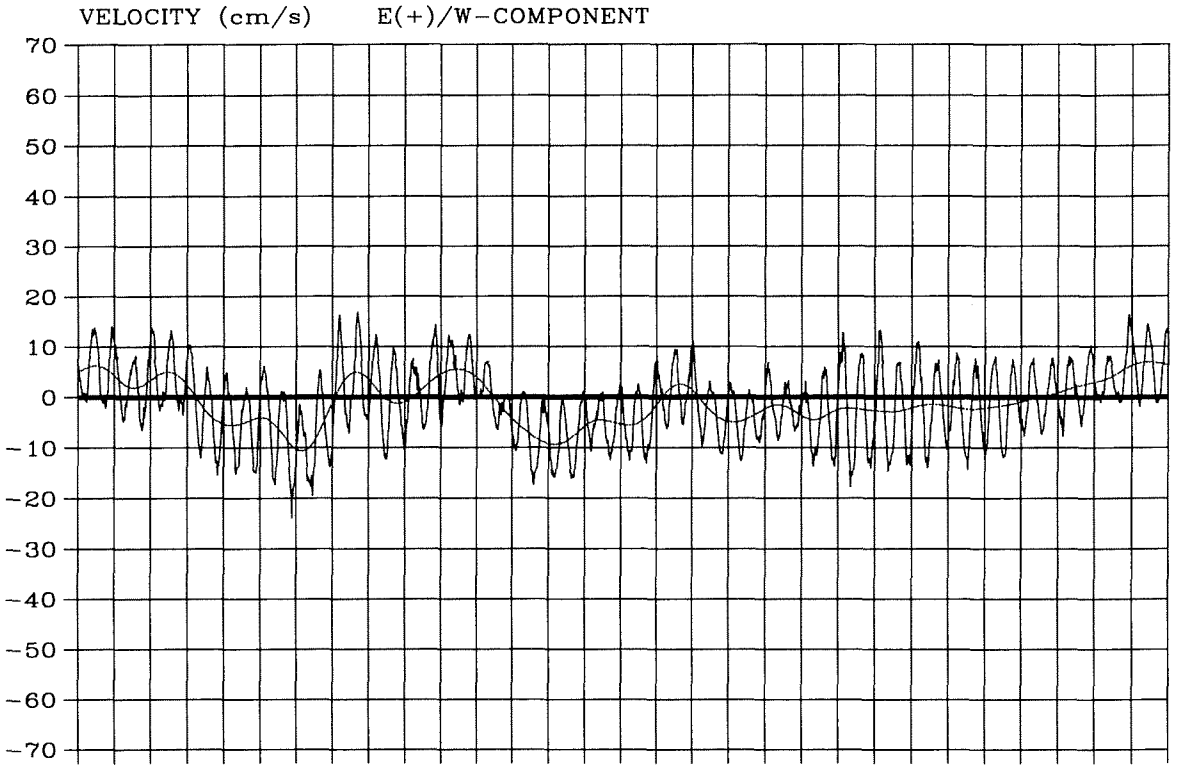
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 60.0 m Bottom depth : 250.0 m

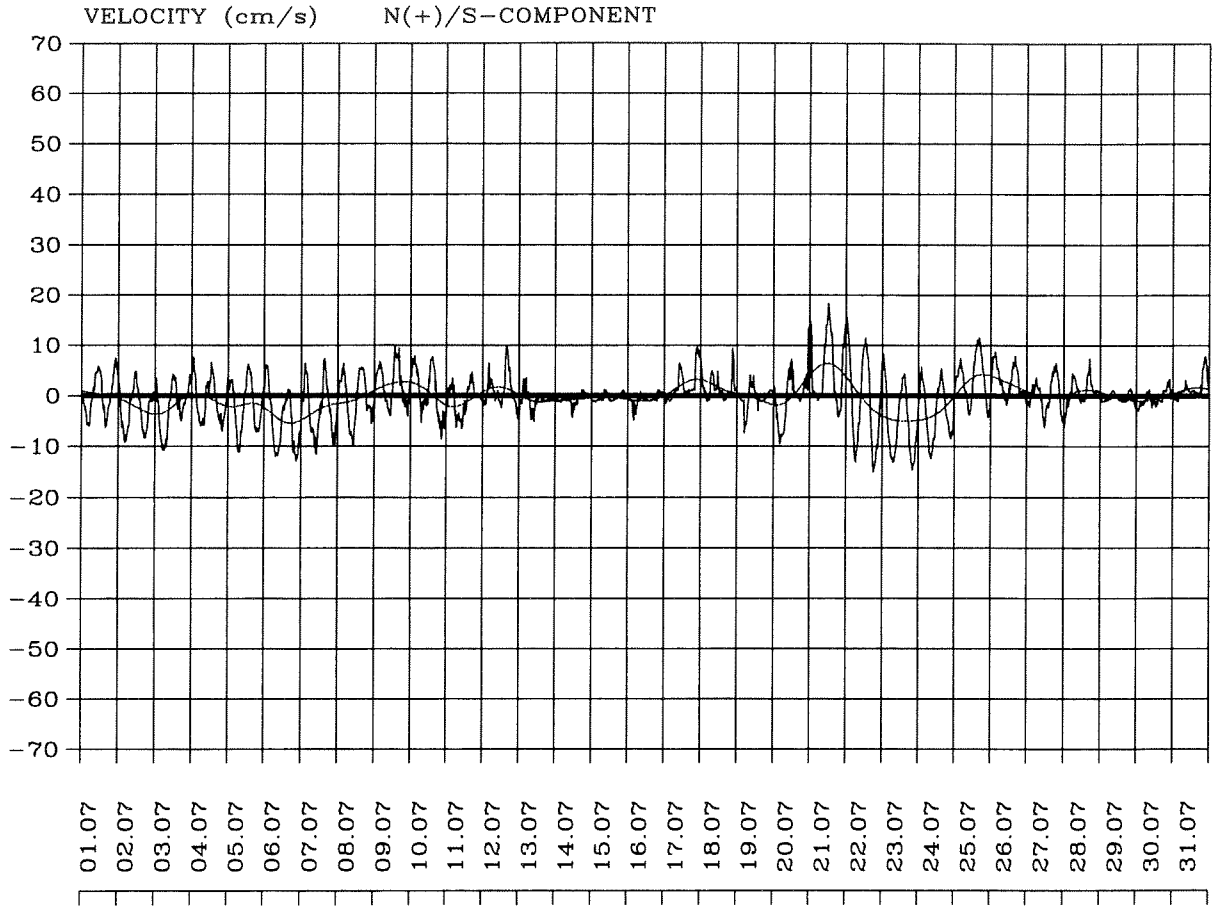
Time interval : 20.00 minutes. Instrument no. : 10794

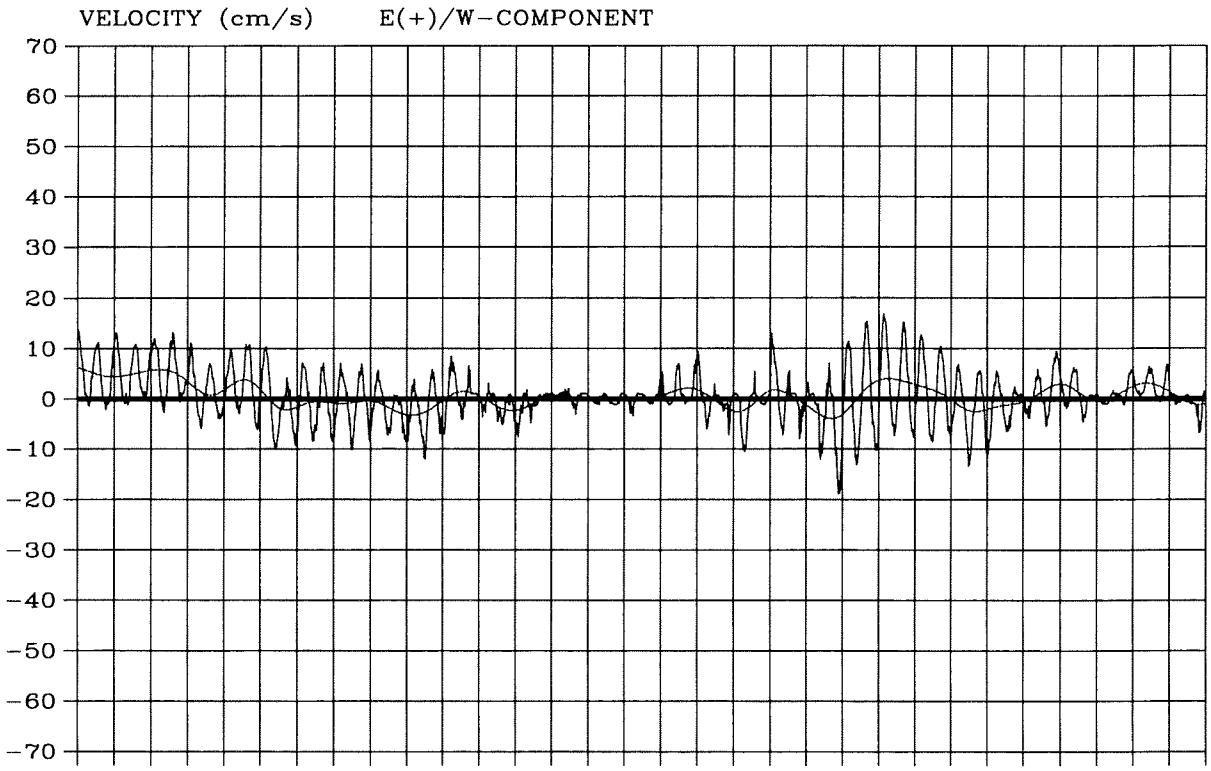
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

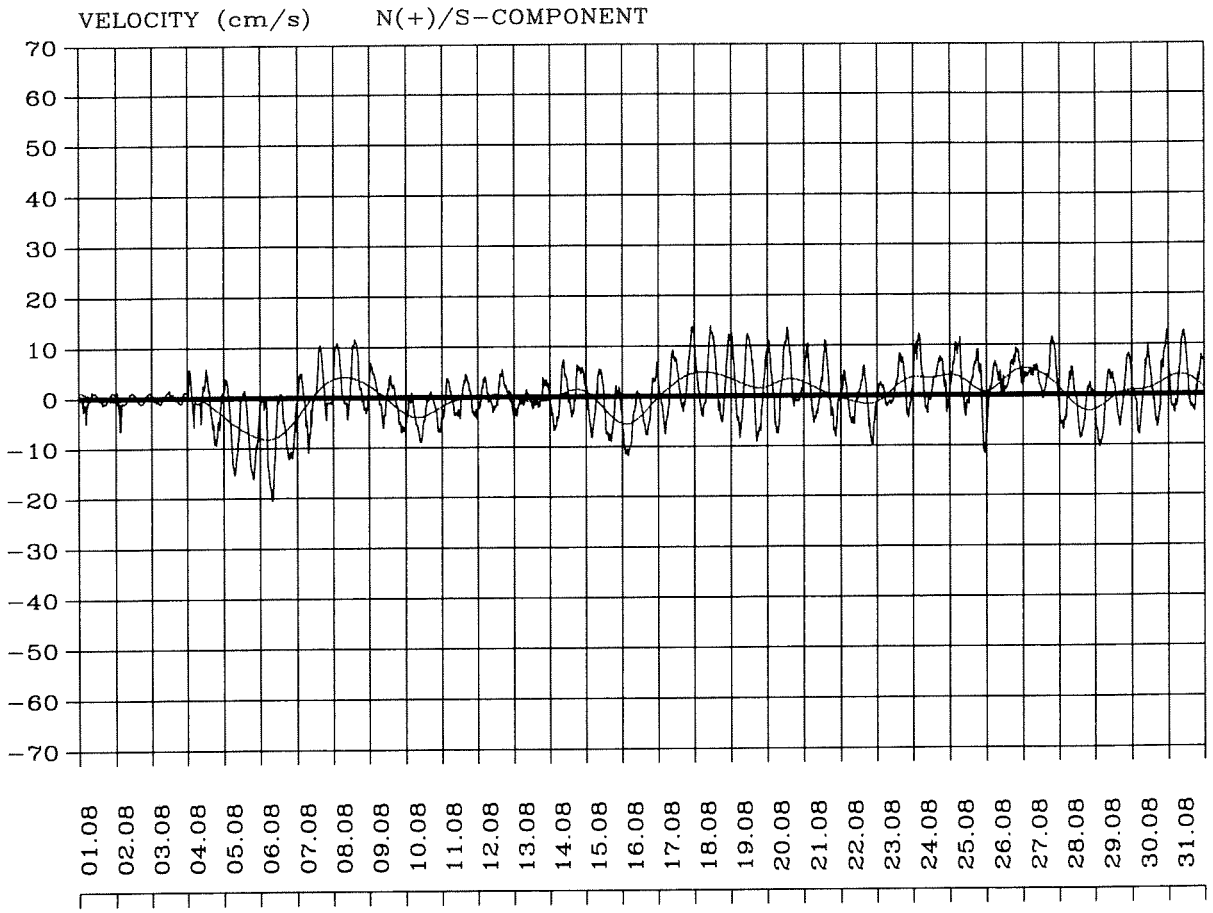
Time interval : 20.00 minutes. Instrument no. : 10794

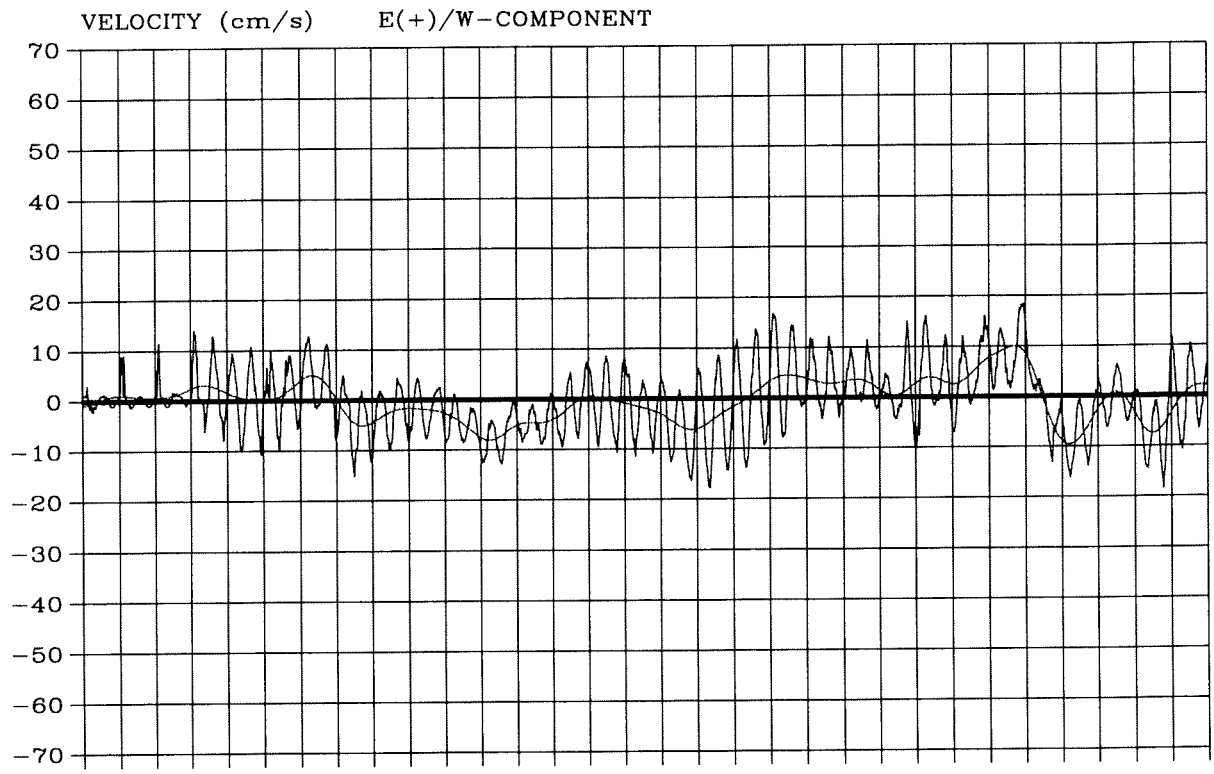
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

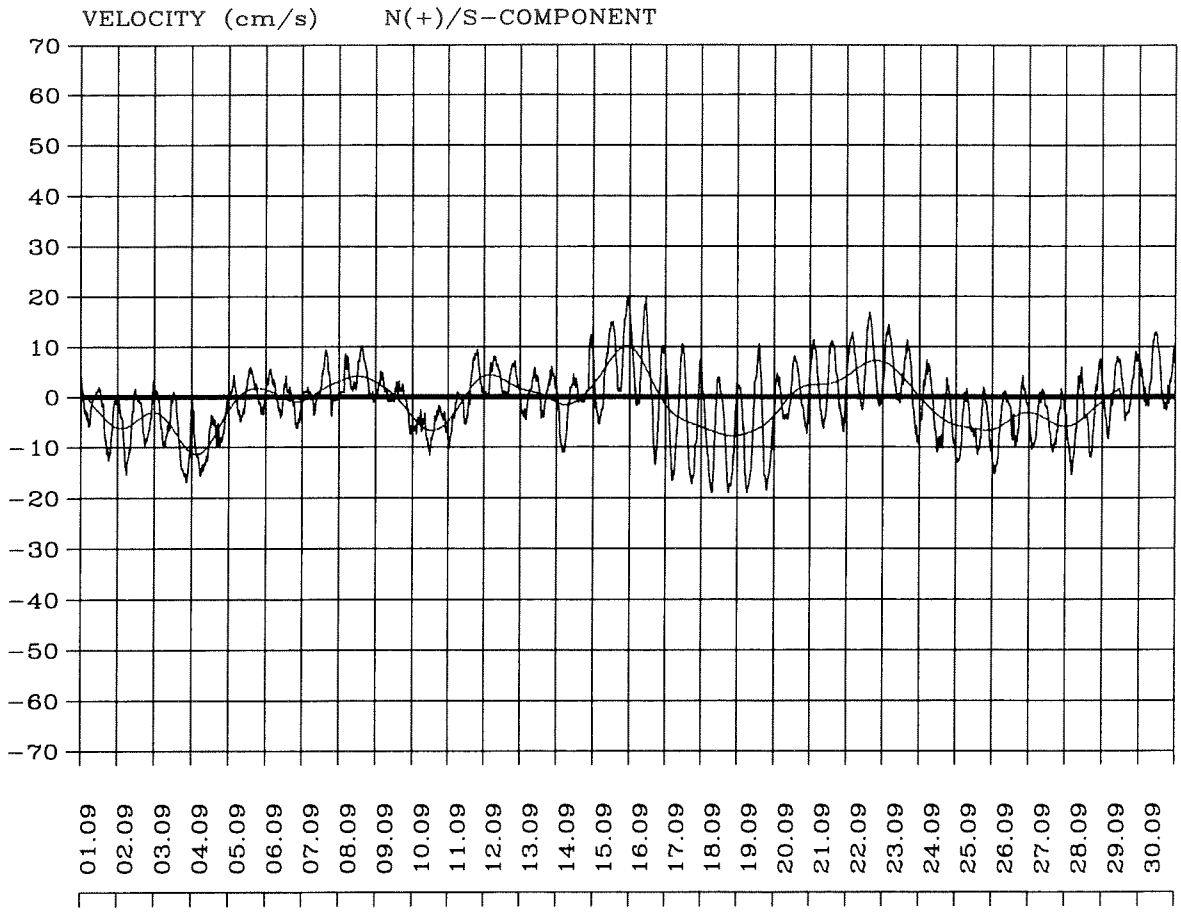
Time interval : 20.00 minutes. Instrument no. : 10794

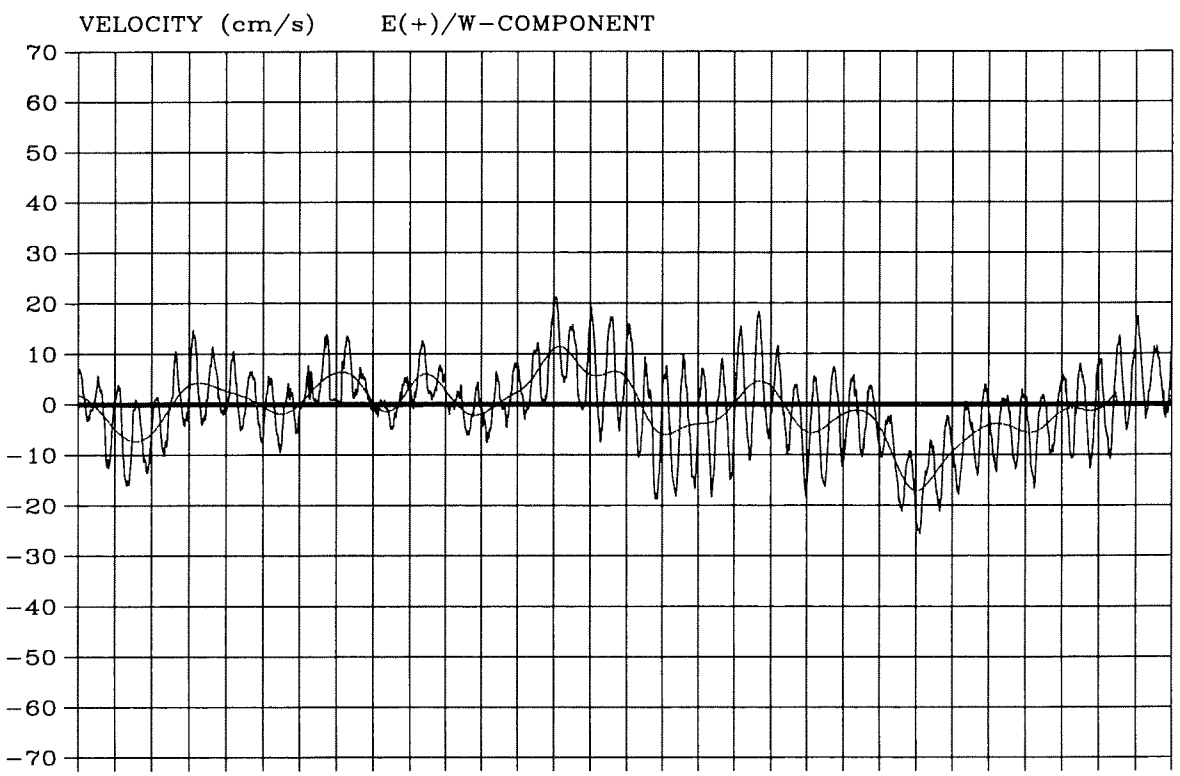
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 60.0 m Bottom depth : 250.0 m

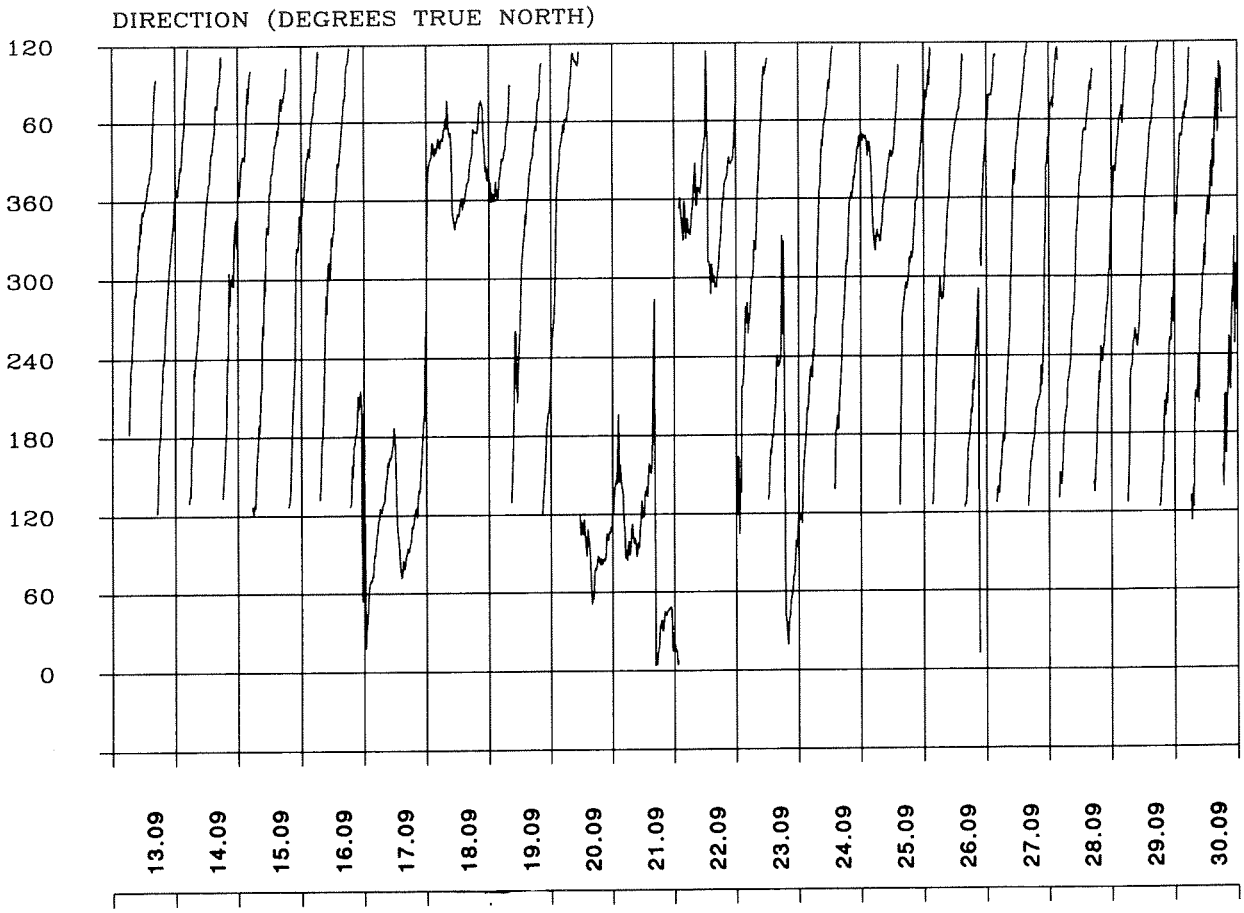
Time interval : 20.00 minutes. Instrument no. : 10794

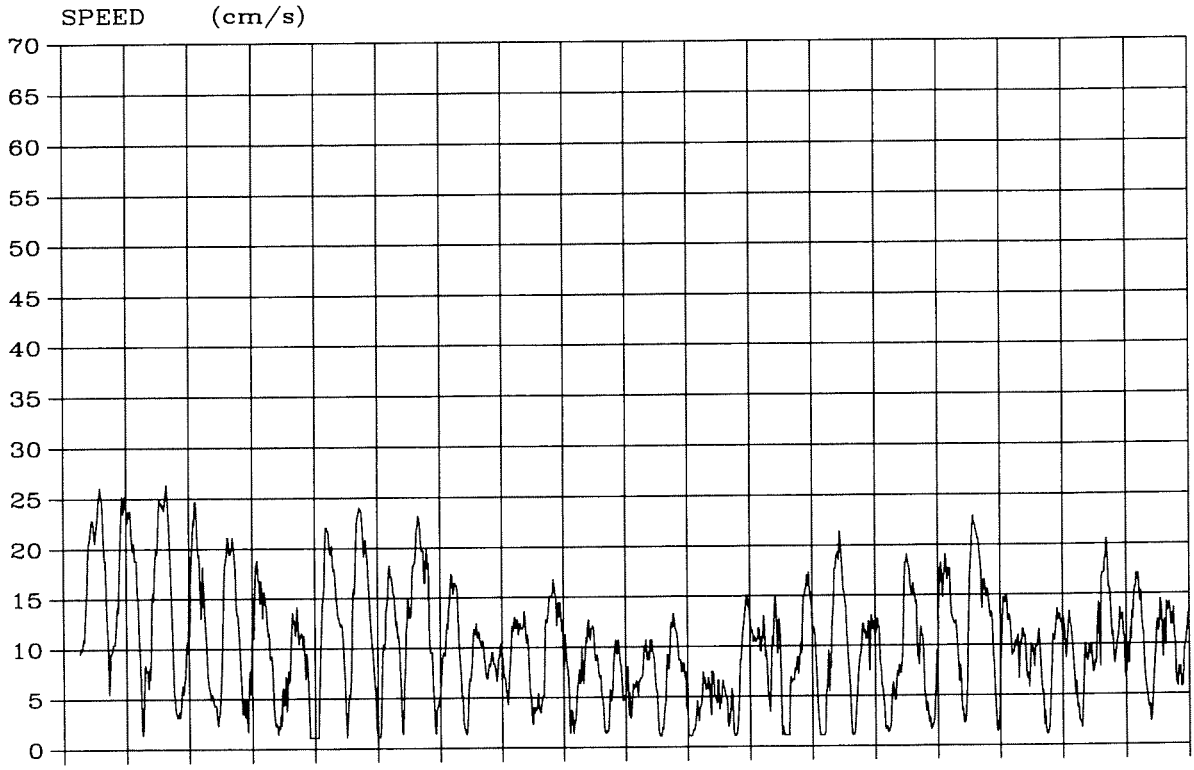
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

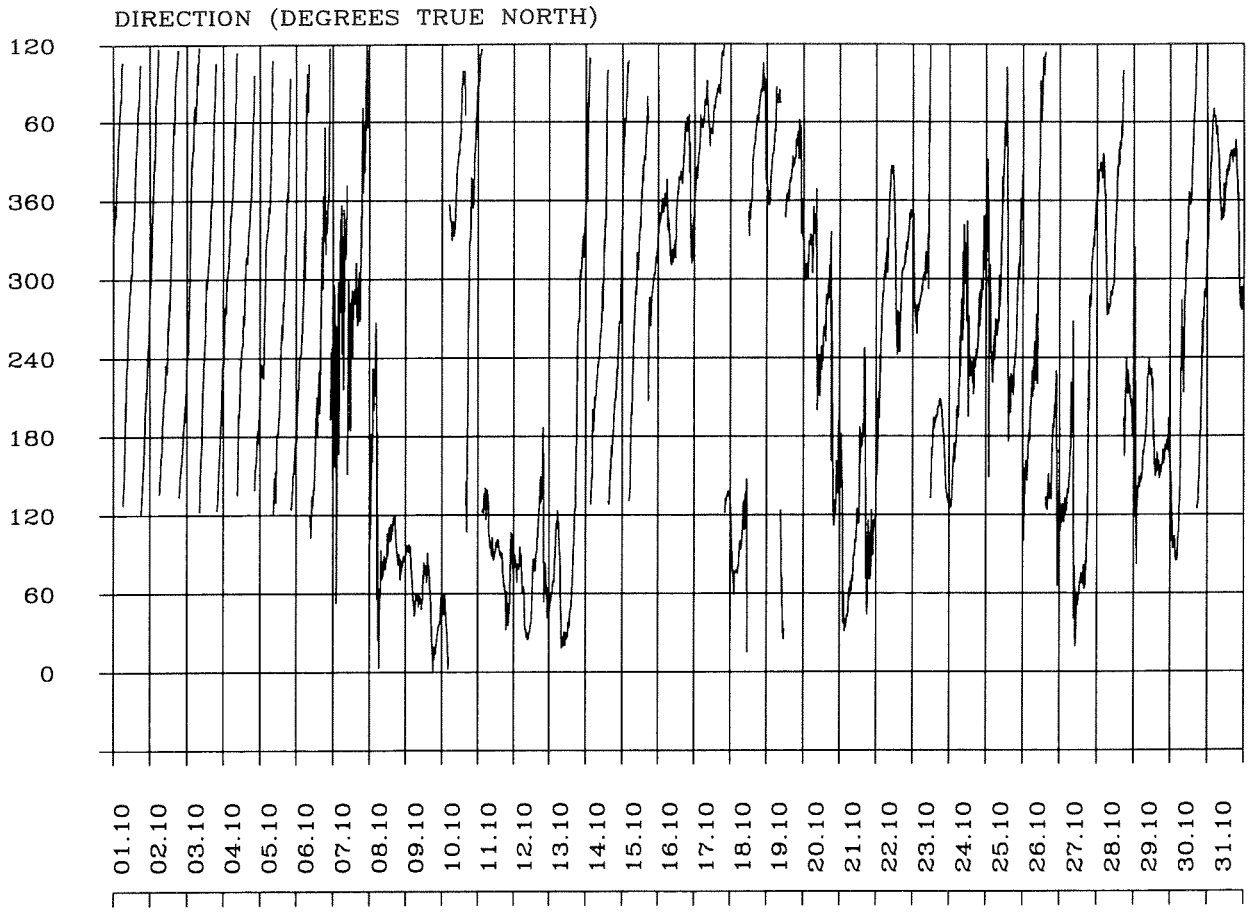
Instrument depth : 60.0 m Bottom depth : 250.0 m

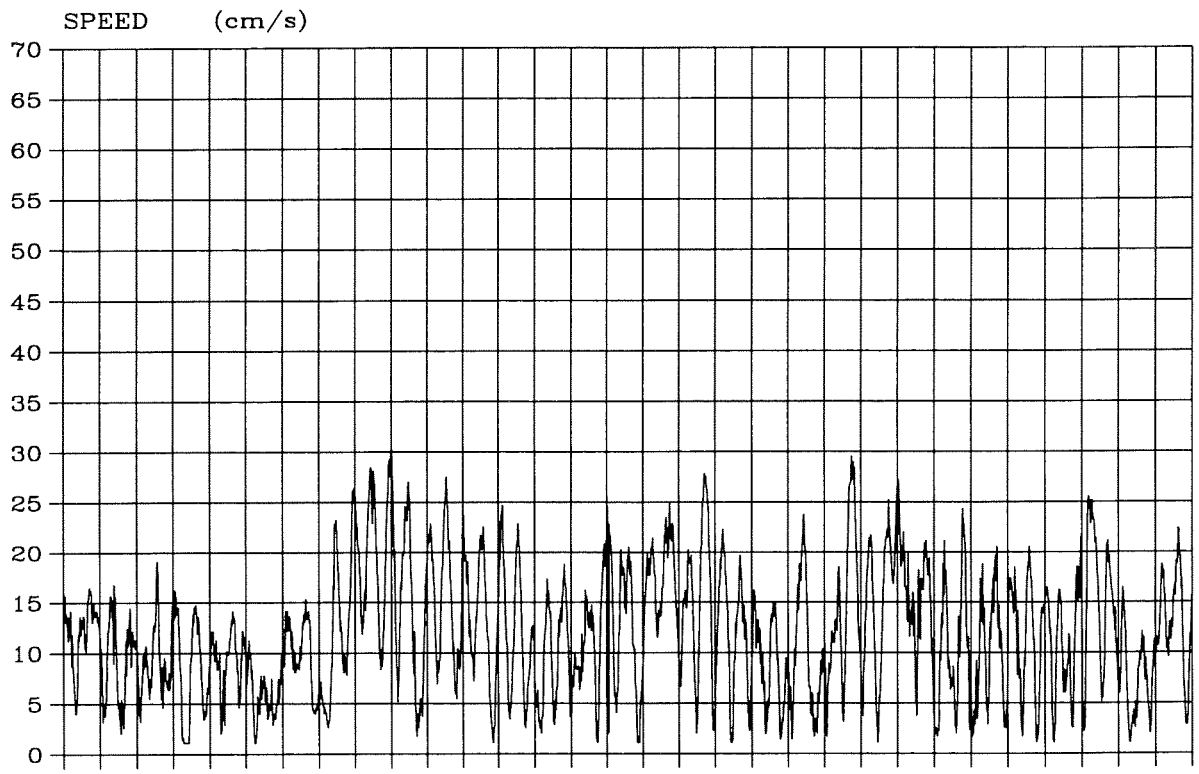
Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-7 Speed and direction of current.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

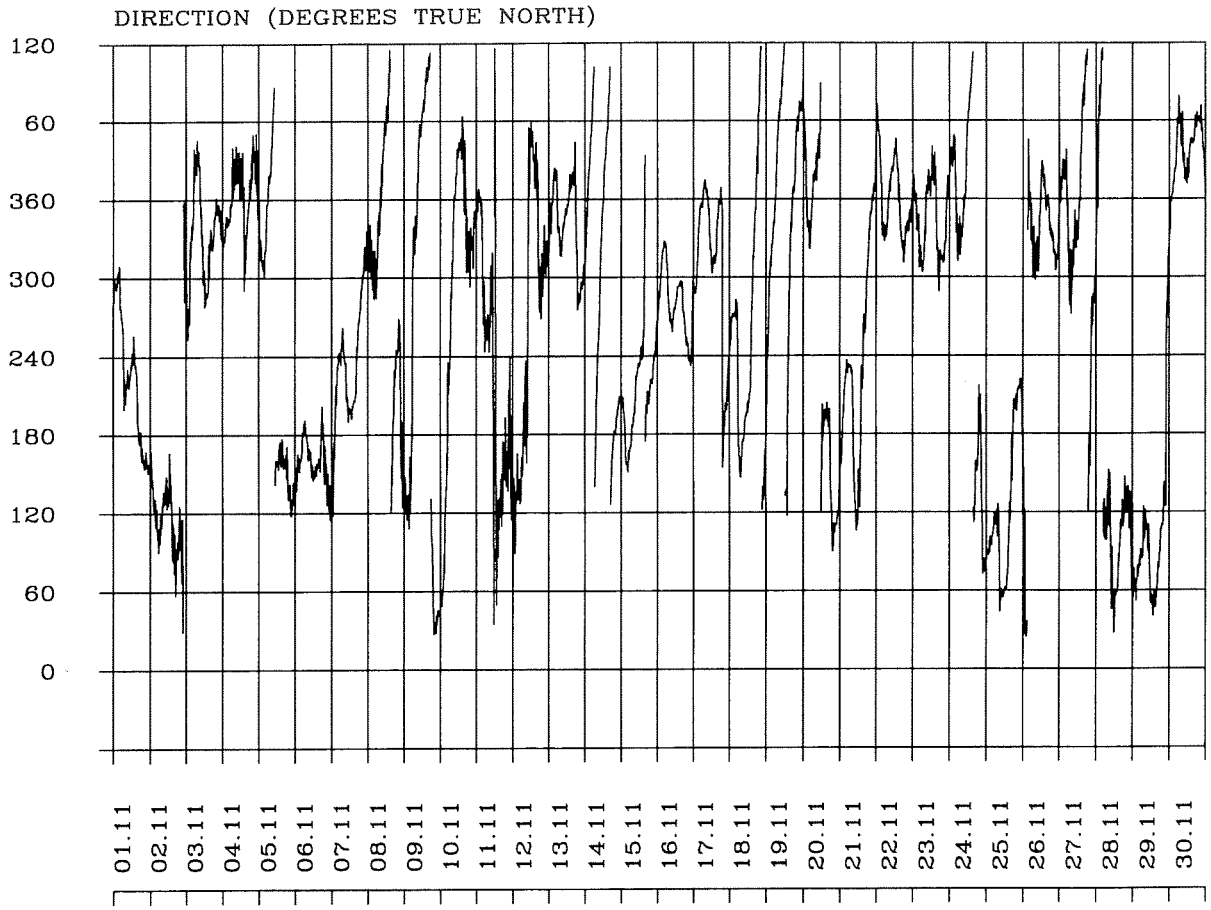
Time interval : 20.00 minutes. Instrument no. : 10794

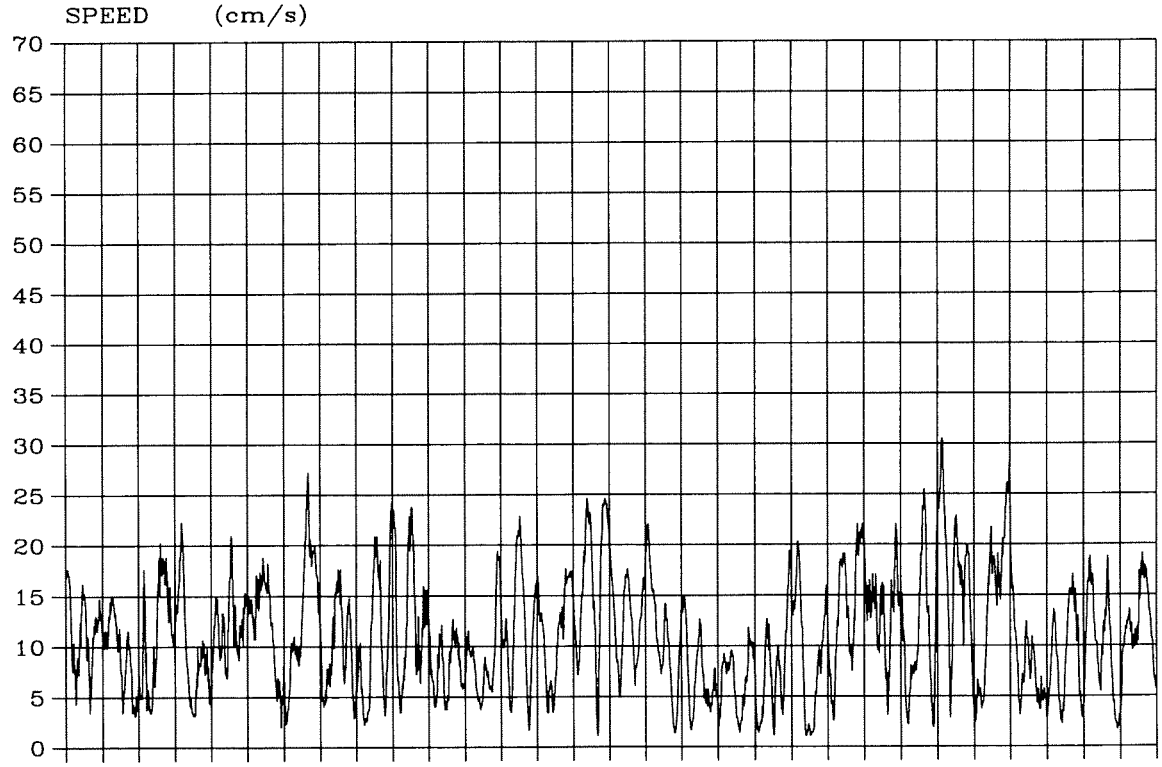
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-7

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 60.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-7

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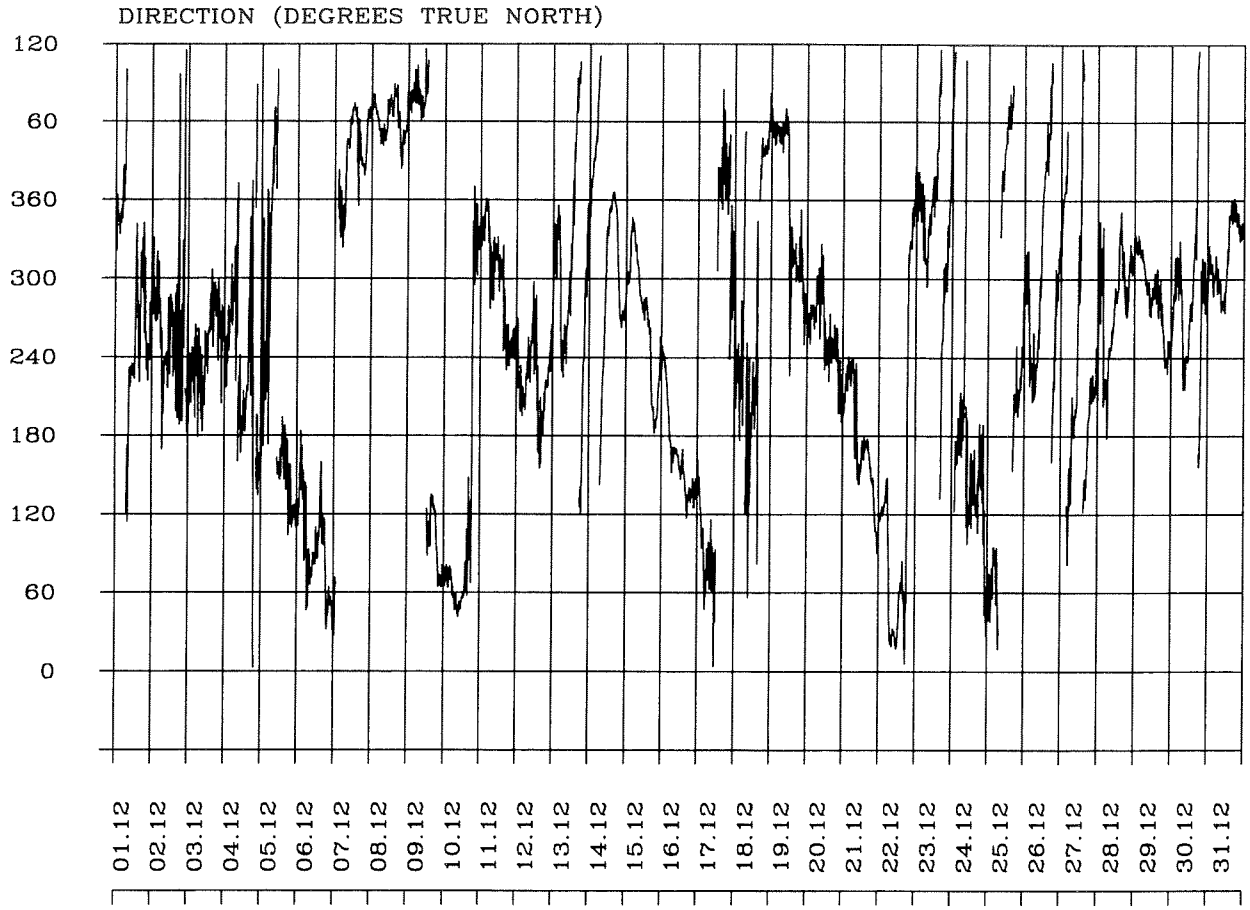
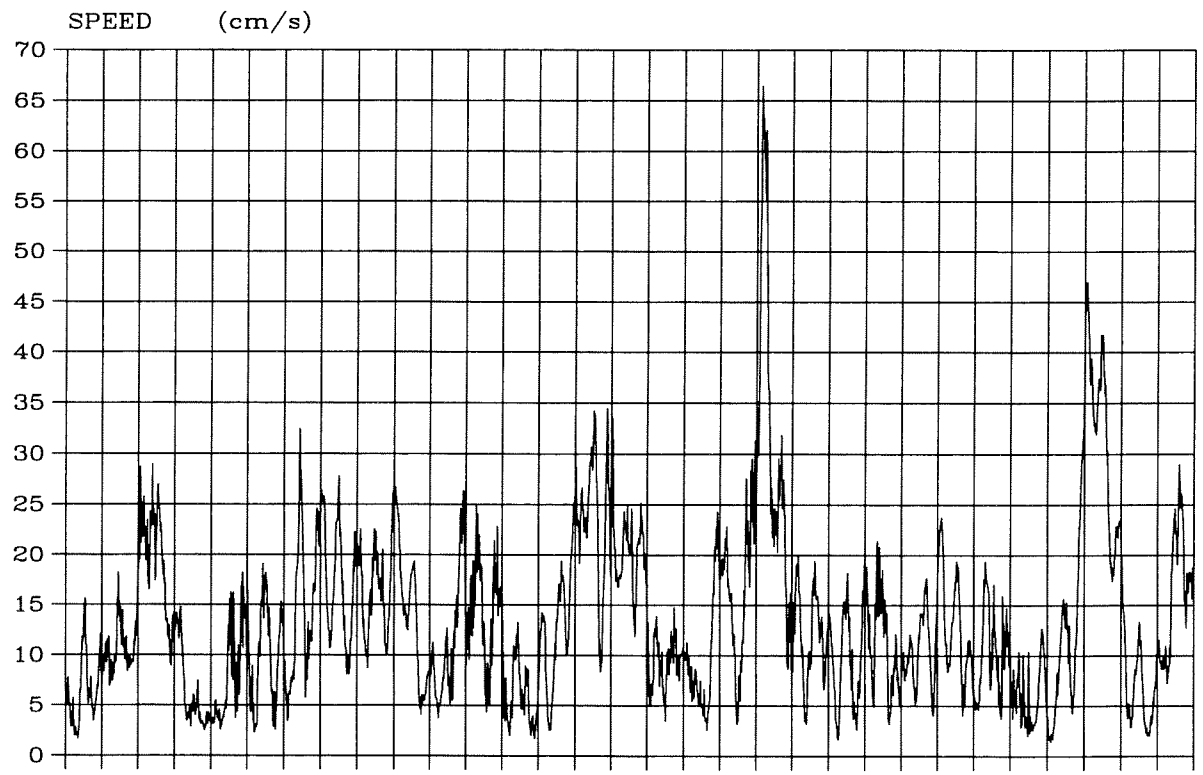




Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

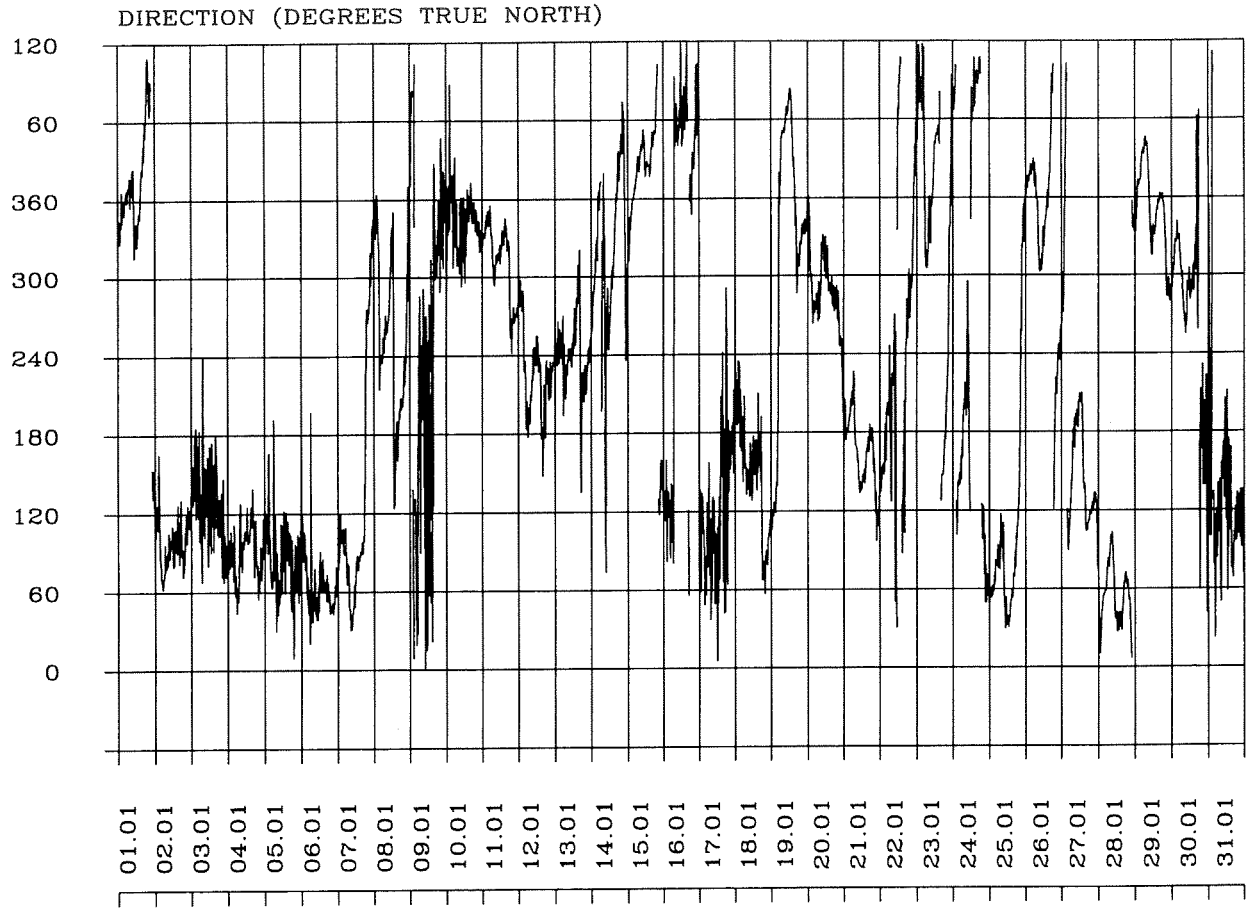
Time interval : 20.00 minutes. Instrument no. : 10794

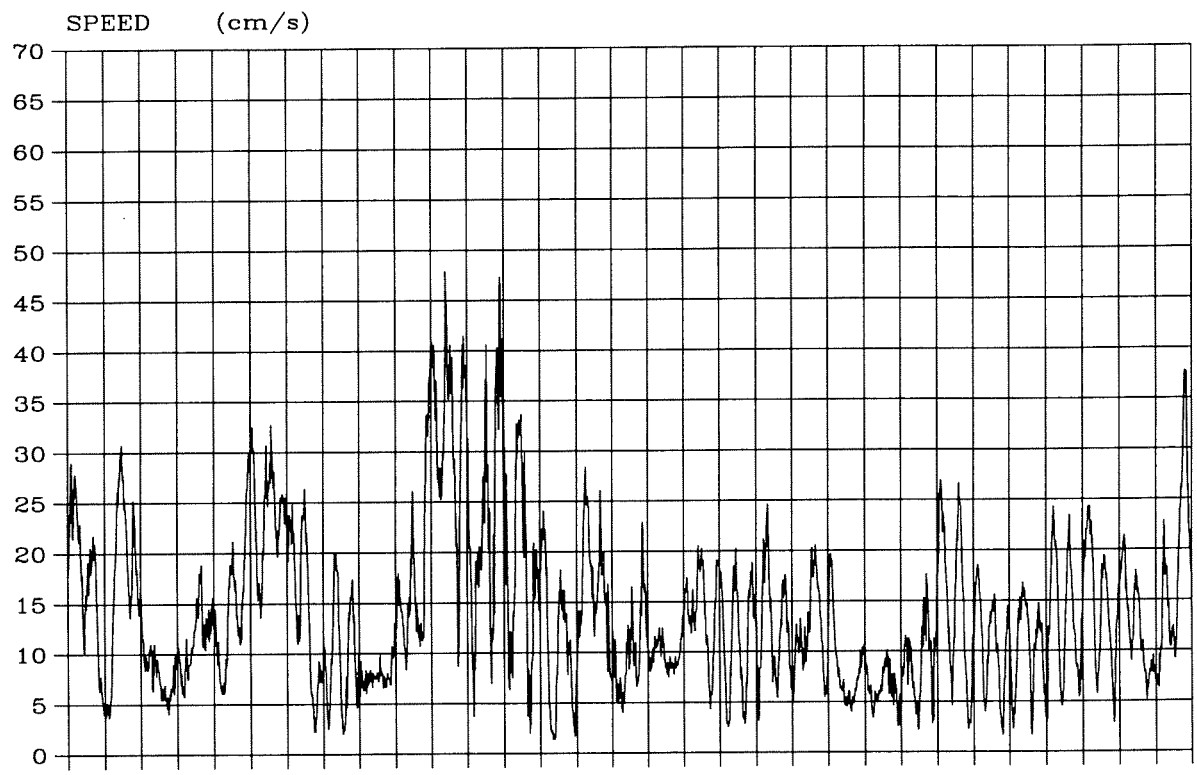
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-1-7

Continues.....





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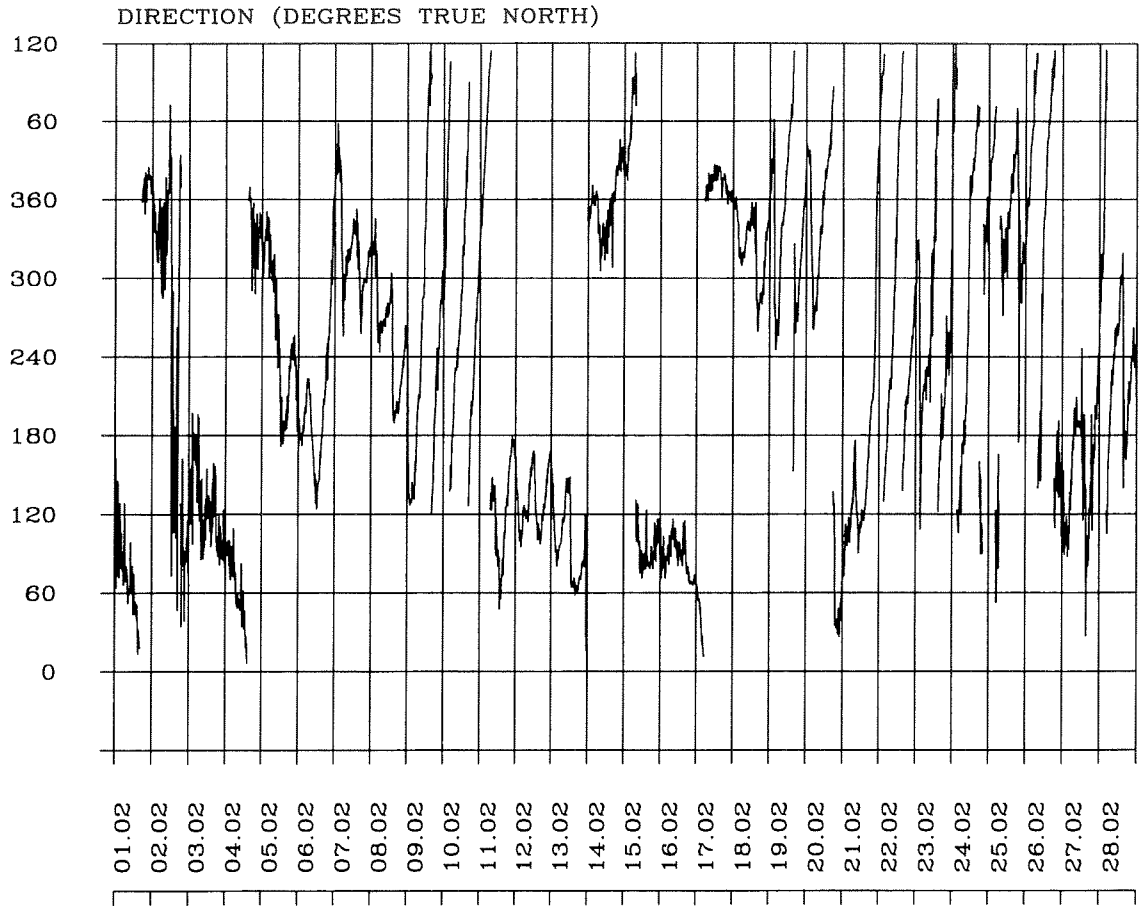
IMR

Fig. 1-1-7

Continues.....



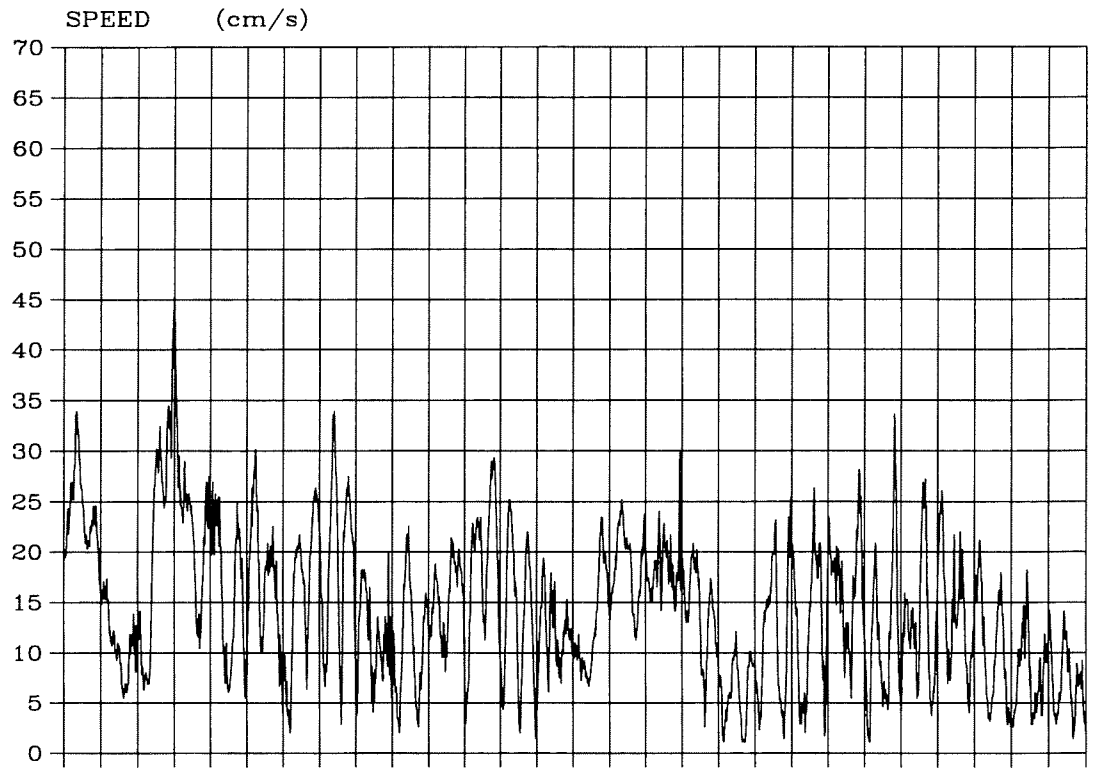


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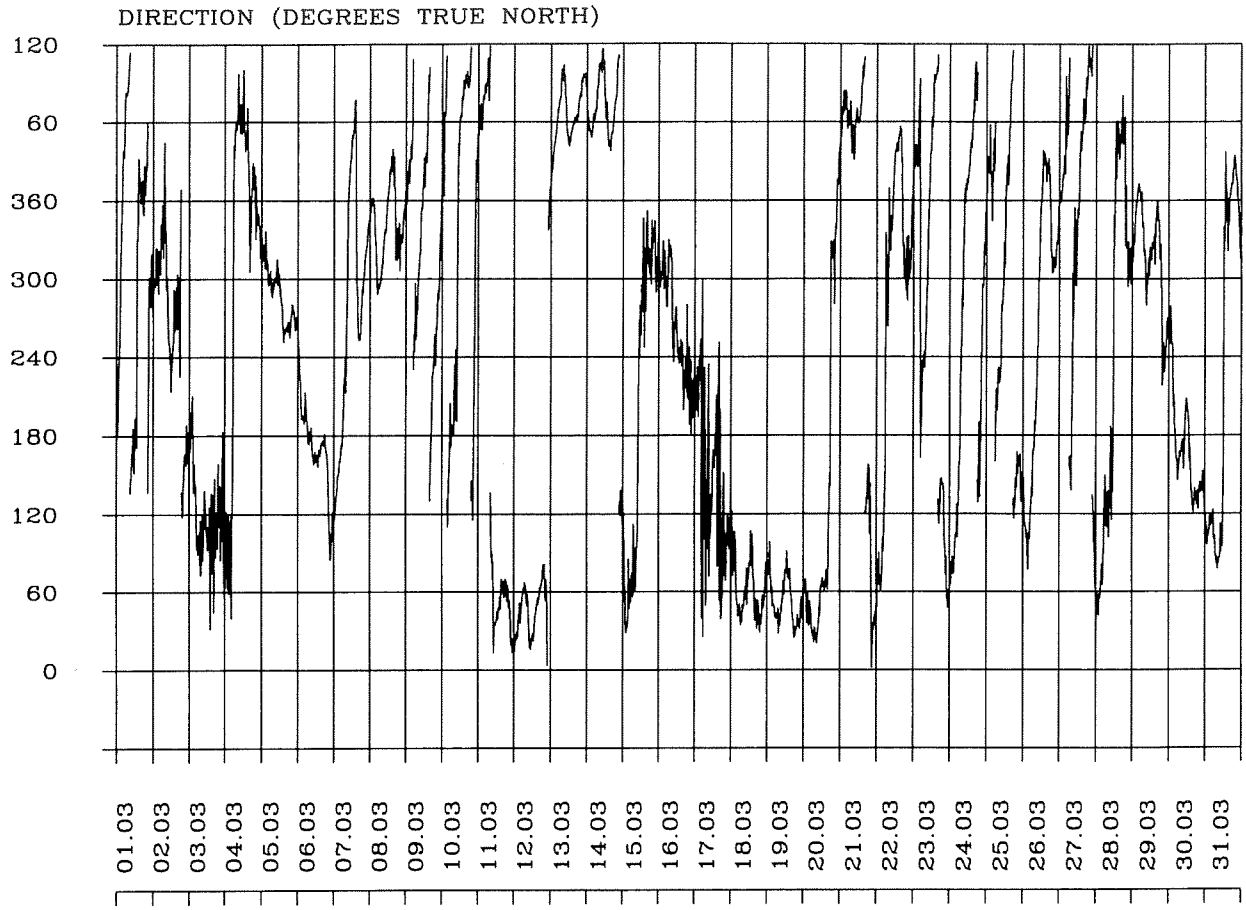
Fig. 1-1-7

Continues.....



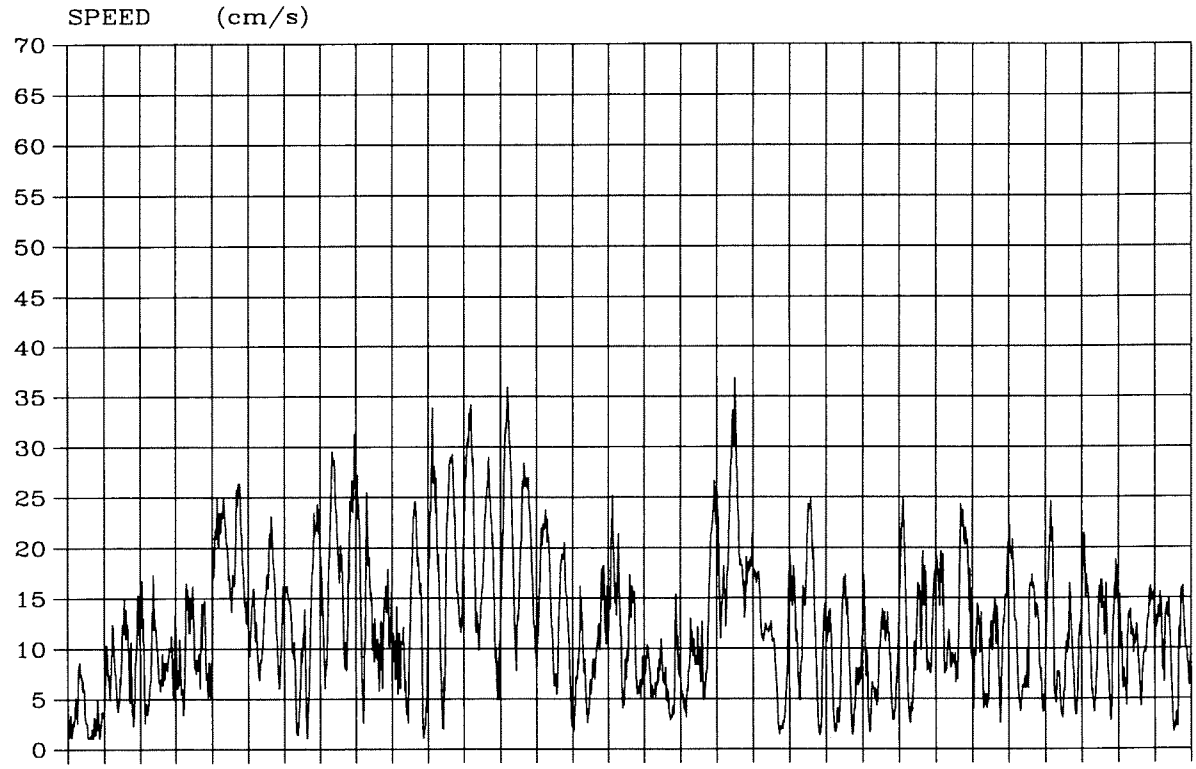


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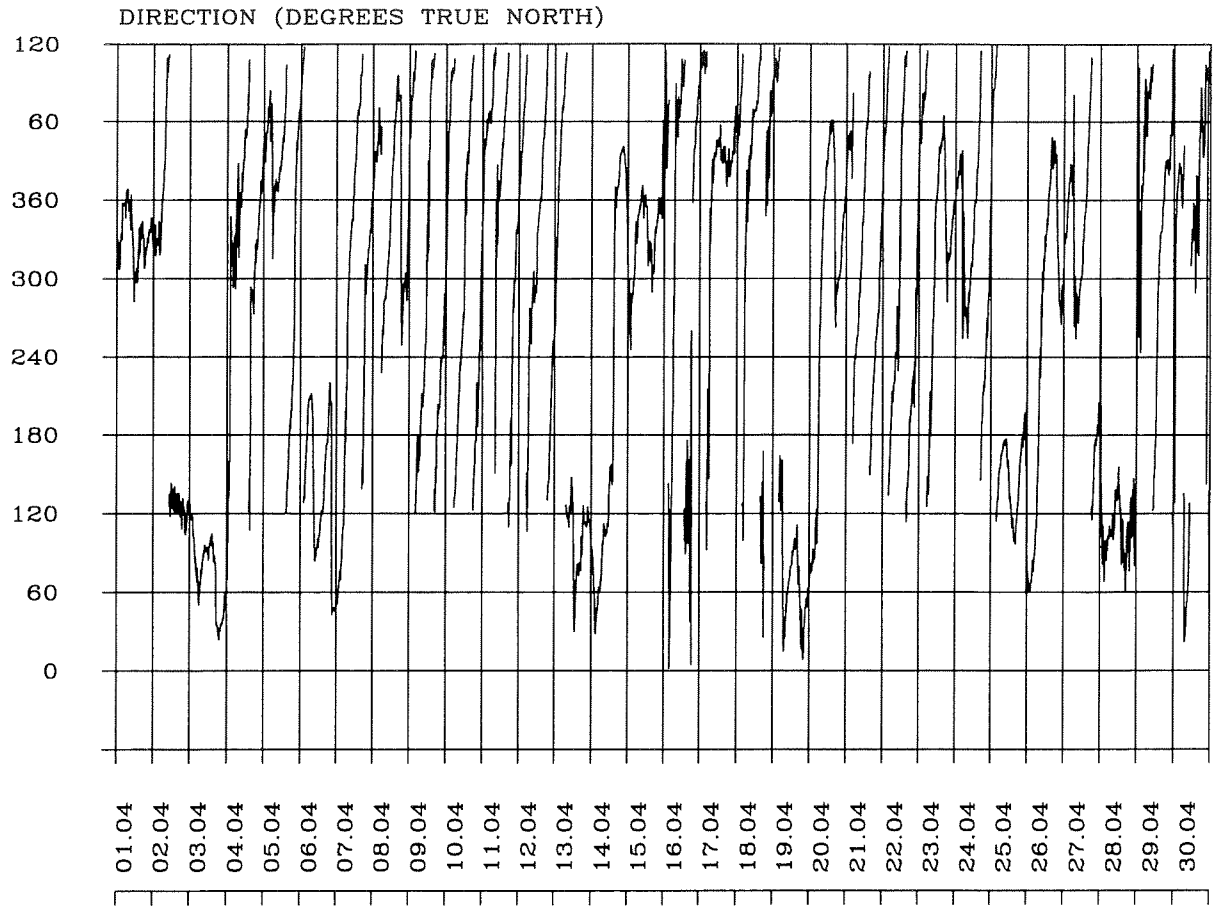
Fig. 1-1-7

Continues.....



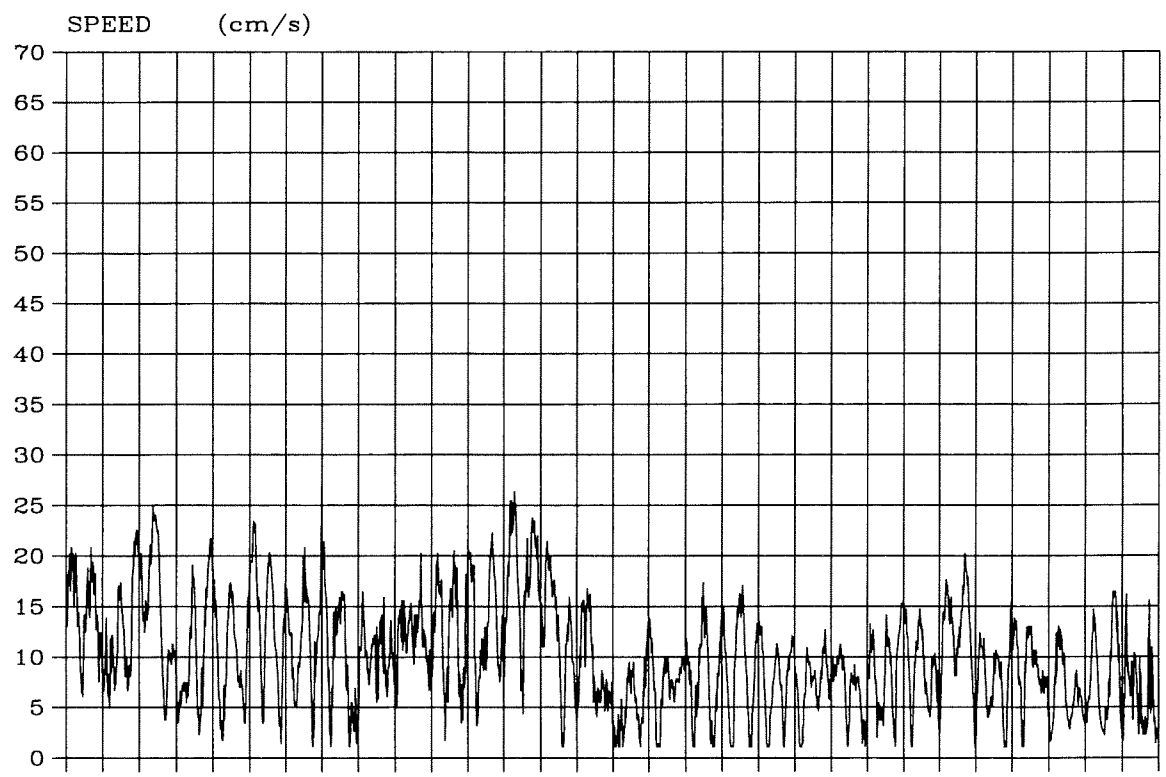


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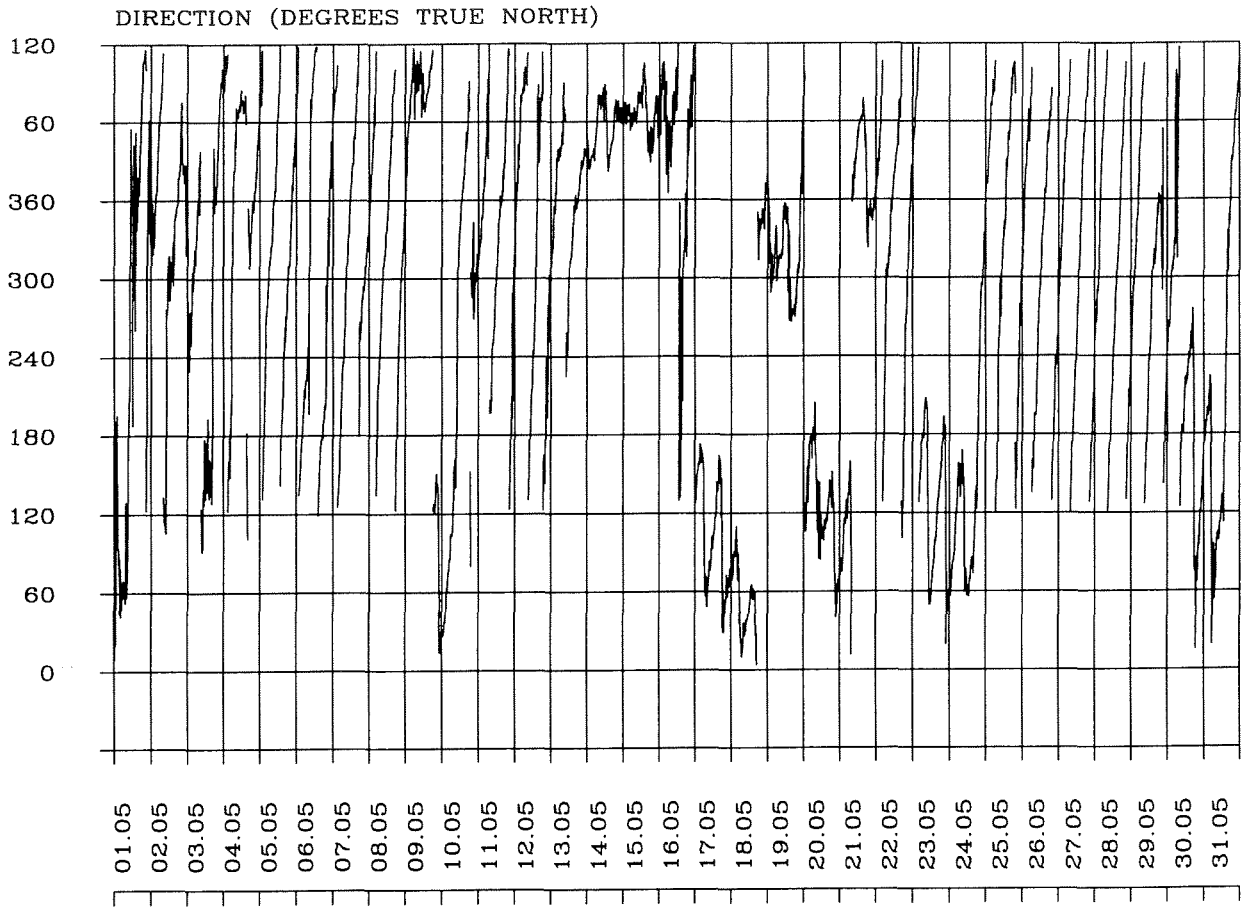
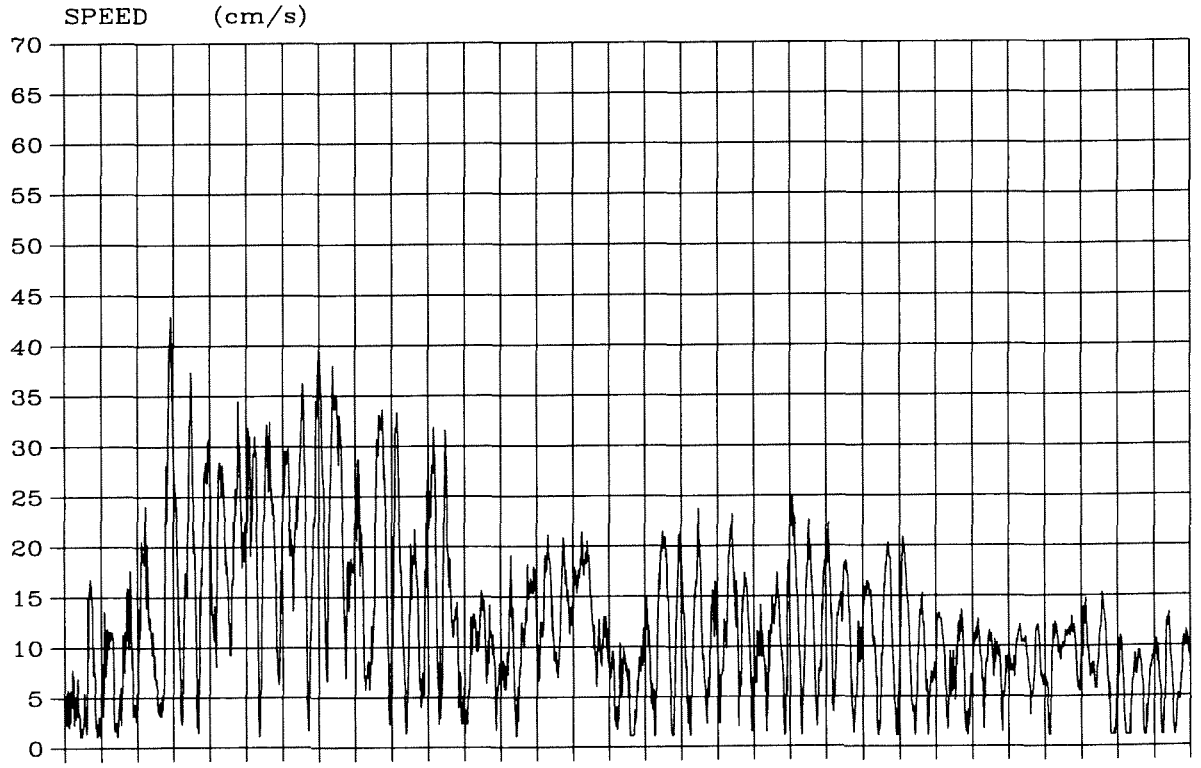
Fig. 1-1-7

Continues.....





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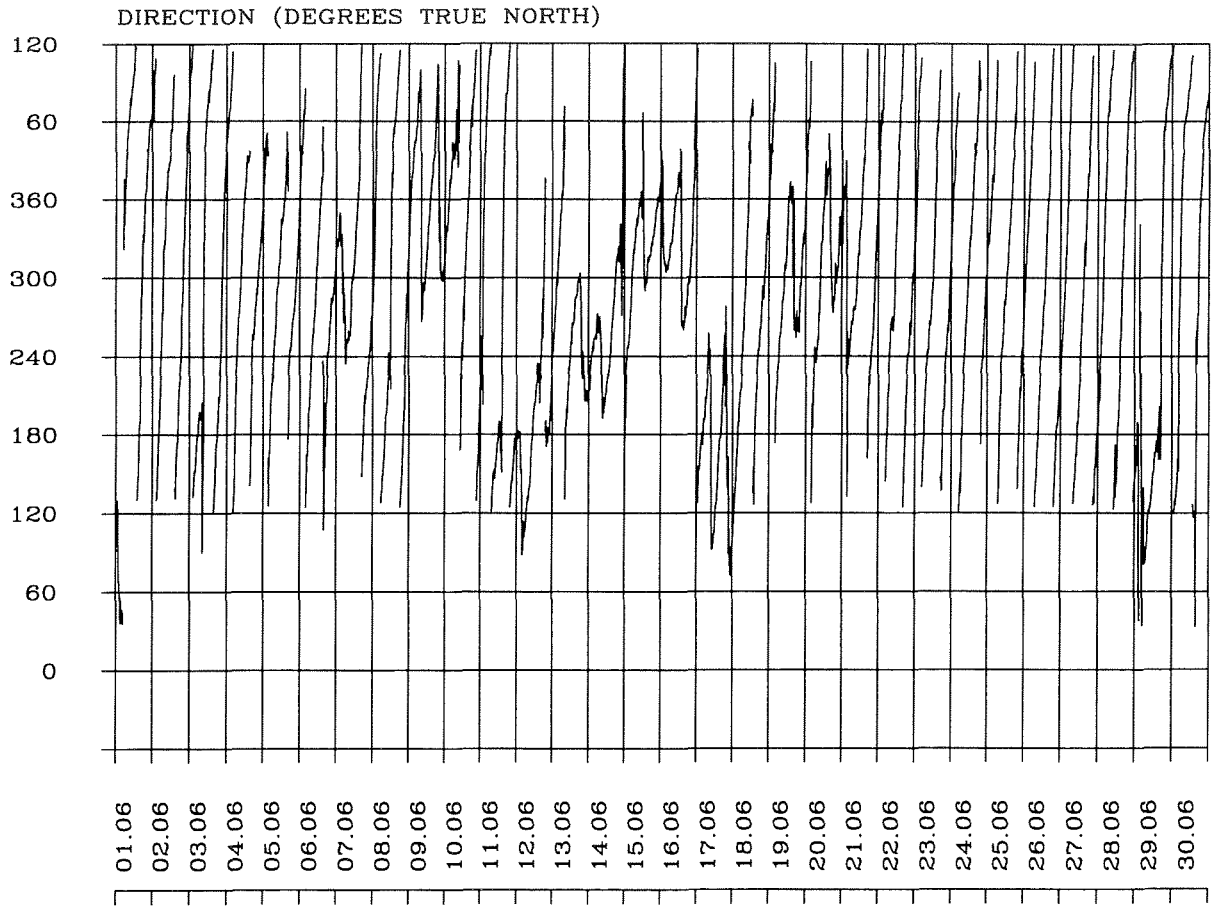
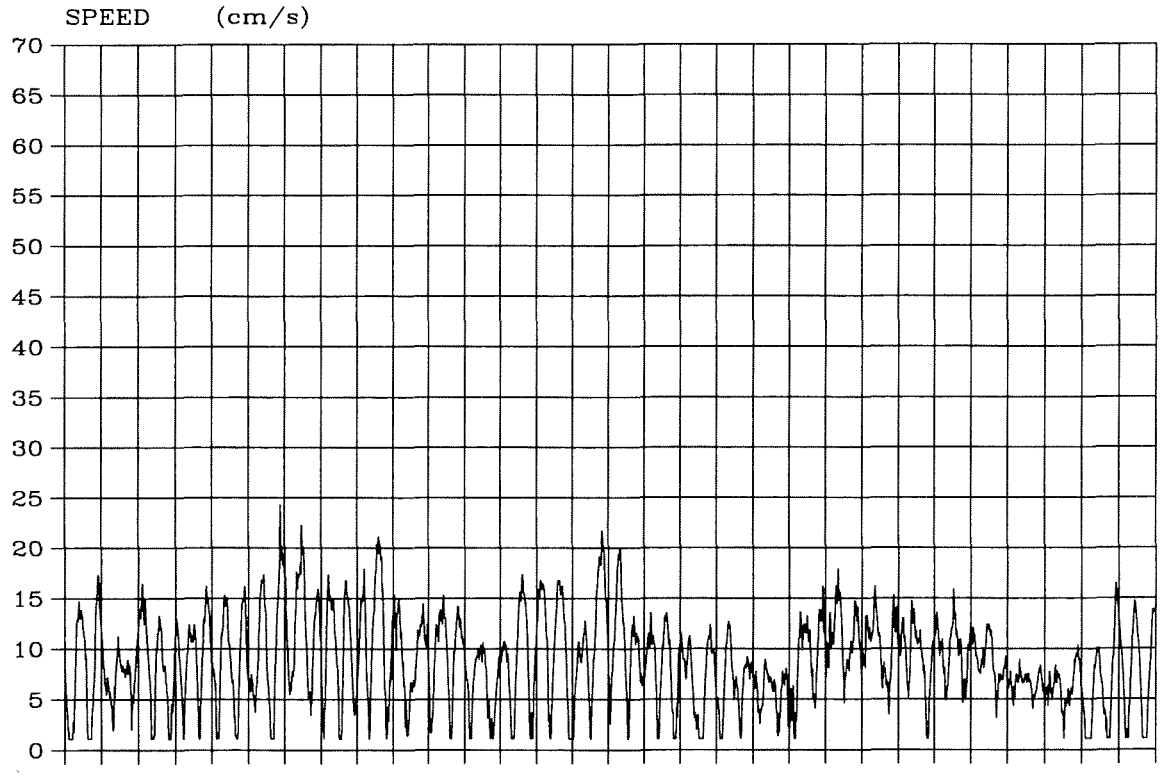
IMR

Fig. 1-1-7

Continues.....





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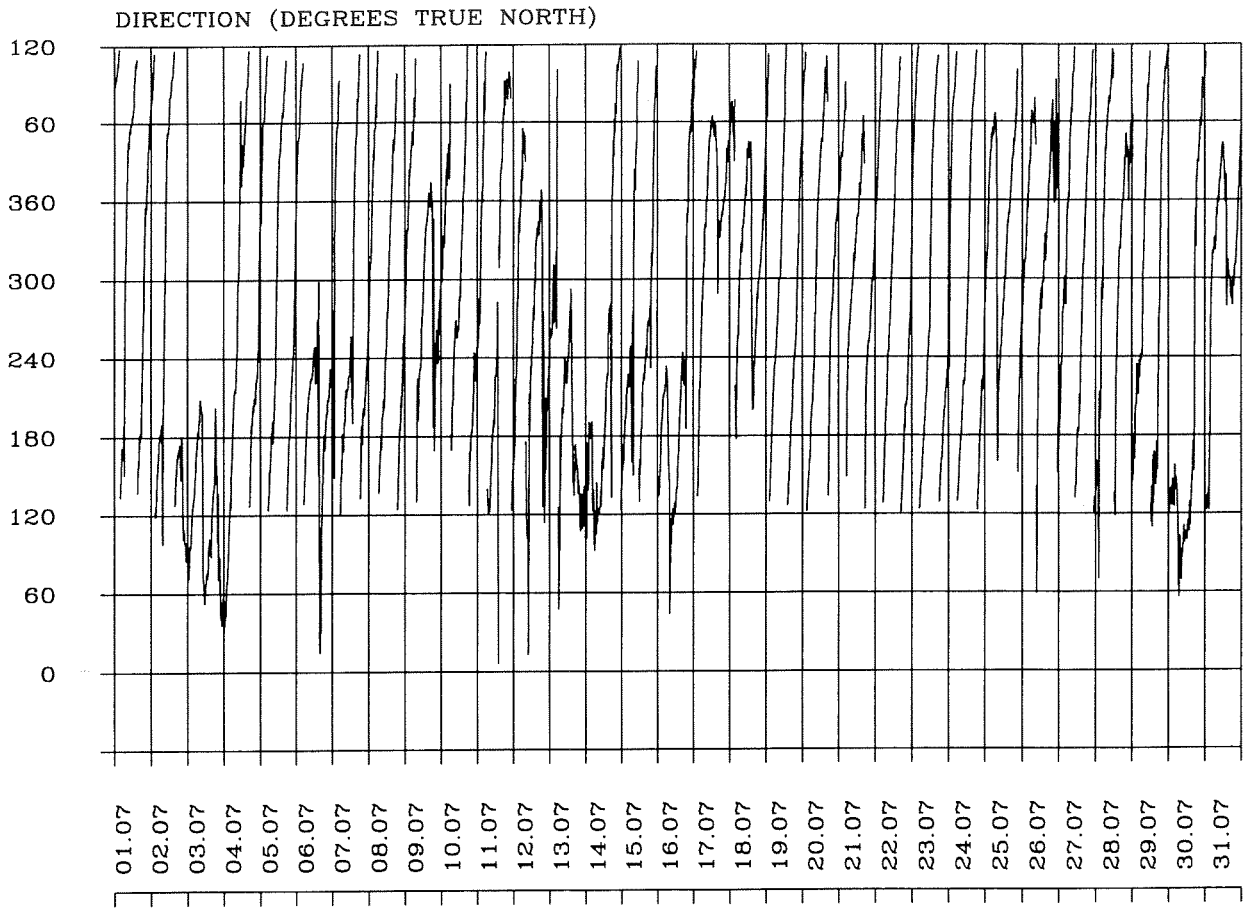
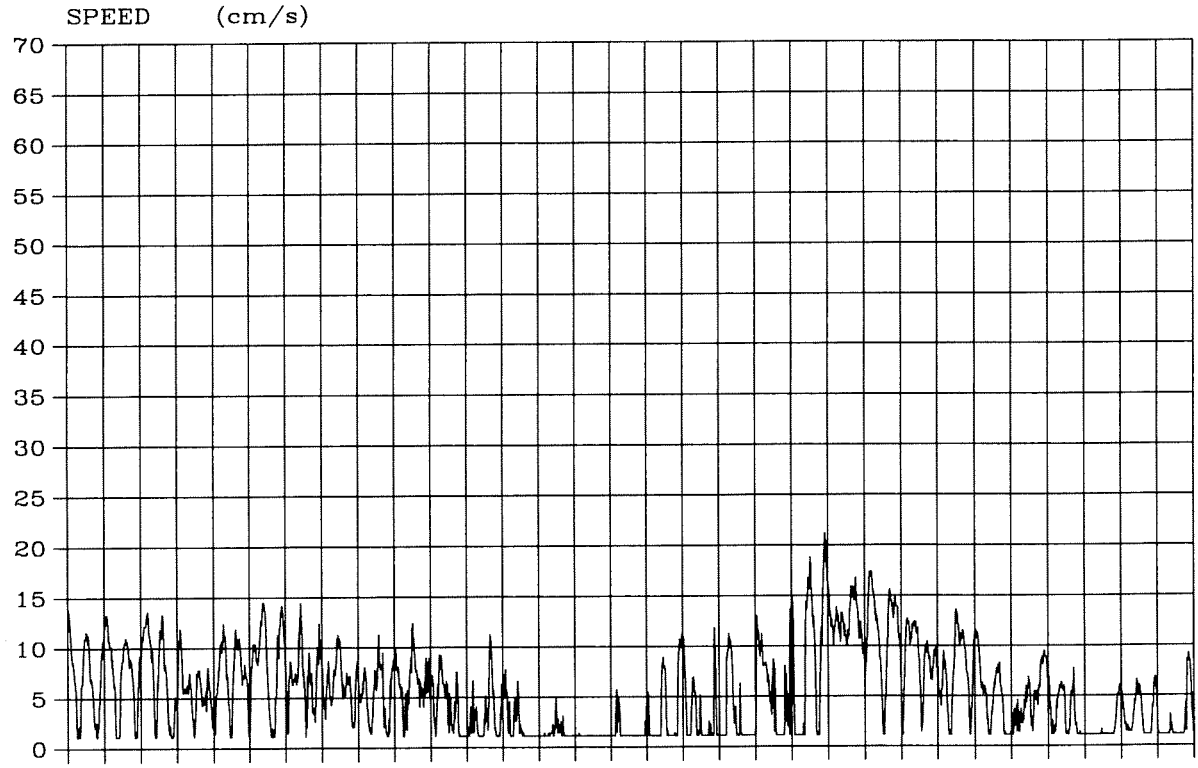
IMR

Fig. 1–1–7

Continues.....





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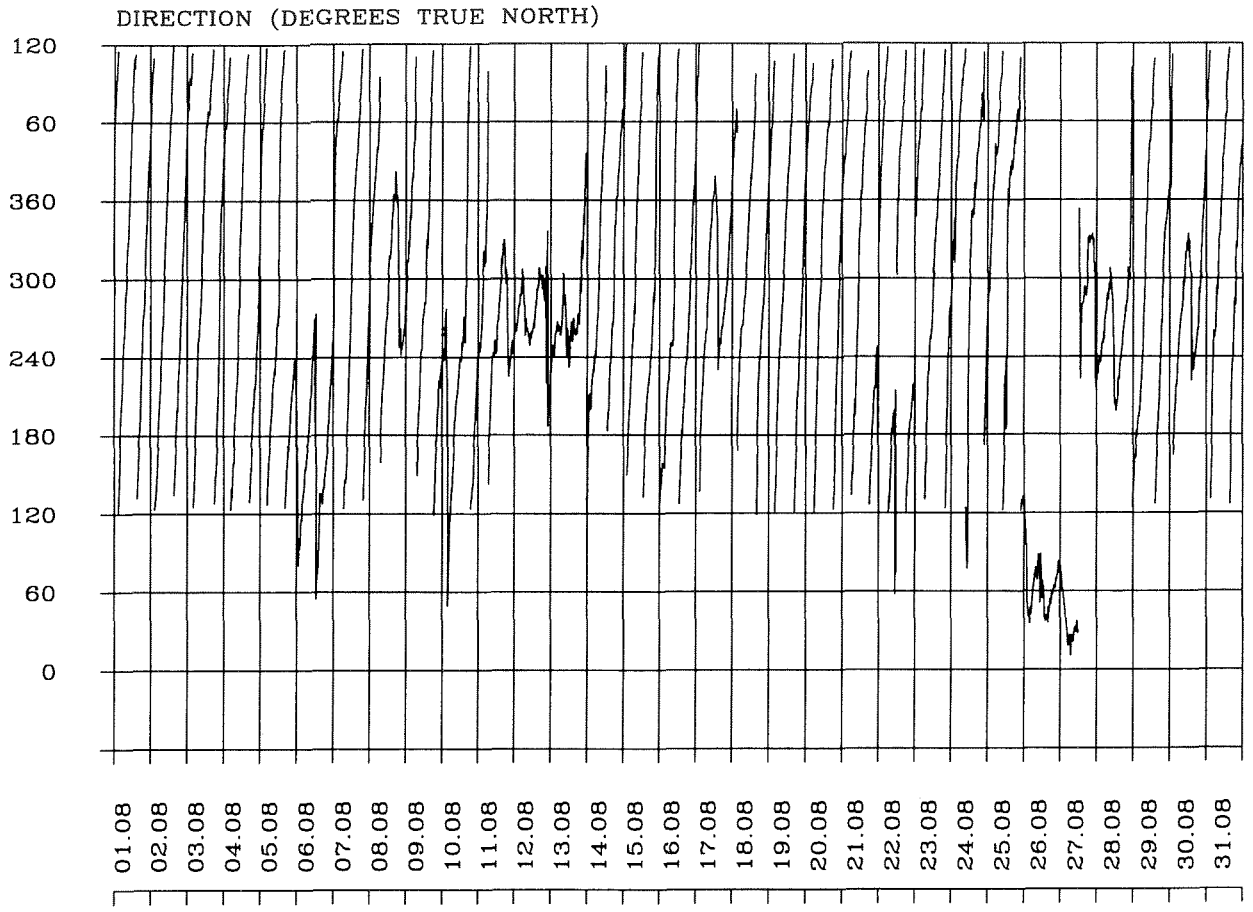
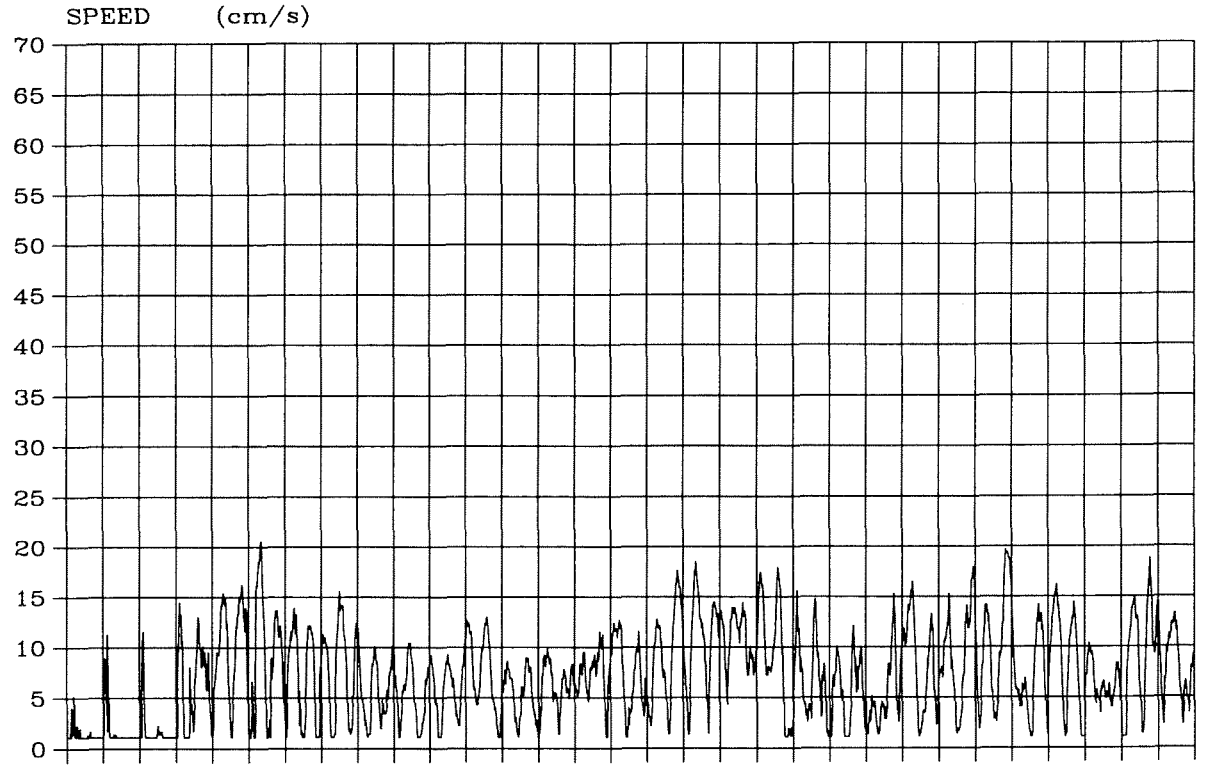
IMR

Fig. 1–1–7

Continues.....





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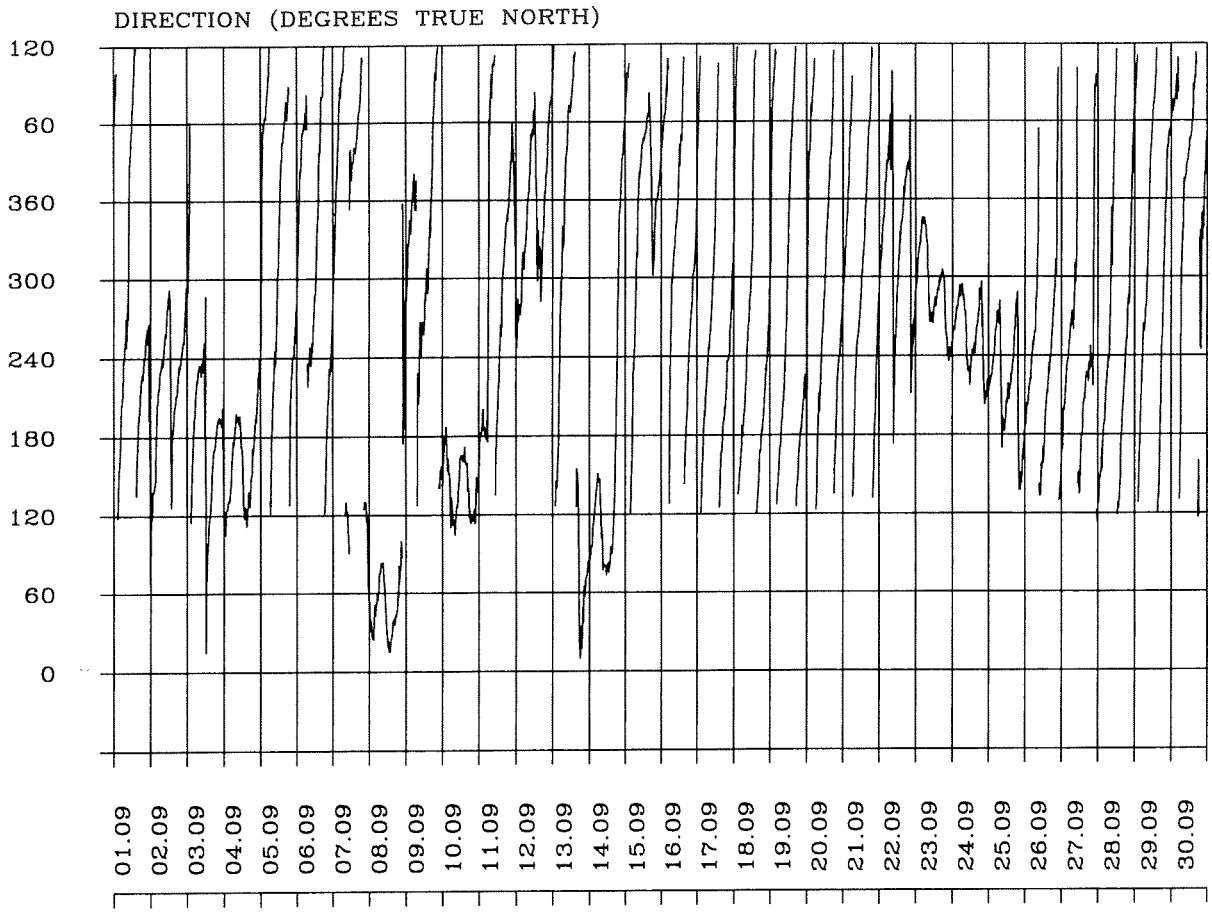
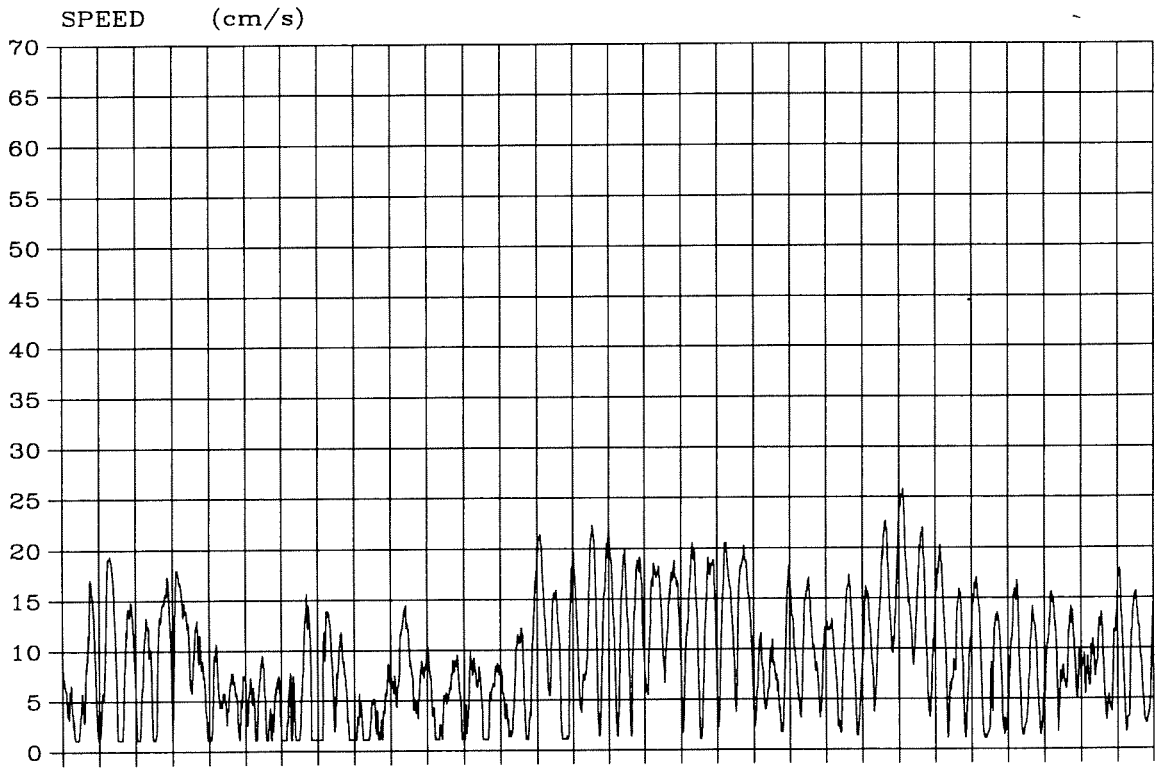
IMR

Fig. 1-1-7

Continues.....





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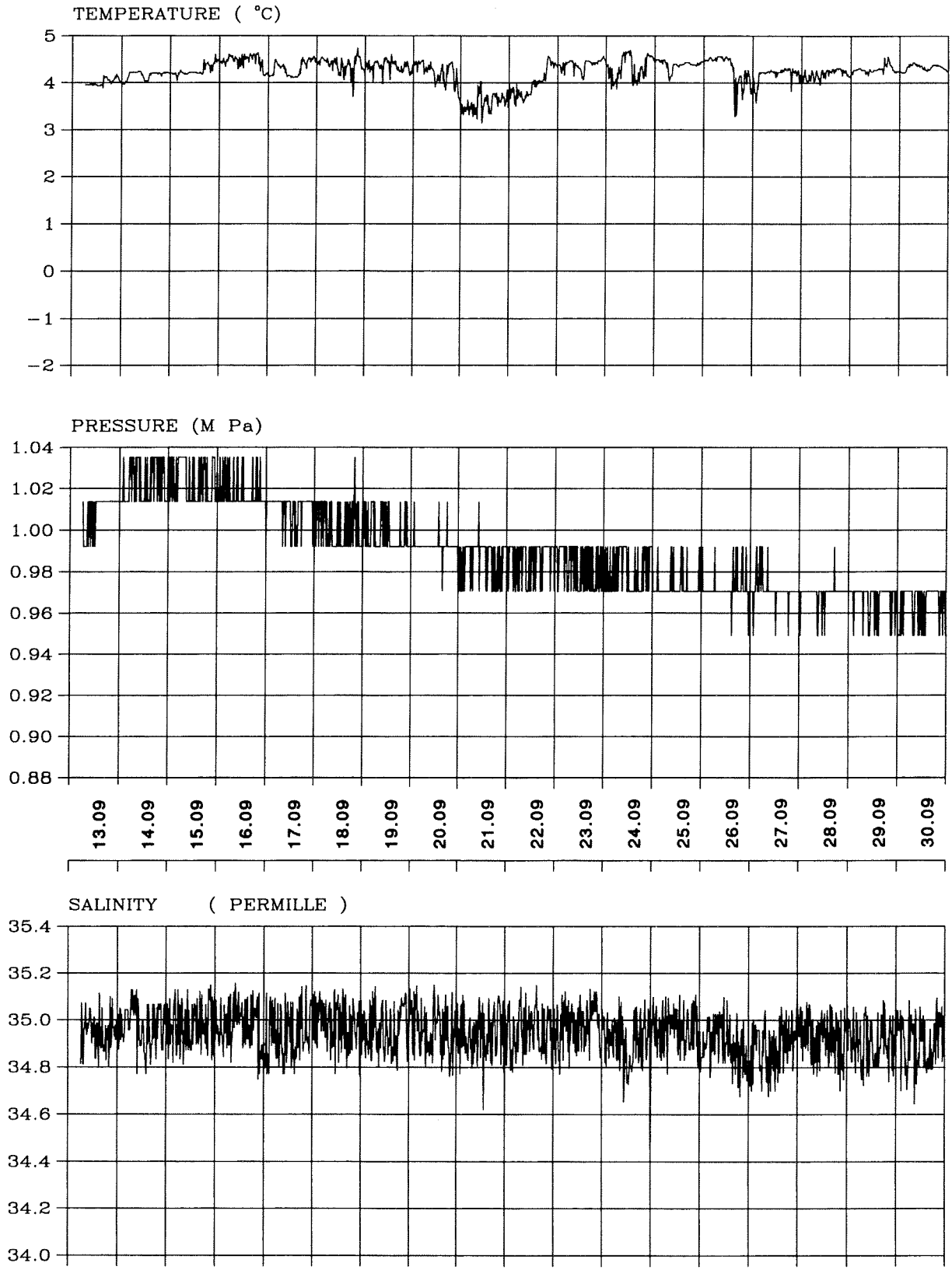
IMR

Fig. 1-1-7

Continues.....



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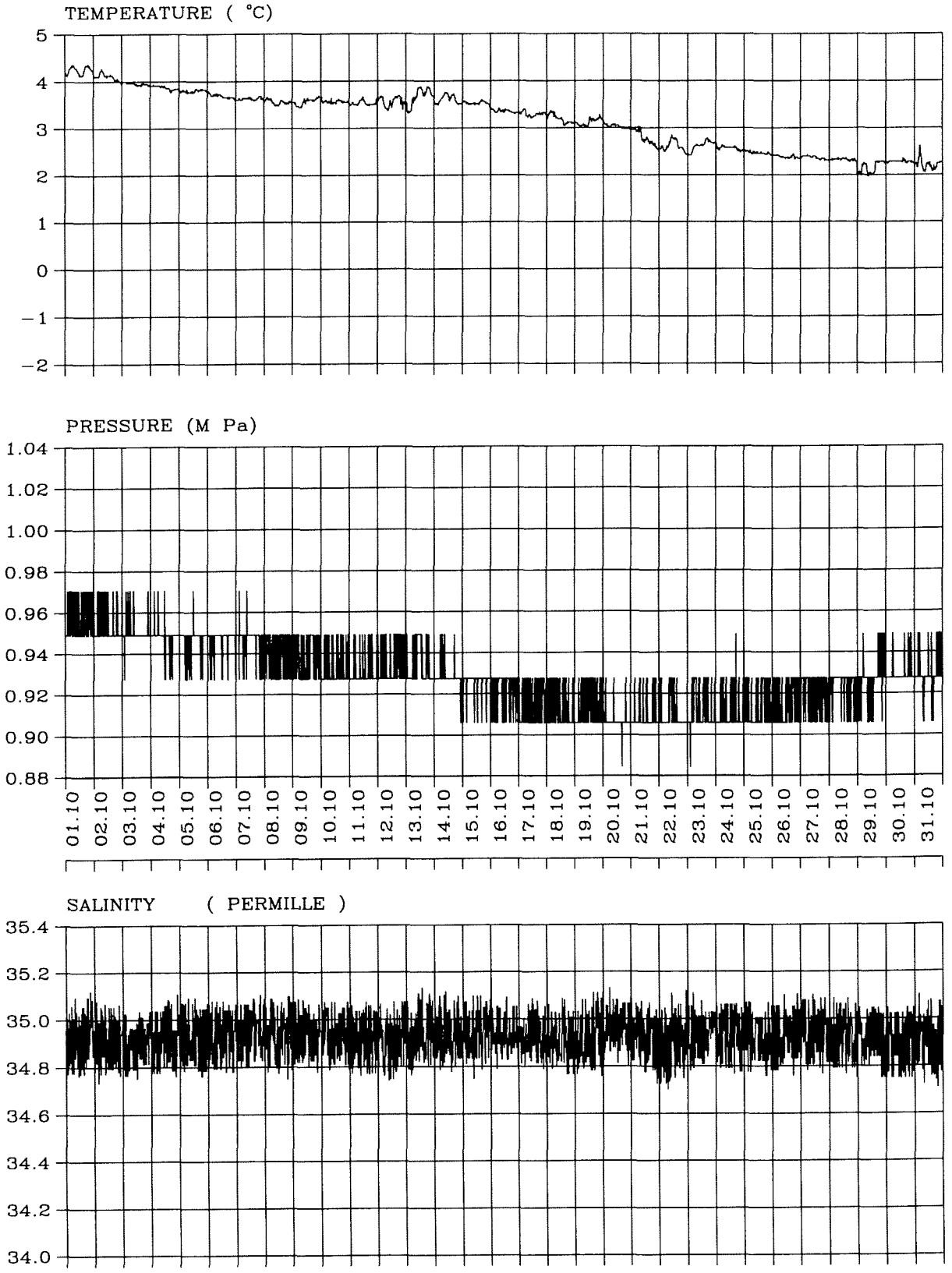
IMR

Fig. 1–1–8 Temperature, pressure and salinity.



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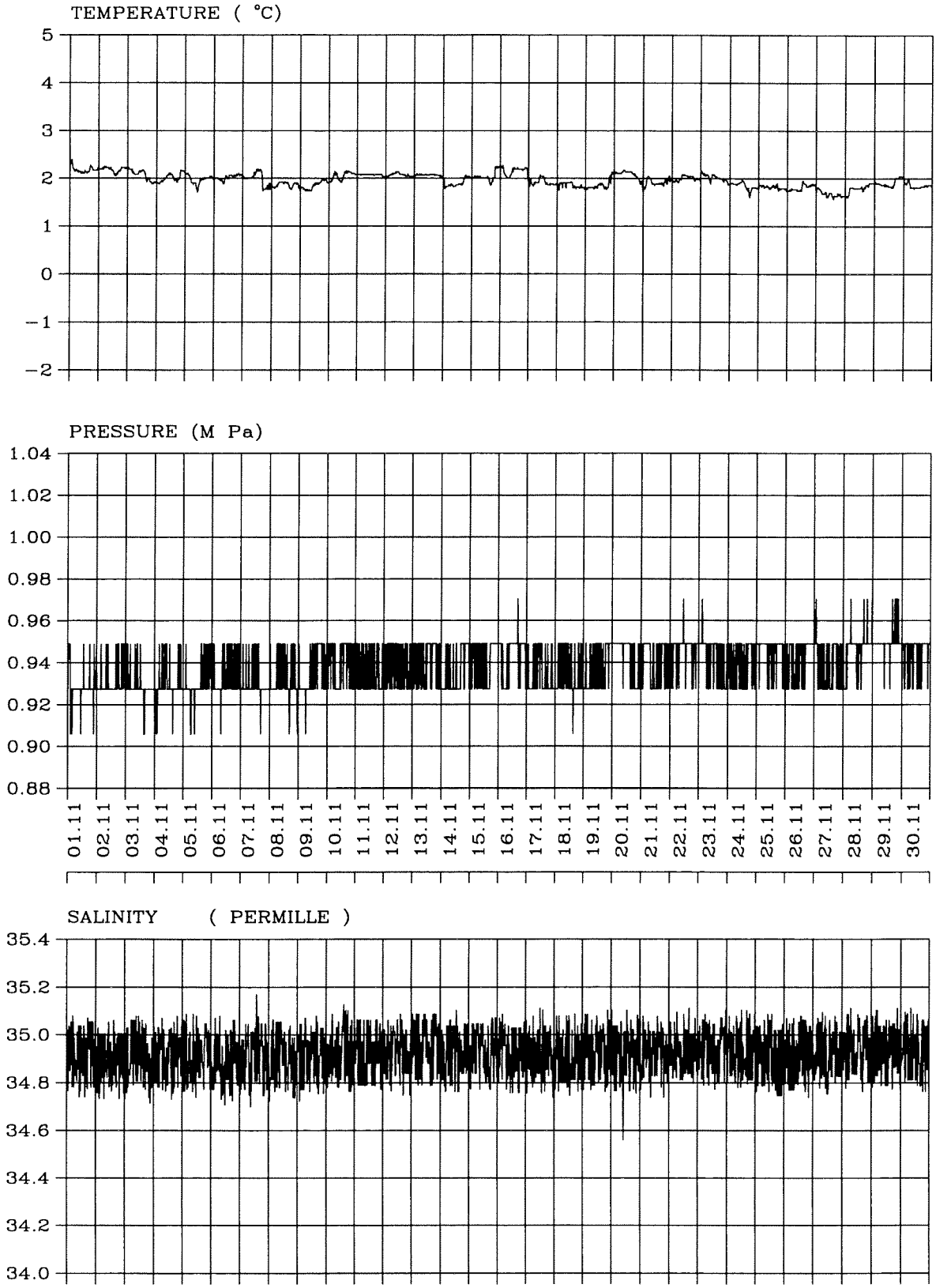
IMR

Fig. 1-1-8

Continues.....



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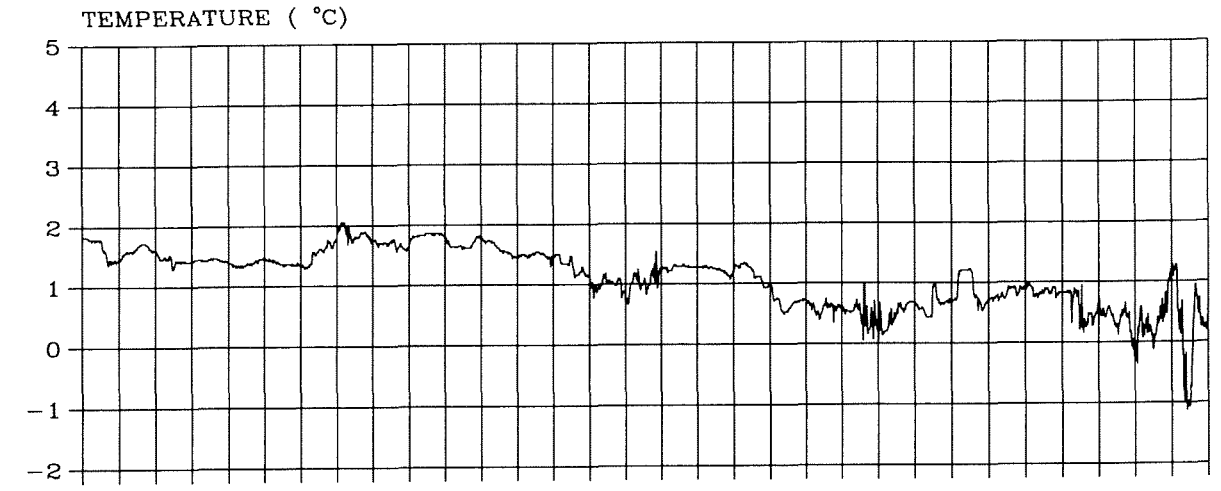
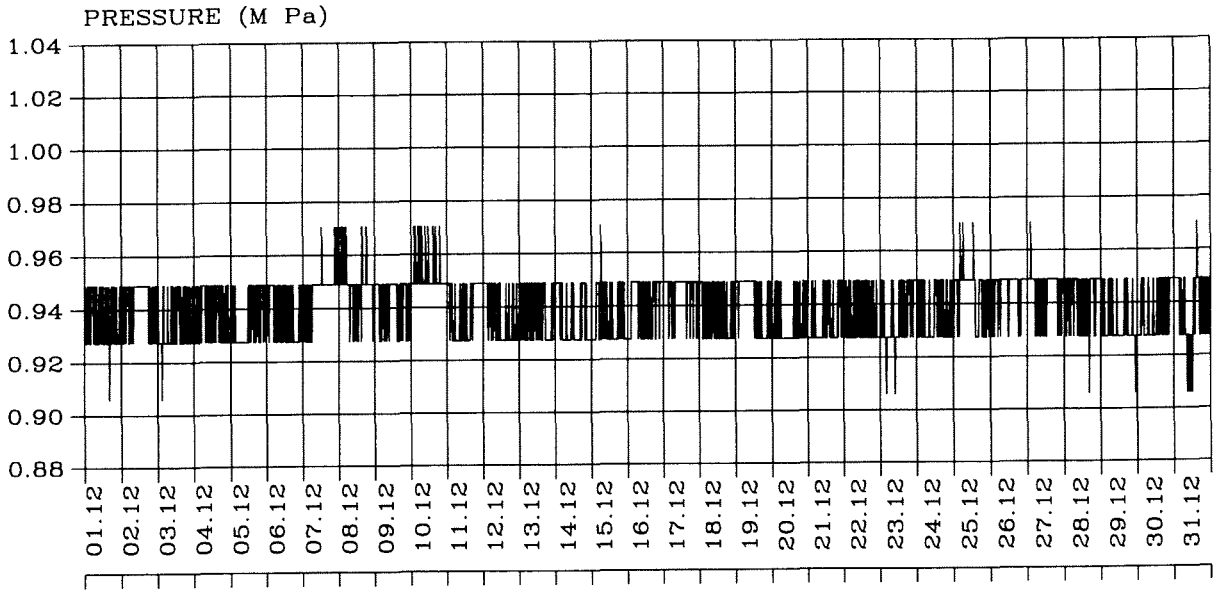
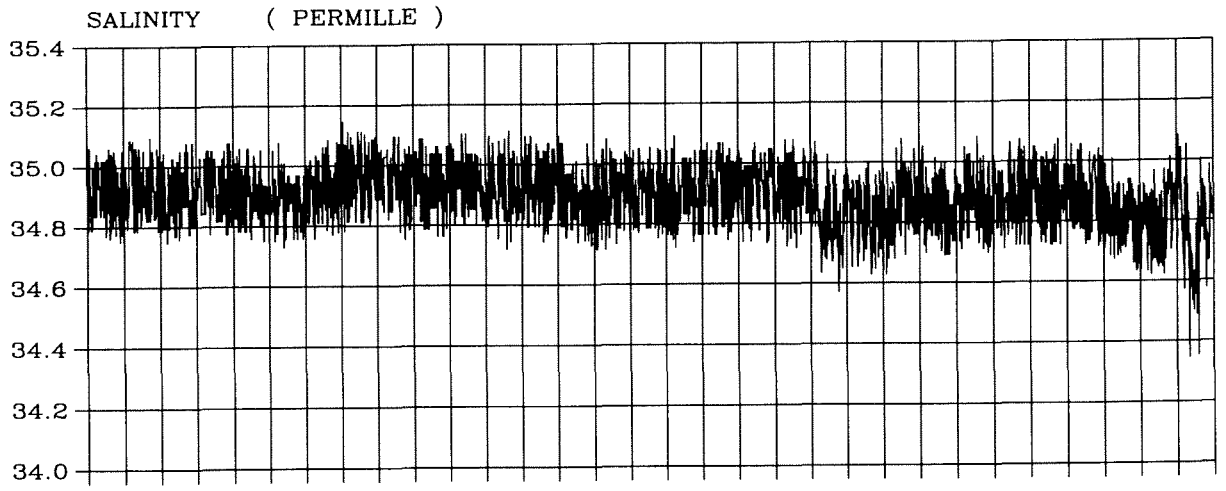
IMR

Fig. 1-1-8

Continues.....







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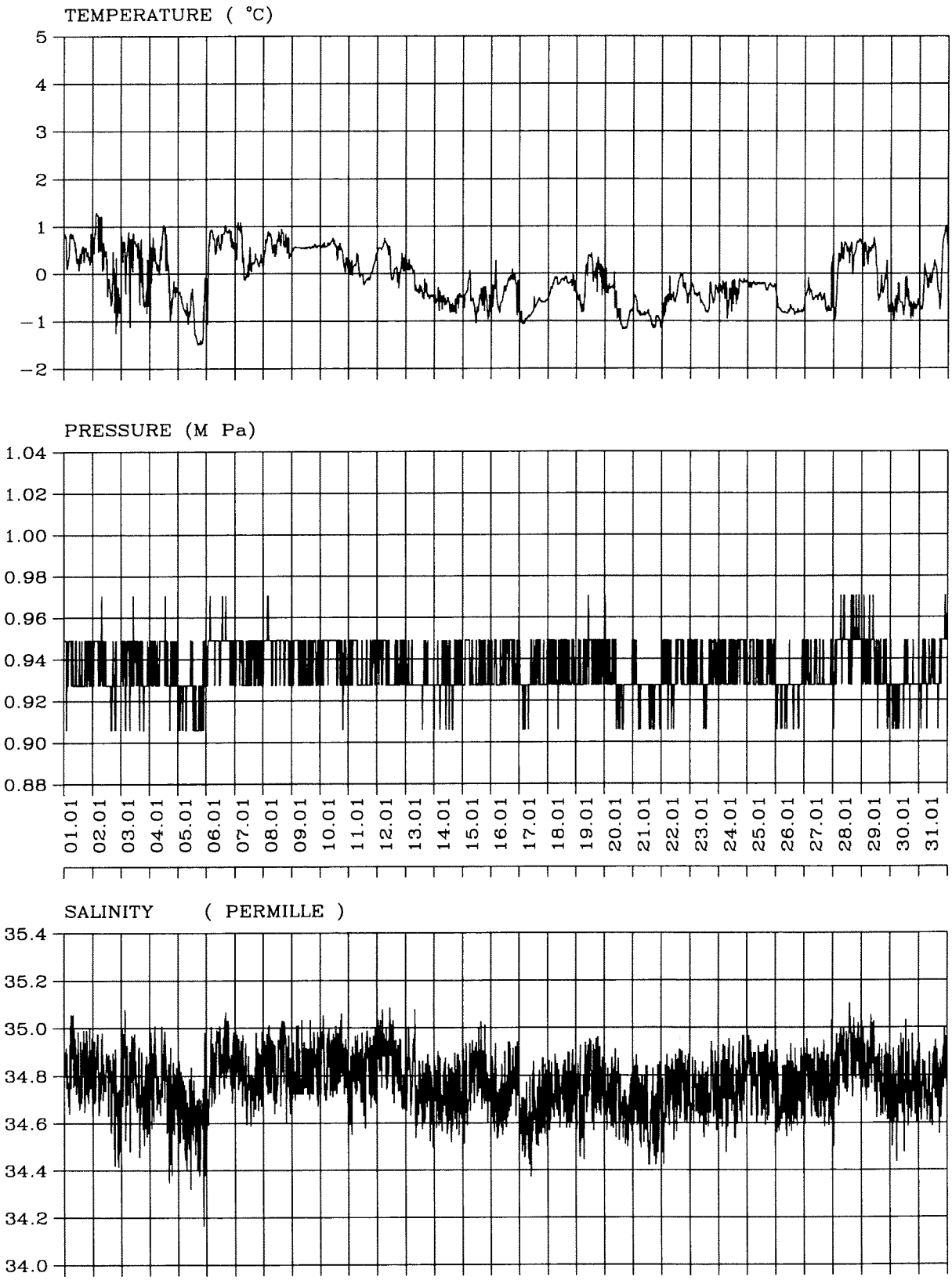
IMR

Fig. 1-1-8

Continues.....



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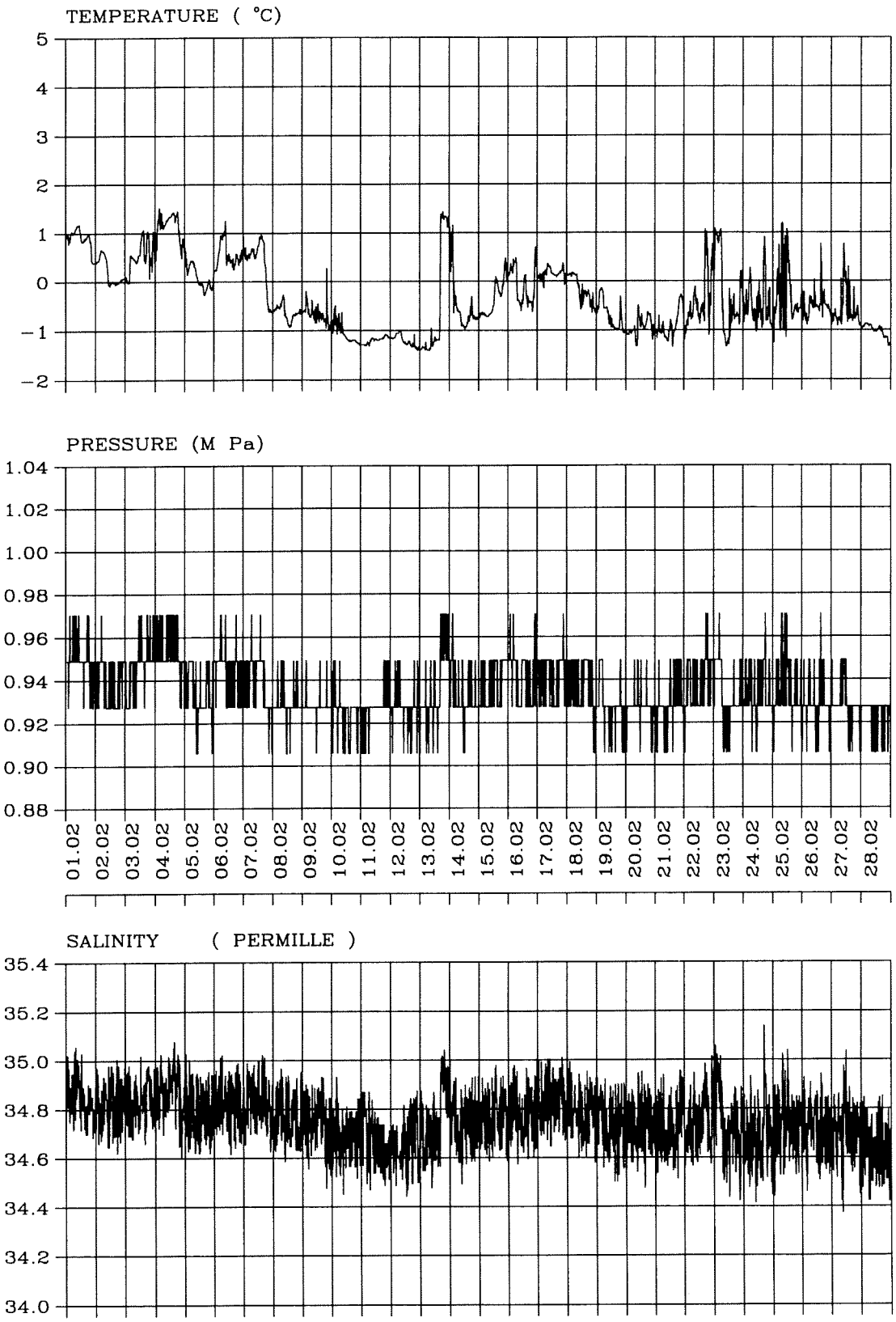
IMR

Fig. 1-1-8

Continues.....



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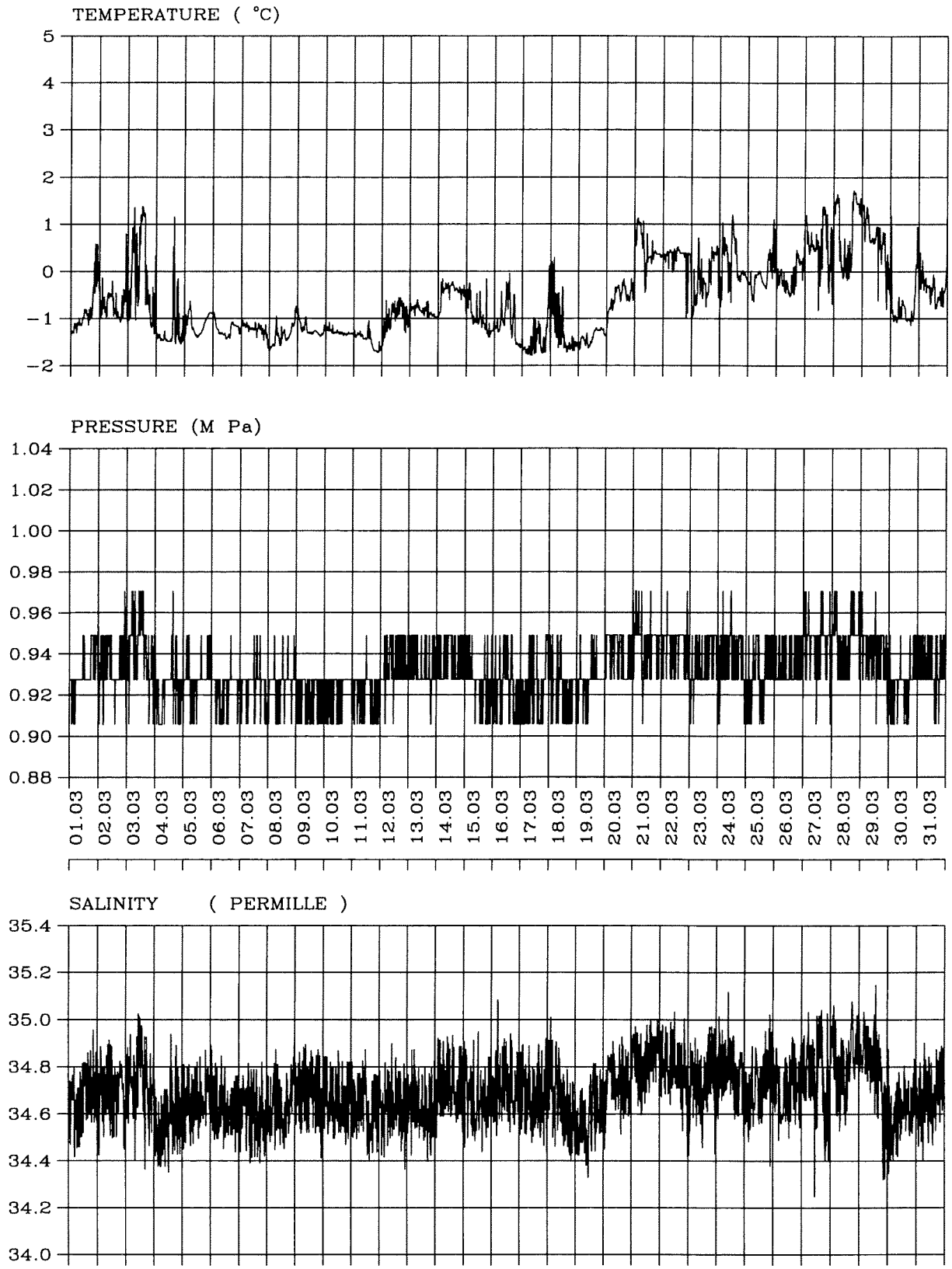
IMR

Fig. 1–1–8

Continues.....



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IMR

Fig. 1-1-8

Continues.....

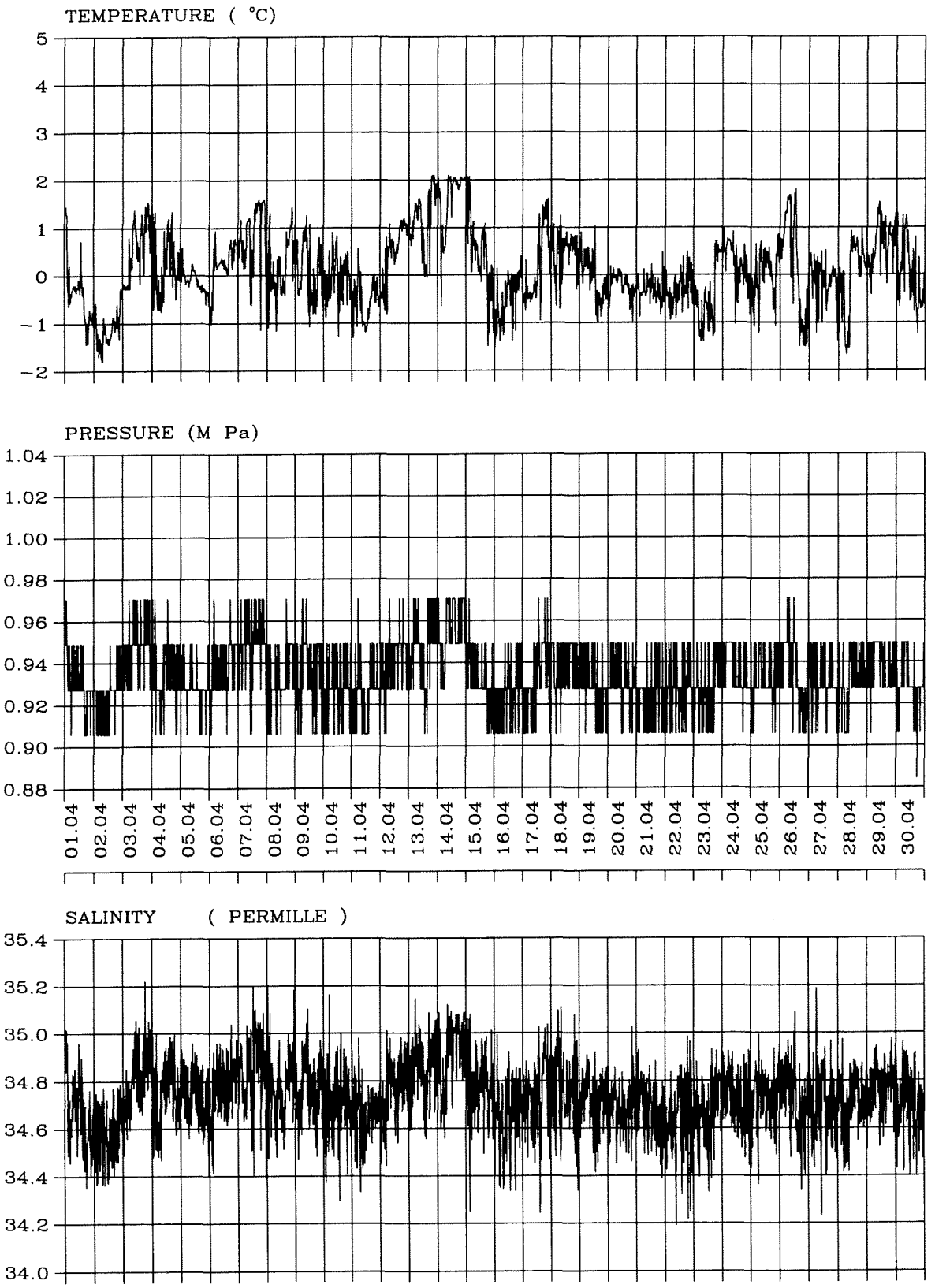

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Fig. 1-1-8

Continues.....

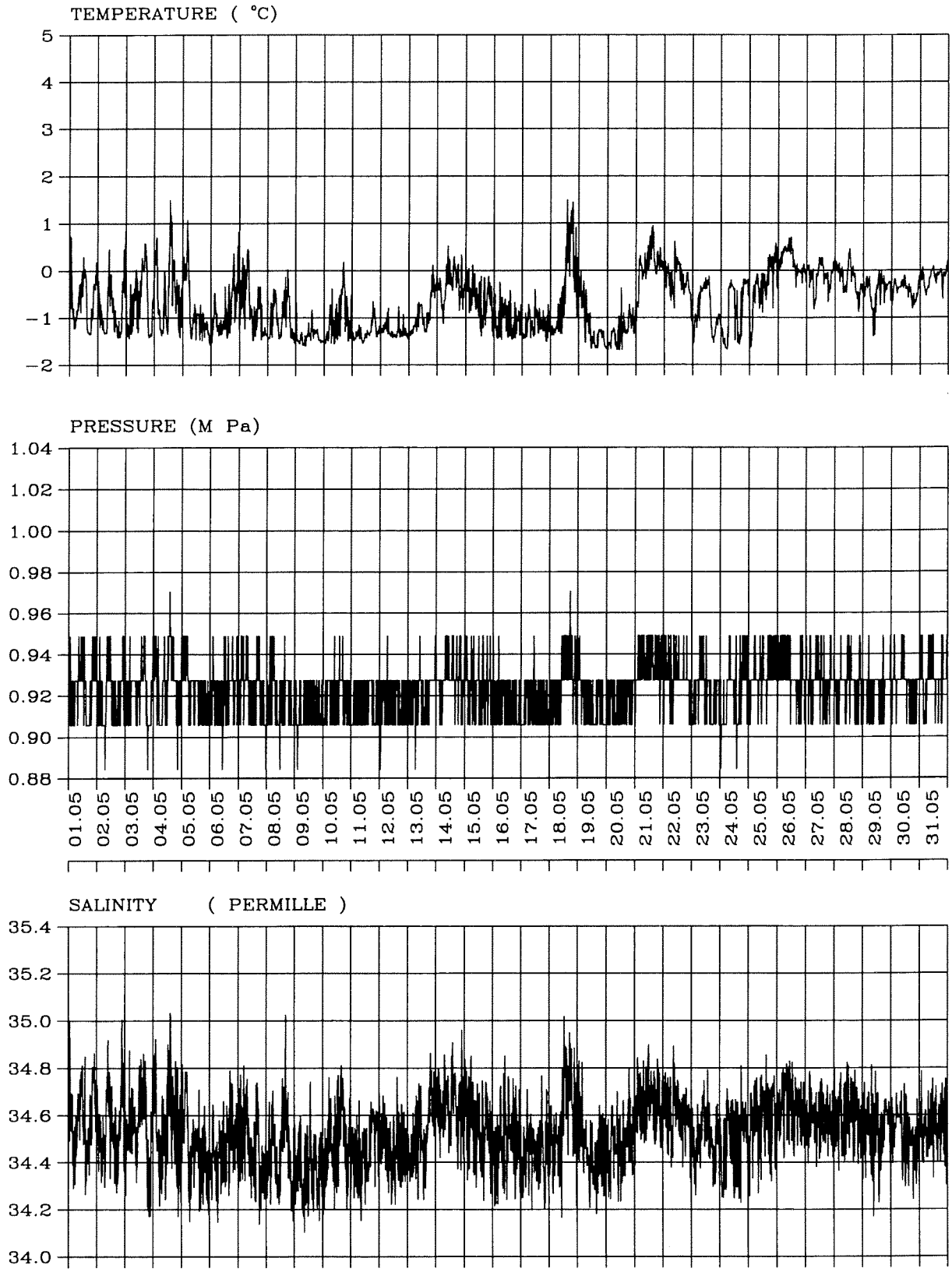

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Fig. 1-1-8

Continues.....

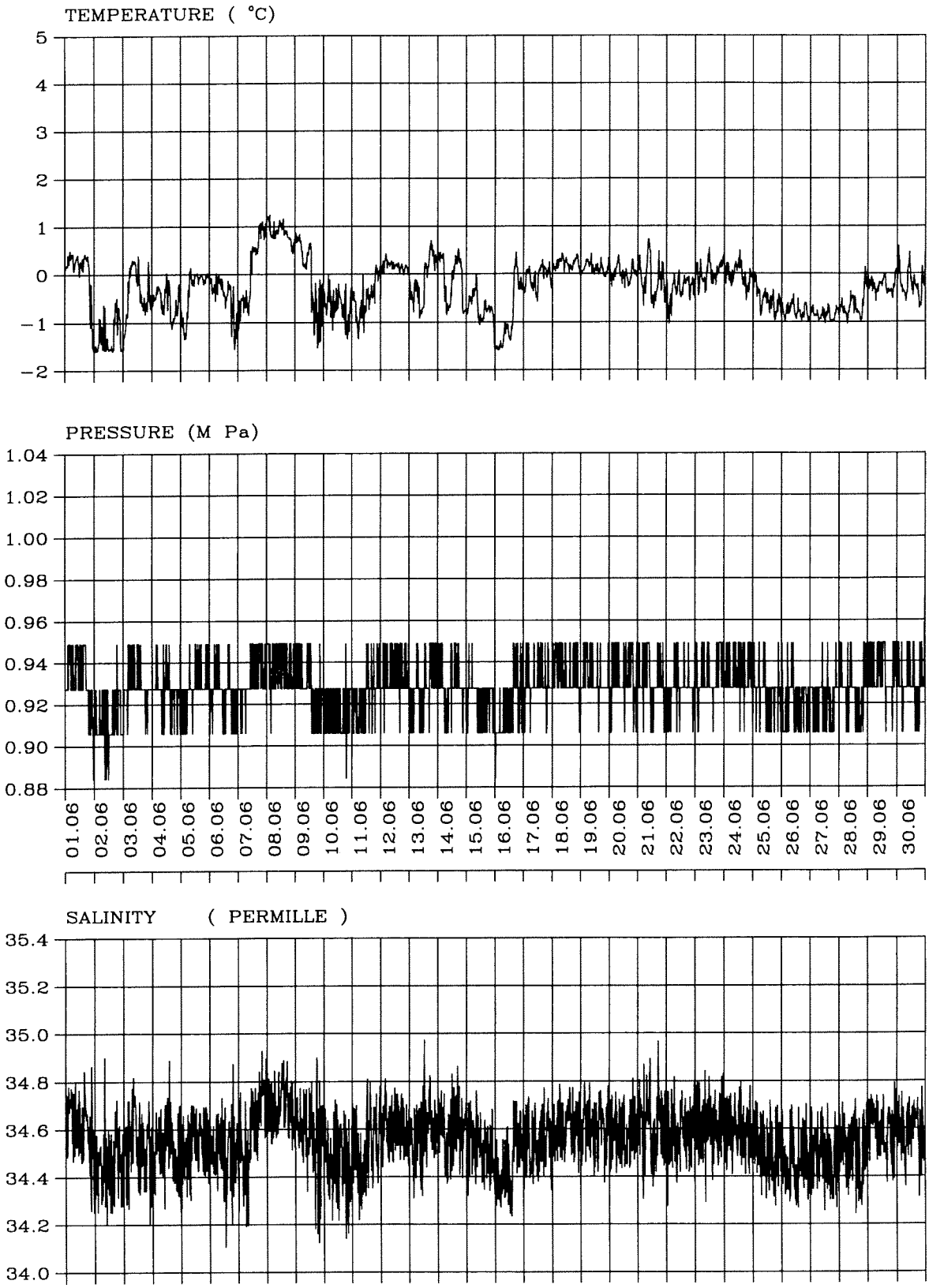

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Fig. 1-1-8

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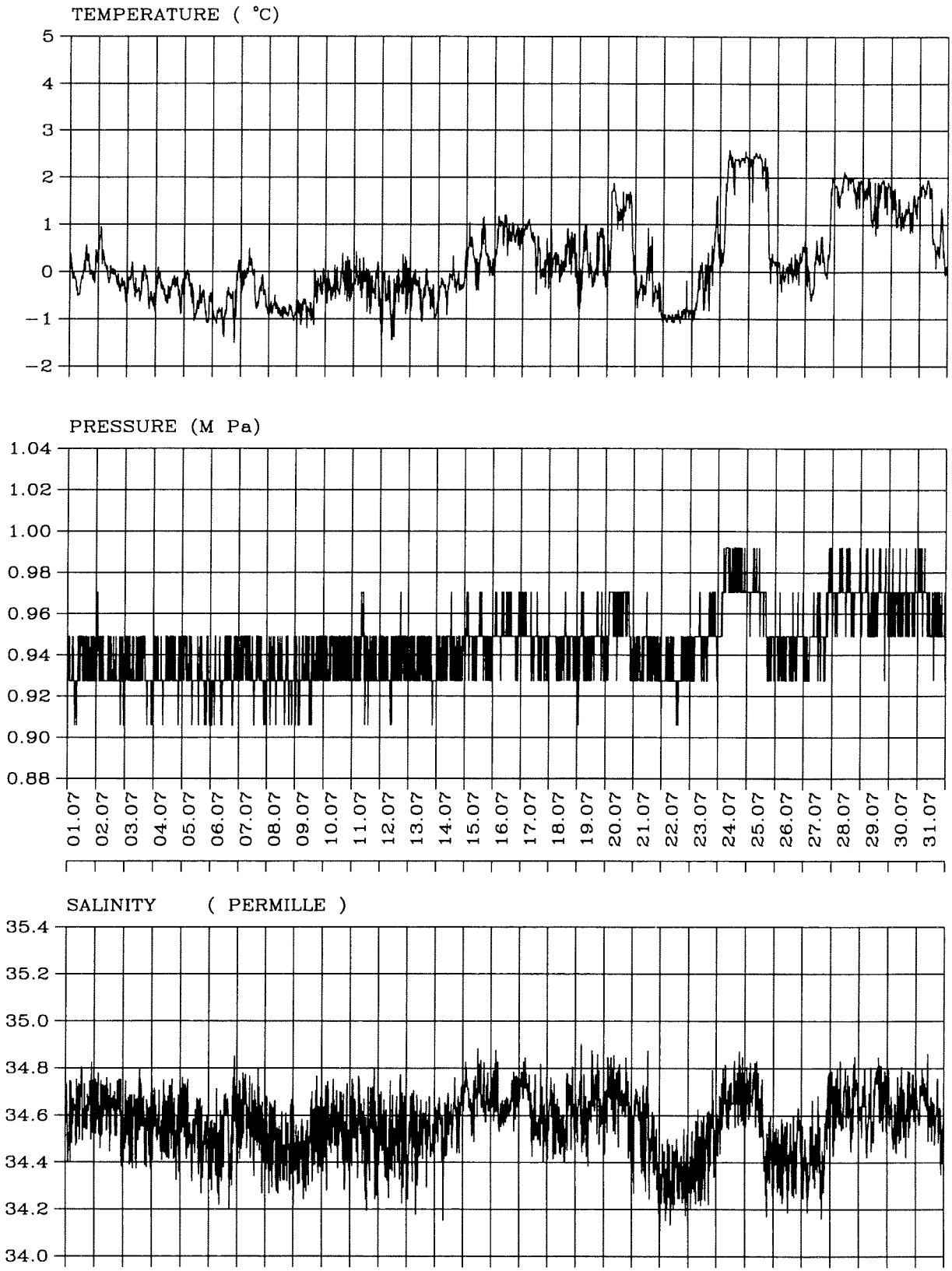

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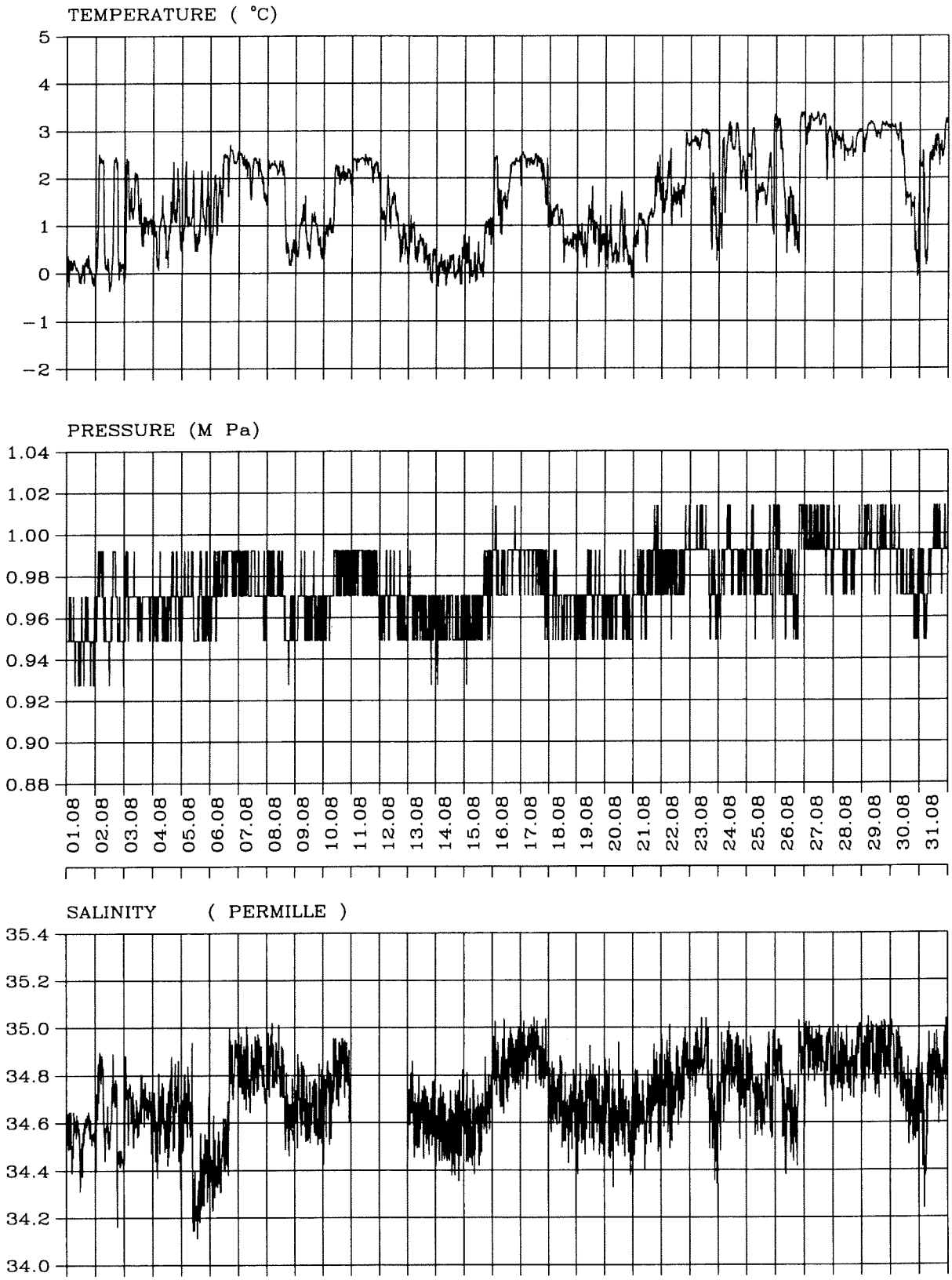
Fig. 1-1-8

Continues.....



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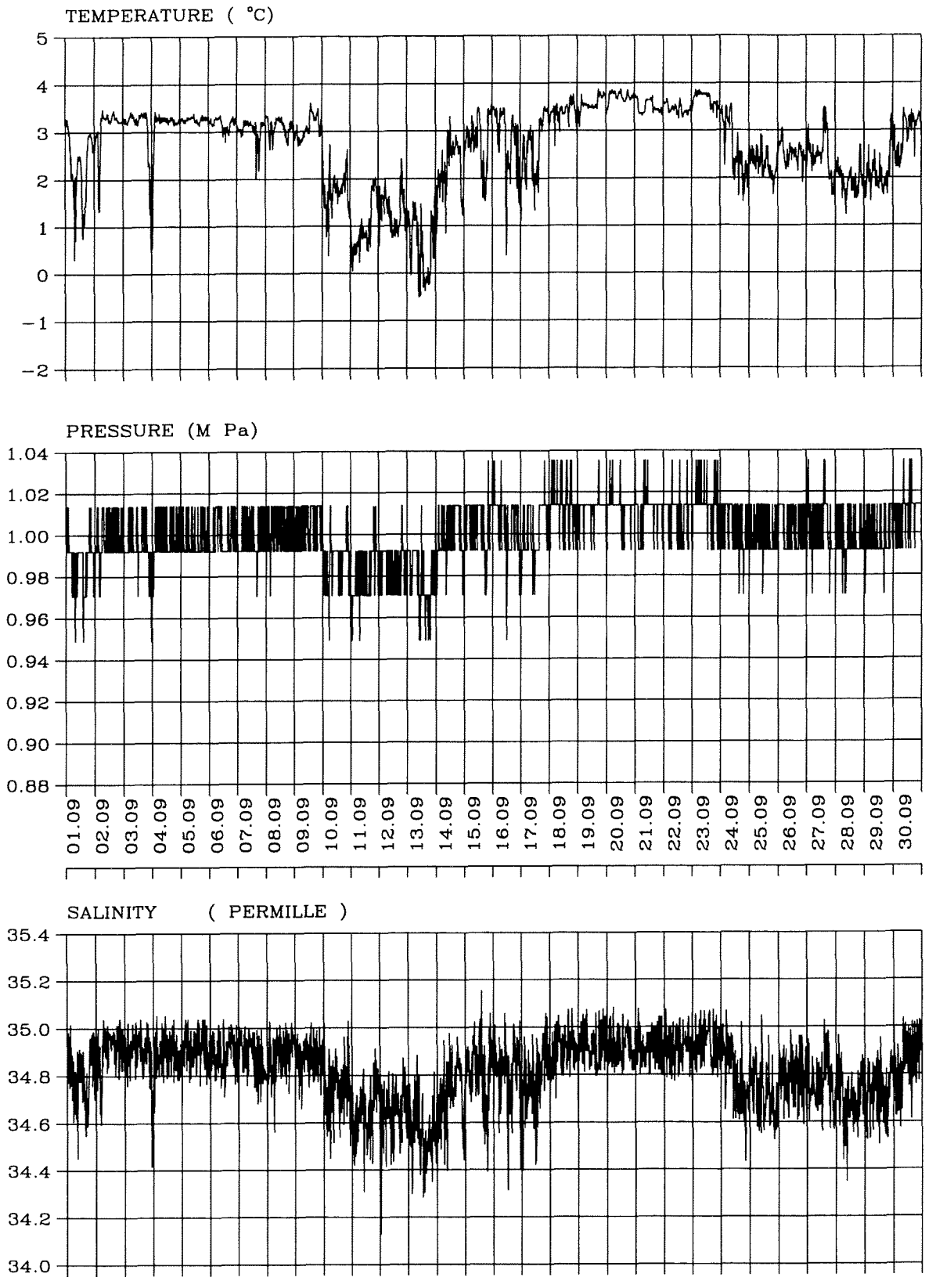
IMR

Fig. 1-1-8

Continues.....



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IMR

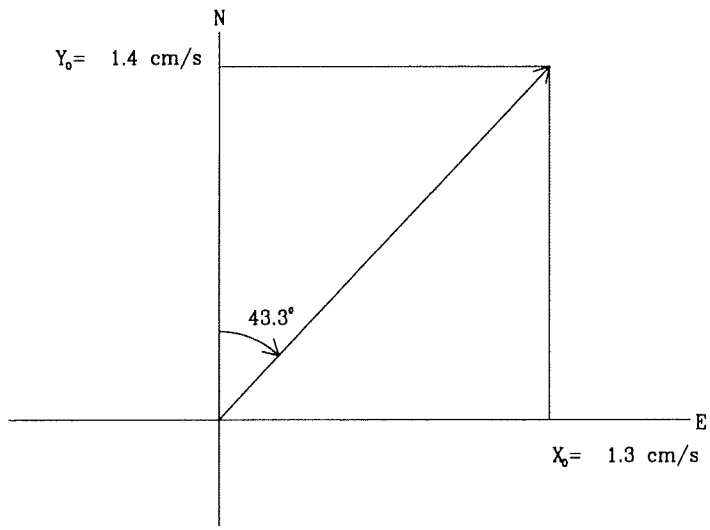
Fig. 1-1-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_j cm/s	g_{xj} °	Y_j cm/s	g_{yj} °	Major axis A_j cm/s	Minor axis B_j cm/s	θ_j °	g_j °	BETA. °
SA	******	0.0	1.5	82.9	1.2	56.1	1.9	-0.4	50.4	71.9	173.7
SSA	******	0.1	1.6	19.8	0.7	54.5	1.7	0.4	68.2	25.0	22.8
MSF	354.37	1.0	1.1	301.9	0.1	11.5	1.1	0.1	88.7	301.9	107.4
MF	327.86	1.1	2.1	115.3	0.3	170.8	2.1	0.3	84.7	116.0	99.2
N2	12.66	28.4	1.3	7.8	1.1	284.9	1.3	-1.0	74.8	355.8	119.0
M2	12.42	29.0	6.8	44.7	5.5	324.8	6.9	-5.2	69.7	29.0	131.2
S2	12.00	30.0	2.2	92.1	1.9	24.6	2.4	-1.6	55.8	68.3	158.4

MEAN CURRENT



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Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-1-9 Harmonic analysis of current.

A discription of the model and its definitions :

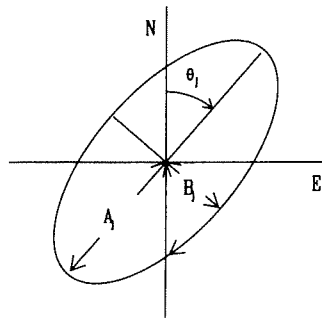
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

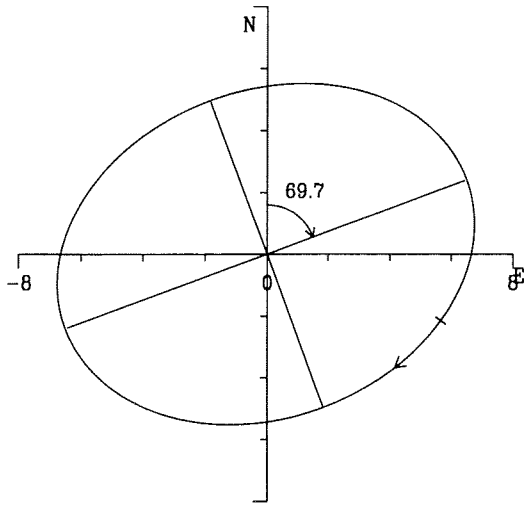
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

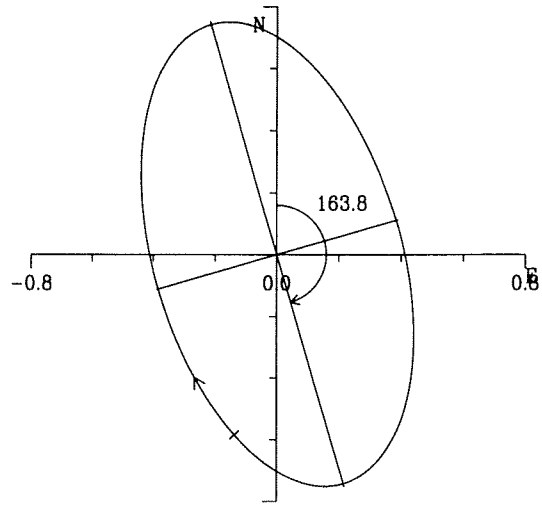
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1500 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 − 1993 01.10 H. 0000

IMR

Fig. 1−1−10 M2 and K1 ellipse.

MEAN VALUES

Speed	10.83 cm/s
NS-component	1.39 cm/s
EW-component	1.33 cm/s
Velocity	1.93 cm/s
in direction	43 °

MAXIMUM

Velocity	66.49 cm/s
in direction	272 °
Temperature	4.74 °C
Salinity	35.222

MINIMUM

Velocity	0.00 cm/s
in direction	200 °
Temperature	-1.81 °C
Salinity	34.103

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 60.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10794

Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

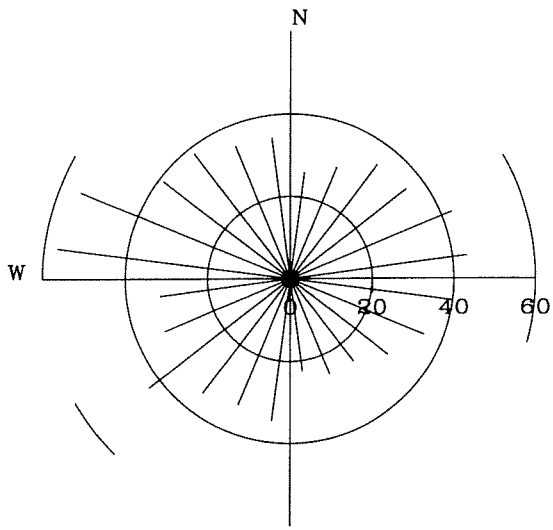
Fig. 1-1-11

Overall mean values.
Overall maximum values.
Overall minimum values.

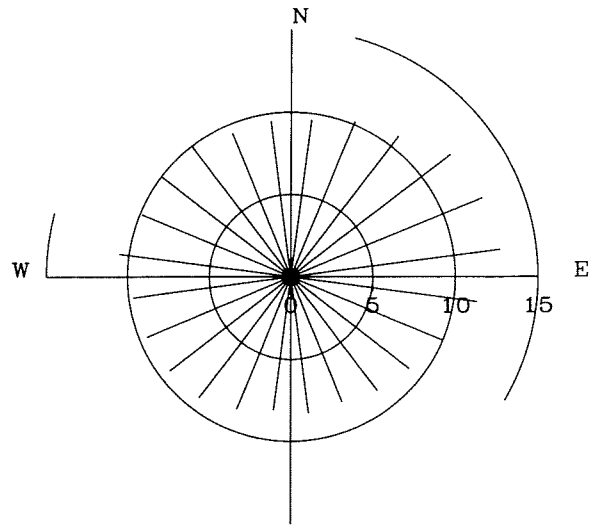
Mooring: *1*

Depth: *100 m*

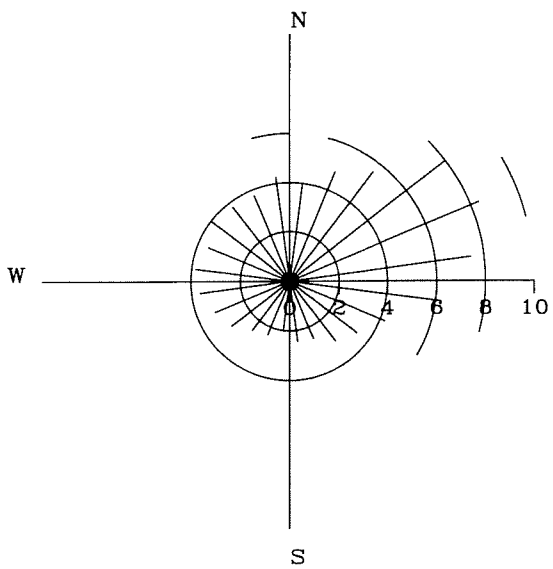
CURRENT VELOCITY DISTRIBUTION



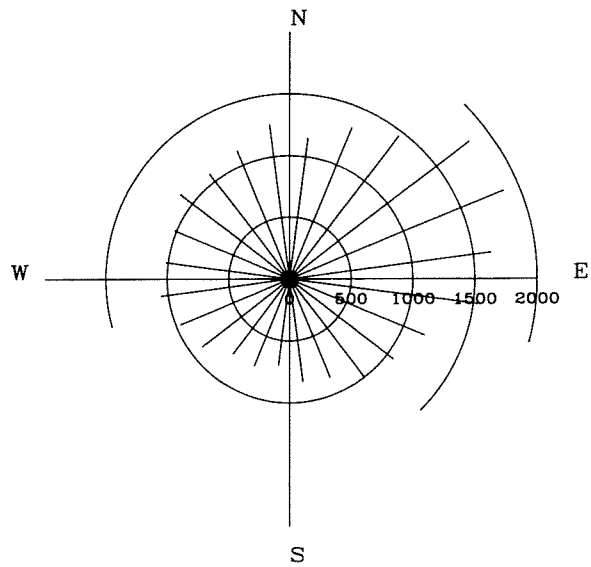
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

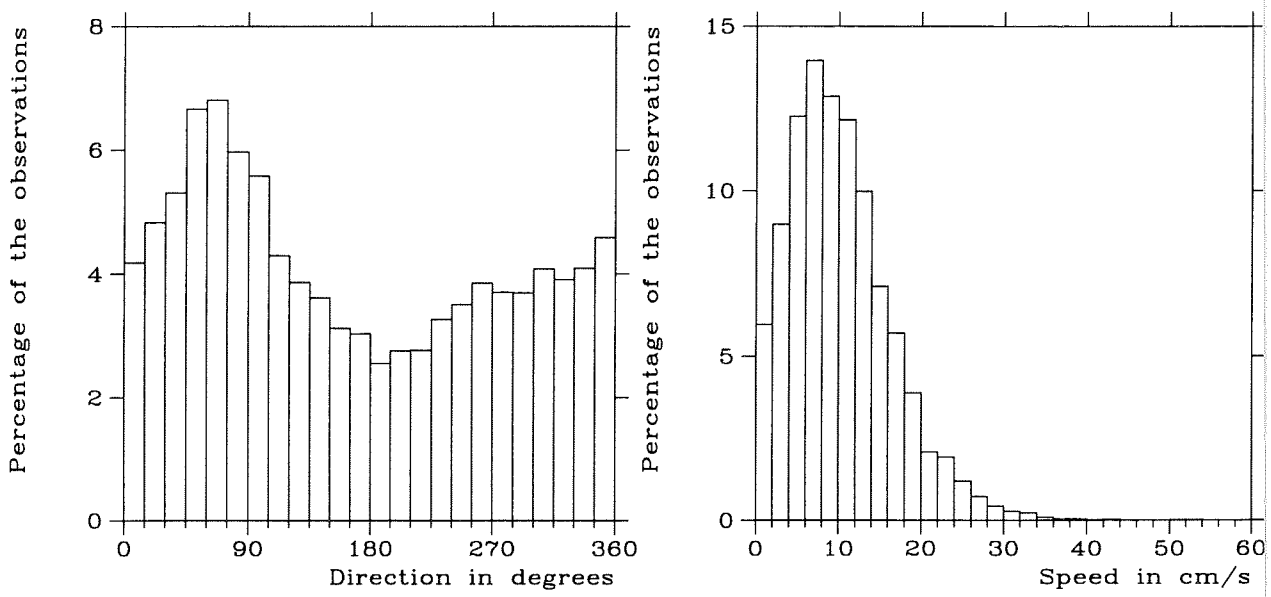
Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

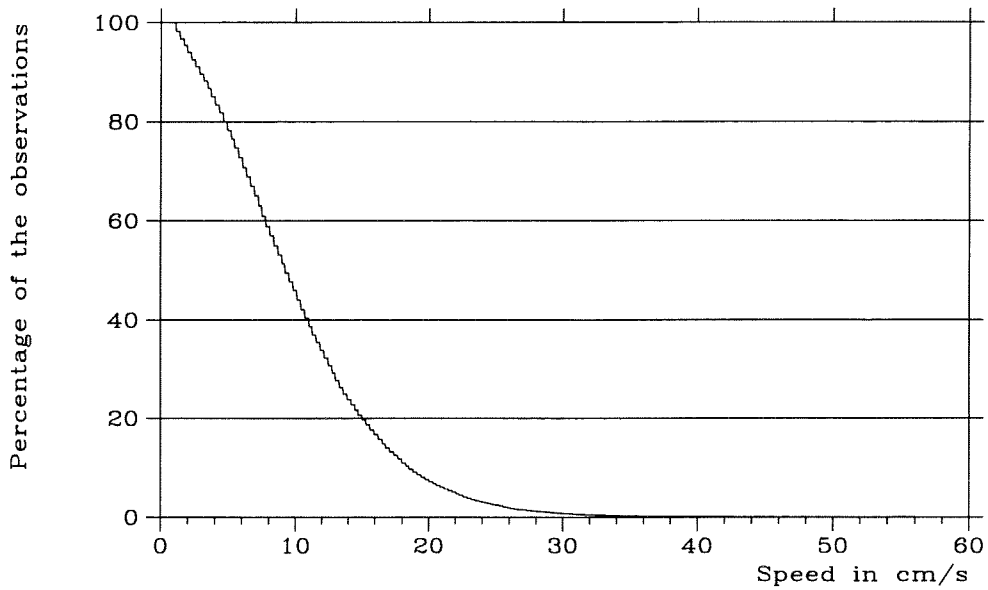
IMR

Fig. 1-2-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10802

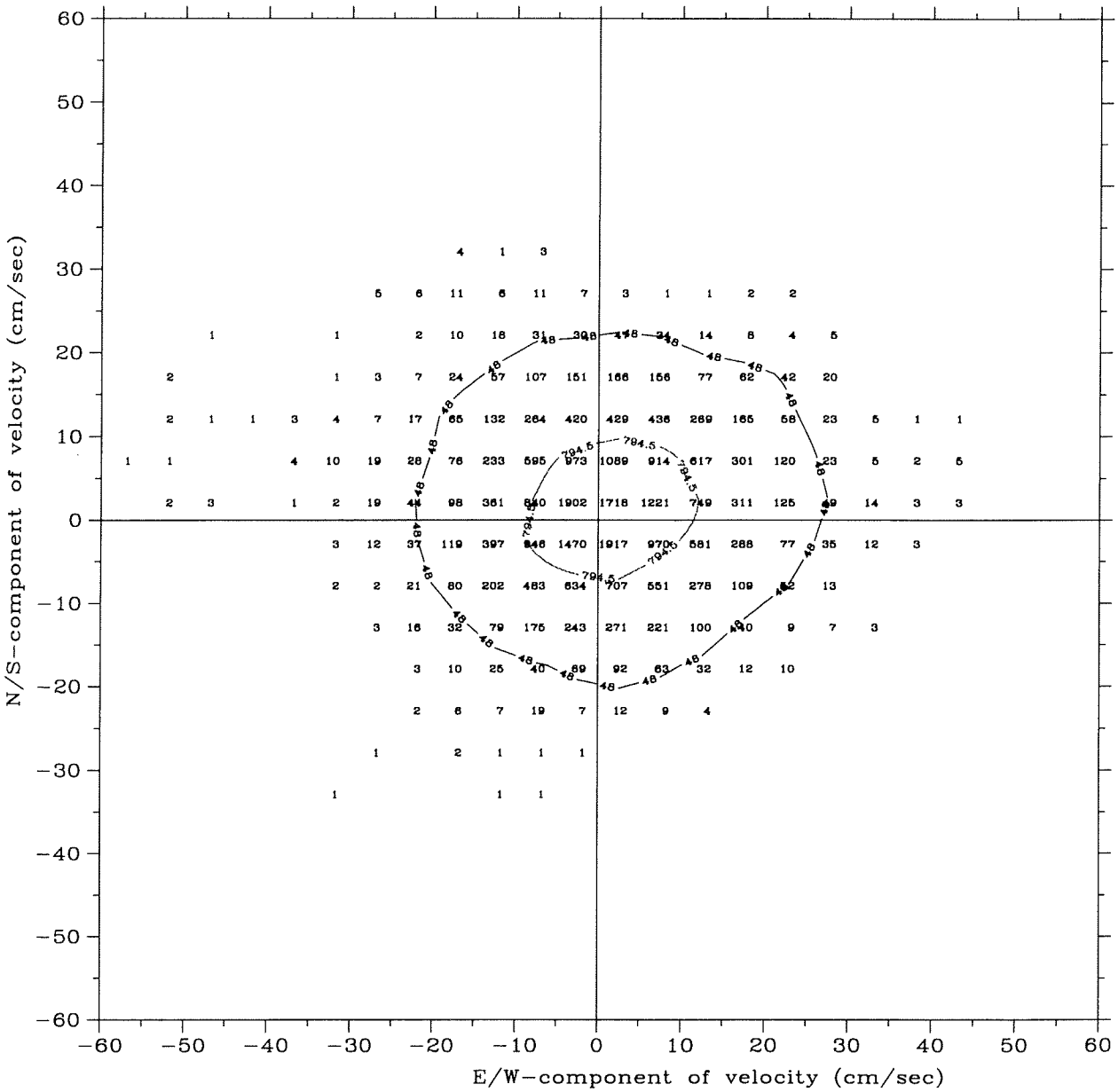
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-2

Histogram of speed and direction.
Current speed distribution.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27558

Isoline for 50% and 96%

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

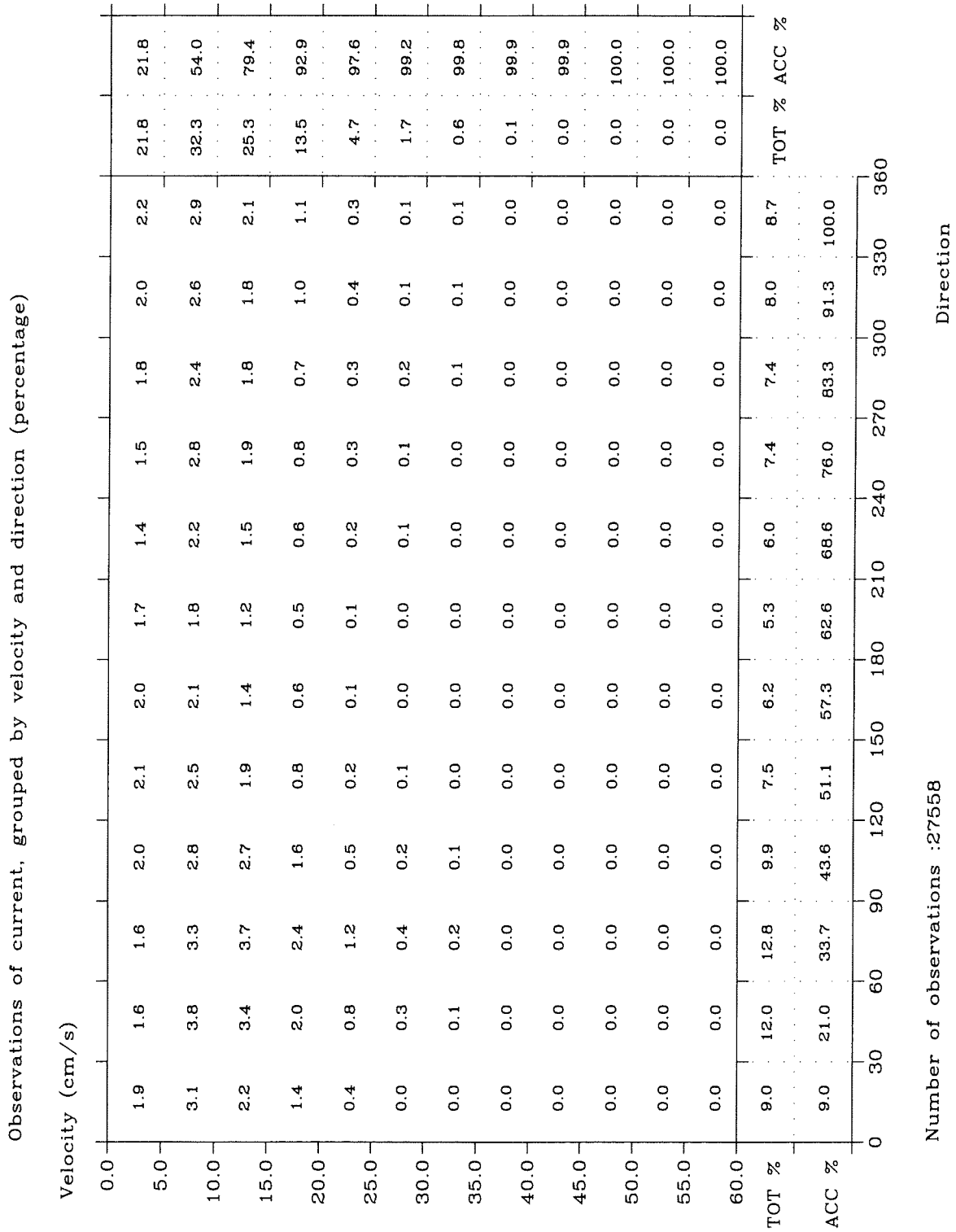
Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 − 1993 30.09 H. 2300

IMR

Fig. 1-2-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

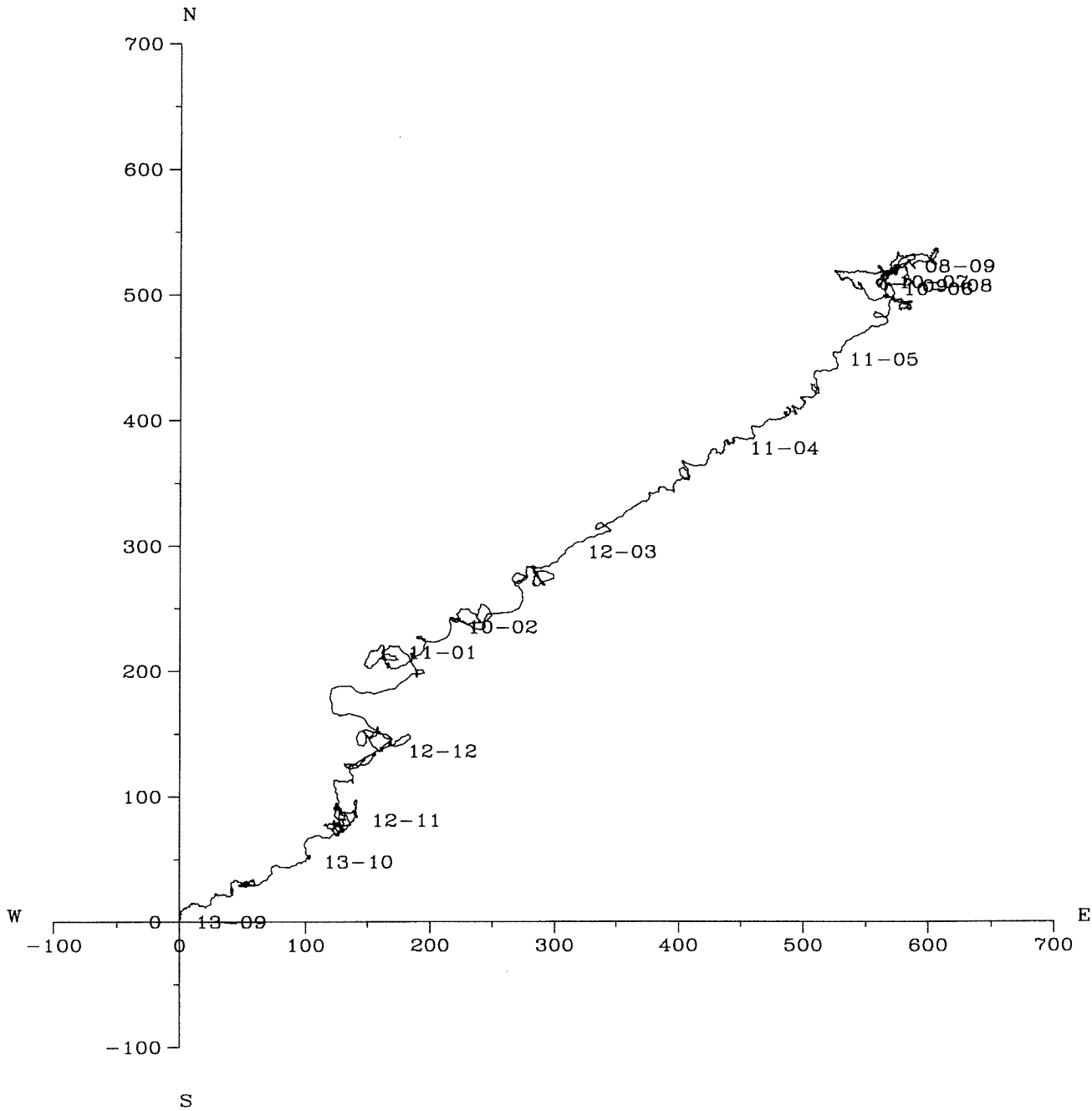
Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



Units in km

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

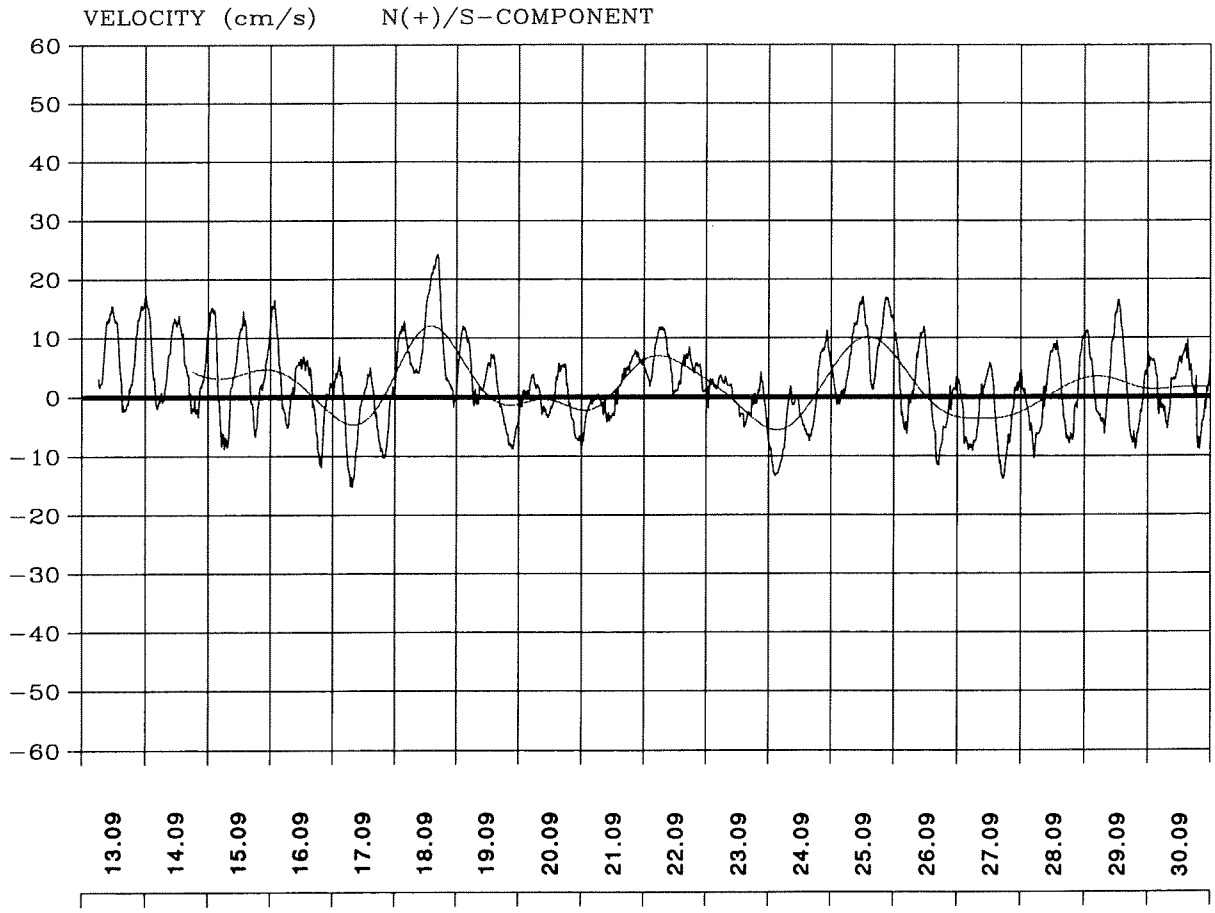
Instrument depth : 100.0 m Bottom depth : 250.0 m

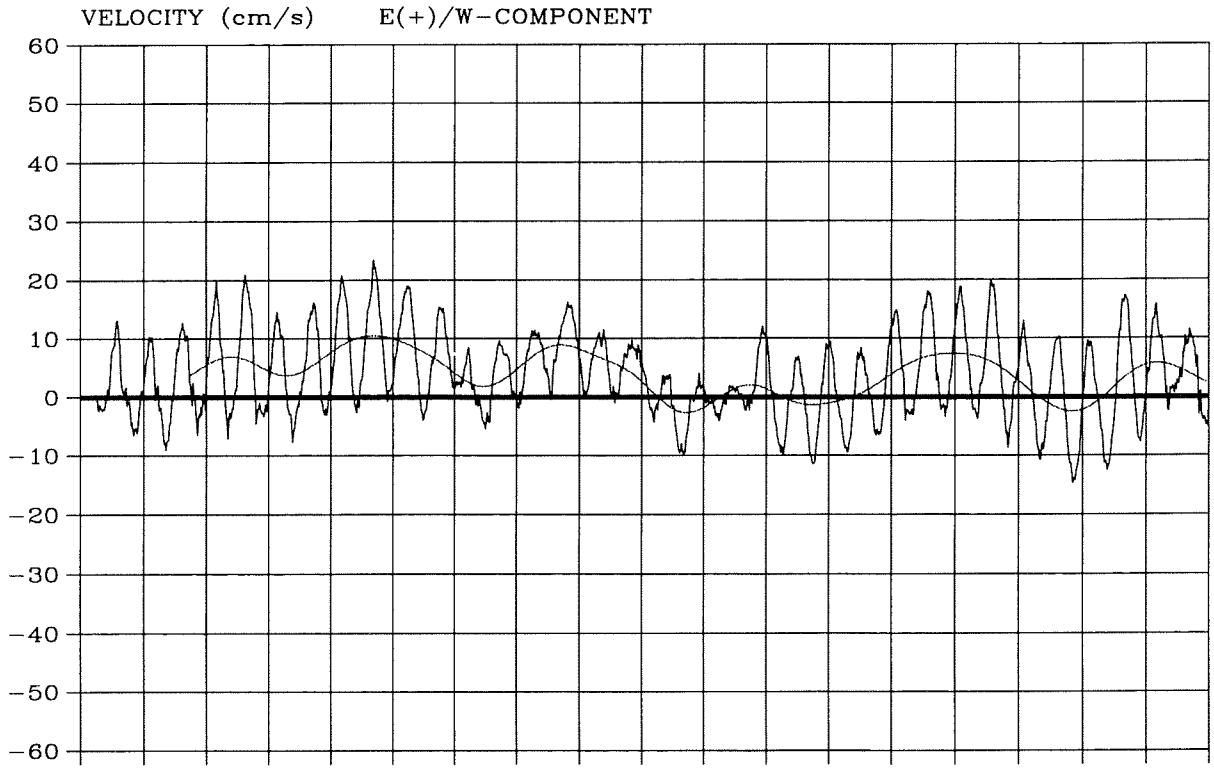
Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-5 Progressive vector diagram.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

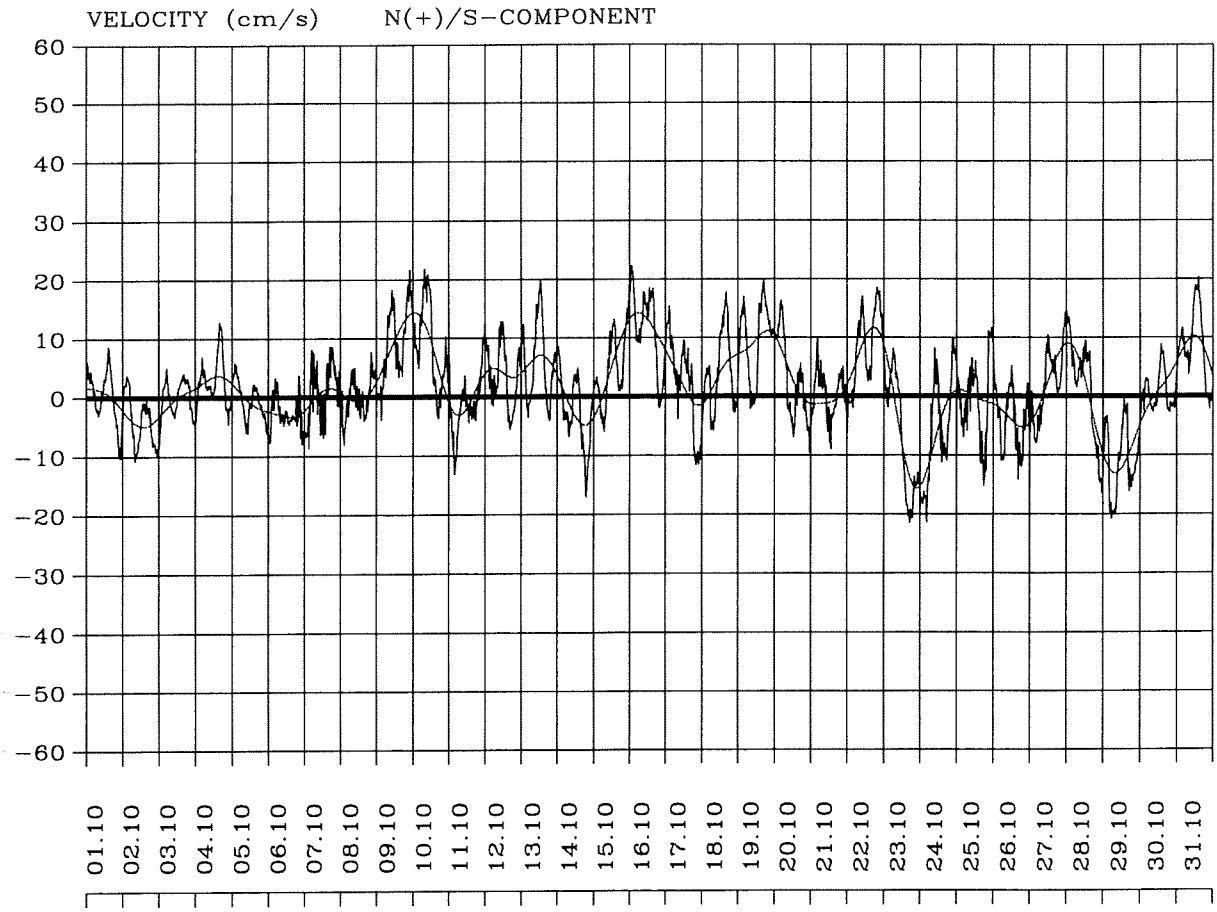
Instrument depth : 100.0 m Bottom depth : 250.0 m

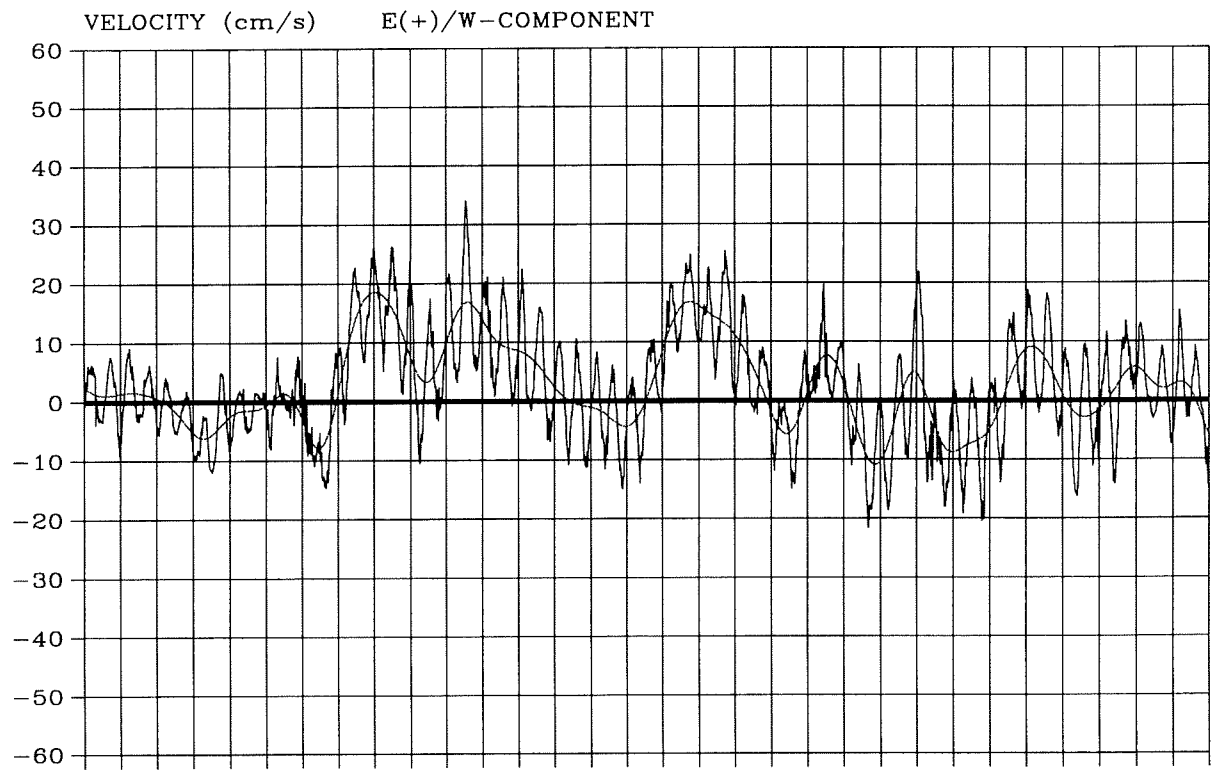
Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6 Current velocity distribution.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

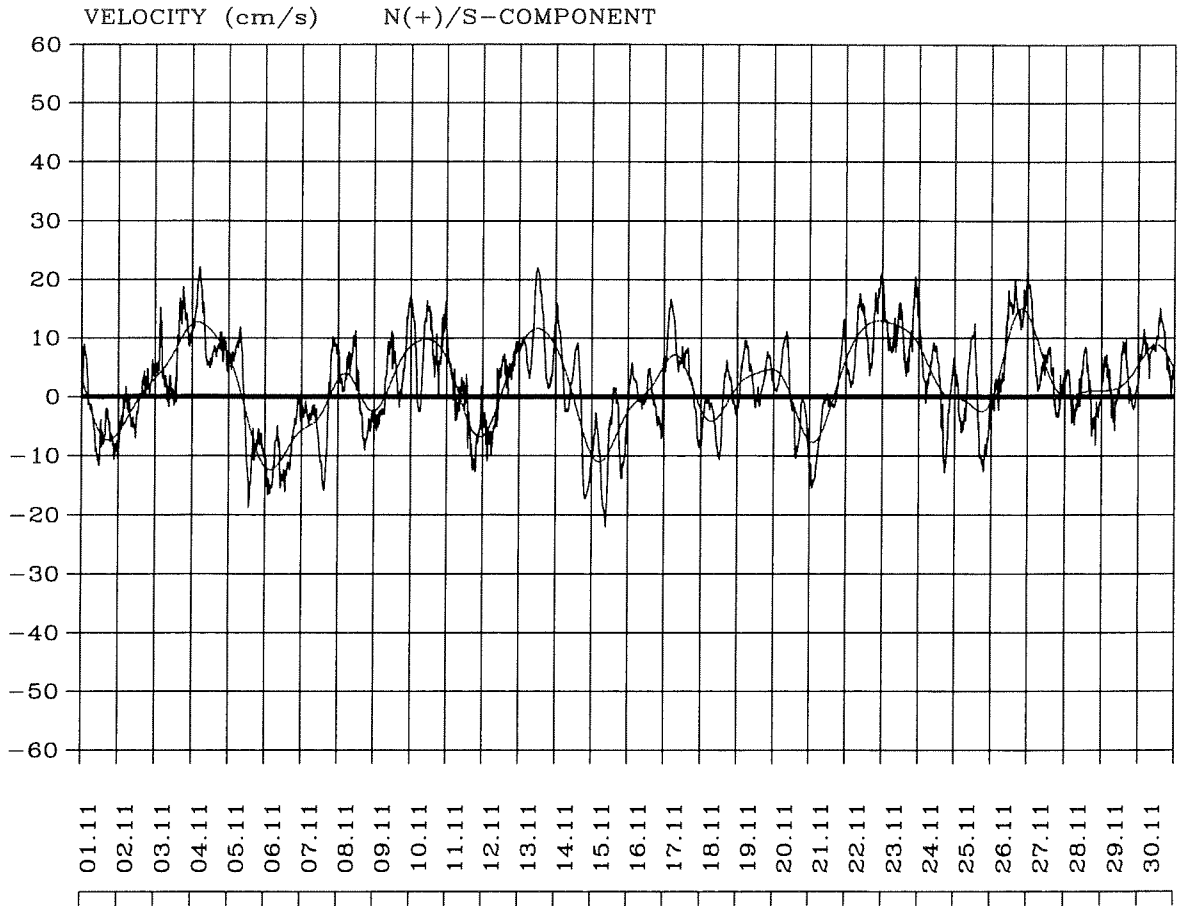
Time interval : 20.00 minutes. Instrument no. : 10802

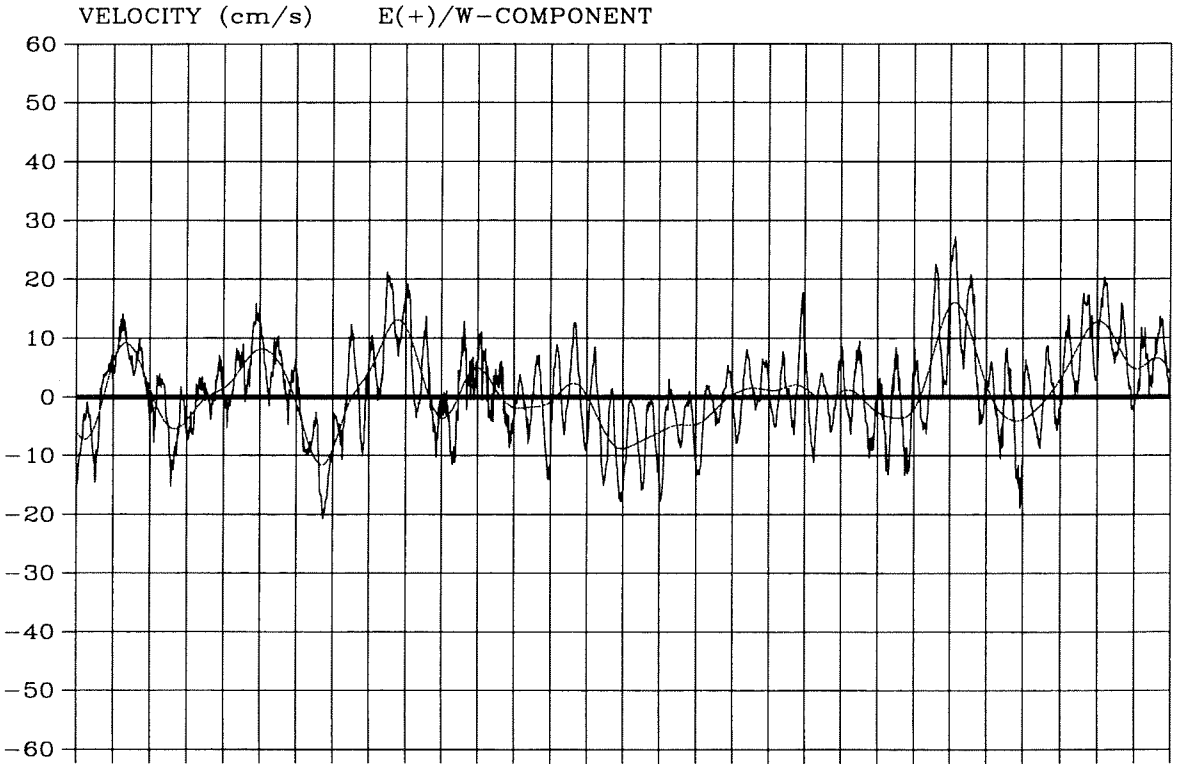
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

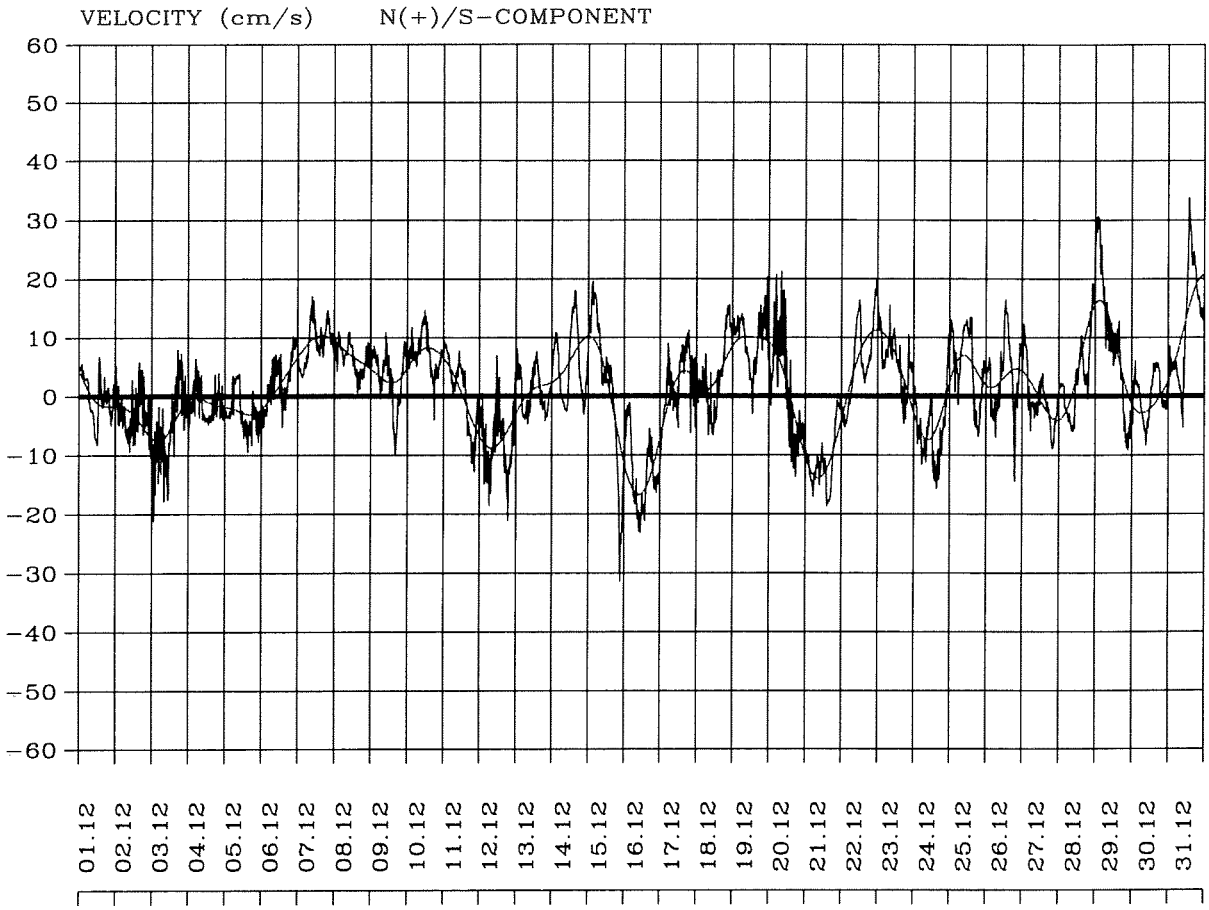
Time interval : 20.00 minutes. Instrument no. : 10802

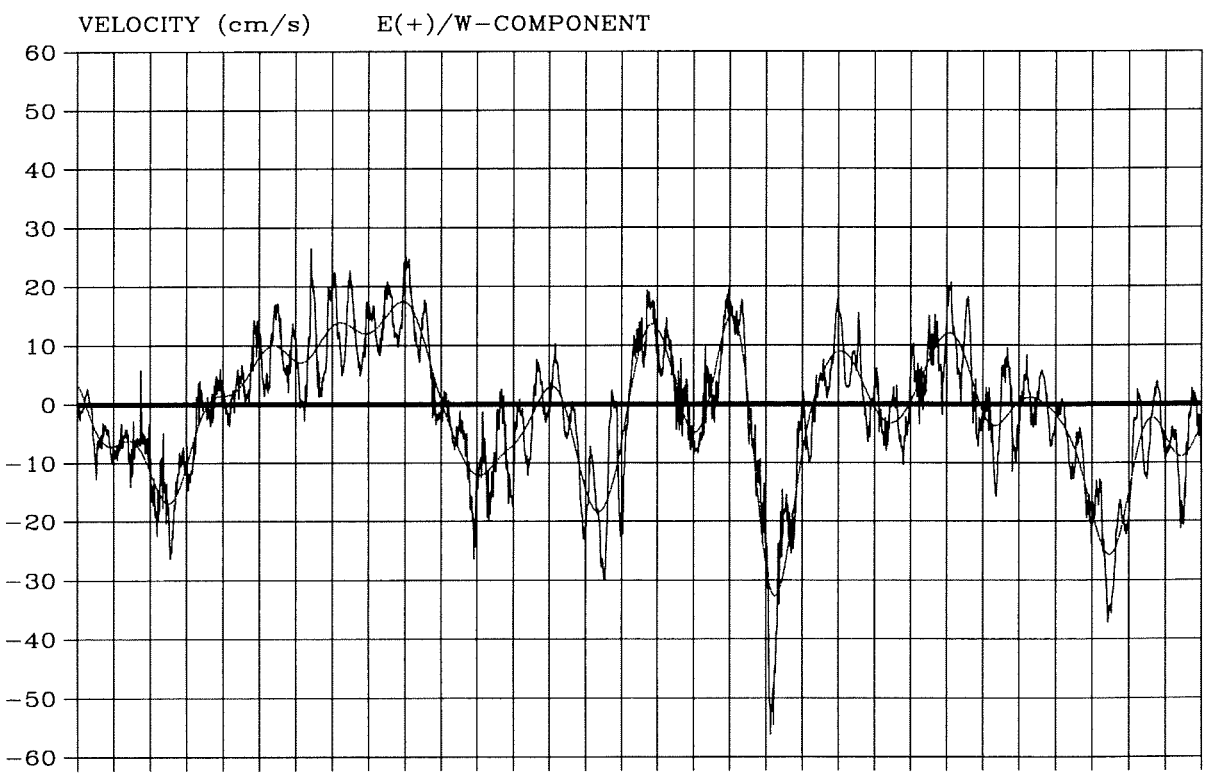
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 100.0 m Bottom depth : 250.0 m

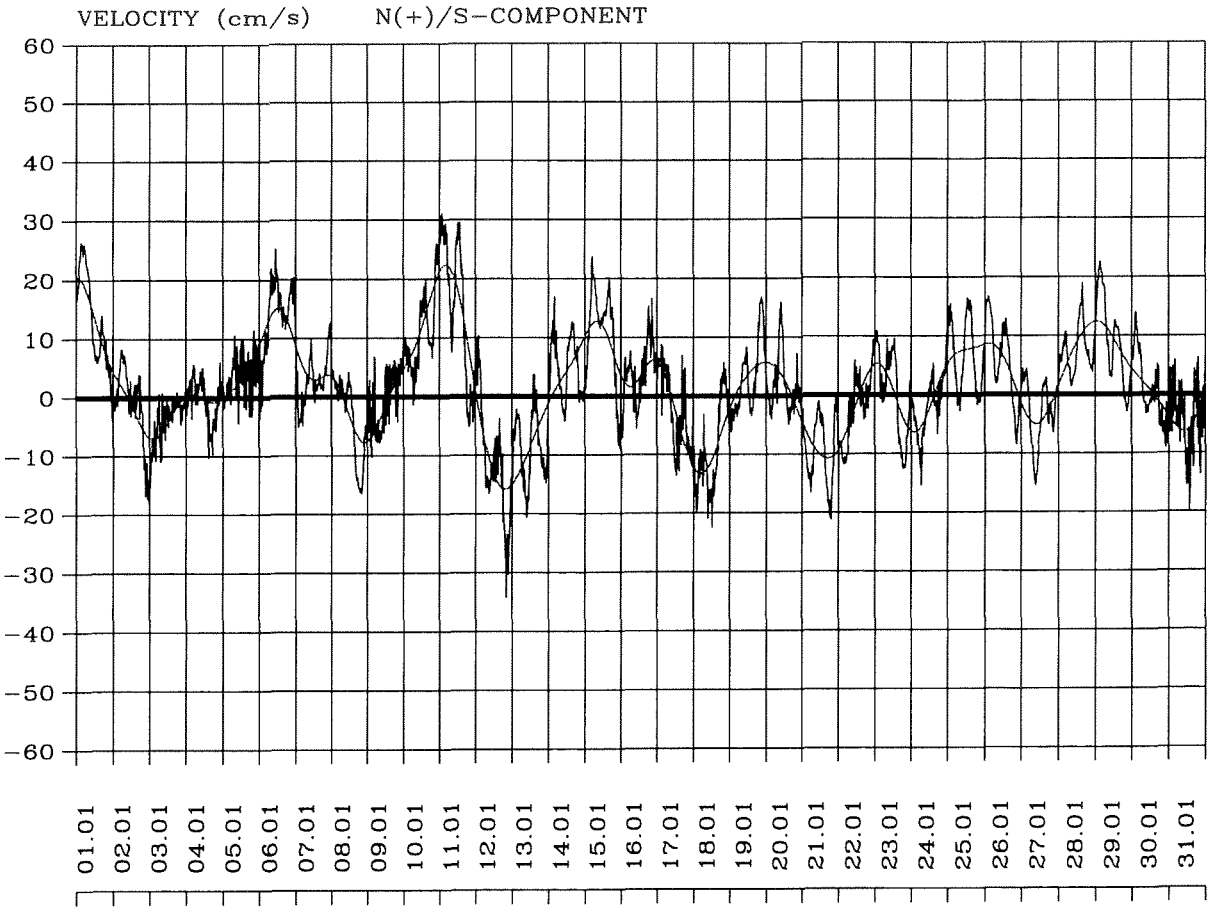
Time interval : 20.00 minutes. Instrument no. : 10802

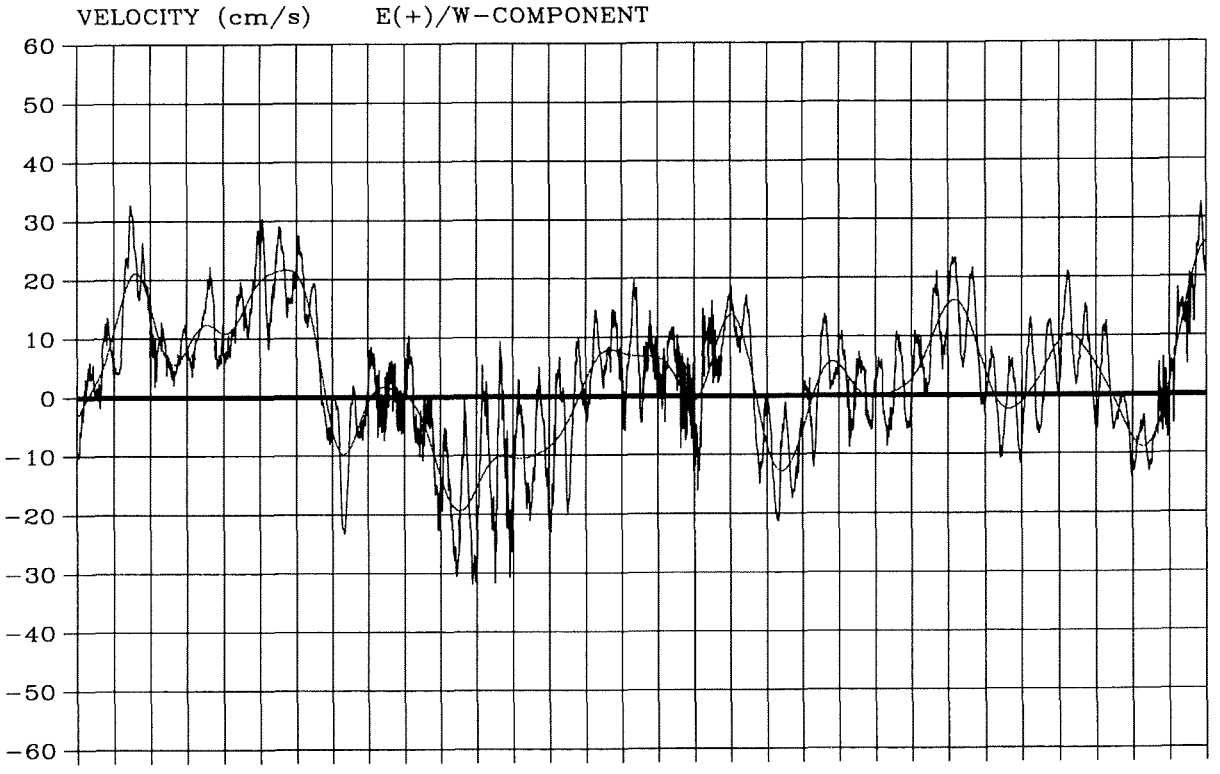
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

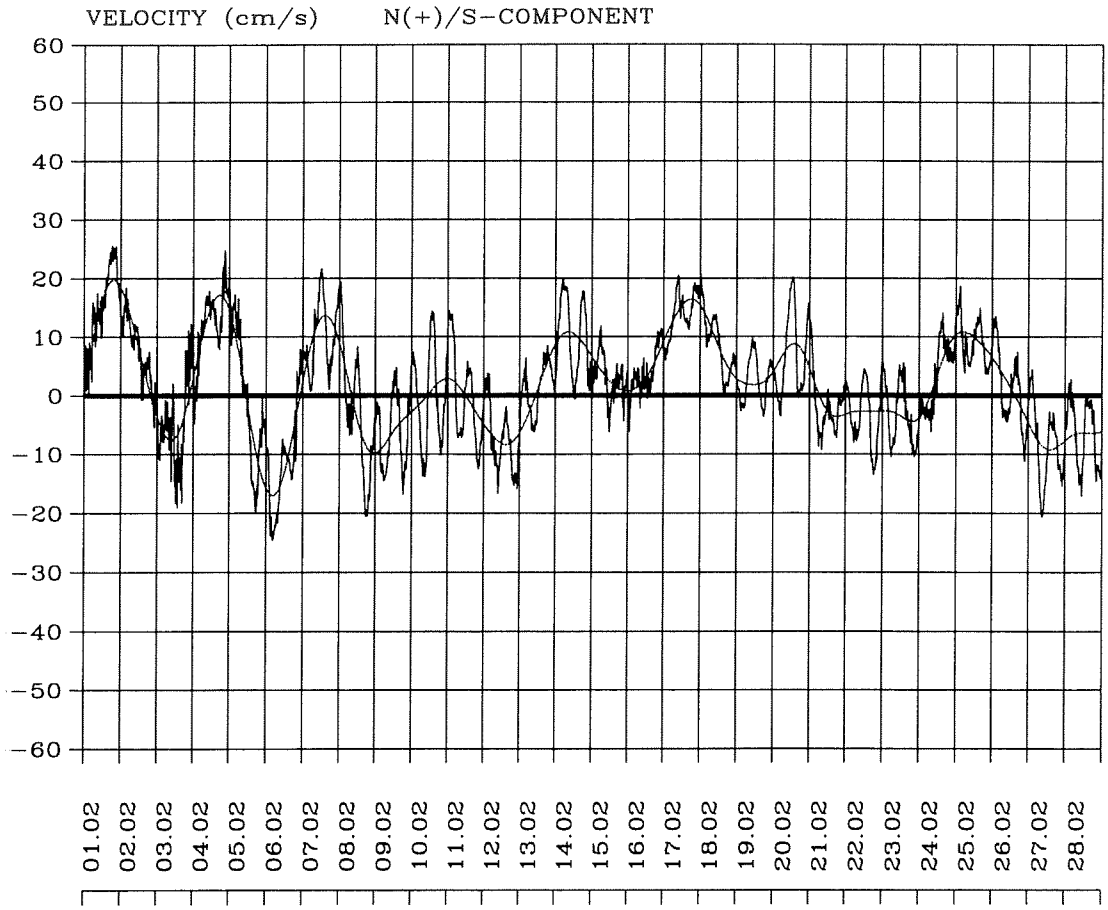
Time interval : 20.00 minutes. Instrument no. : 10802

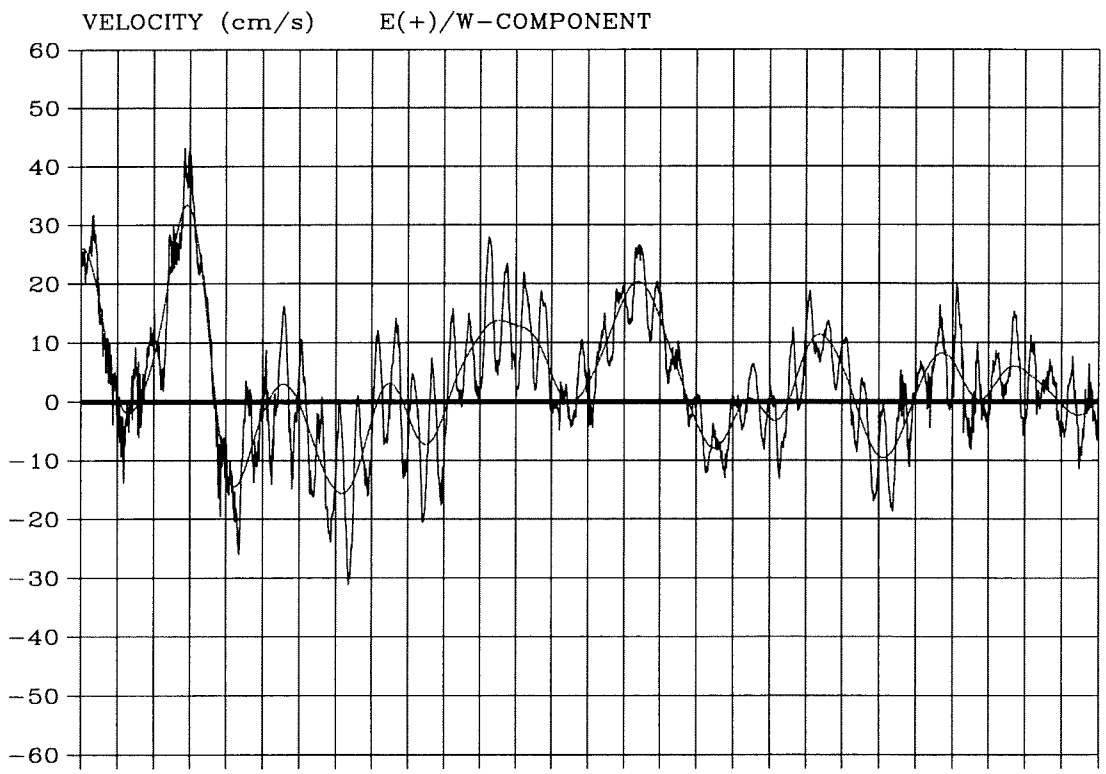
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

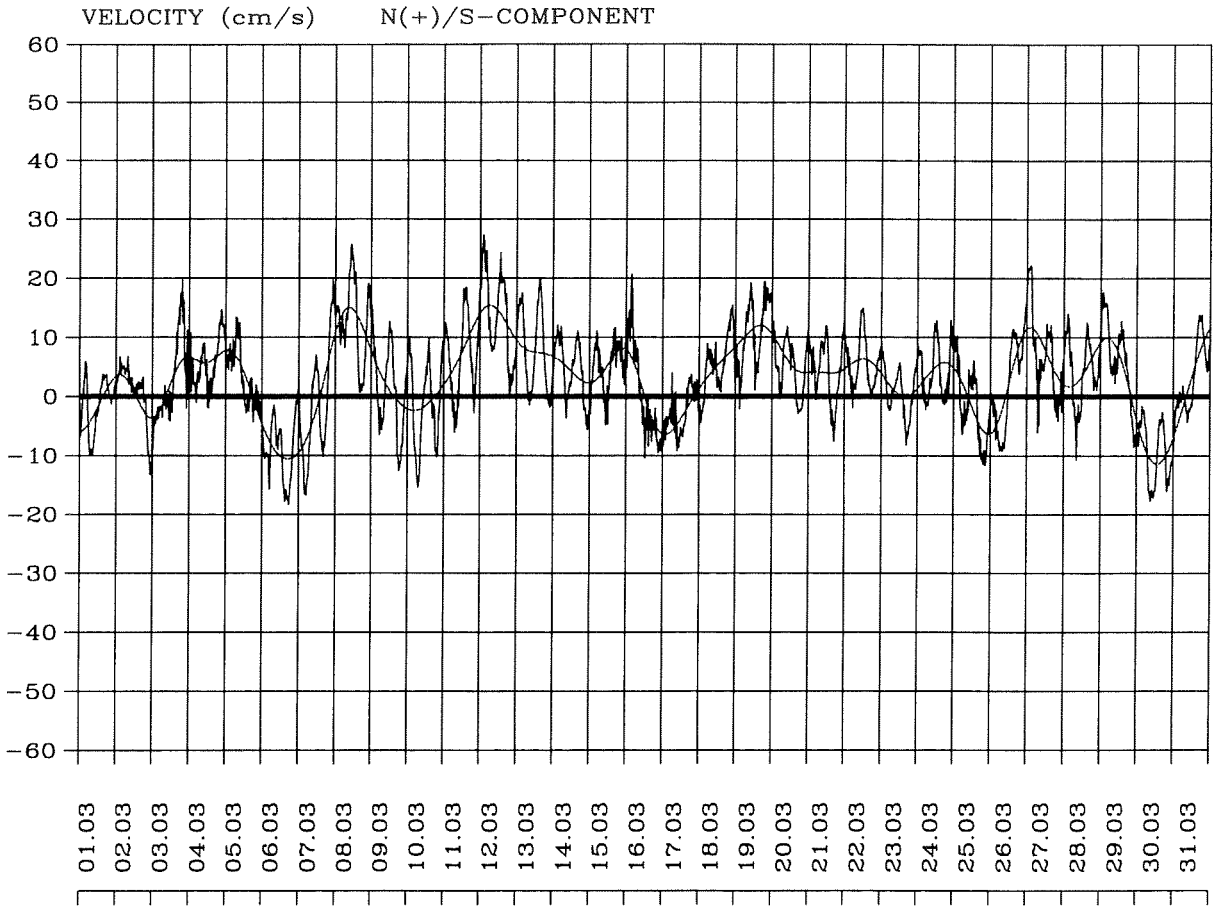
Time interval : 20.00 minutes. Instrument no. : 10802

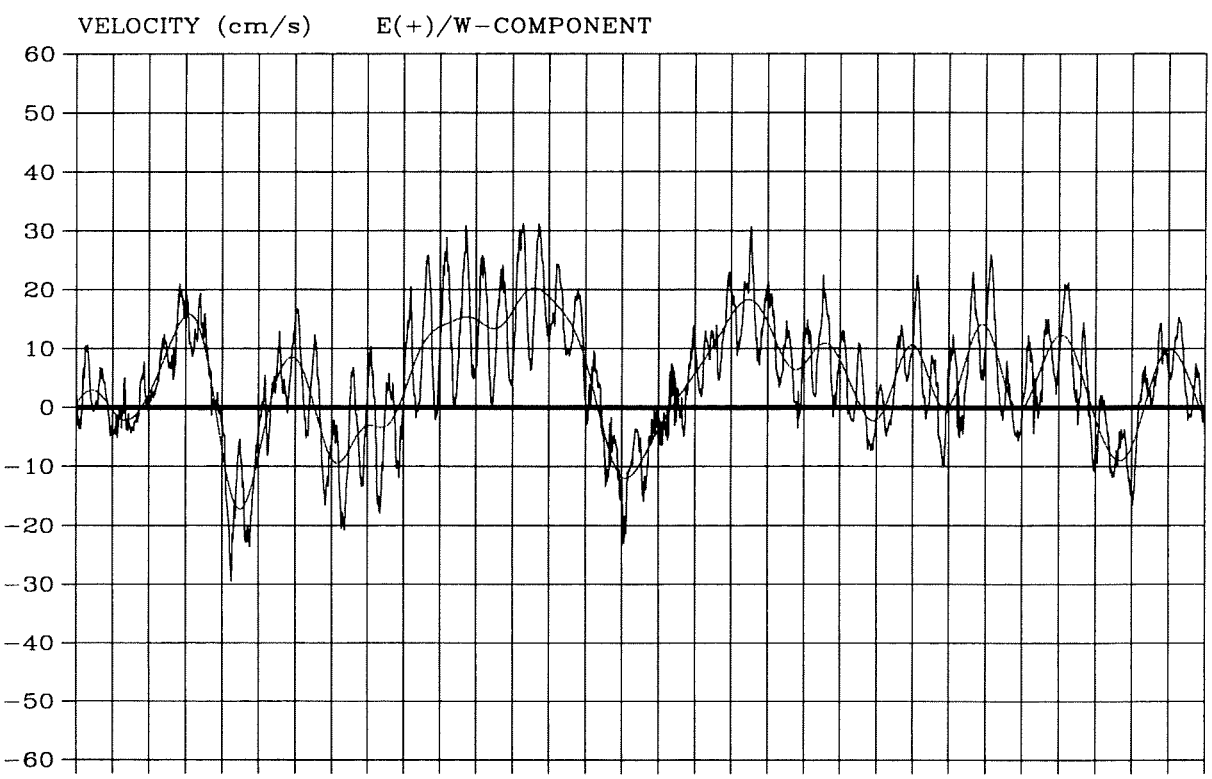
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

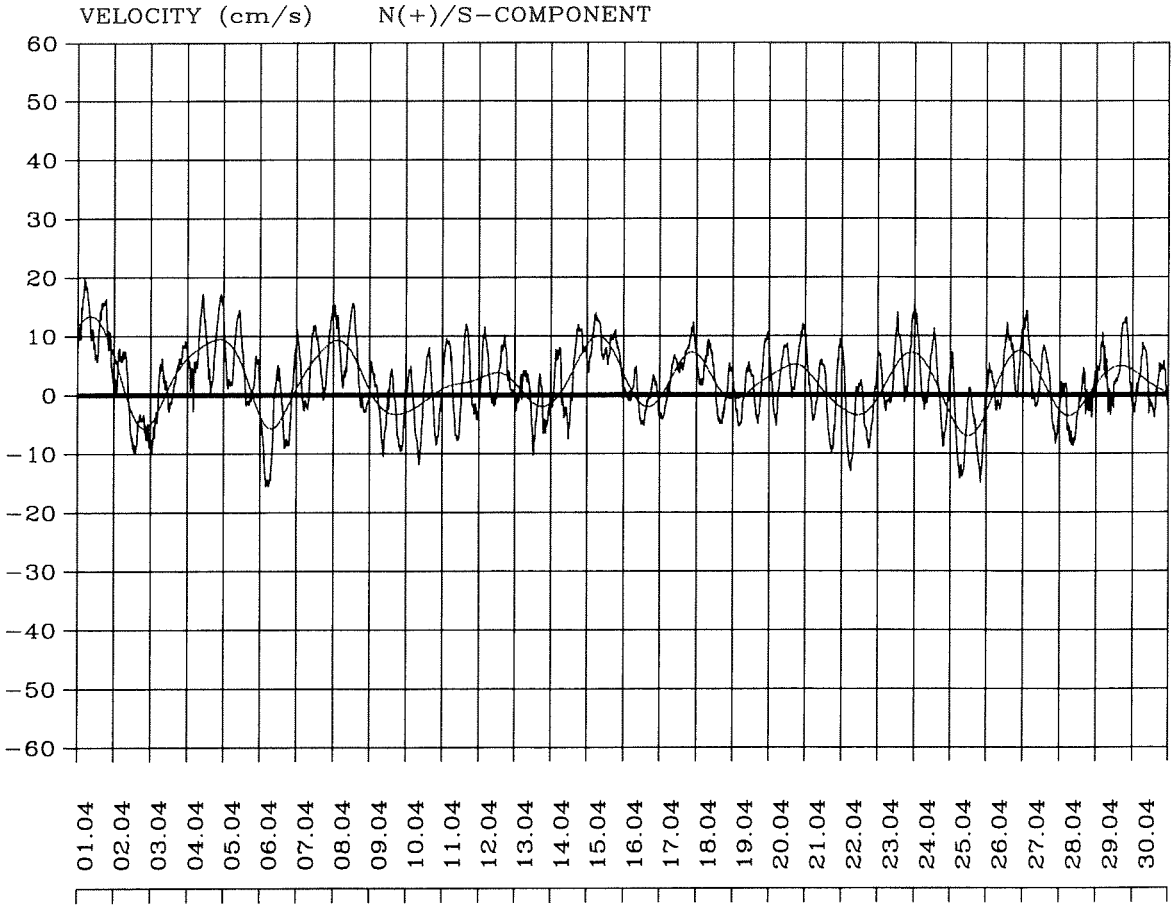
Time interval : 20.00 minutes. Instrument no. : 10802

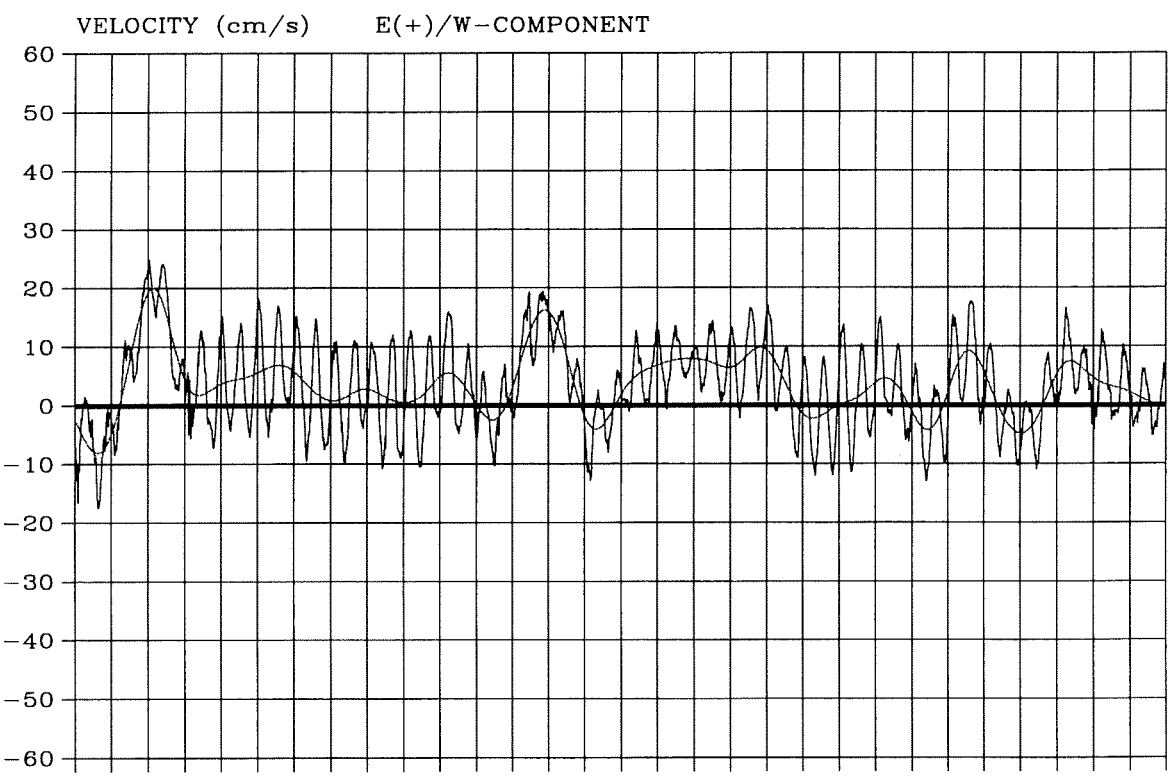
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

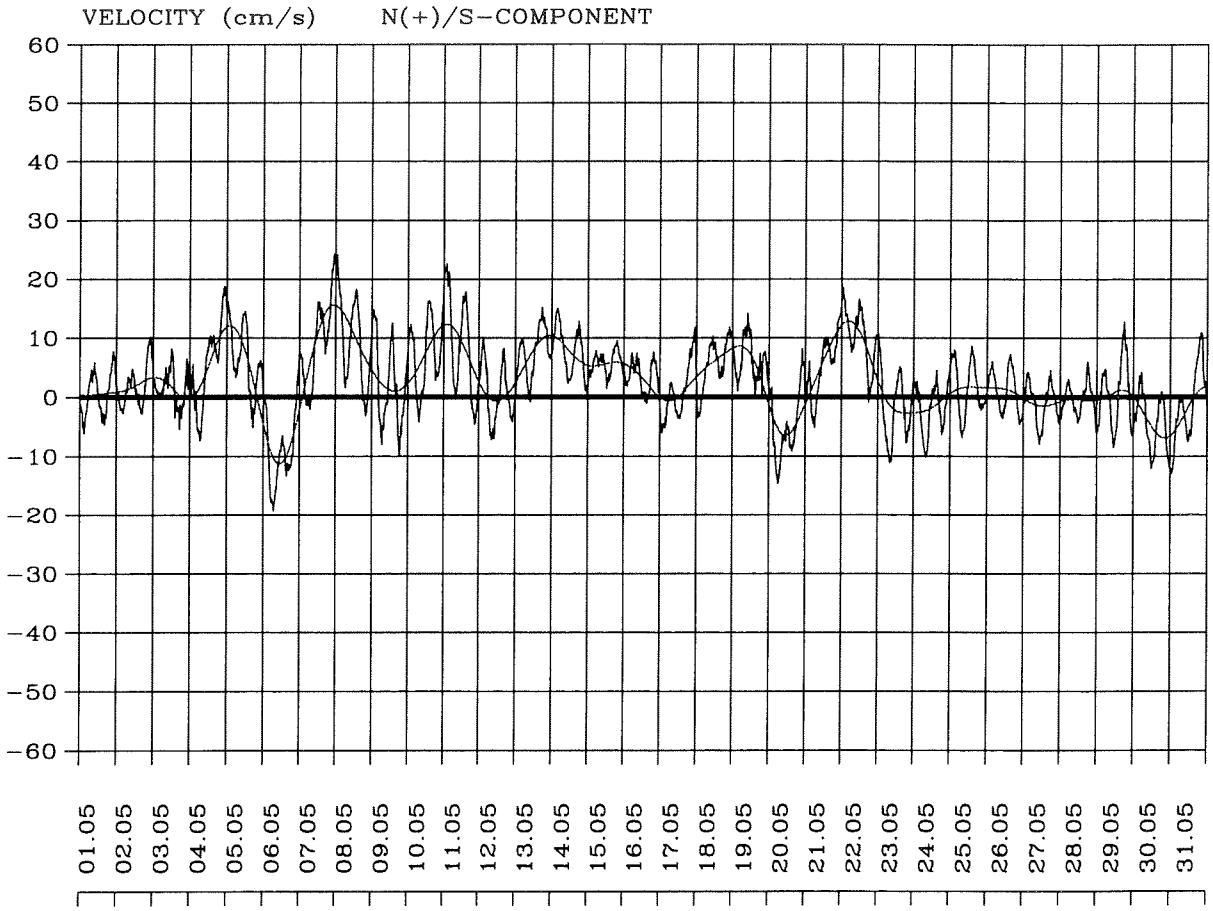
Time interval : 20.00 minutes. Instrument no. : 10802

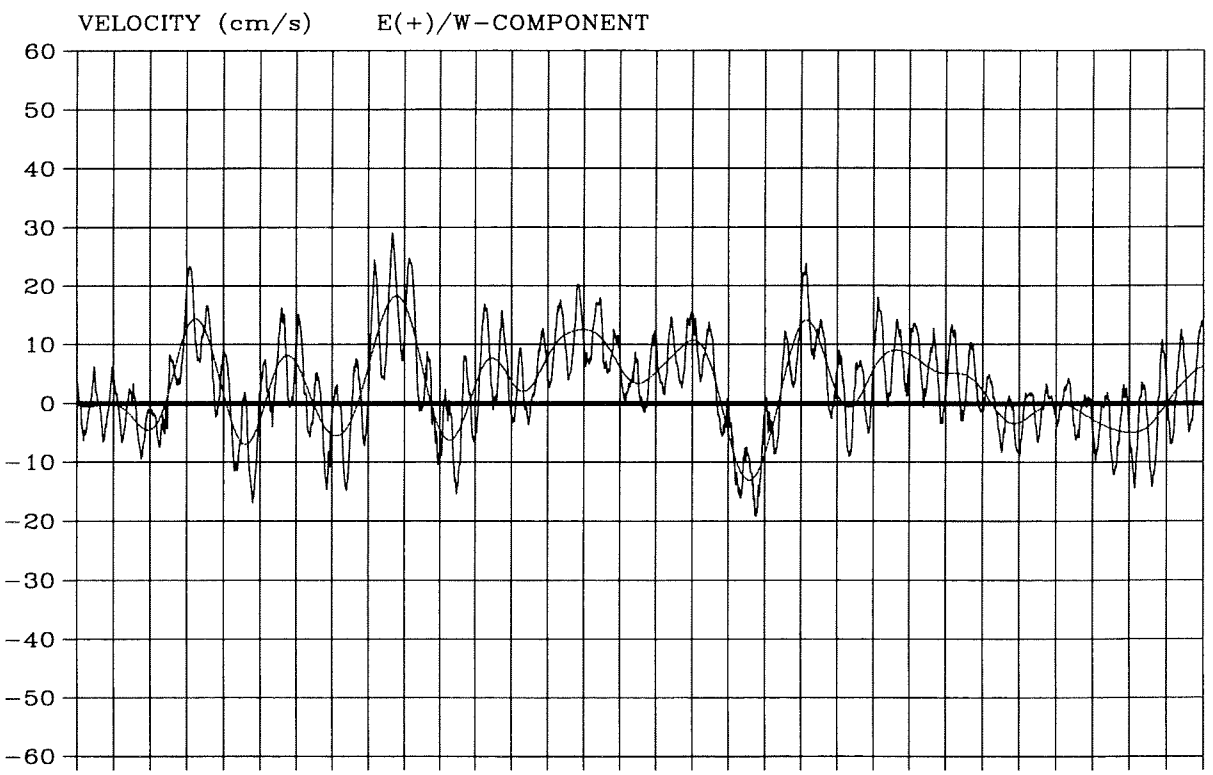
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

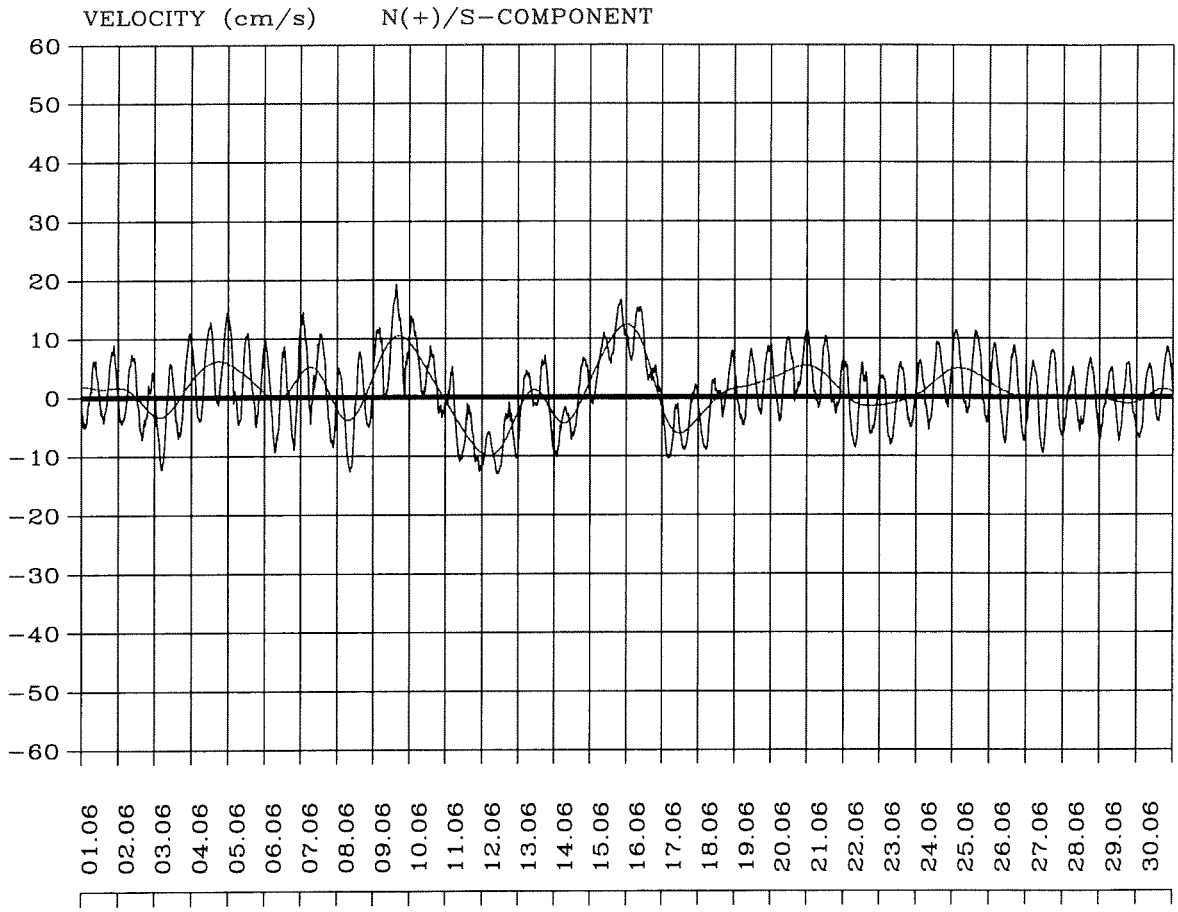
Time interval : 20.00 minutes. Instrument no. : 10802

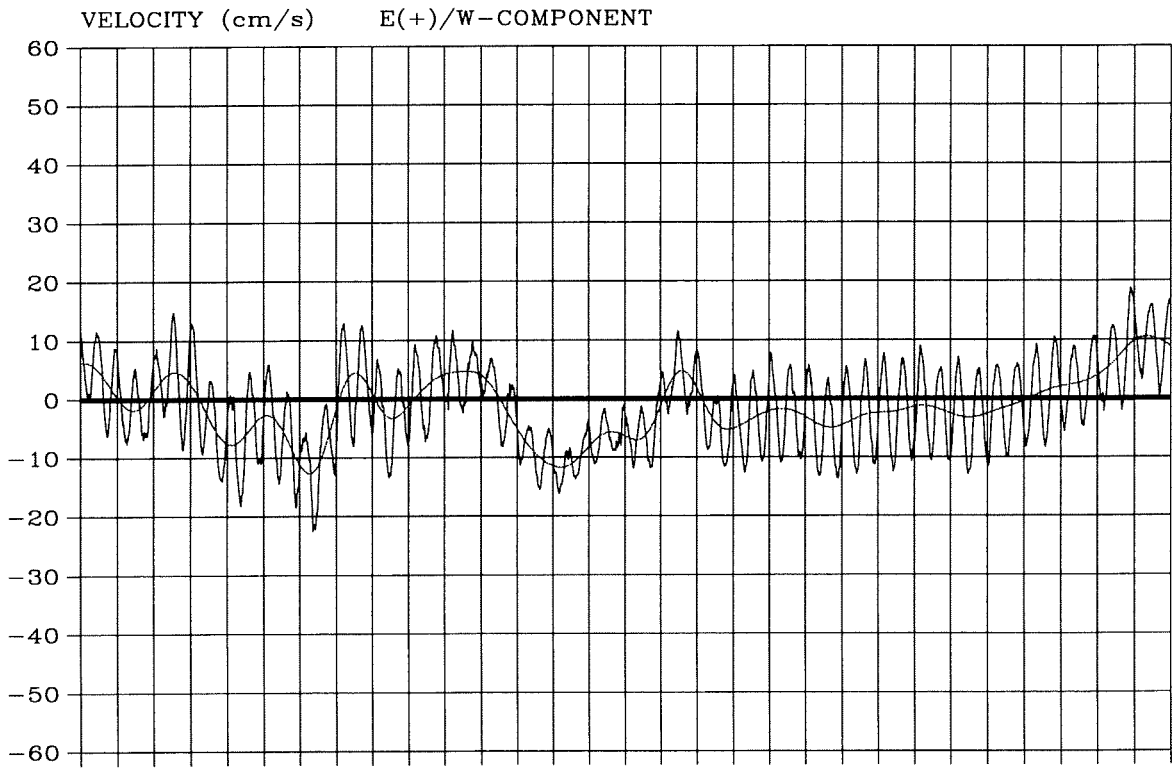
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

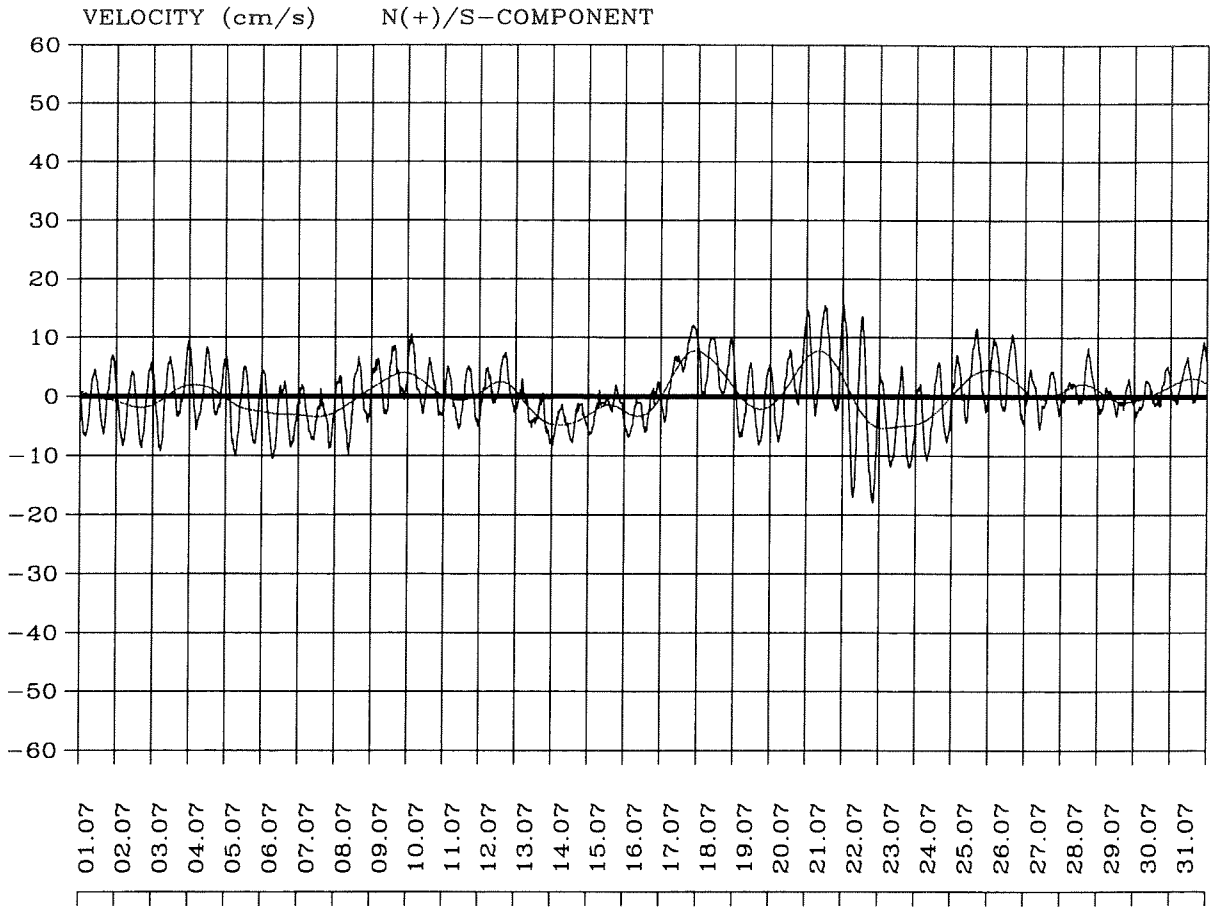
Time interval : 20.00 minutes. Instrument no. : 10802

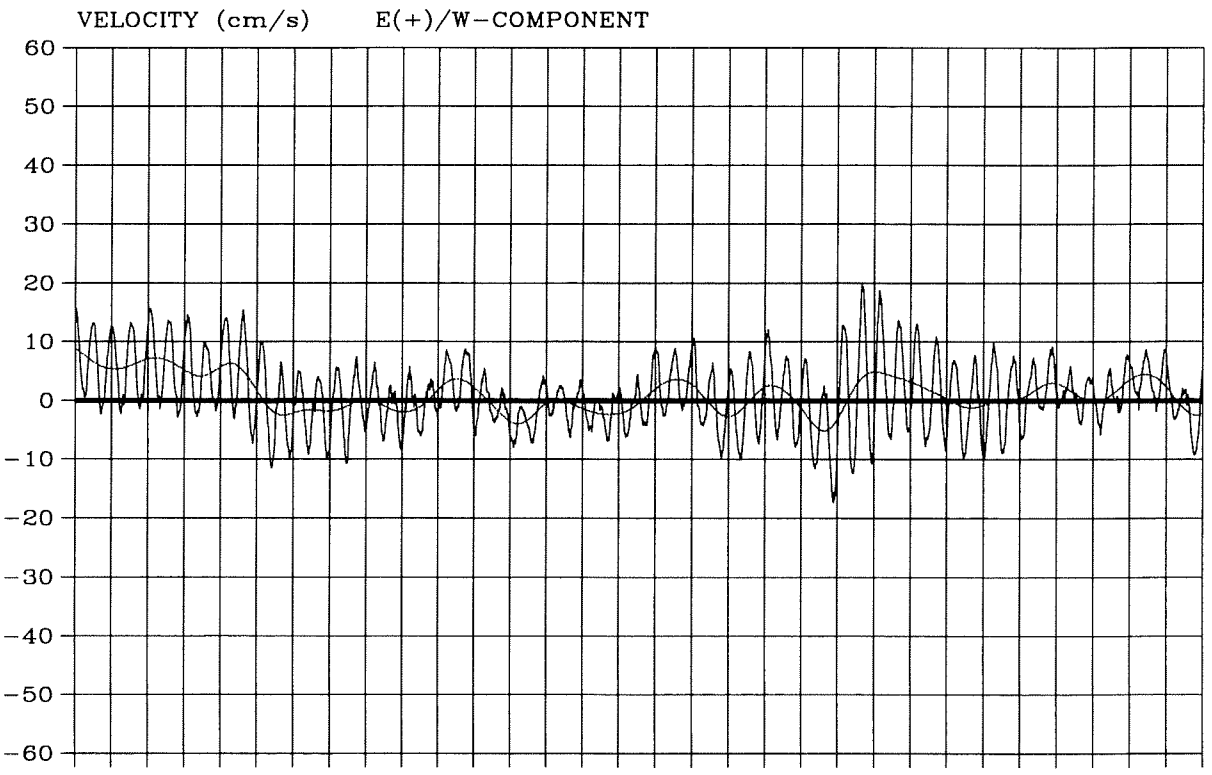
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

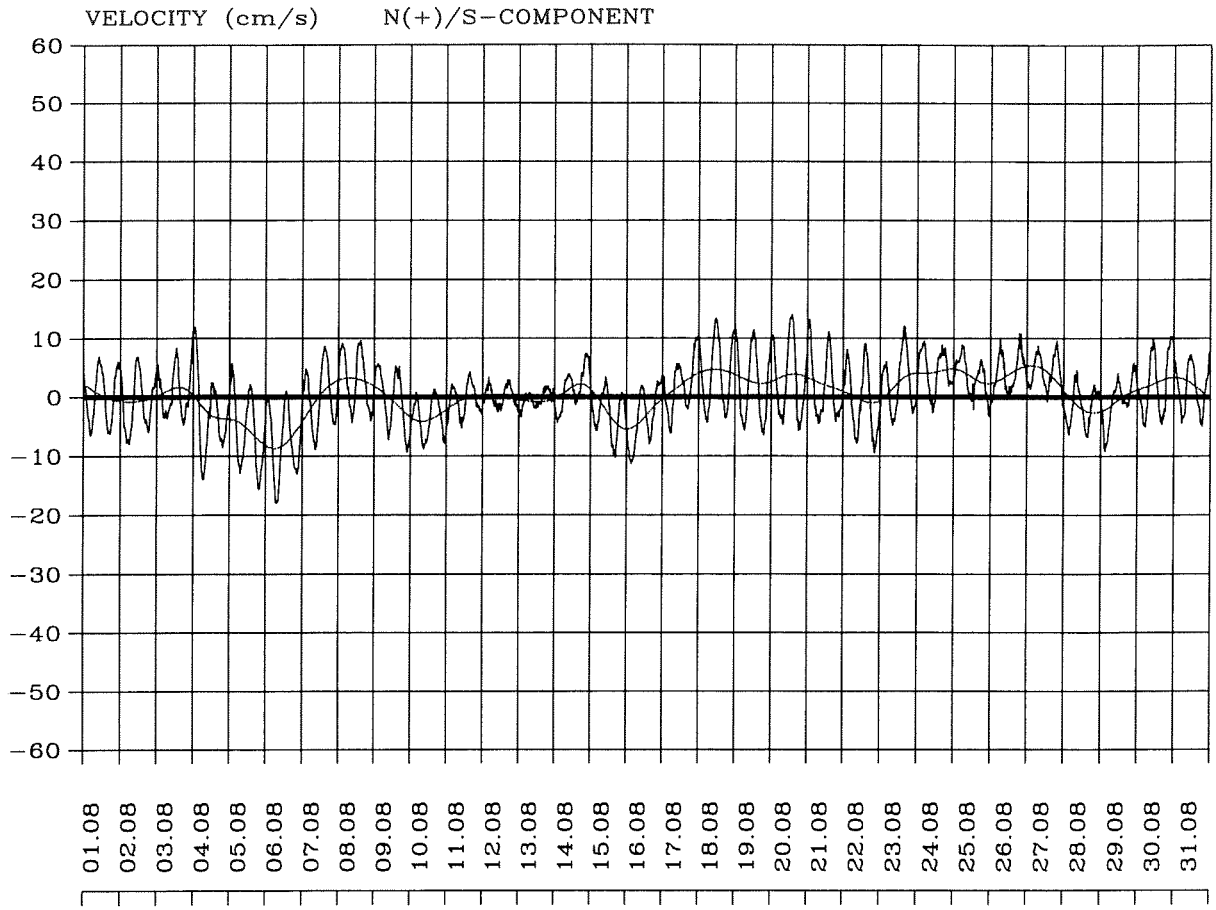
Time interval : 20.00 minutes. Instrument no. : 10802

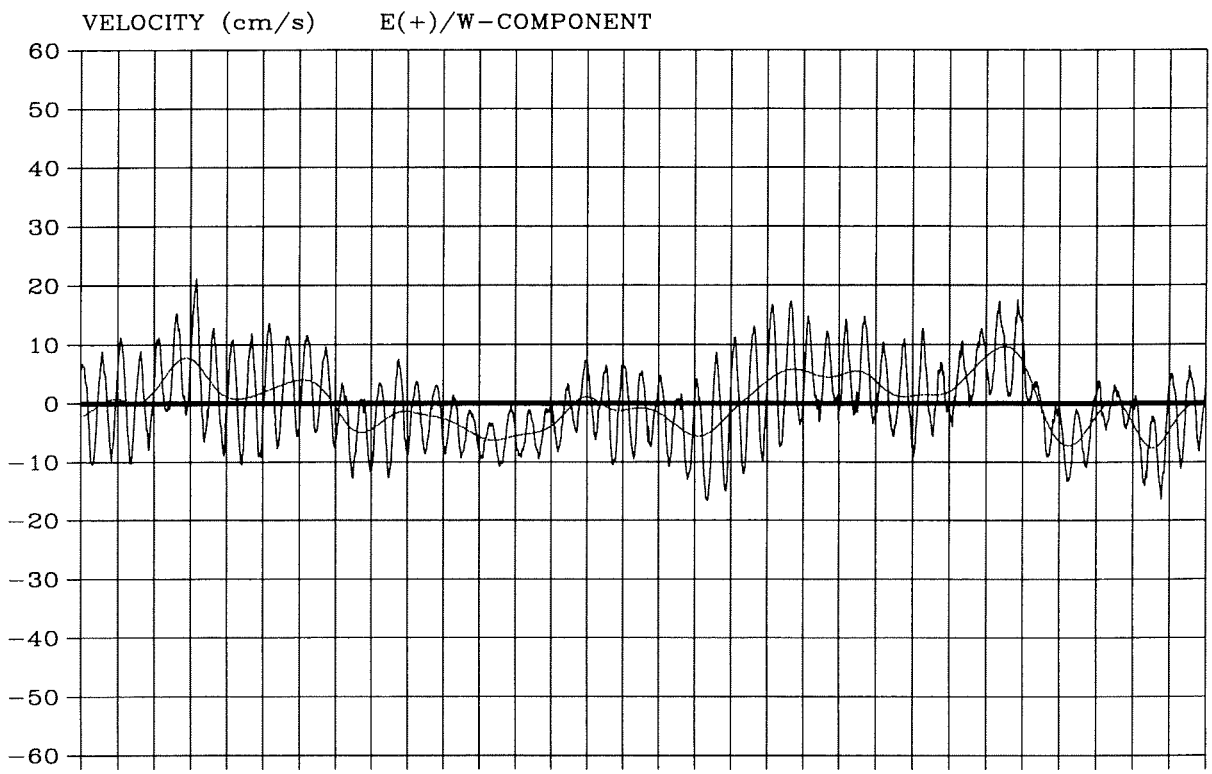
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 100.0 m Bottom depth : 250.0 m

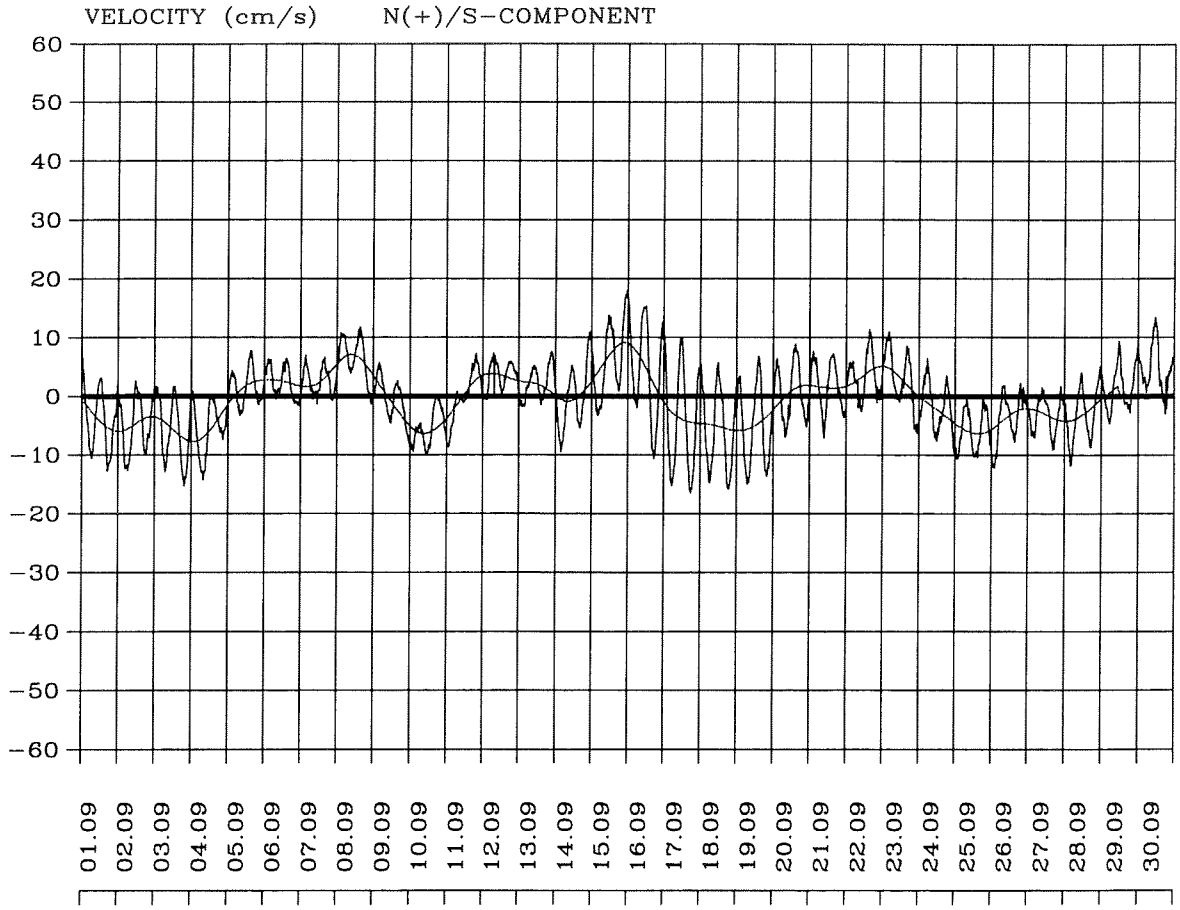
Time interval : 20.00 minutes. Instrument no. : 10802

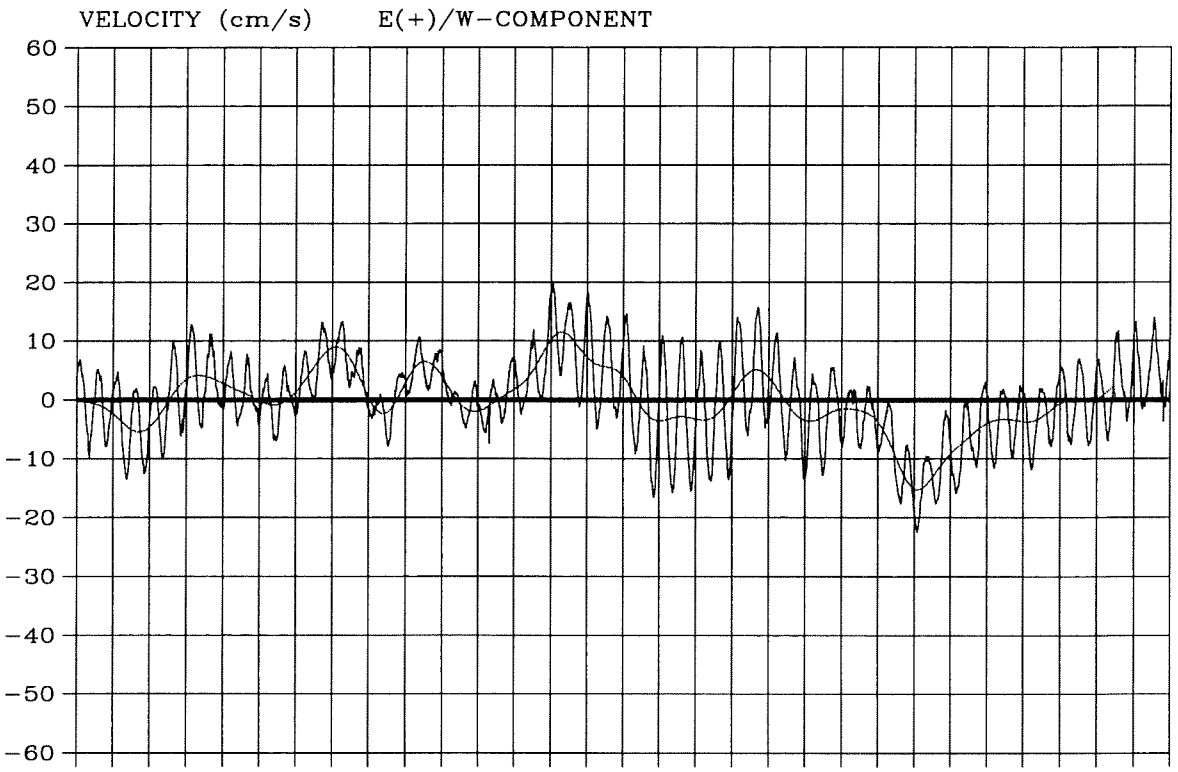
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

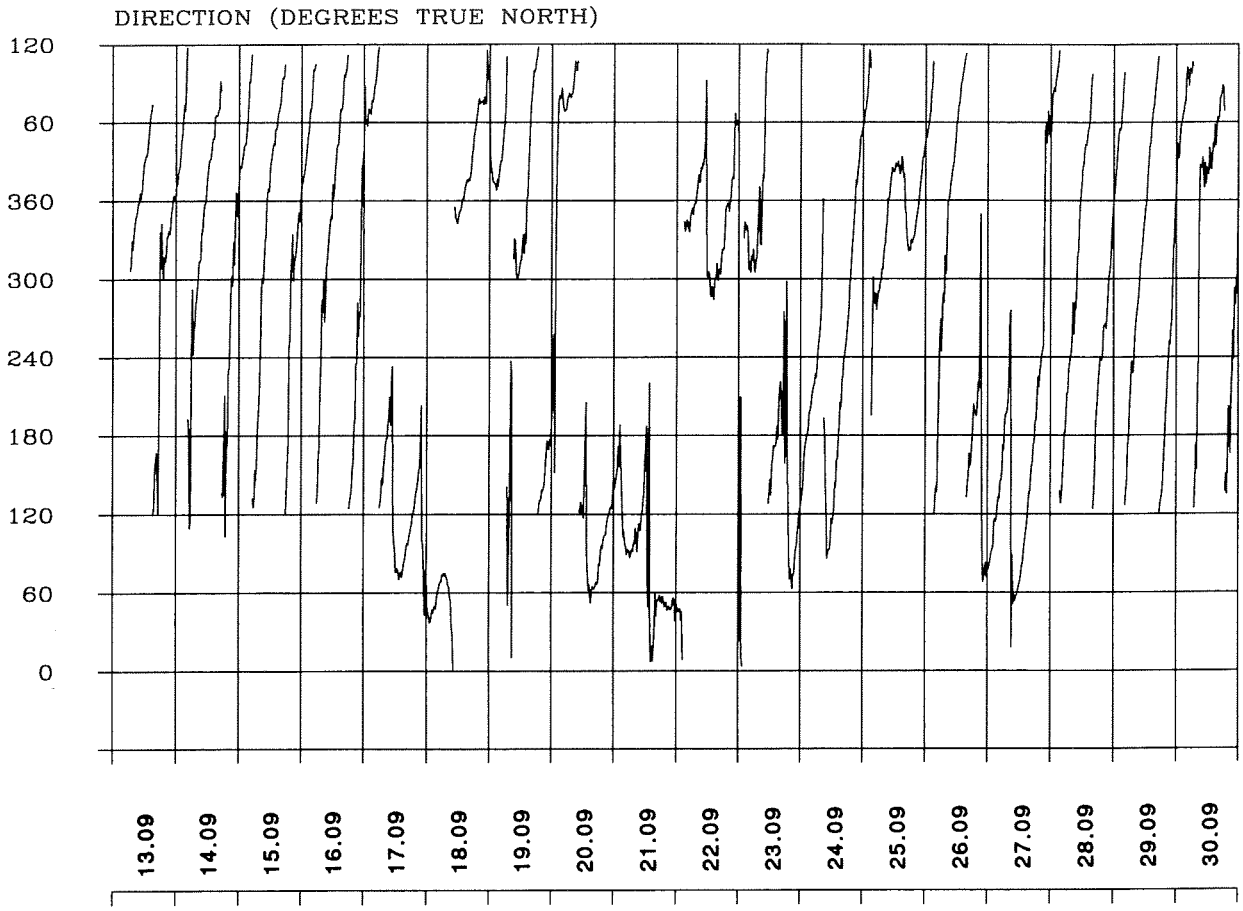
Time interval : 20.00 minutes. Instrument no. : 10802

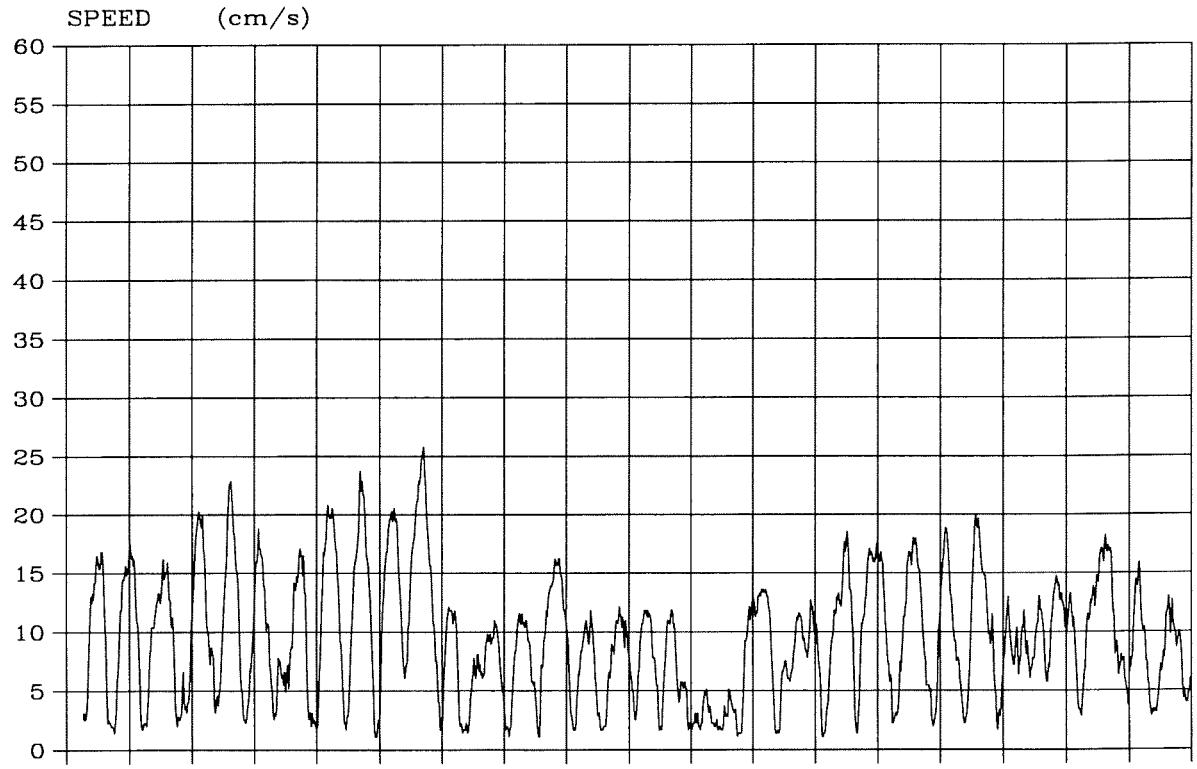
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

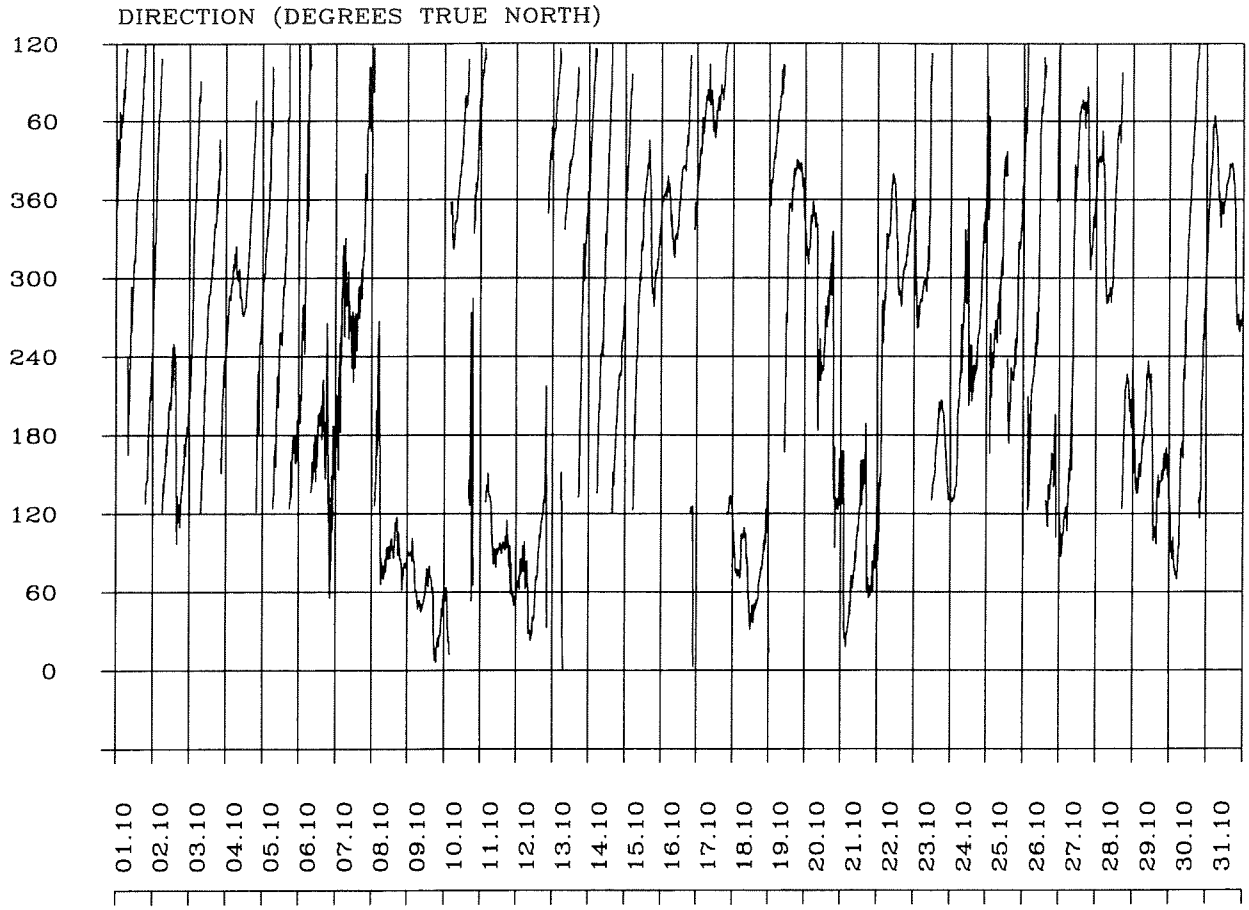
Instrument depth : 100.0 m Bottom depth : 250.0 m

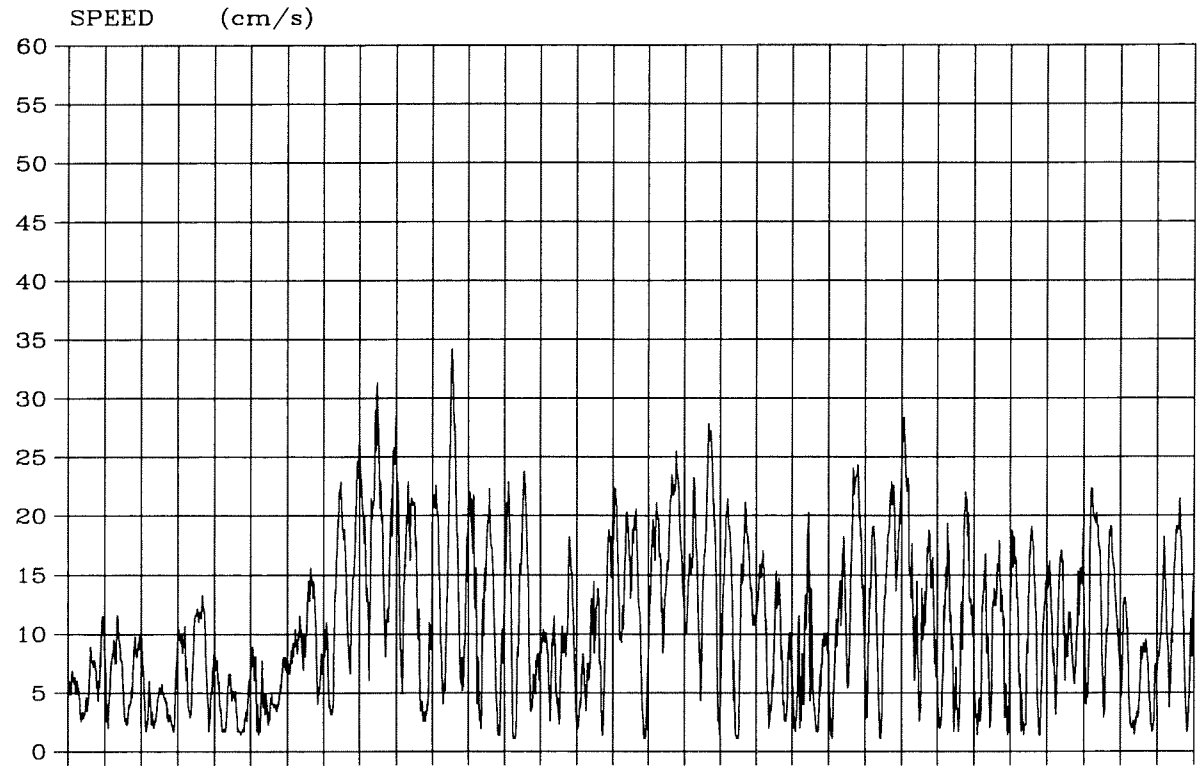
Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-7 Speed and direction of current.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

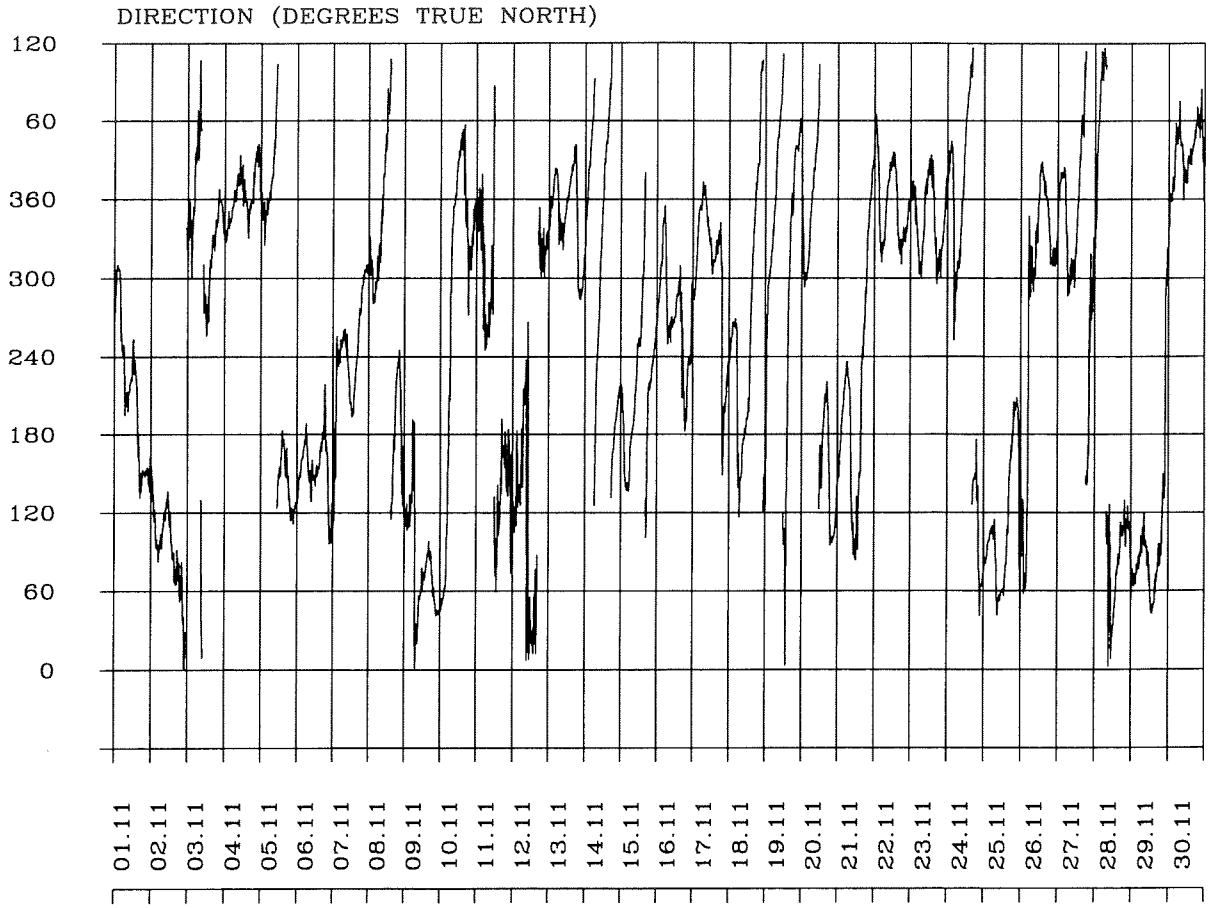
Time interval : 20.00 minutes. Instrument no. : 10802

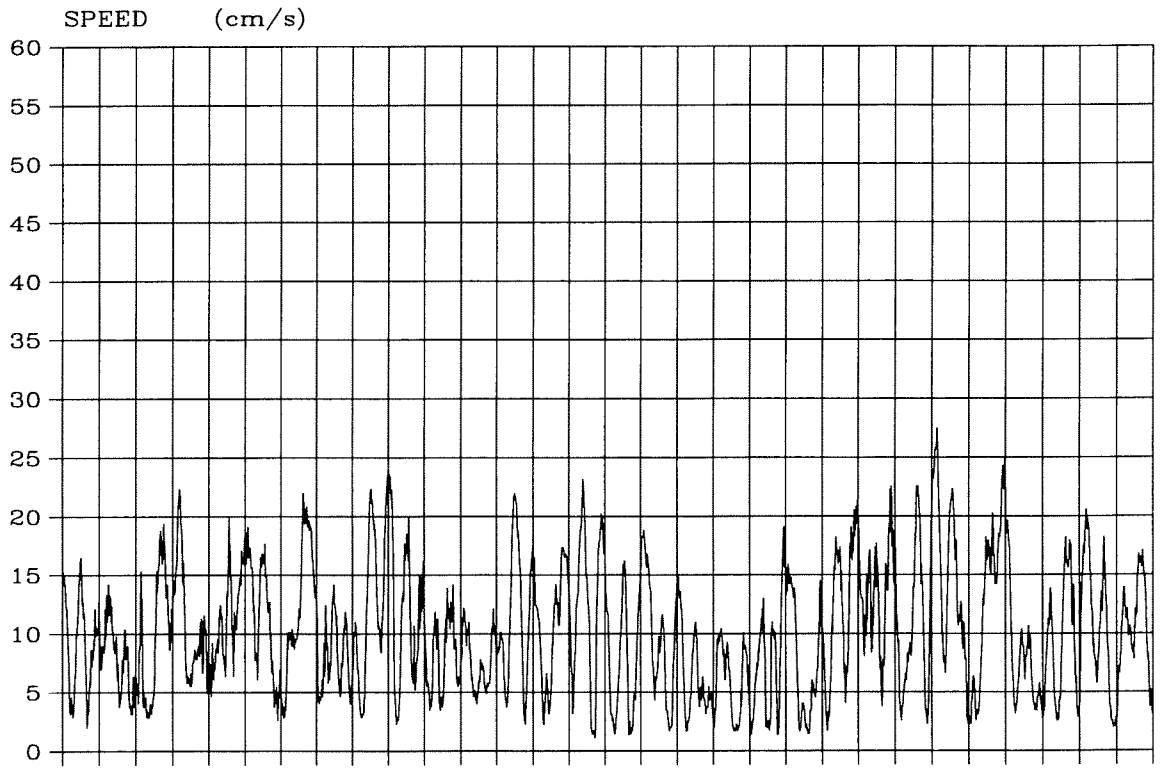
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-7

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

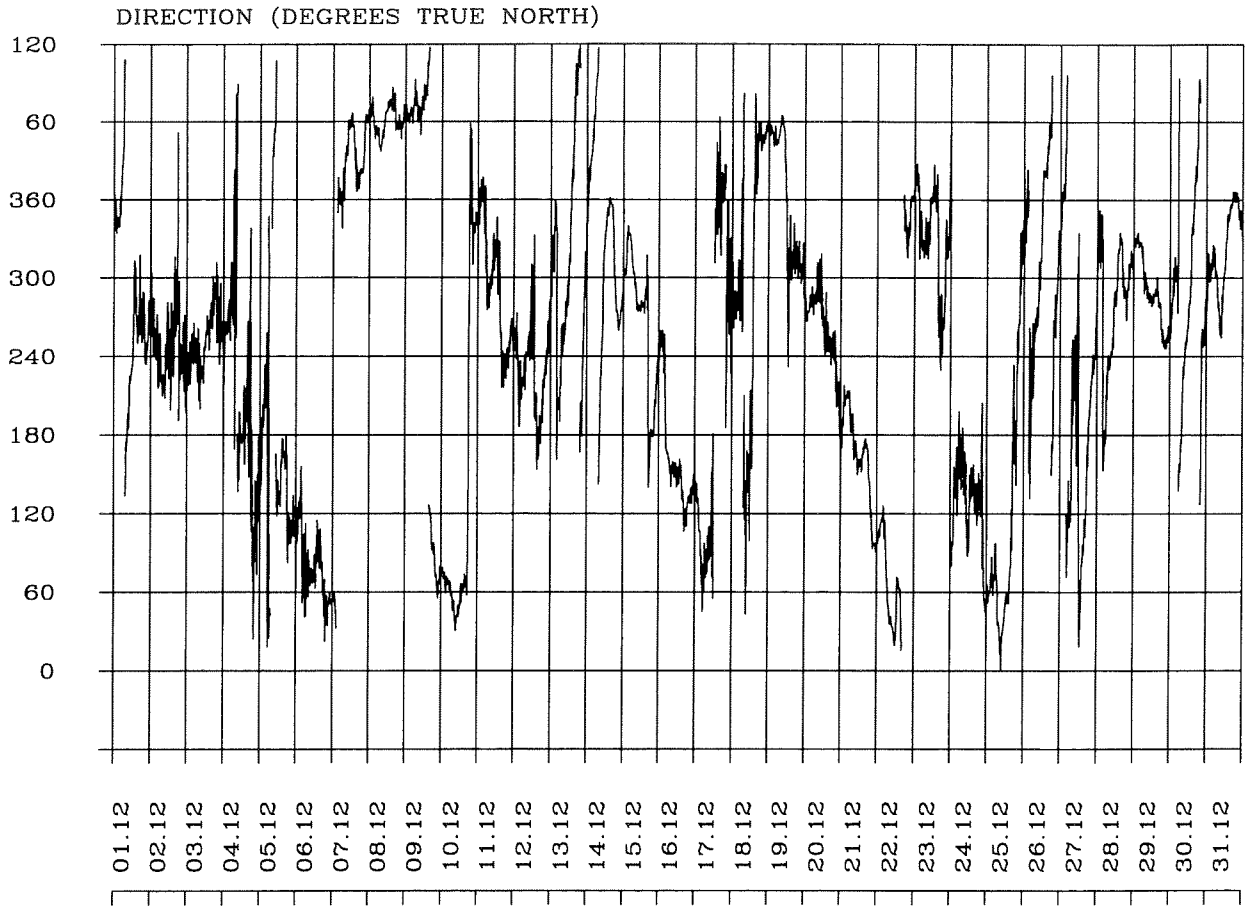
Time interval : 20.00 minutes. Instrument no. : 10802

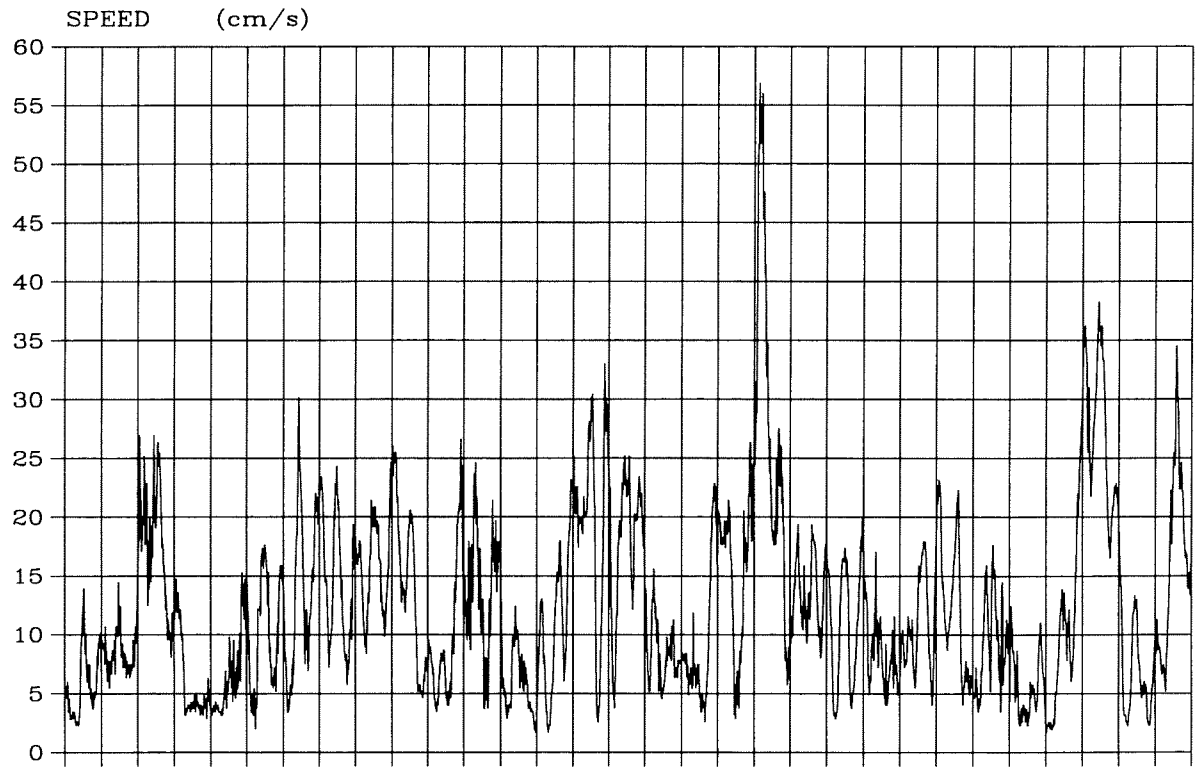
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-2-7

Continues.....





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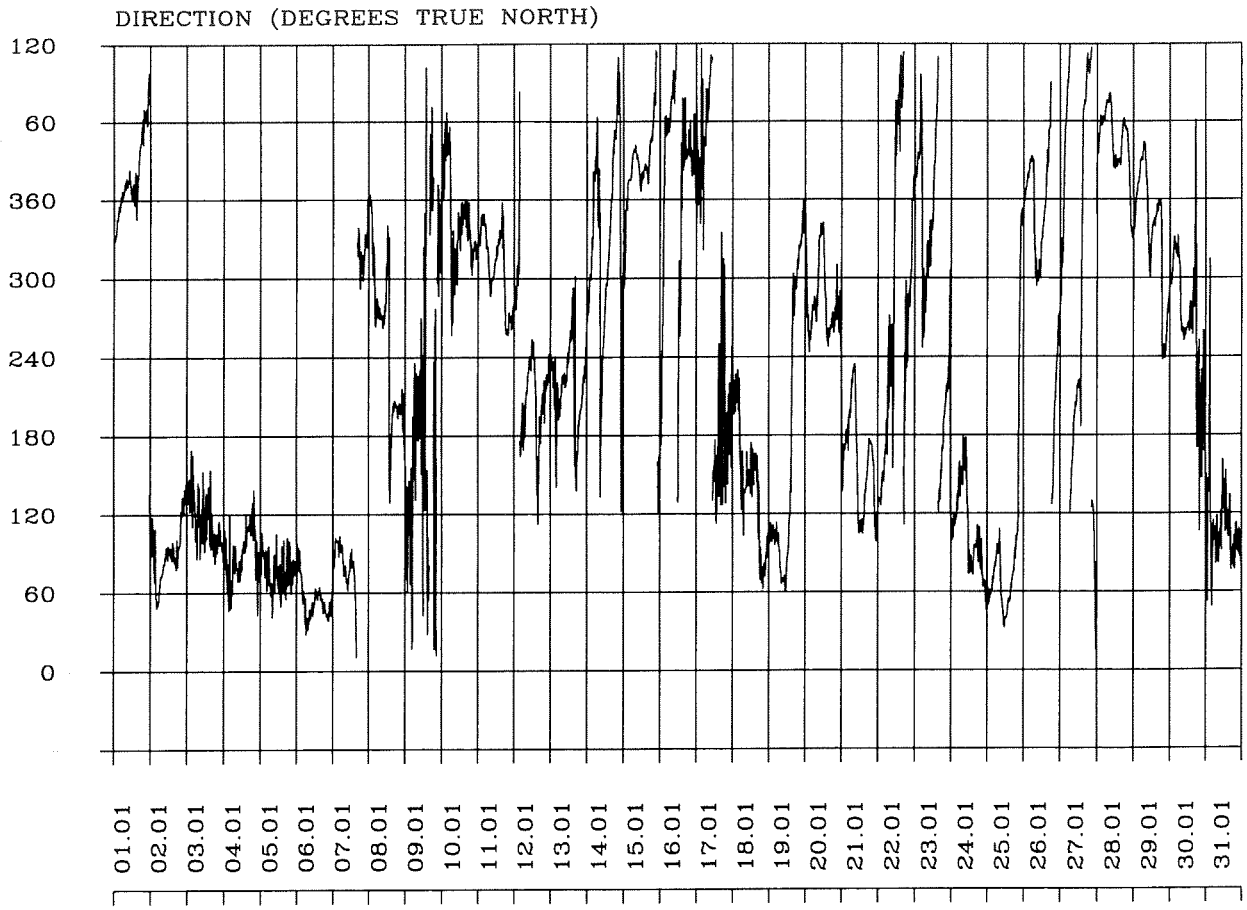
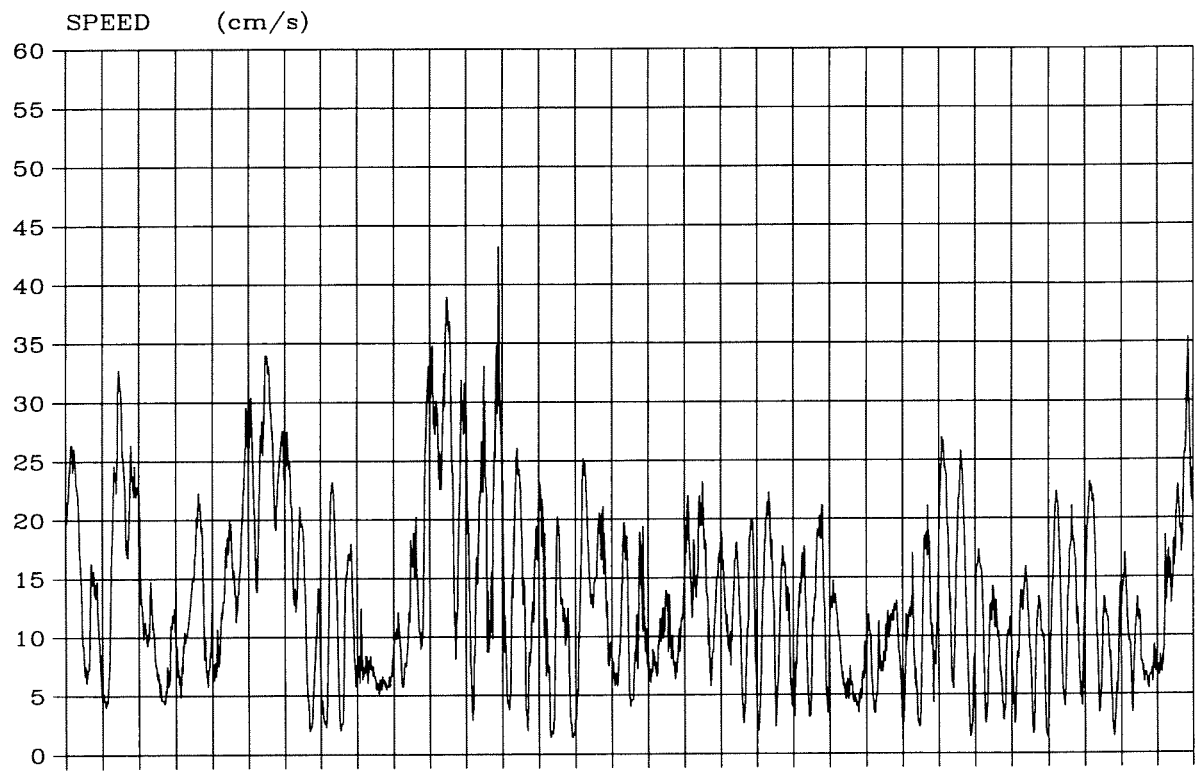
IMR

Fig. 1-2-7

Continues.....





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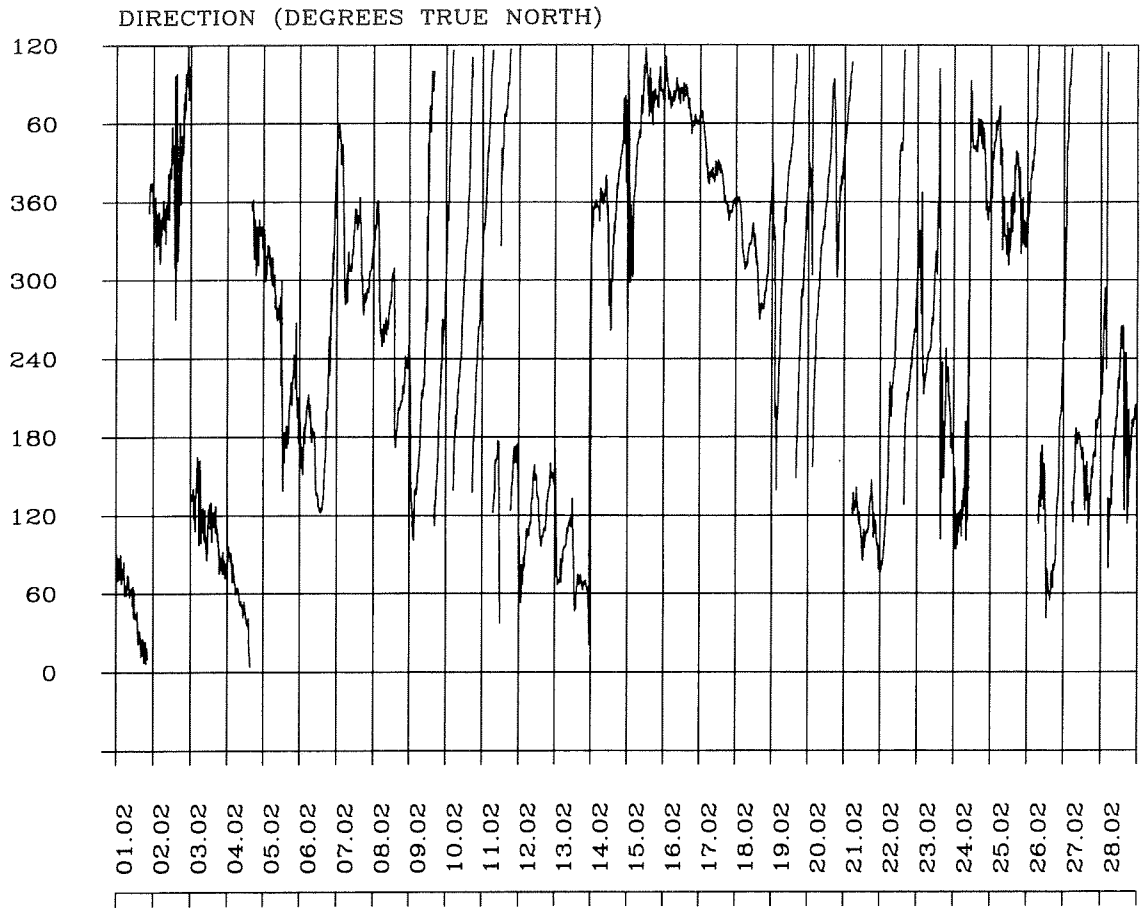
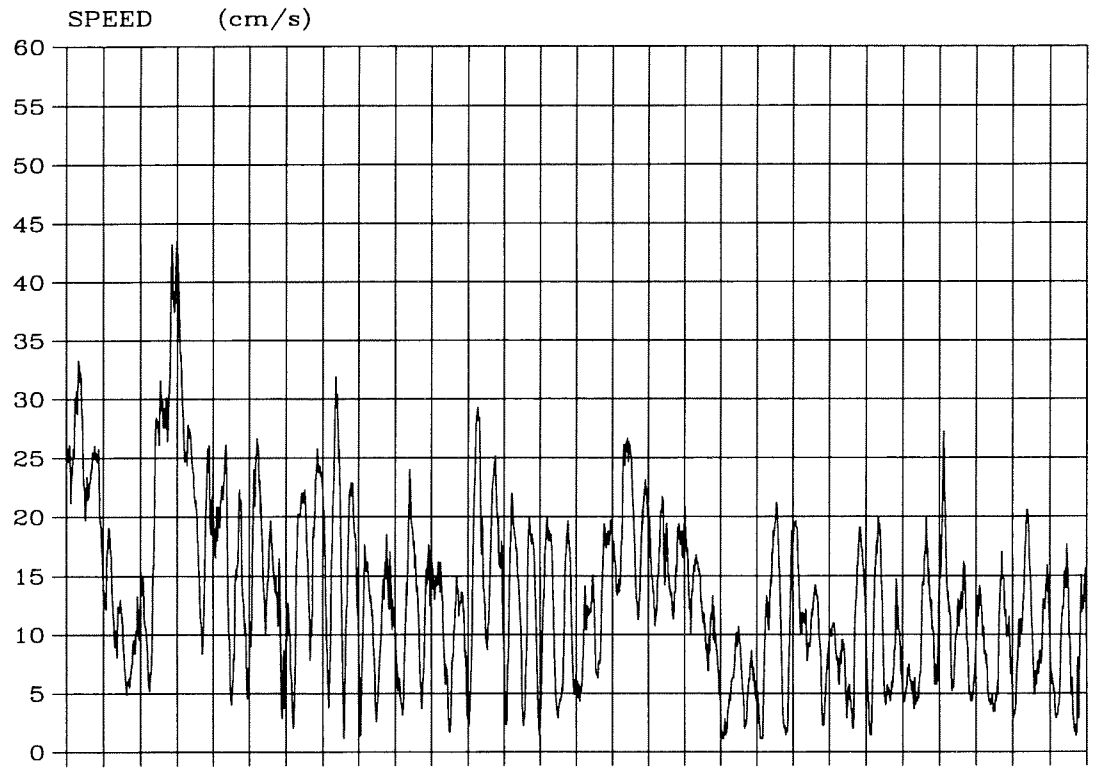
IMR

Fig. 1-2-7

Continues.....





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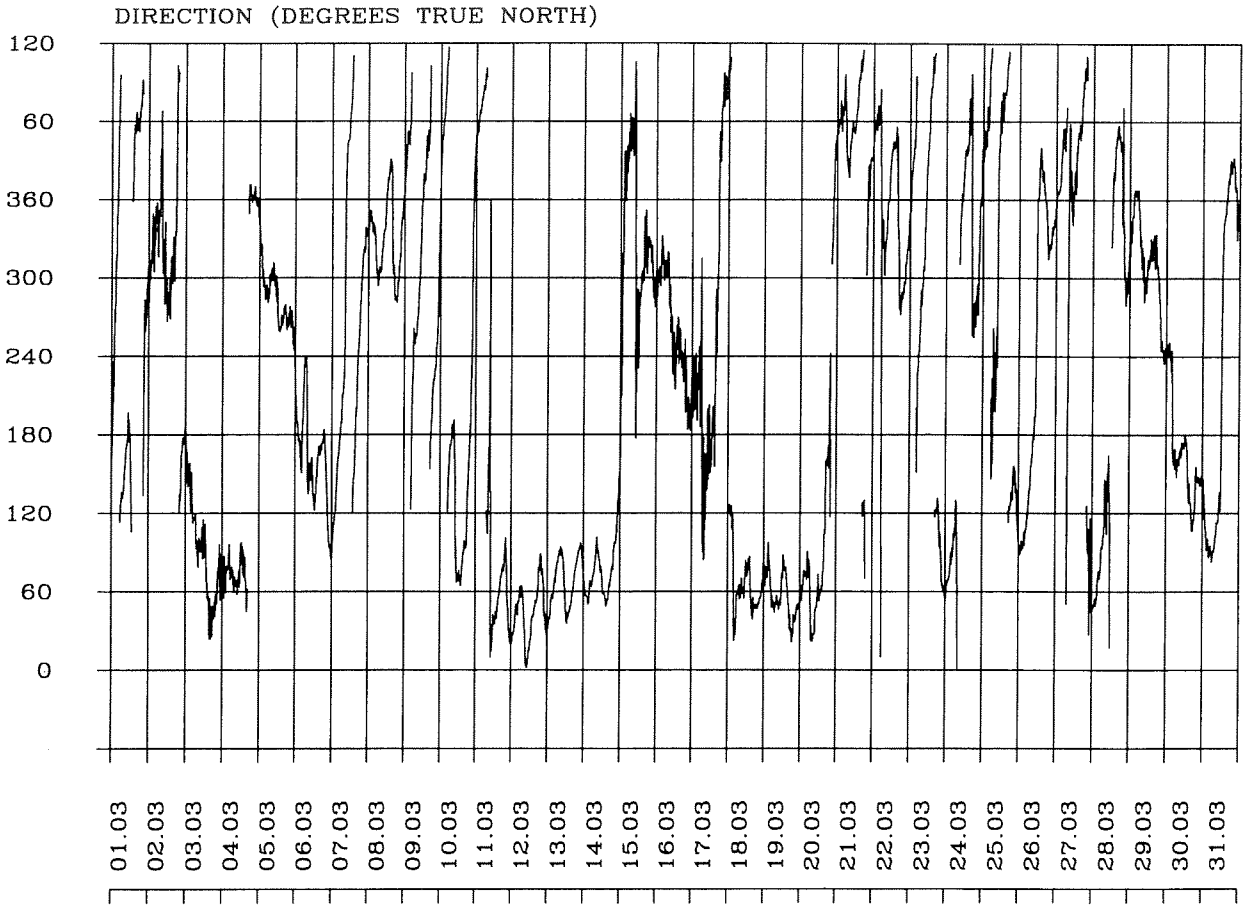
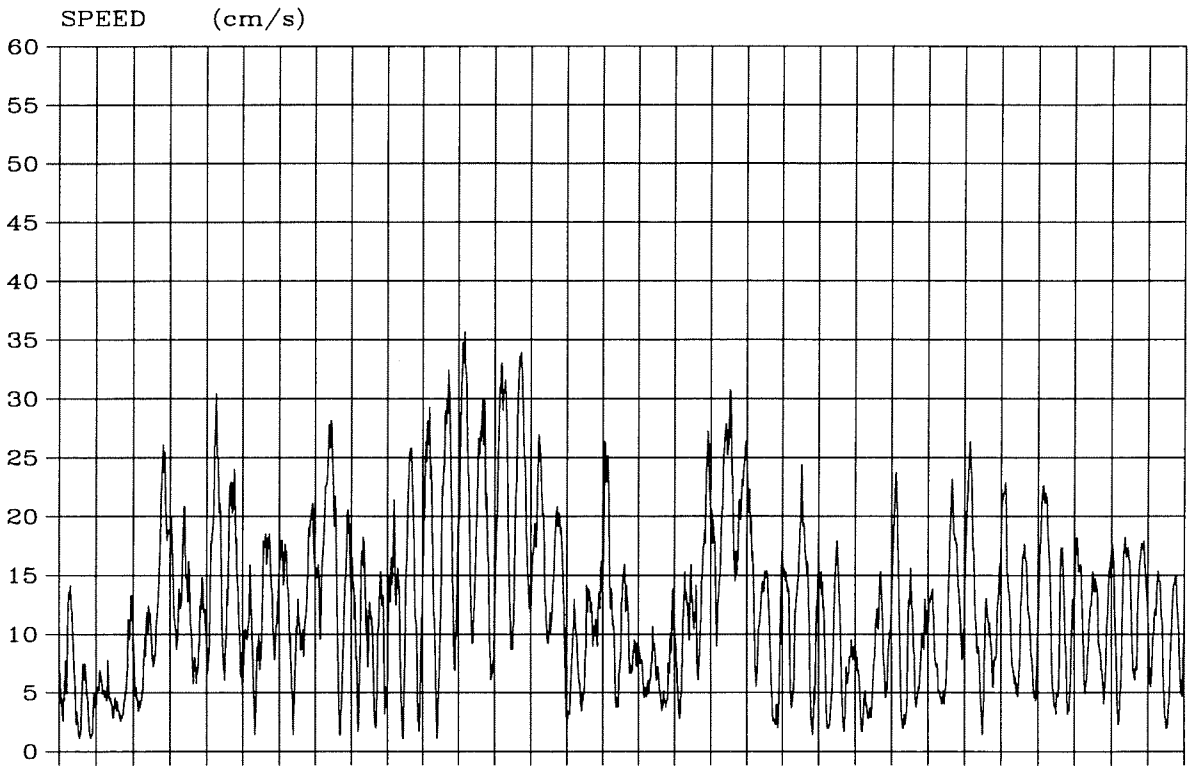
IMR

Fig. 1-2-7

Continues.....





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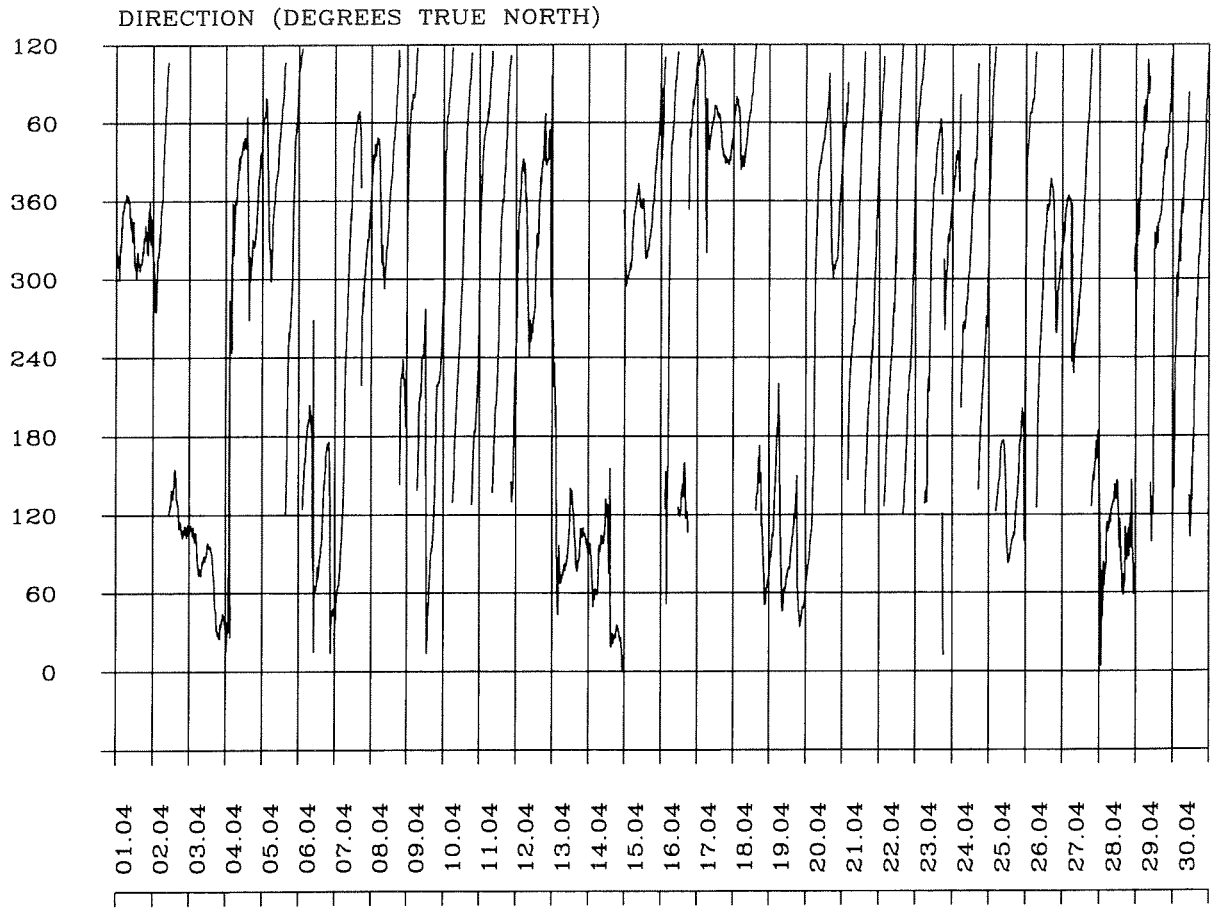
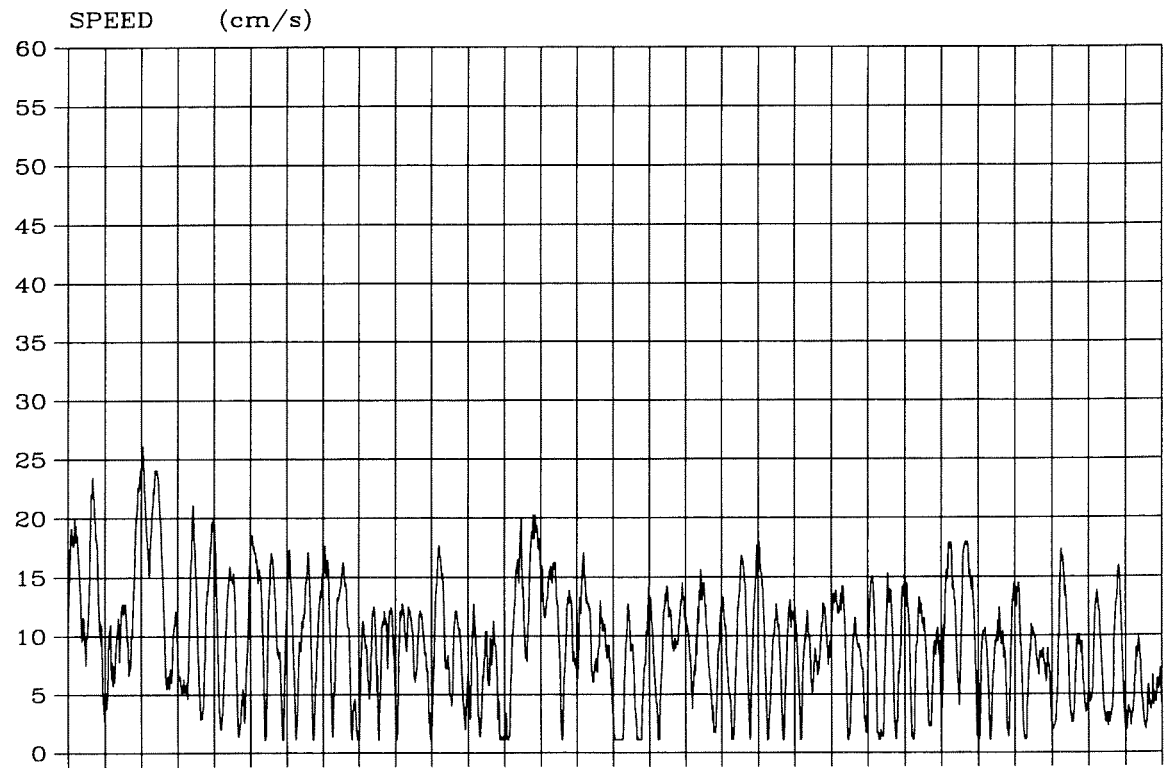
IMR

Fig. 1–2–7

Continues.....





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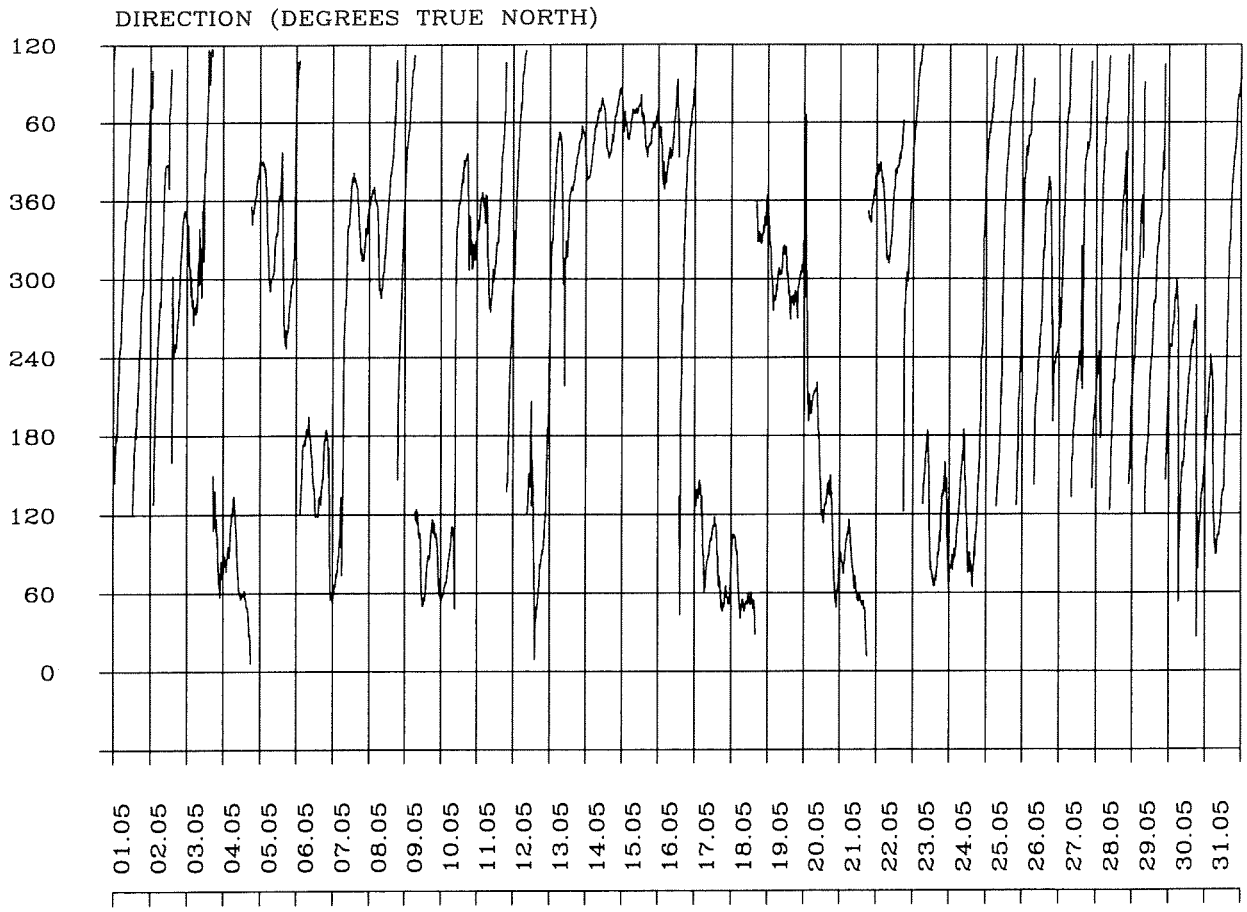
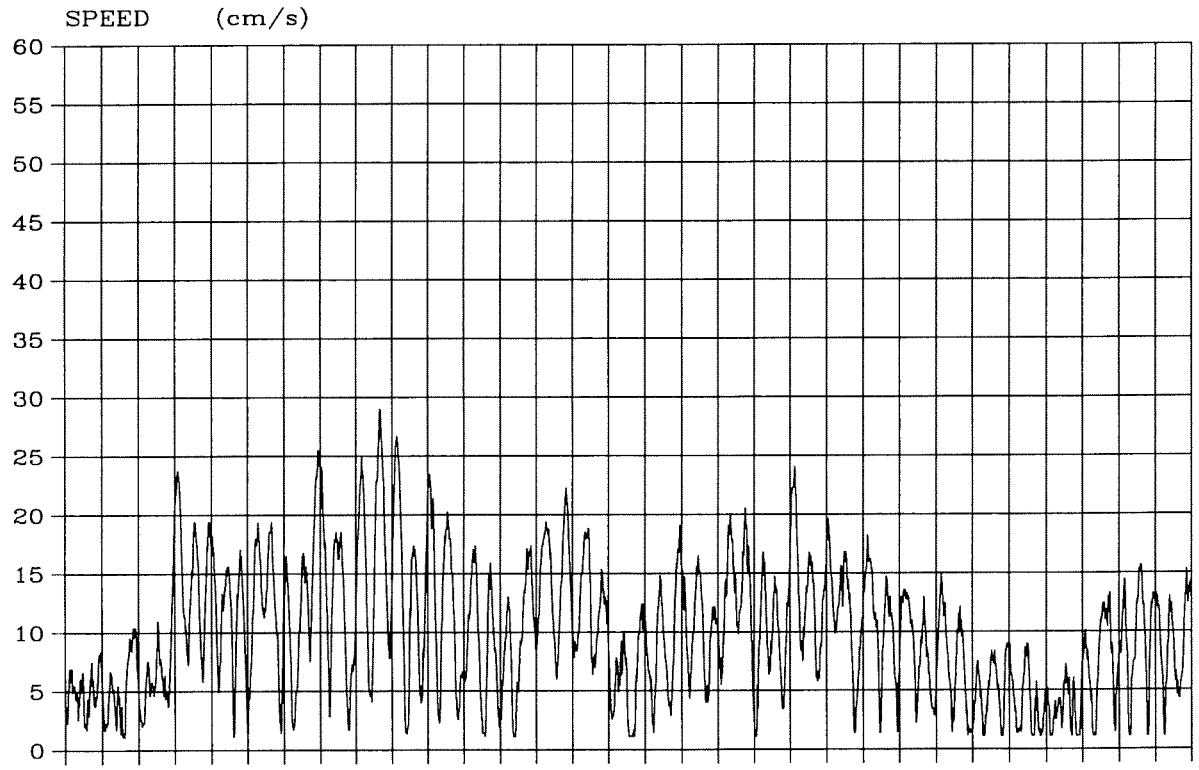
IMR

Fig. 1-2-7

Continues.....





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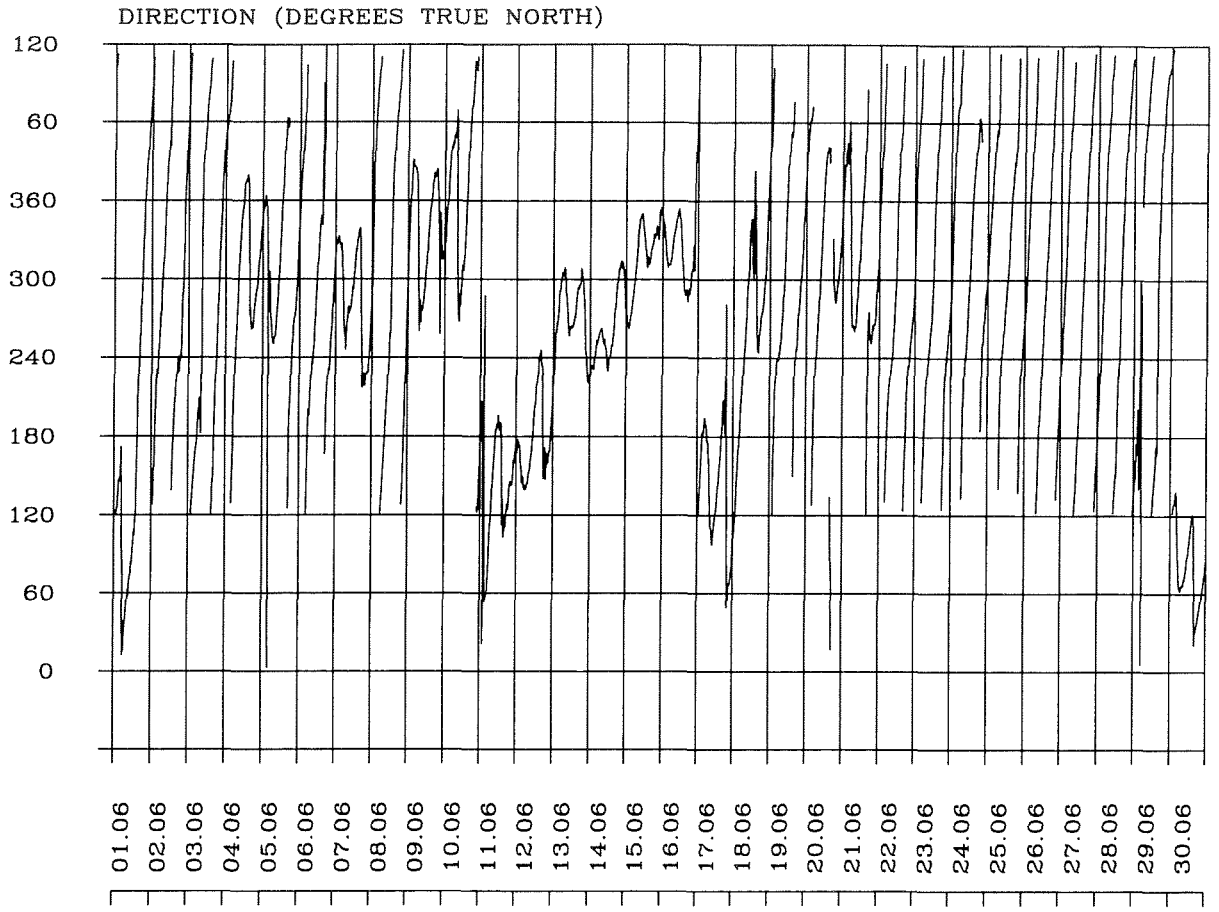
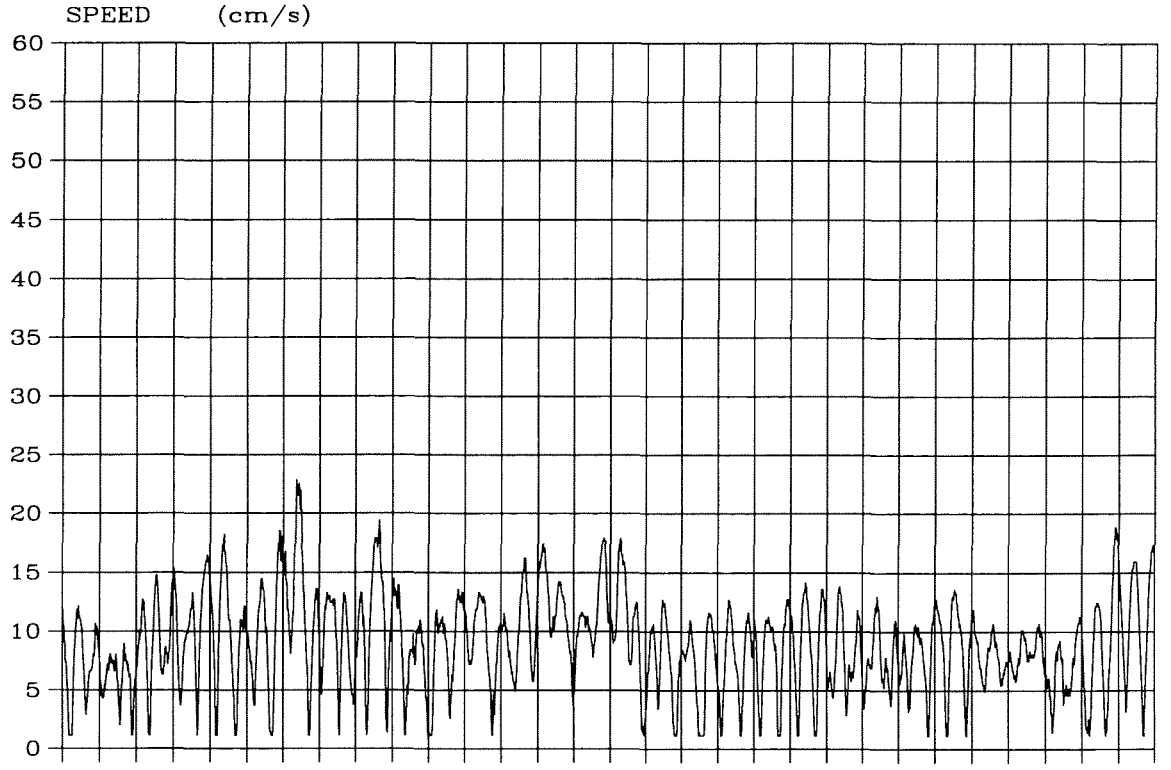
IMR

Fig. 1–2–7

Continues.....





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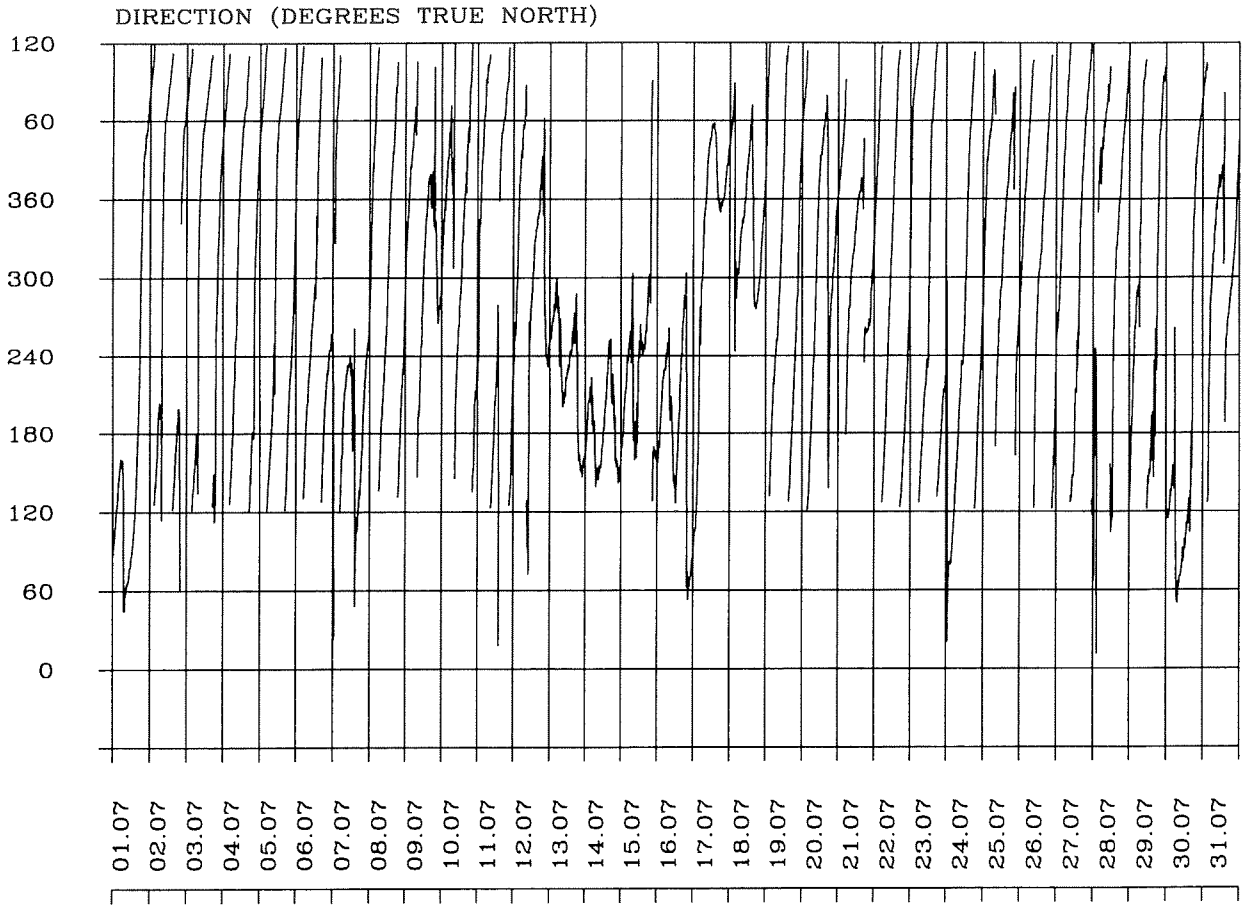
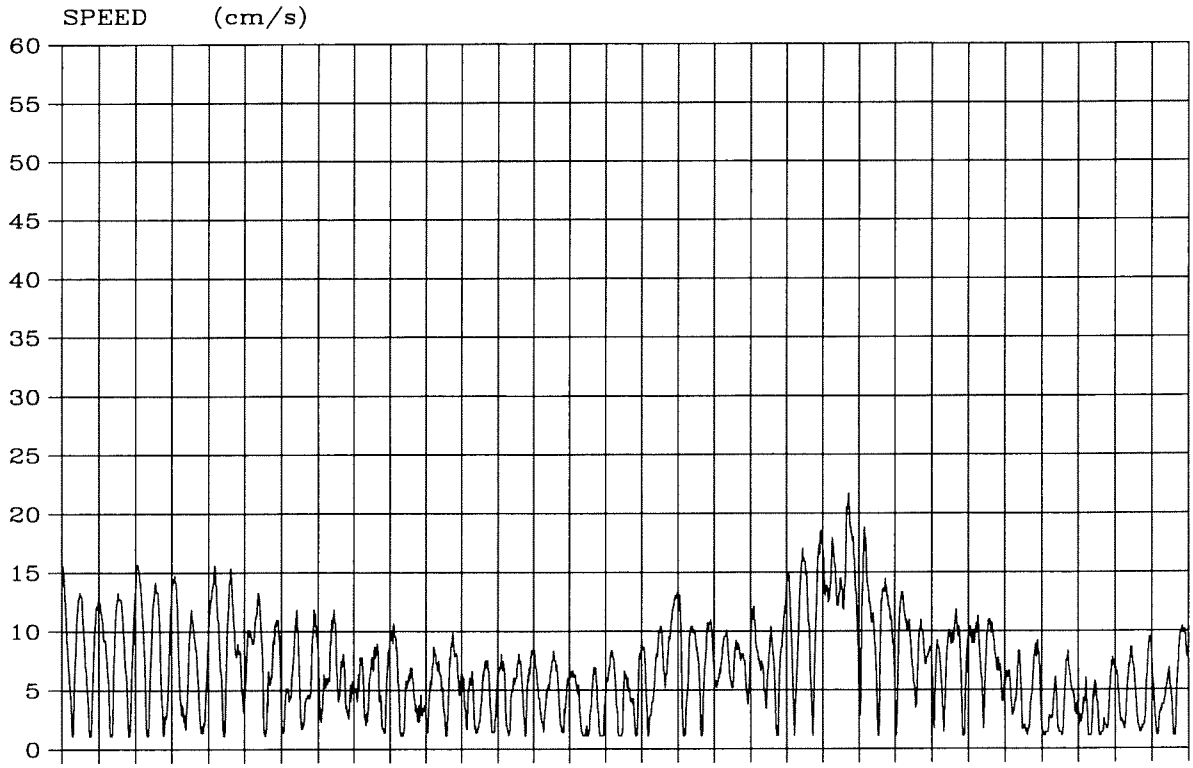
IMR

Fig. 1-2-7

Continues.....





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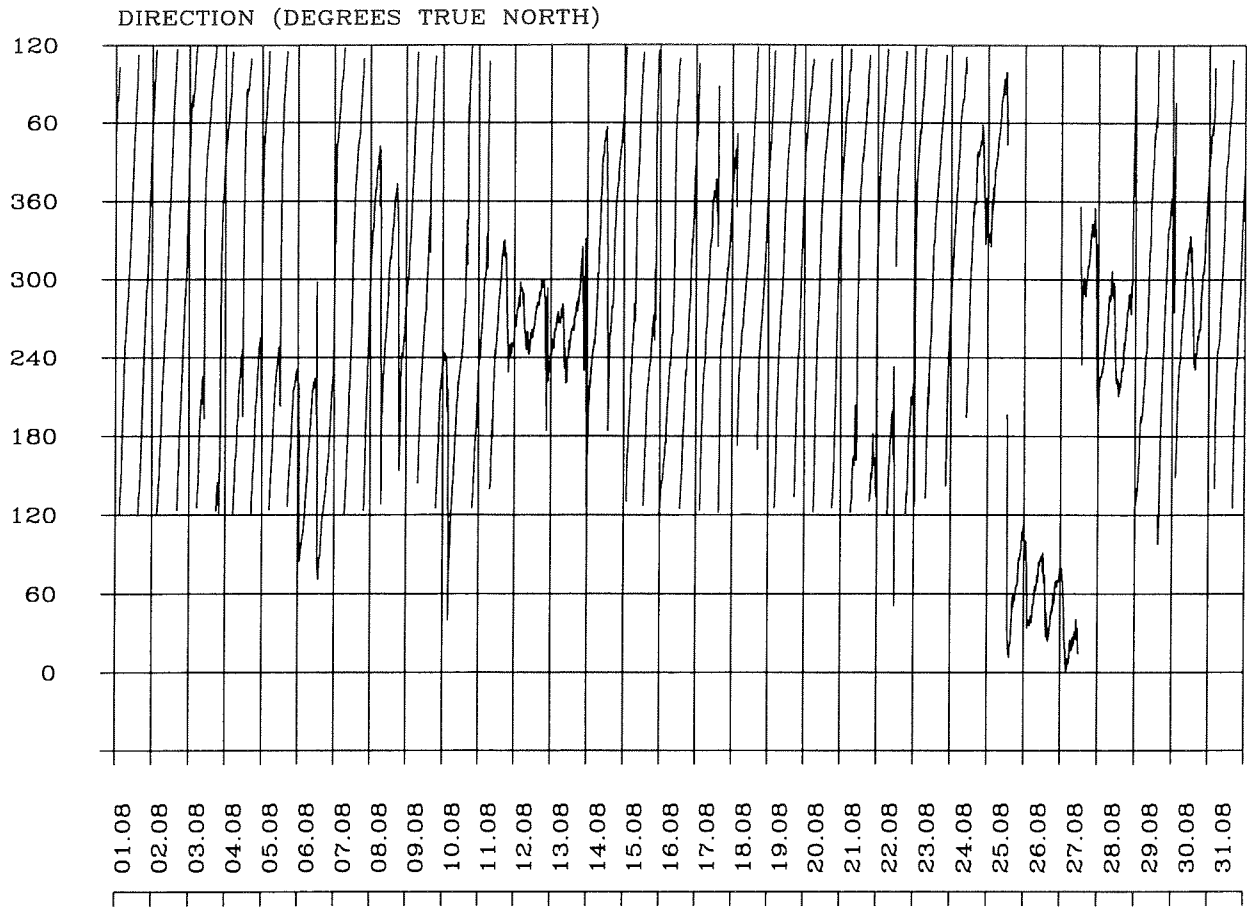
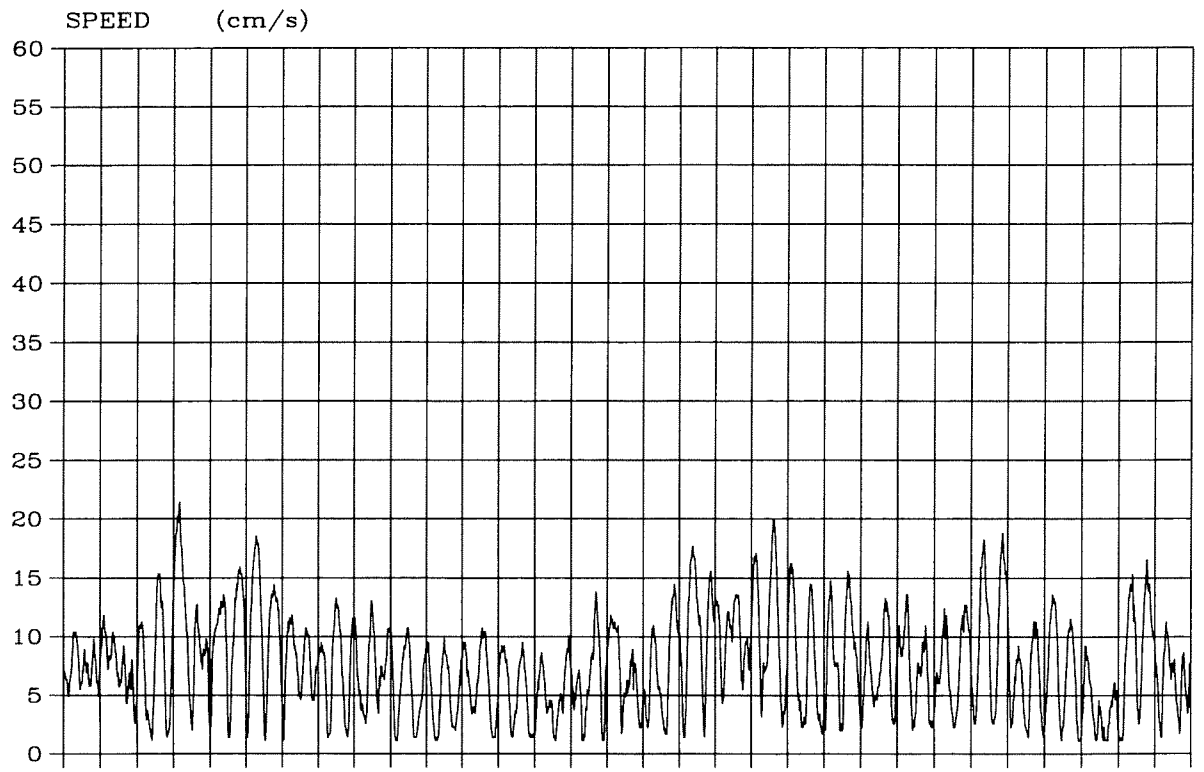
IMR

Fig. 1-2-7

Continues.....





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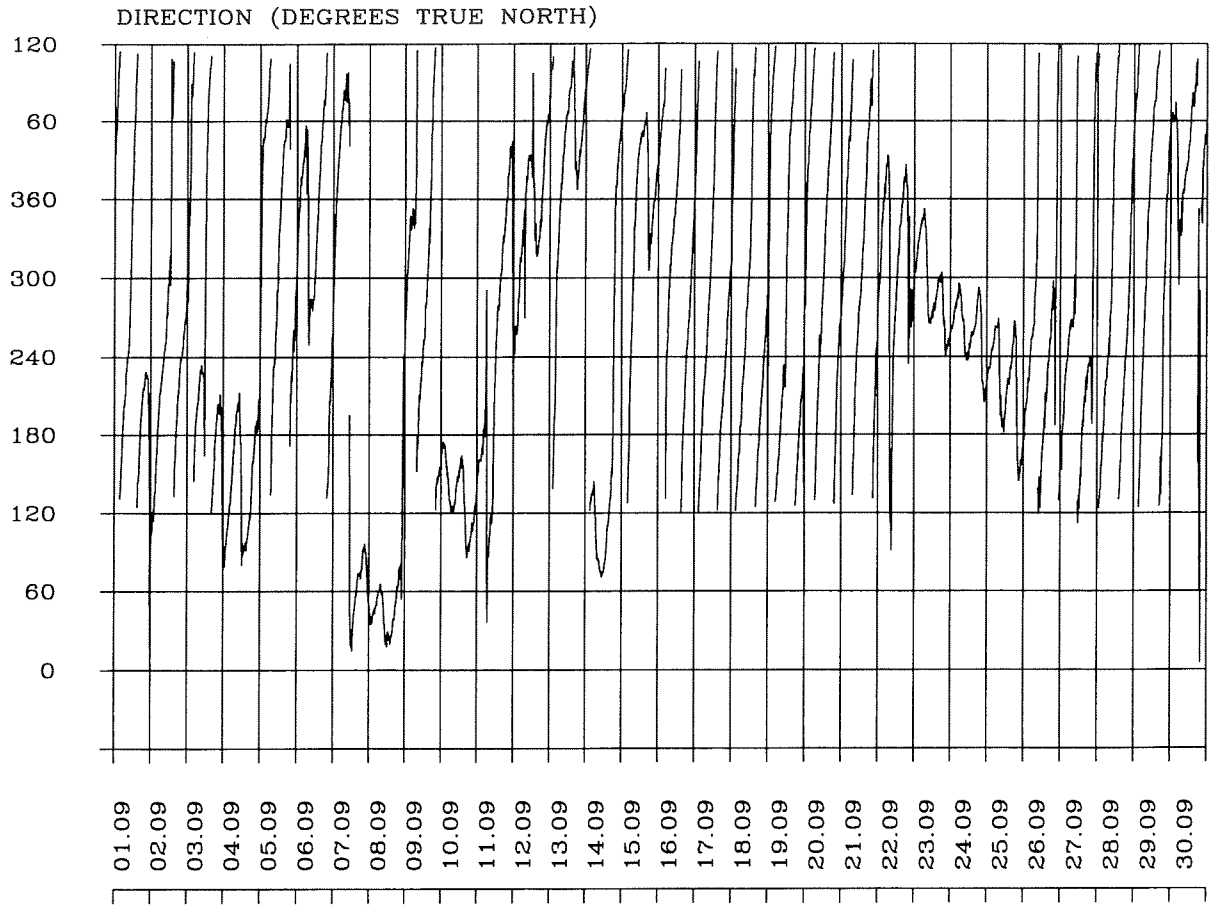
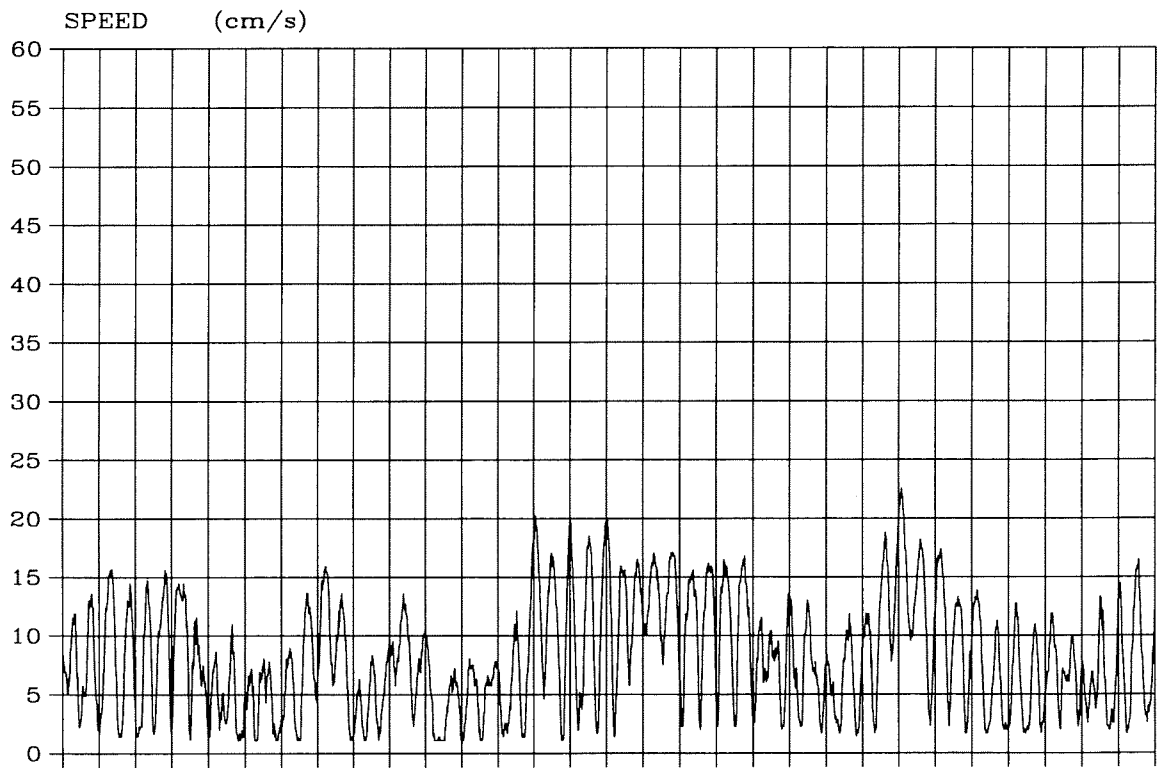
IMR

Fig. 1-2-7

Continues.....





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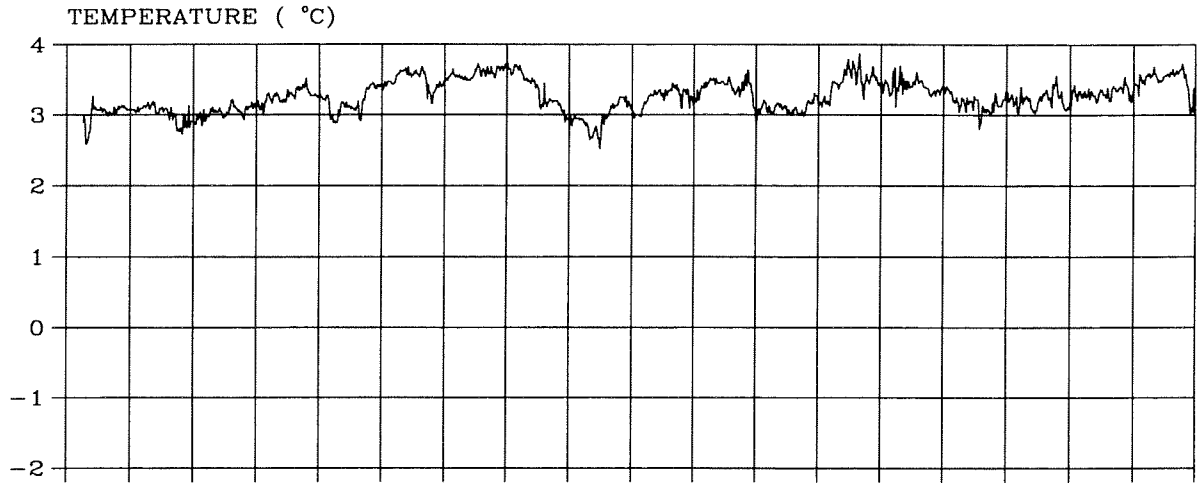
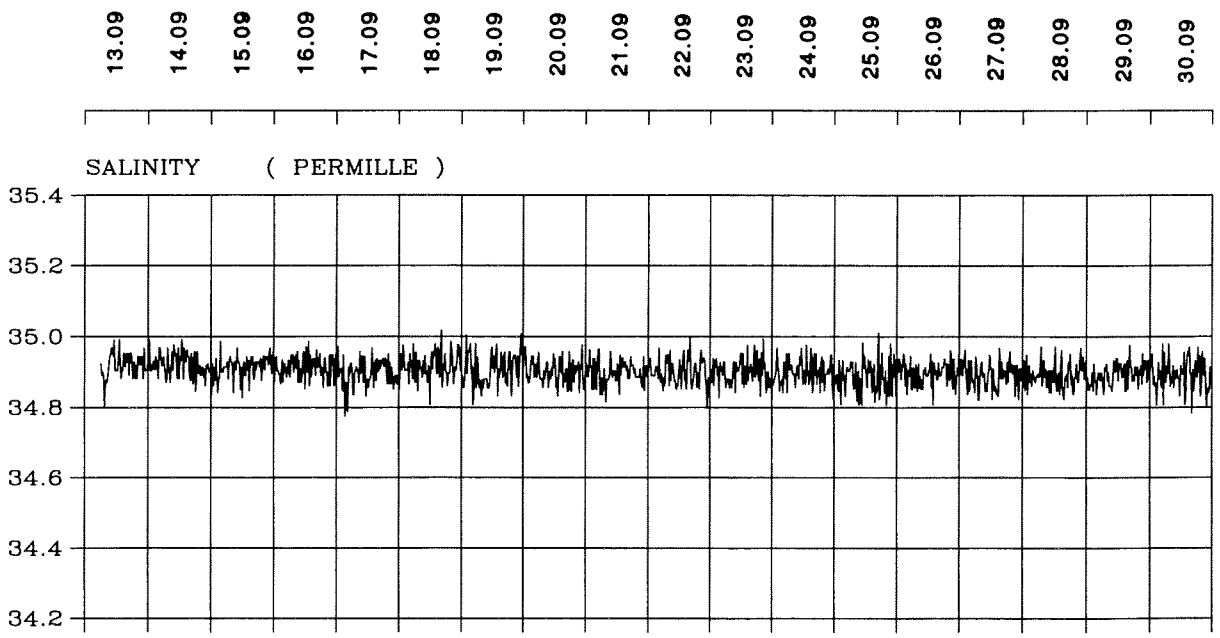
IMR

Fig. 1-2-7

Continues.....





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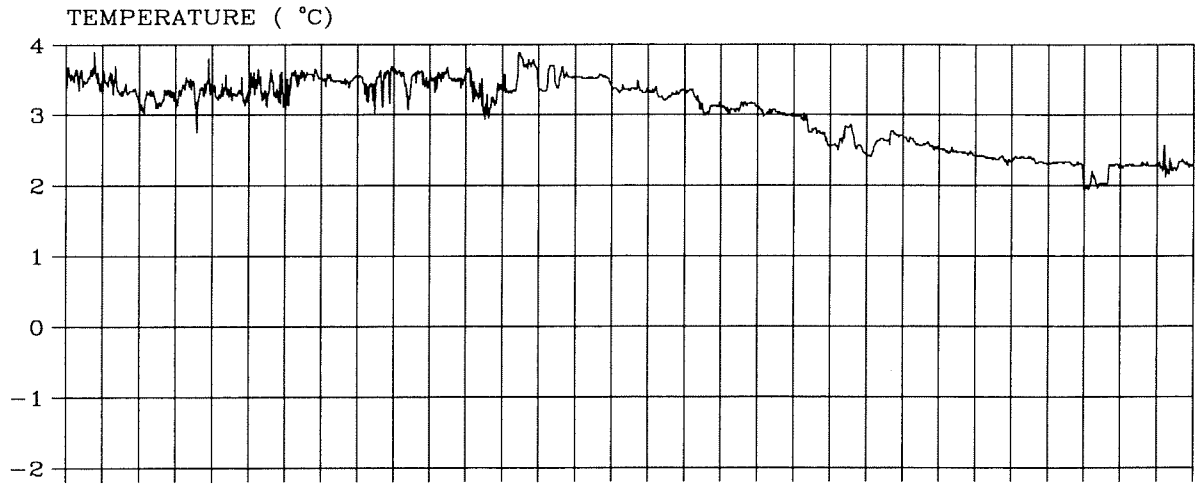
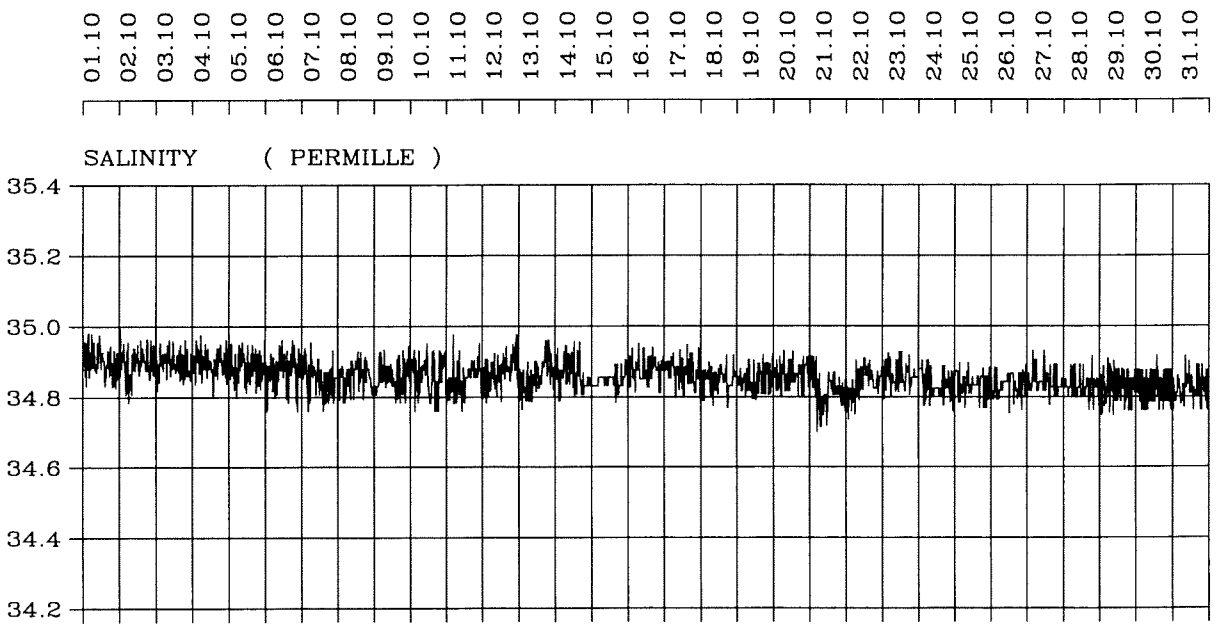
IMR

Fig. 1-2-8 Temperature and salinity.





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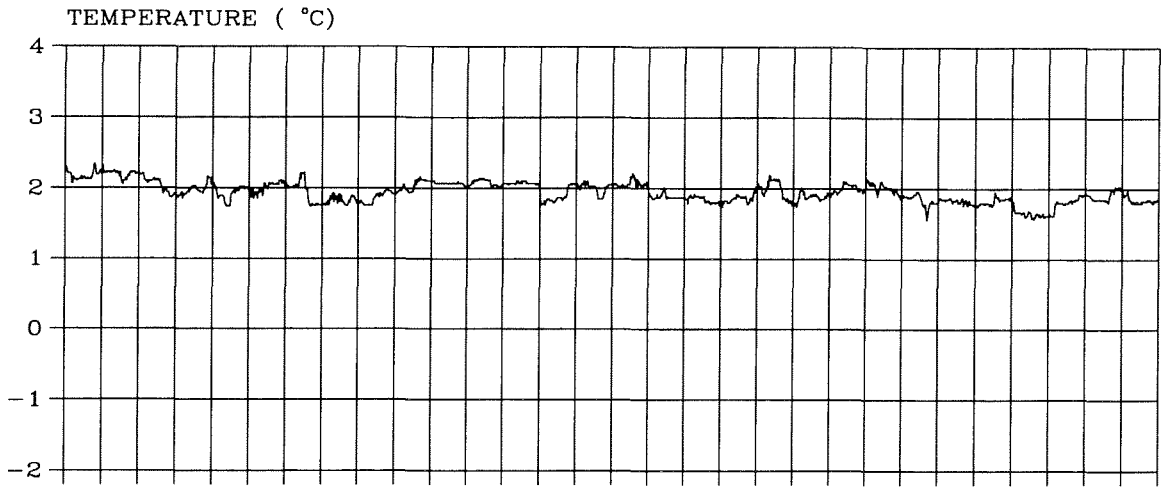
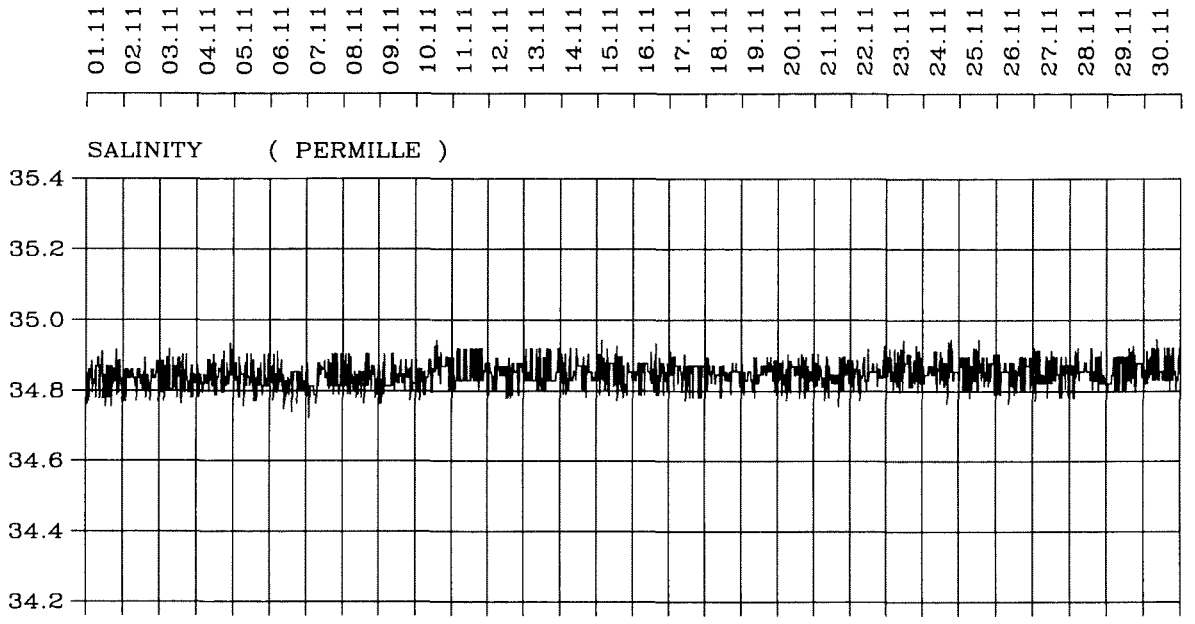
IMR

Fig. 1-2-8

Continues.....





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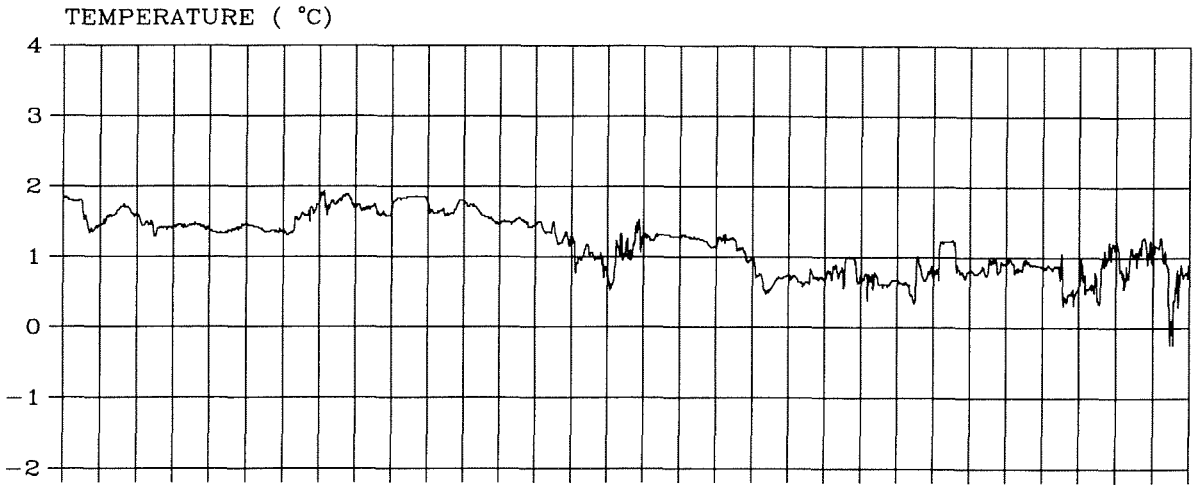
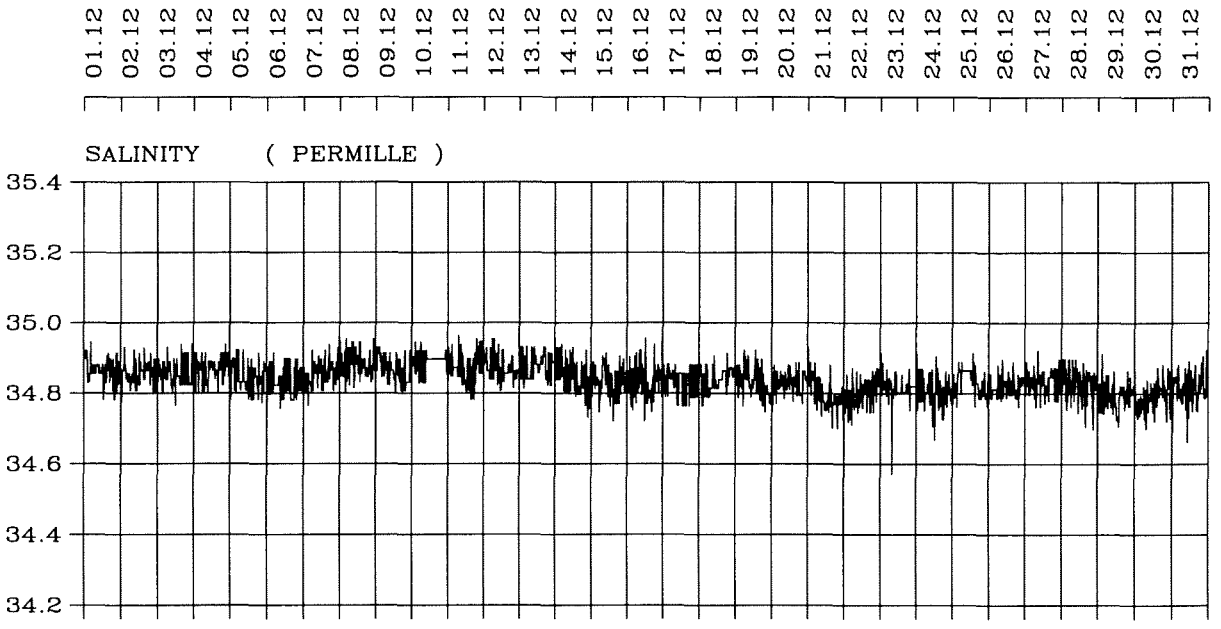
IMR

Fig. 1-2-8

Continues.....





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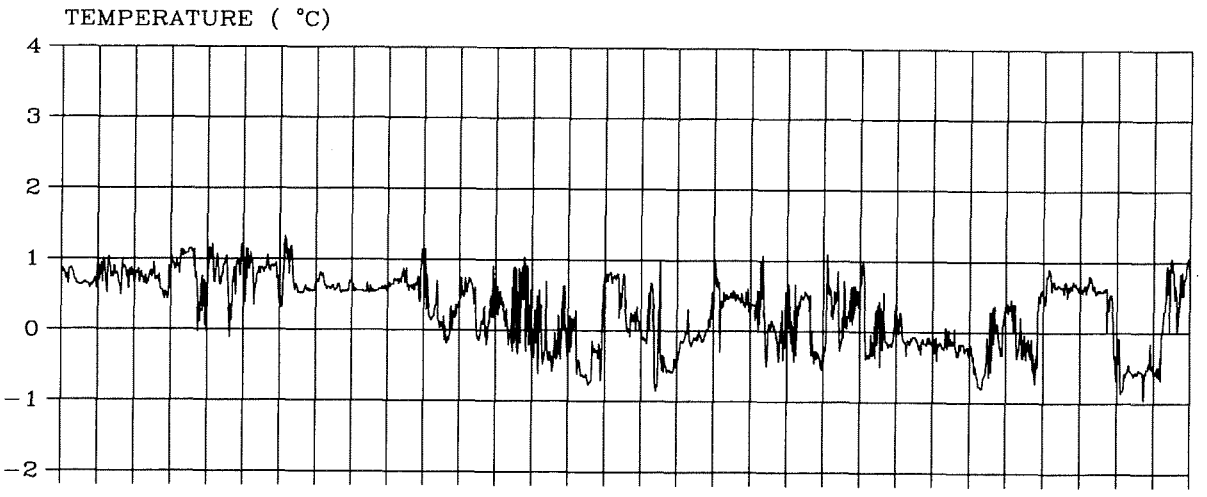
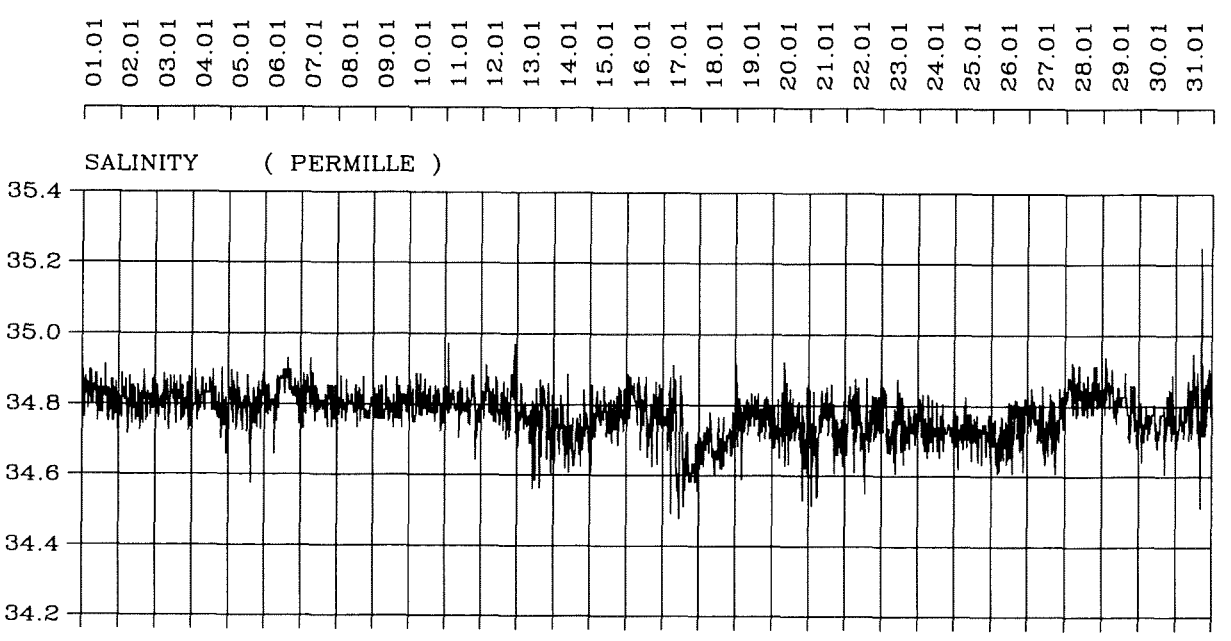
IMR

Fig. 1–2–8

Continues.....





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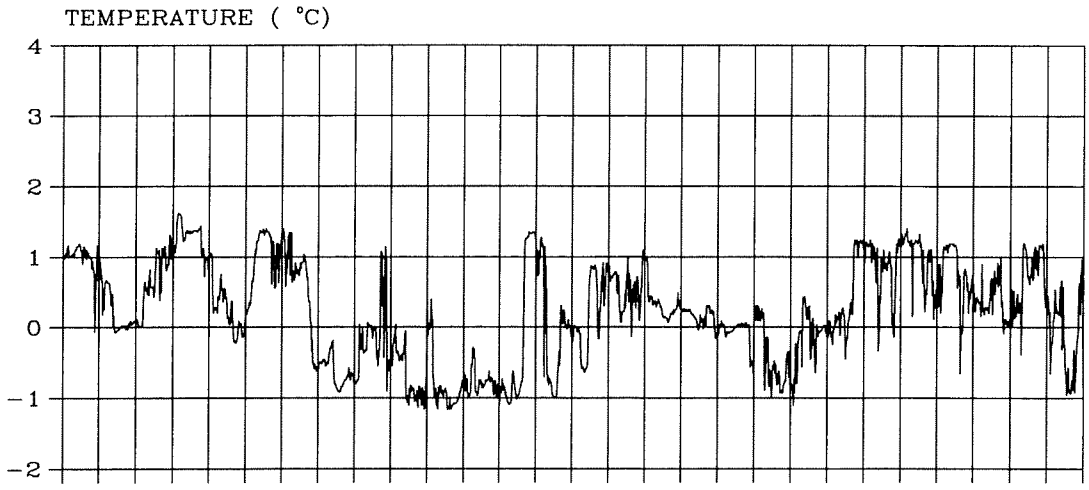
IMR

Fig. 1-2-8

Continues.....



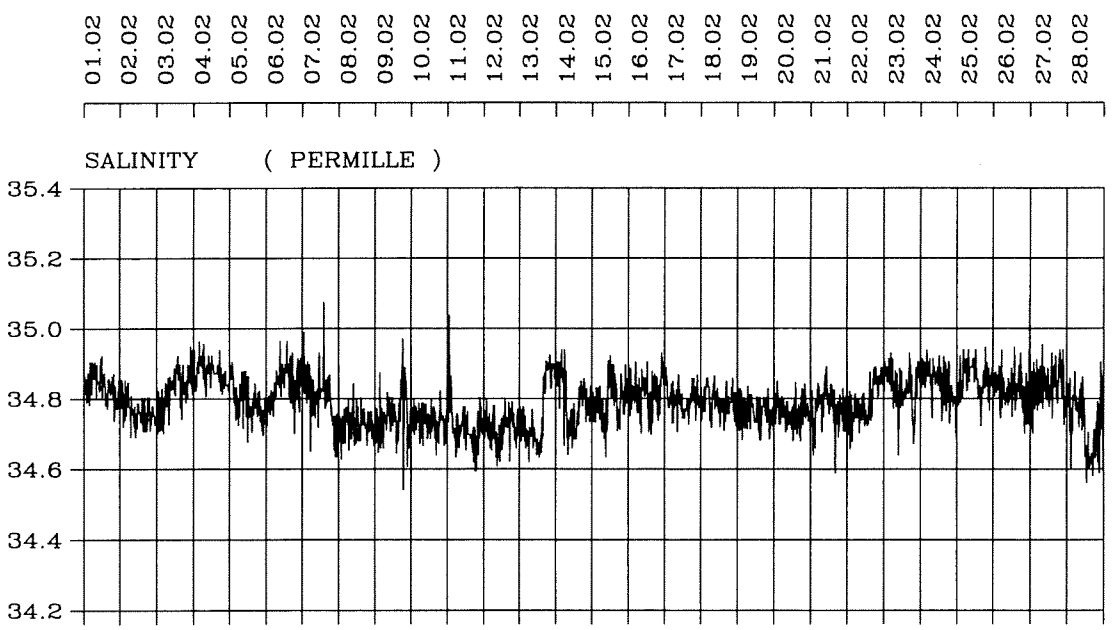


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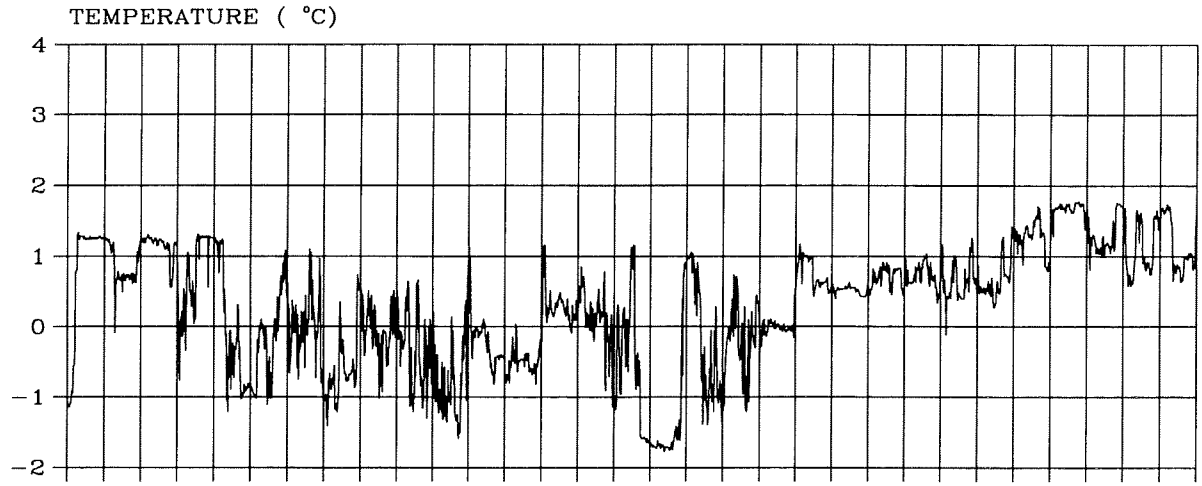
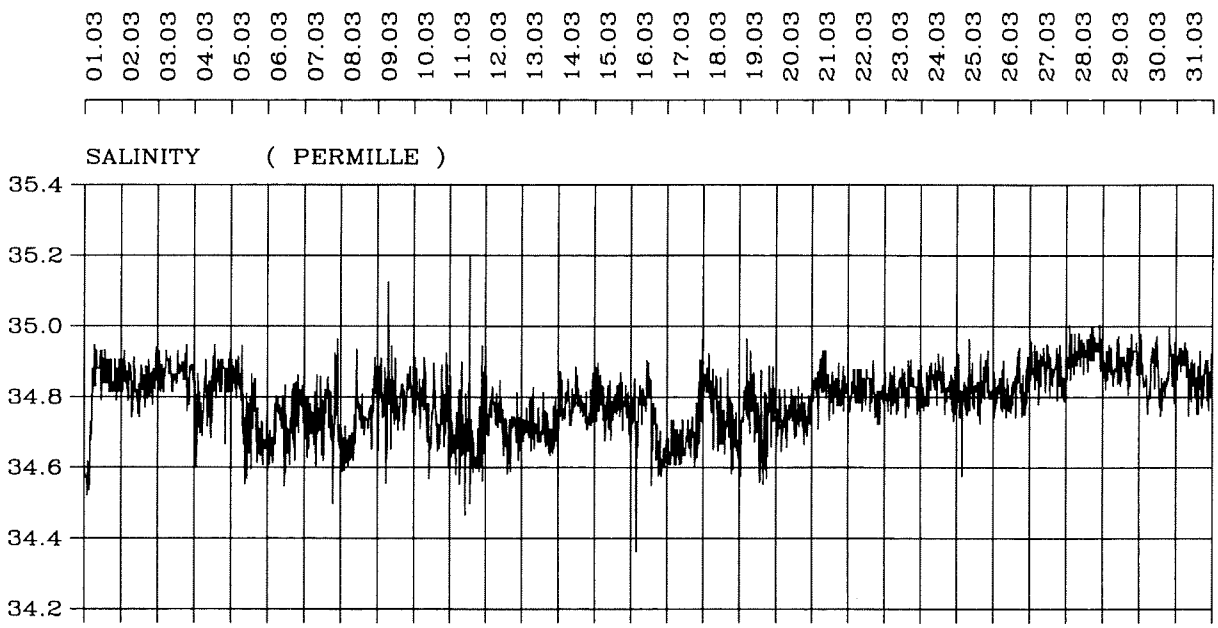
Fig. 1-2-8

Continues.....





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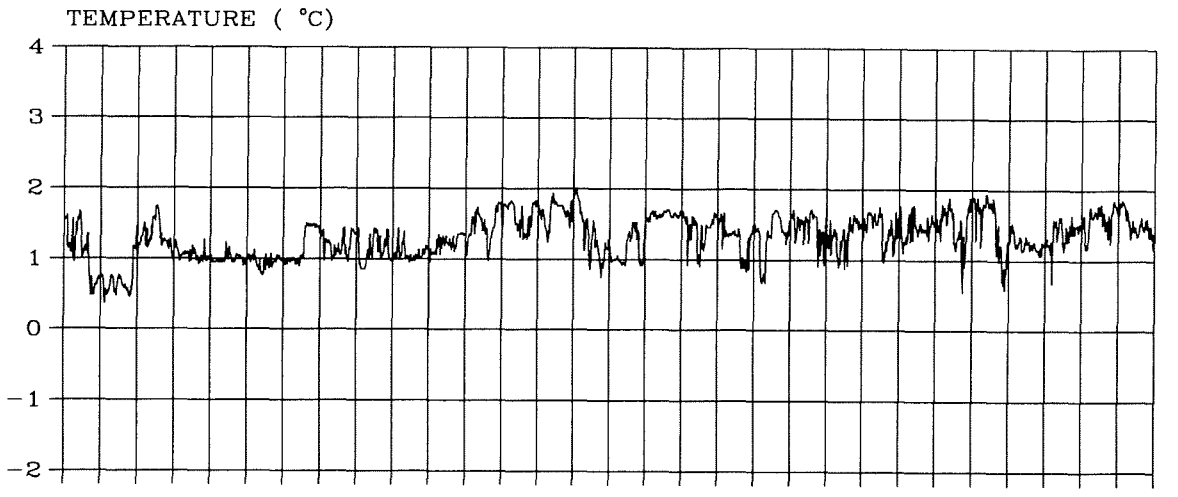
IMR

Fig. 1-2-8

Continues.....



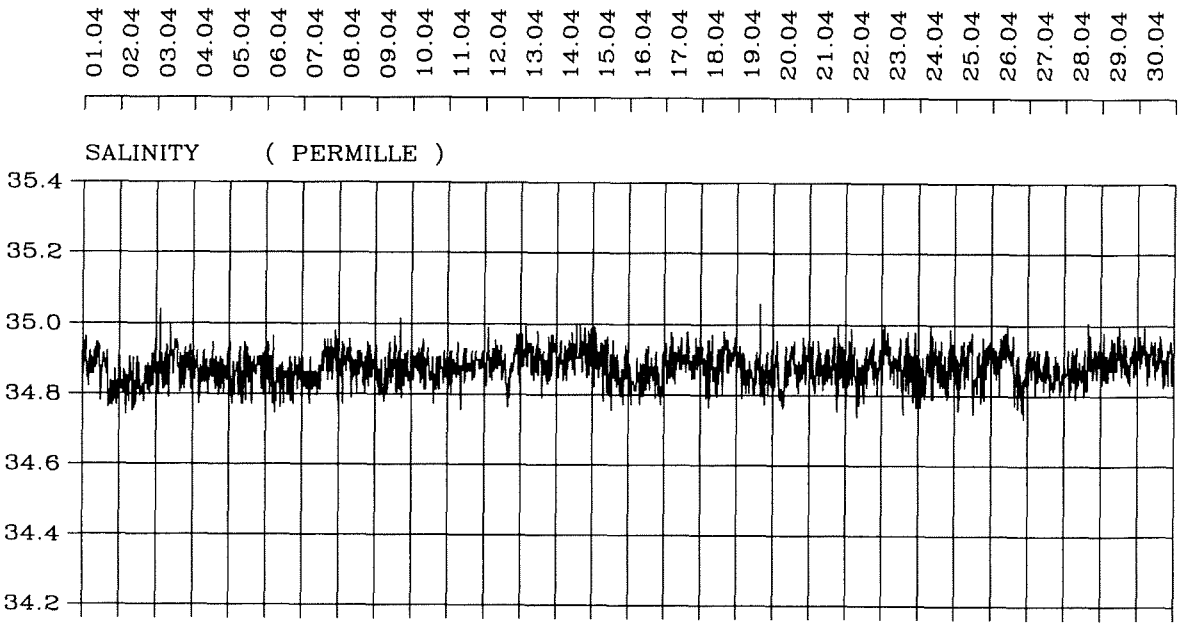


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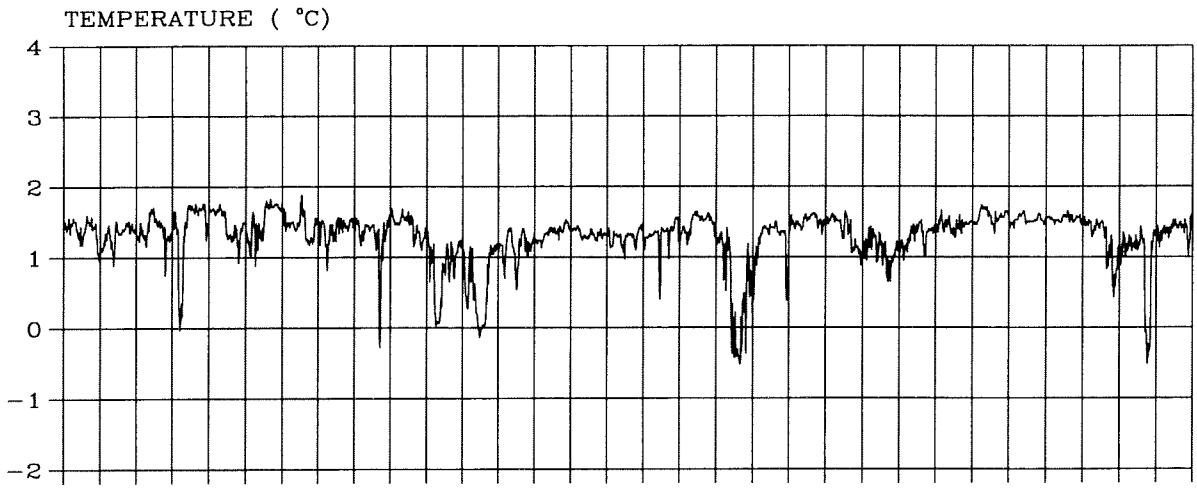
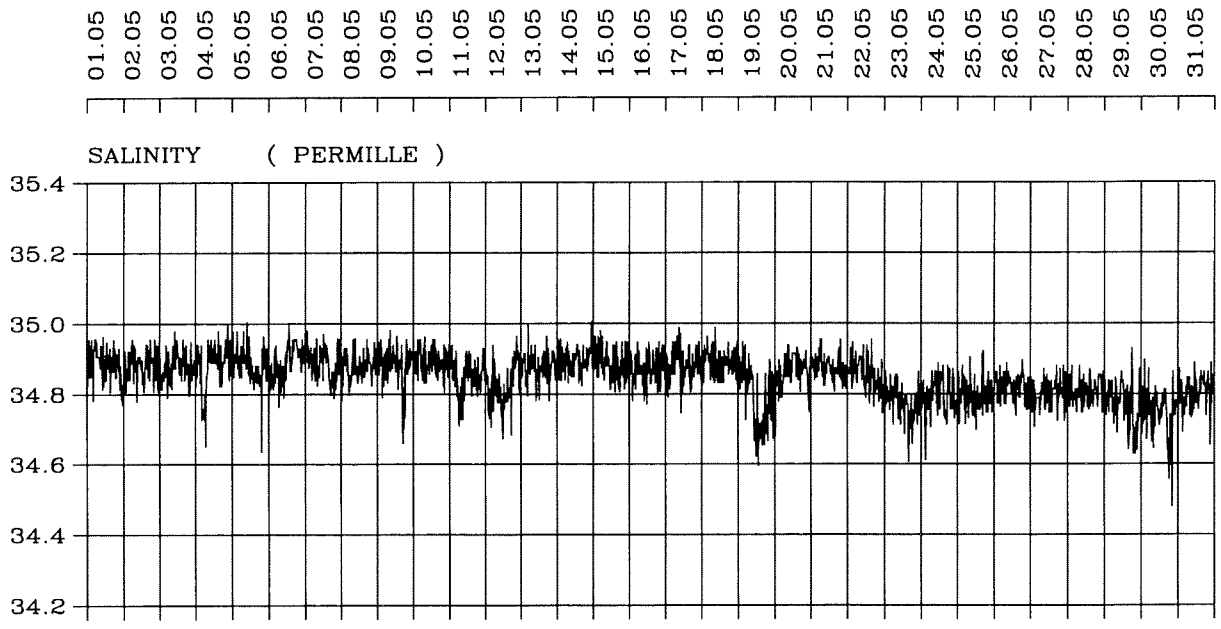
Fig. 1-2-8

Continues.....





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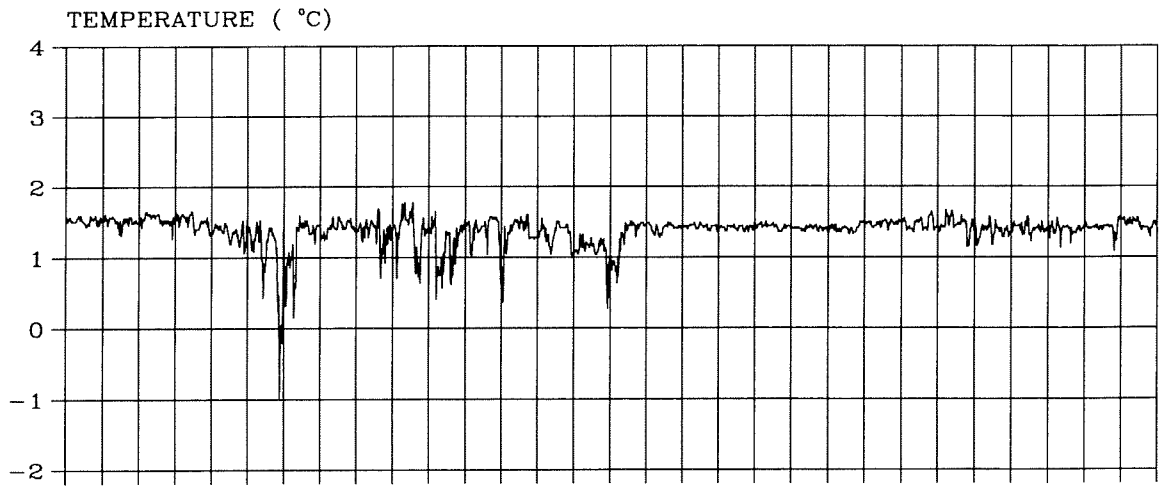
IMR

Fig. 1–2–8

Continues.....



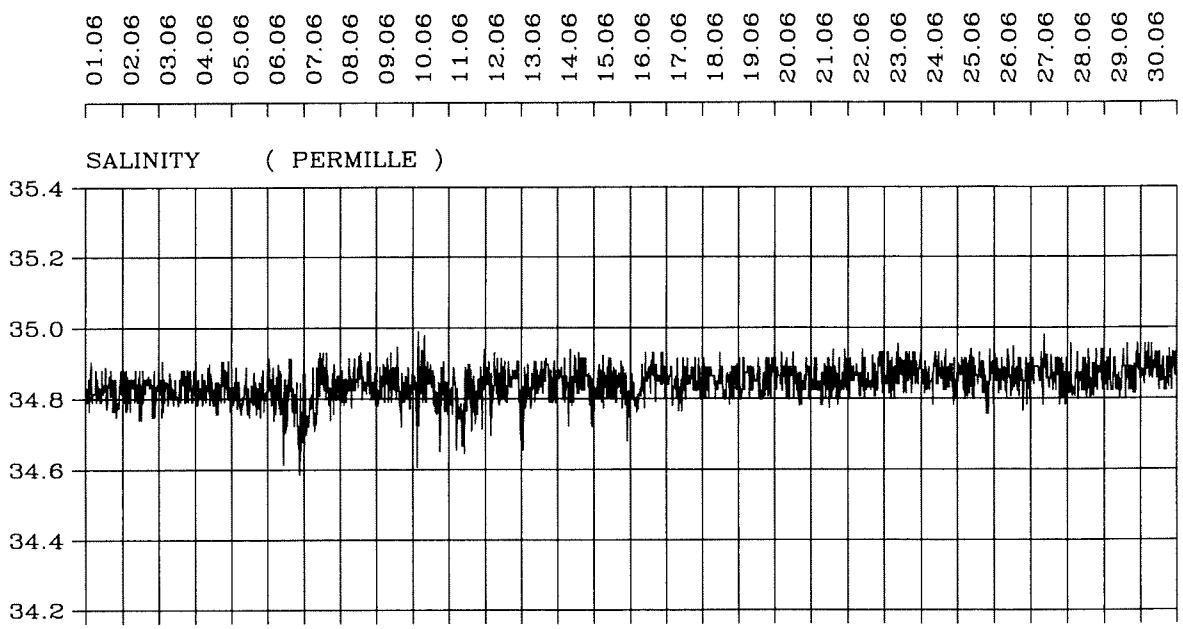


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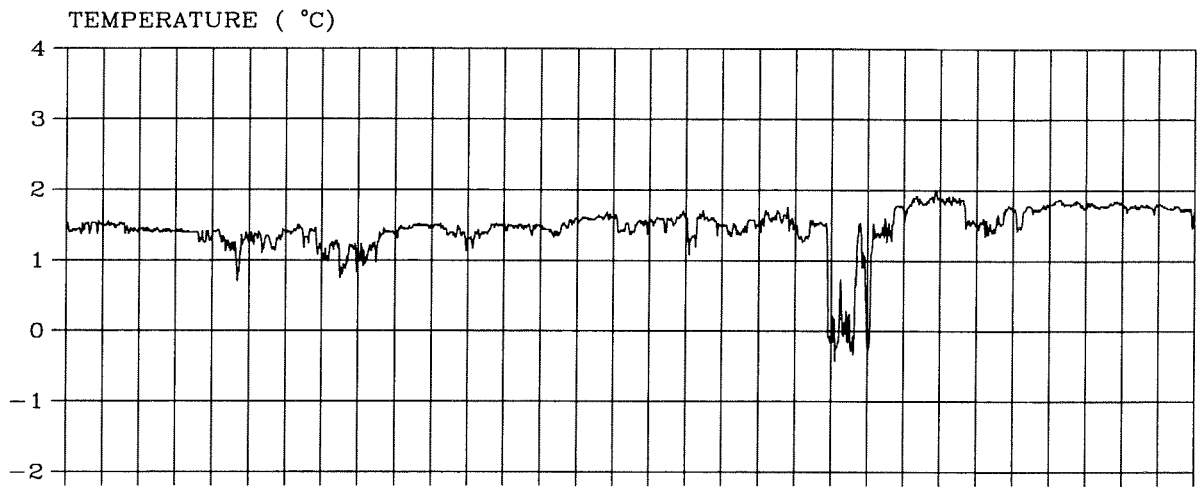
Fig. 1-2-8

Continues.....



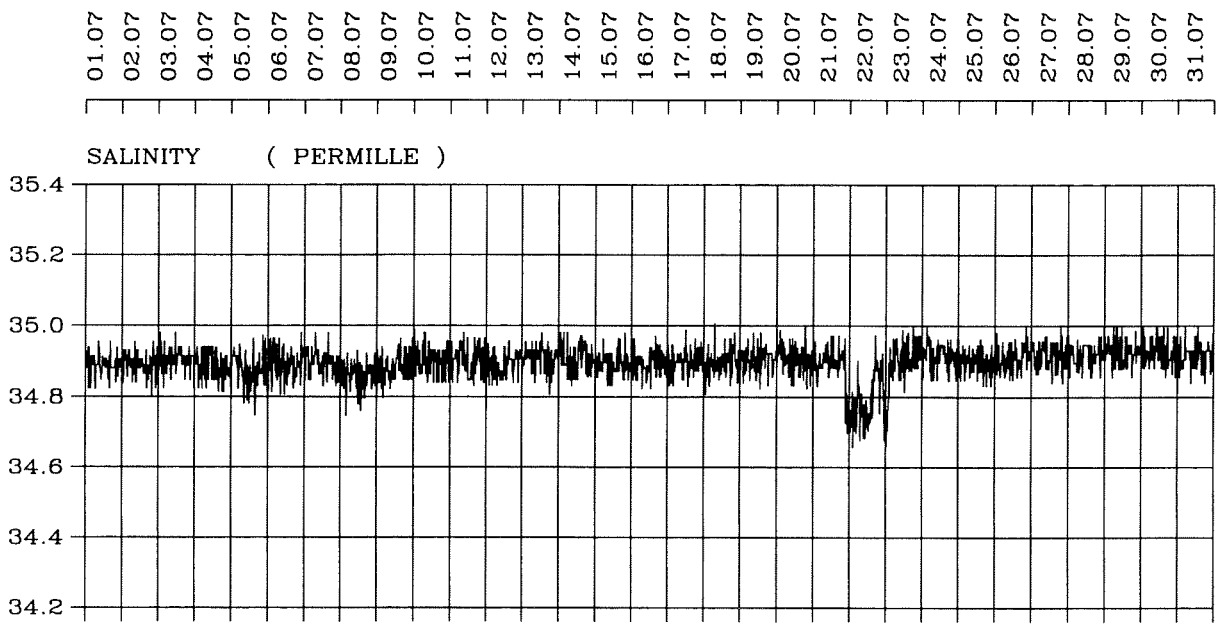


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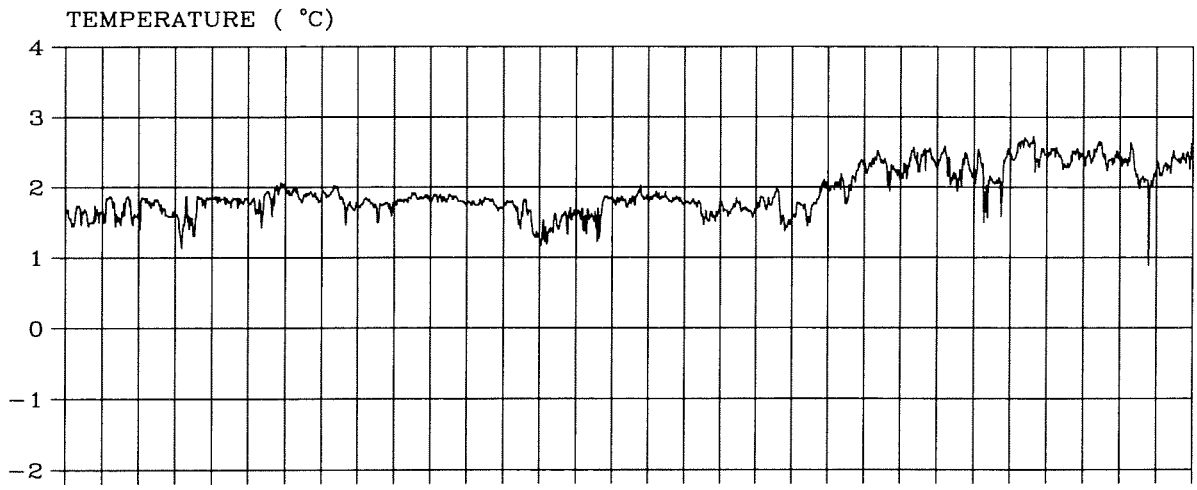
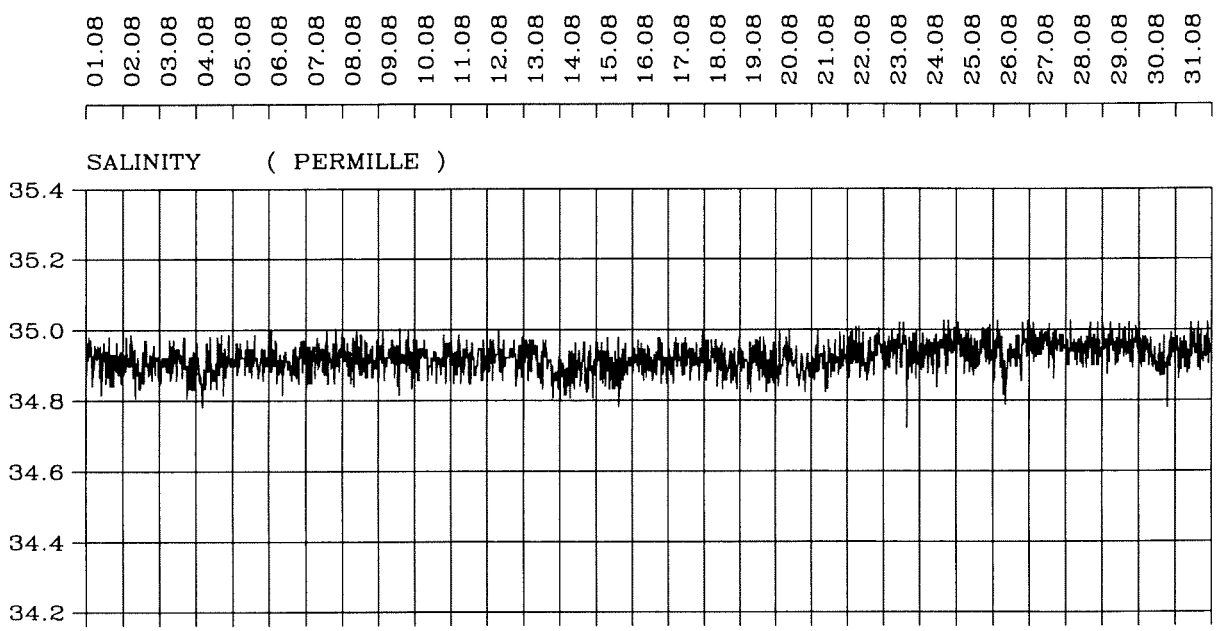
Fig. 1-2-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

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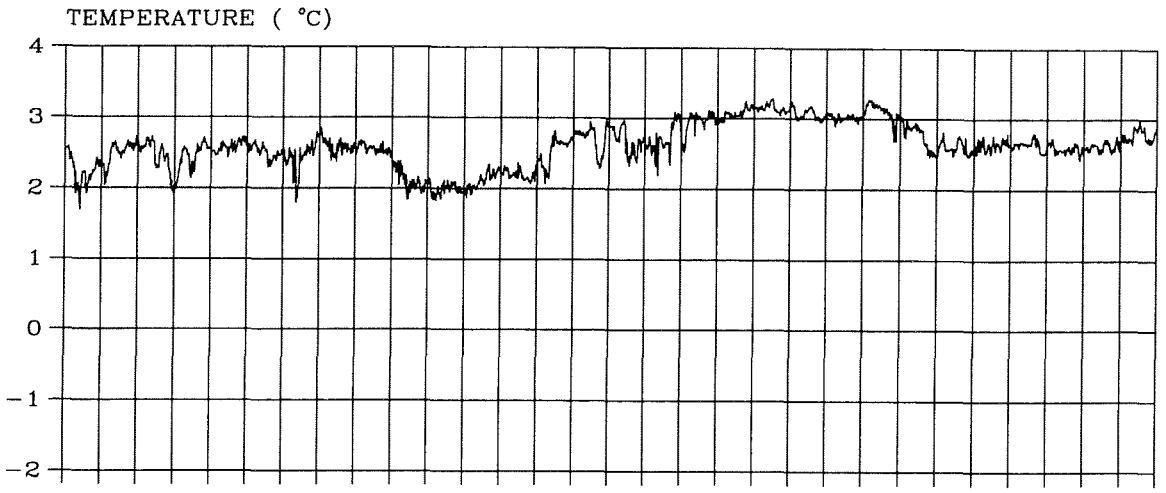
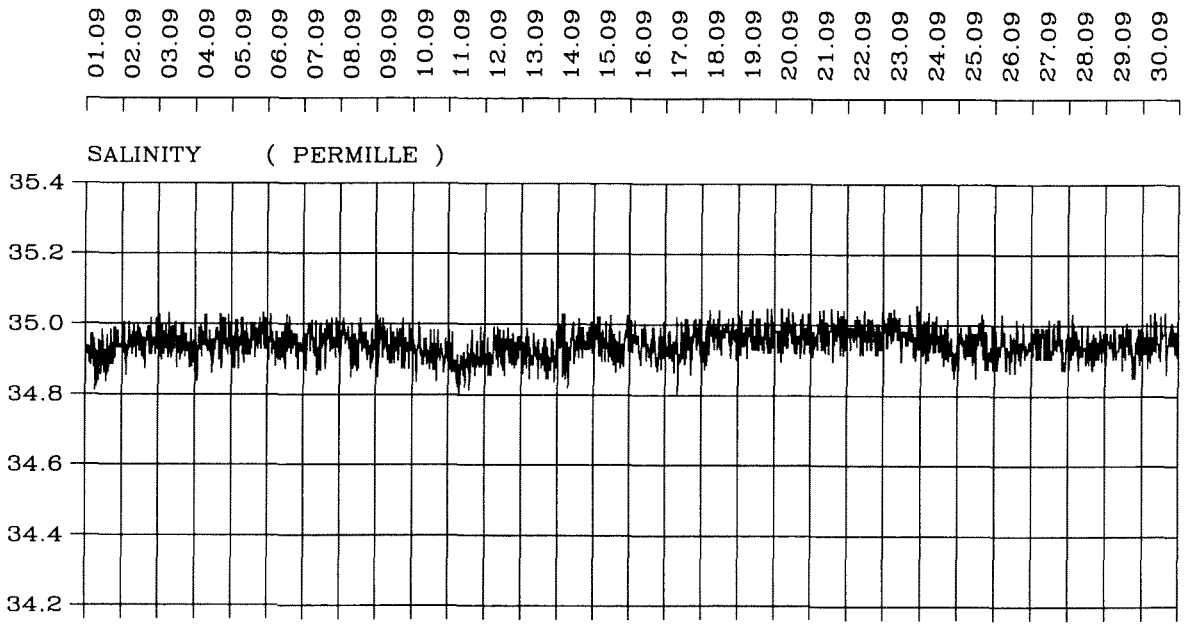
Fig. 1–2–8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

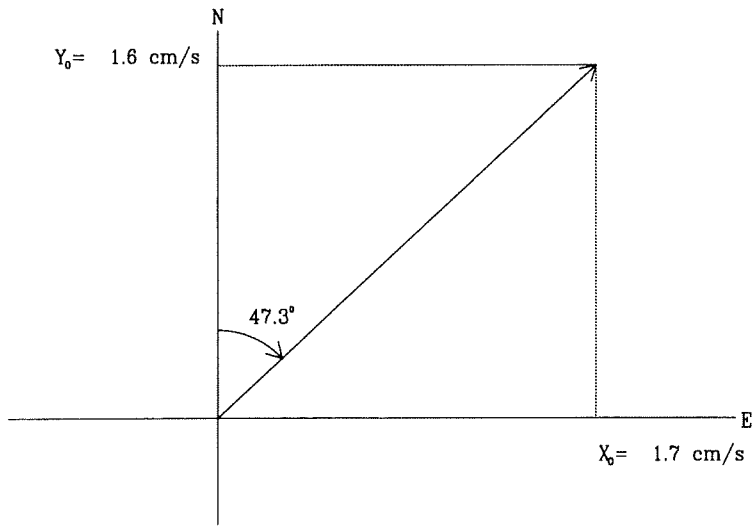
Fig. 1-2-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_j cm/s	g_{xj} °	Y_j cm/s	g_{yj} °	Major axis A_j cm/s	Minor axis B_j cm/s	θ_j °	g_j °	BETA. °
SA	******	0.0	1.4	63.2	1.1	49.9	1.8	-0.2	52.3	58.2	160.0
SSA	******	0.1	1.5	6.8	0.6	62.7	1.6	0.5	75.6	11.5	9.3
MF	327.86	1.1	2.0	118.1	0.5	165.3	2.0	0.4	79.1	120.3	103.5
N2	12.66	28.4	1.3	25.3	1.1	304.8	1.3	-1.1	68.7	8.3	131.5
M2	12.42	29.0	6.4	48.8	5.1	332.3	6.6	-4.7	67.1	31.9	134.2
S2	12.00	30.0	2.0	94.9	1.7	34.0	2.3	-1.3	53.9	72.3	162.4

MEAN CURRENT



Northern Central Bank, Barents Sea
Position : N 76° 0.07´ E 34° 59.50´
Instrument depth : 100.0 m Bottom depth : 250.0 m
Time interval : 20.00 minutes. Instrument no. : 10802
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

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Fig. 1-2-9 Harmonic analysis of current.

A discription of the model and its definitions :

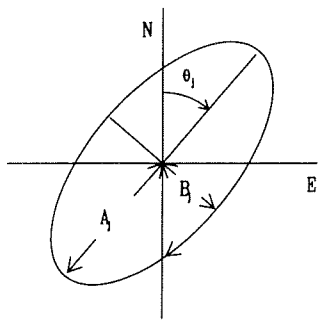
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90°-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

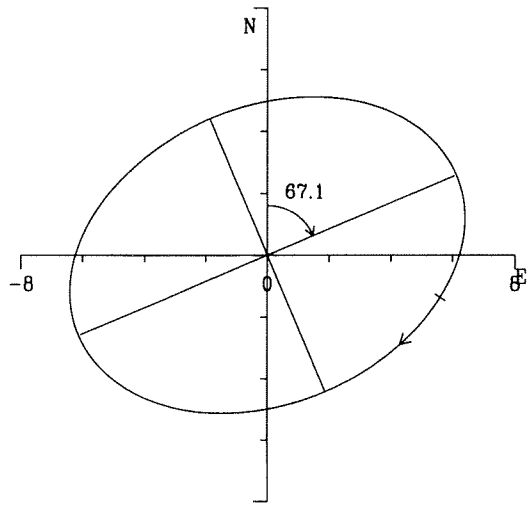
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

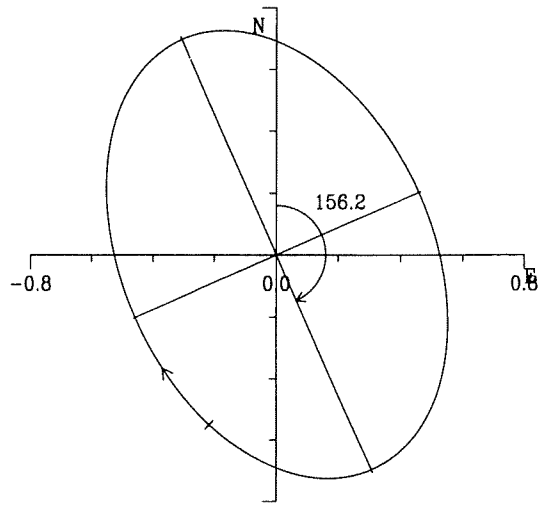
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1500 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 − 1993 30.09 H. 2300

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Fig. 1−2−10 M2 and K1 ellipse.

MEAN VALUES

Speed	10.24 cm/s
NS-component	1.58 cm/s
EW-component	1.74 cm/s
Velocity	2.35 cm/s
in direction	47 °

MAXIMUM

Velocity	56.90 cm/s
in direction	278 °
Temperature	3.90 °C
Salinity	35.247

MINIMUM

Velocity	0.00 cm/s
in direction	100 °
Temperature	-1.77 °C
Salinity	34.362

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 100.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10802

Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

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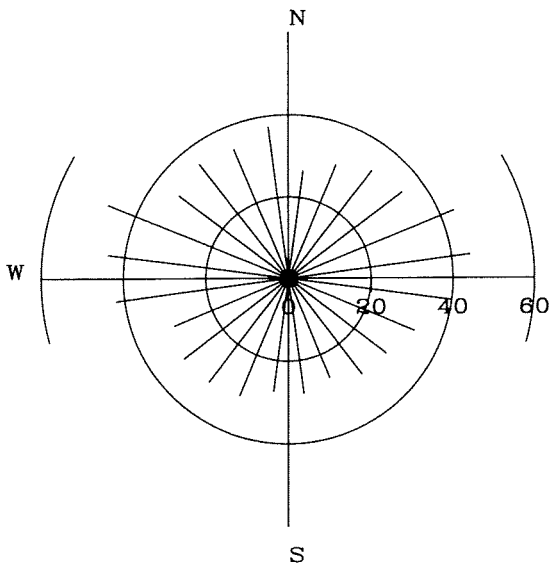
Fig. 1-2-11

Overall mean values.
Overall maximum values.
Overall minimum values.

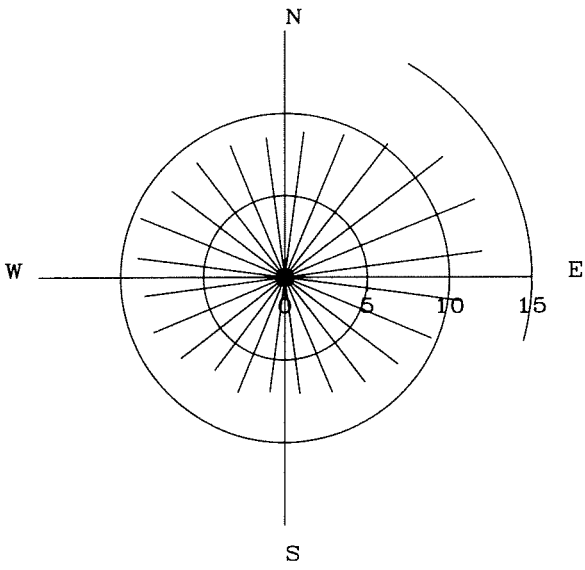
Mooring: *1*

Depth: *190 m*

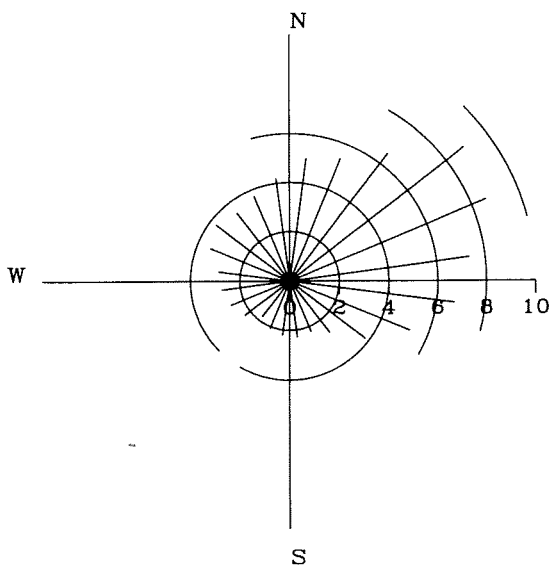
CURRENT VELOCITY DISTRIBUTION



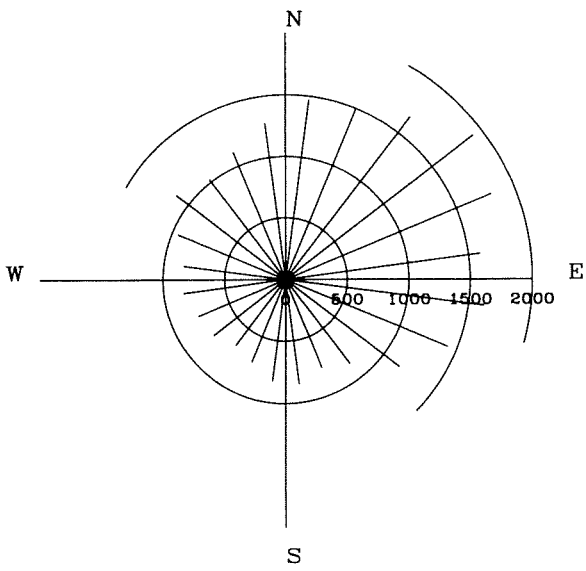
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

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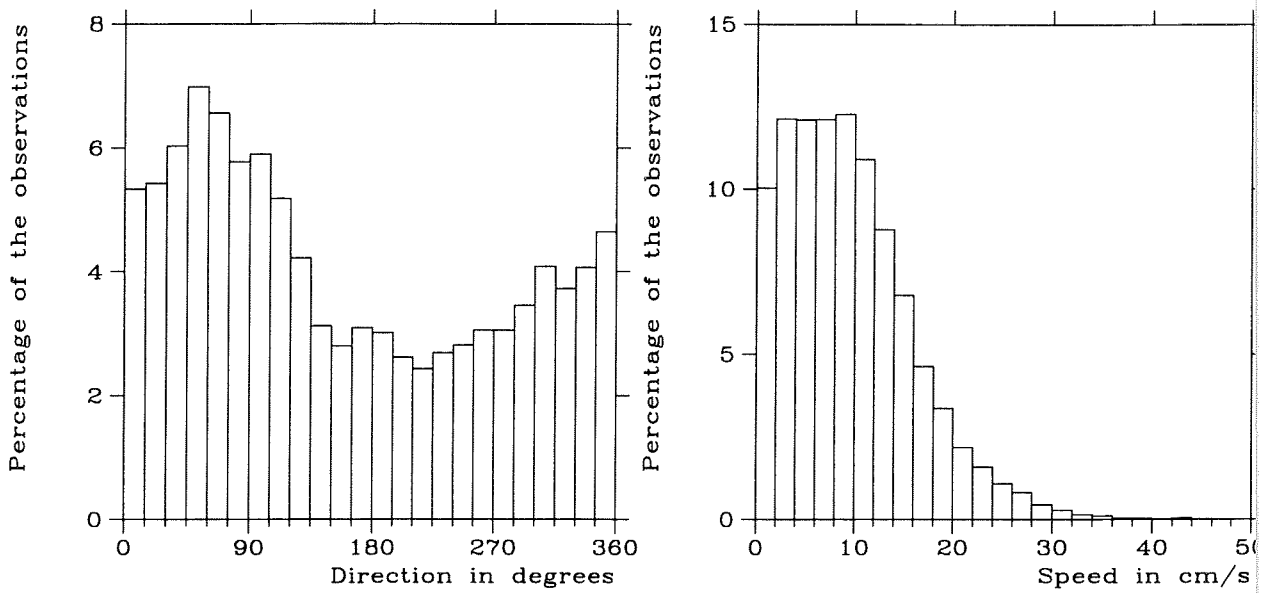
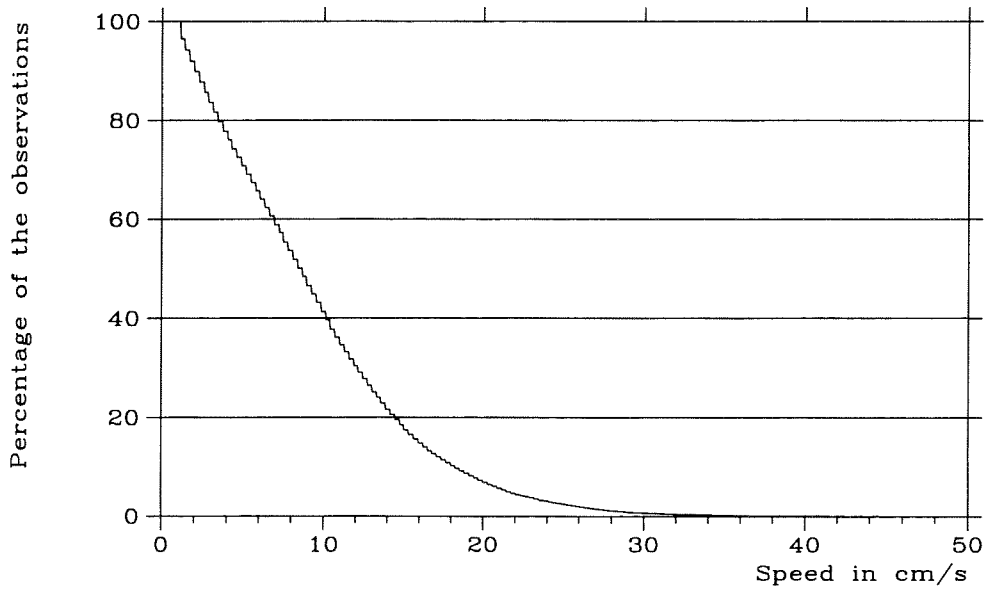
Fig. 1-3-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

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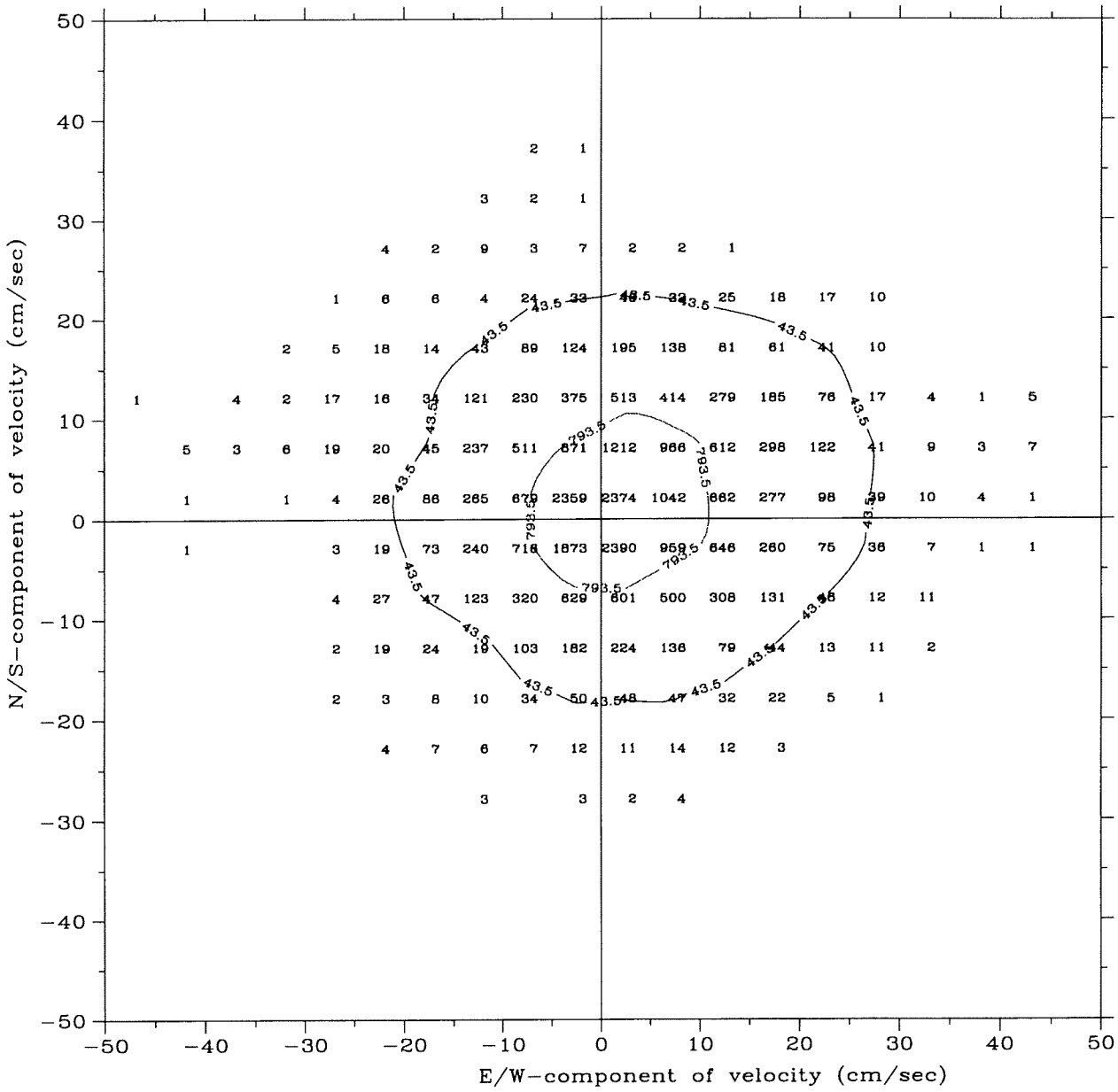
Fig. 1-3-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27558

Isoline for 50% and 96%

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

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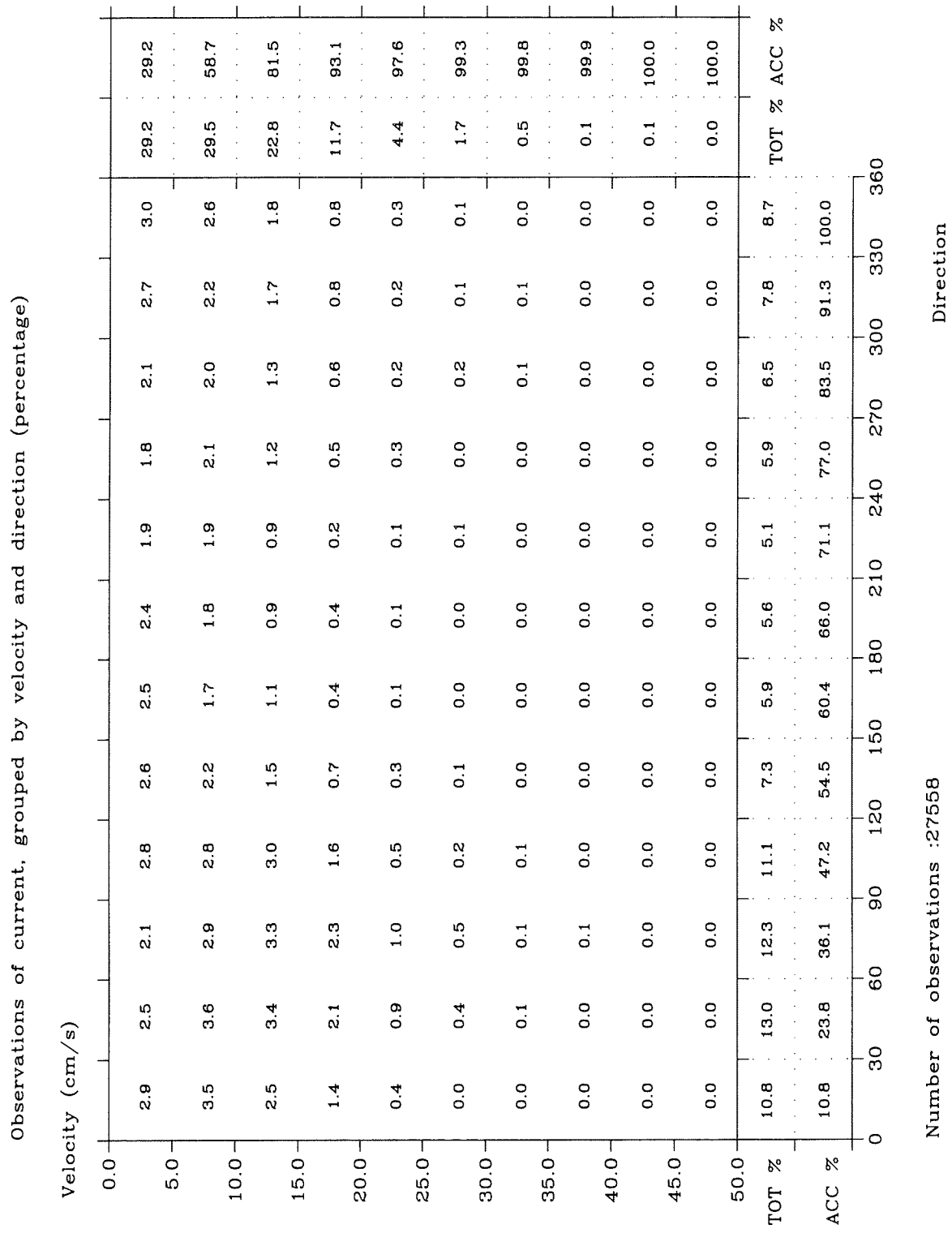
Fig. 1-3-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

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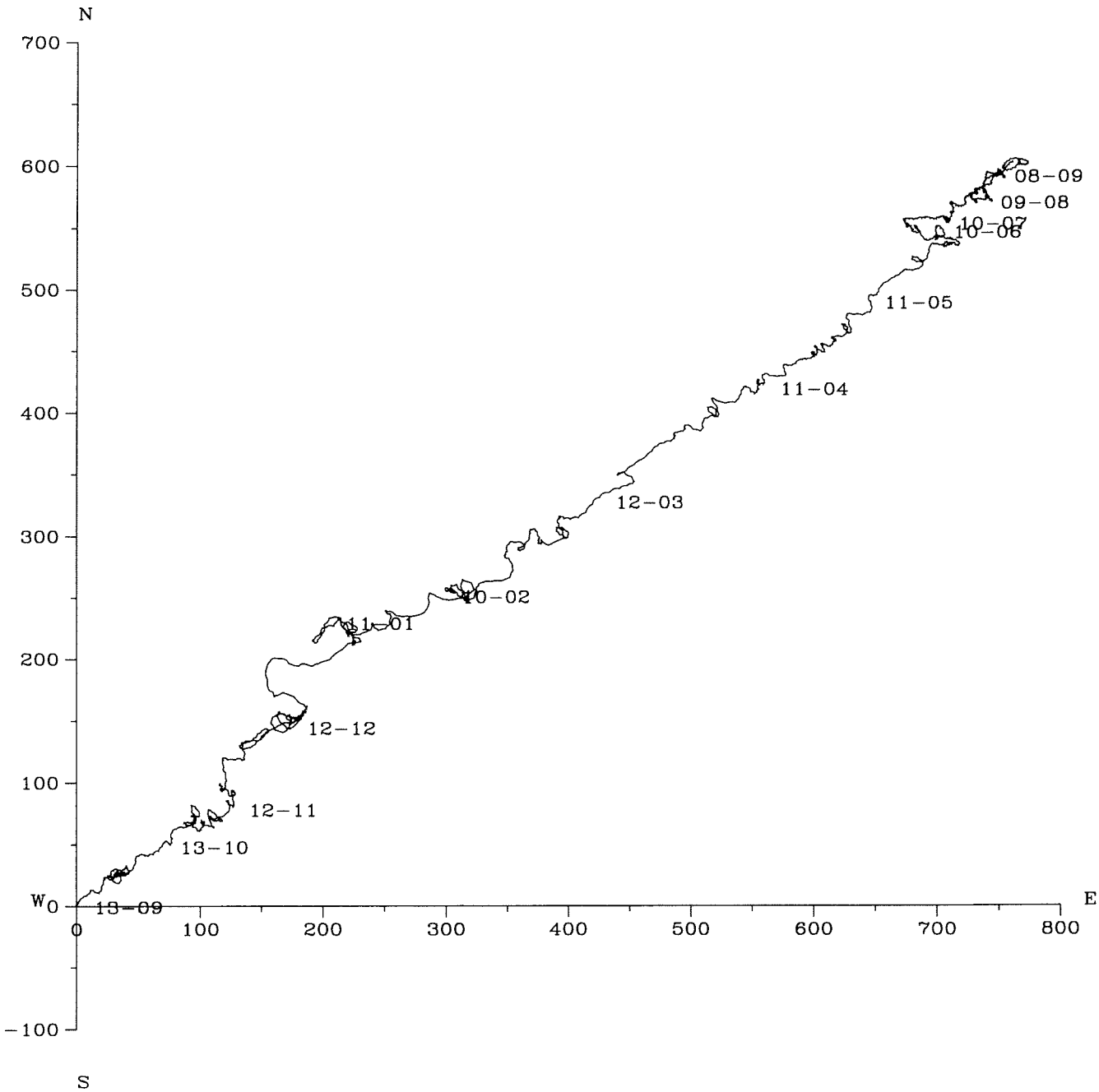
Fig. 1-3-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



Units in km

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

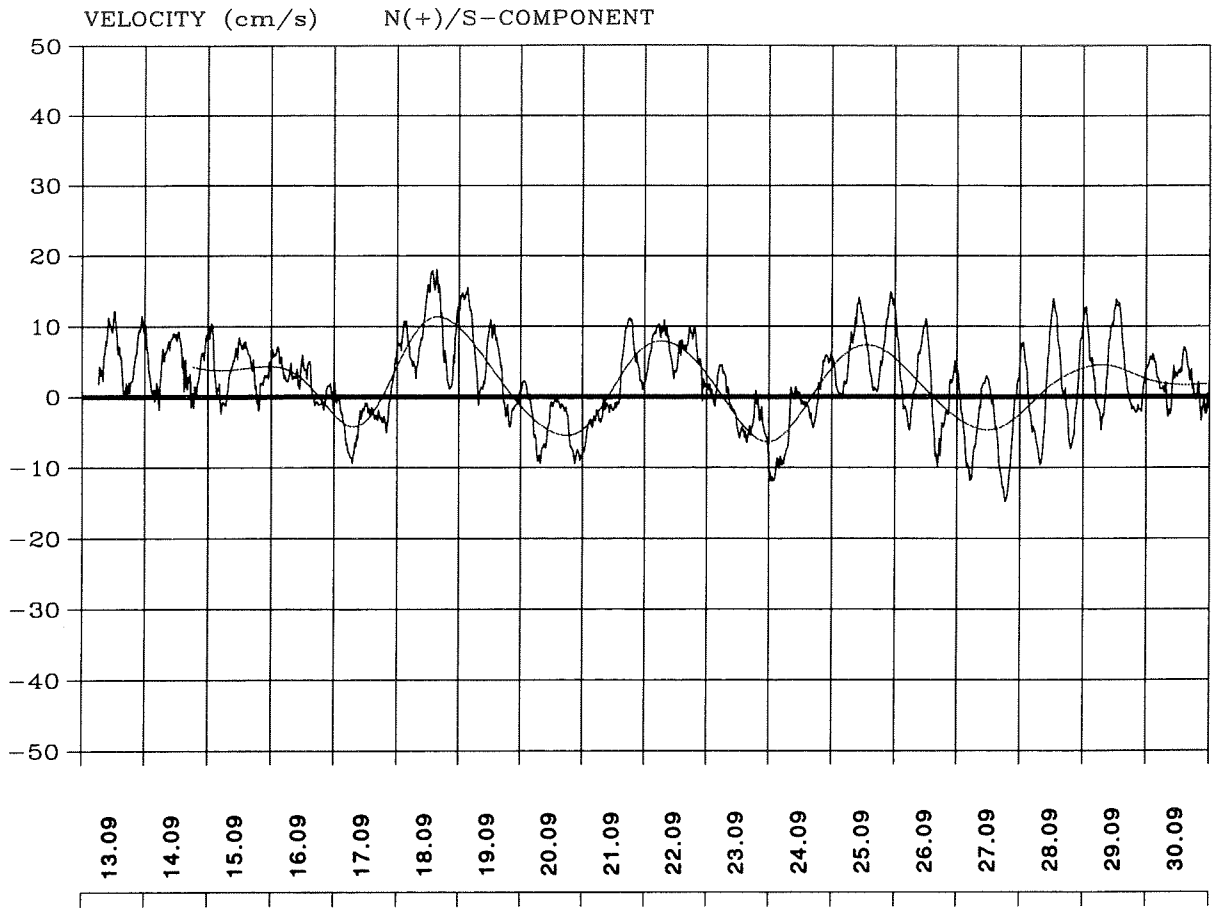
Instrument depth : 190.0 m Bottom depth : 250.0 m

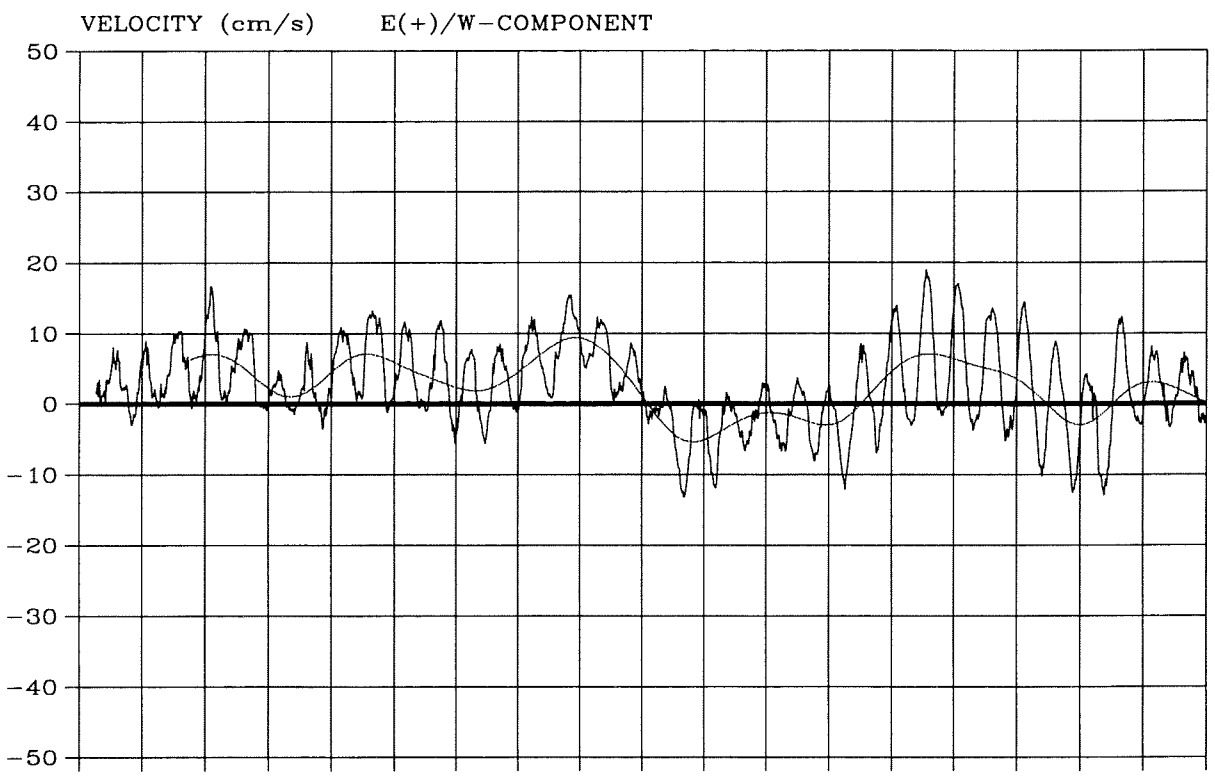
Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 − 1993 30.09 H. 2300

IMR

Fig. 1−3−5 Progressive vector diagram.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

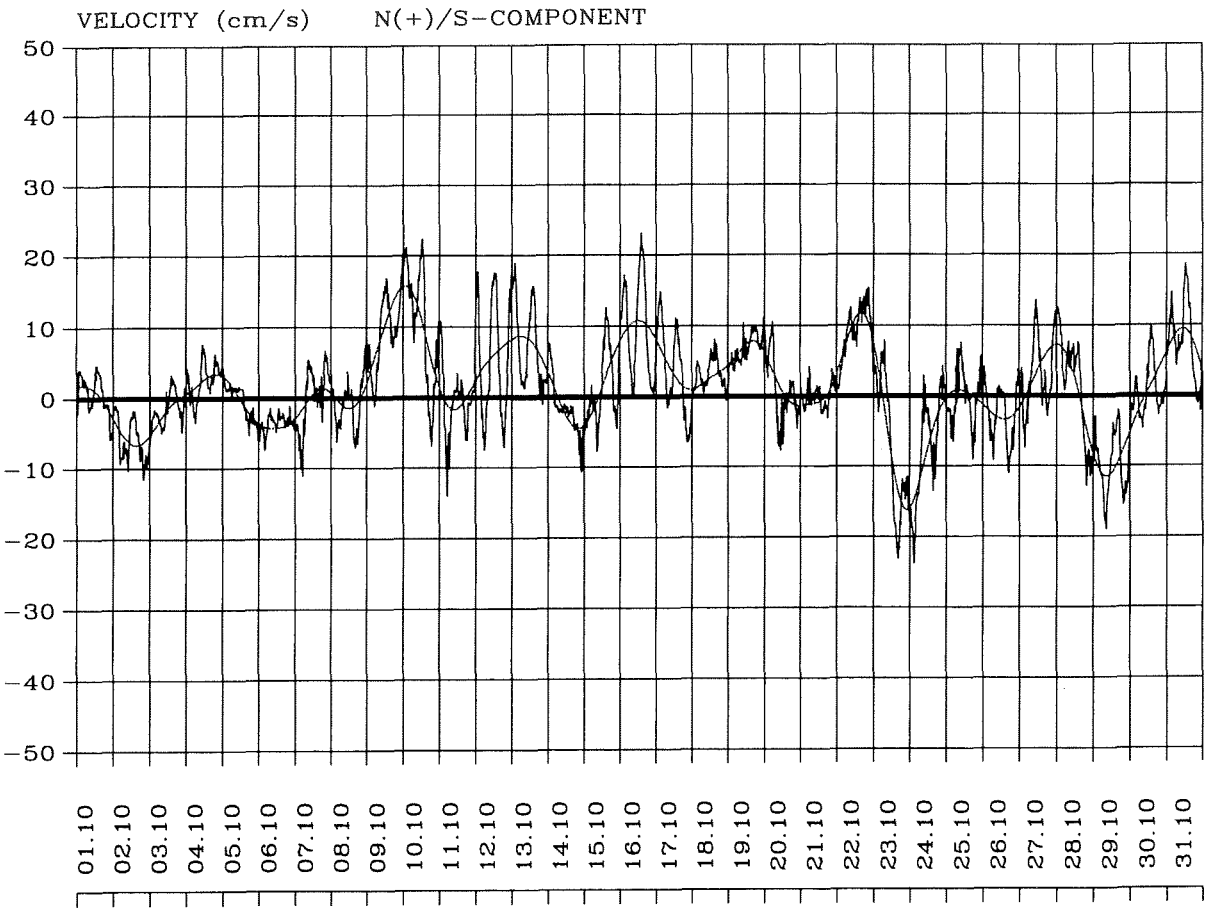
Instrument depth : 190.0 m Bottom depth : 250.0 m

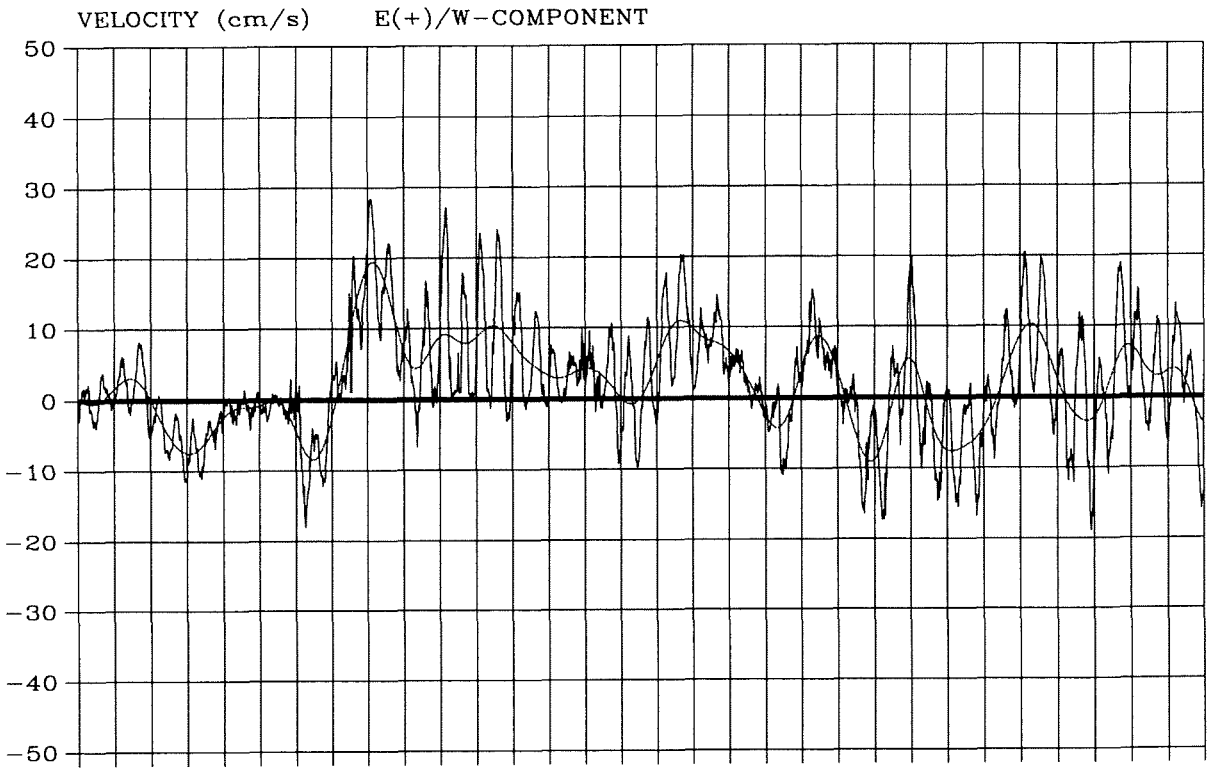
Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6 Current velocity distribution.





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 190.0 m Bottom depth : 250.0 m

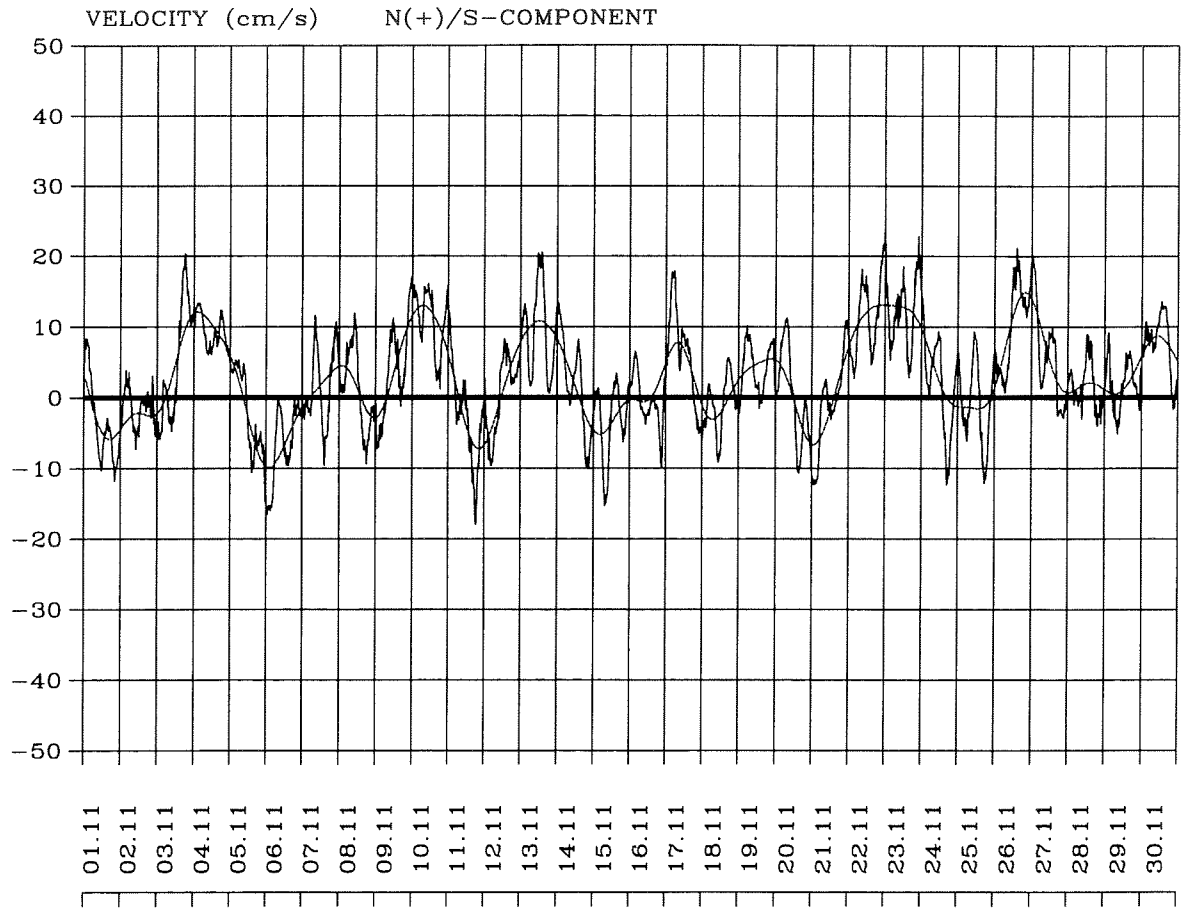
Time interval : 20.00 minutes. Instrument no. : 10804

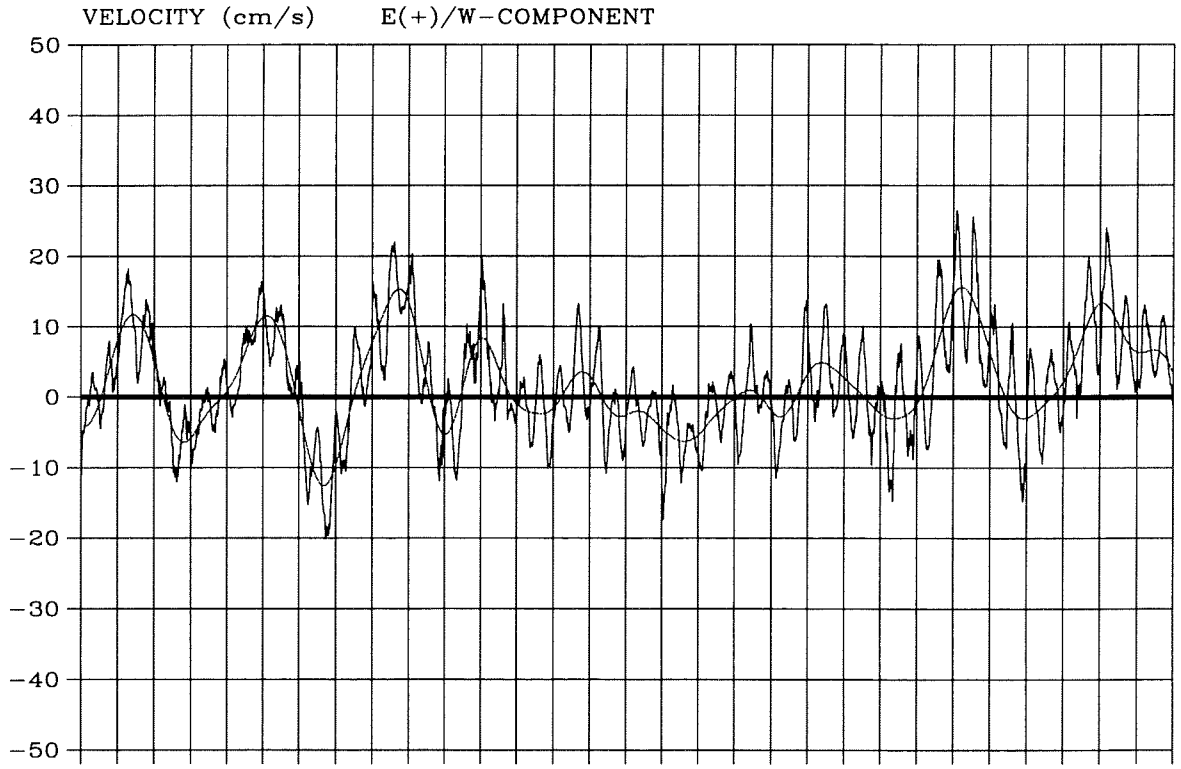
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





Northern Central Bank, Barents Sea

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Instrument depth : 190.0 m Bottom depth : 250.0 m

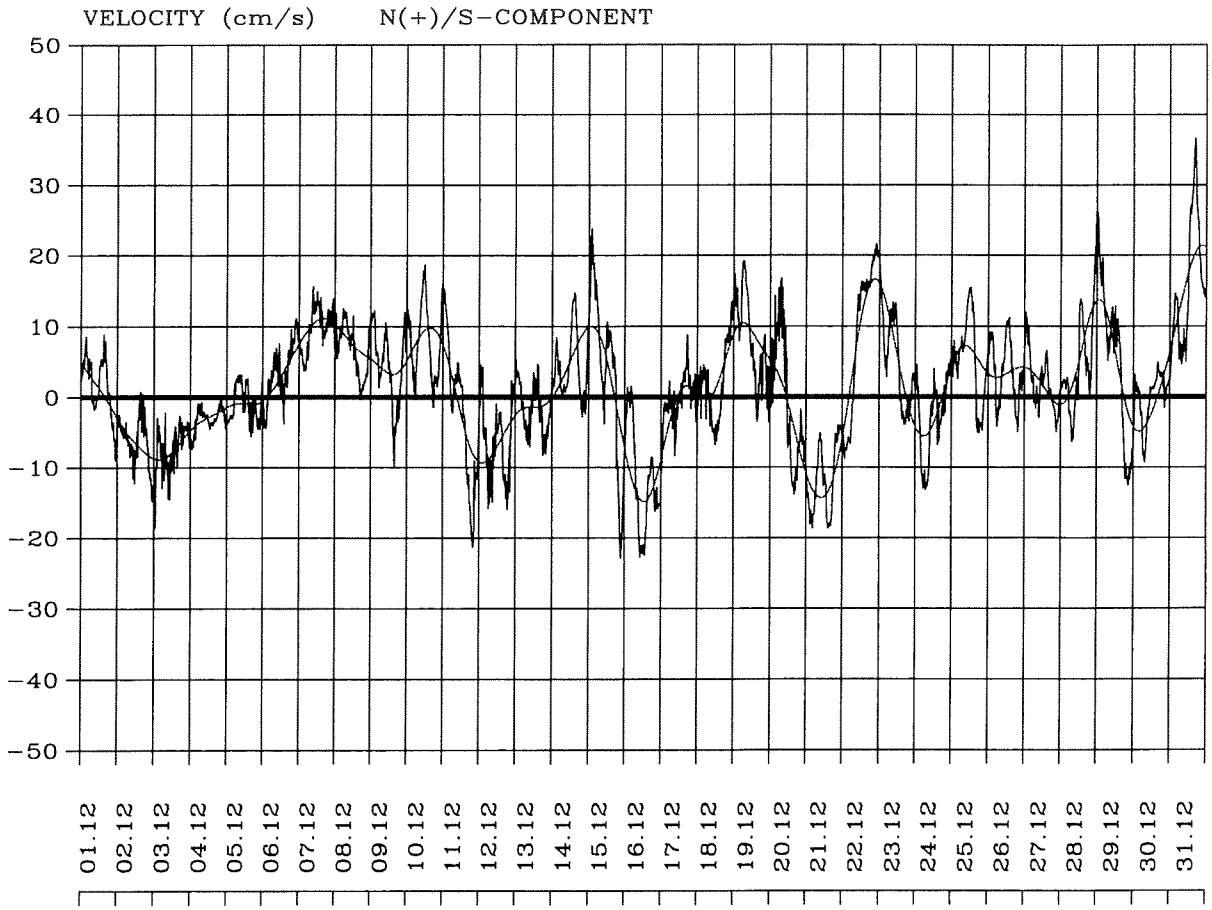
Time interval : 20.00 minutes. Instrument no. : 10804

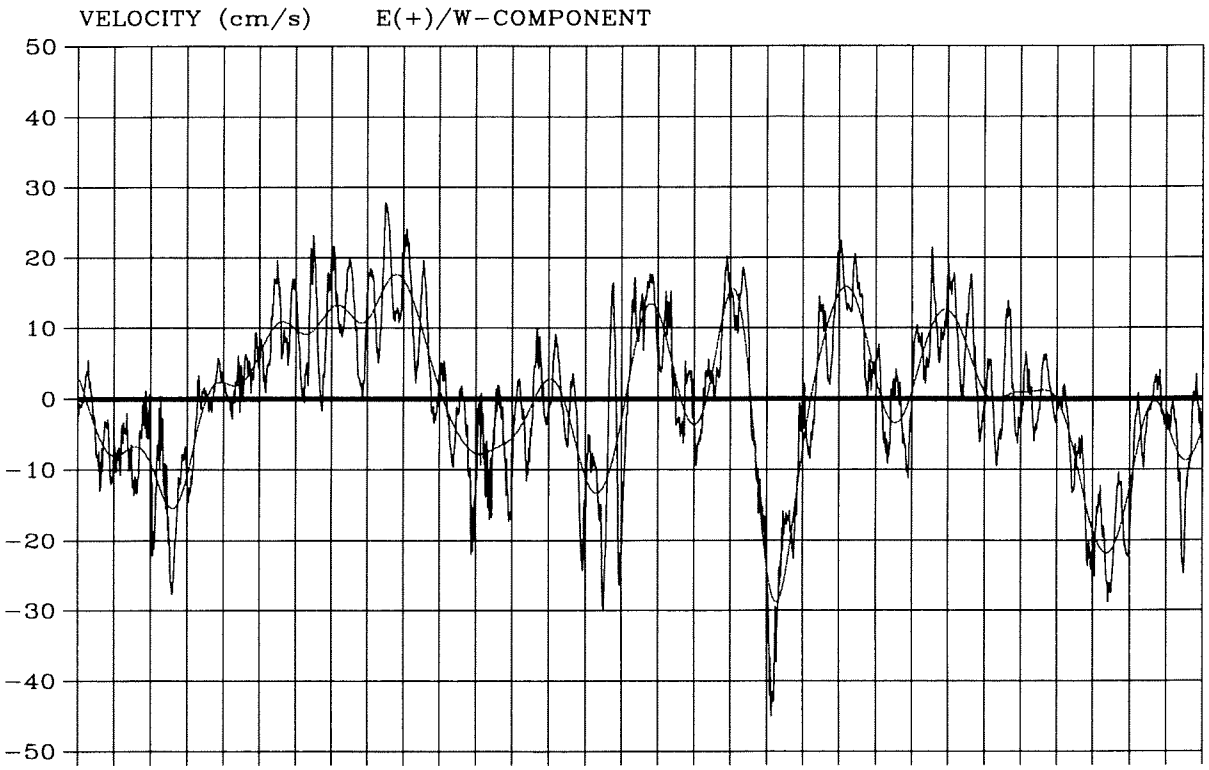
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





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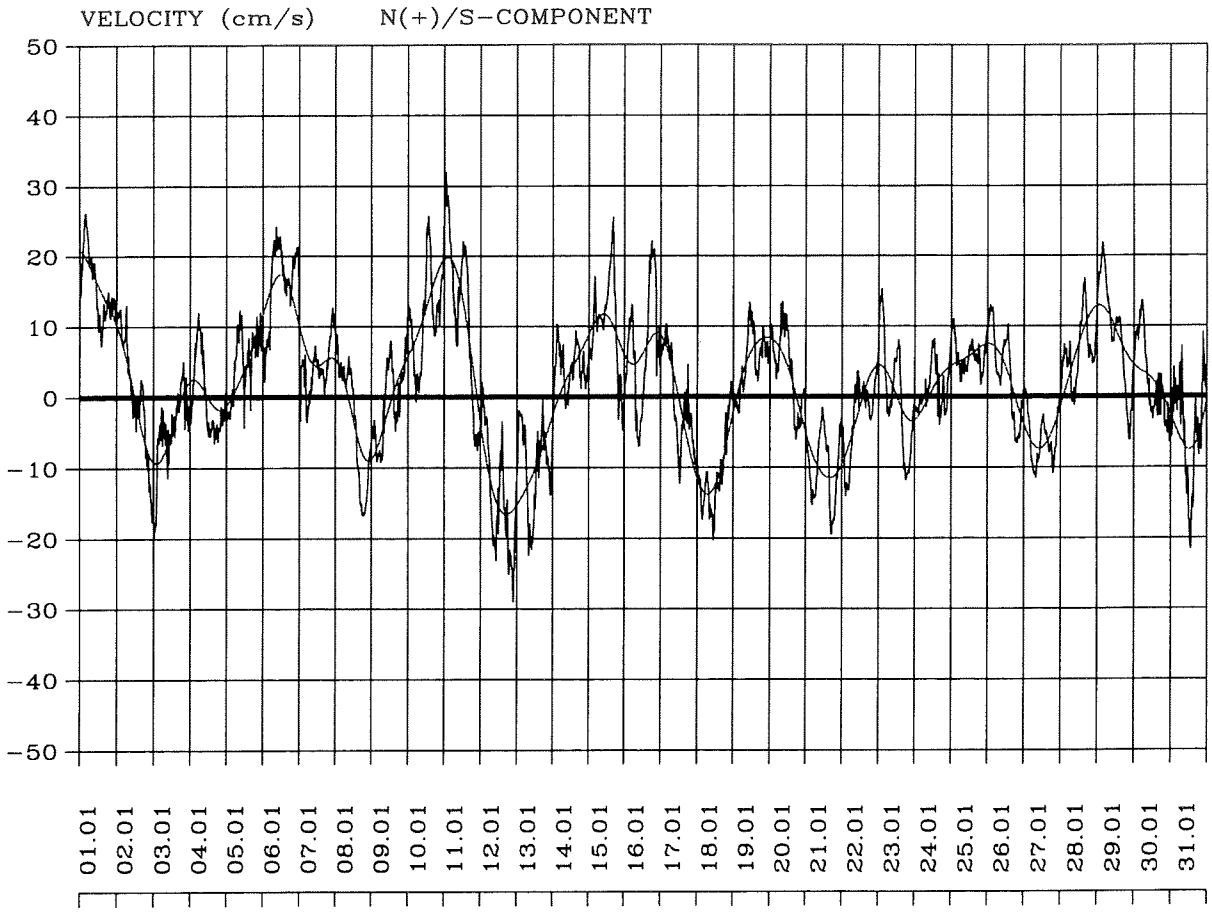
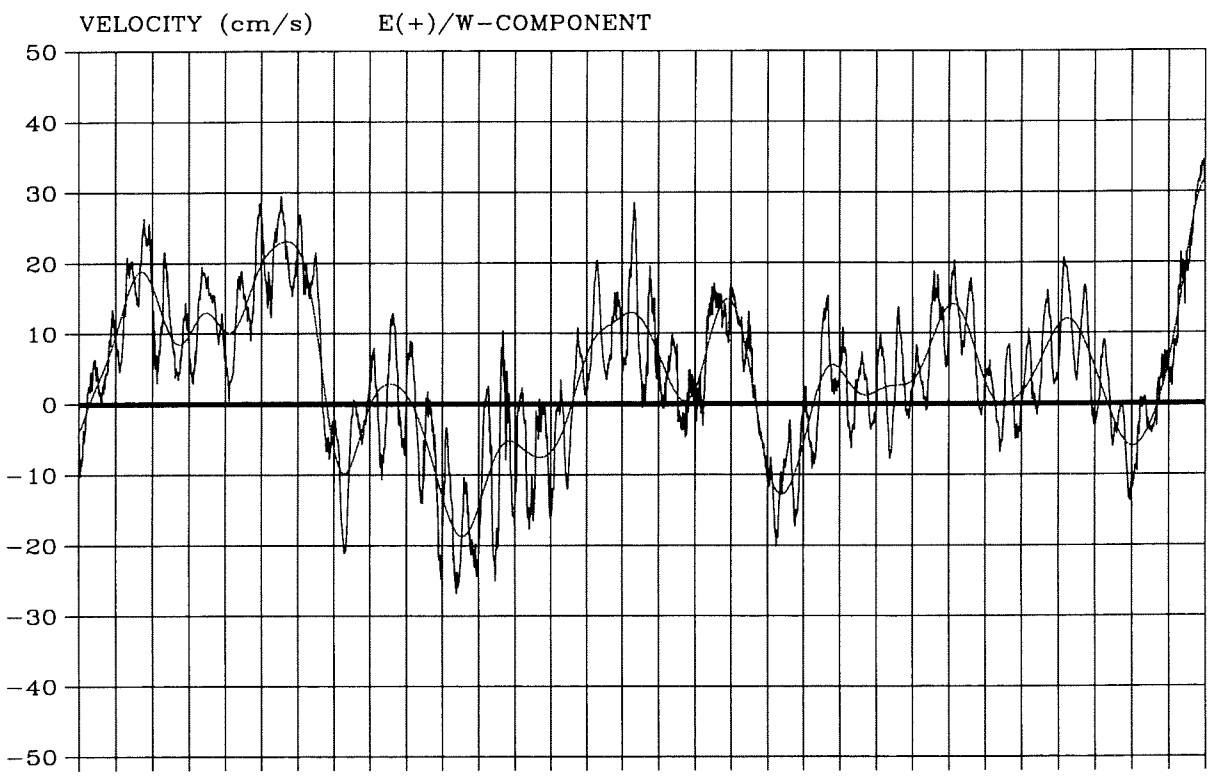
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





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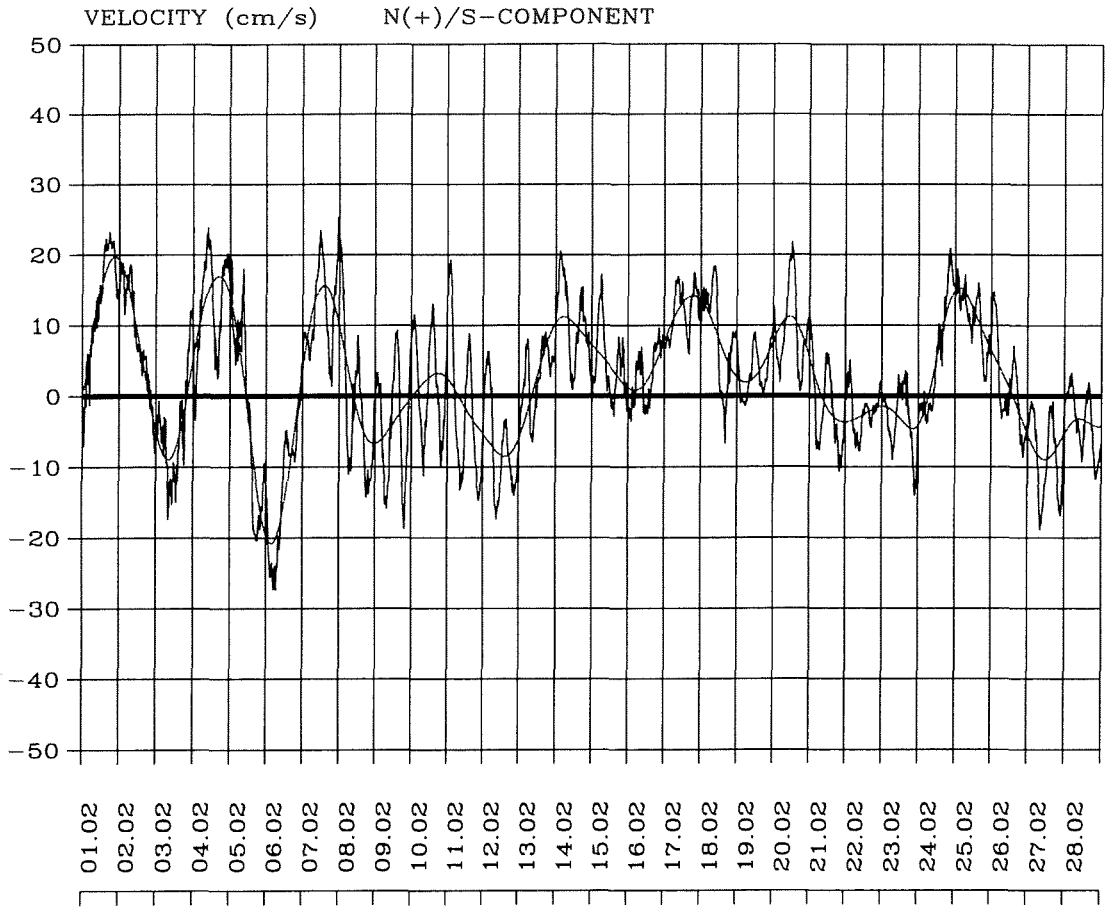
Time interval : 20.00 minutes. Instrument no. : 10804

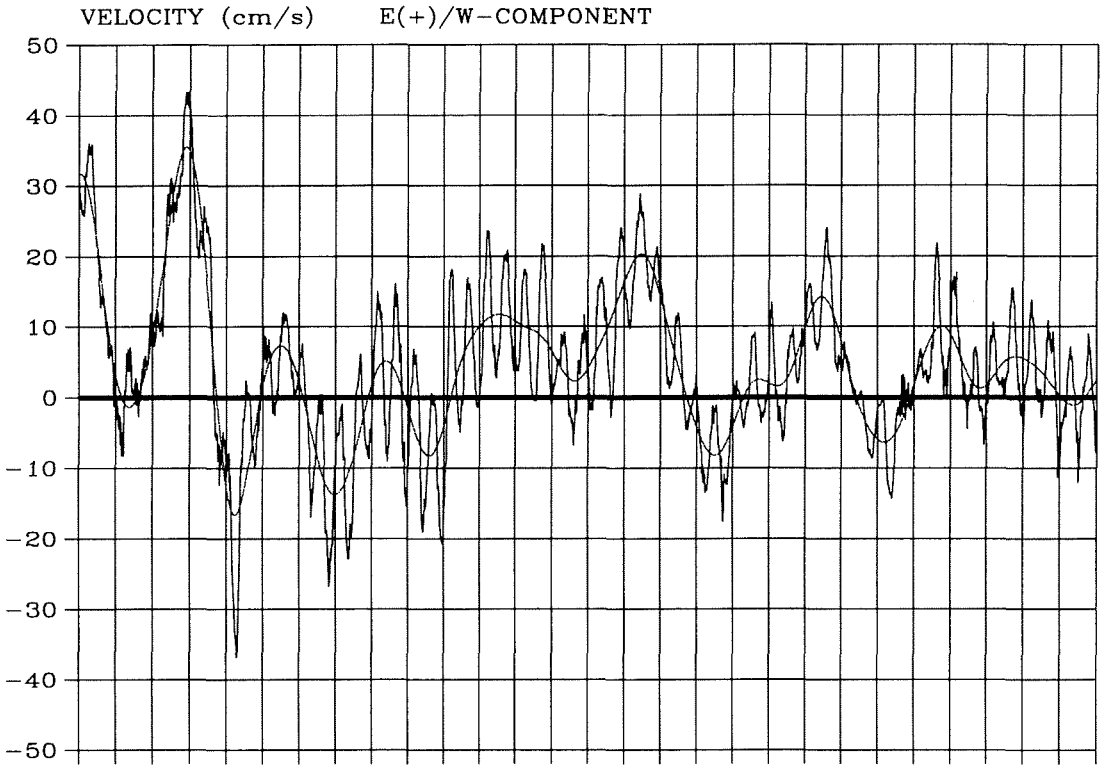
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





Northern Central Bank, Barents Sea

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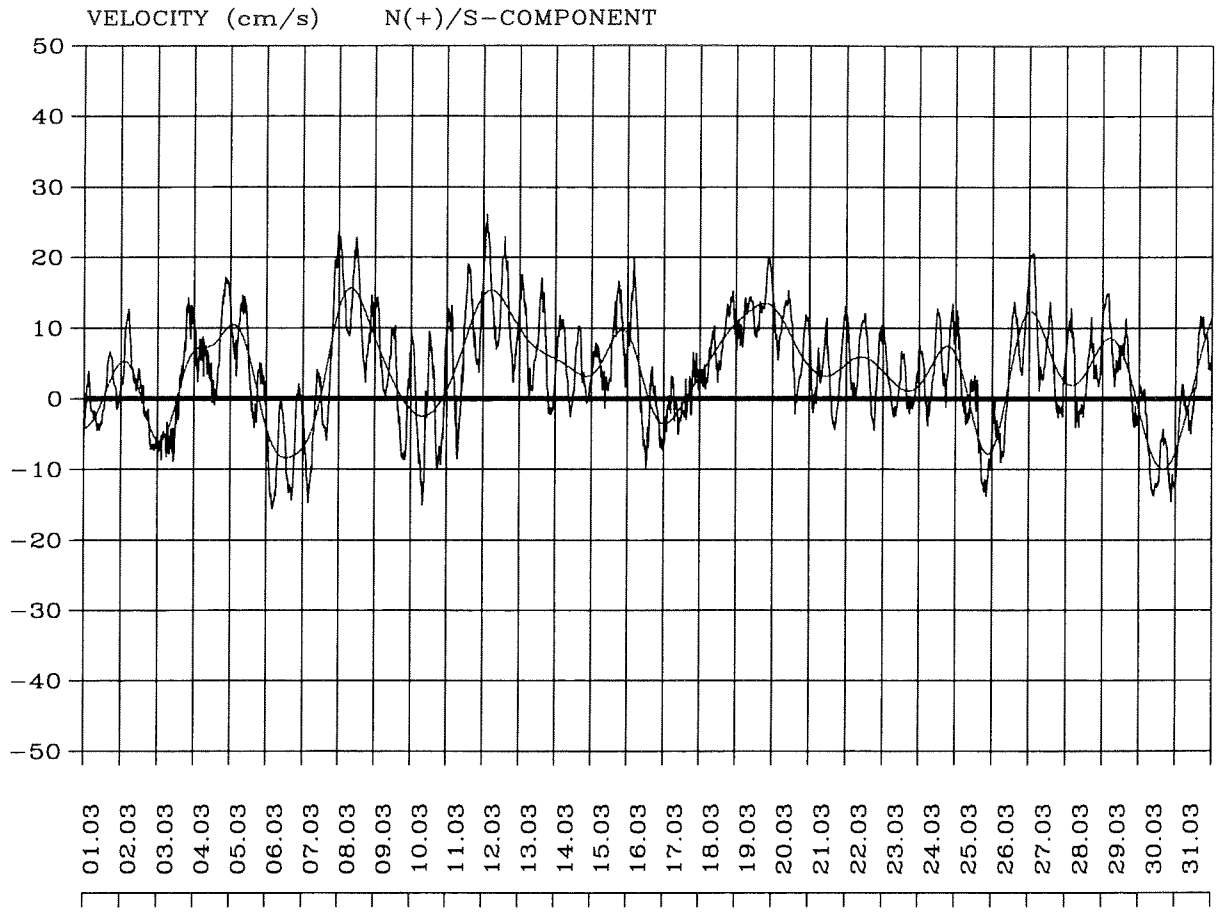
Time interval : 20.00 minutes. Instrument no. : 10804

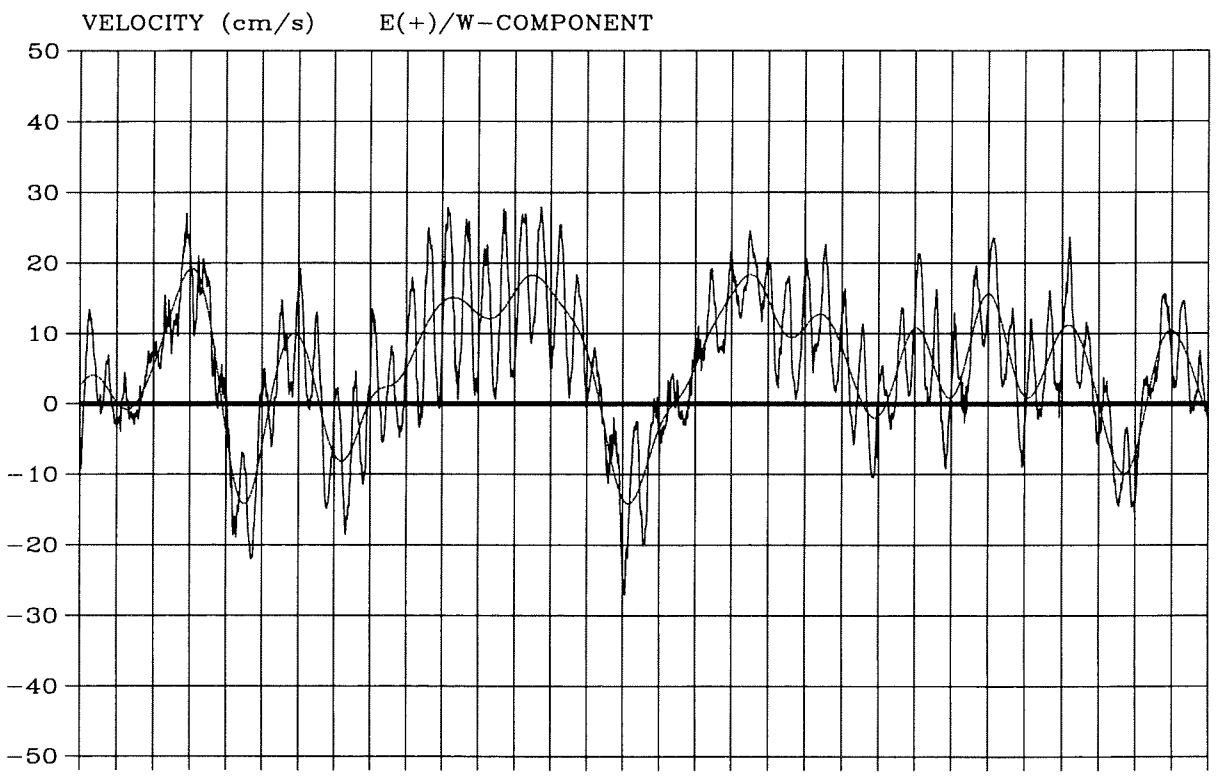
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





Northern Central Bank, Barents Sea

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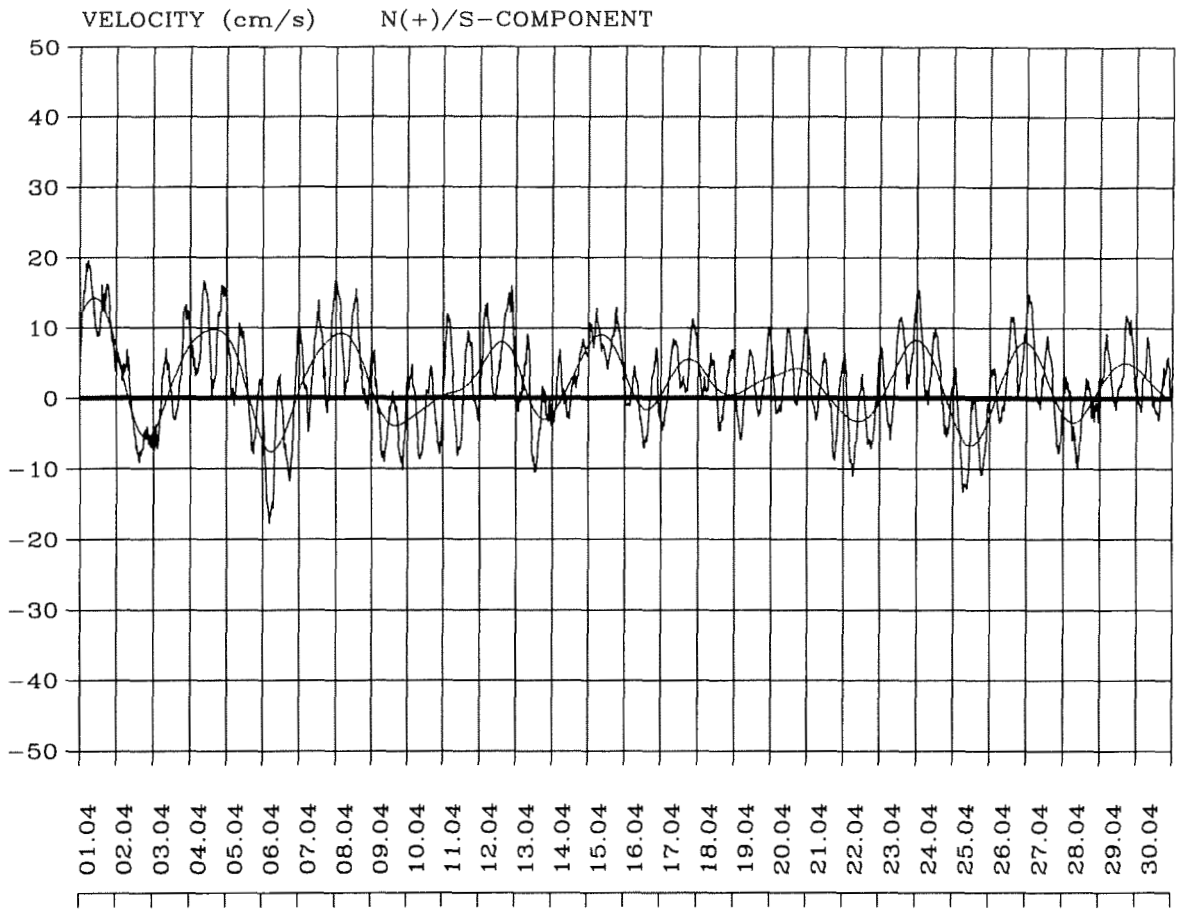
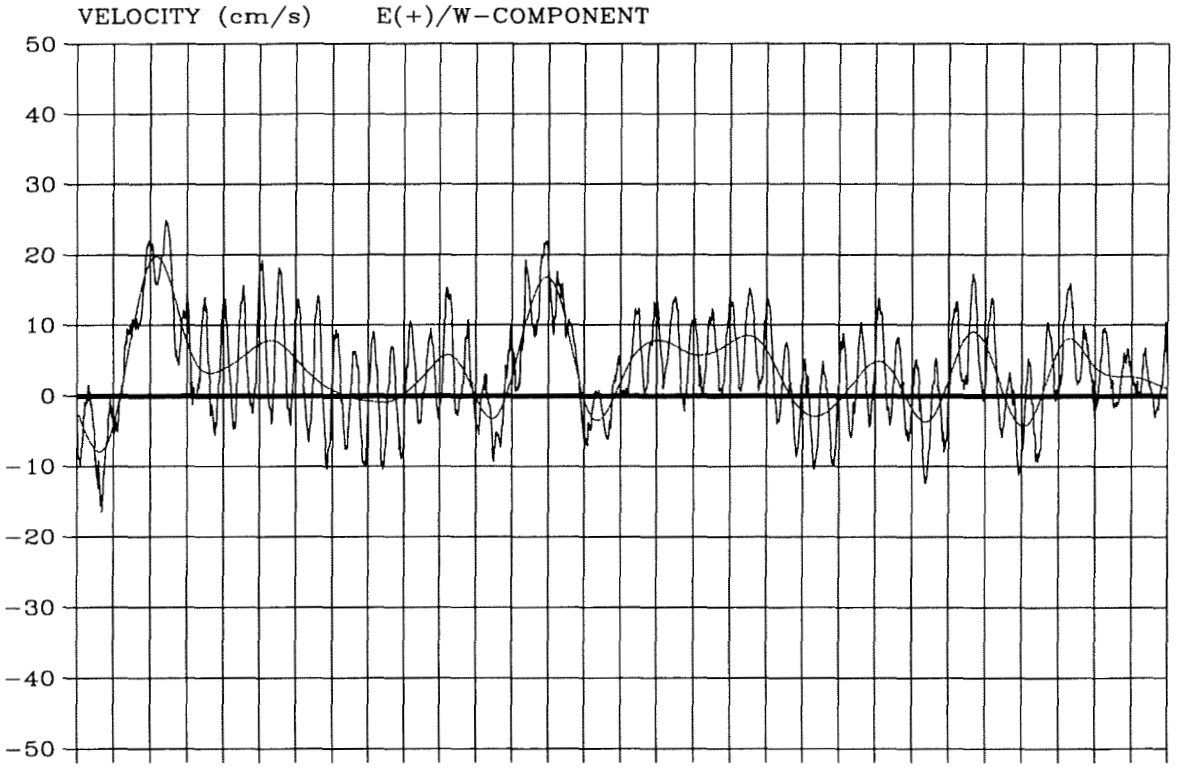
IMR

Fig. 1-3-6

Continues.....





Northern Central Bank, Barents Sea

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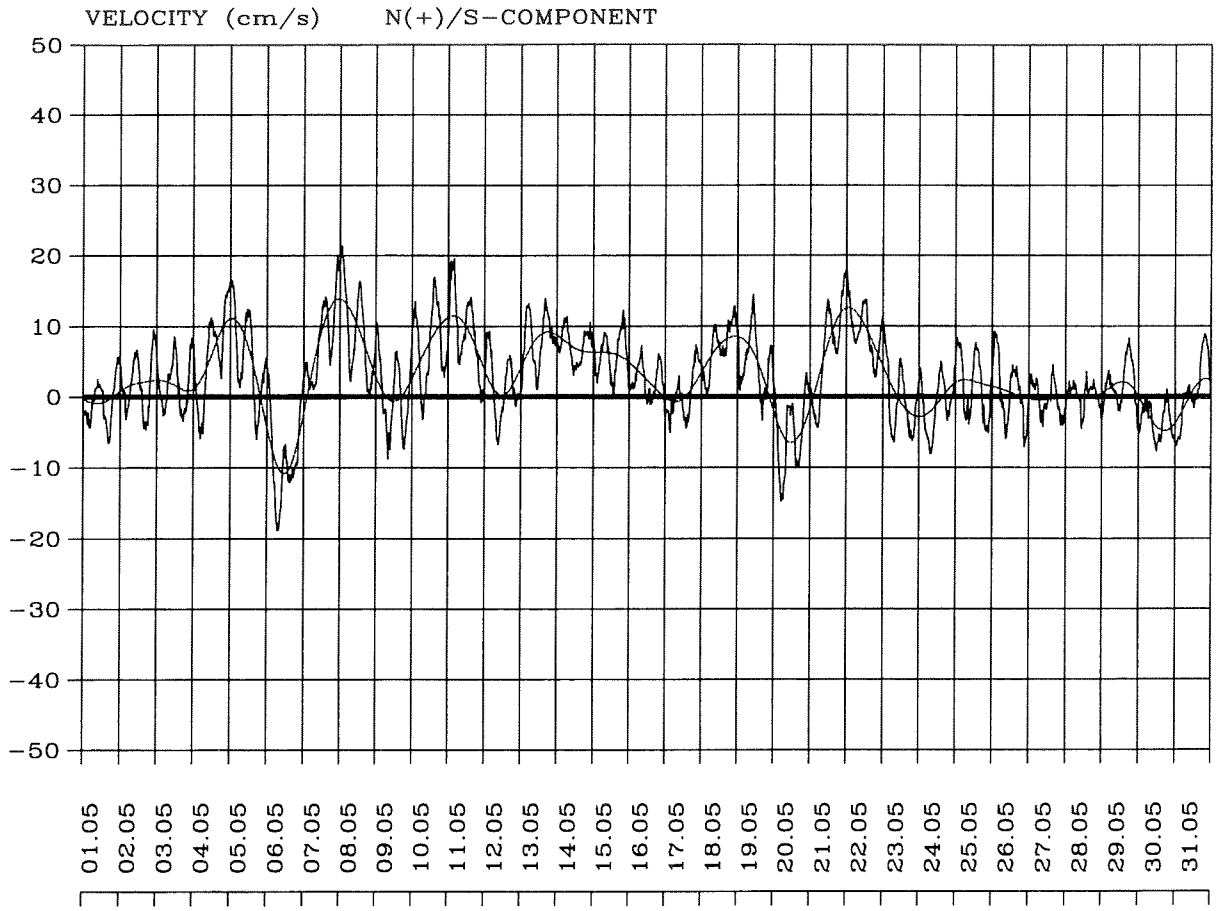
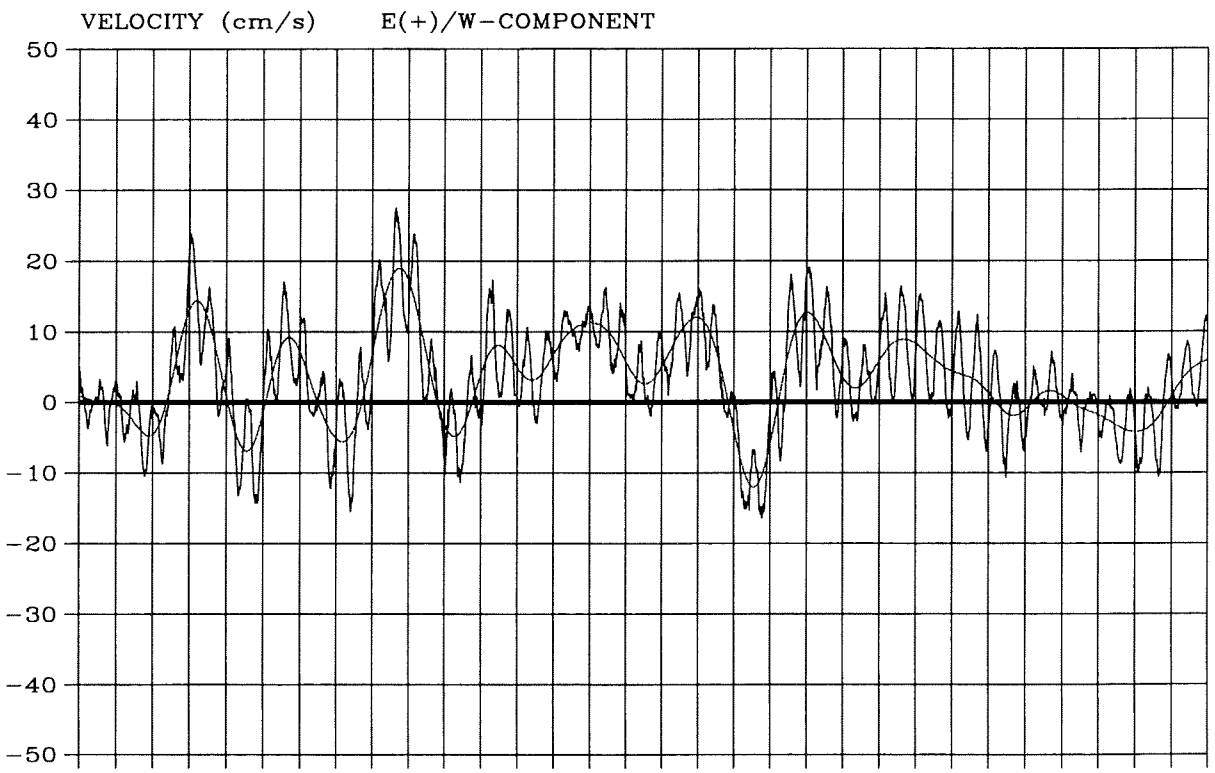
IMR

Fig. 1-3-6

Continues.....





Northern Central Bank, Barents Sea

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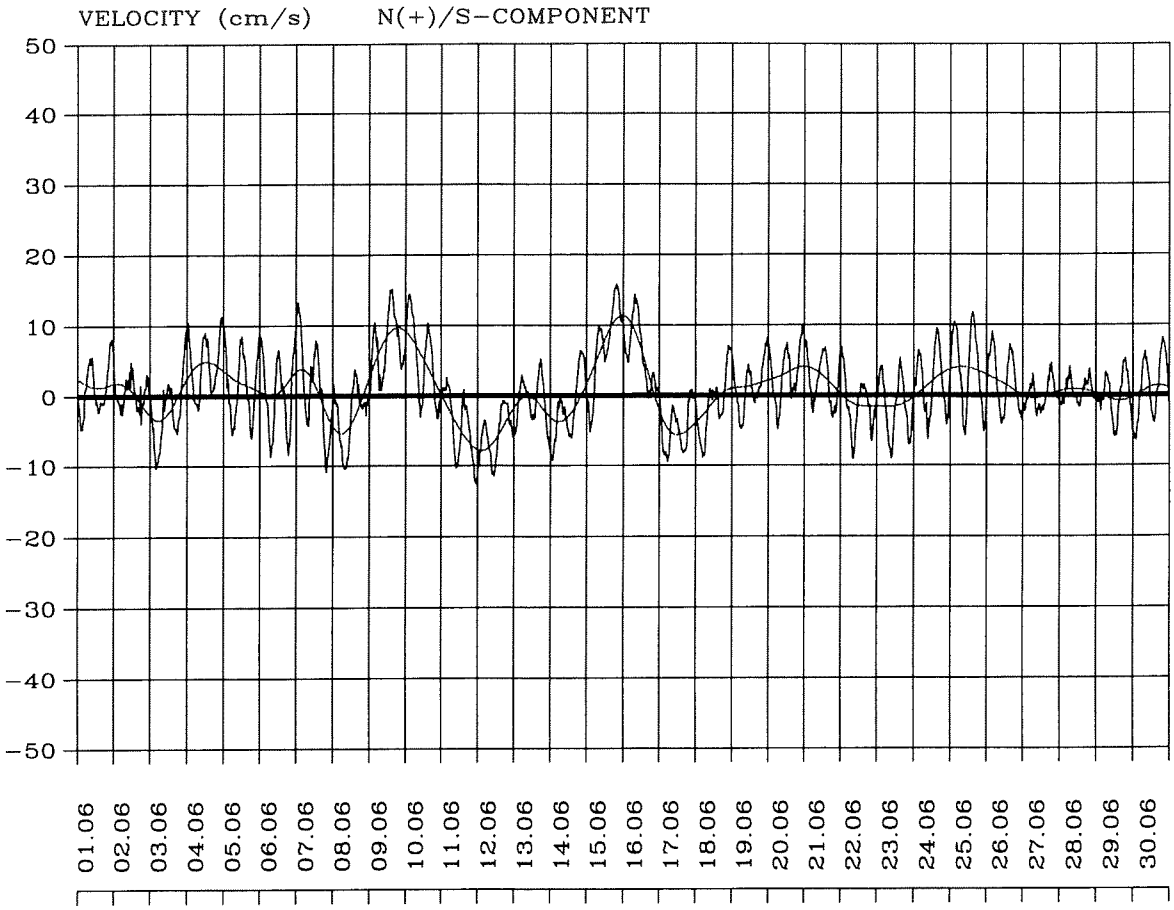
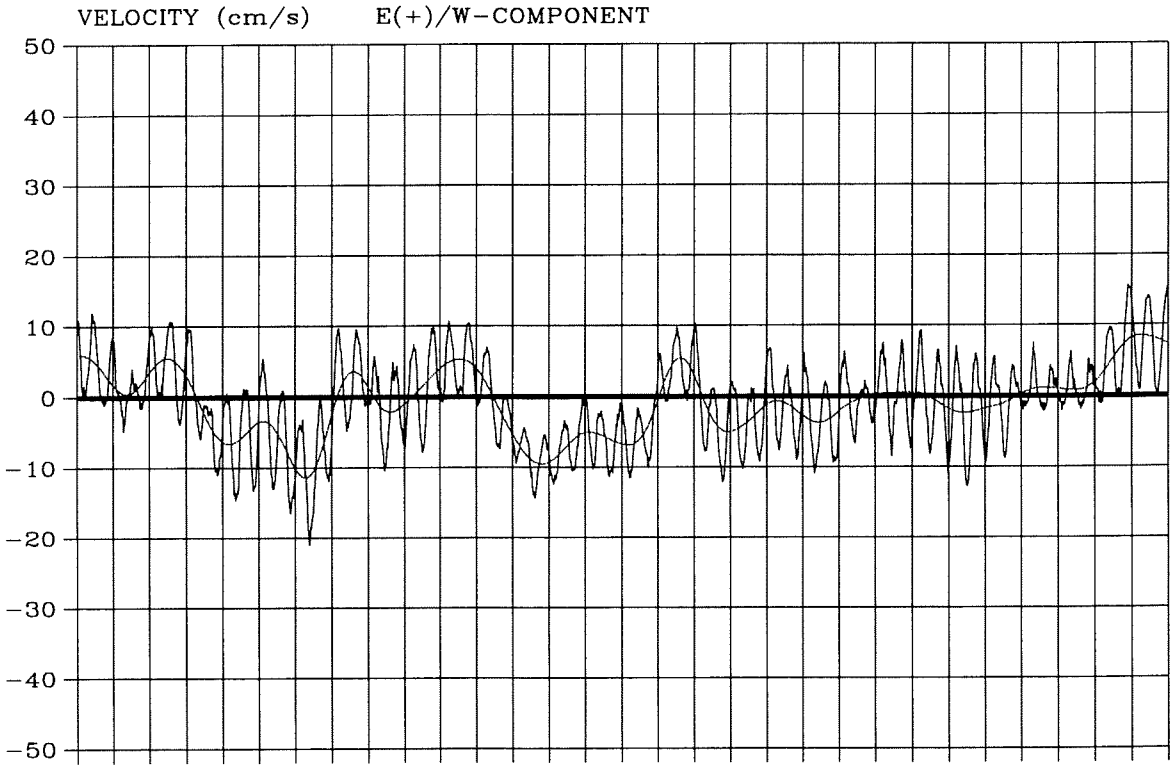
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





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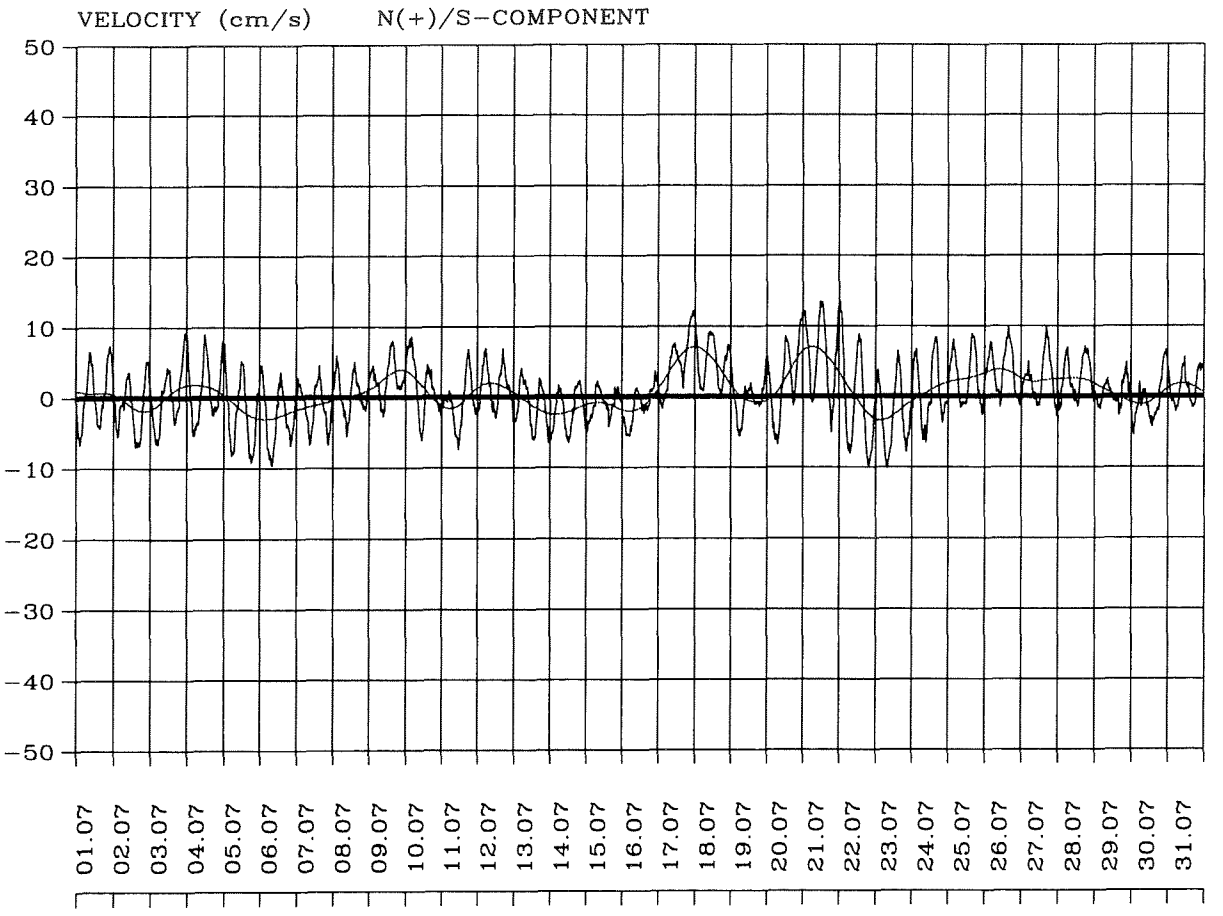
Time interval : 20.00 minutes. Instrument no. : 10804

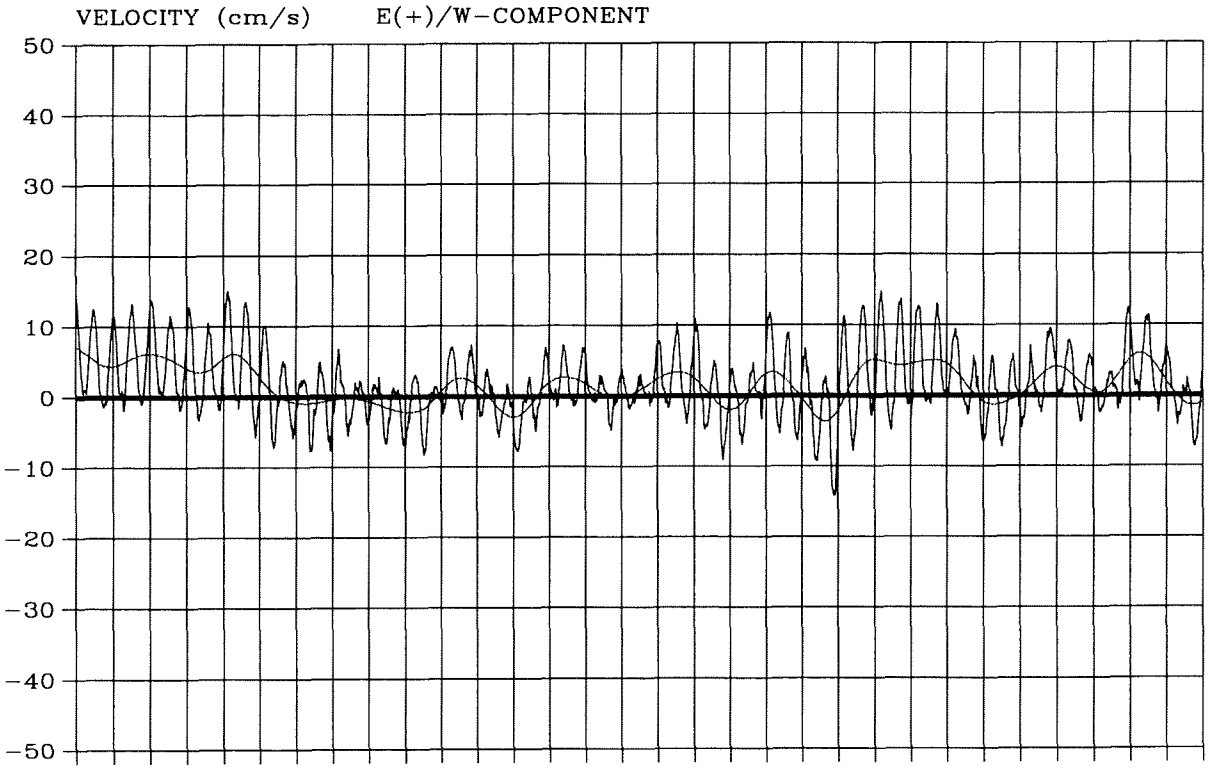
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

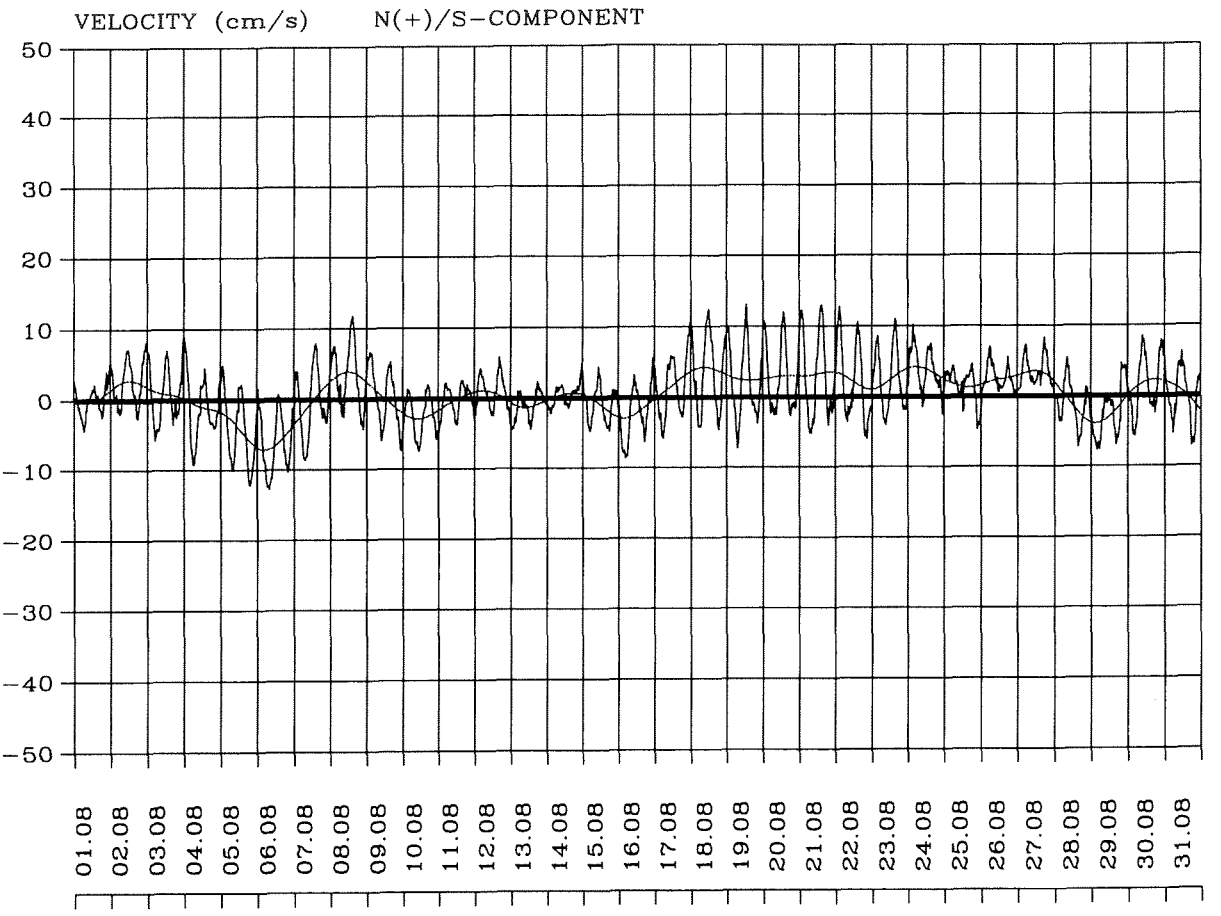
Time interval : 20.00 minutes. Instrument no. : 10804

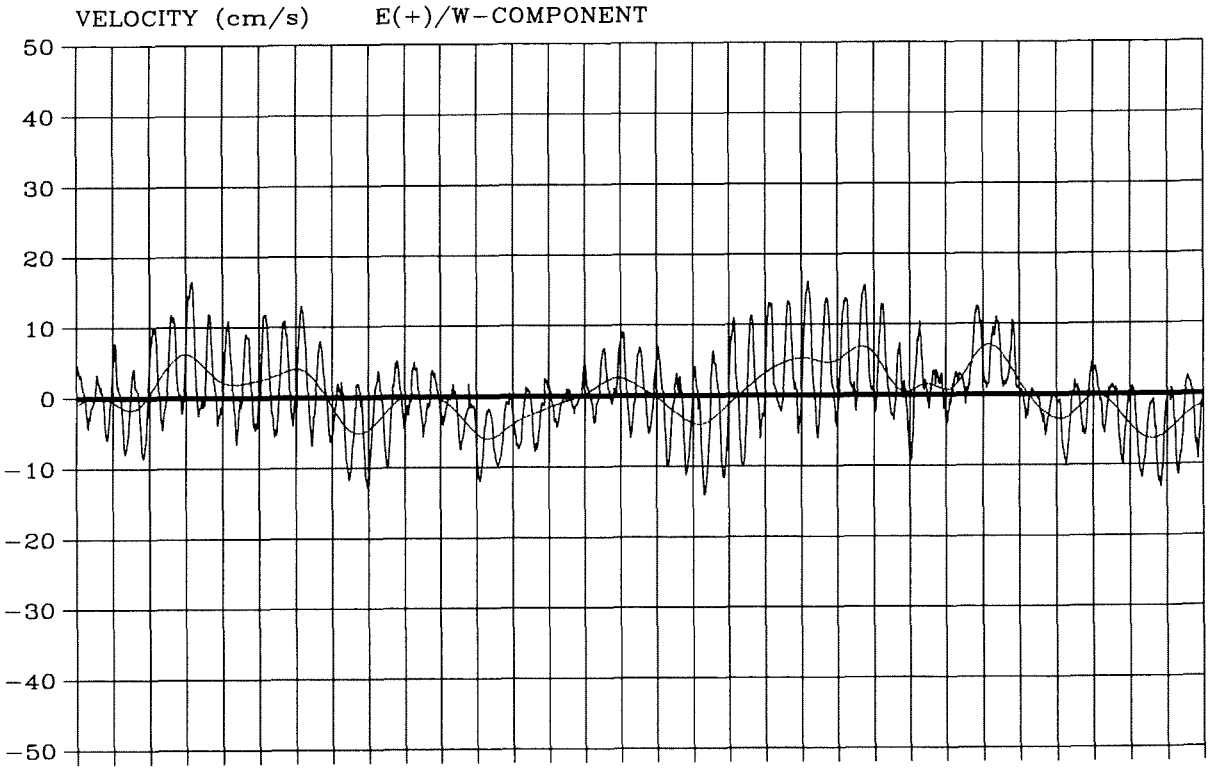
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





Northern Central Bank, Barents Sea

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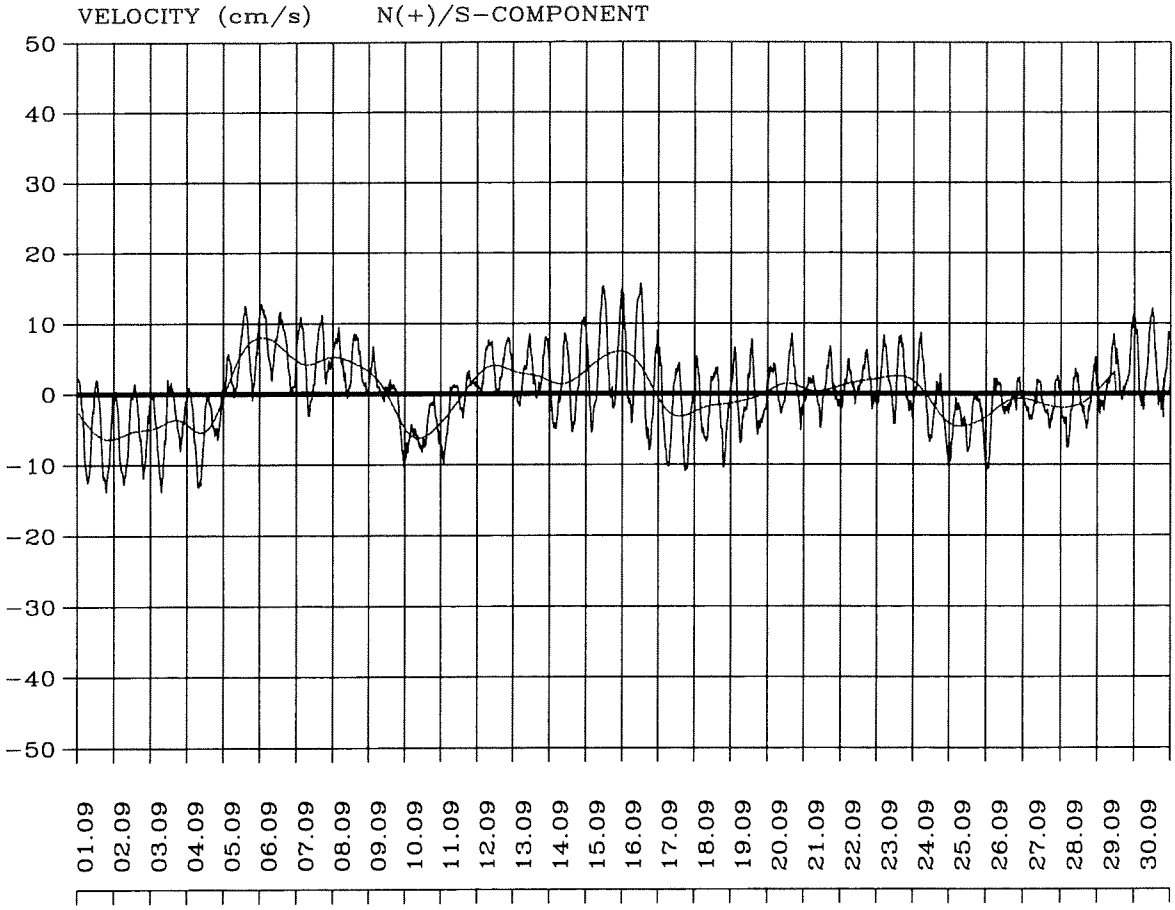
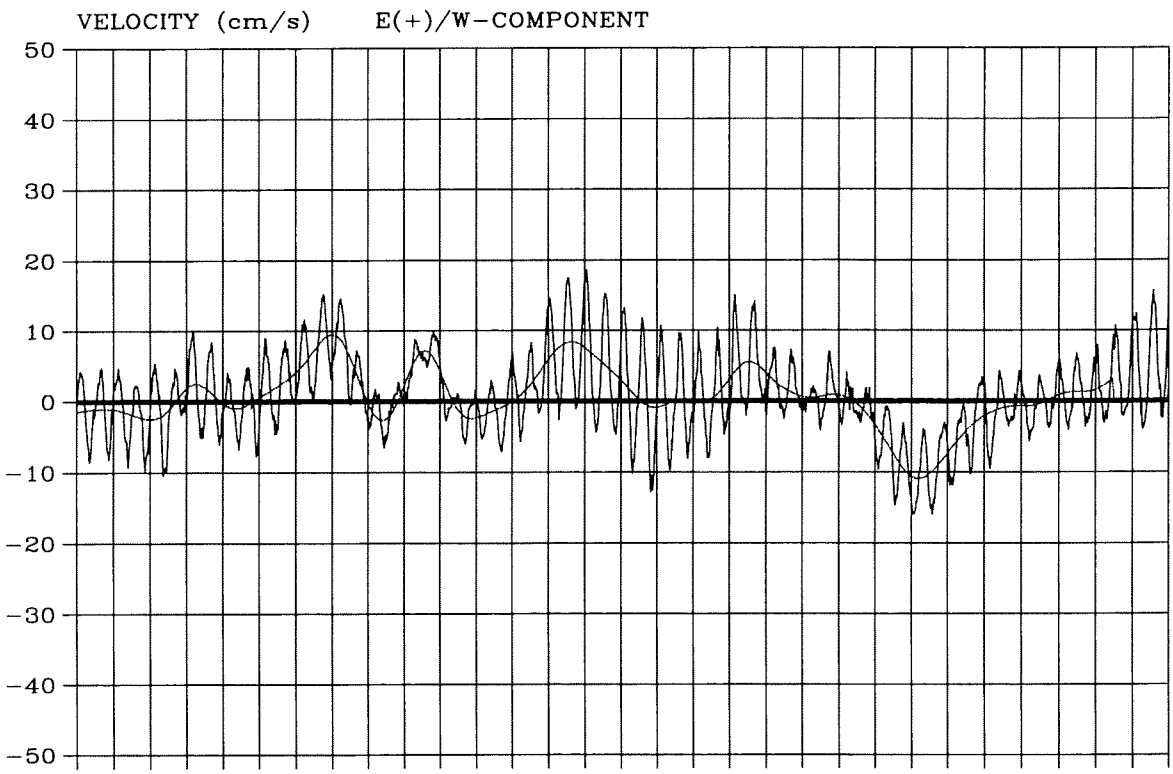
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-6

Continues.....





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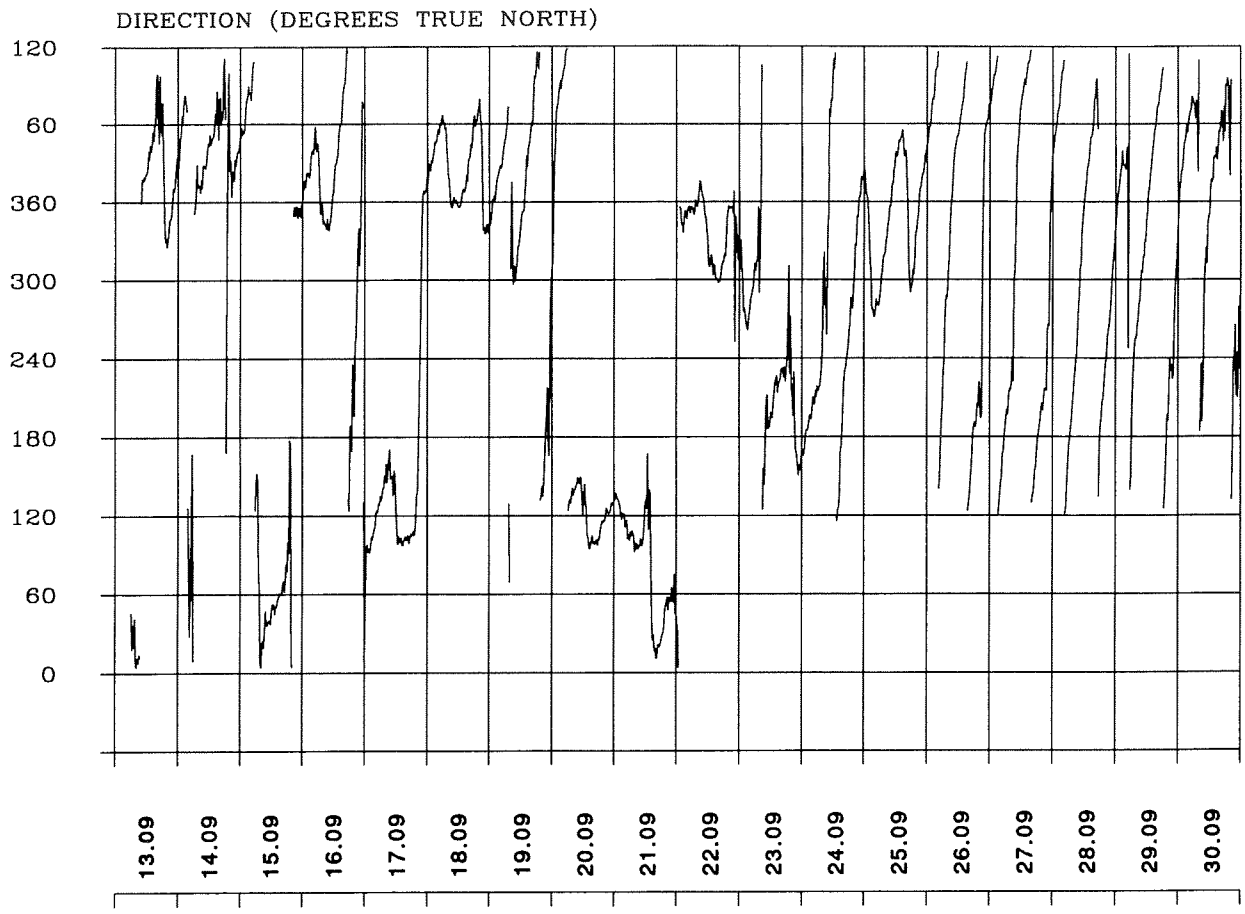
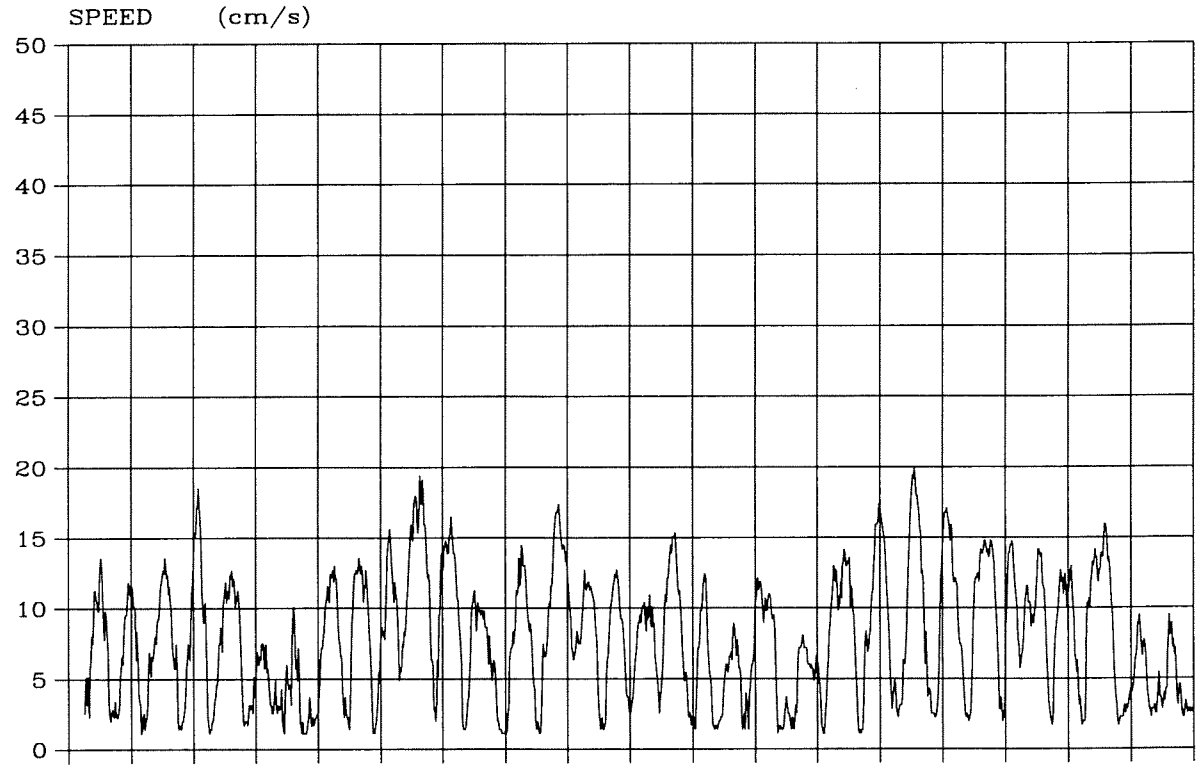
IMR

Fig. 1-3-6

Continues.....





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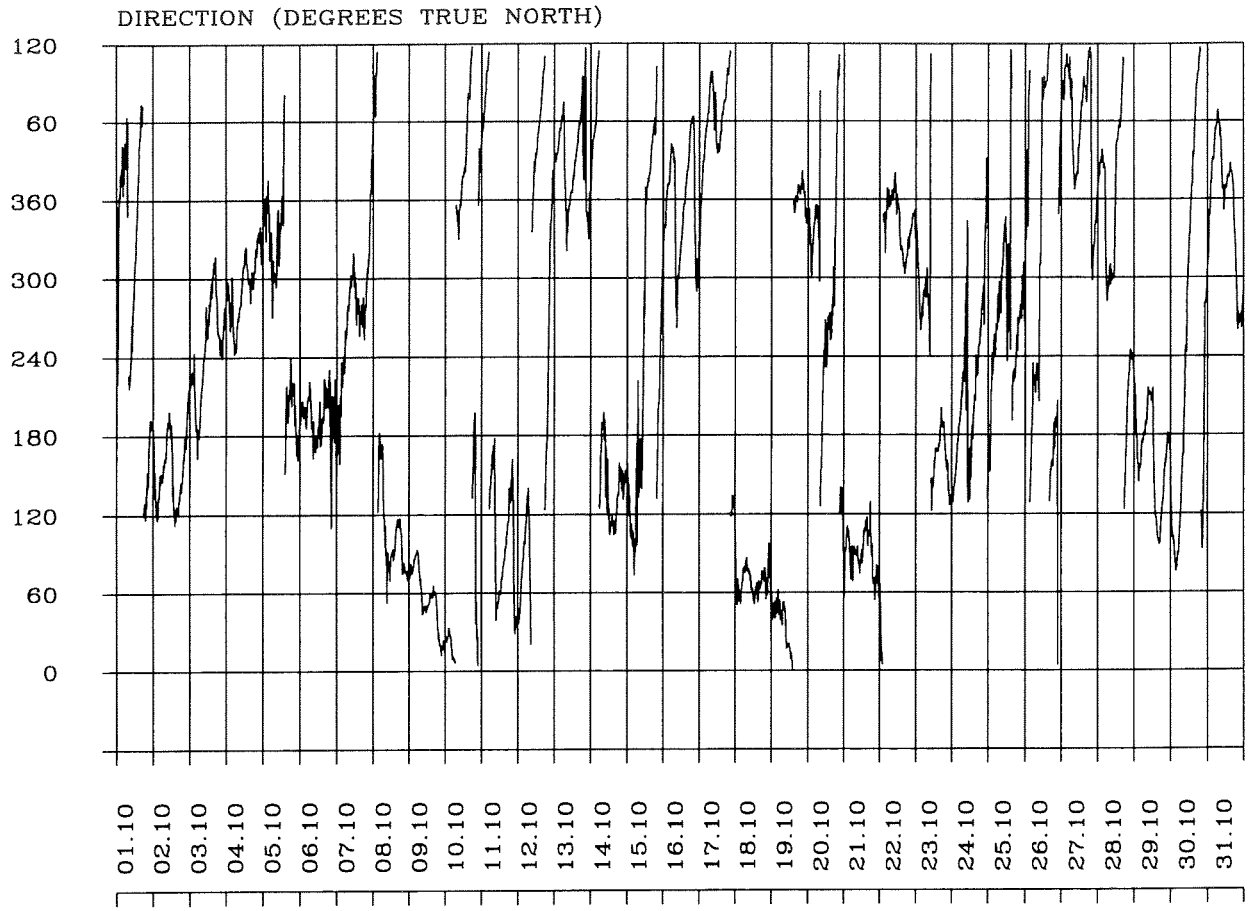
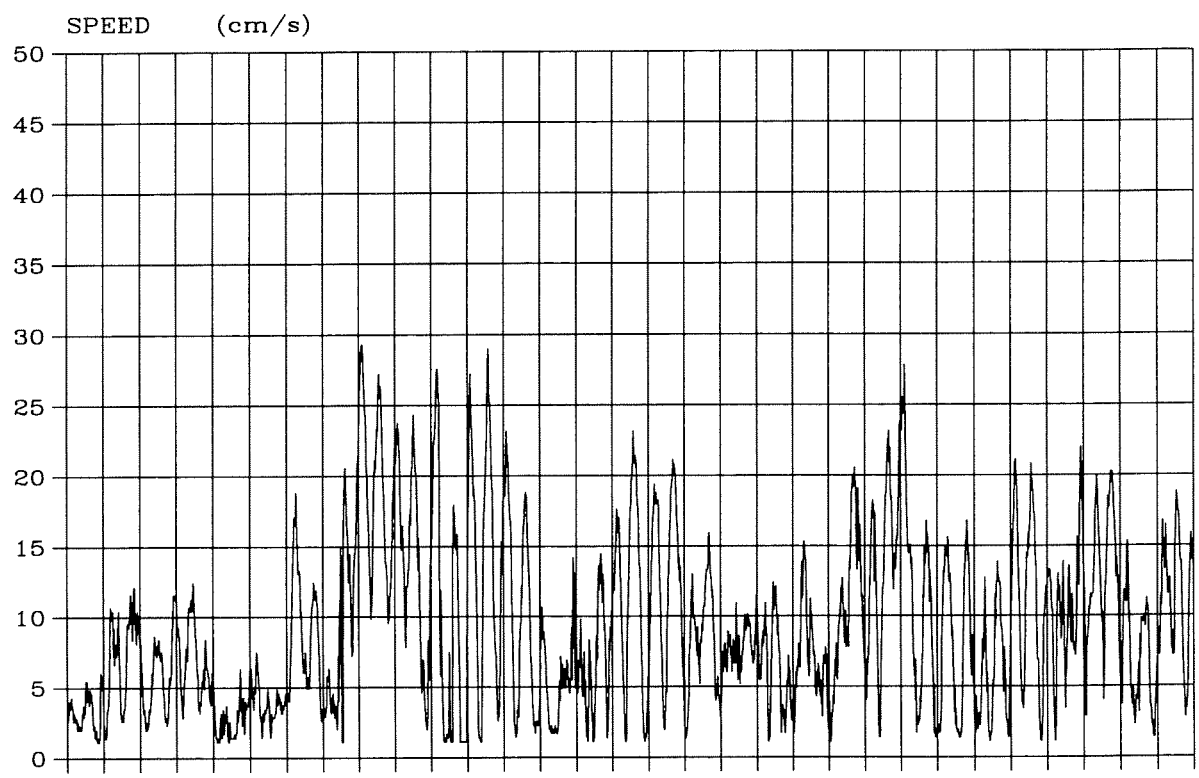
IMR

Fig. 1-3-7 Speed and direction of current.





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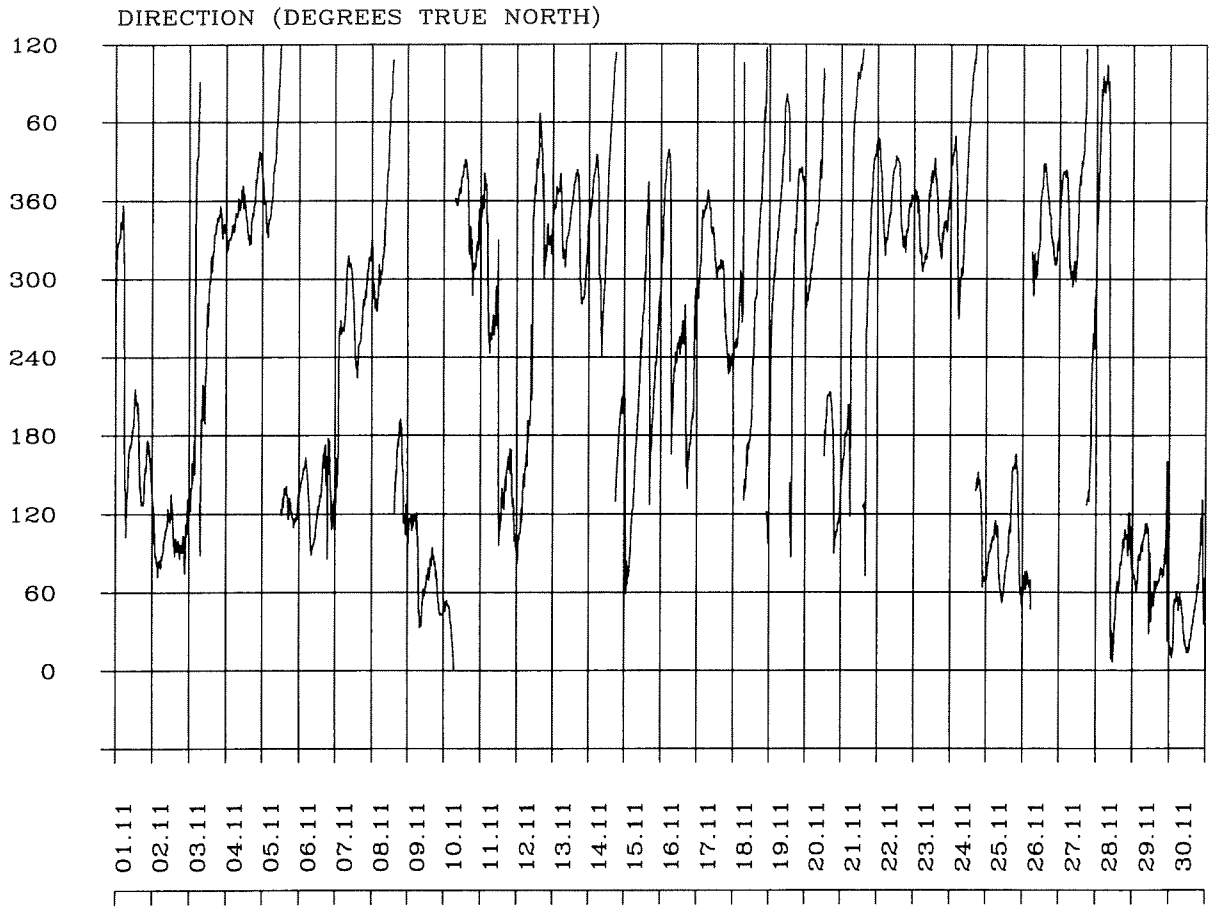
Time interval : 20.00 minutes. Instrument no. : 10804

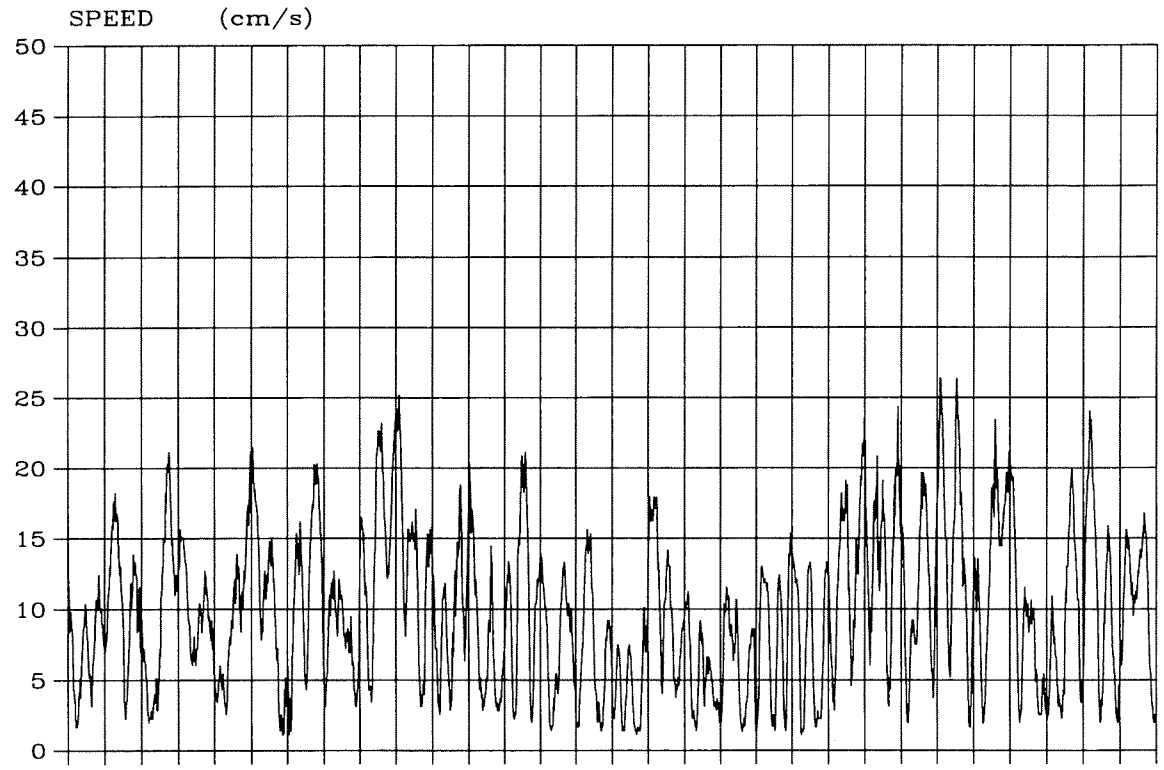
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





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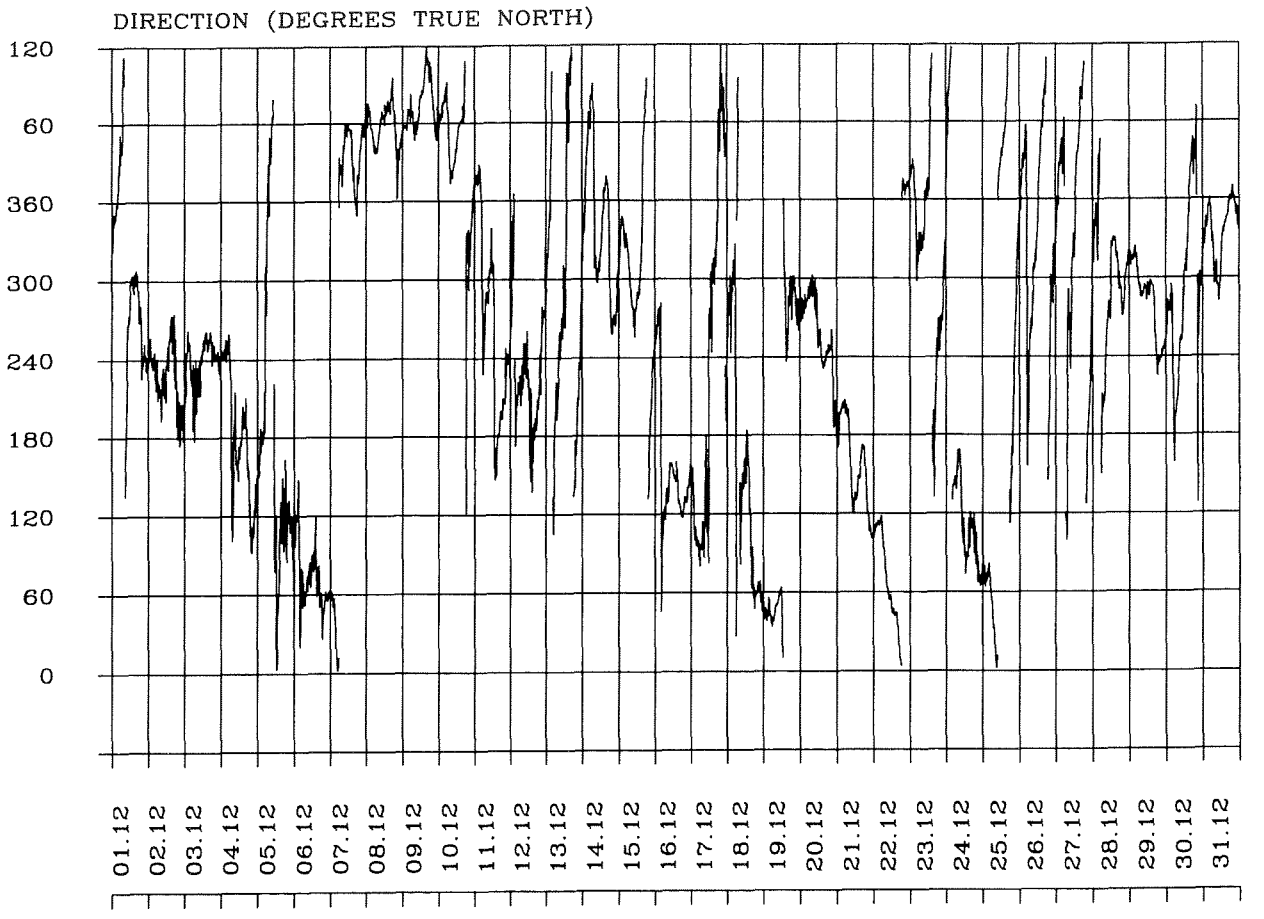
Time interval : 20.00 minutes. Instrument no. : 10804

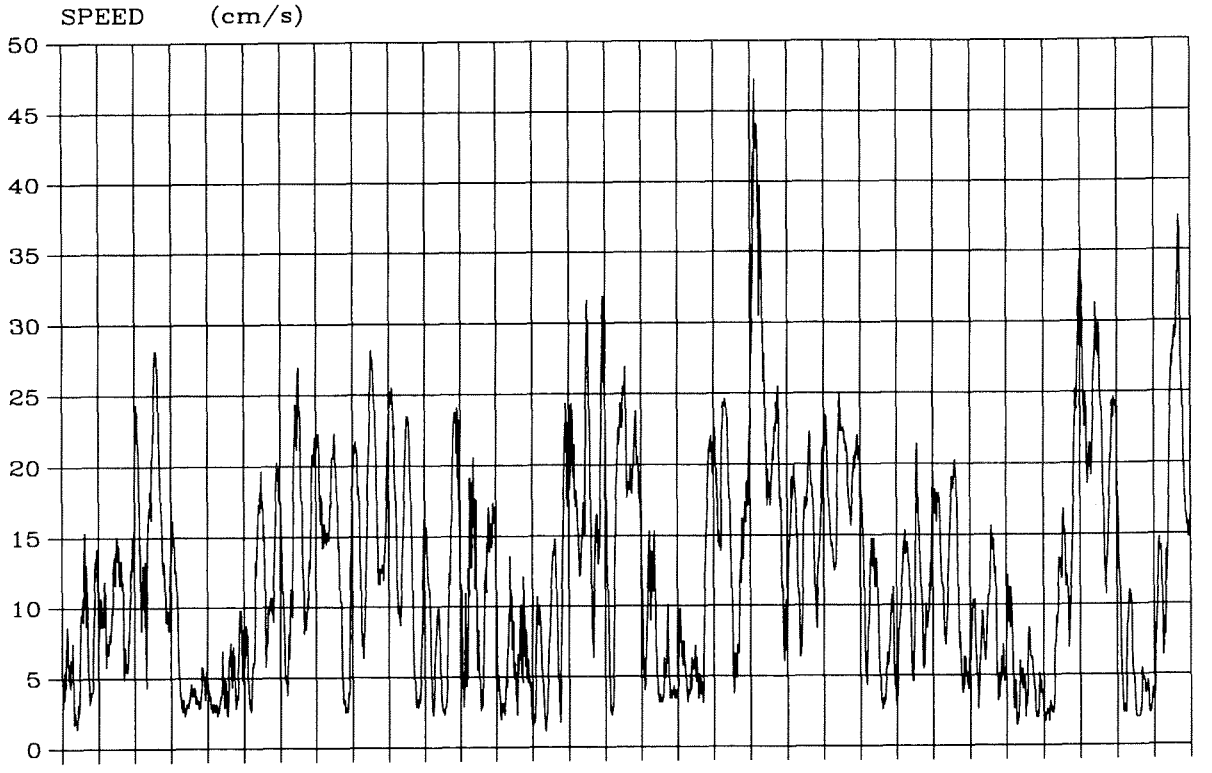
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





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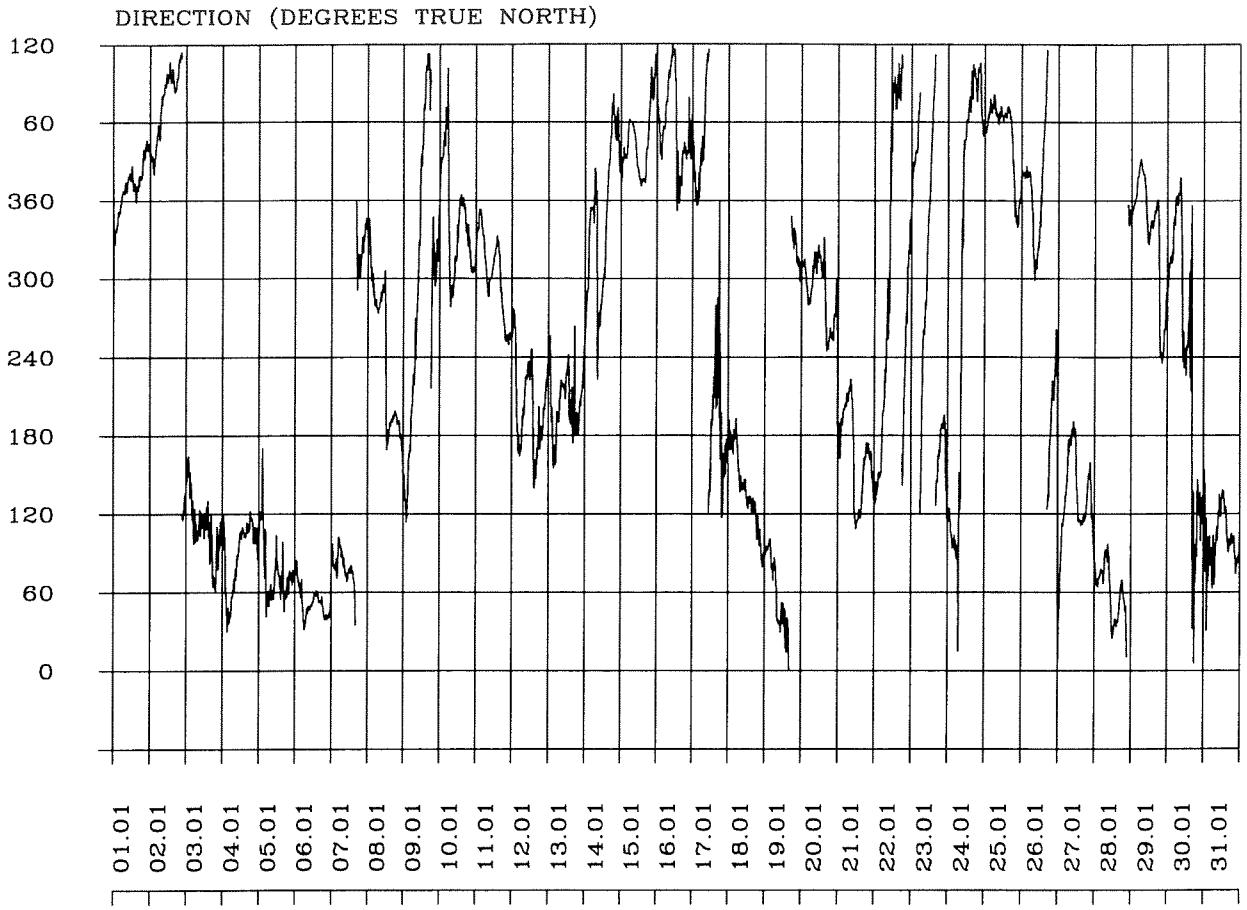
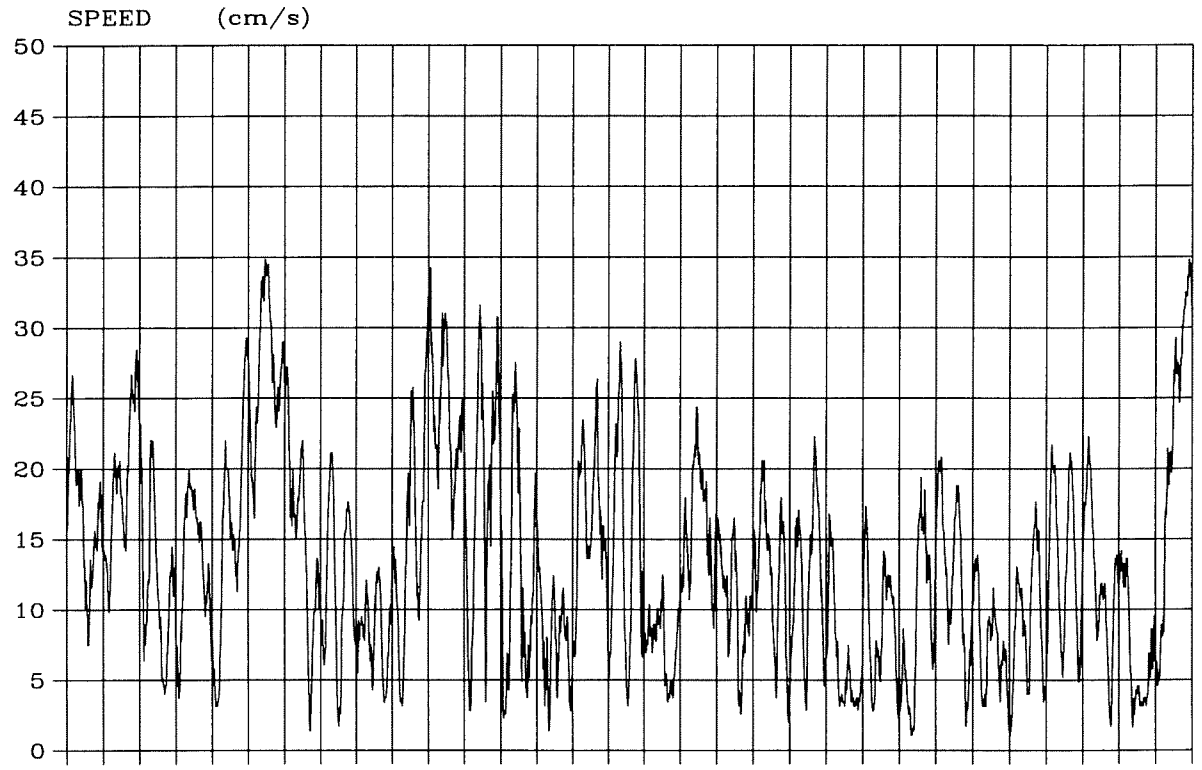
IMR

Fig. 1-3-7

Continues.....





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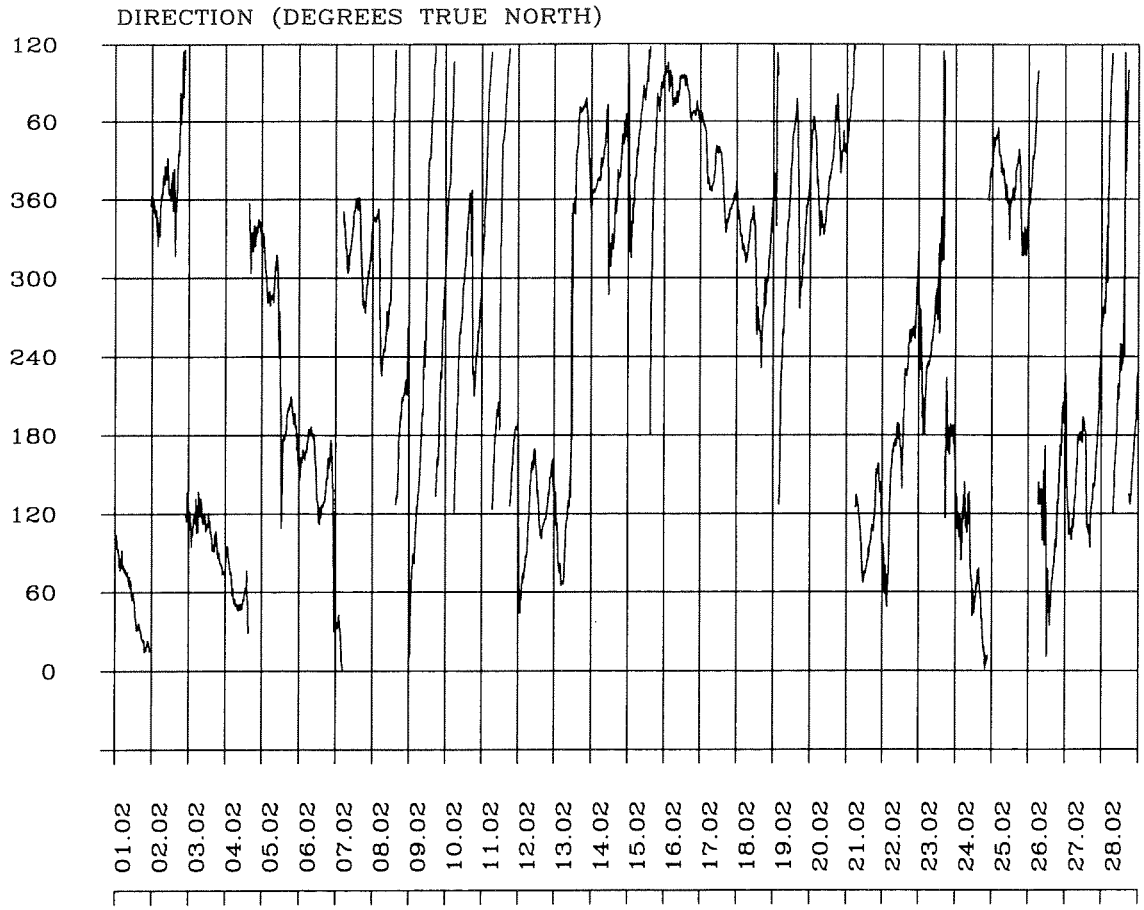
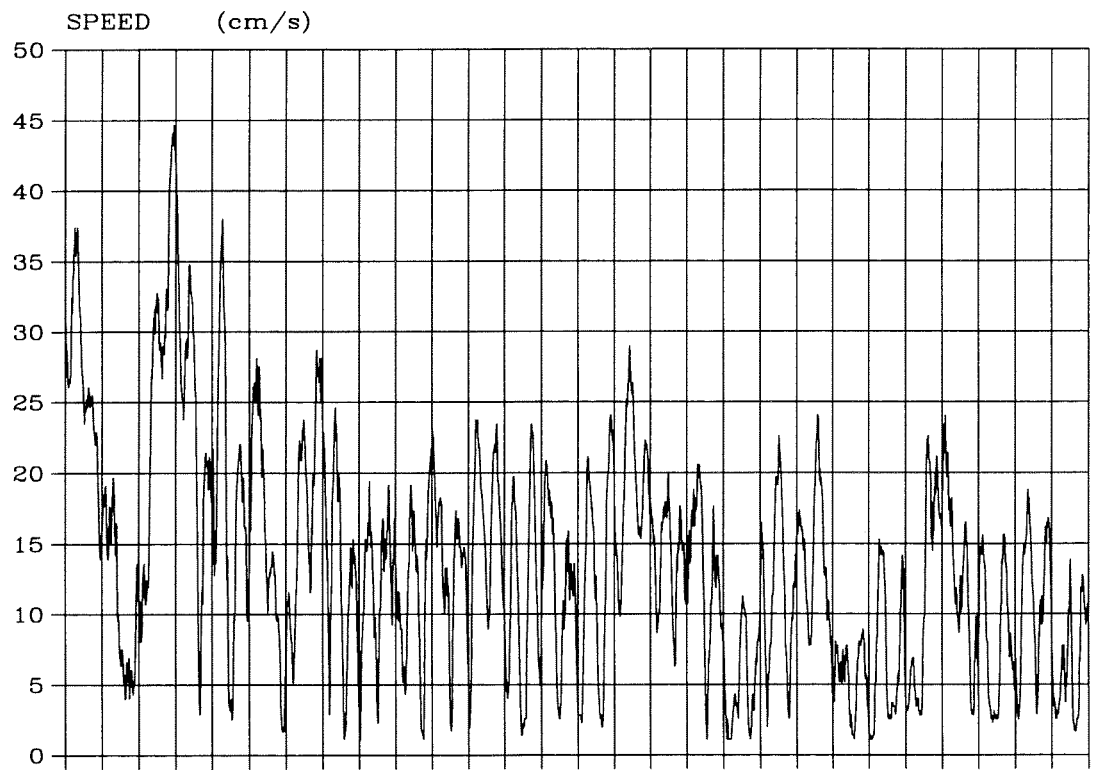
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





Northern Central Bank, Barents Sea

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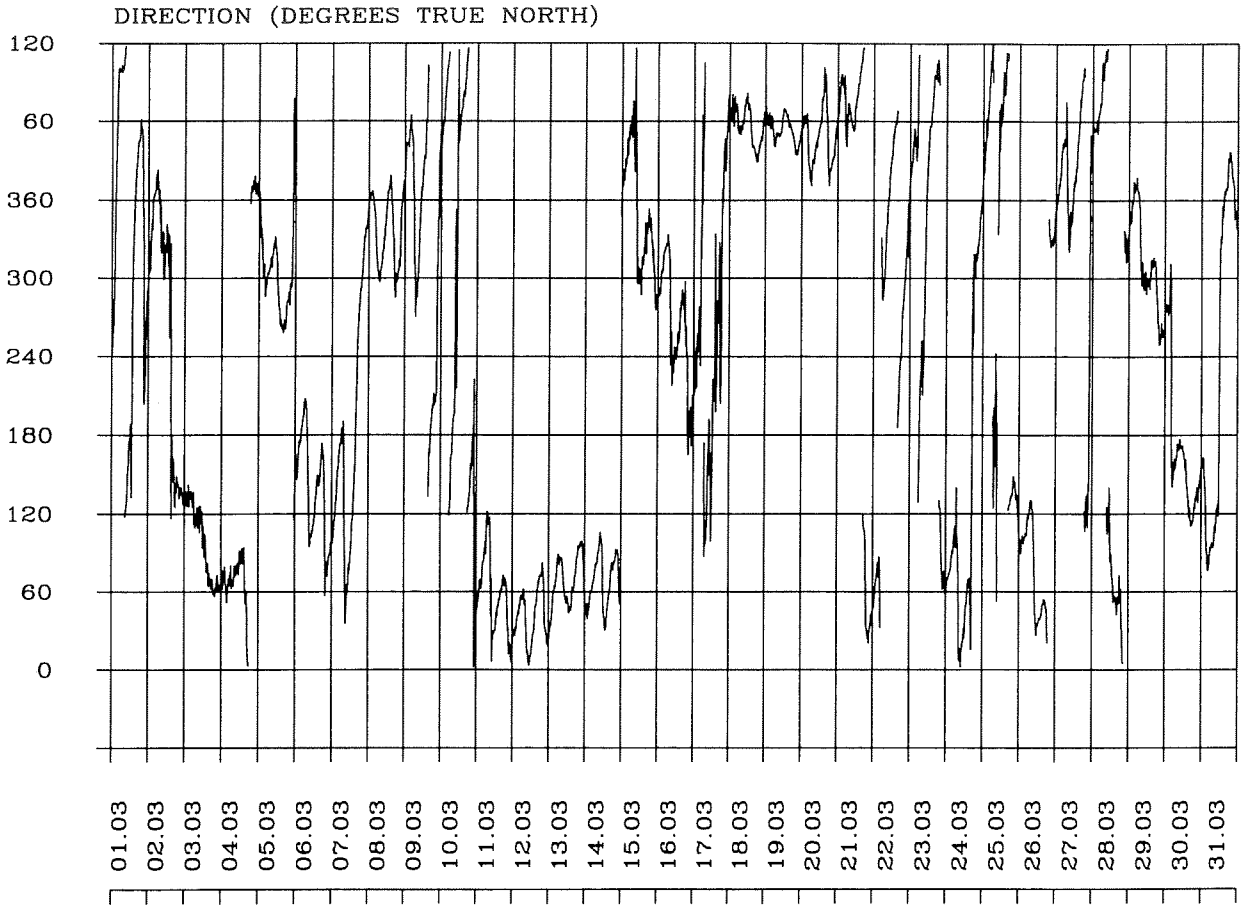
Time interval : 20.00 minutes. Instrument no. : 10804

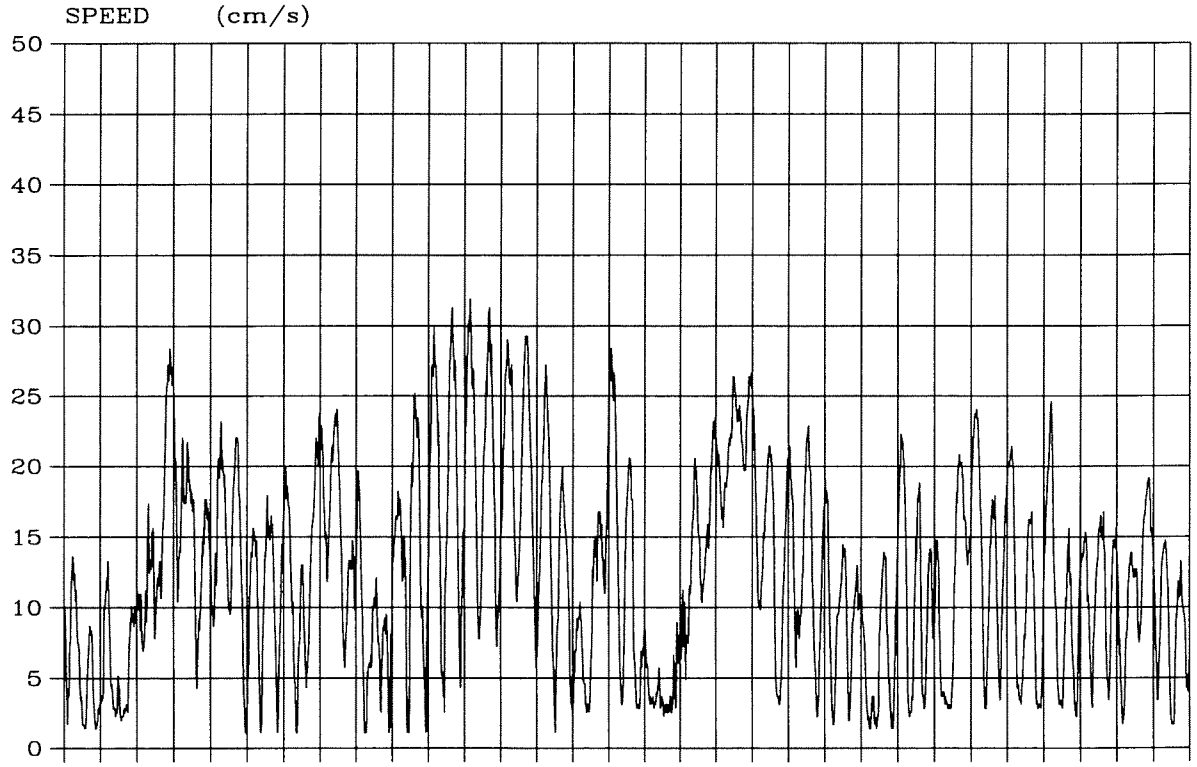
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





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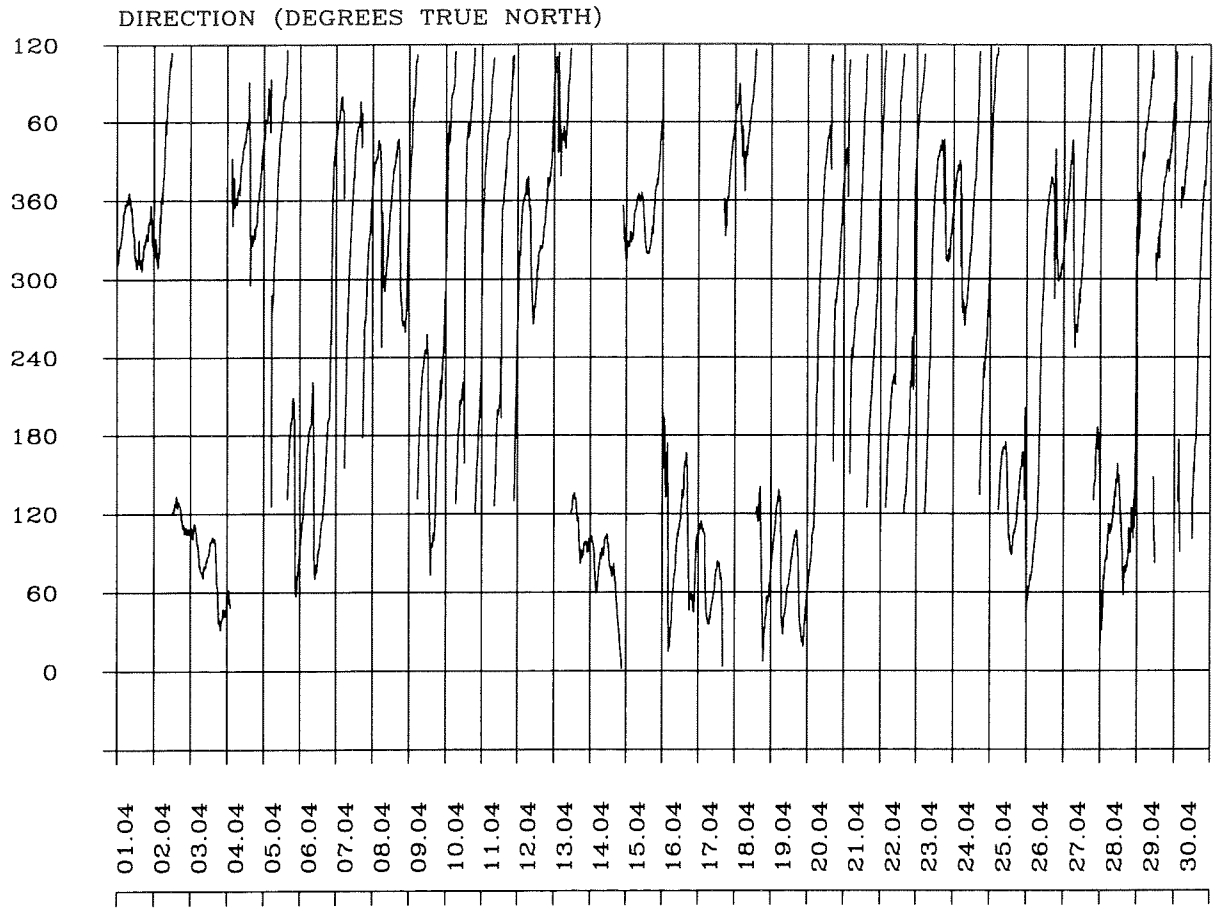
Time interval : 20.00 minutes. Instrument no. : 10804

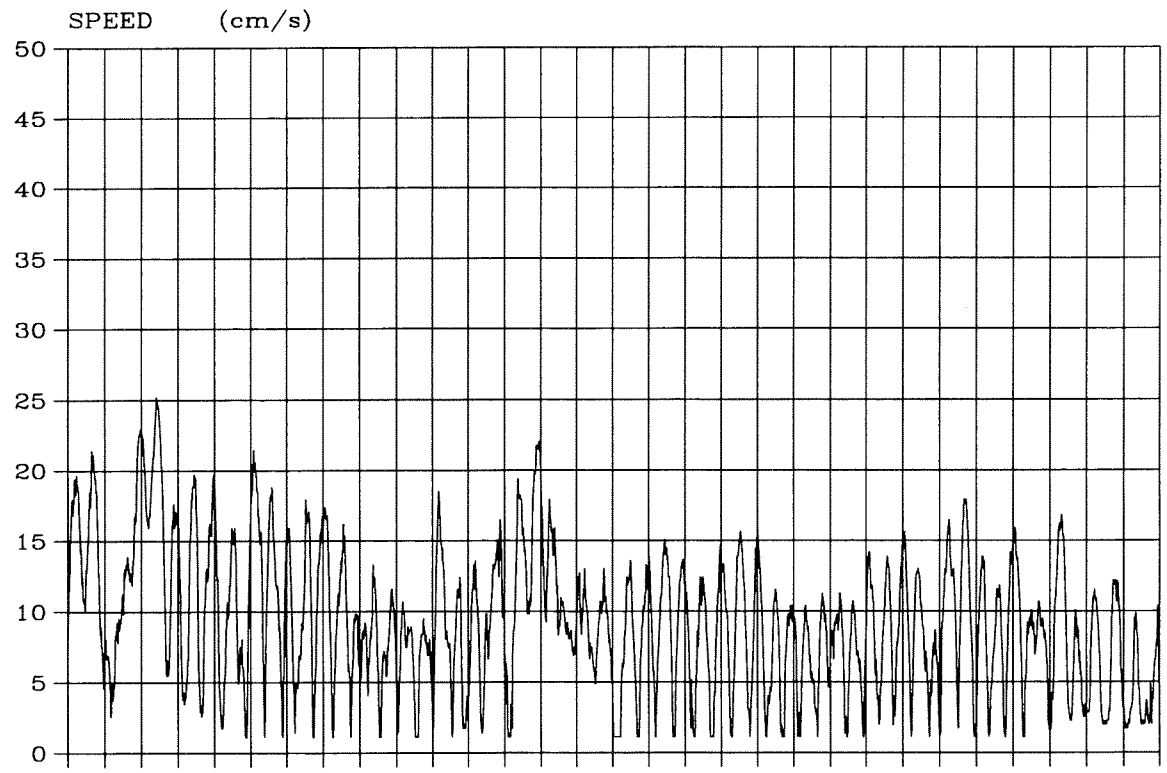
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





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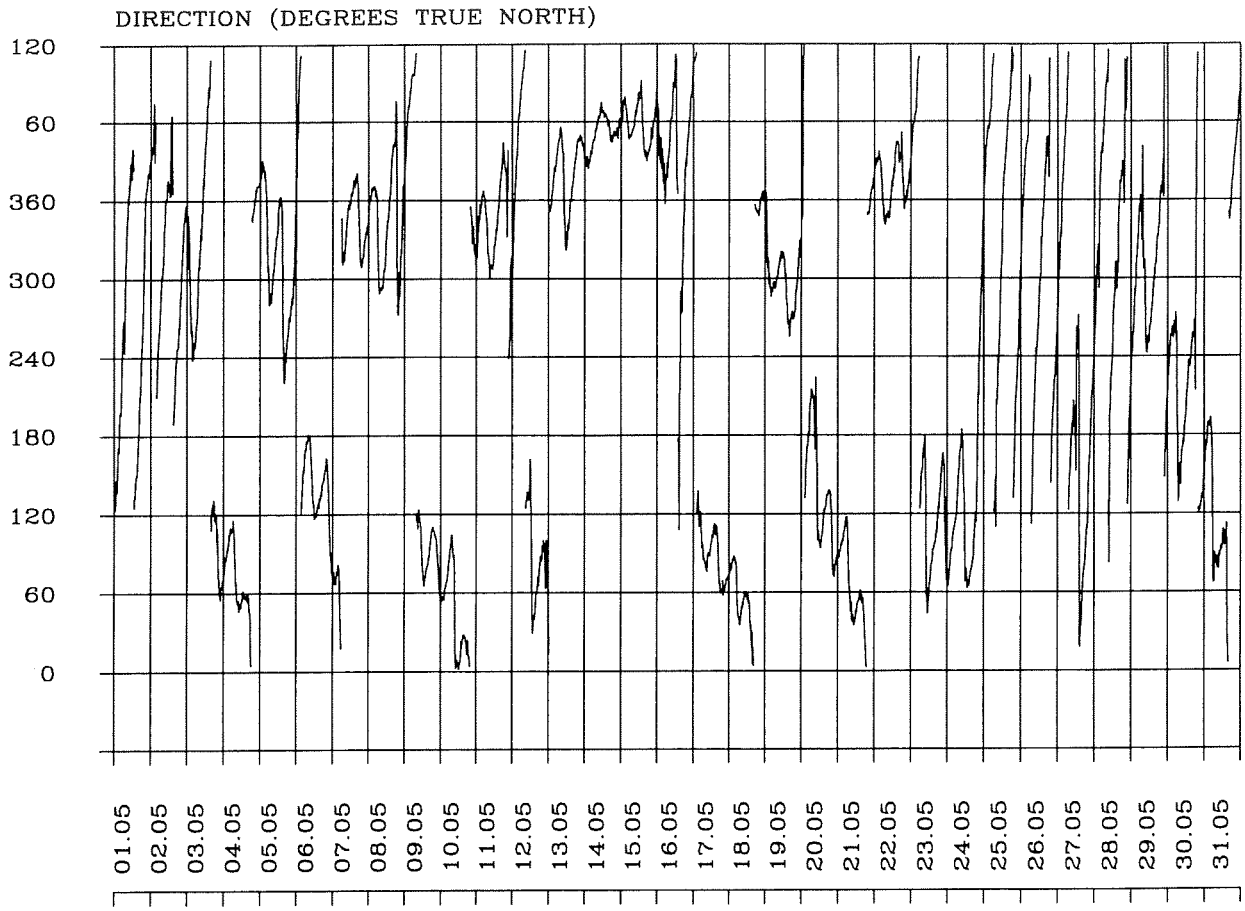
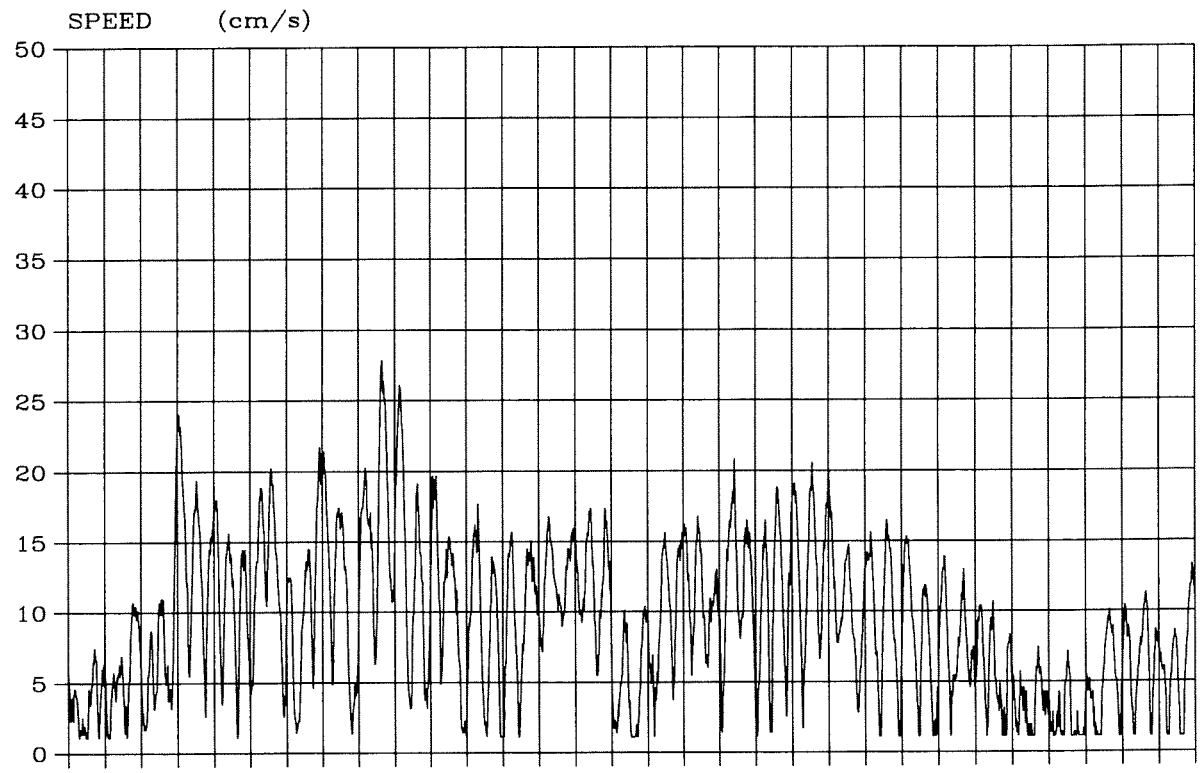
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





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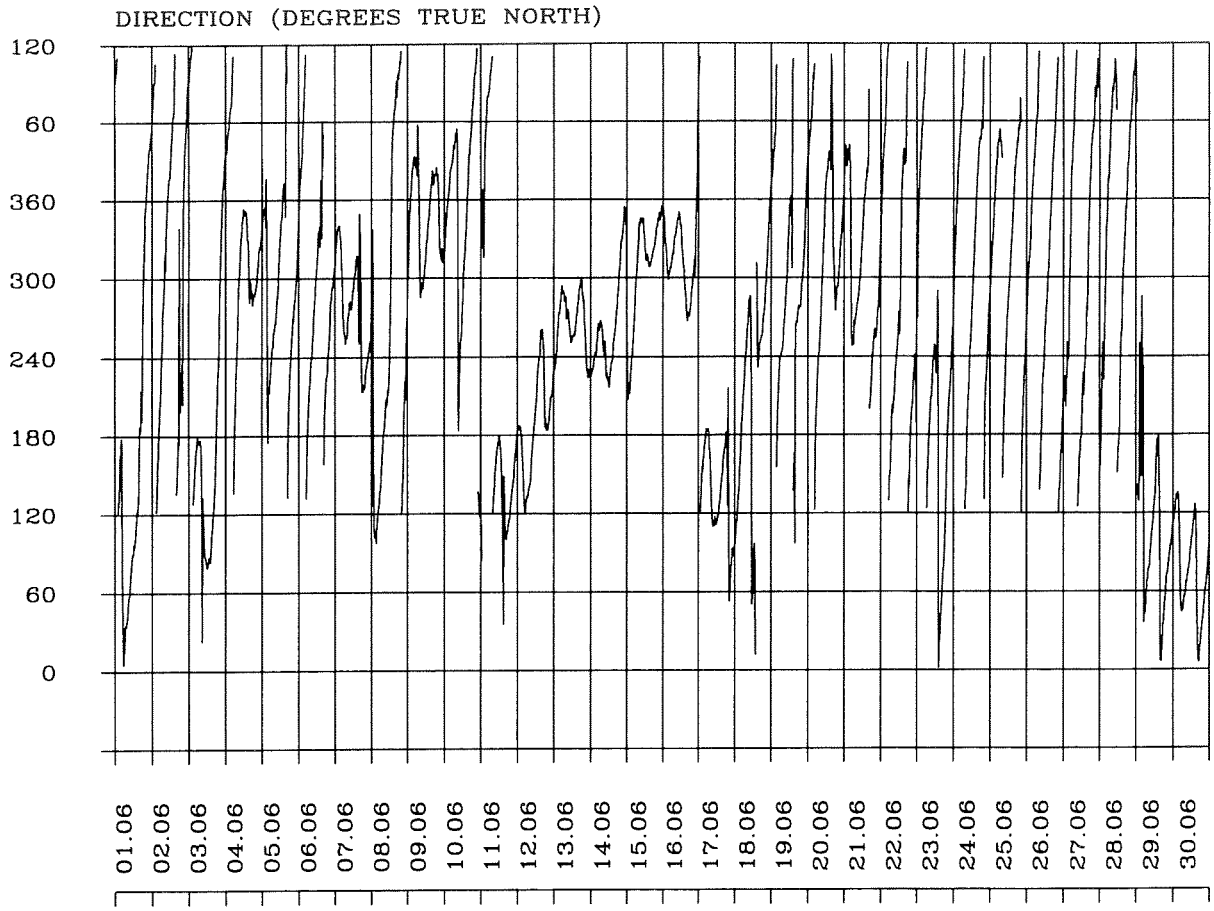
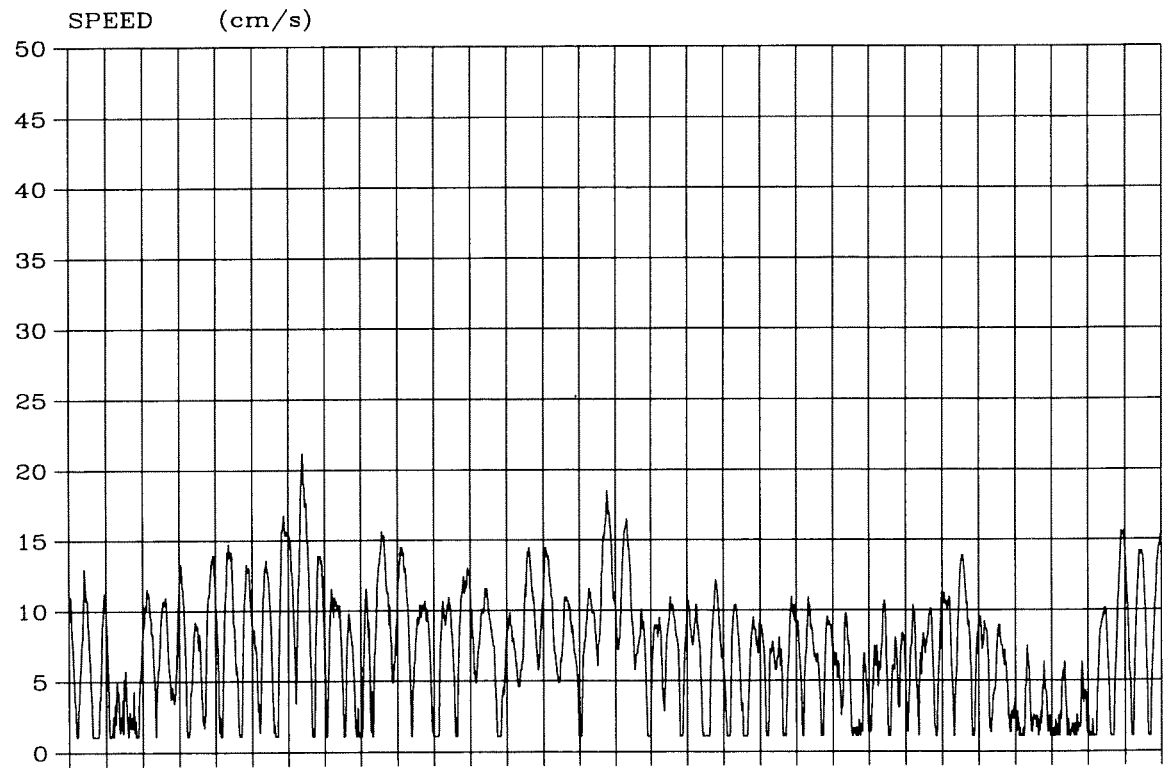
IMR

Fig. 1-3-7

Continues.....





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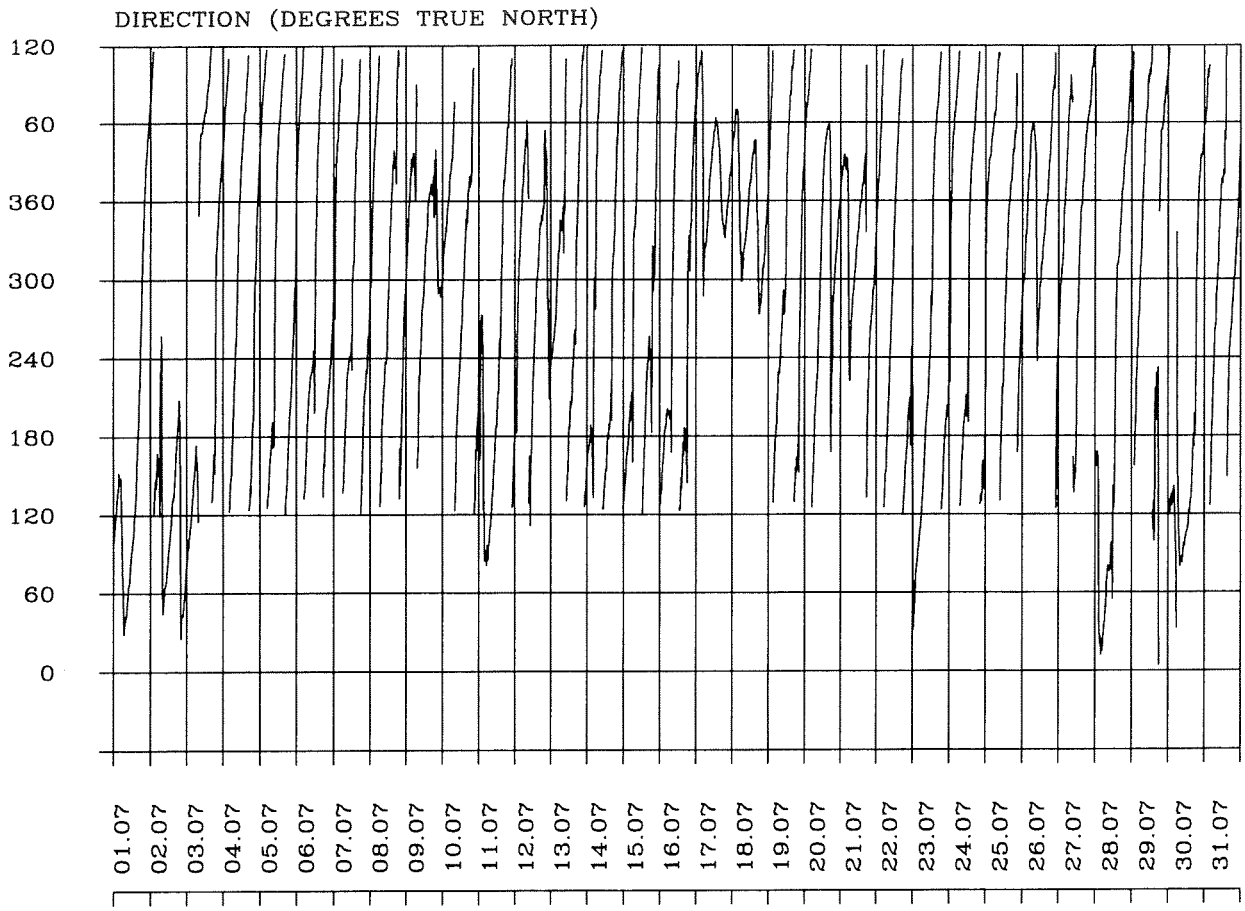
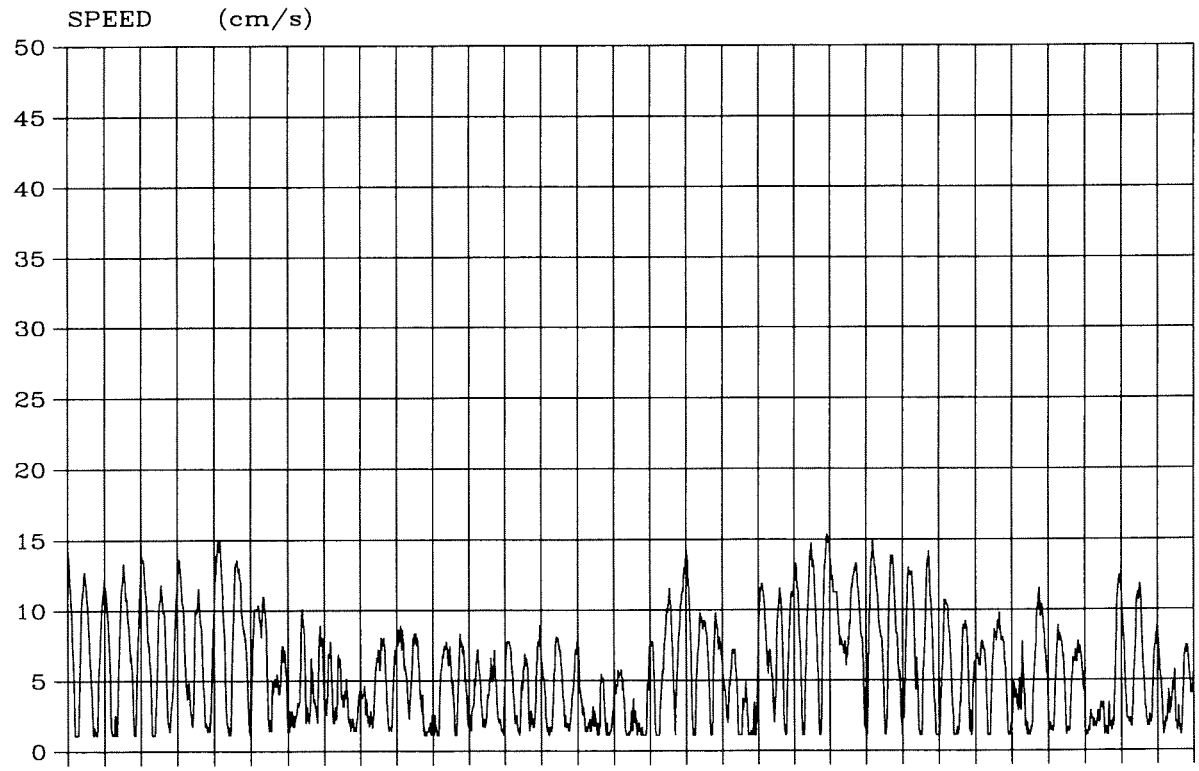
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





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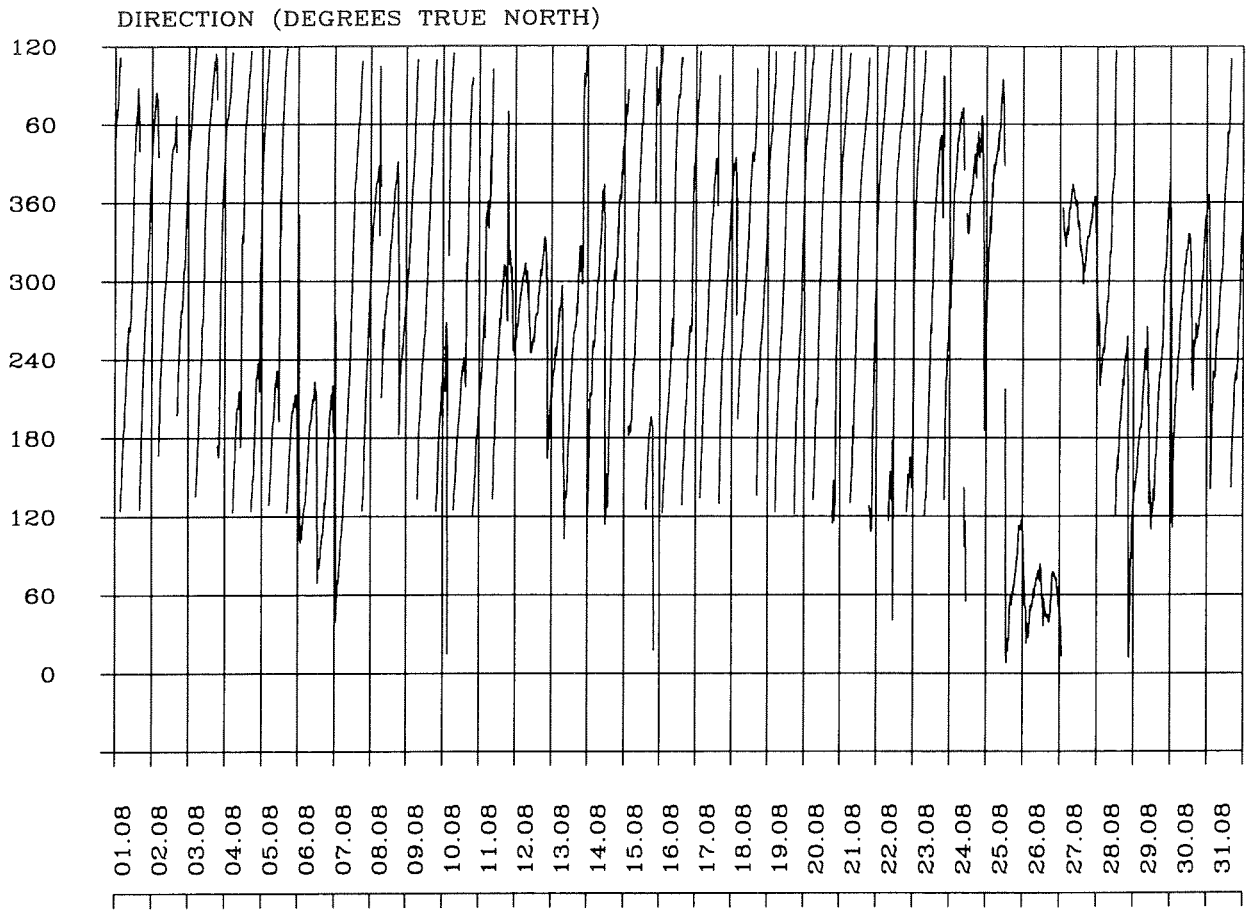
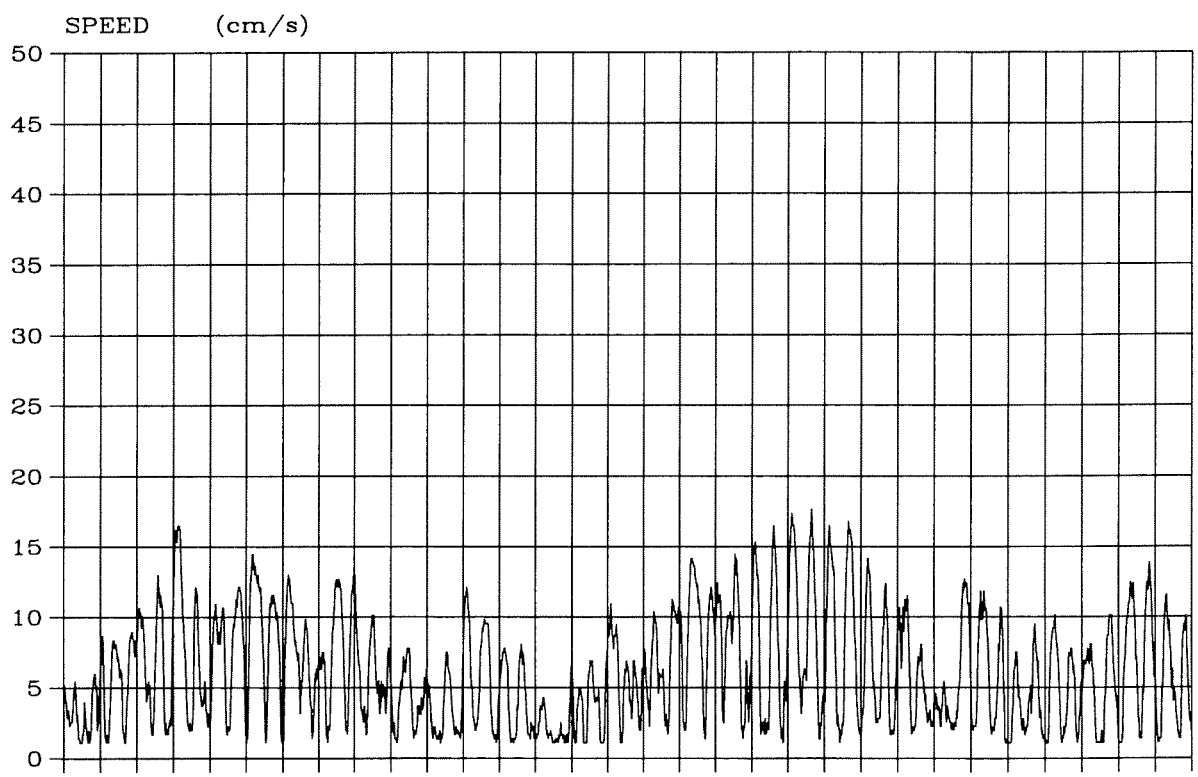
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1–3–7

Continues.....





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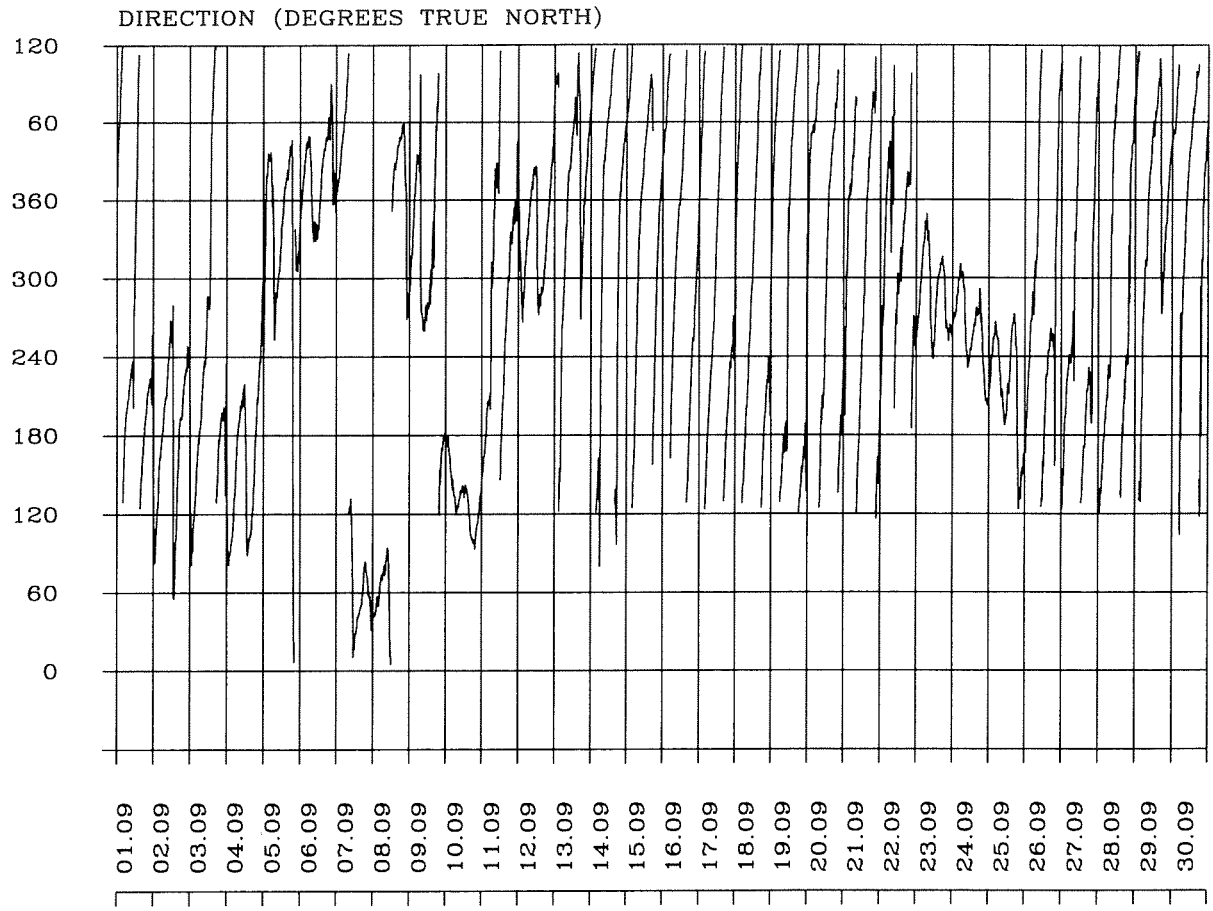
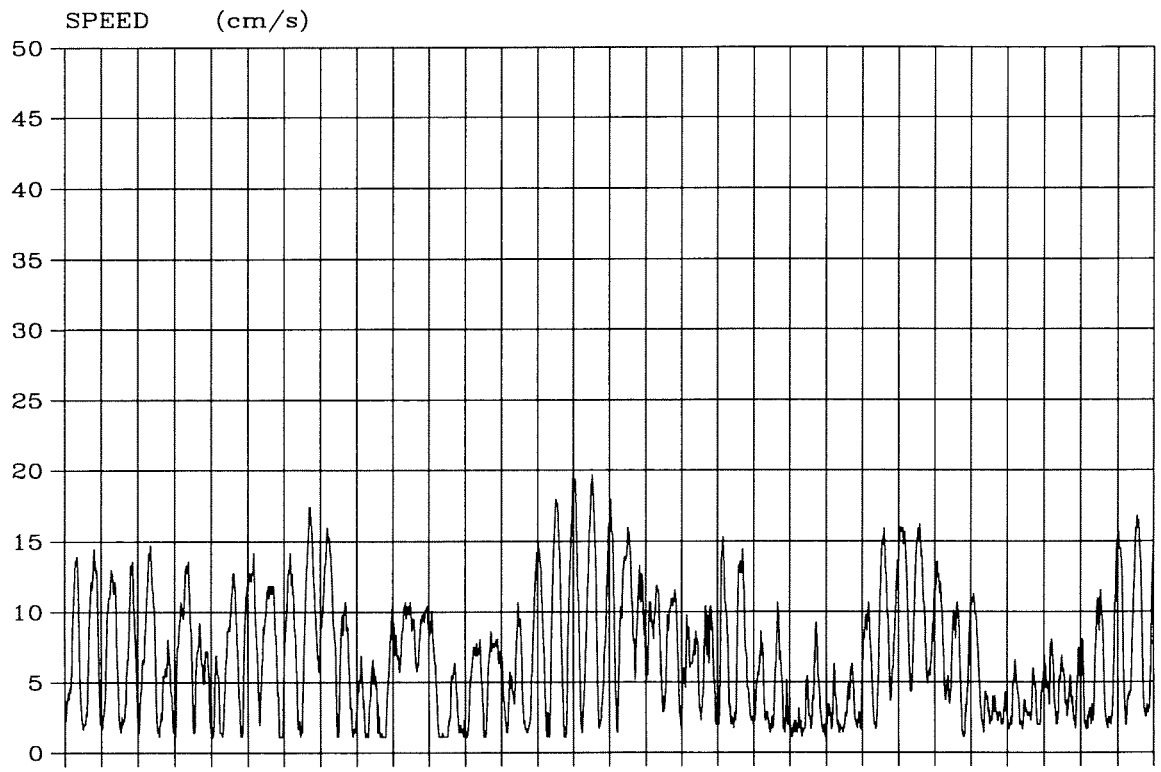
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1-3-7

Continues.....





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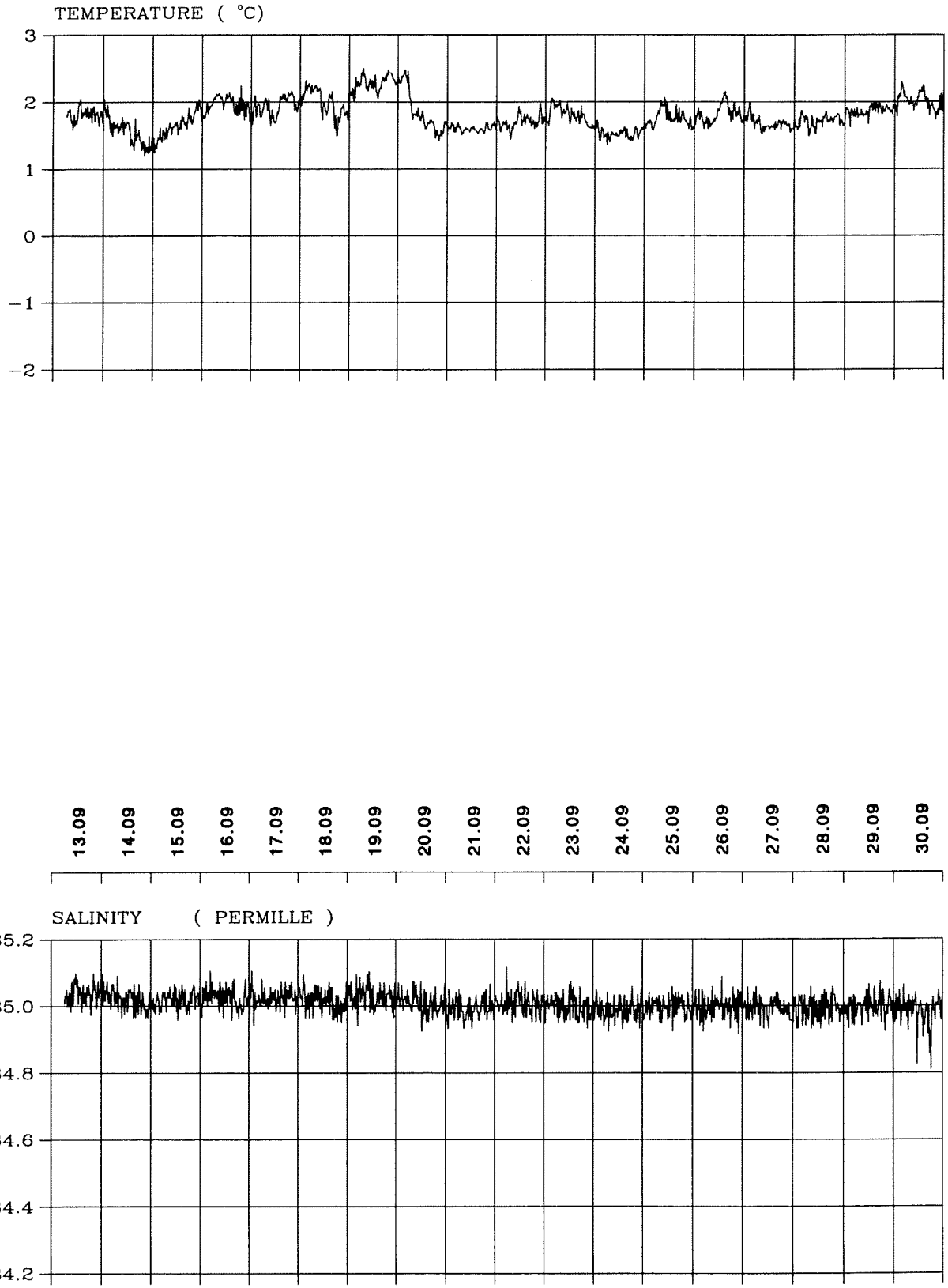
Observation period: 1992 13.09 H. 0615 – 1993 30.09 H. 2300

IMR

Fig. 1–3–7

Continues.....



Northern Central Bank, Barents Sea

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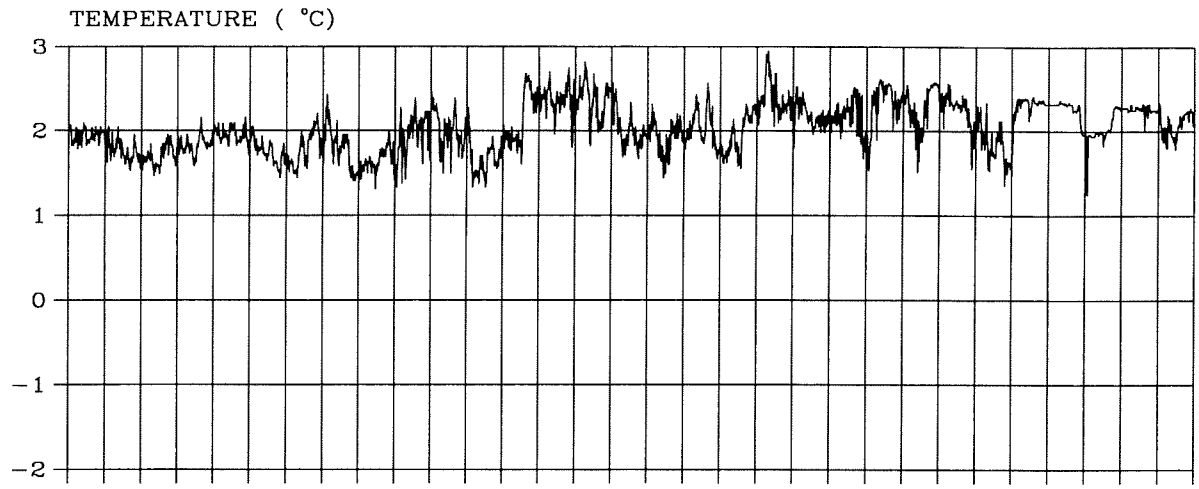
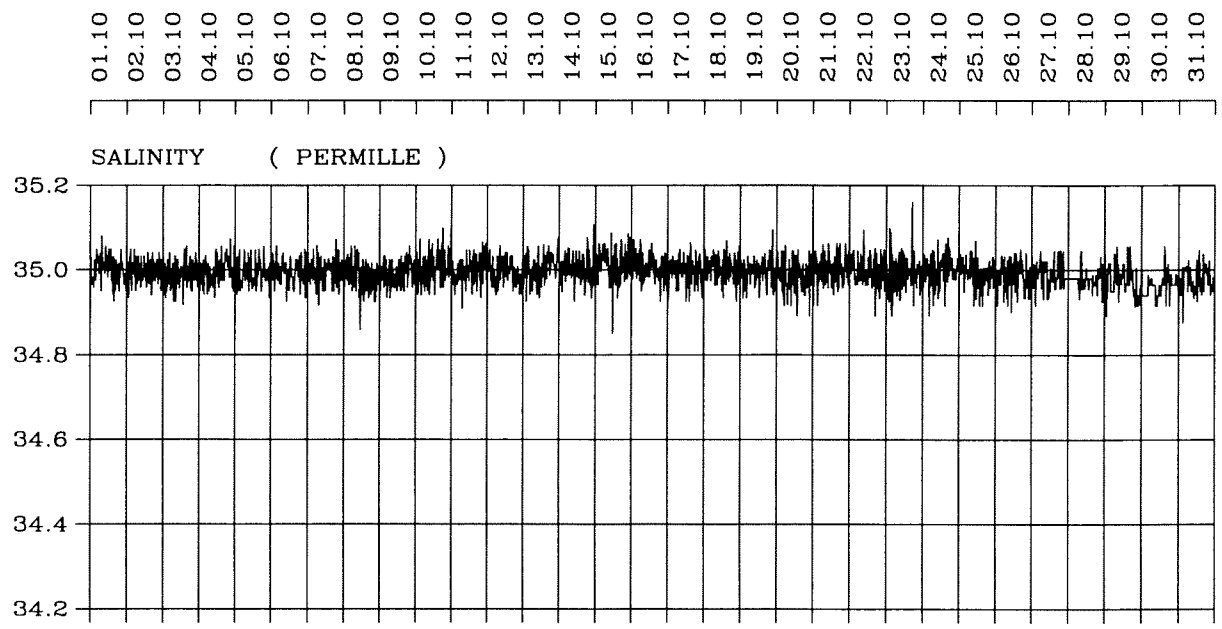
Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

Fig. 1-3-8 Temperature and salinity.





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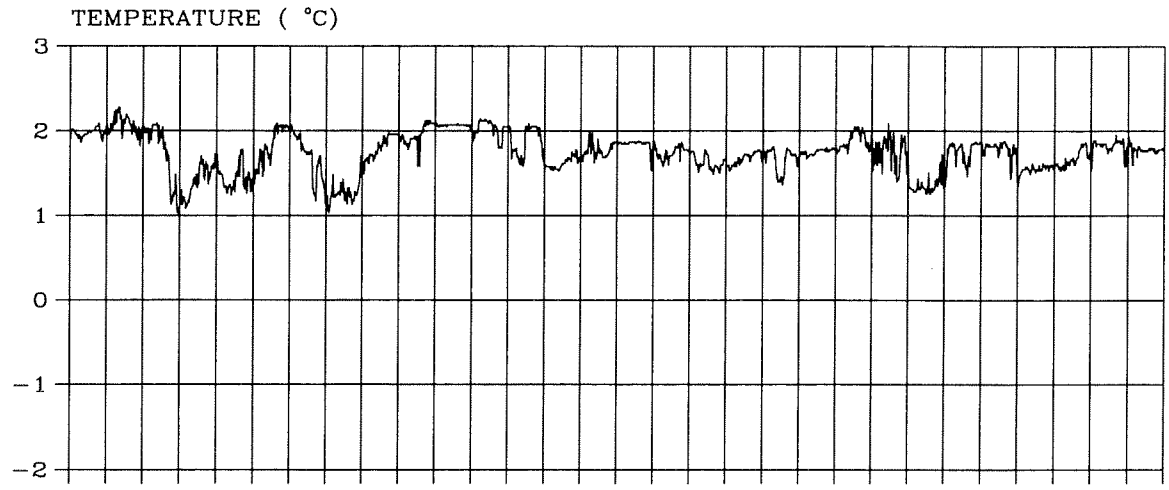
Time interval : 20.00 minutes. Instrument no. : 10804

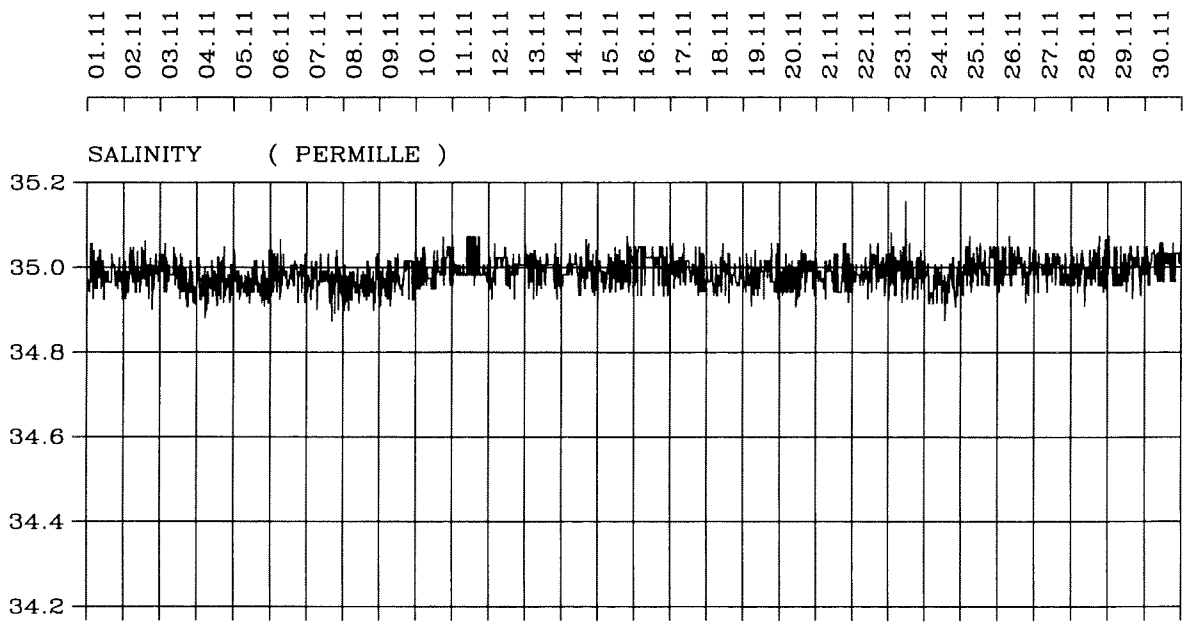
Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

Fig. 1-3-8

Continues.....





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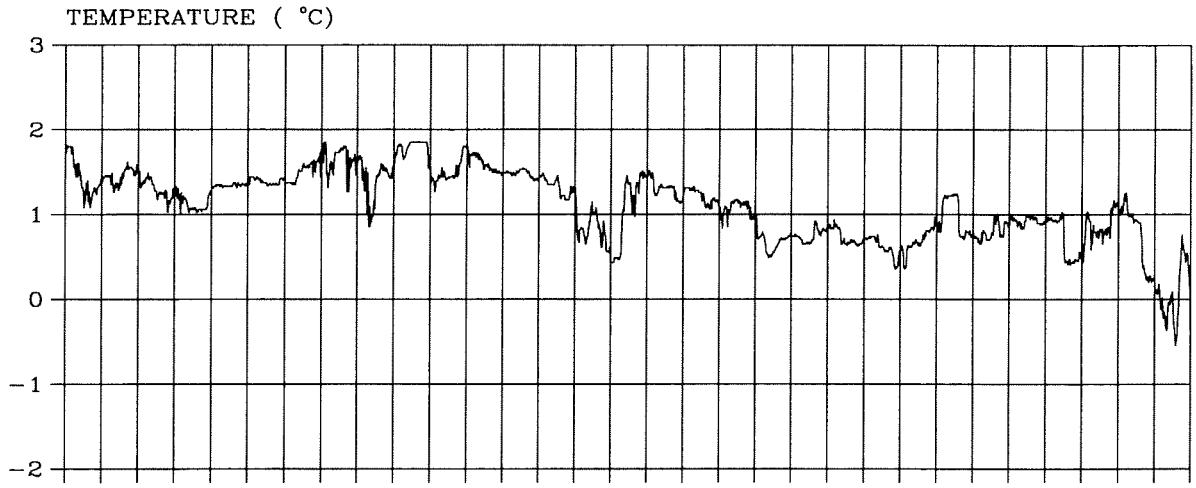
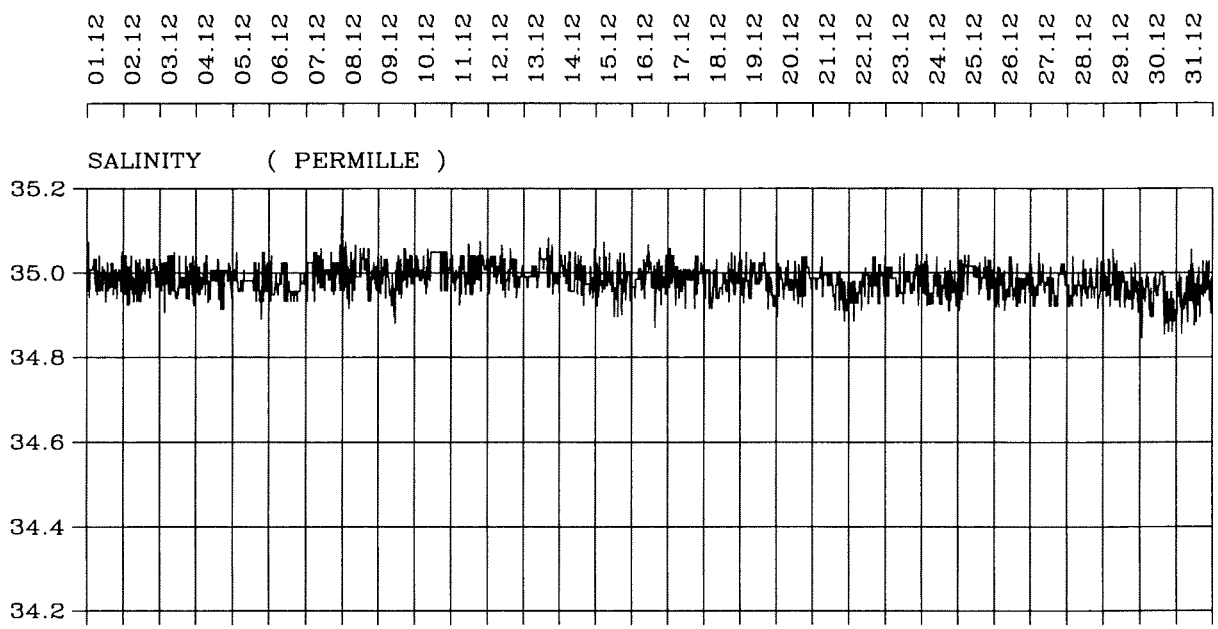
IMR

Fig. 1-3-8

Continues.....





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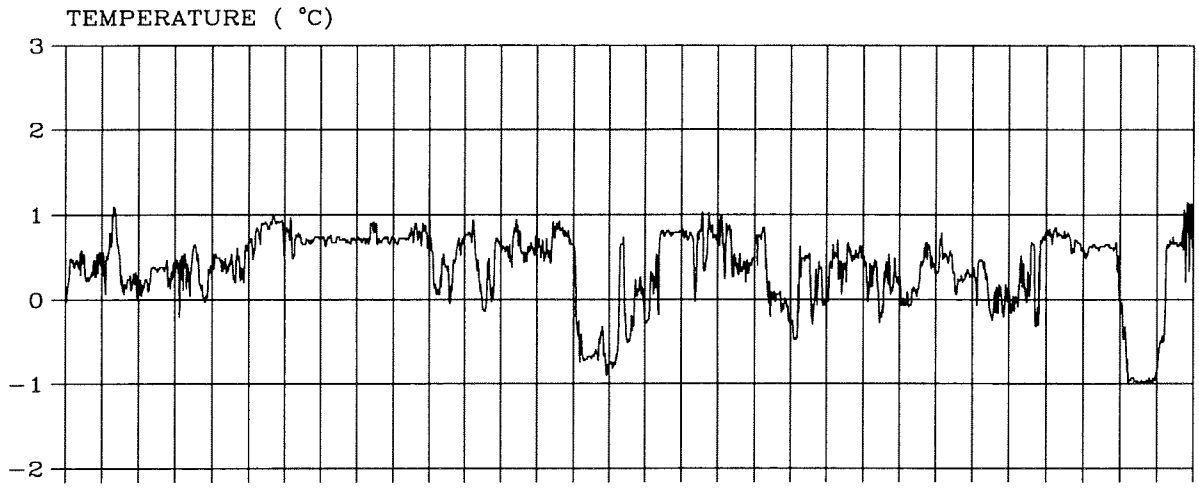
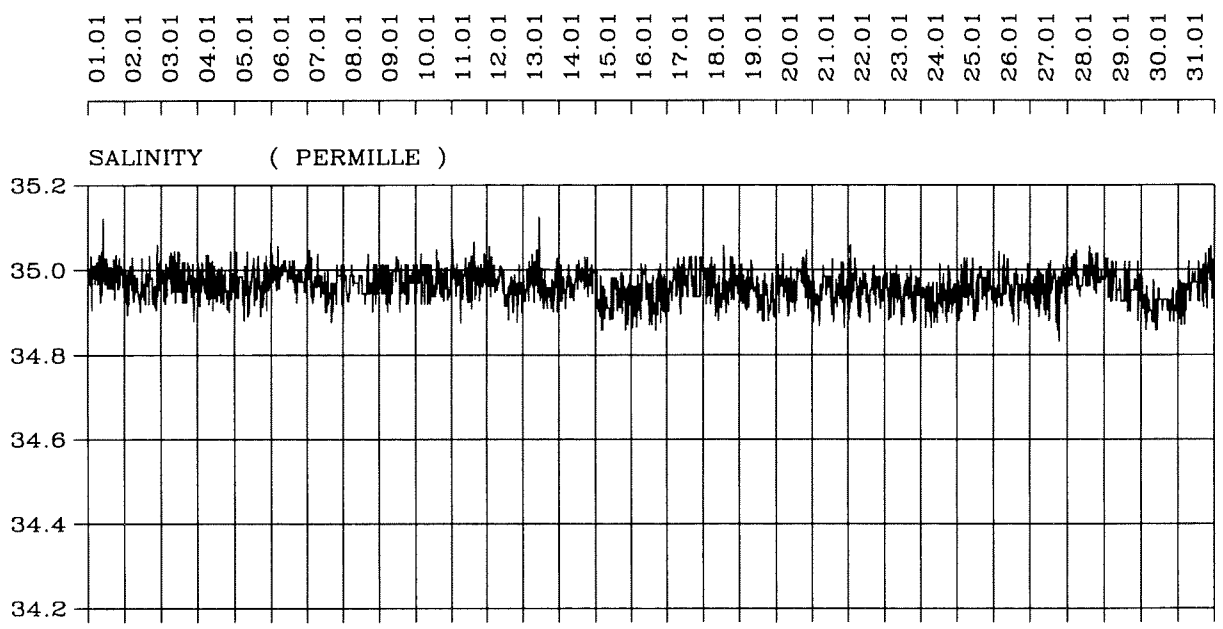
IMR

Fig. 1-3-8

Continues.....





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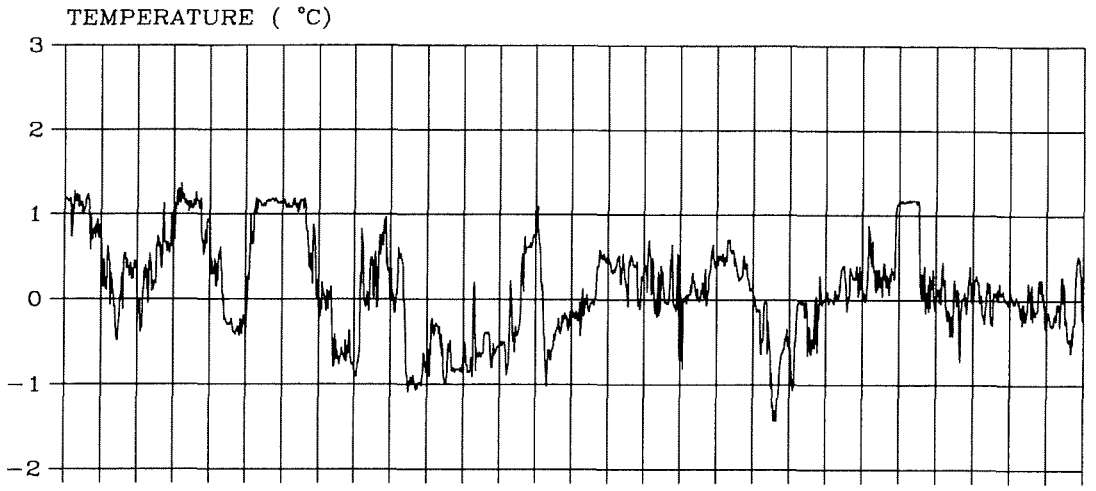
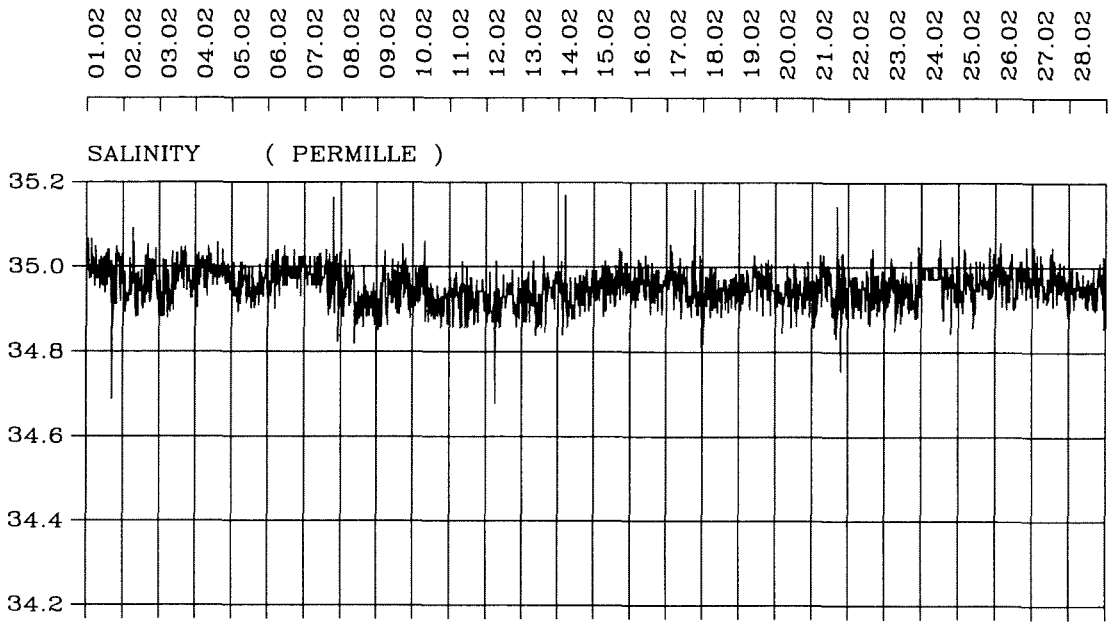
IMR

Fig. 1-3-8

Continues.....





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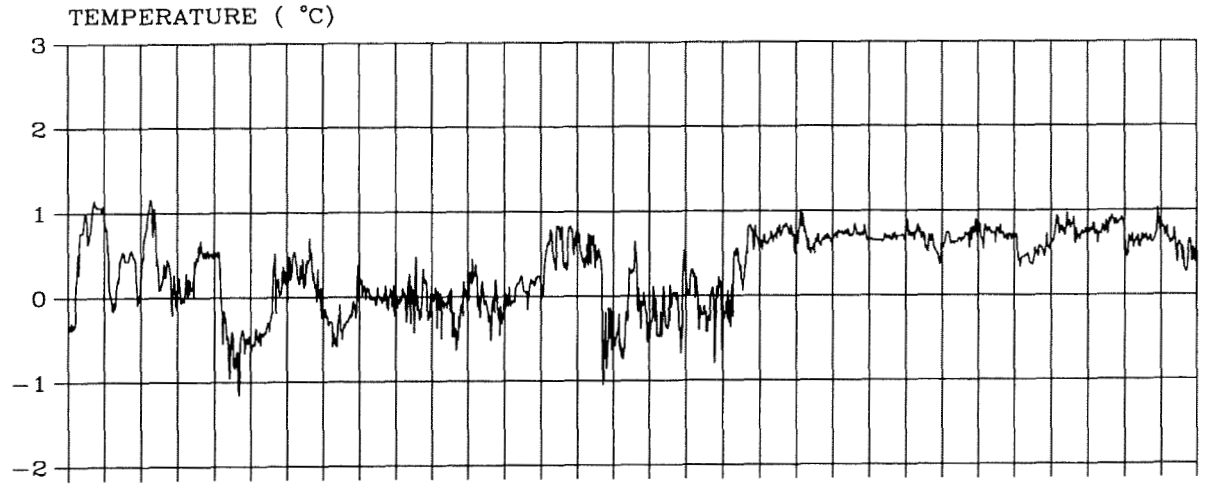
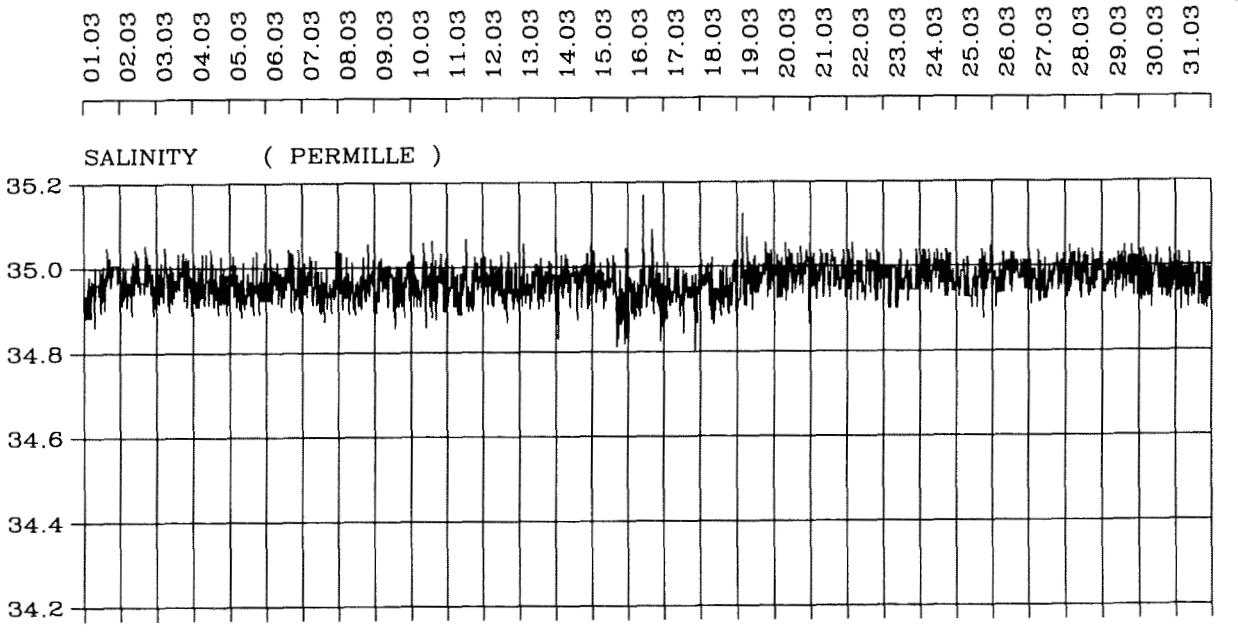
IMR

Fig. 1–3–8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 190.0 m Bottom depth : 250.0 m

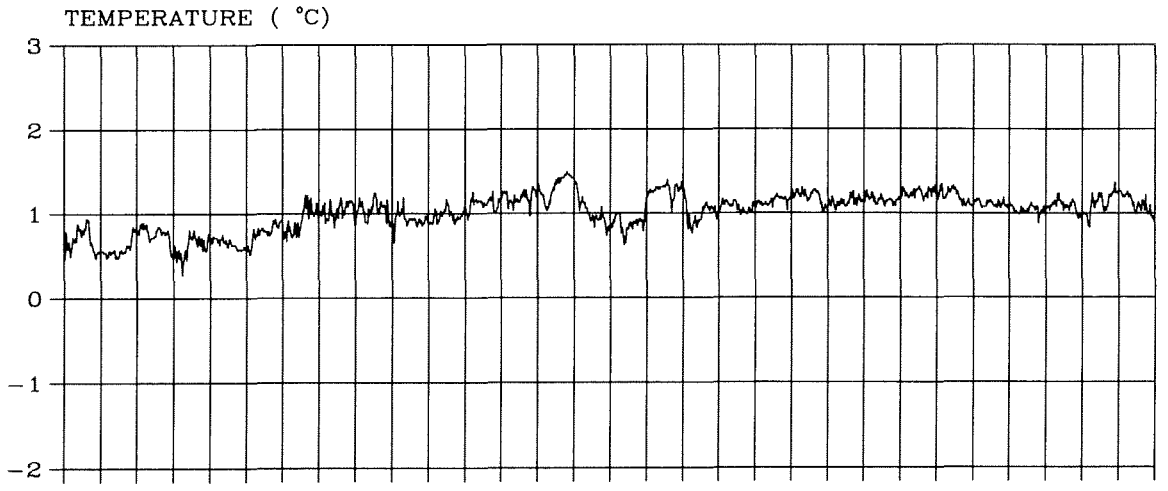
Time interval : 20.00 minutes. Instrument no. : 10804

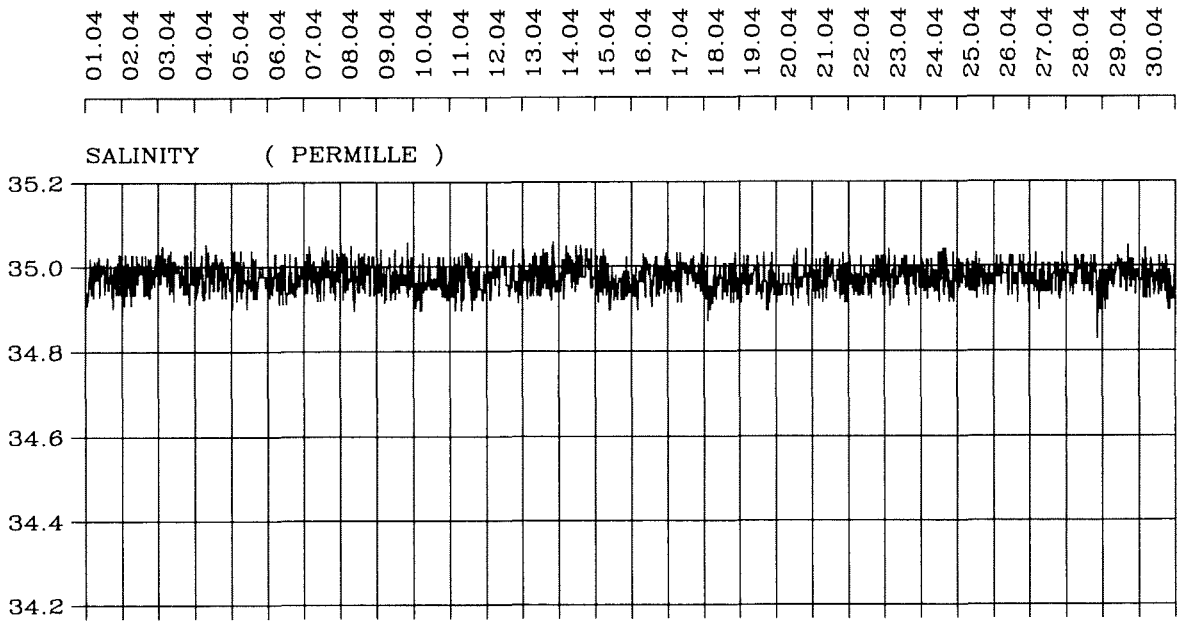
Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

Fig. 1-3-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

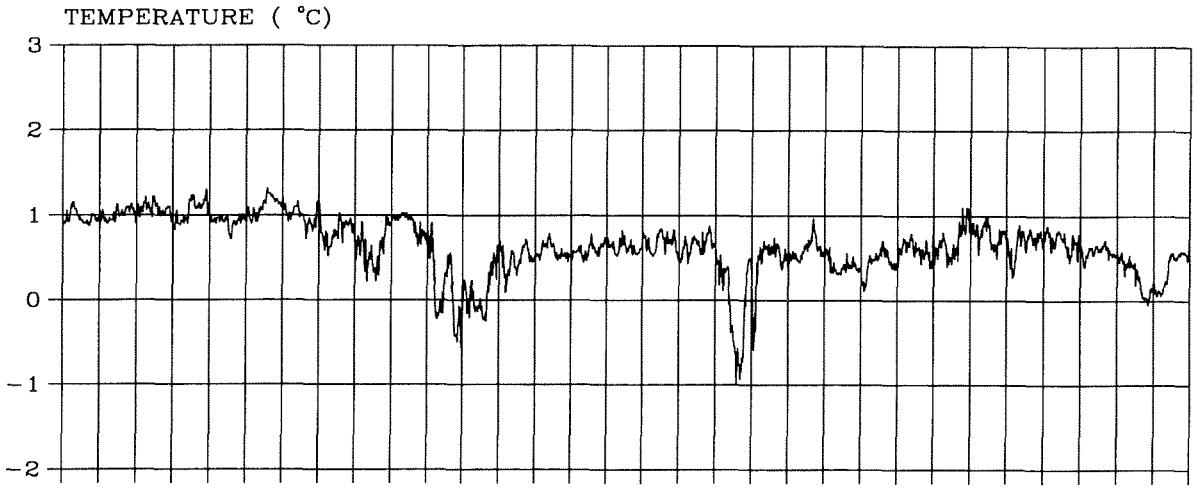
Time interval : 20.00 minutes. Instrument no. : 10804

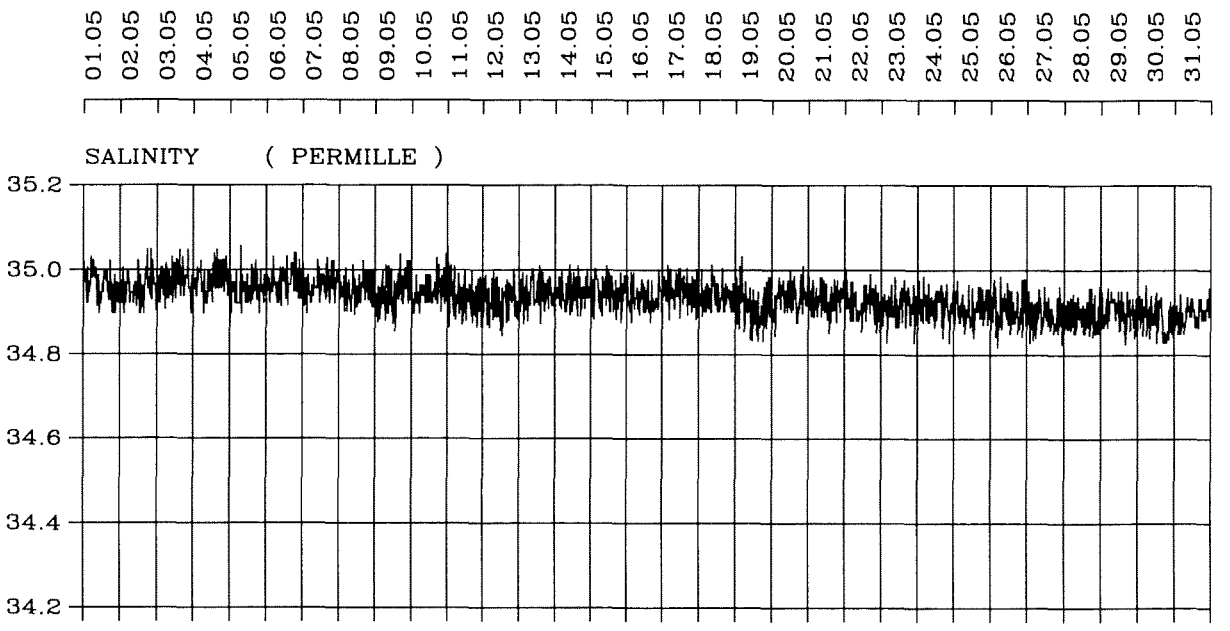
Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

Fig. 1-3-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

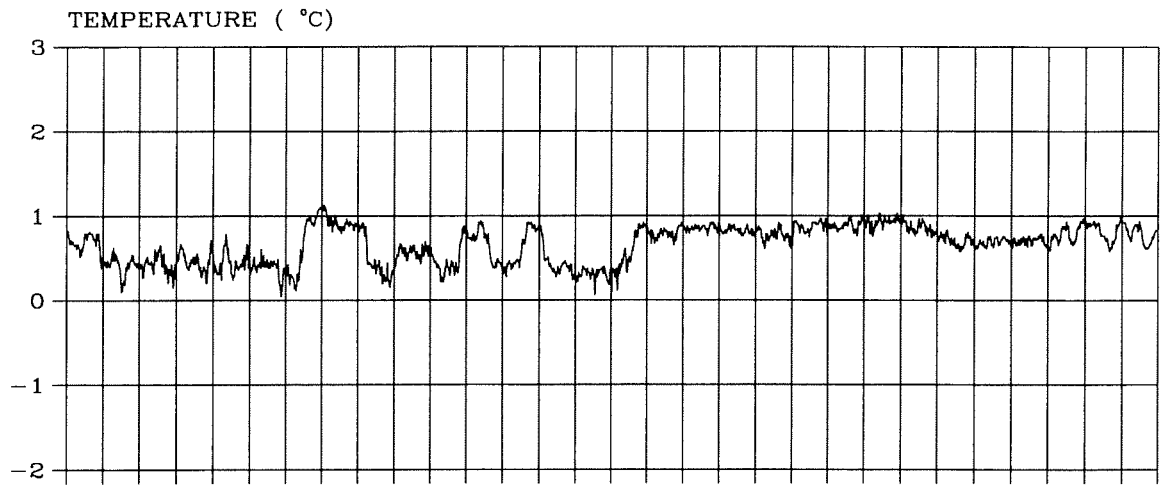
Time interval : 20.00 minutes. Instrument no. : 10804

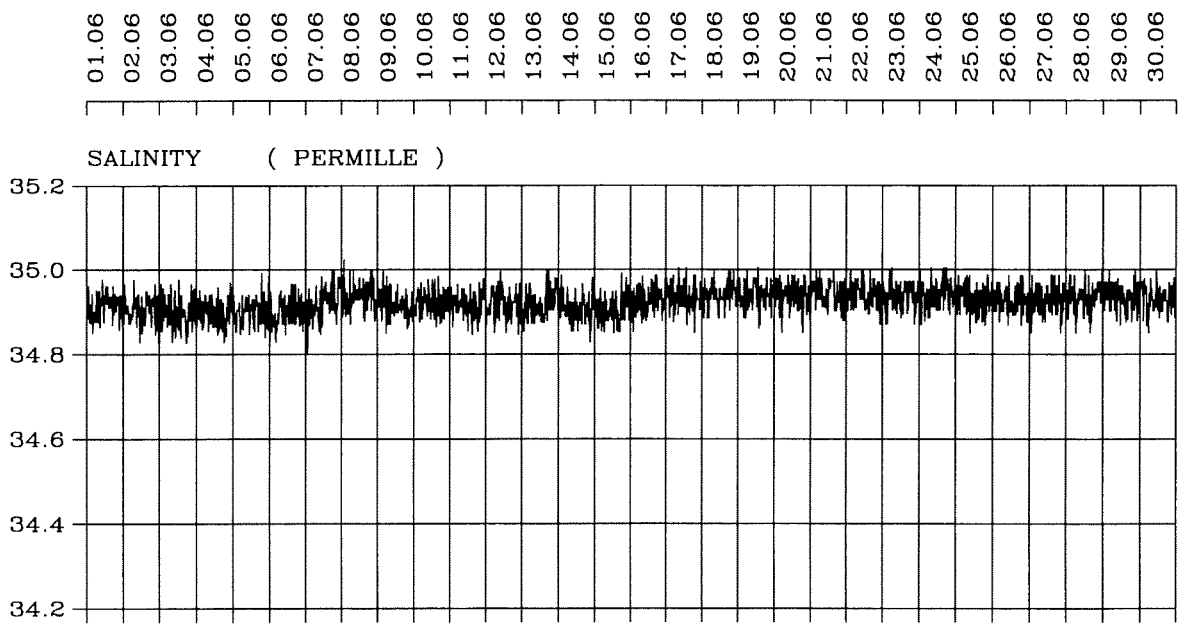
Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

Fig. 1–3–8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 190.0 m Bottom depth : 250.0 m

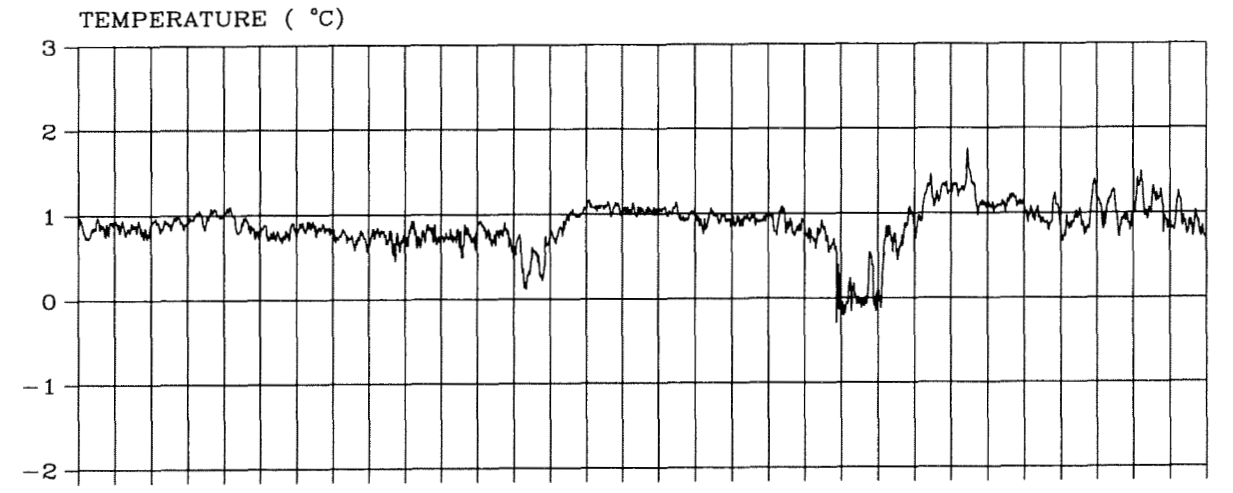
Time interval : 20.00 minutes. Instrument no. : 10804

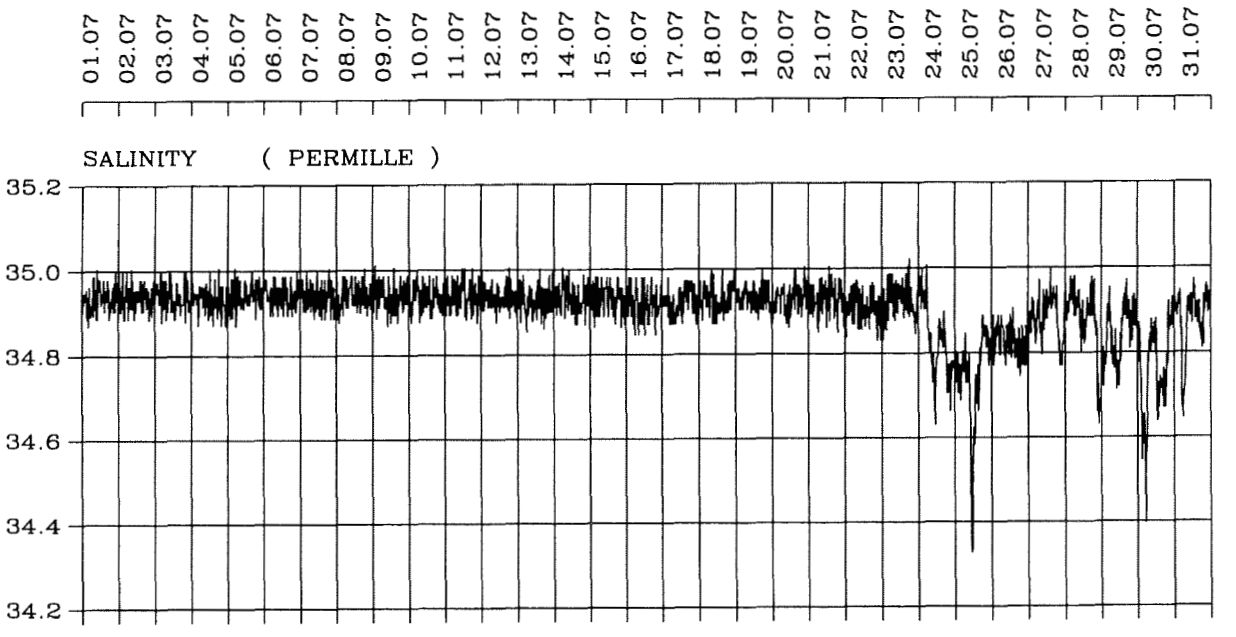
Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

Fig. 1-3-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

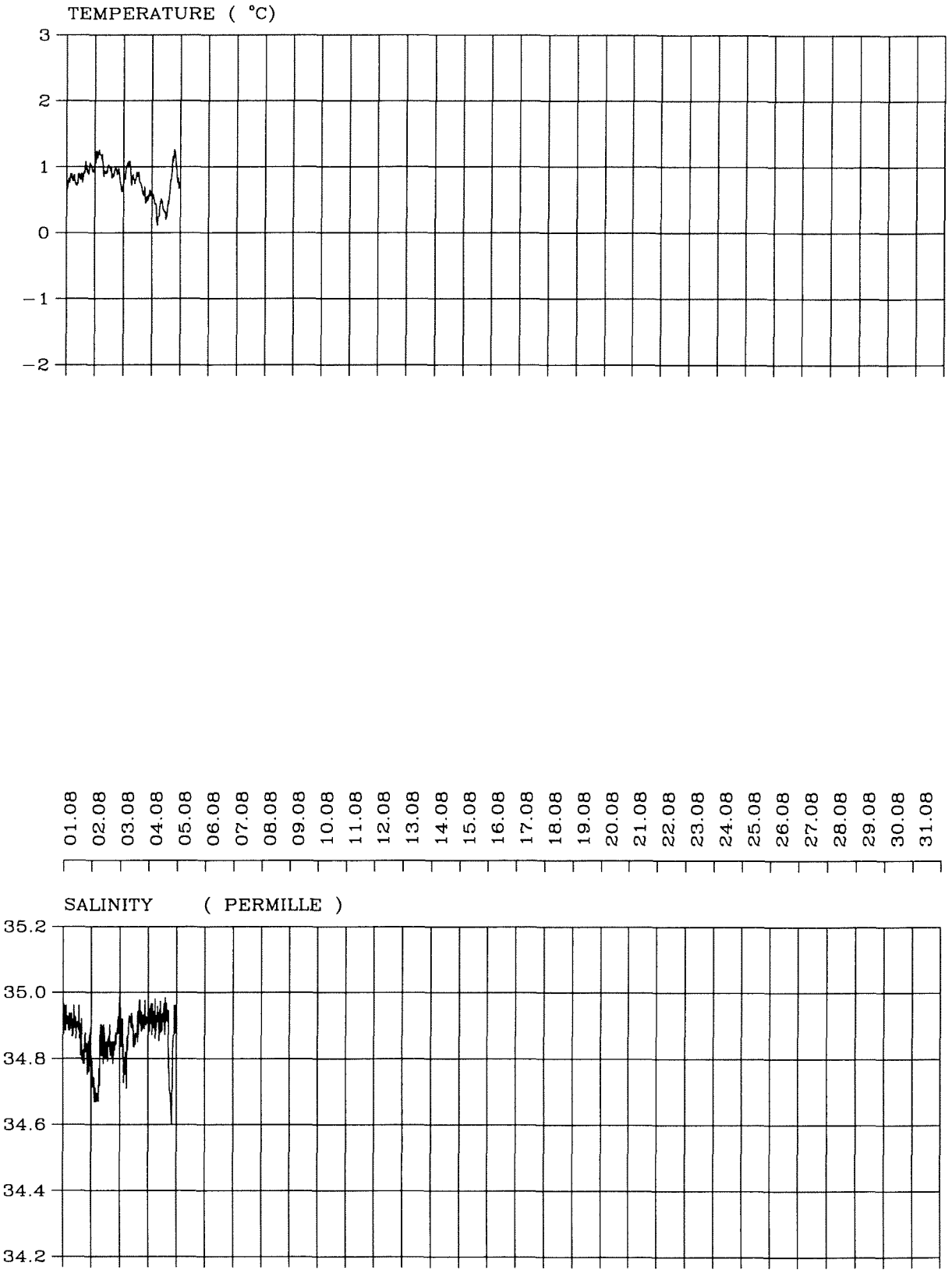
Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

Fig. 1–3–8

Continues.....



Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 190.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 – 1993 05.08 H. 0000

IMR

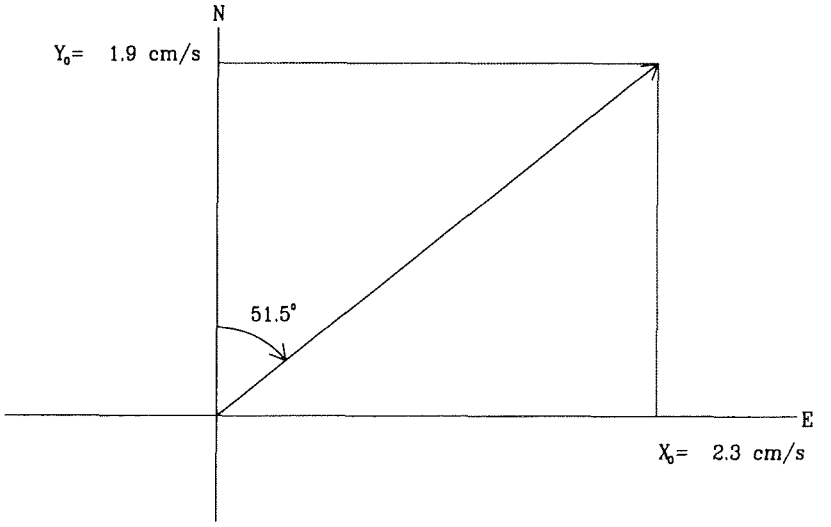
Fig. 1-3-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_j cm/s	g_{xj} °	Y_j cm/s	g_{yj} °	Major axis A_j cm/s	Minor axis B_j cm/s	θ_j °	g_j °	BETA. °
SA	******	0.0	1.8	53.9	1.1	48.7	2.1	-0.1	57.9	52.4	154.1
SSA	******	0.1	1.1	356.4	0.5	45.2	1.2	0.4	71.5	2.4	0.1
MF	327.86	1.1	1.9	118.3	0.5	145.3	2.0	0.2	75.7	120.1	103.3
N2	12.66	28.4	1.2	25.2	0.9	312.5	1.2	-0.8	66.0	8.7	131.9
M2	12.42	29.0	5.6	50.2	4.4	337.1	5.8	-3.9	64.8	32.4	134.7
S2	12.00	30.0	1.9	94.4	1.6	33.8	2.2	-1.2	54.9	72.7	162.8

MEAN CURRENT



Northern Central Bank, Barents Sea
Position : N 76° 0.07′ E 34° 59.50′
Instrument depth : 190.0 m Bottom depth : 250.0 m
Time interval : 20.00 minutes. Instrument no. : 10804
Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

IMR

Fig. 1-3-9 Harmonic analysis of current.

A discription of the model and its definitions :

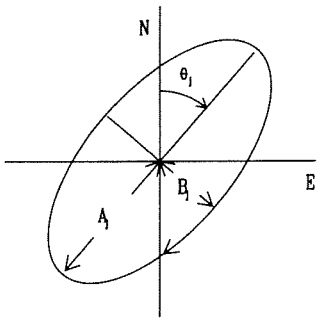
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{*}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{*}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{*}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

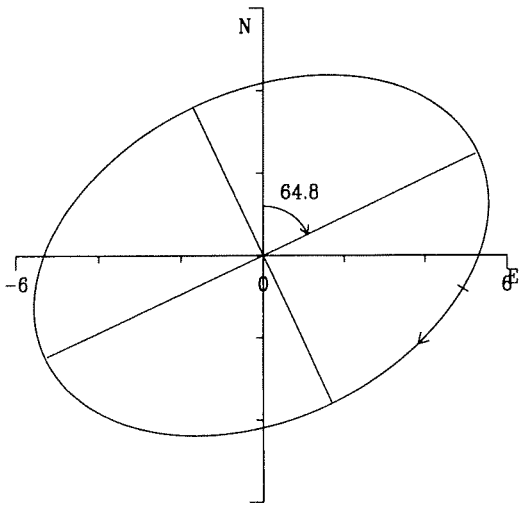
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

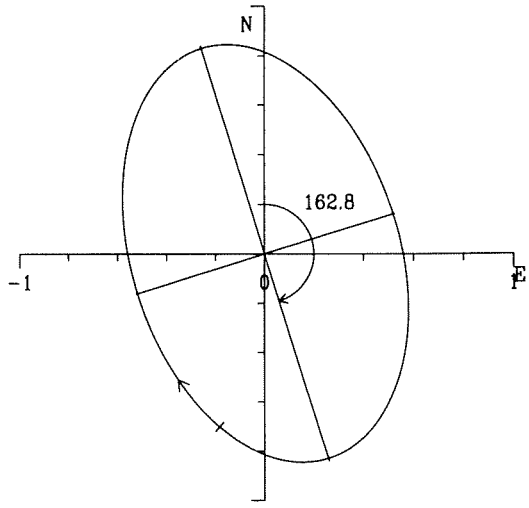
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1500 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 190.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10804

Observation period: 1992 13.09 H. 0615 - 1993 30.09 H. 2300

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Fig. 1-3-10 M2 and K1 ellipse.

MEAN VALUES

Speed	10.03 cm/s
NS-component	2.06 cm/s
EW-component	2.62 cm/s
Velocity	3.33 cm/s
in direction	51 °

MAXIMUM

Velocity	47.31 cm/s
in direction	287 °
Temperature	2.95 °C
Salinity	35.182

MINIMUM

Velocity	0.00 cm/s
in direction	126 °
Temperature	-1.43 °C
Salinity	34.326

Northern Central Bank, Barents Sea
Position : N 76° 0.07′ E 34° 59.50′
Instrument depth : 190.0 m Bottom depth : 250.0 m
Time interval : 20.00 minutes. Instrument no. : 10804
Observation period: 1992 13.09 H. 0615 - 1993 05.08 H. 0000

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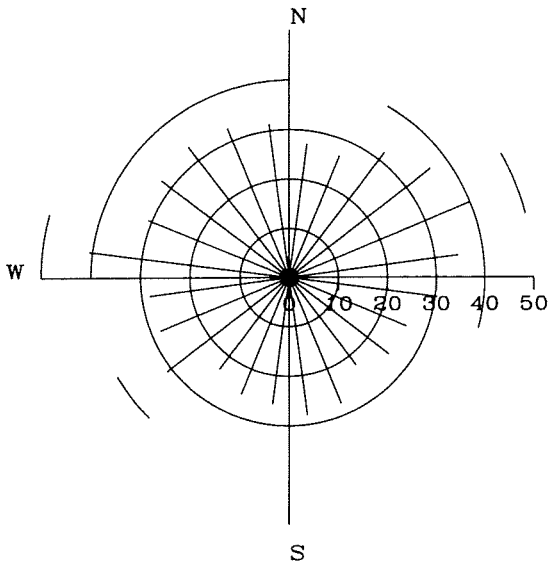
Fig. 1-3-11

Overall mean values.
Overall maximum values.
Overall minimum values.

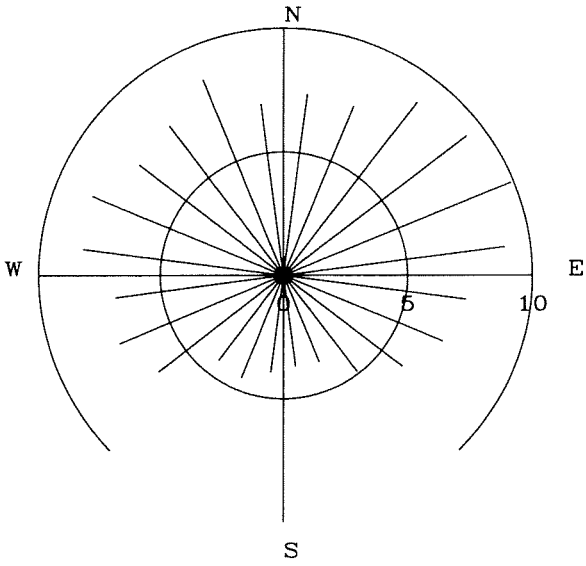
Mooring: *1*

Depth: *240 m*

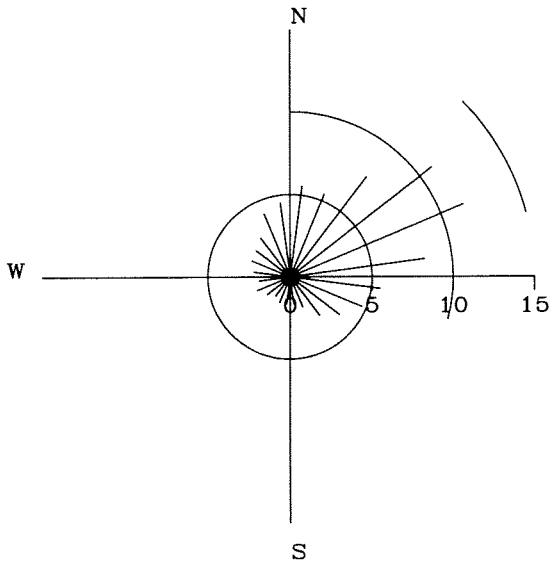
CURRENT VELOCITY DISTRIBUTION



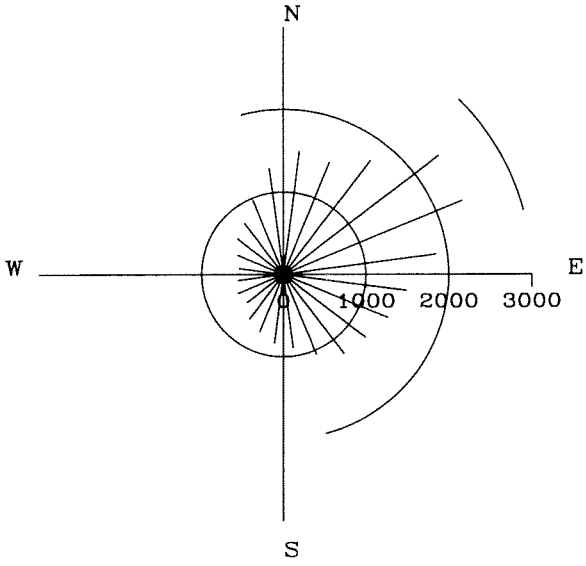
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

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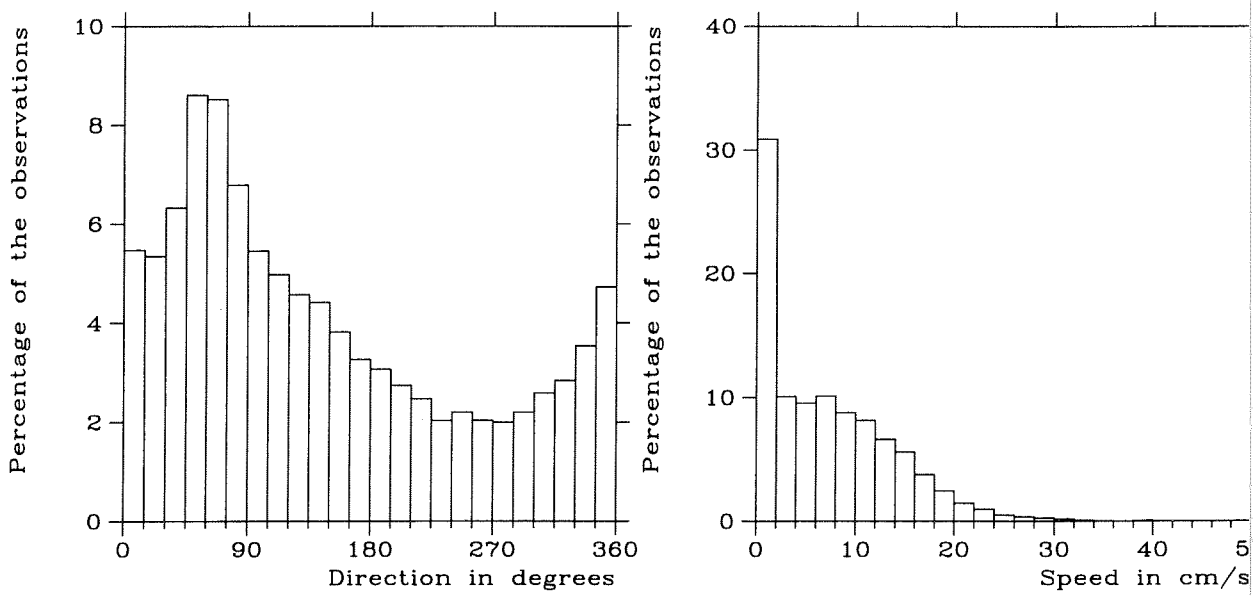
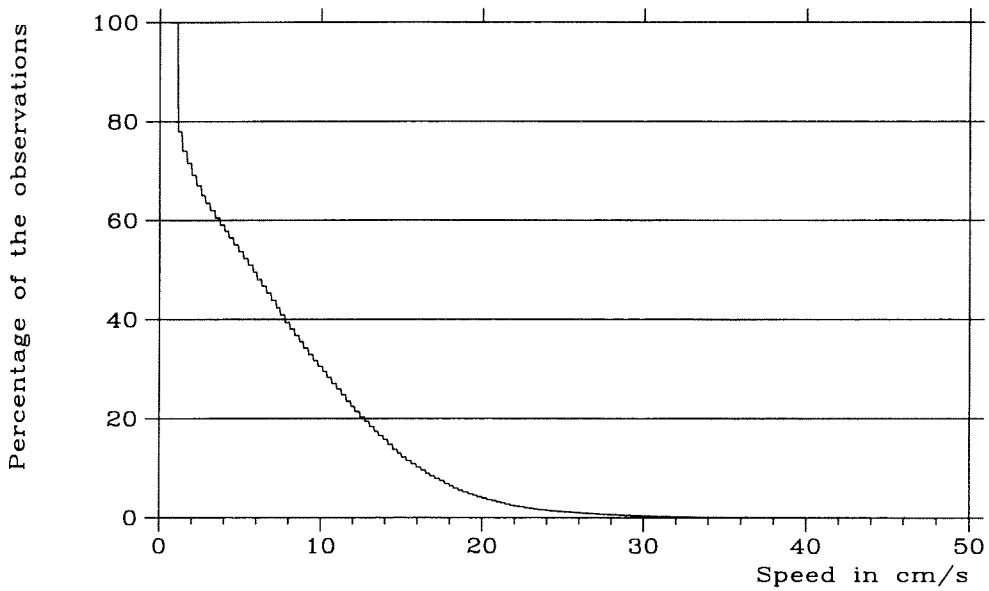
Fig. 1–4–1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



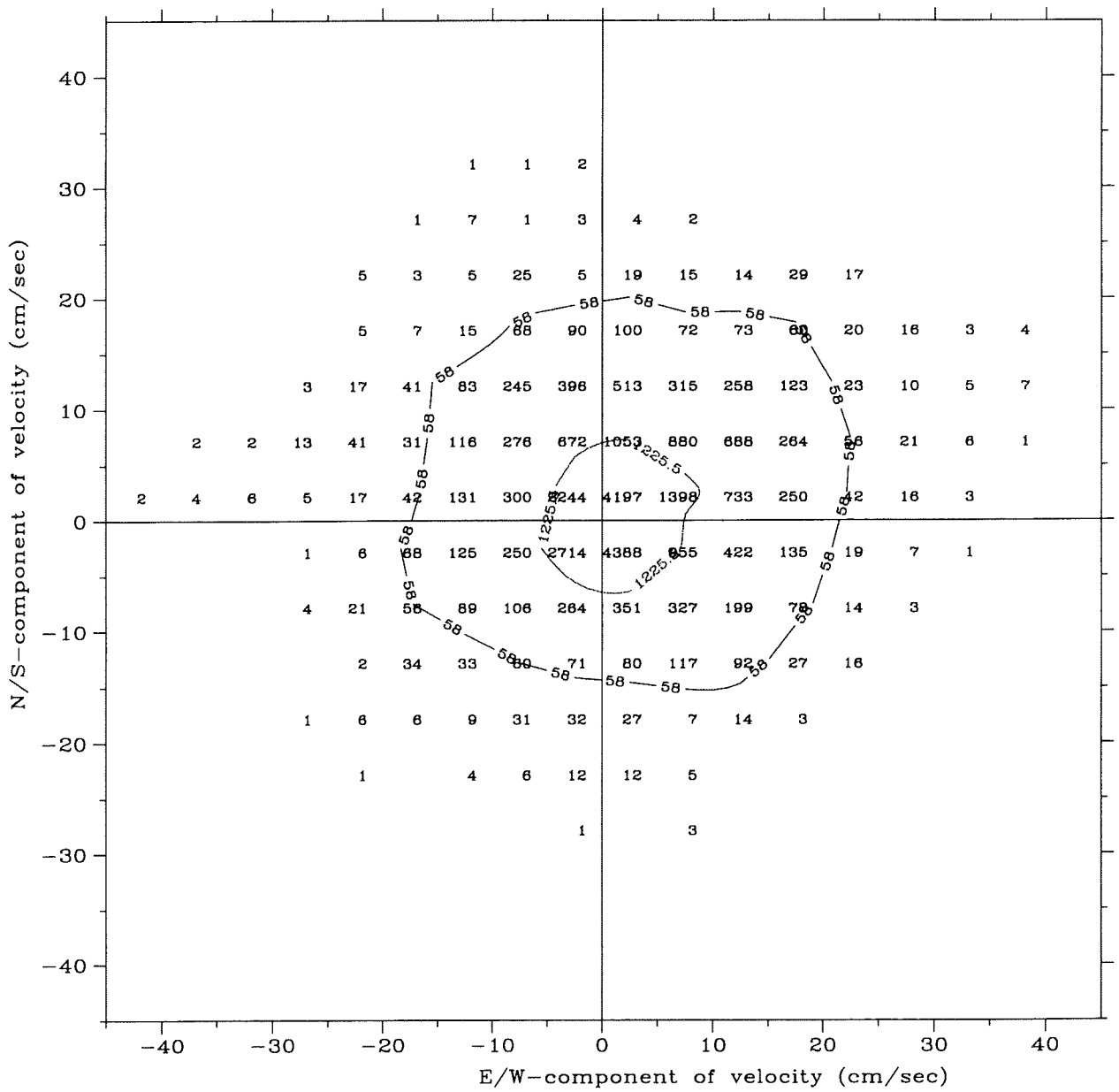
Number of observations :27558

Northern Central Bank, Barents Sea
Position : N 76° 0.07′ E 34° 59.50′
Instrument depth : 240.0 m Bottom depth : 250.0 m
Time interval : 20.00 minutes. Instrument no. : 10805
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27558

Isoline for 50% and 96%

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

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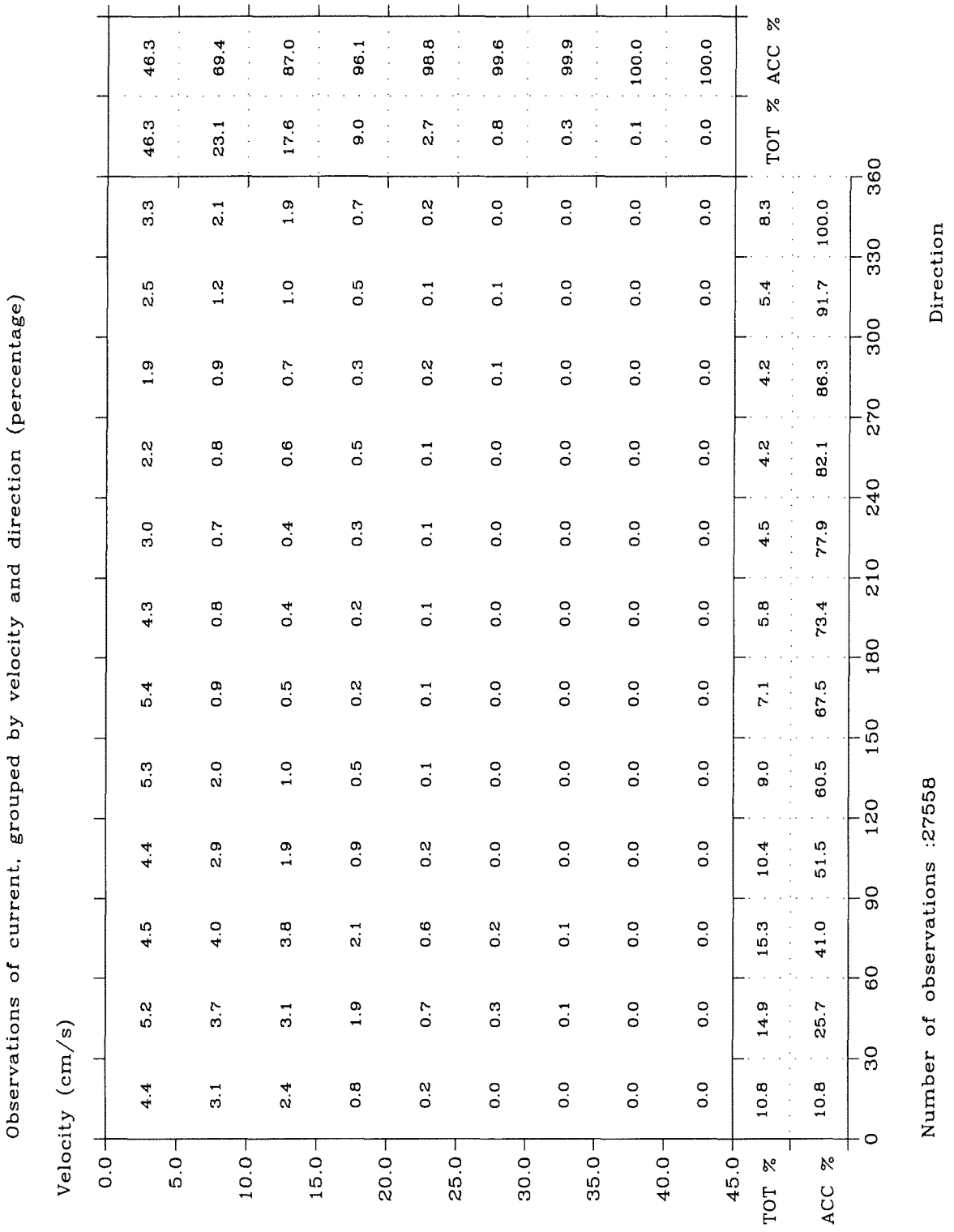
Fig. 1-4-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

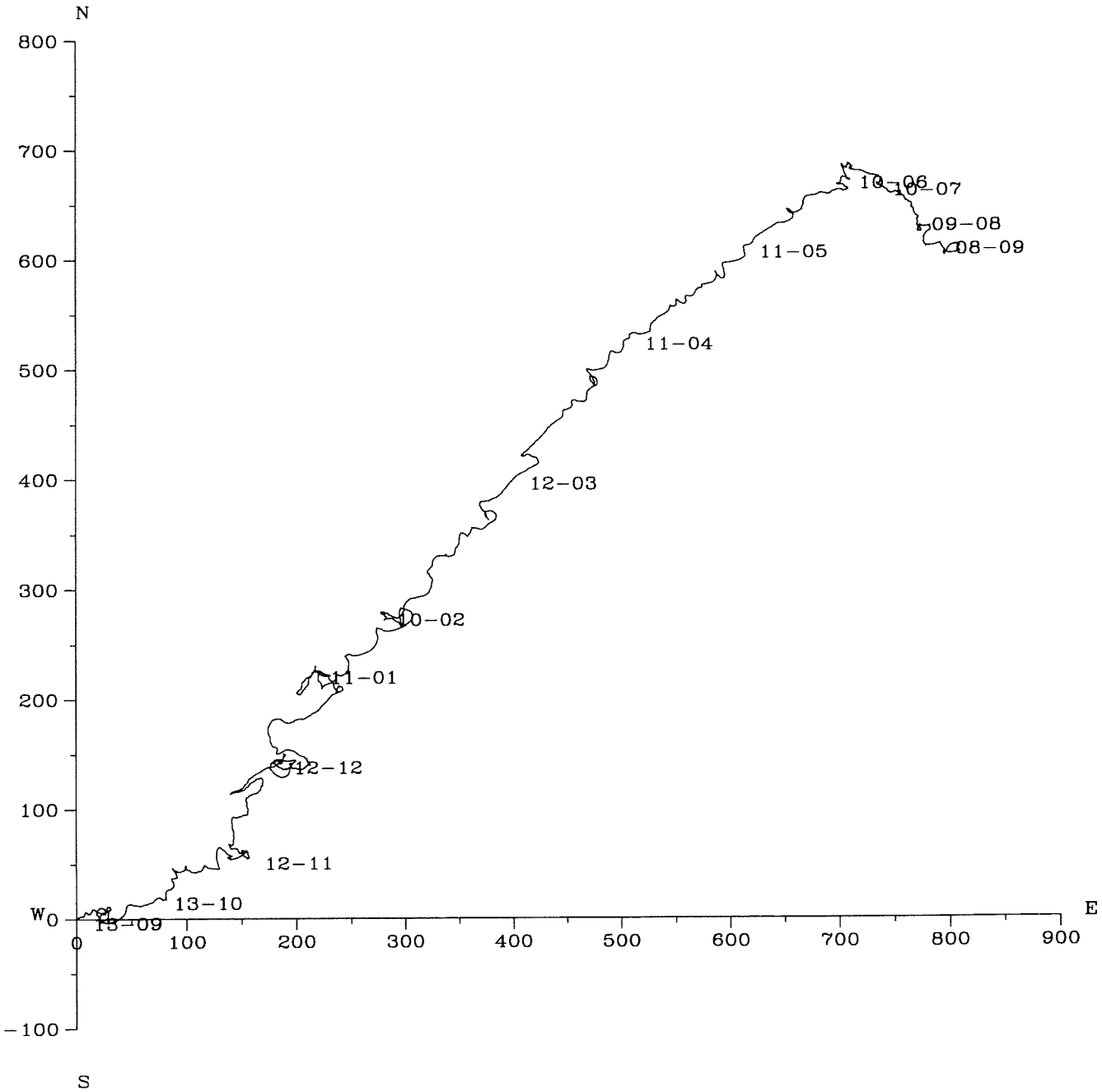
Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1–4–4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



Units in km

Number of observations :27558

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

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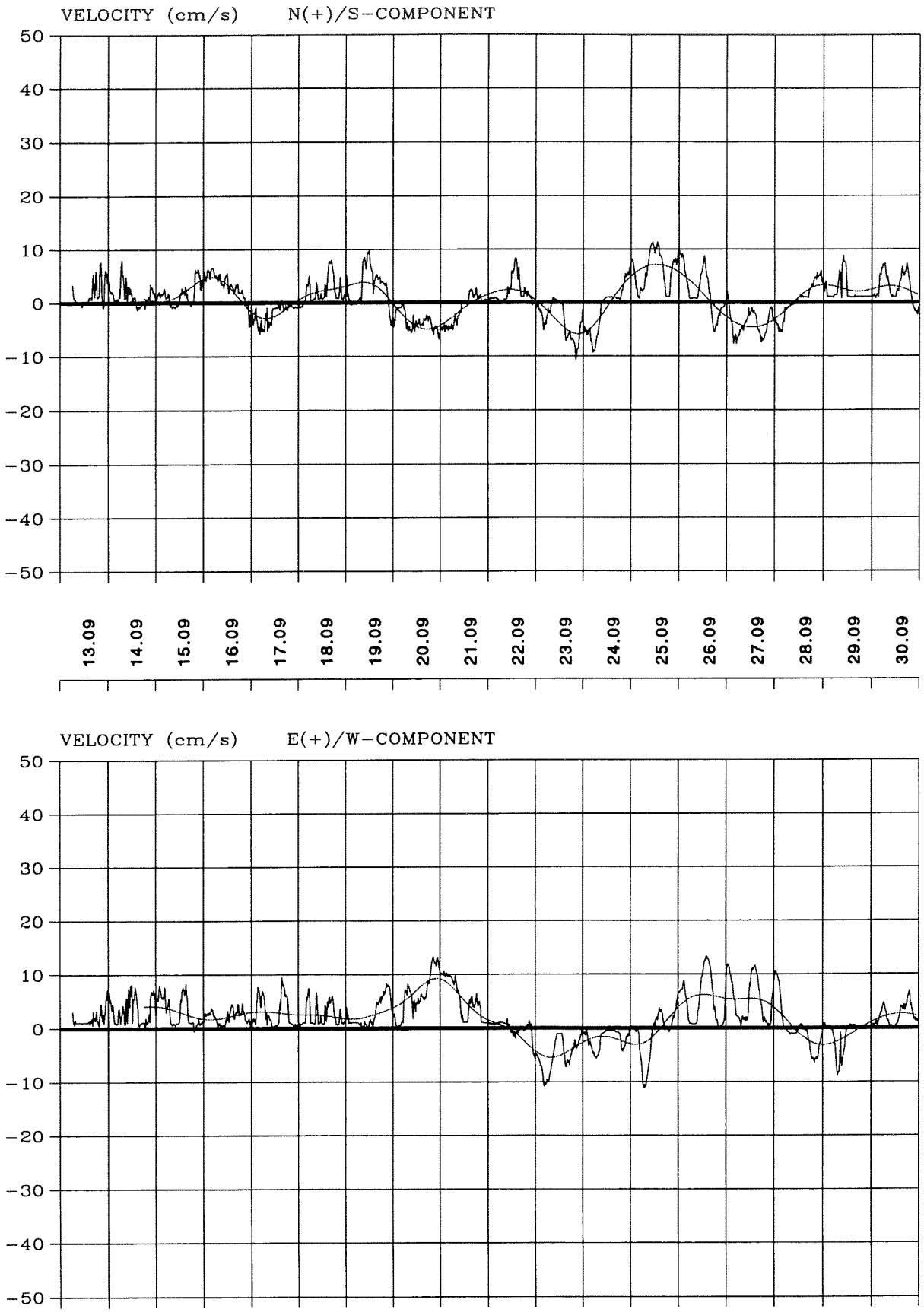
Fig. 1-4-5 Progressive vector diagram.



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

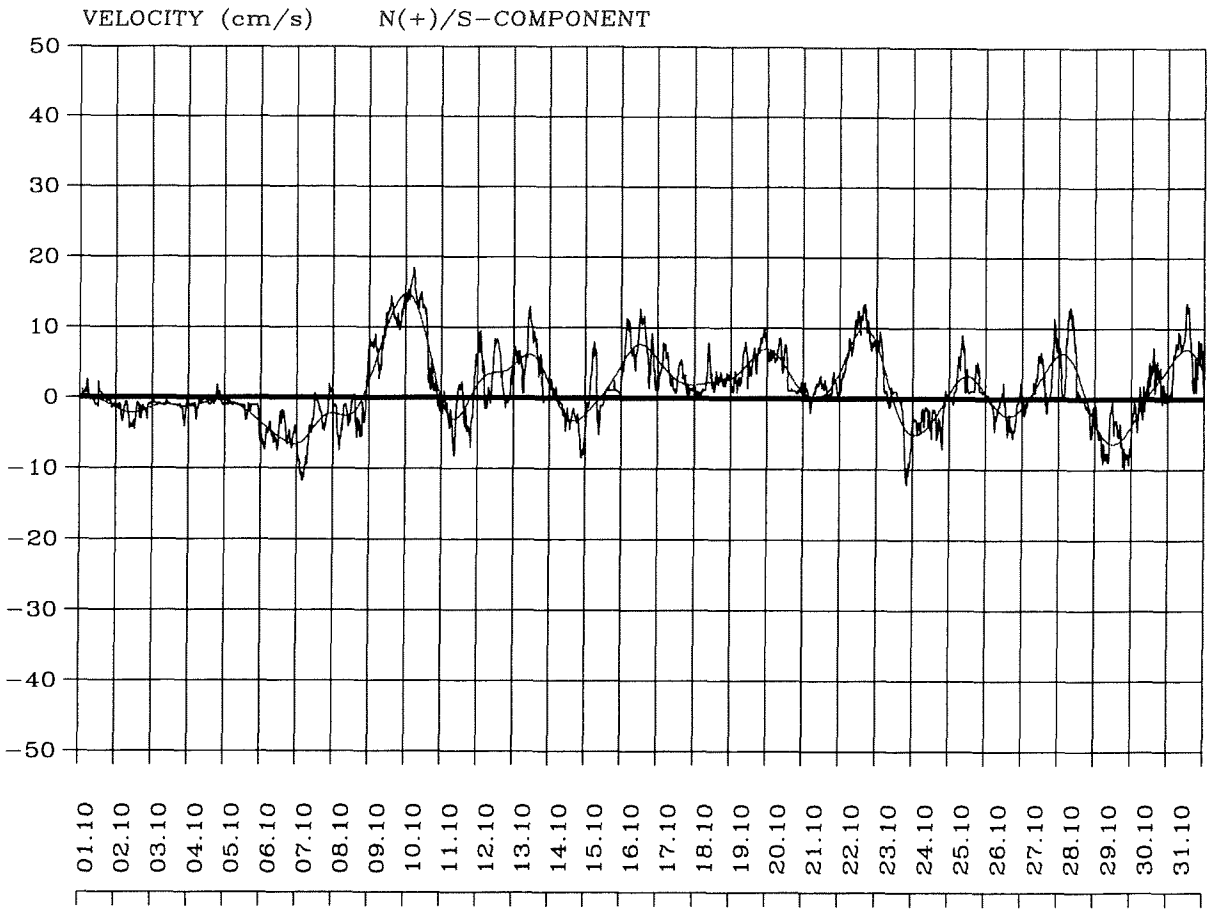
Instrument depth : 240.0 m Bottom depth : 250.0 m

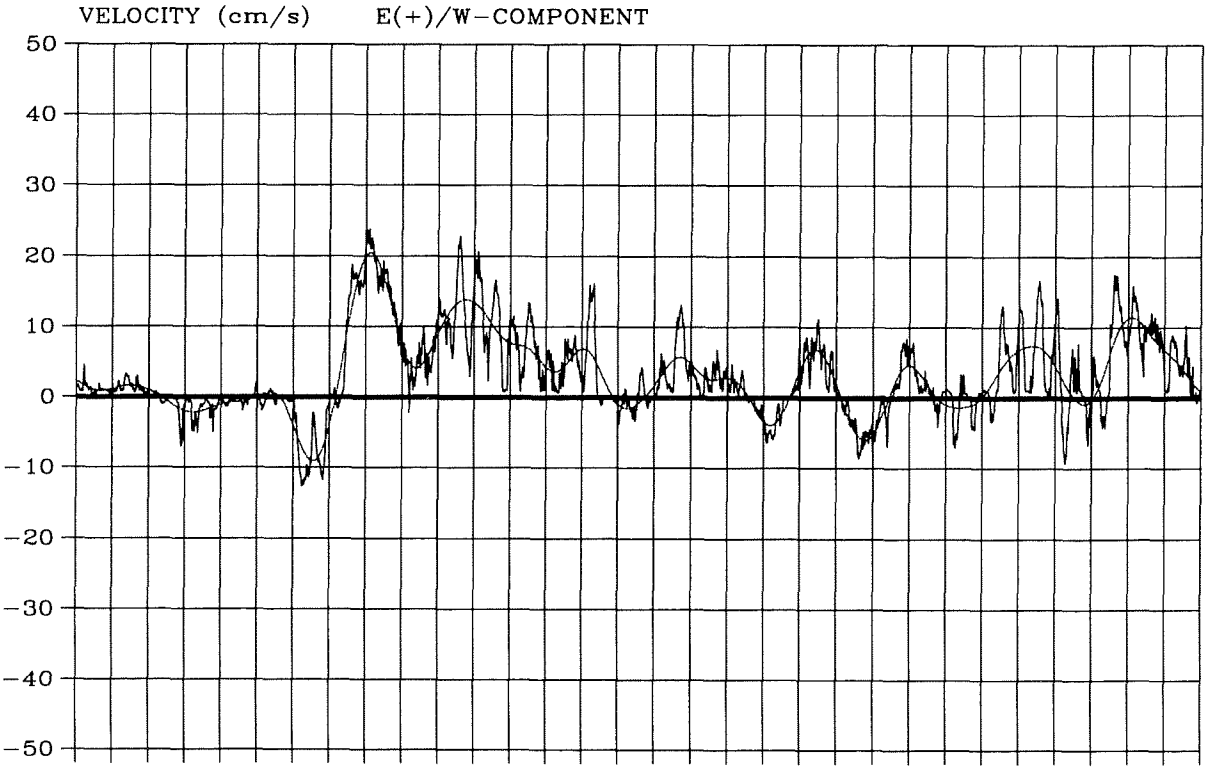
Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-6 Current velocity distribution.





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

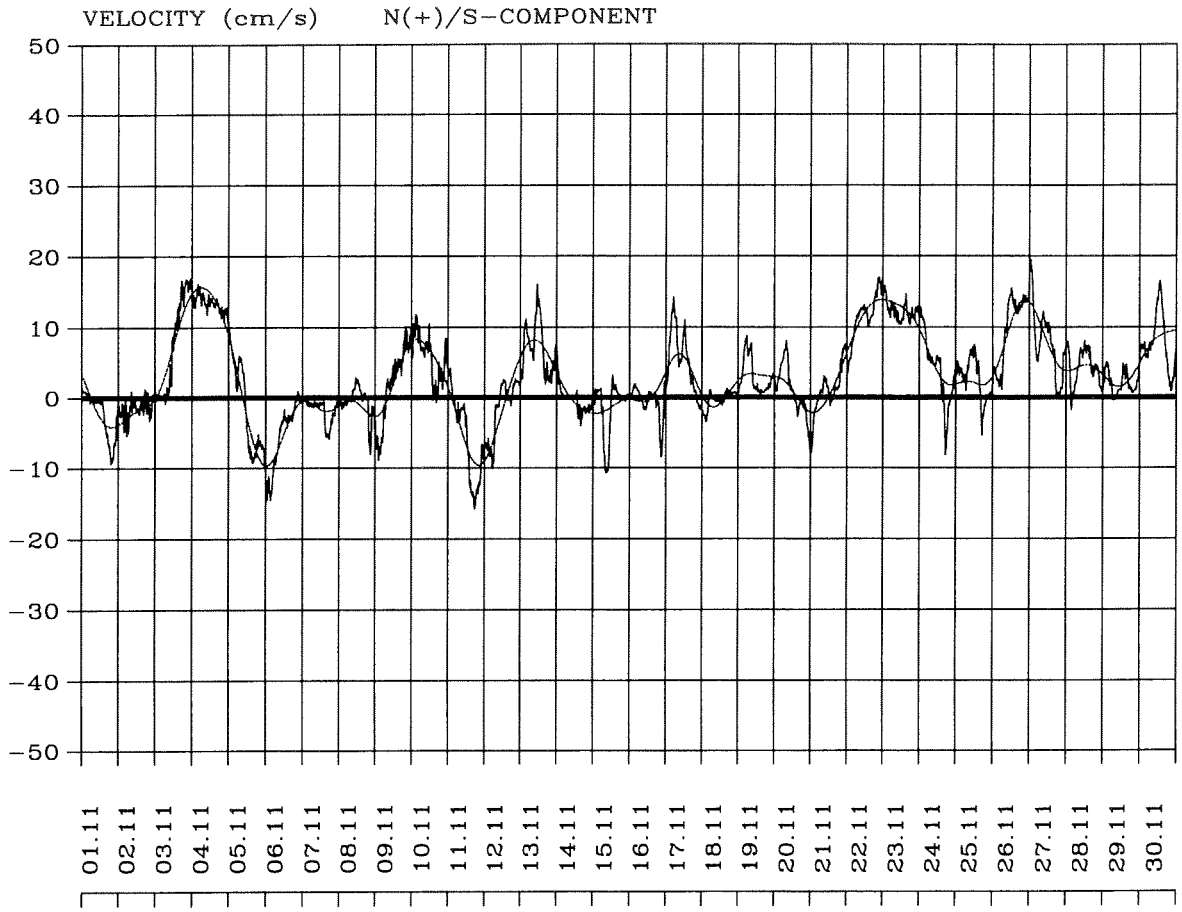
Time interval : 20.00 minutes. Instrument no. : 10805

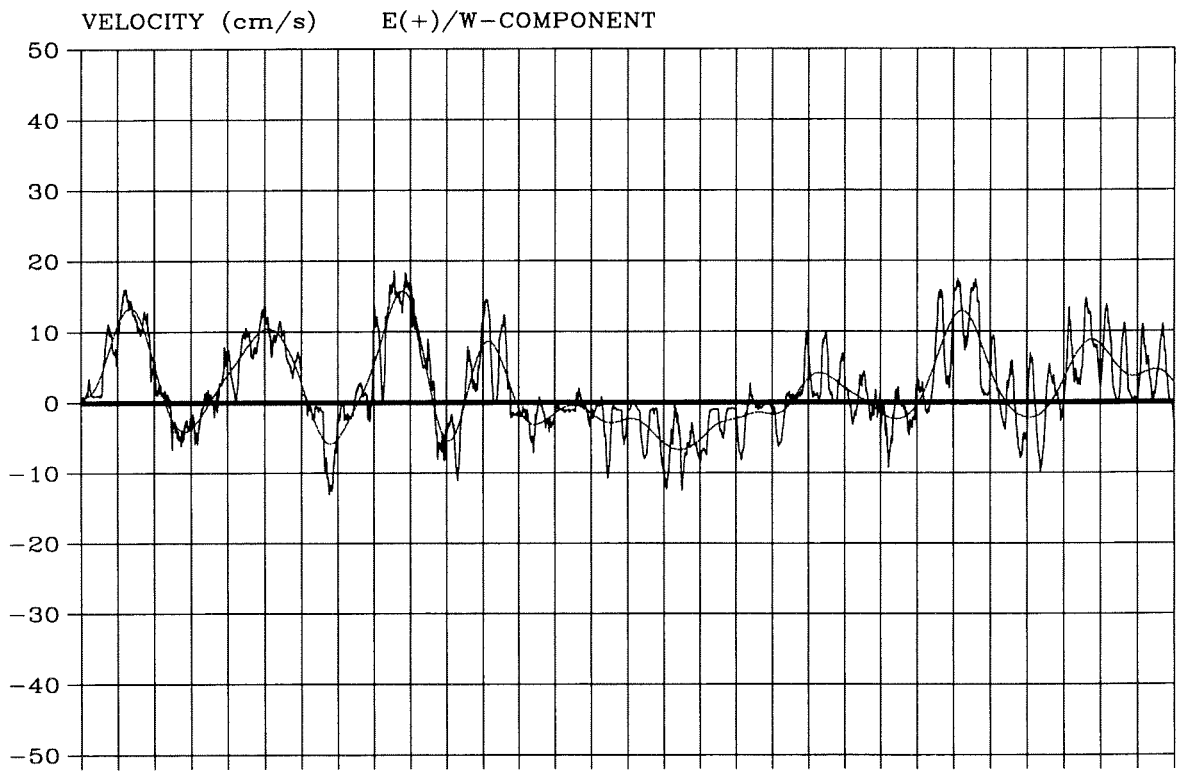
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

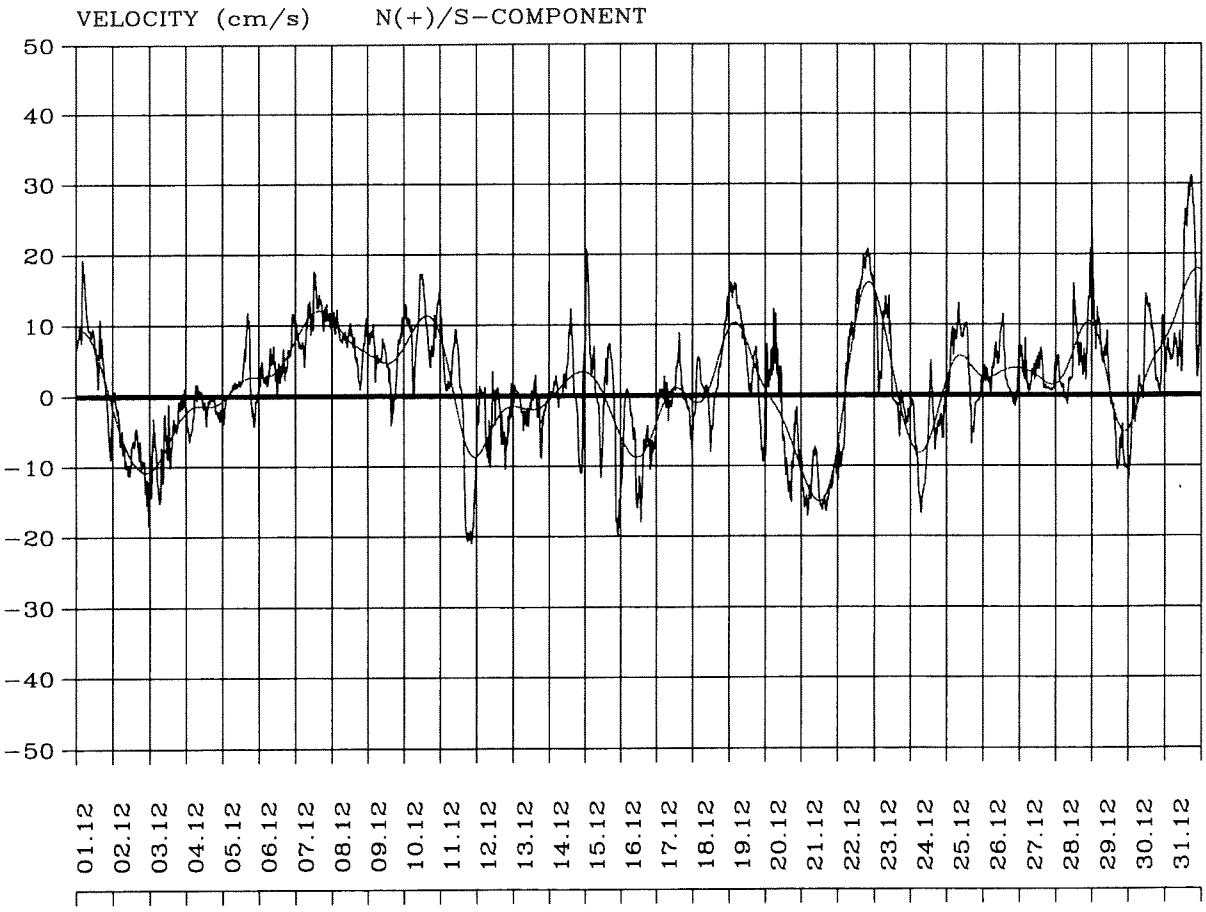
Time interval : 20.00 minutes. Instrument no. : 10805

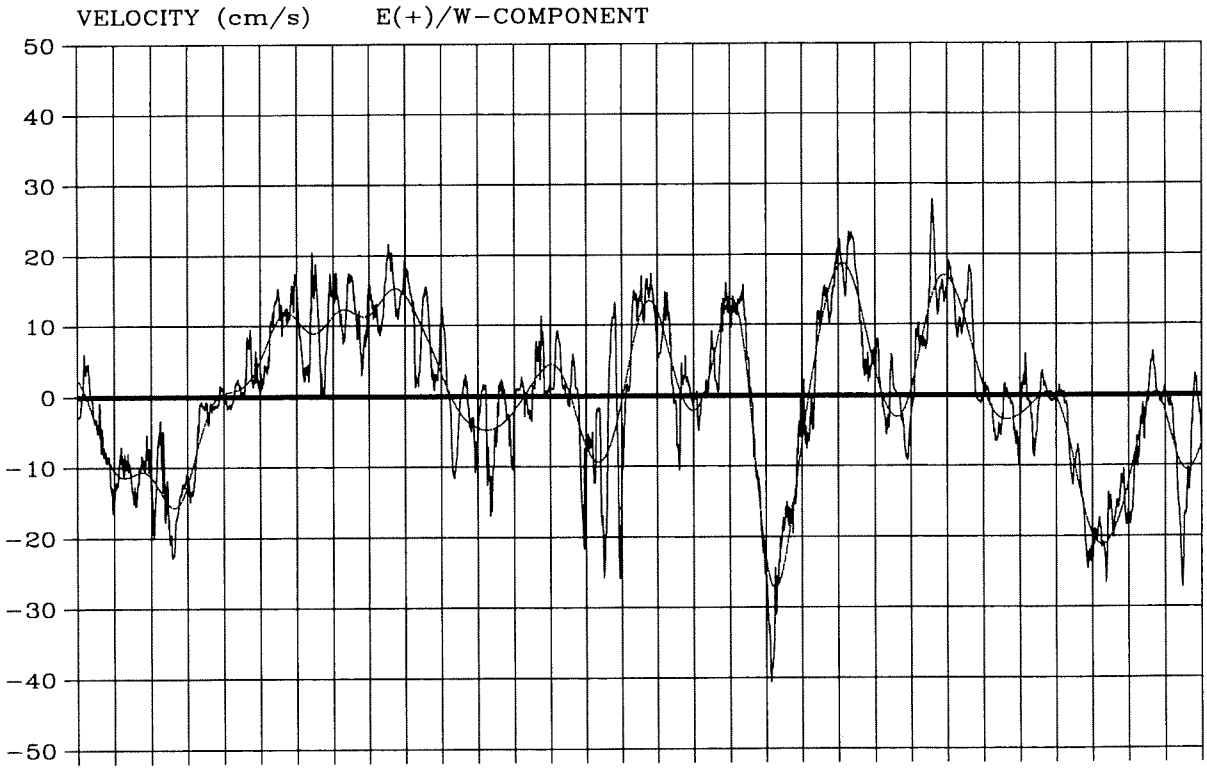
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-6

Continues.....





Northern Central Bank, Barents Sea

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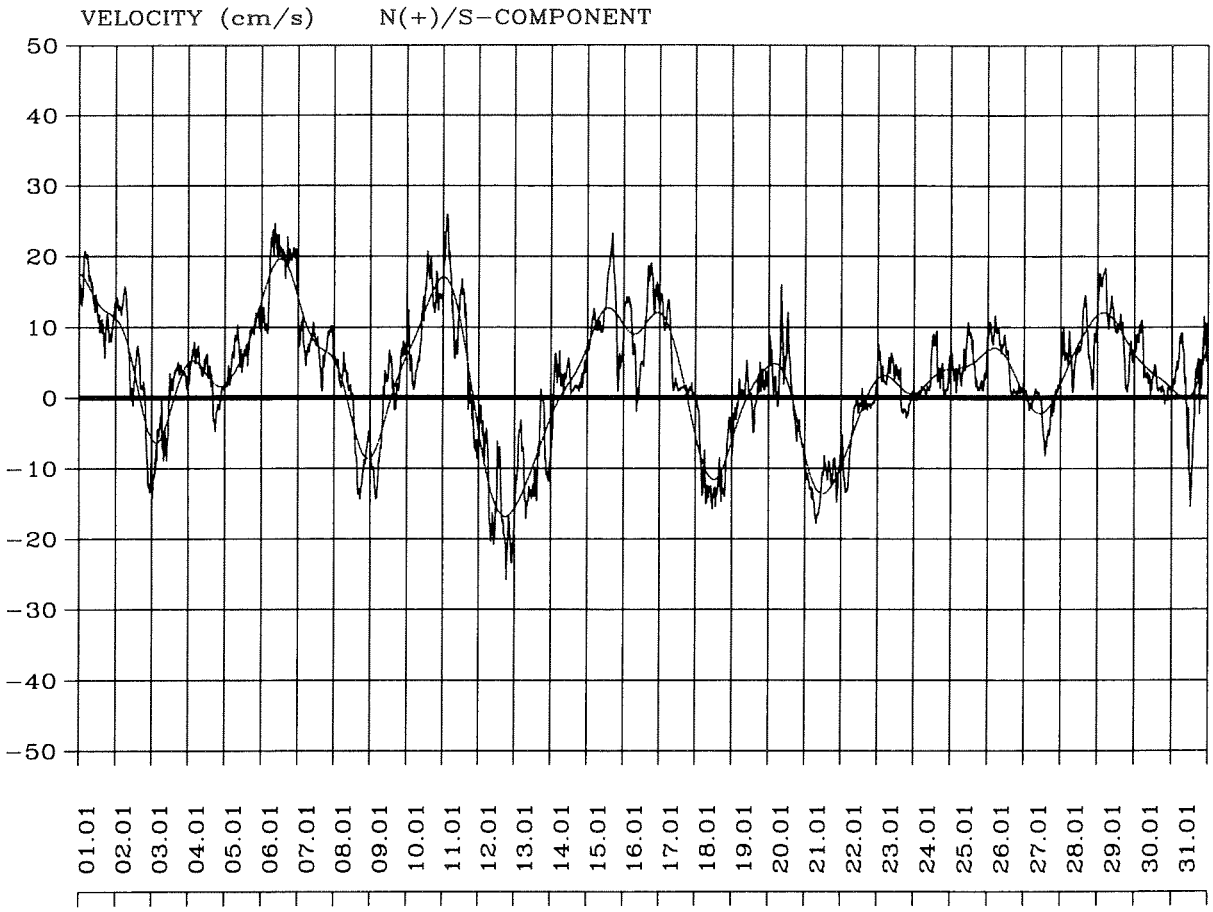
Time interval : 20.00 minutes. Instrument no. : 10805

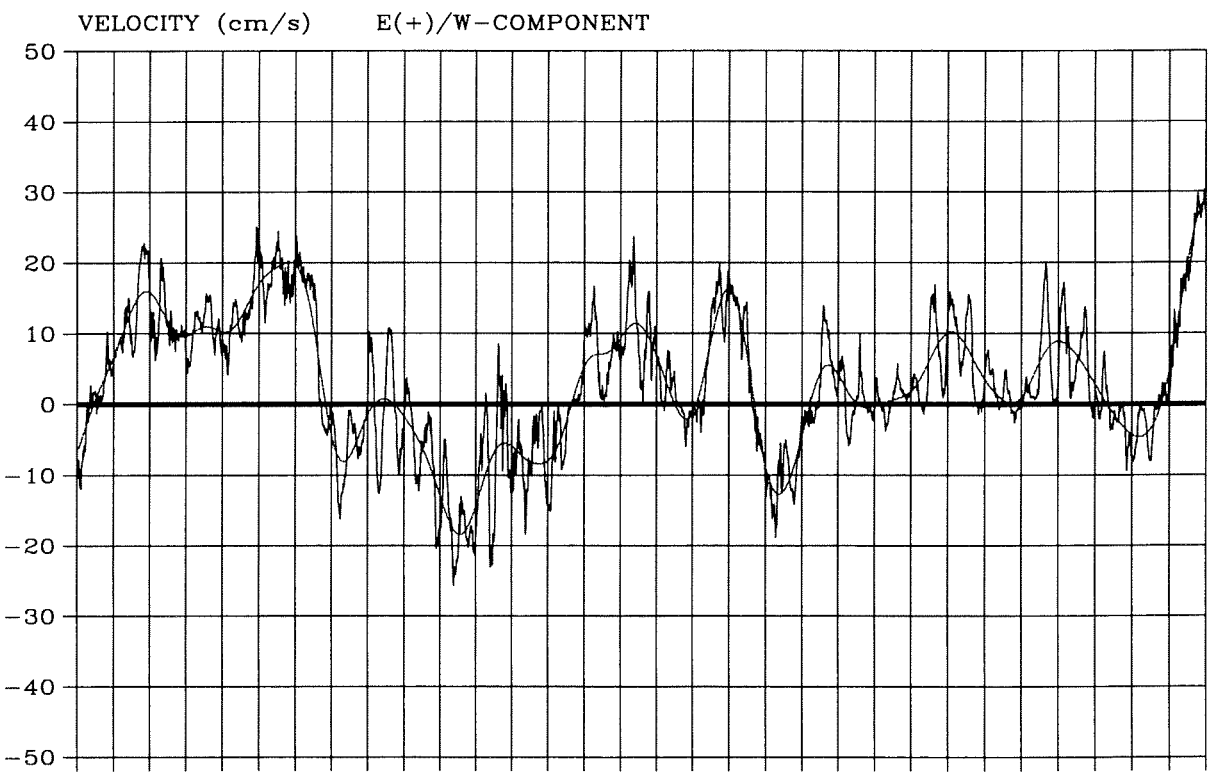
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-6

Continues.....





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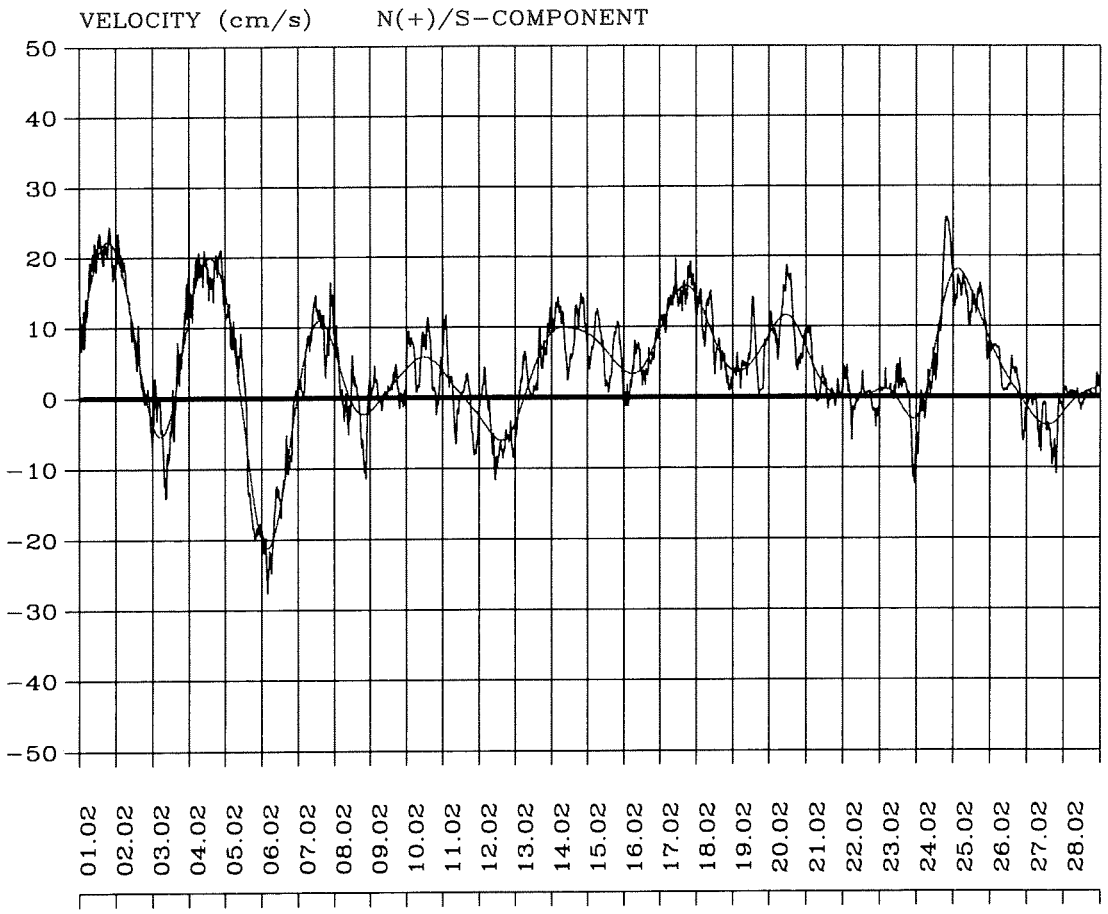
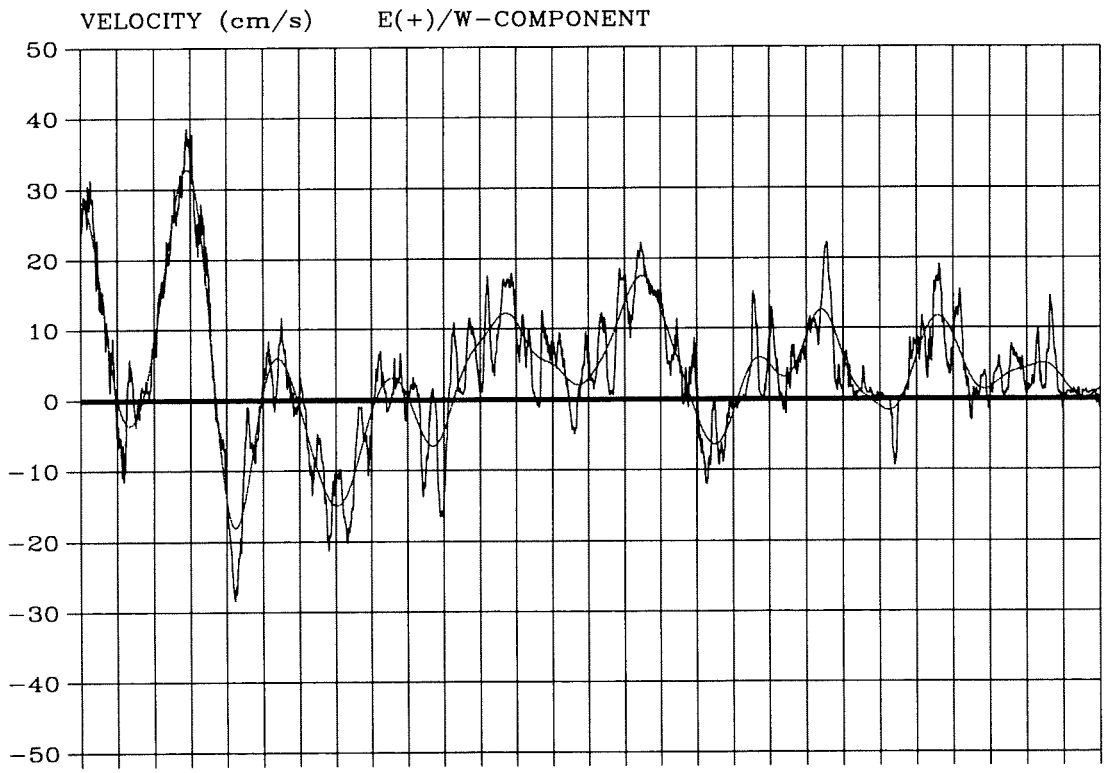
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-6

Continues.....





Northern Central Bank, Barents Sea

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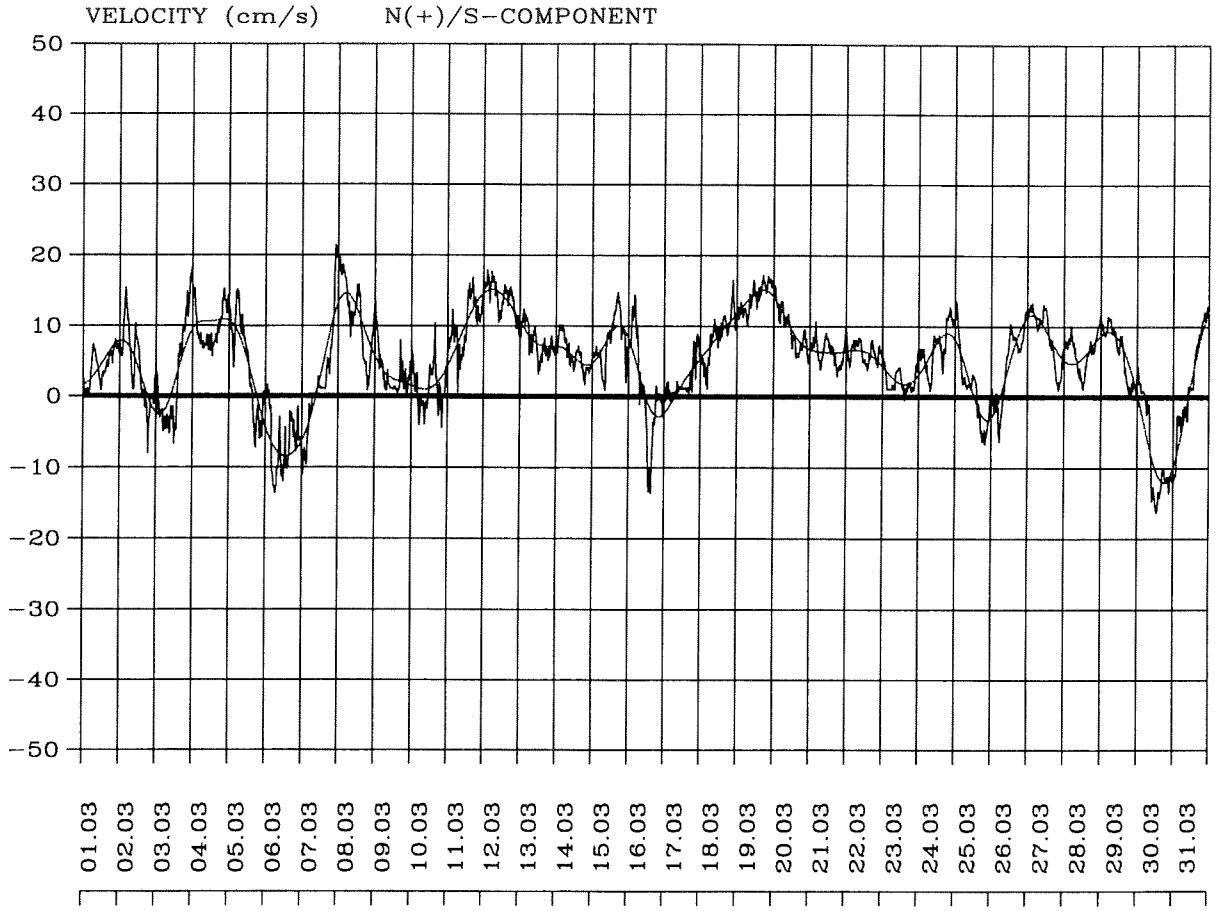
Time interval : 20.00 minutes. Instrument no. : 10805

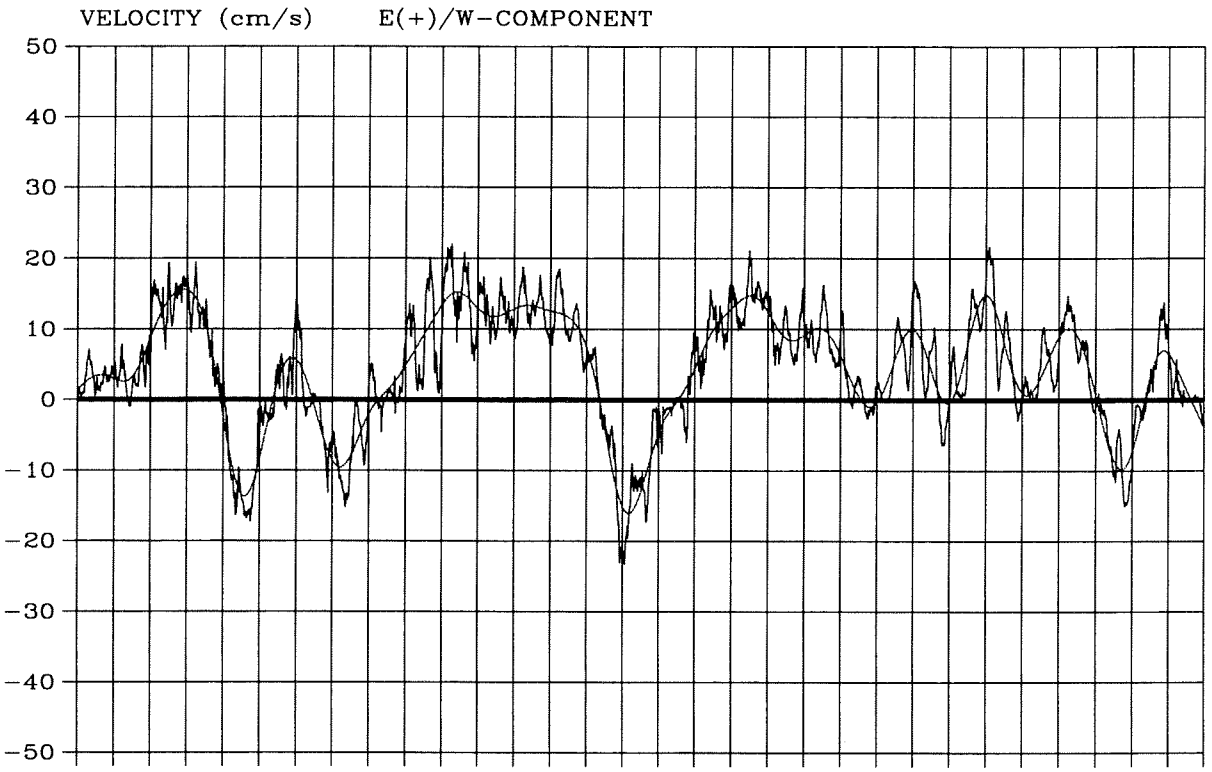
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-4-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 240.0 m Bottom depth : 250.0 m

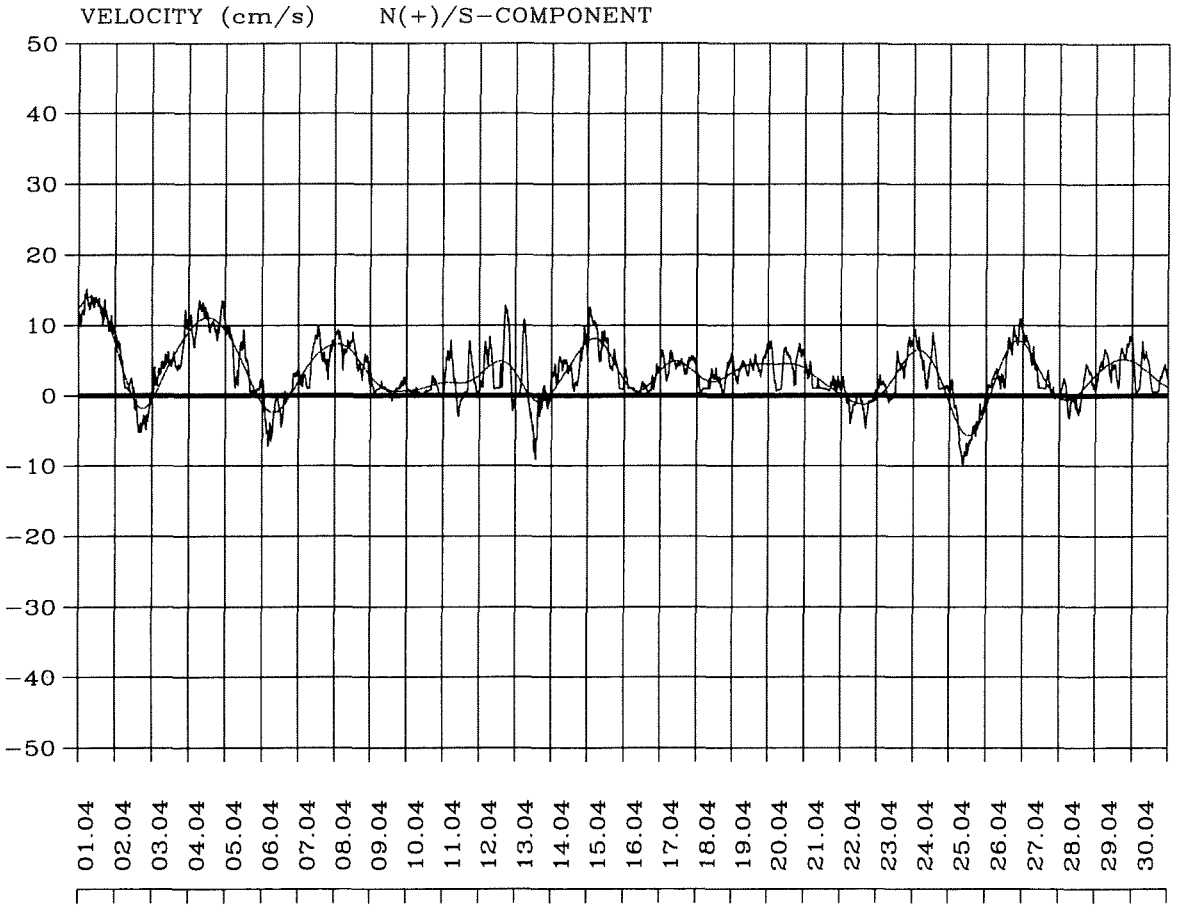
Time interval : 20.00 minutes. Instrument no. : 10805

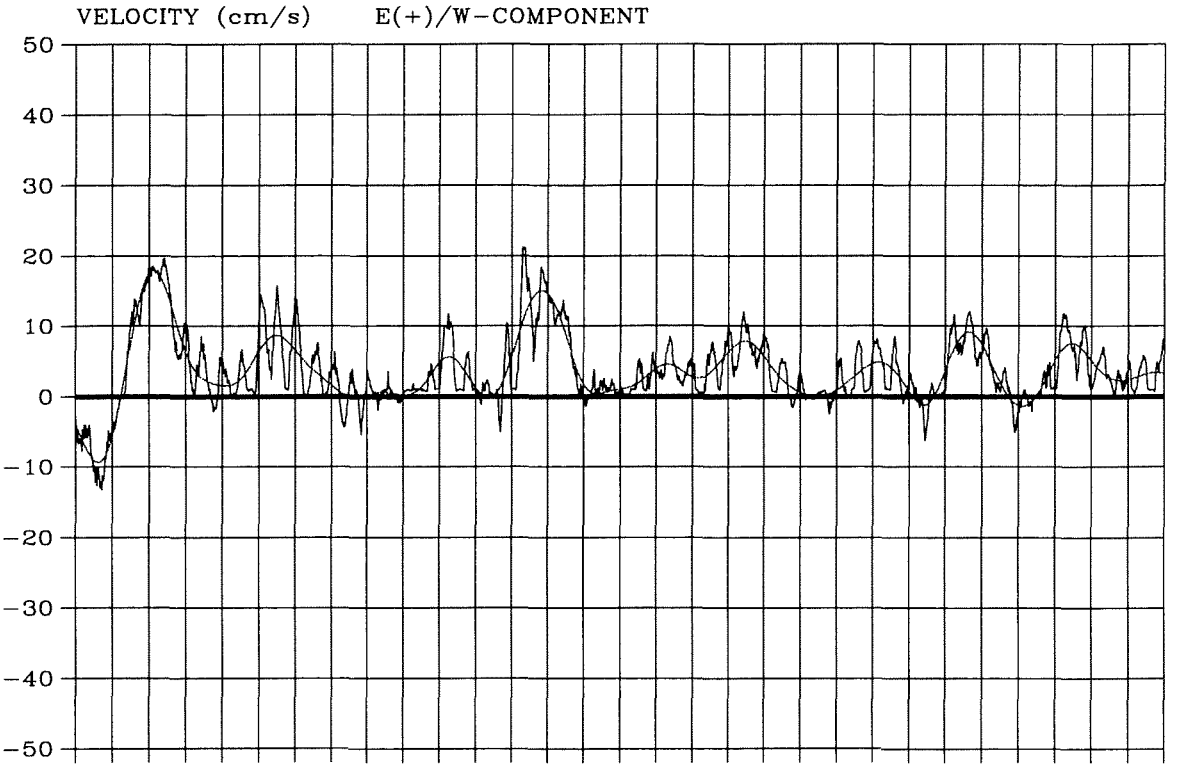
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-4-6

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

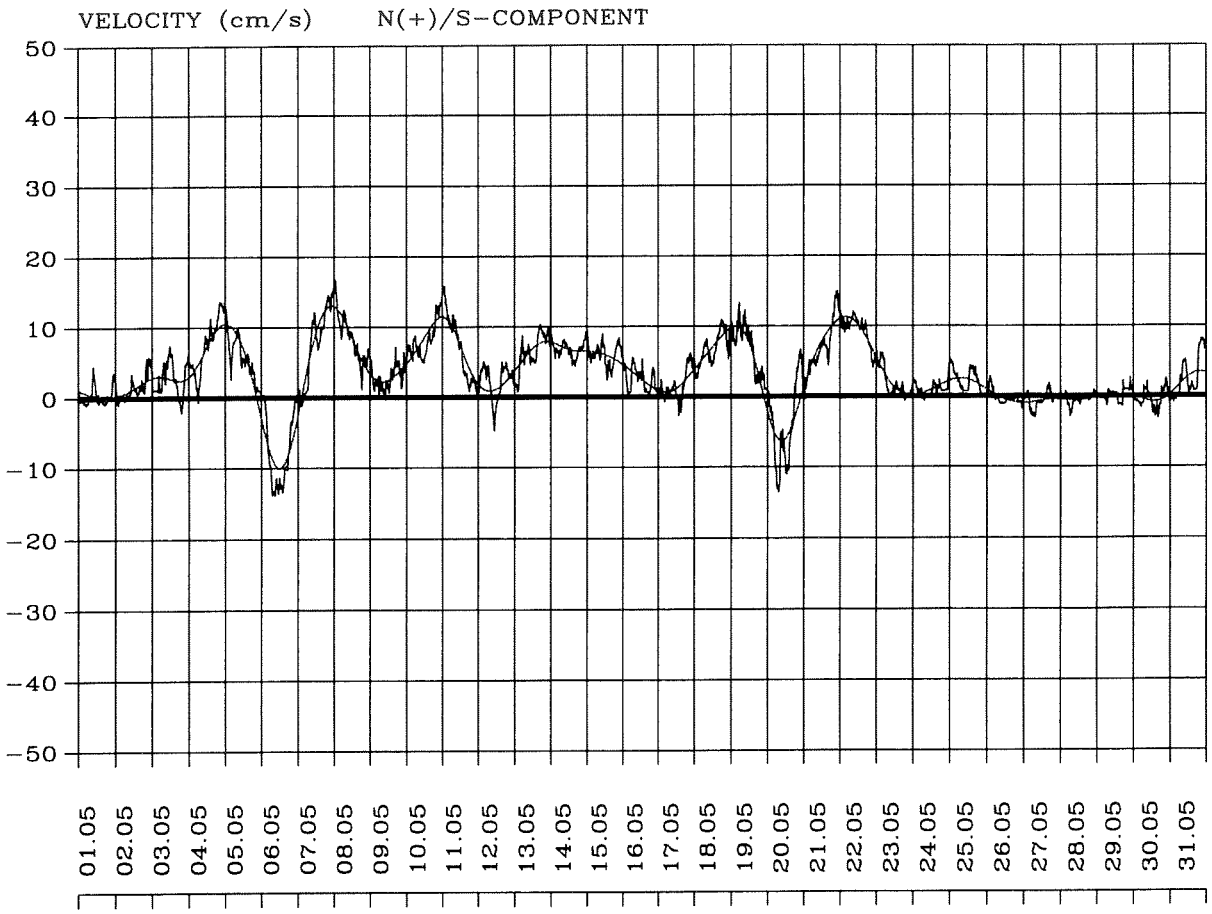
Time interval : 20.00 minutes. Instrument no. : 10805

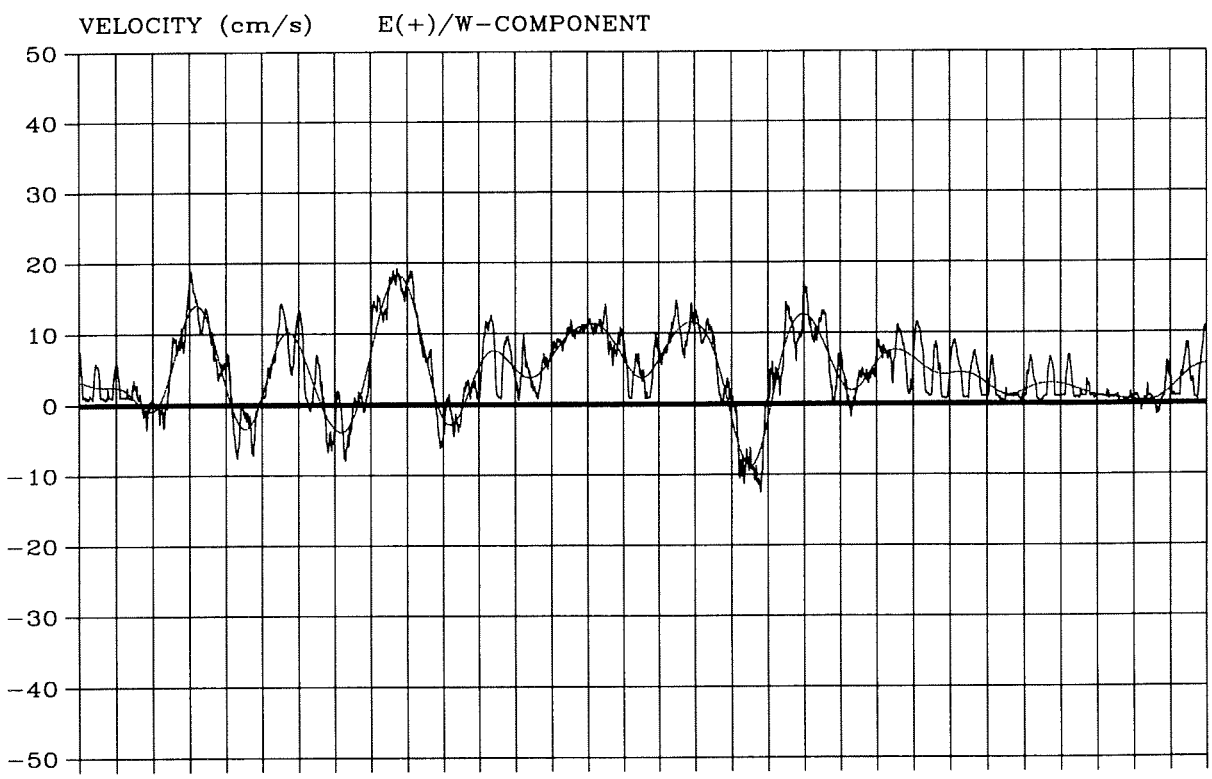
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-4-6

Continues.....





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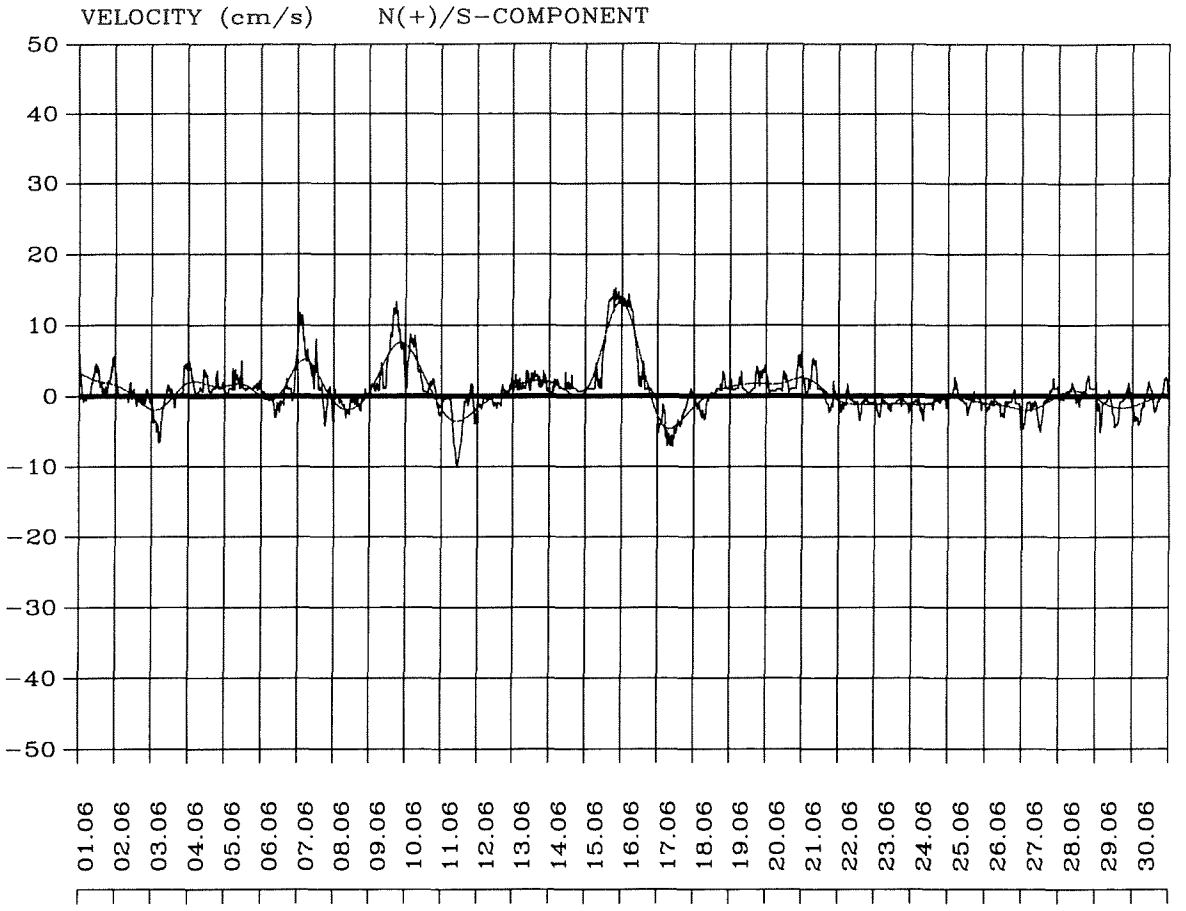
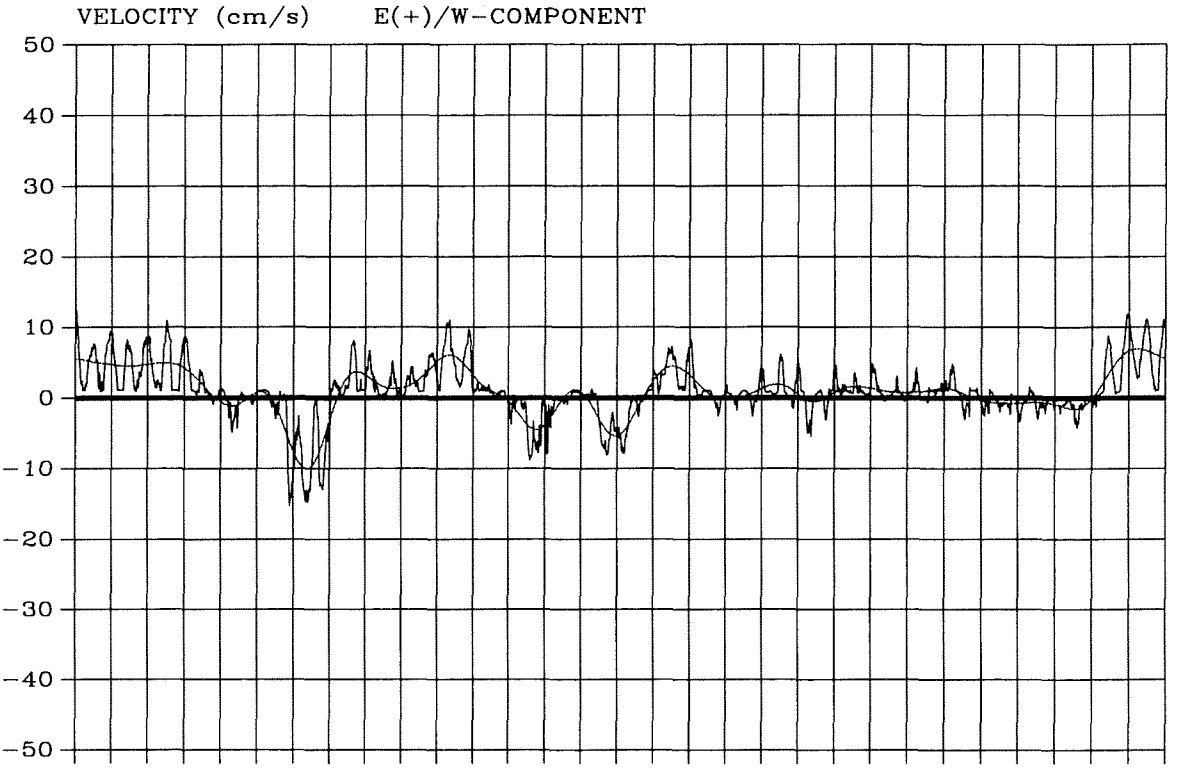
IMR

Fig. 1-4-6

Continues.....





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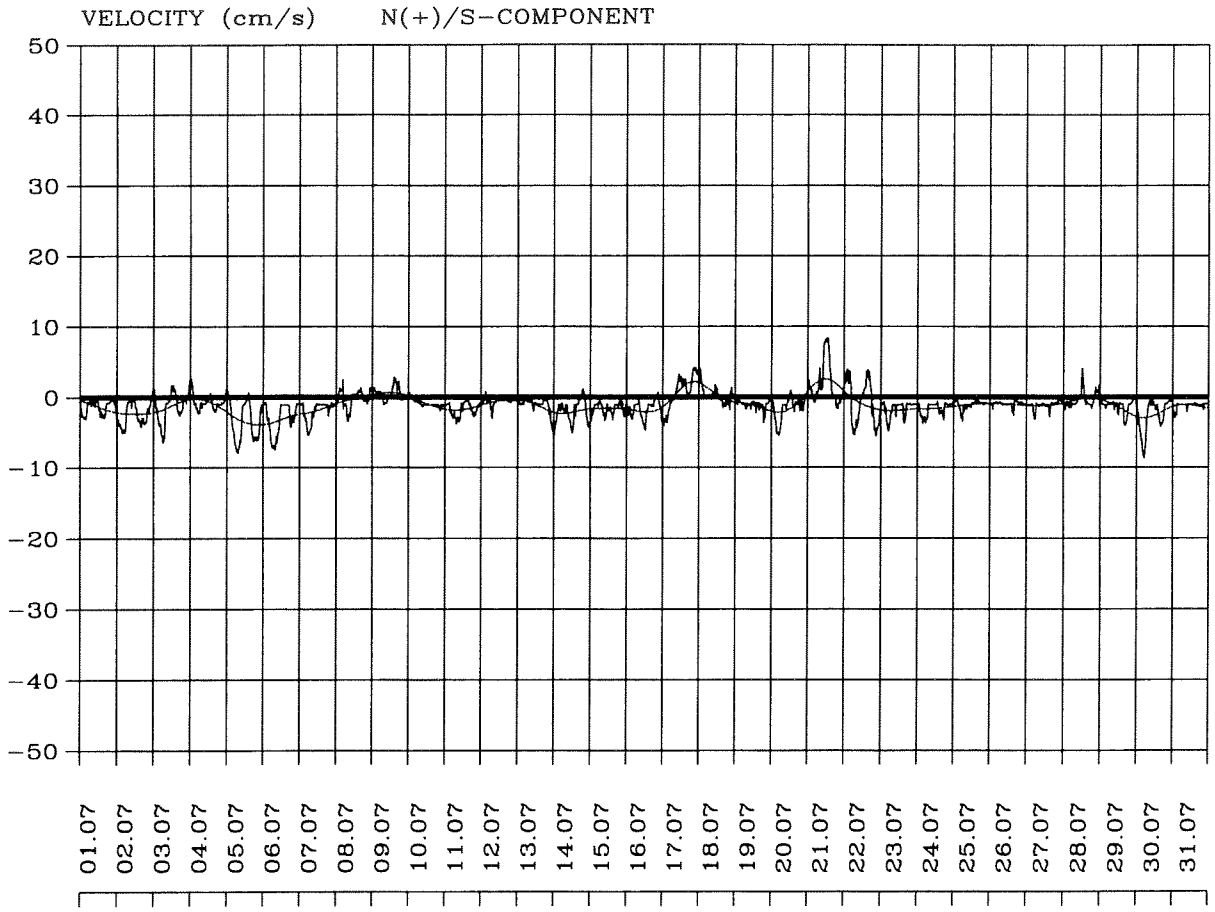
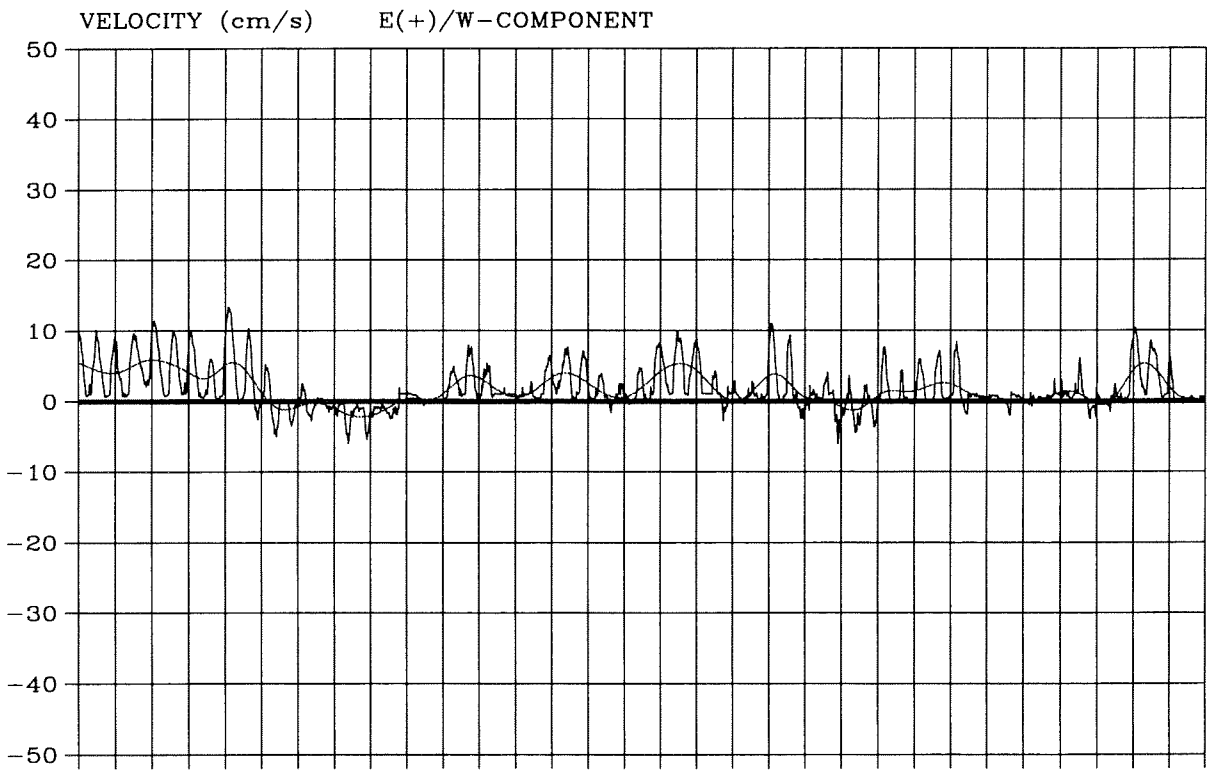
IMR

Fig. 1-4-6

Continues.....





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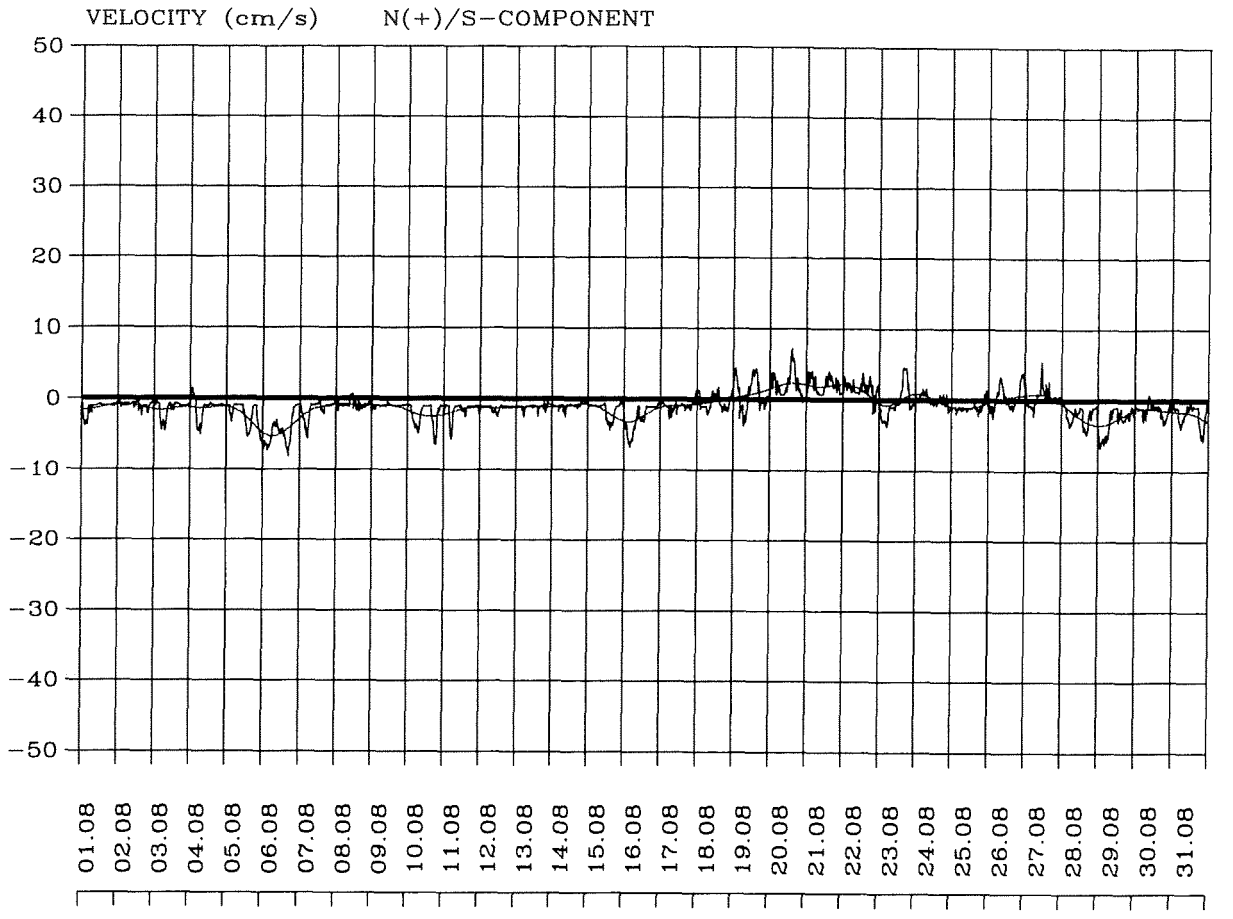
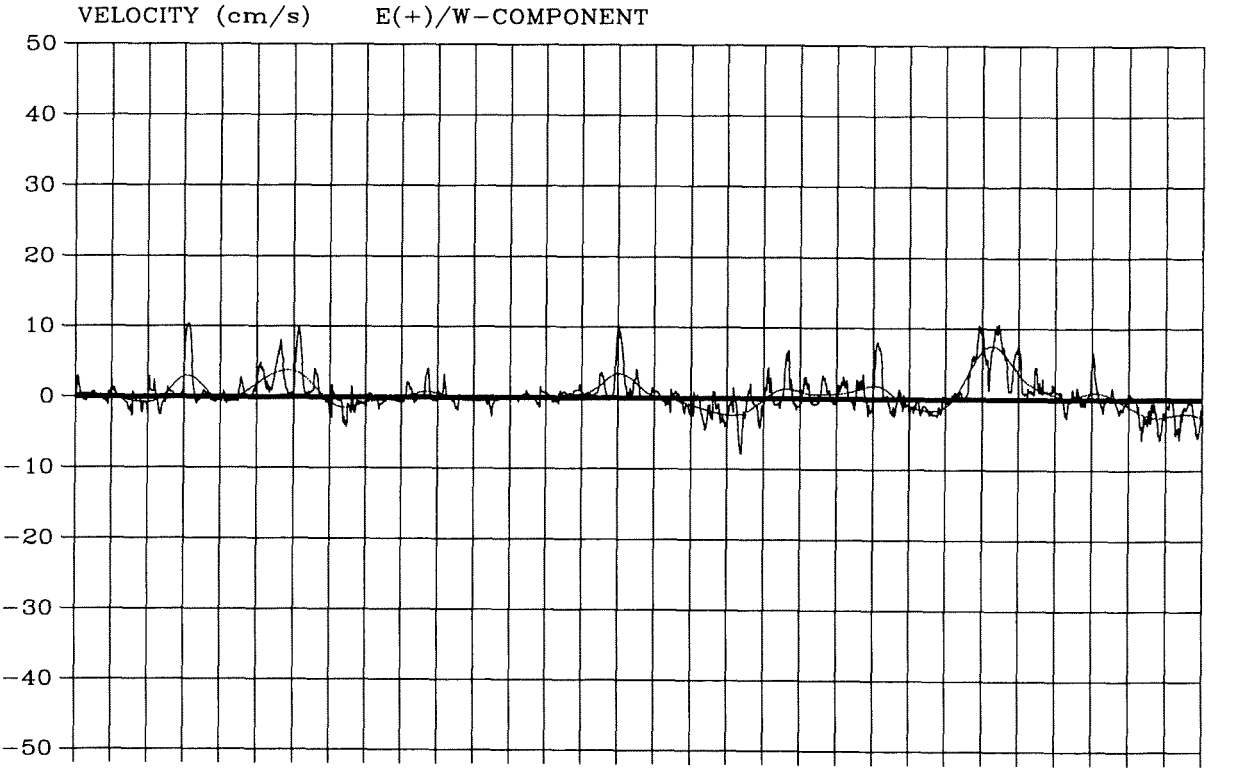
IMR

Fig. 1-4-6

Continues.....





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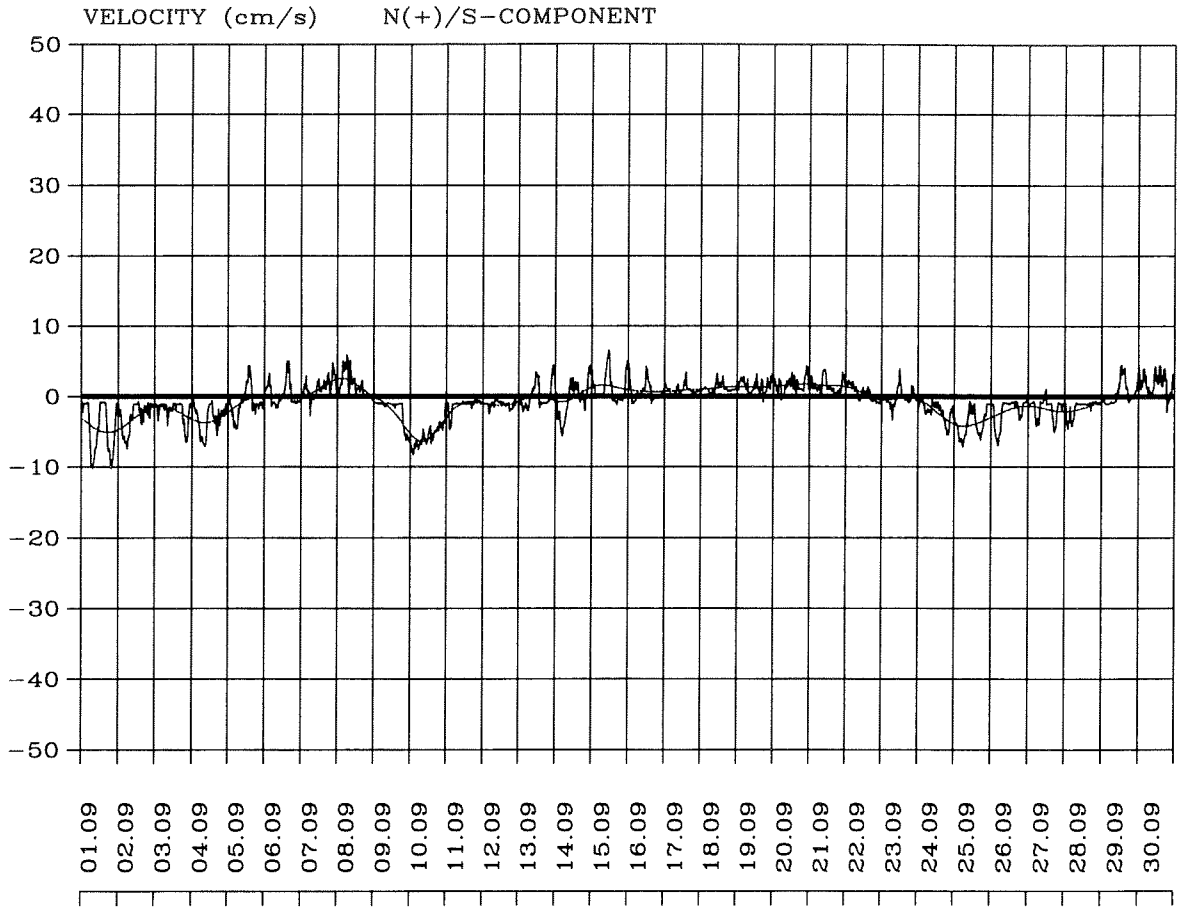
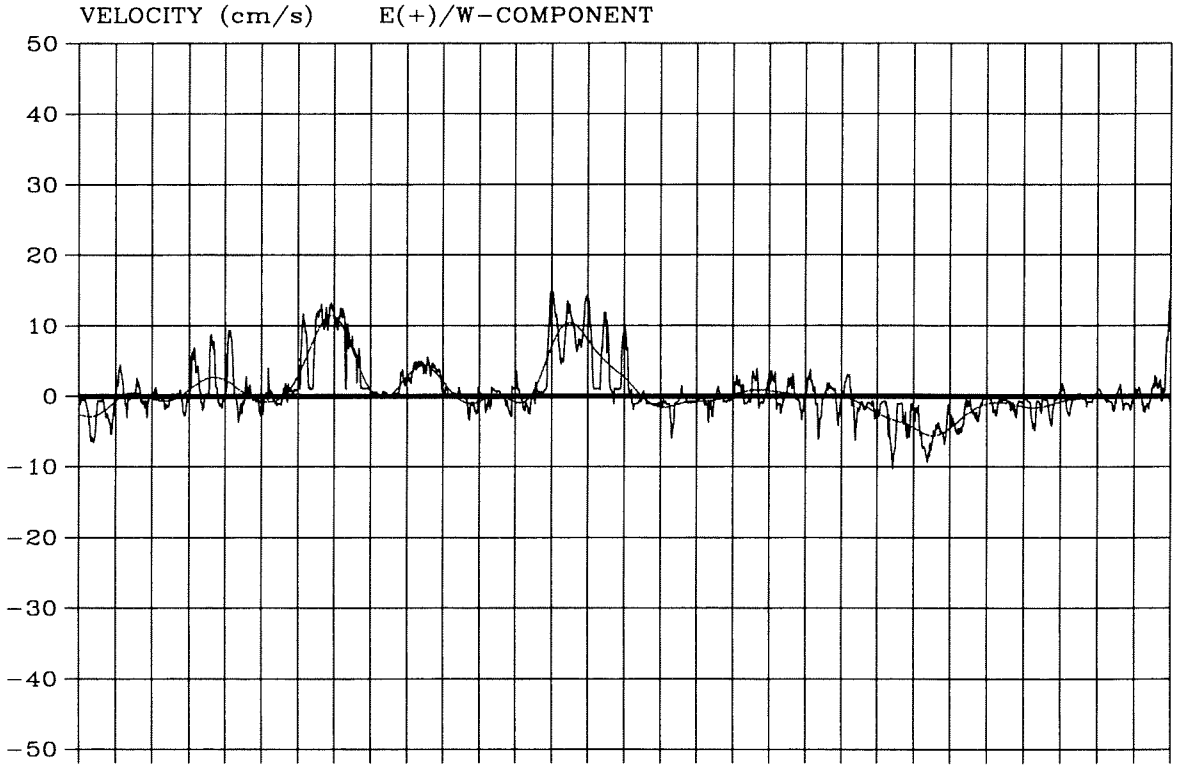
IMR

Fig. 1-4-6

Continues.....





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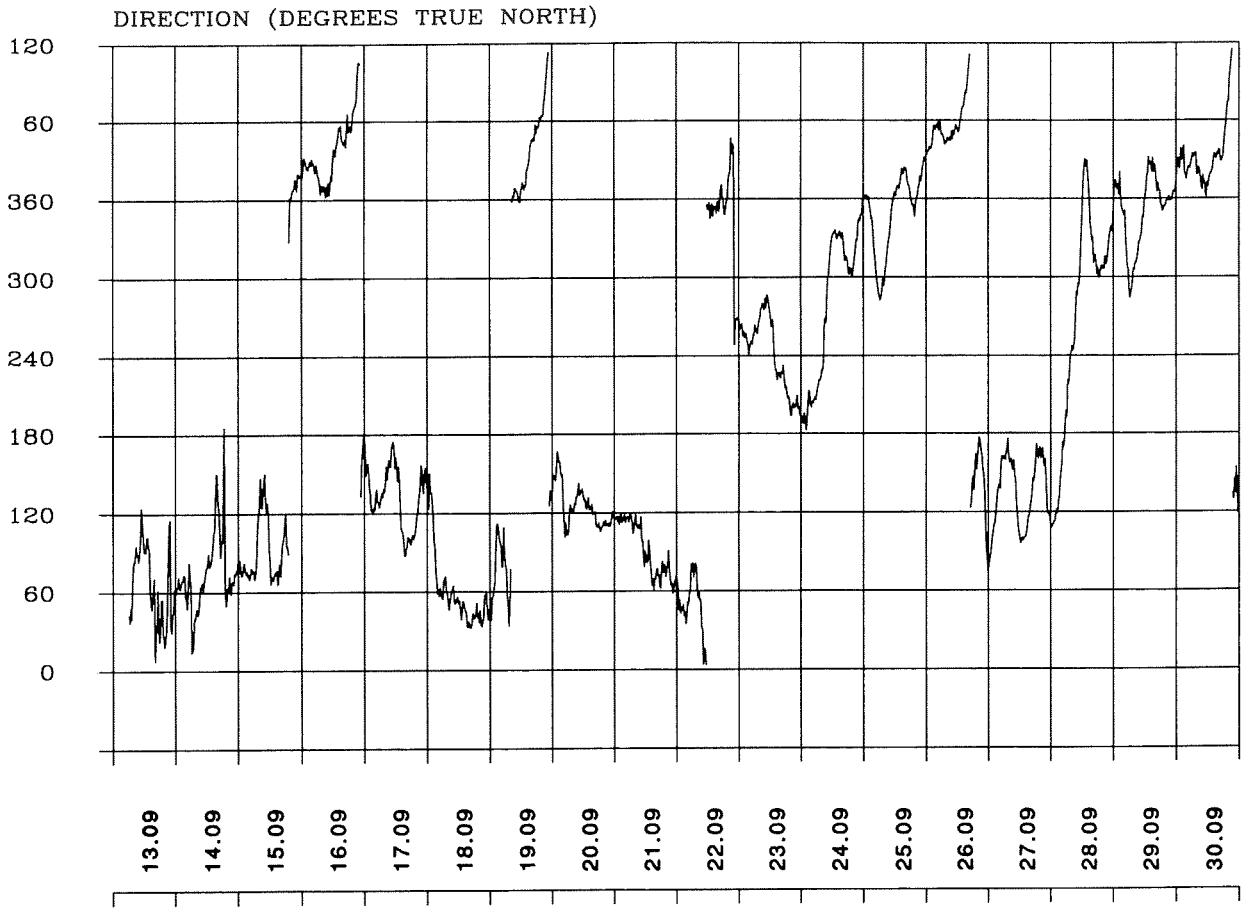
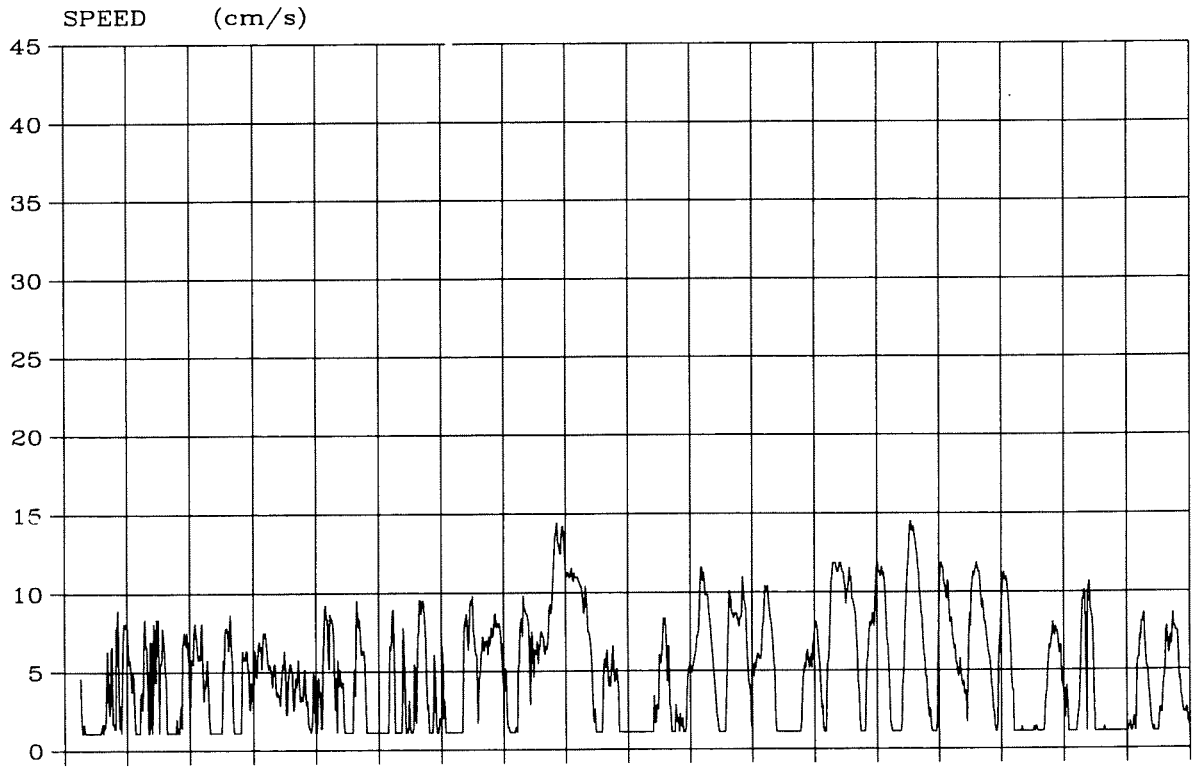
IMR

Fig. 1-4-6

Continues.....





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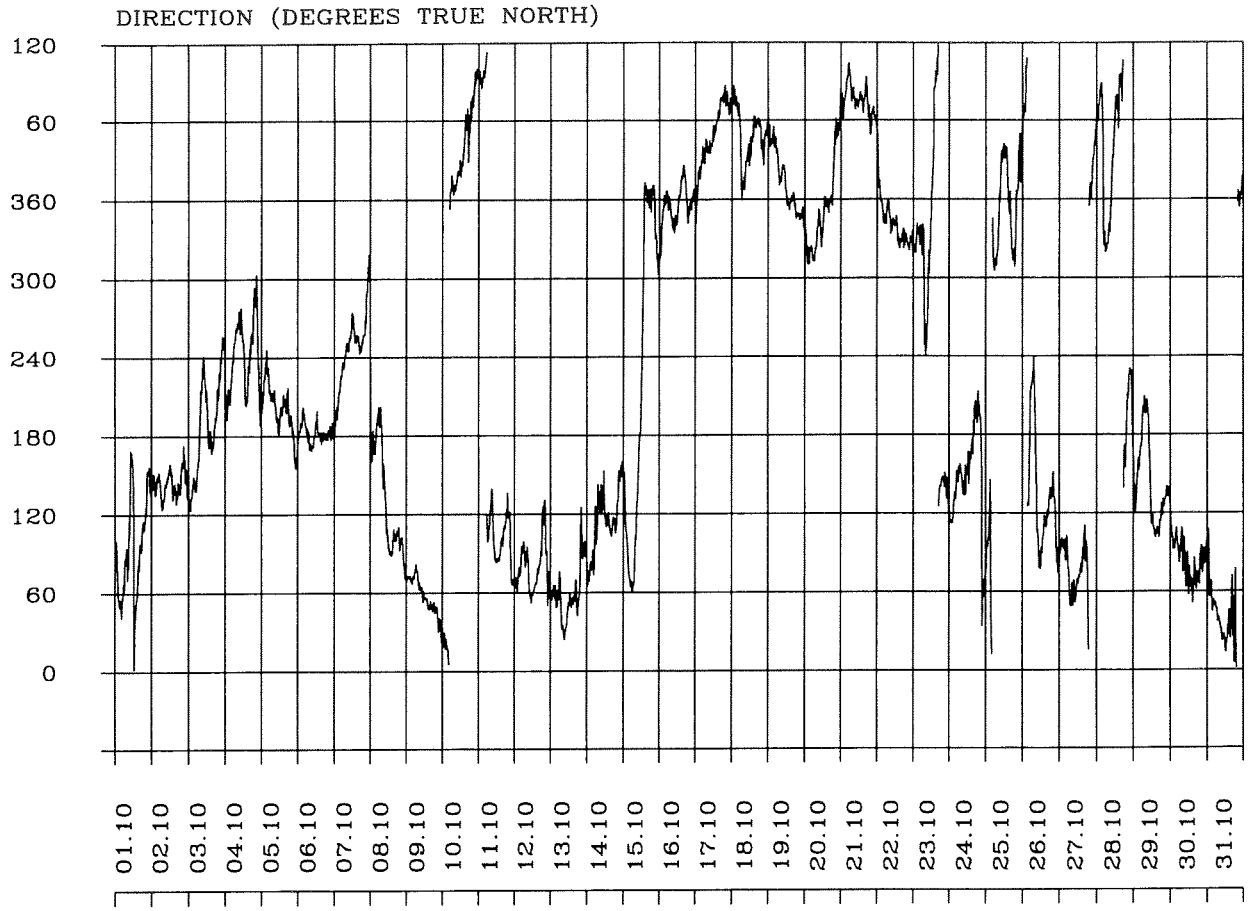
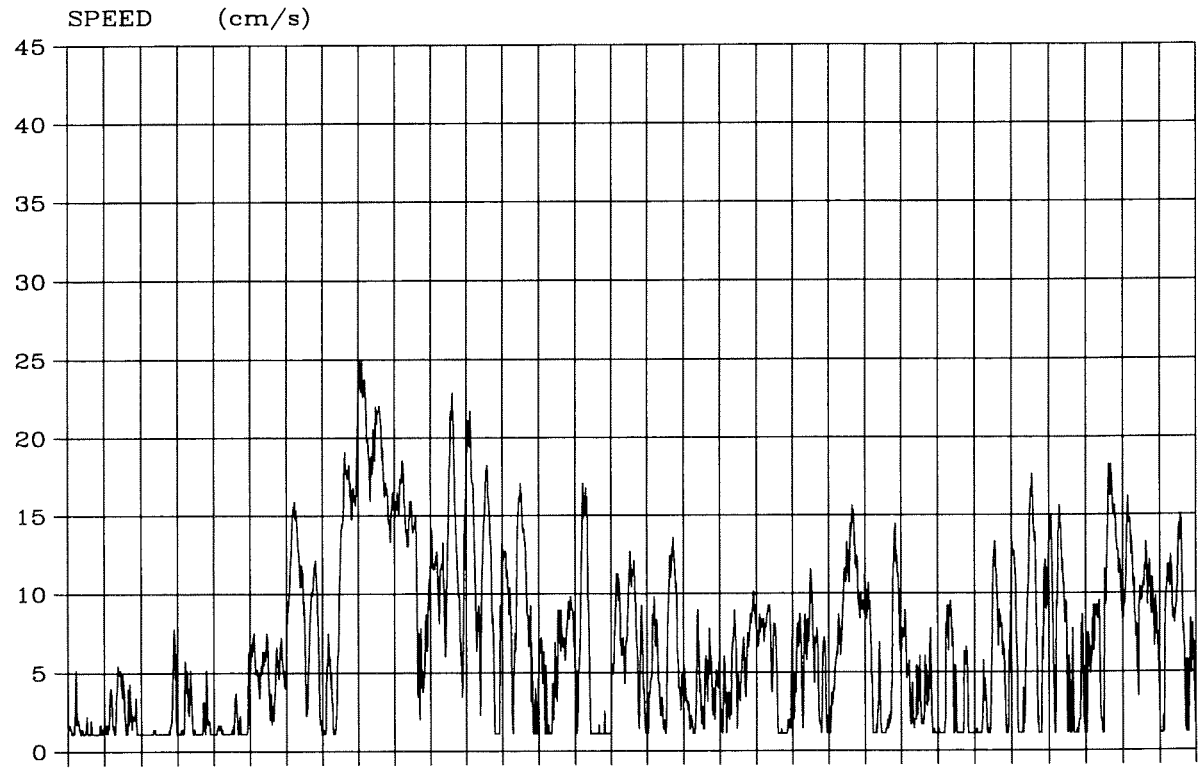
IMR

Fig. 1–4–7 Speed and direction of current.





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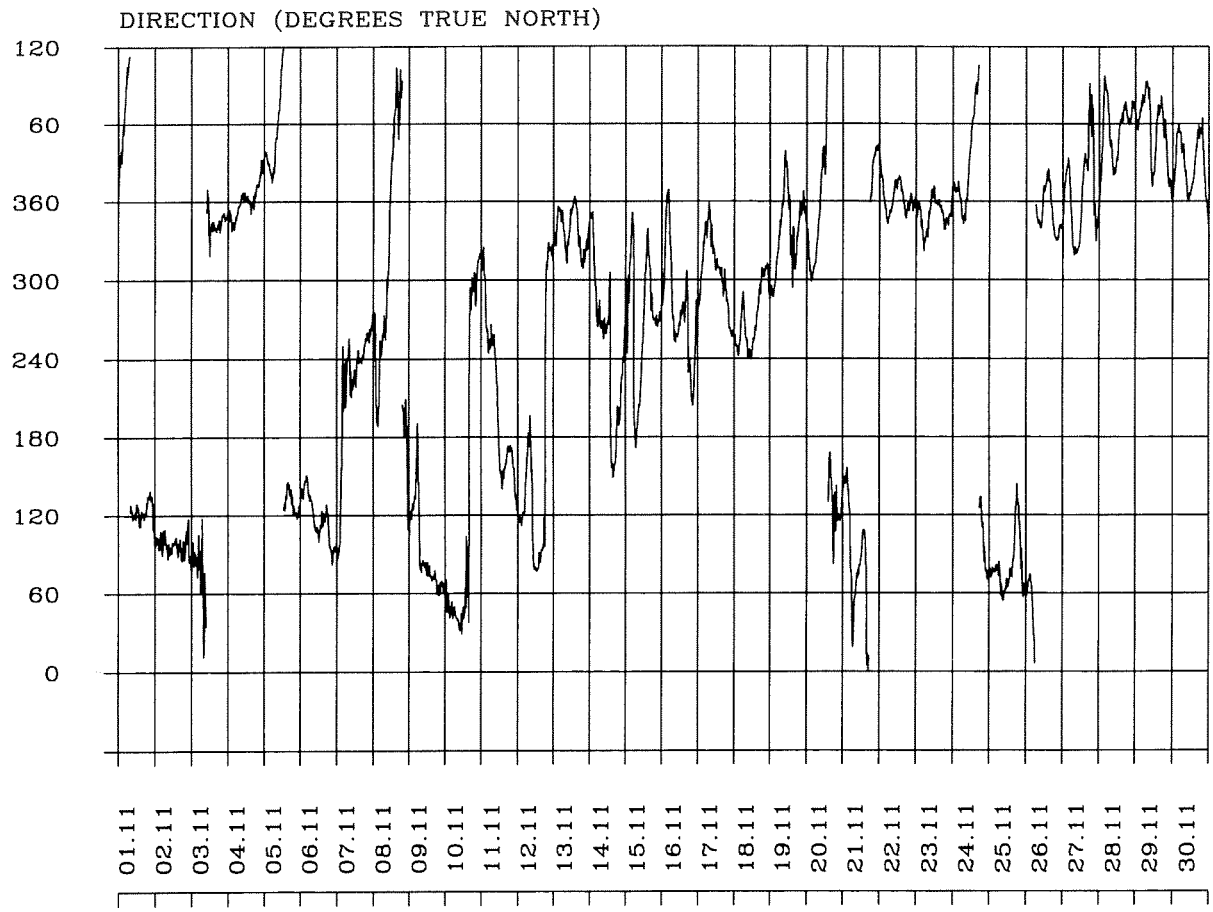
Time interval : 20.00 minutes. Instrument no. : 10805

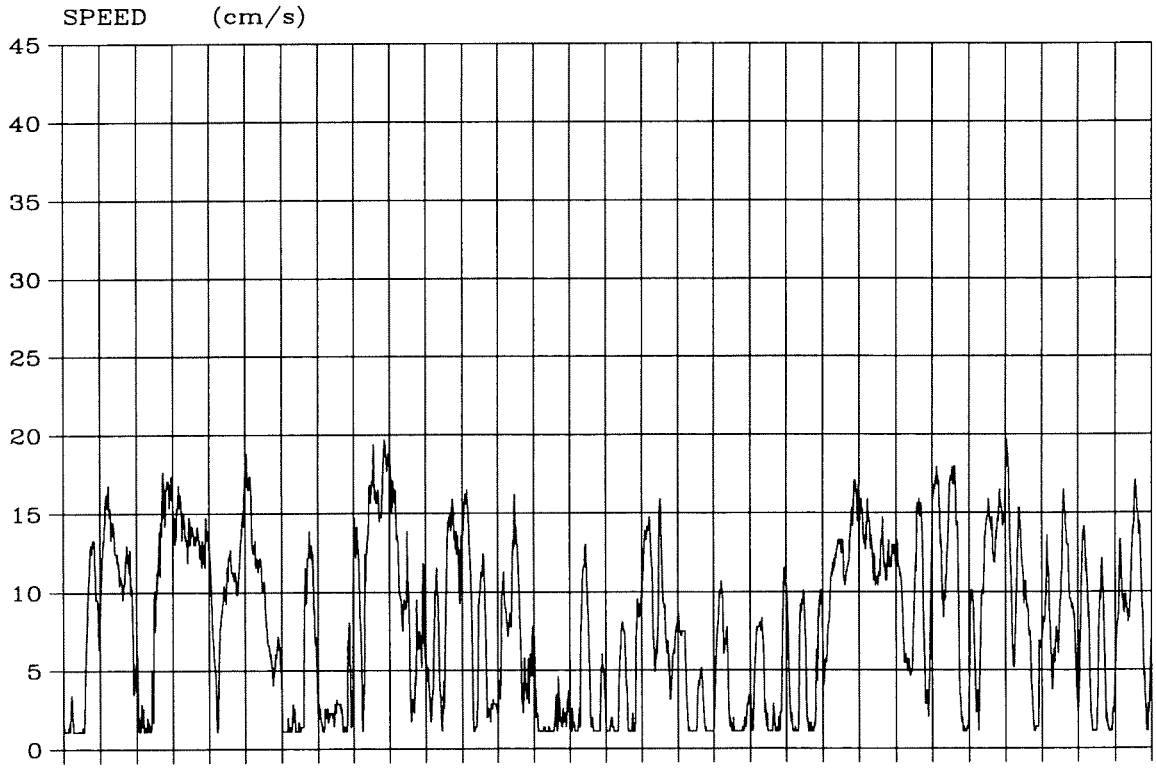
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-7

Continues.....





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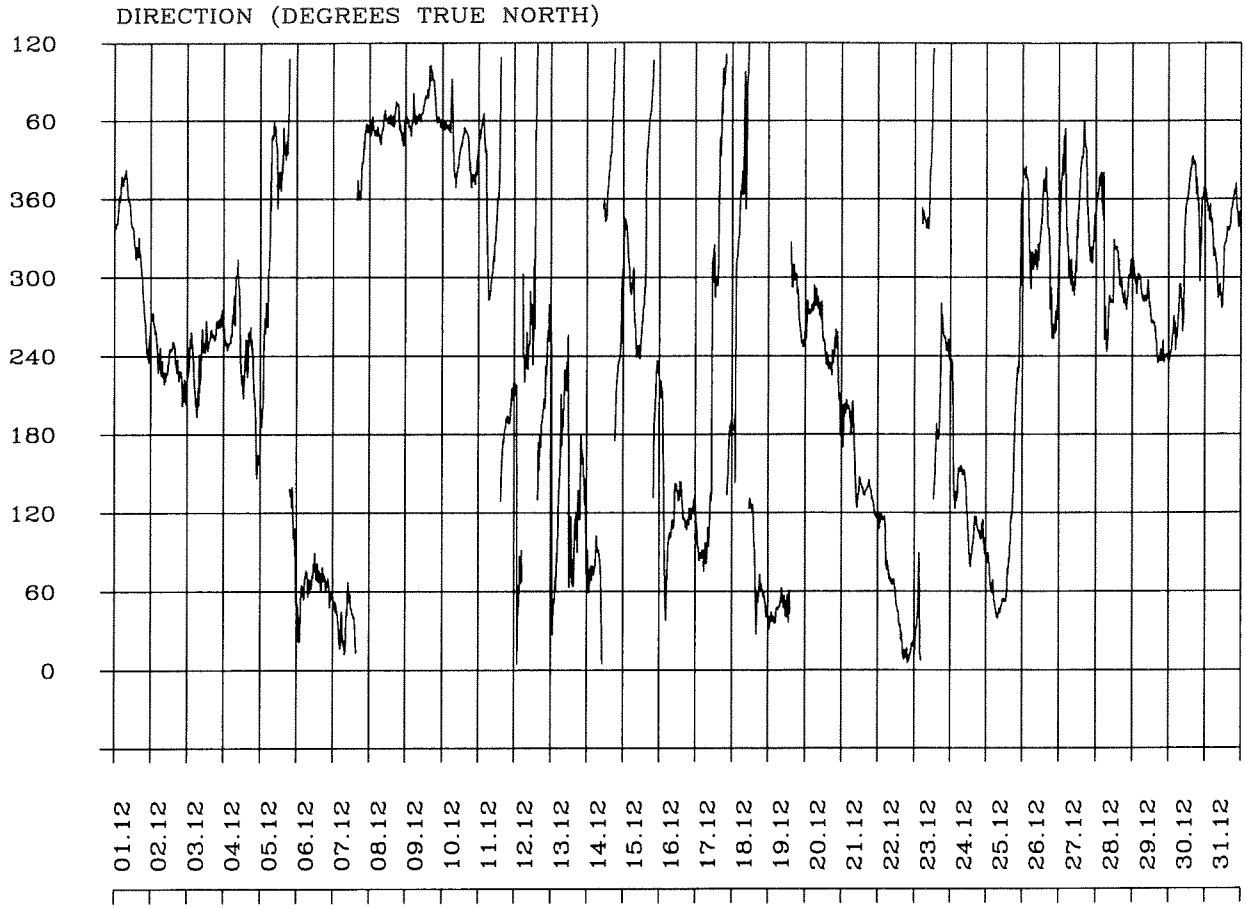
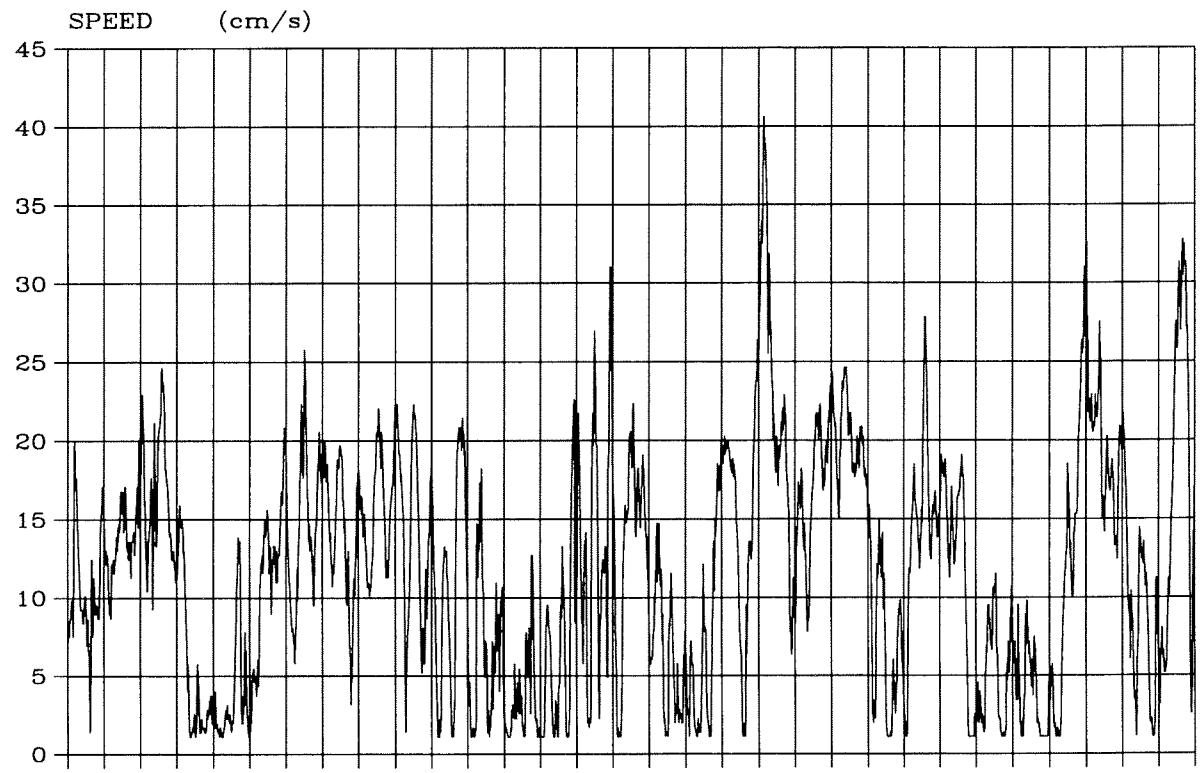
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-7

Continues.....





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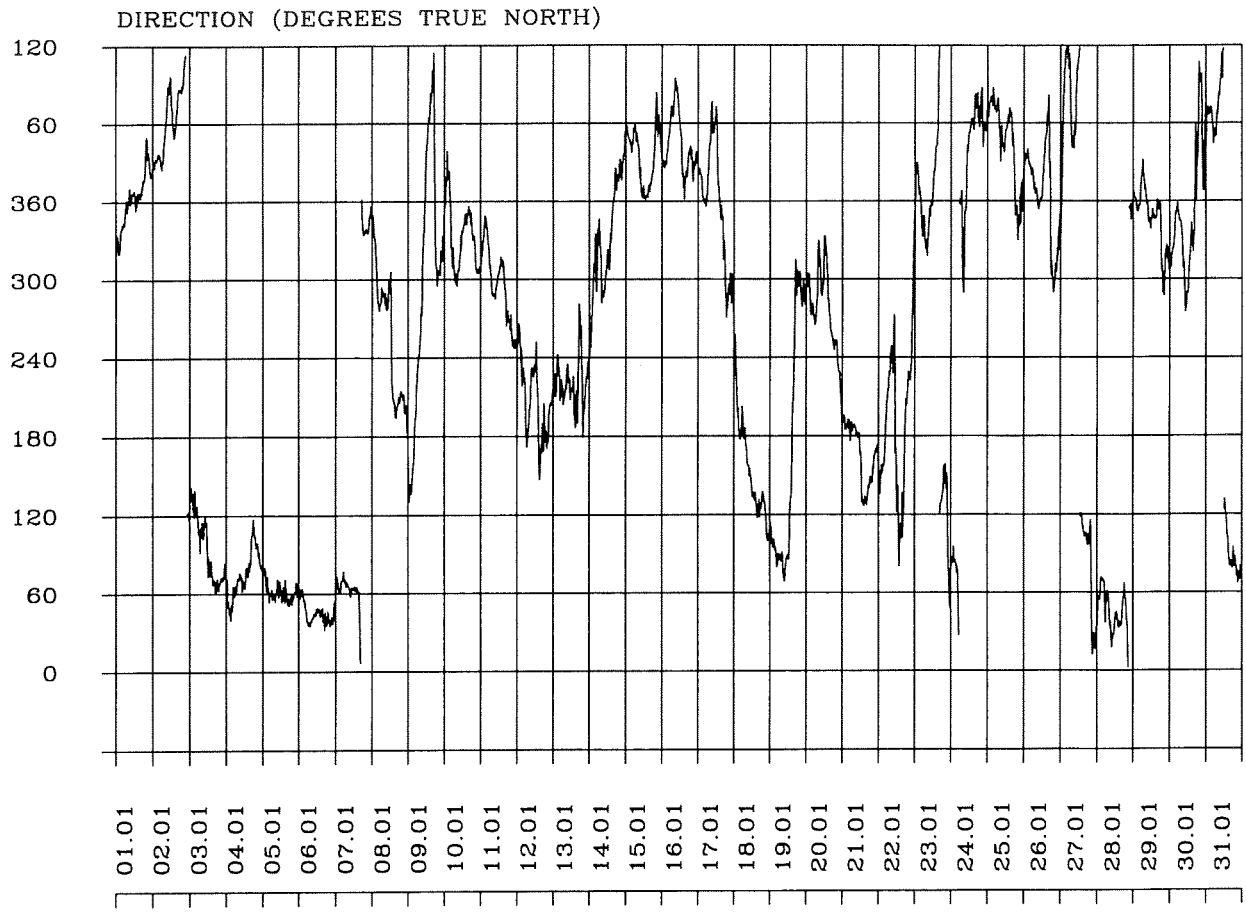
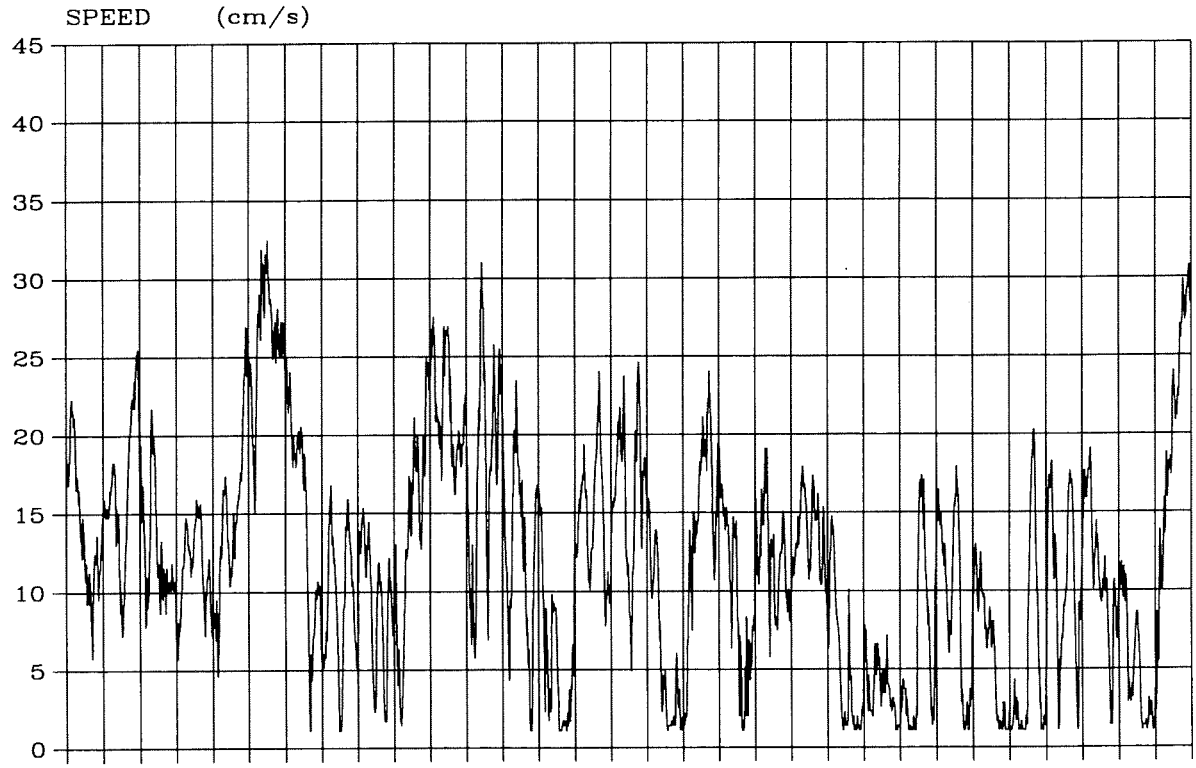
IMR

Fig. 1-4-7

Continues.....





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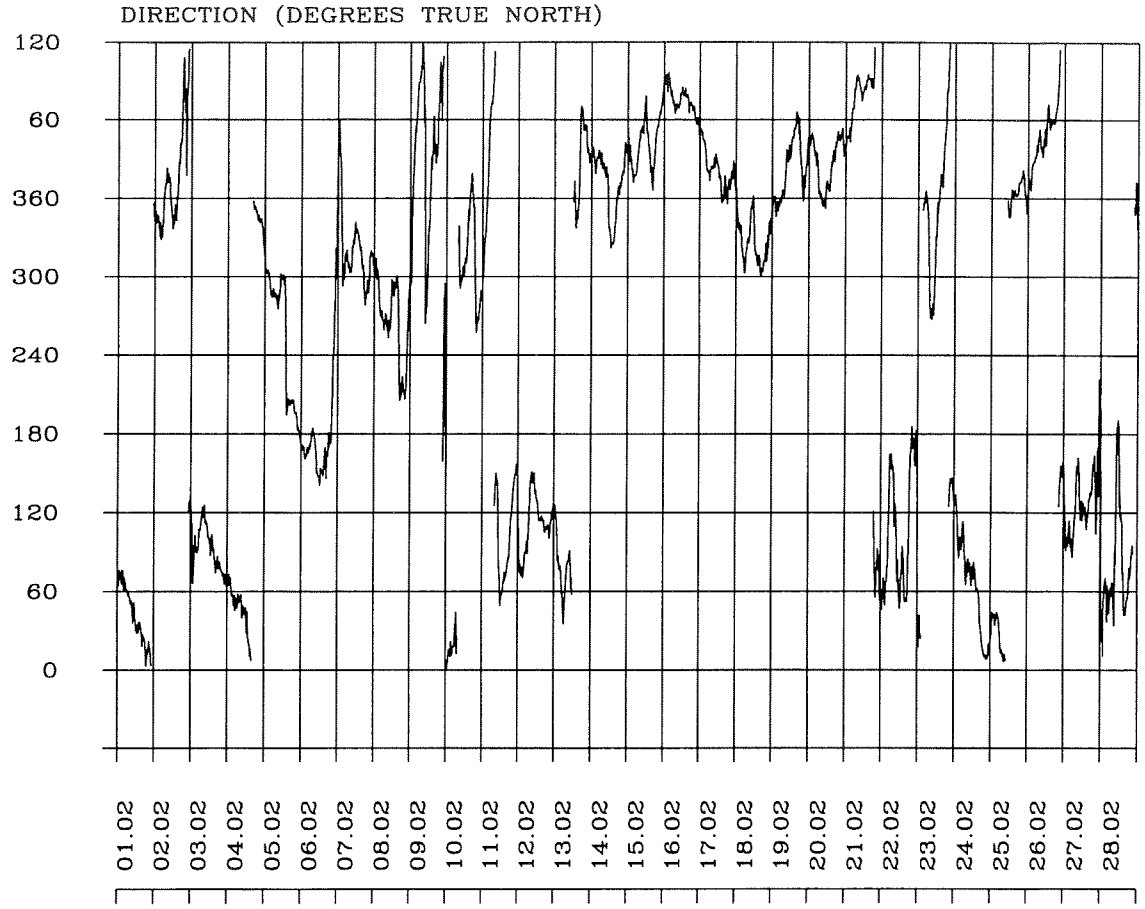
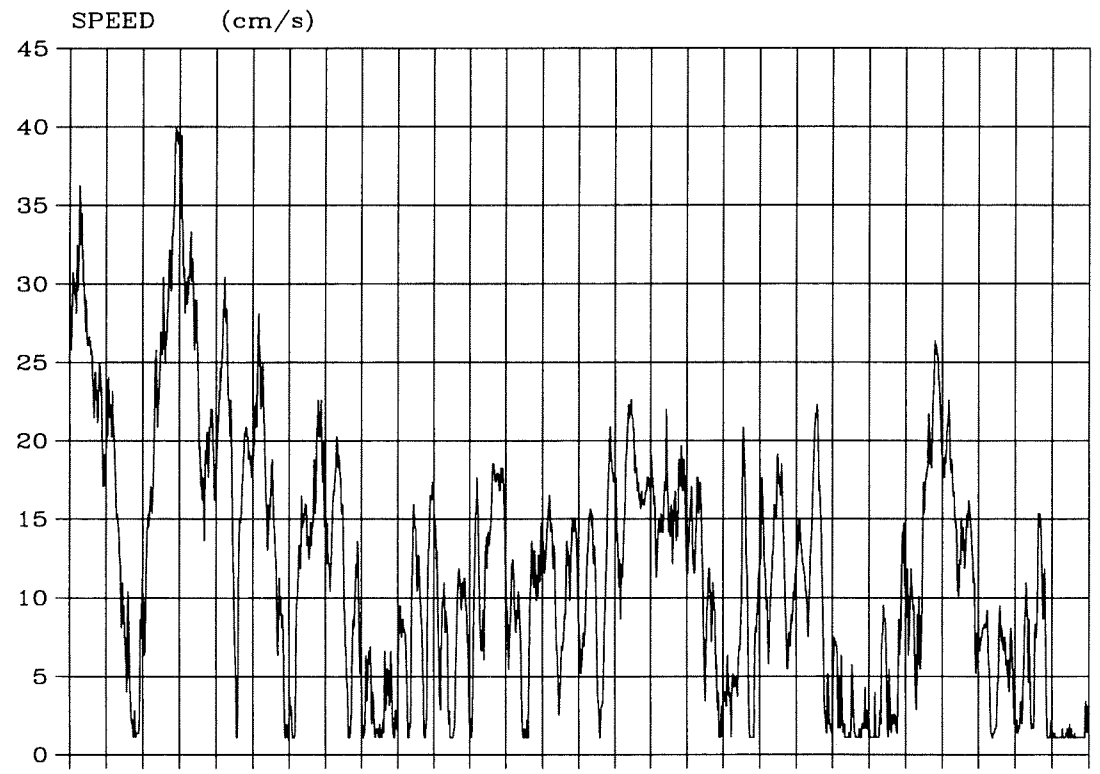
IMR

Fig. 1-4-7

Continues.....





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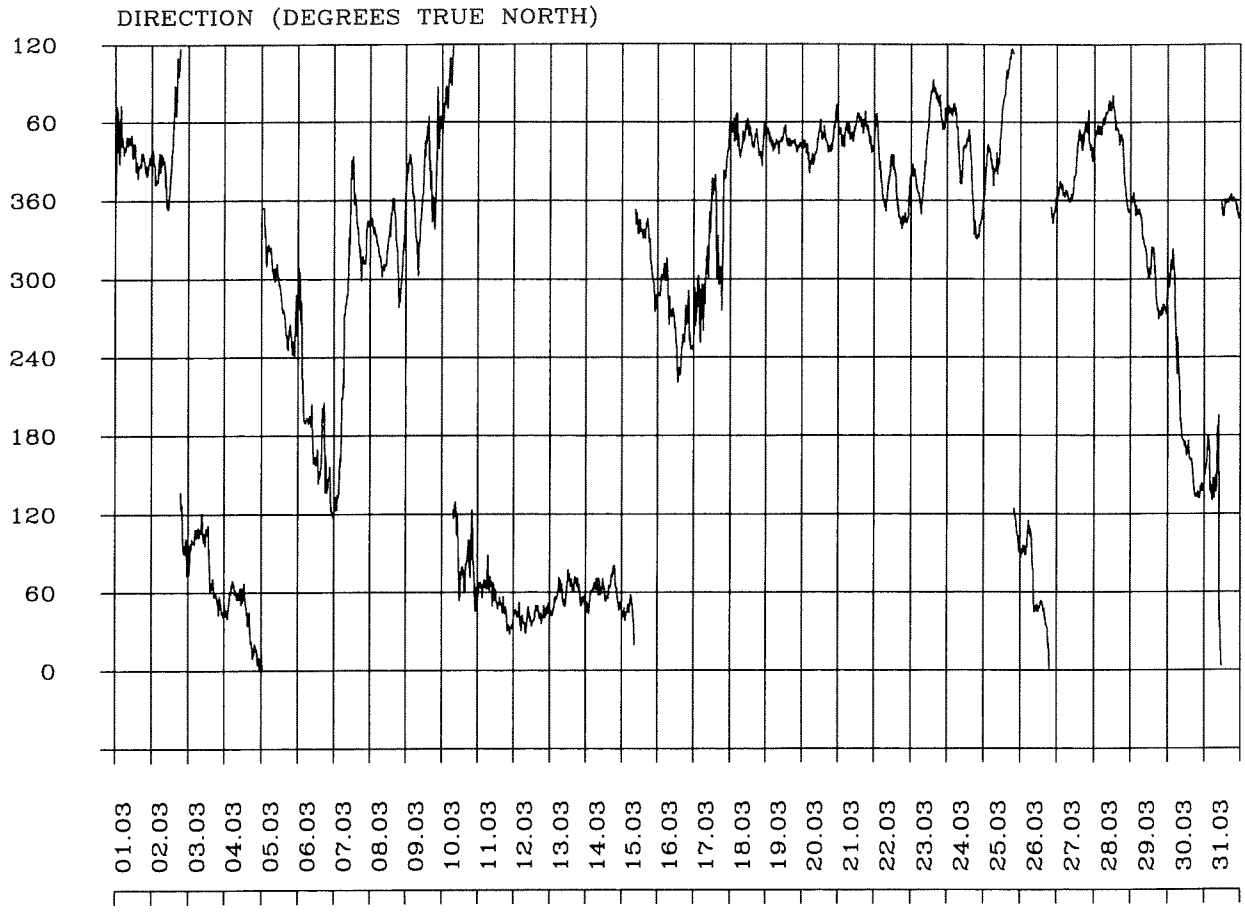
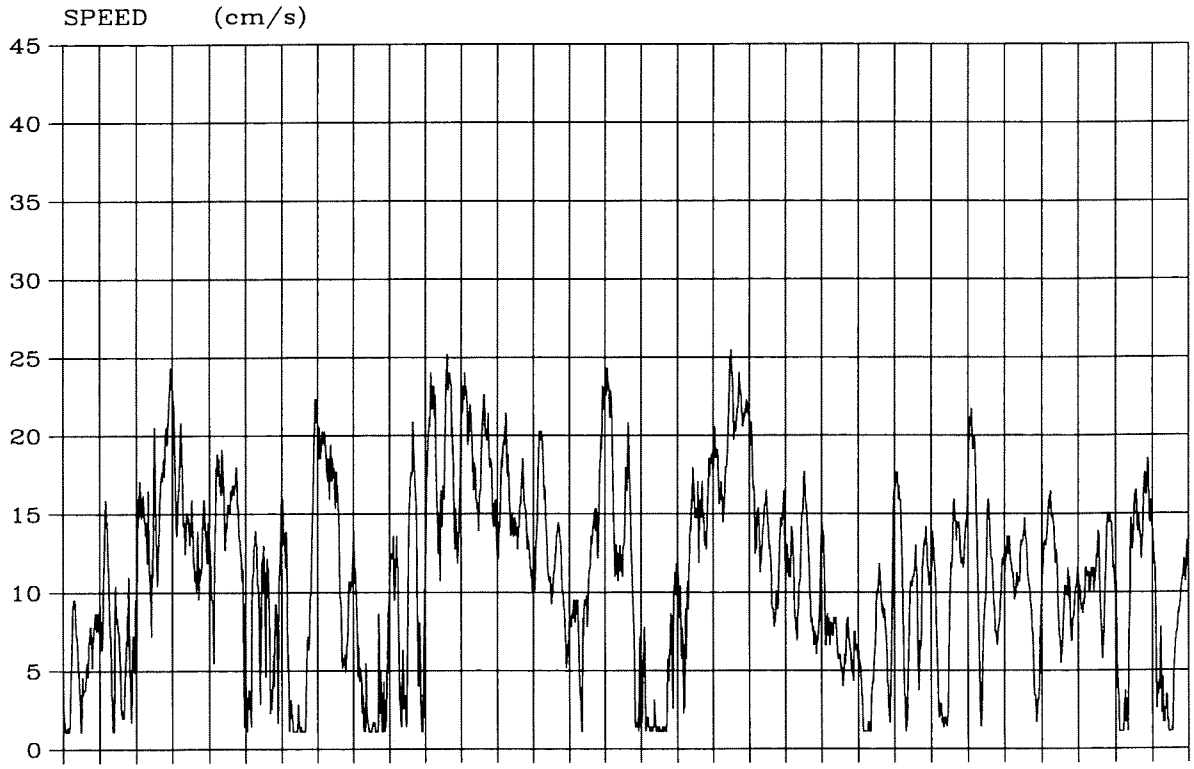
IMR

Fig. 1-4-7

Continues.....





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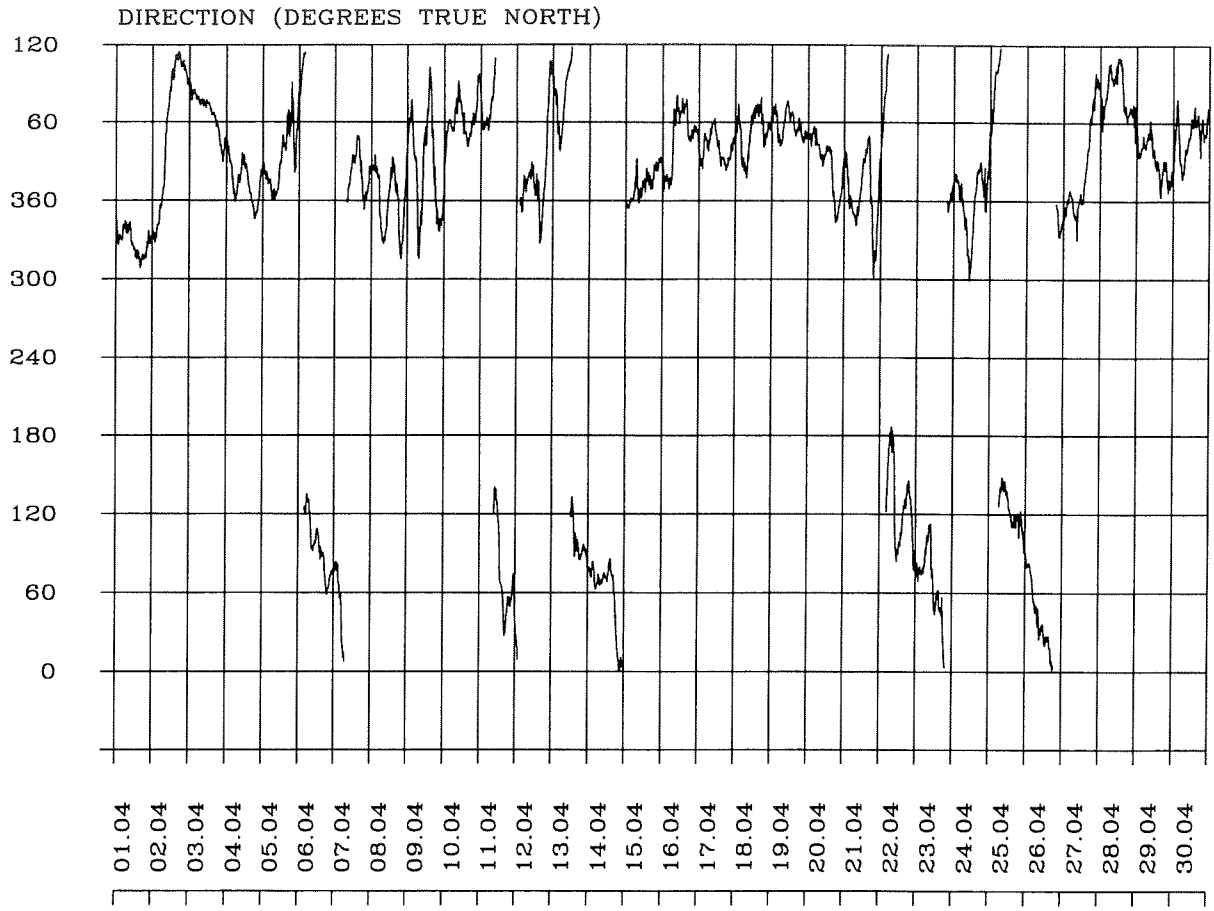
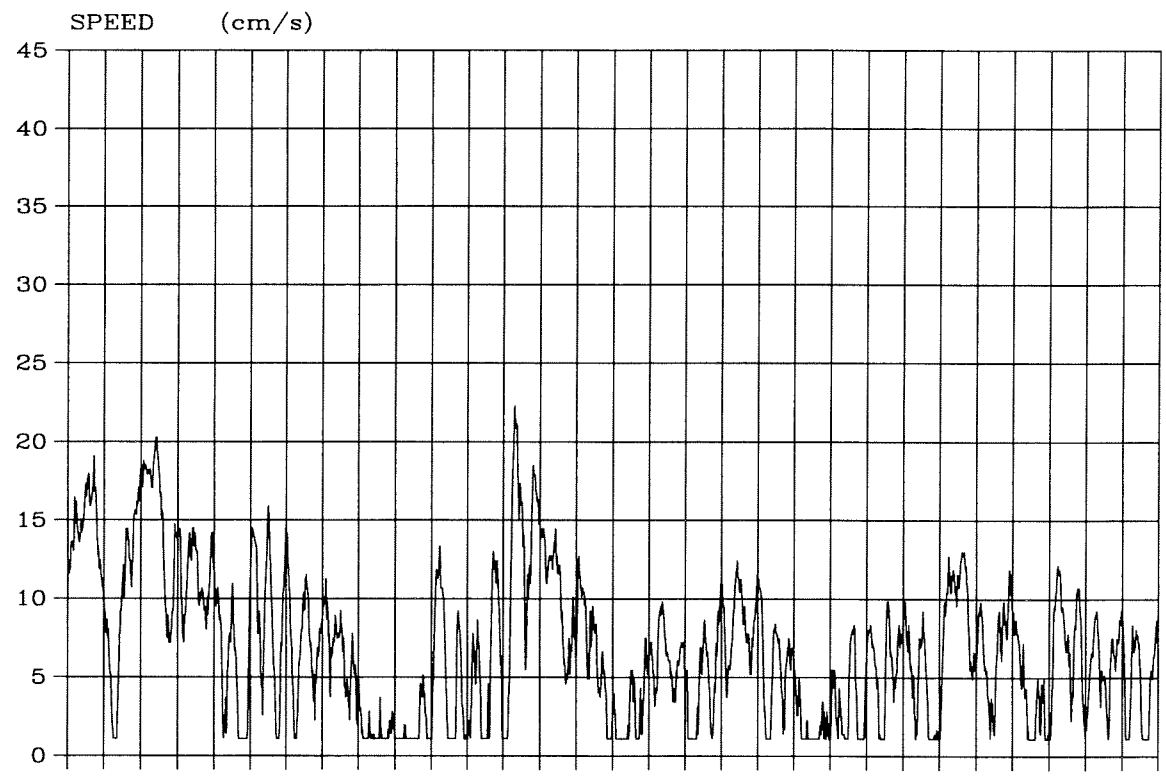
IMR

Fig. 1-4-7

Continues.....





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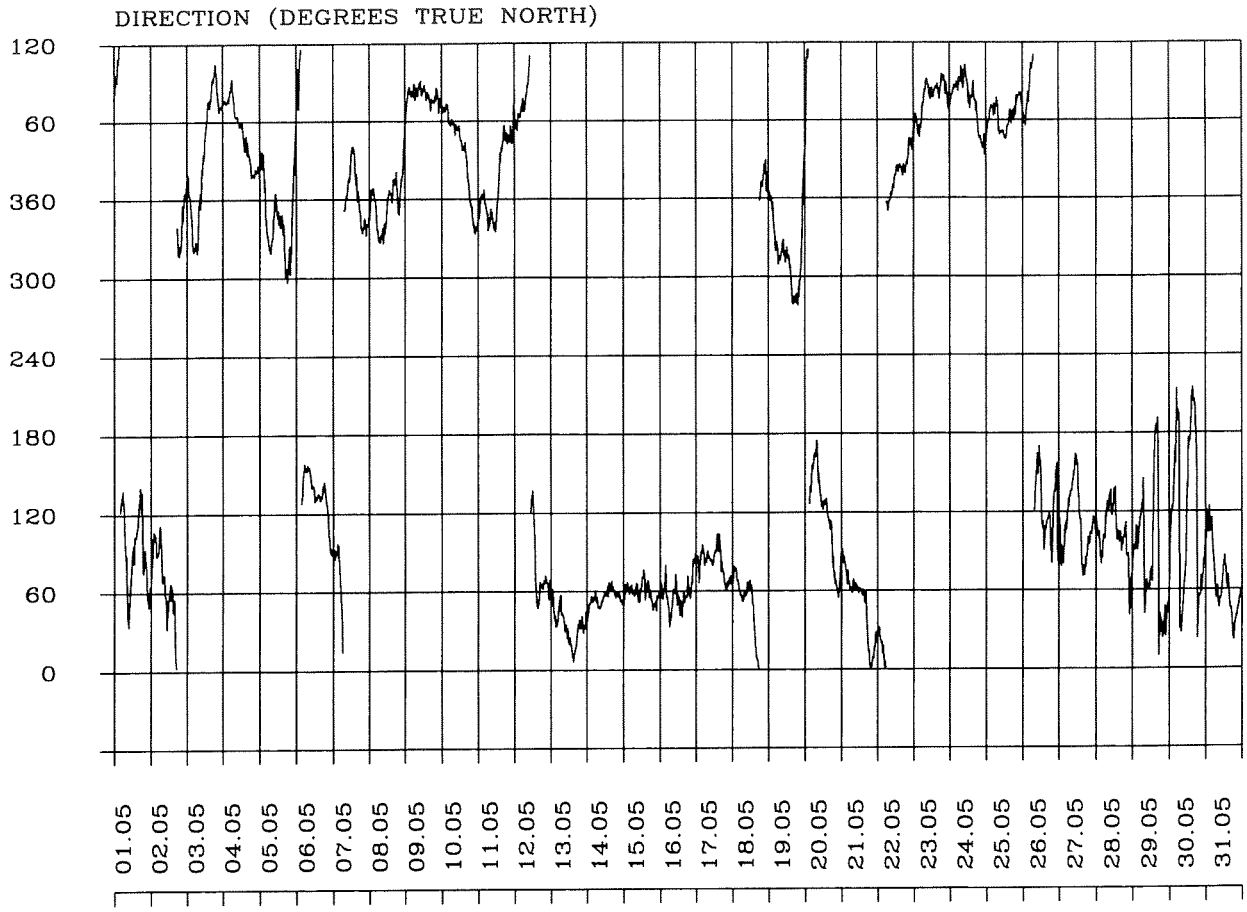
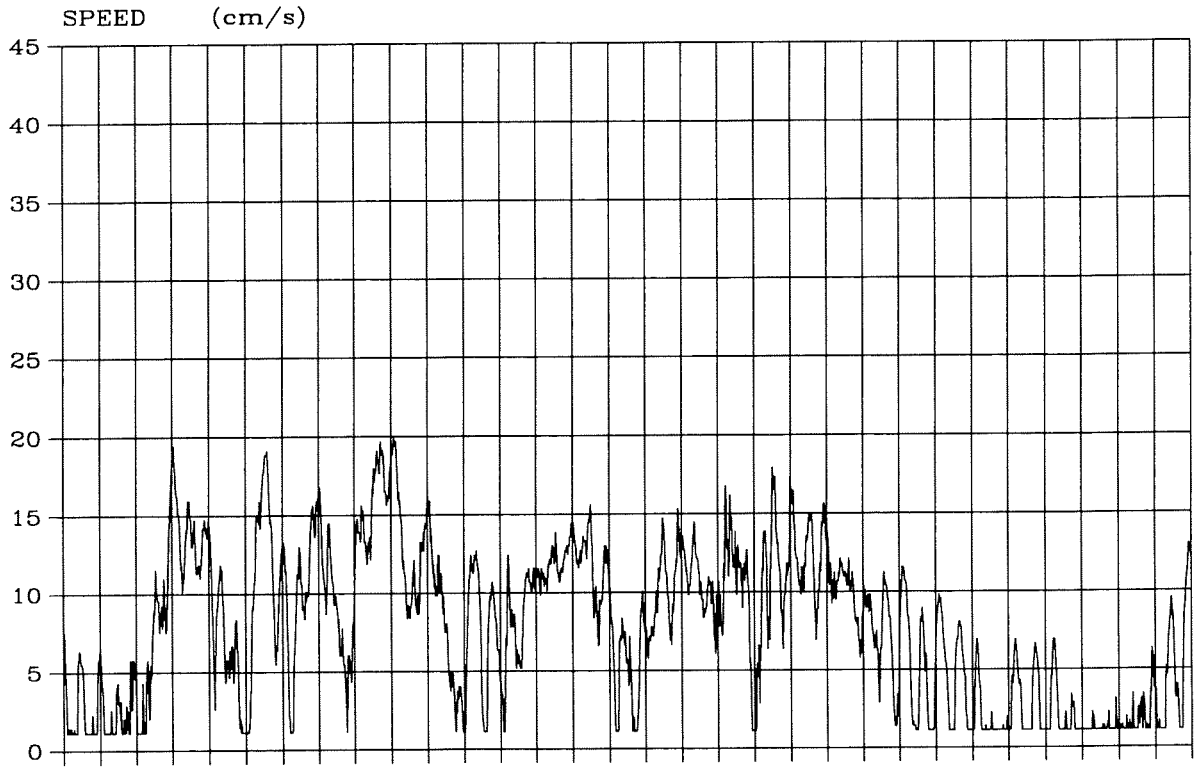
IMR

Fig. 1-4-7

Continues.....





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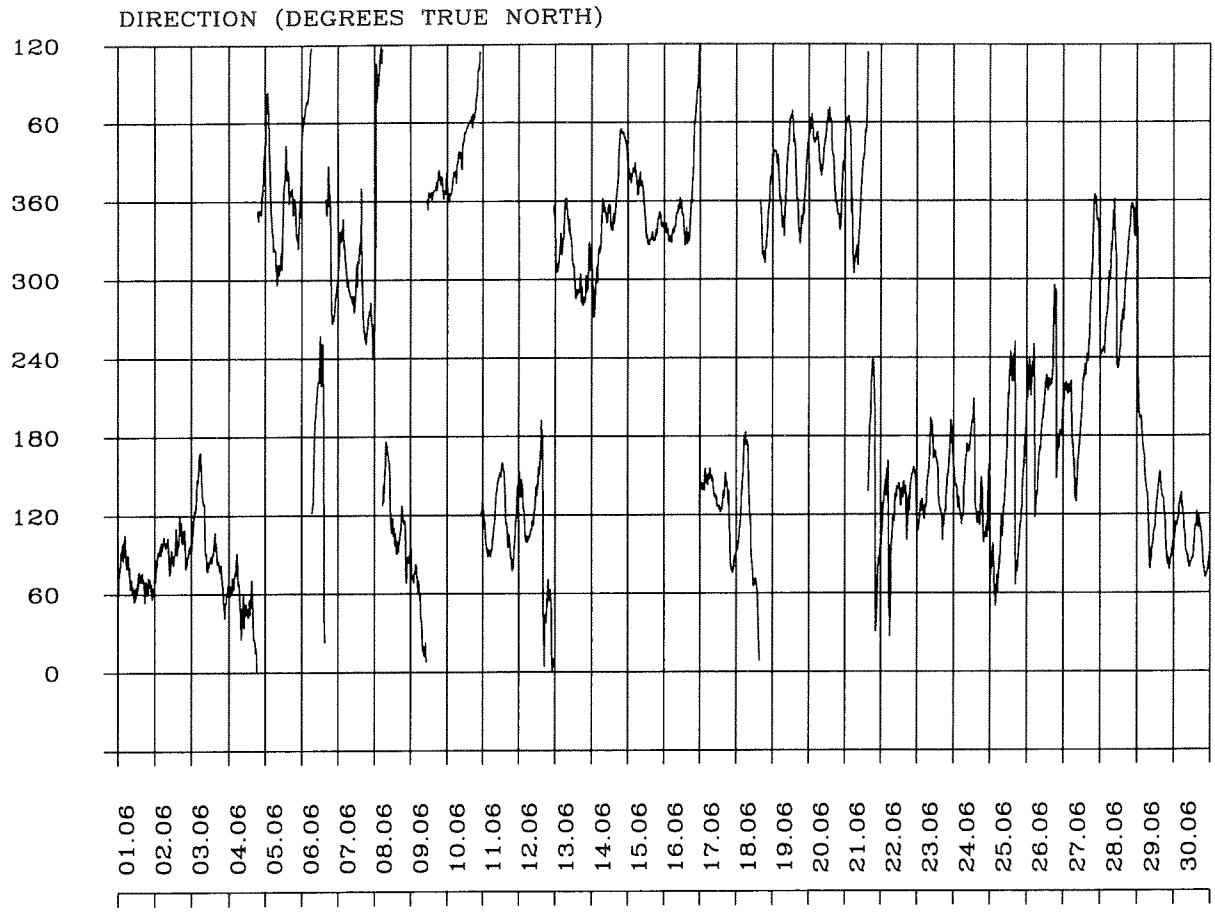
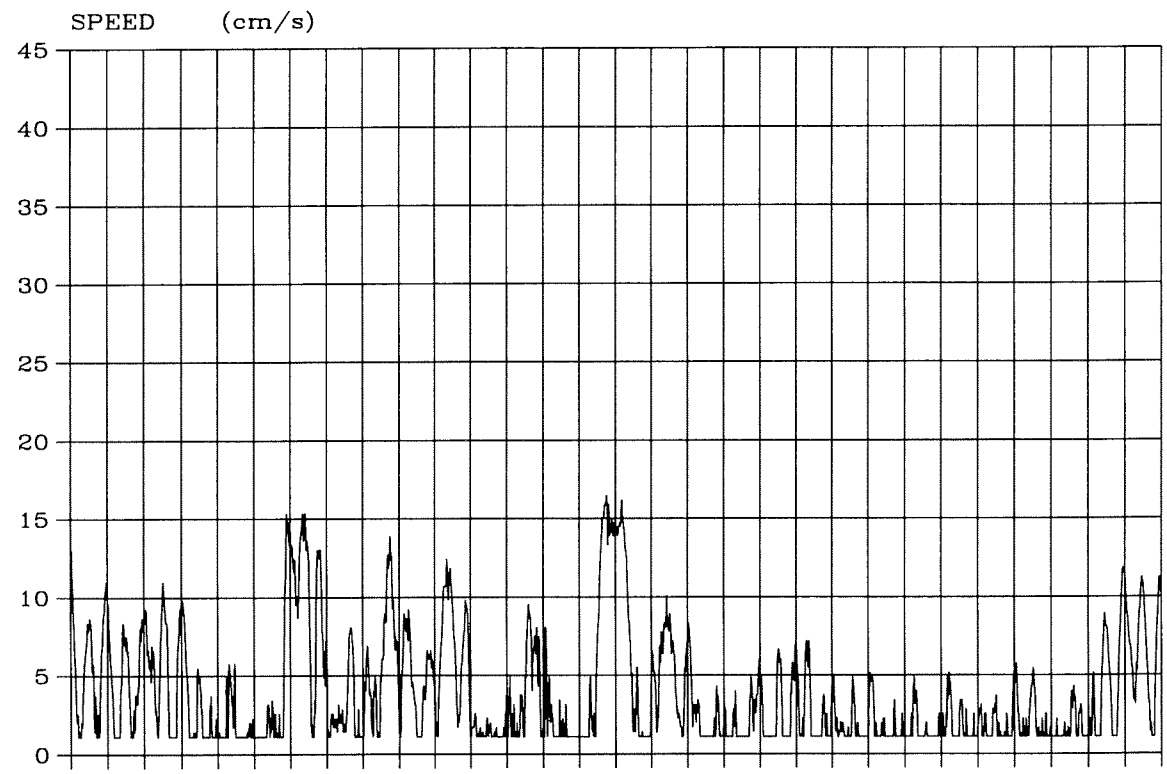
IMR

Fig. 1–4–7

Continues.....





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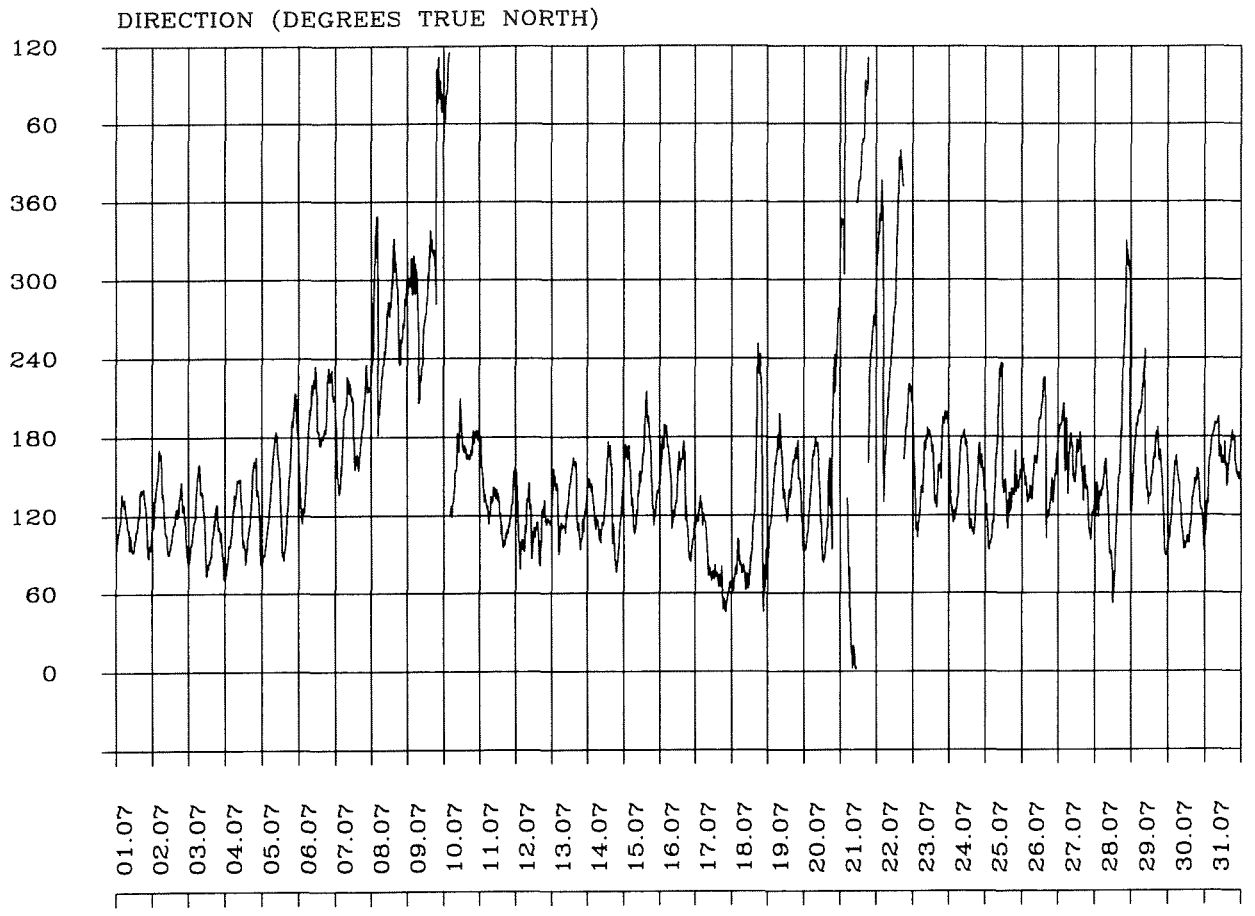
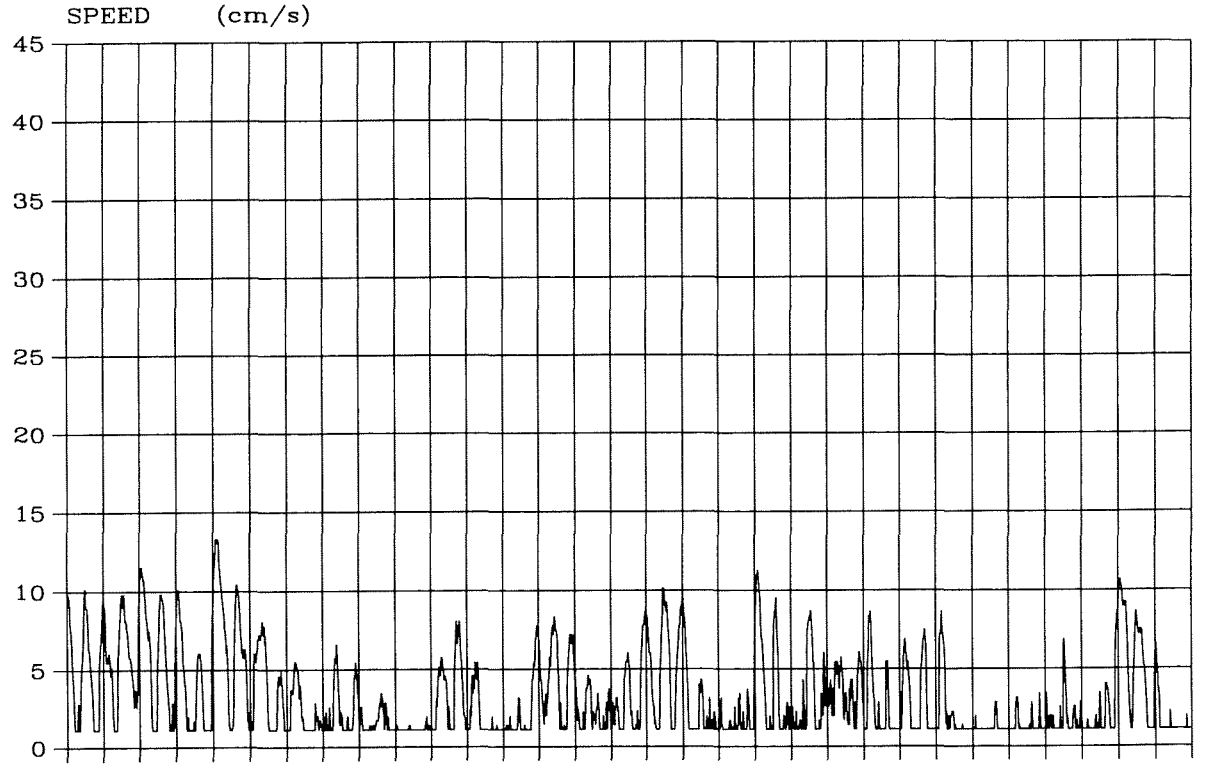
IMR

Fig. 1-4-7

Continues.....





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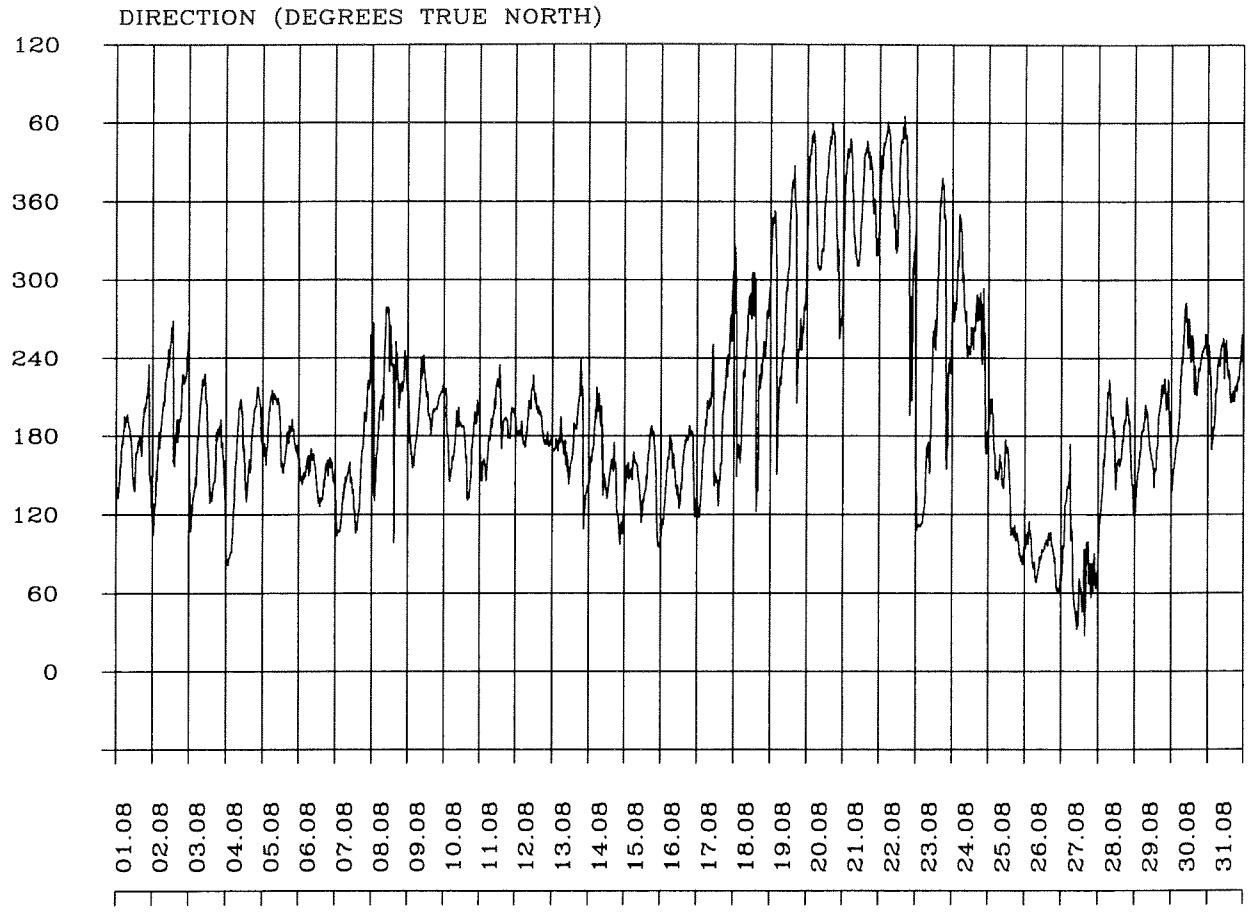
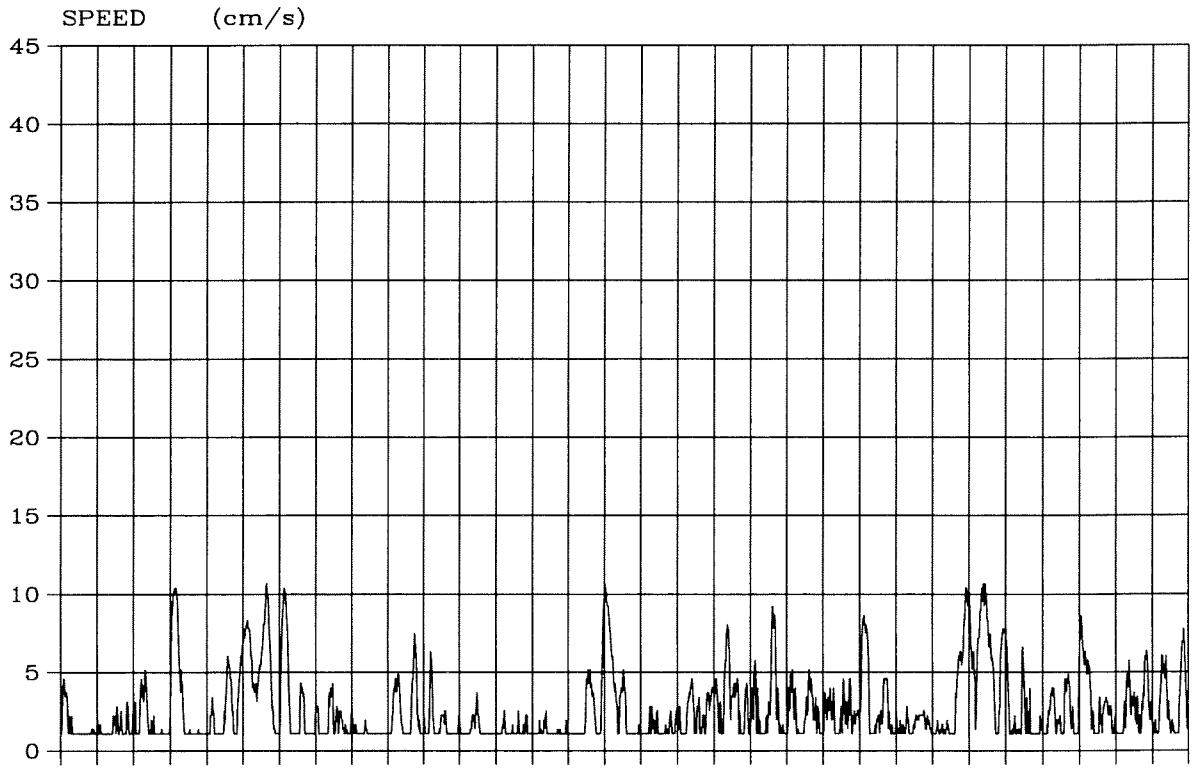
IMR

Fig. 1–4–7

Continues.....





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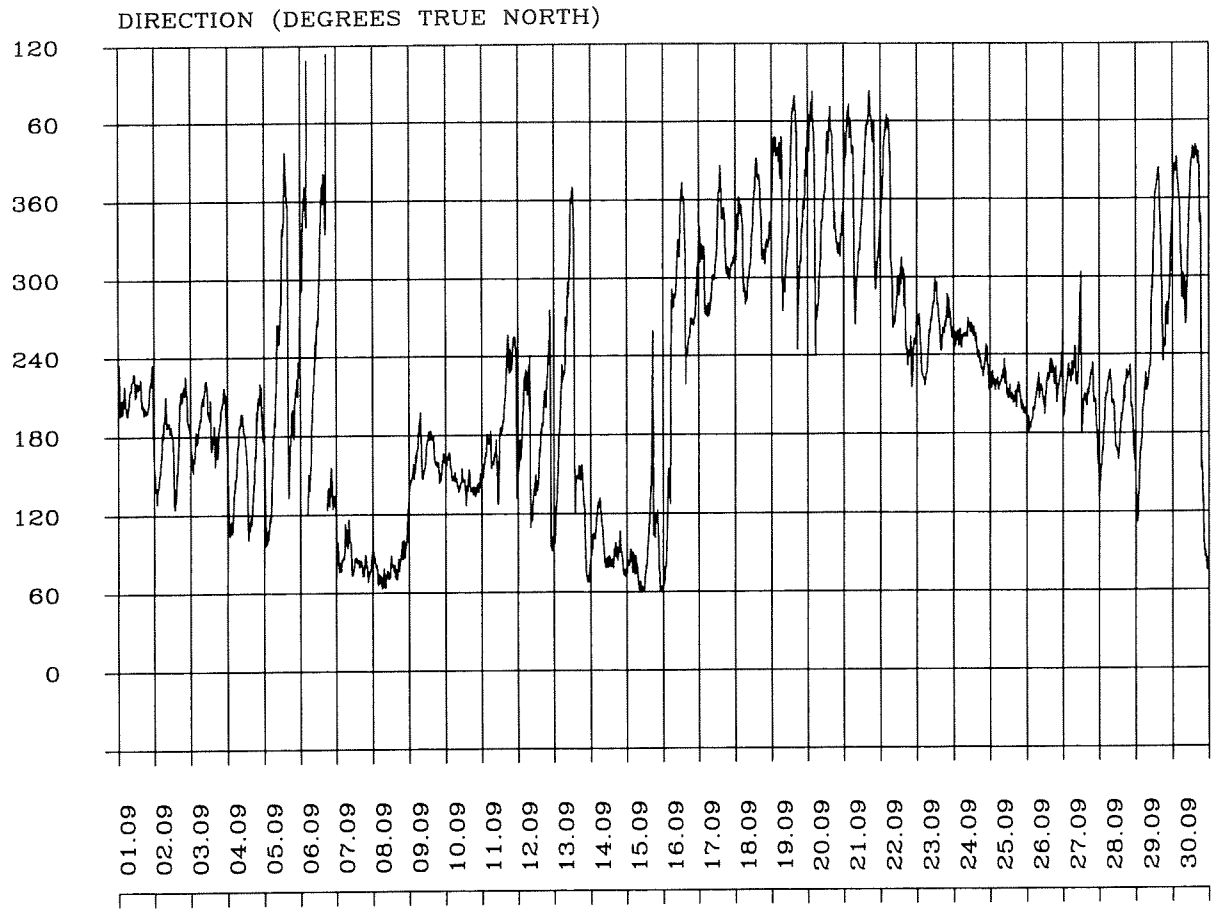
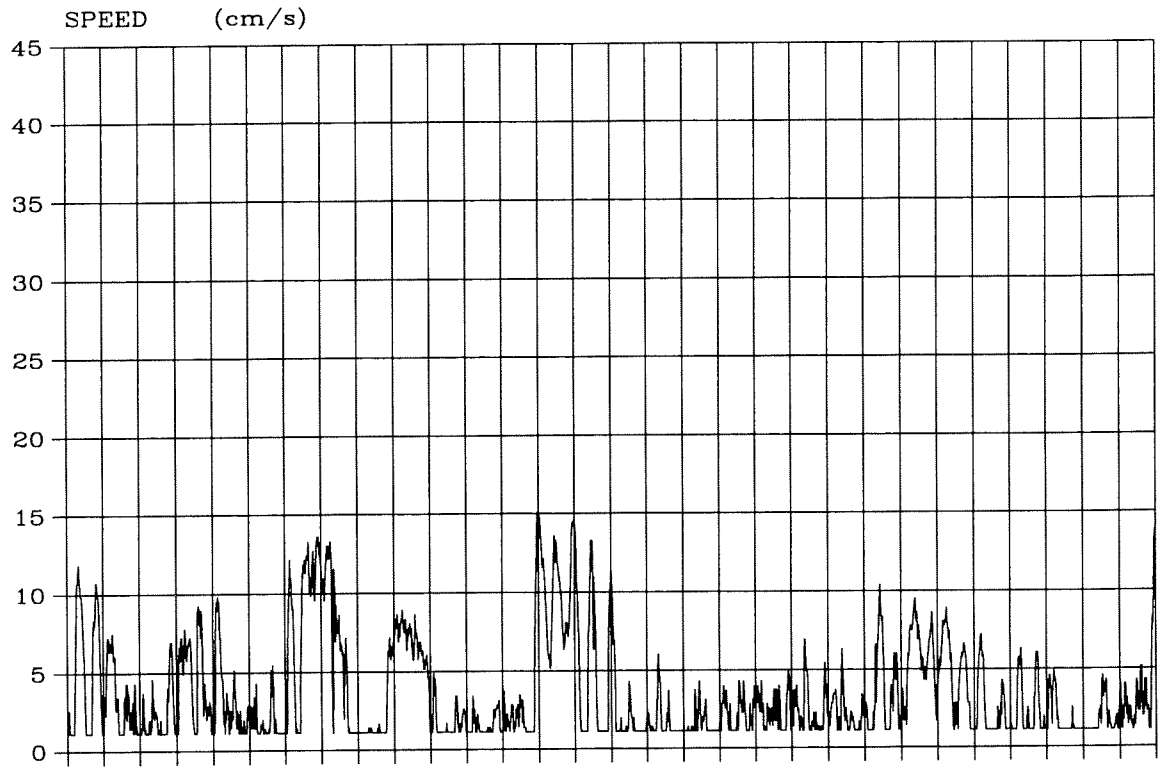
IMR

Fig. 1–4–7

Continues.....





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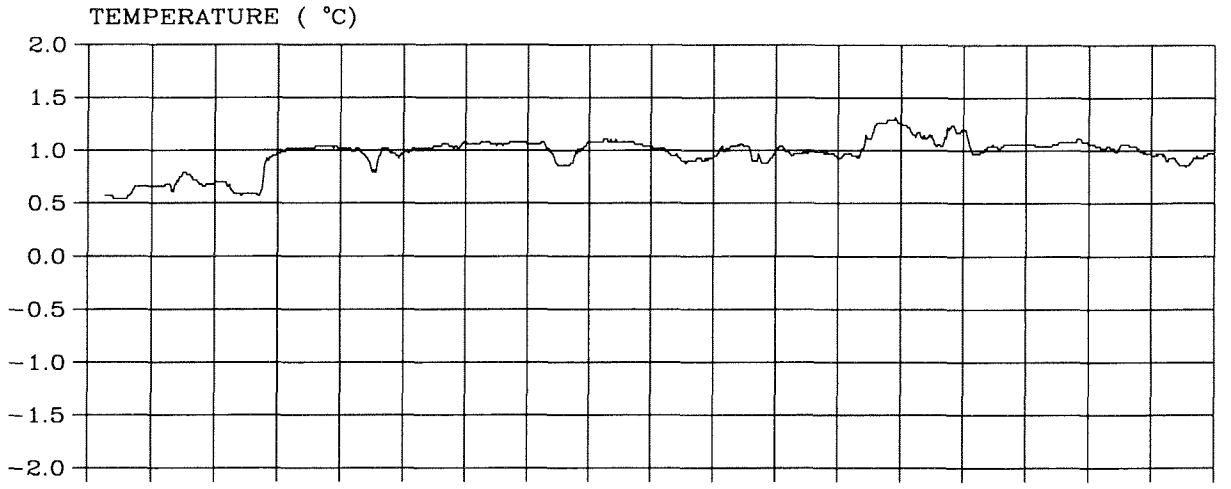
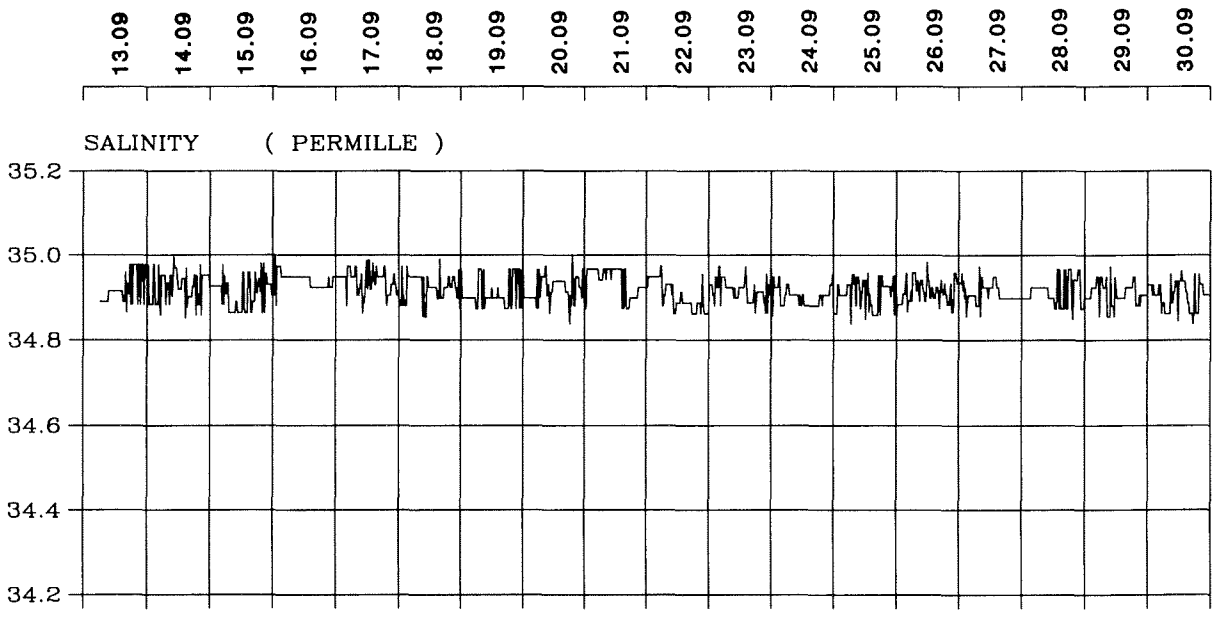
IMR

Fig. 1-4-7

Continues.....





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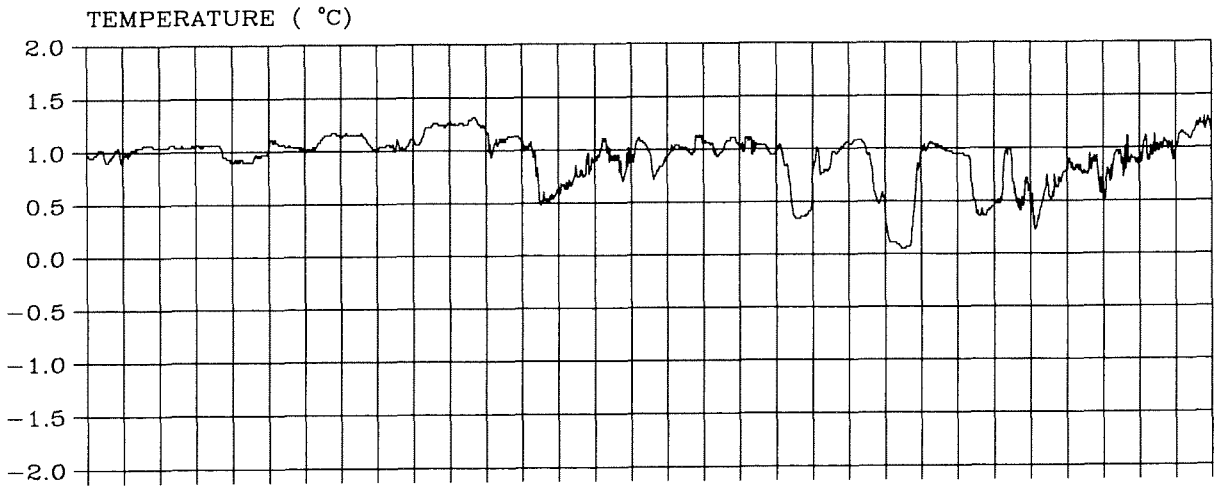
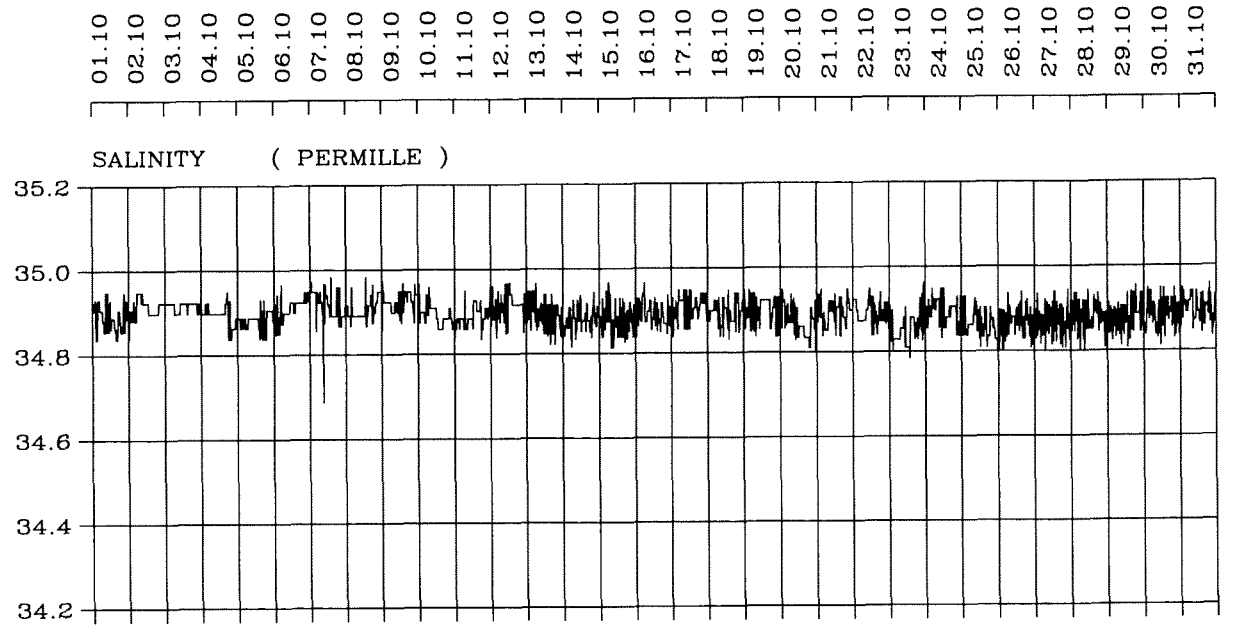
IMR

Fig. 1-4-8 Temperature and salinity.





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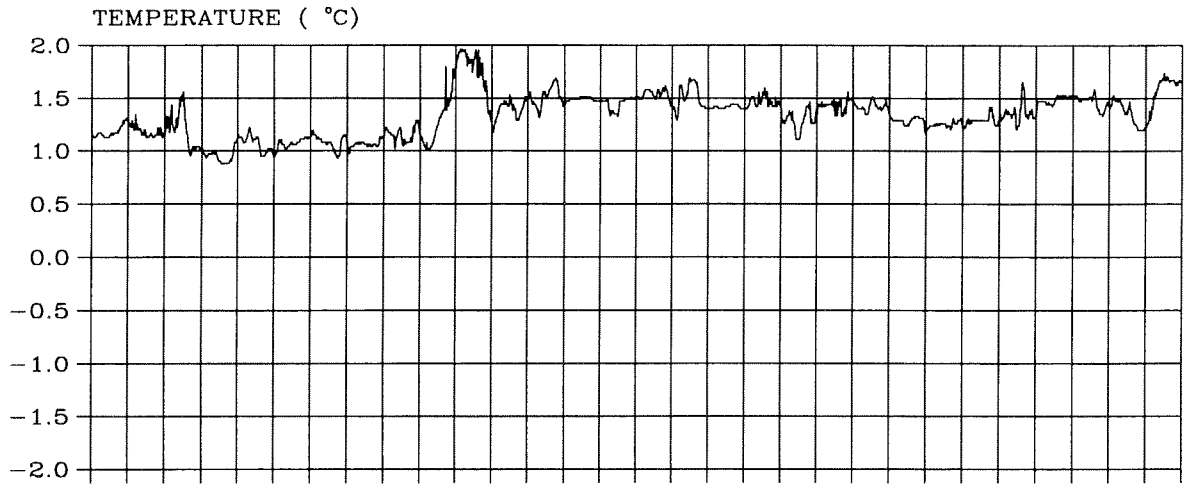
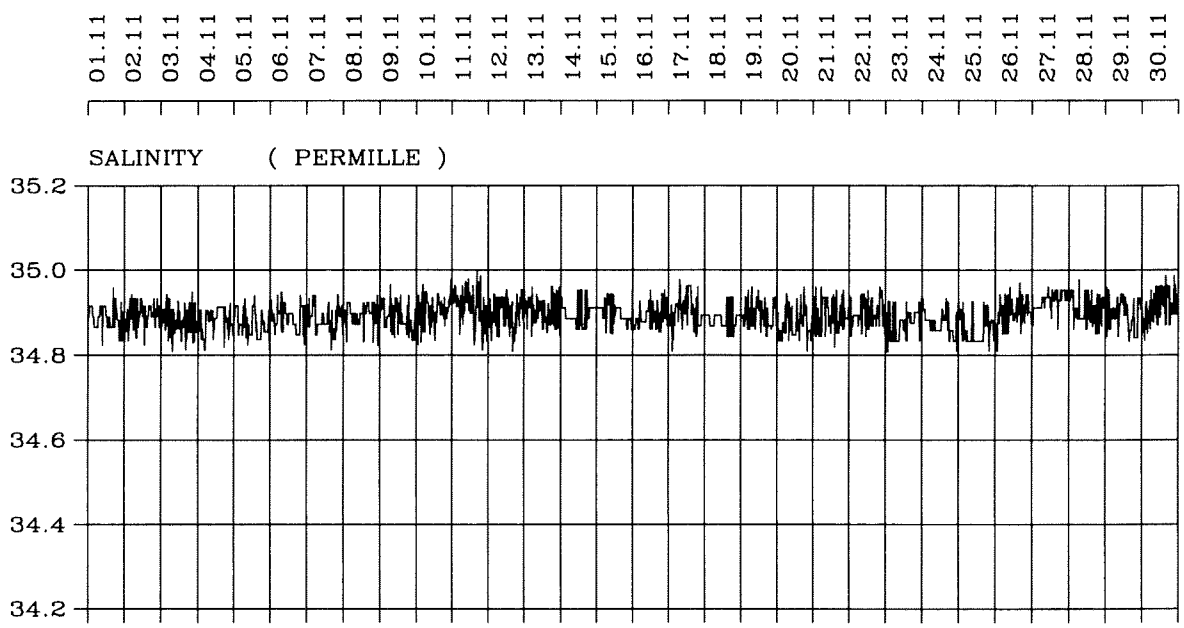
IMR

Fig. 1-4-8

Continues.....





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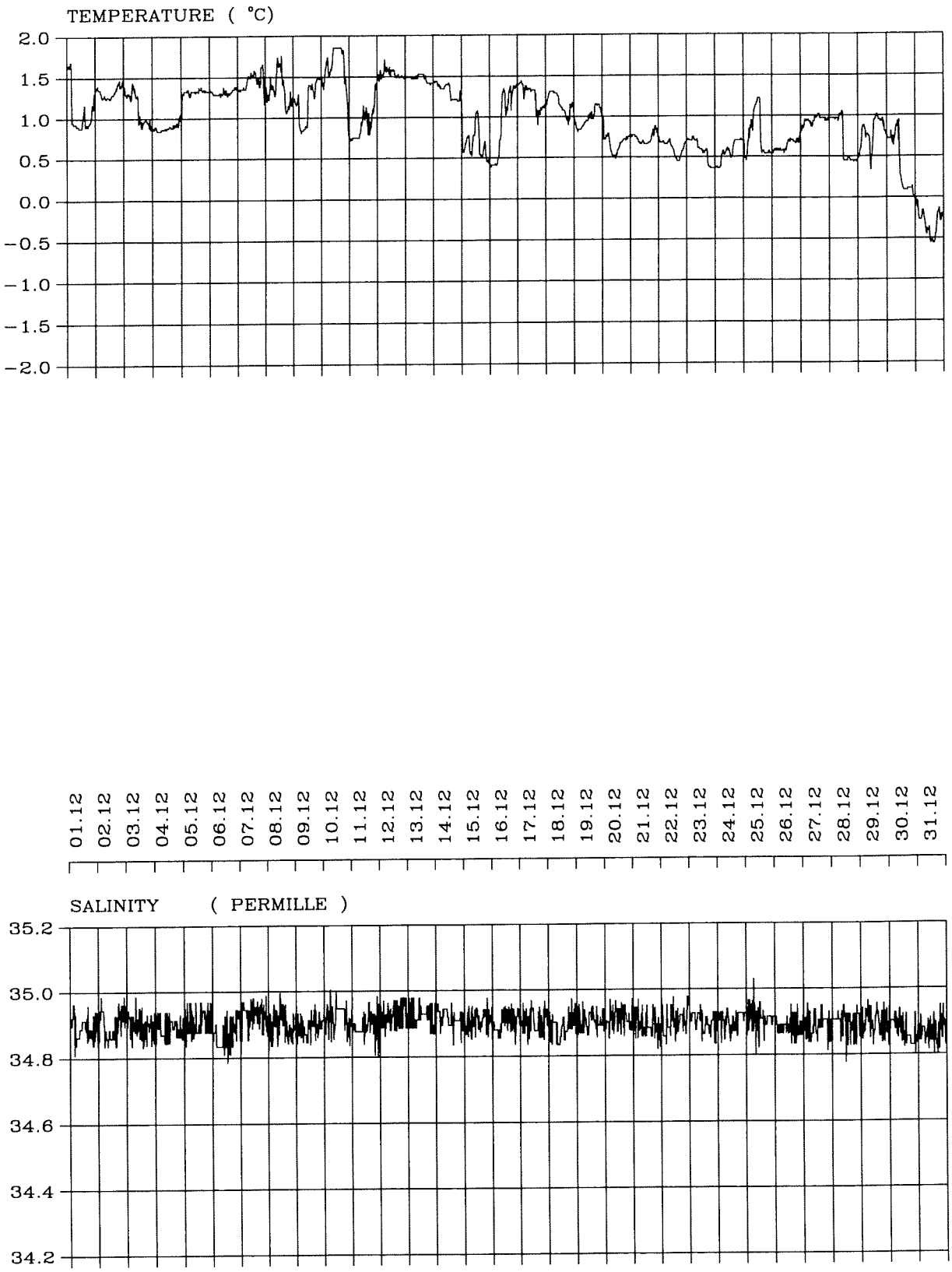
IMR

Fig. 1-4-8

Continues.....



Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 240.0 m Bottom depth : 250.0 m

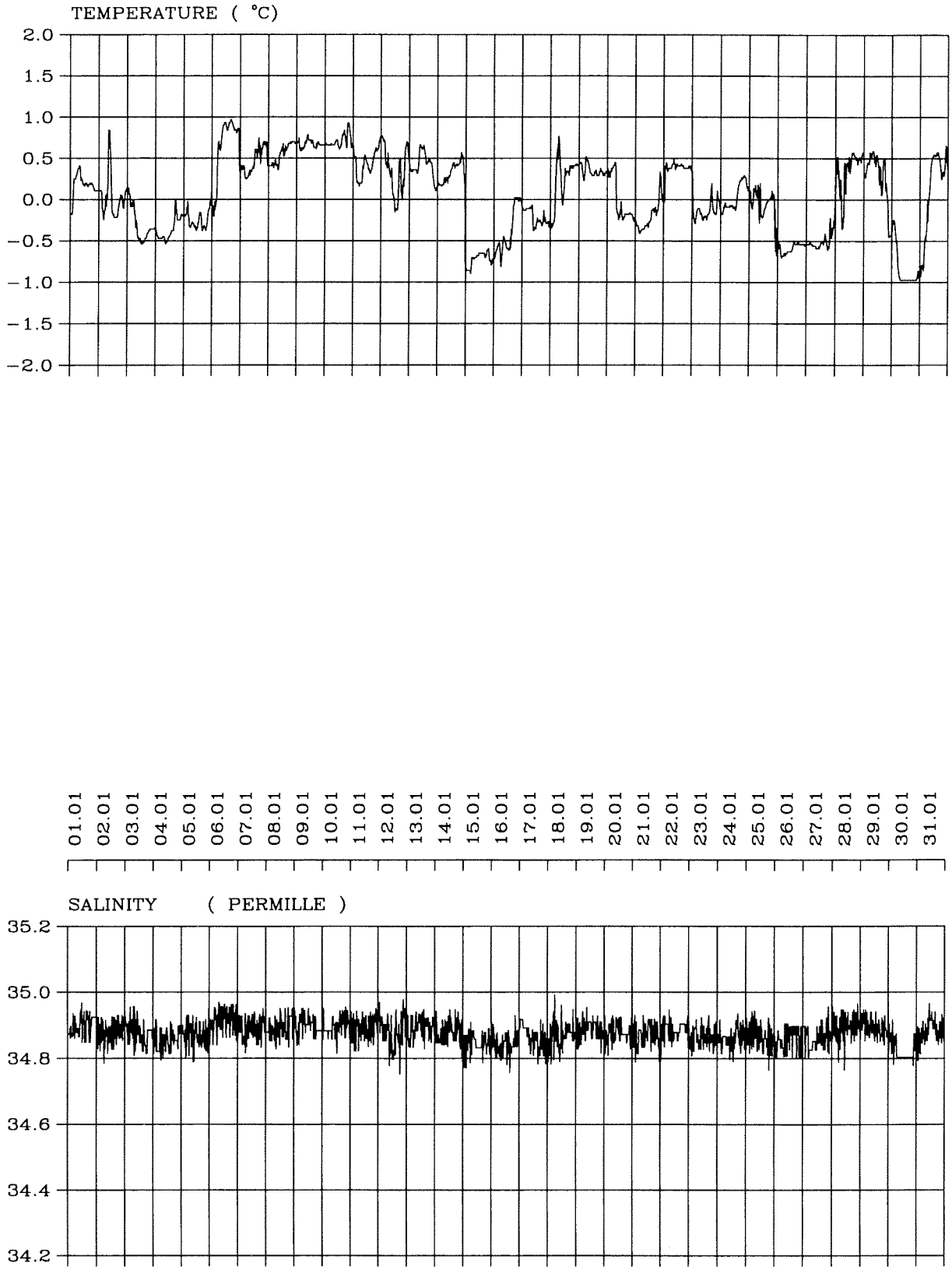
Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1–4–8

Continues.....



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

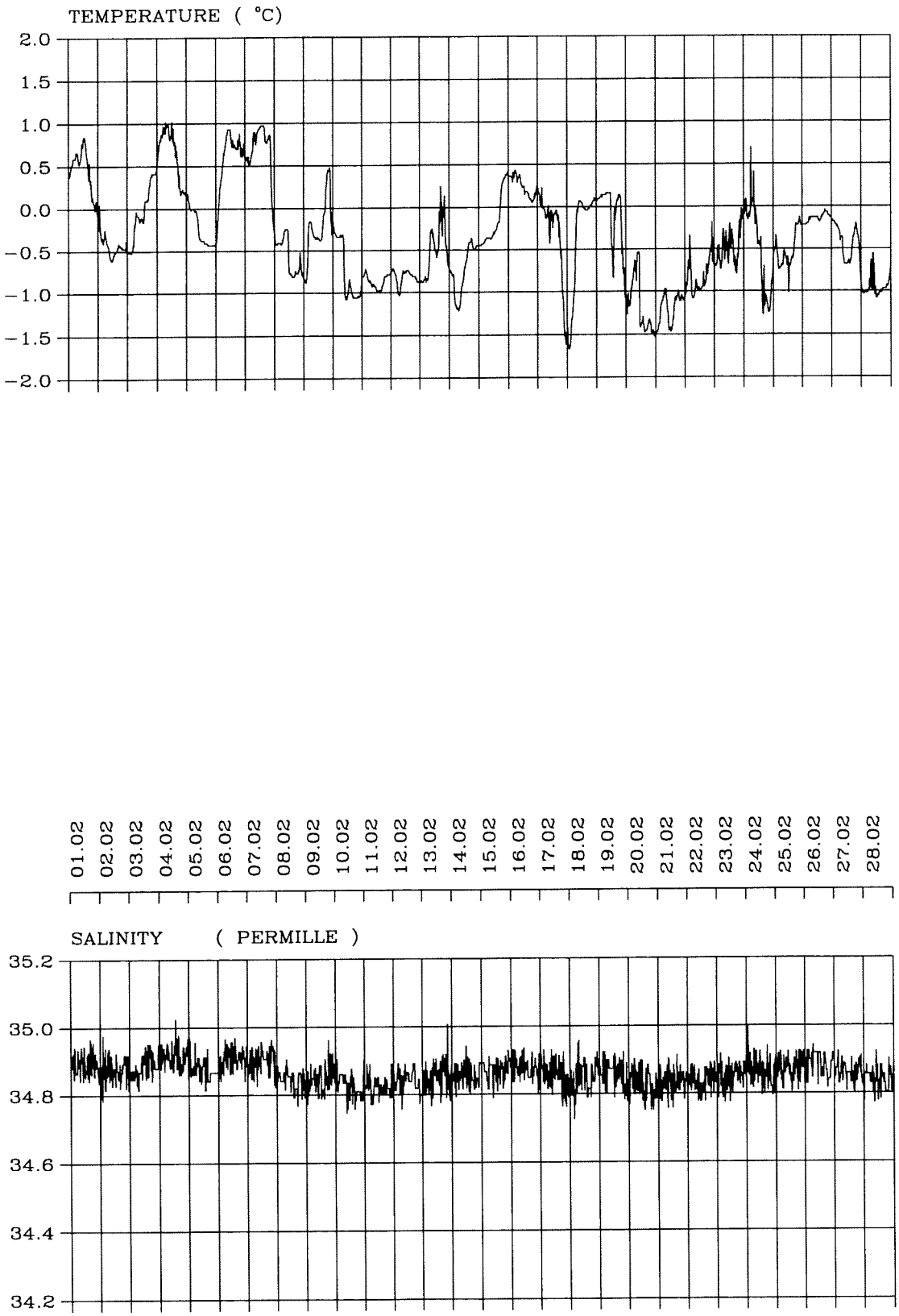
Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-8

Continues.....



Northern Central Bank, Barents Sea

Position : N 76° 0.07´ E 34° 59.50´

Instrument depth : 240.0 m Bottom depth : 250.0 m

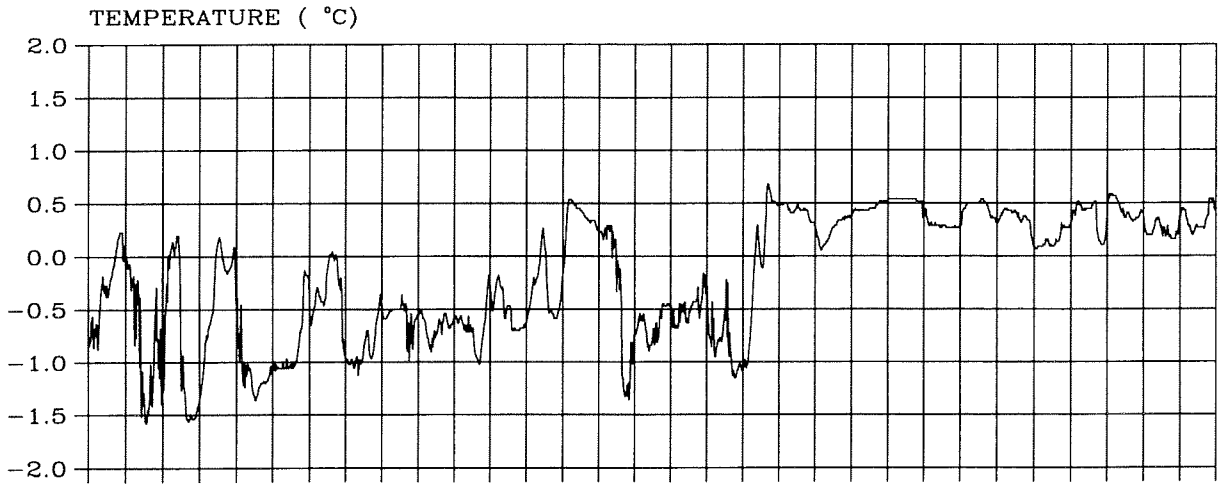
Time interval : 20.00 minutes. Instrument no. : 10805

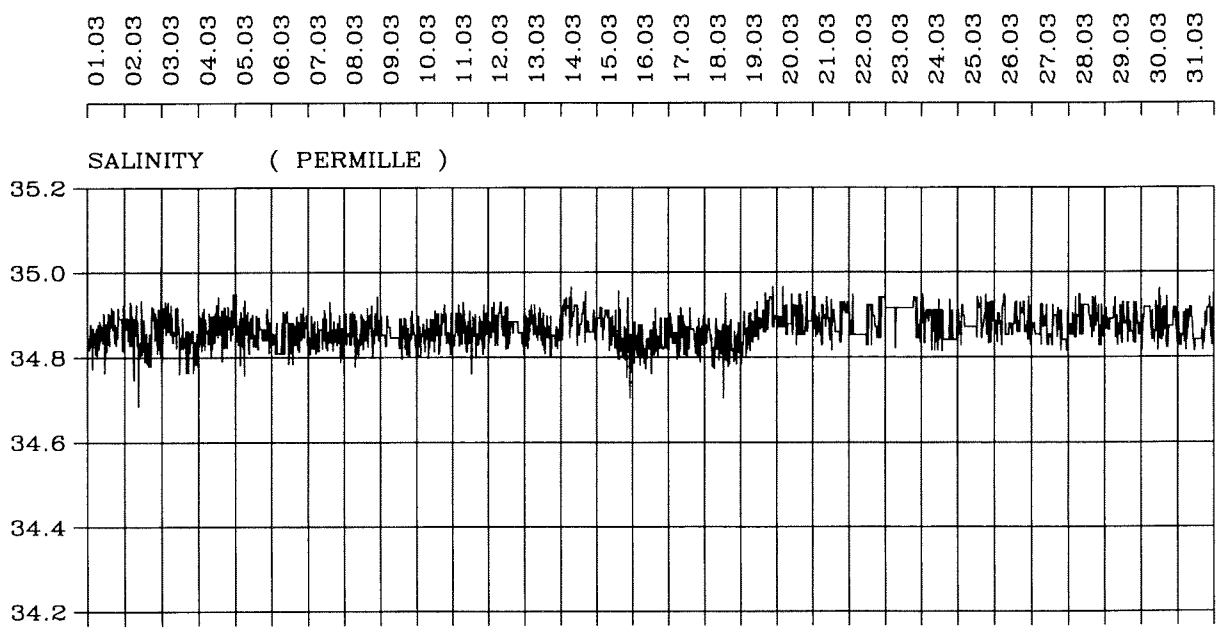
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

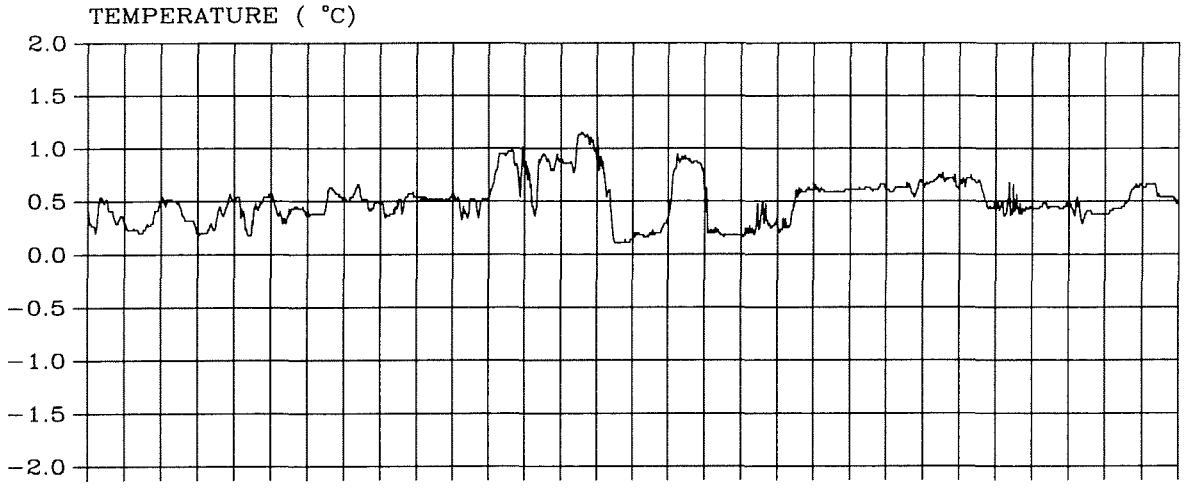
Time interval : 20.00 minutes. Instrument no. : 10805

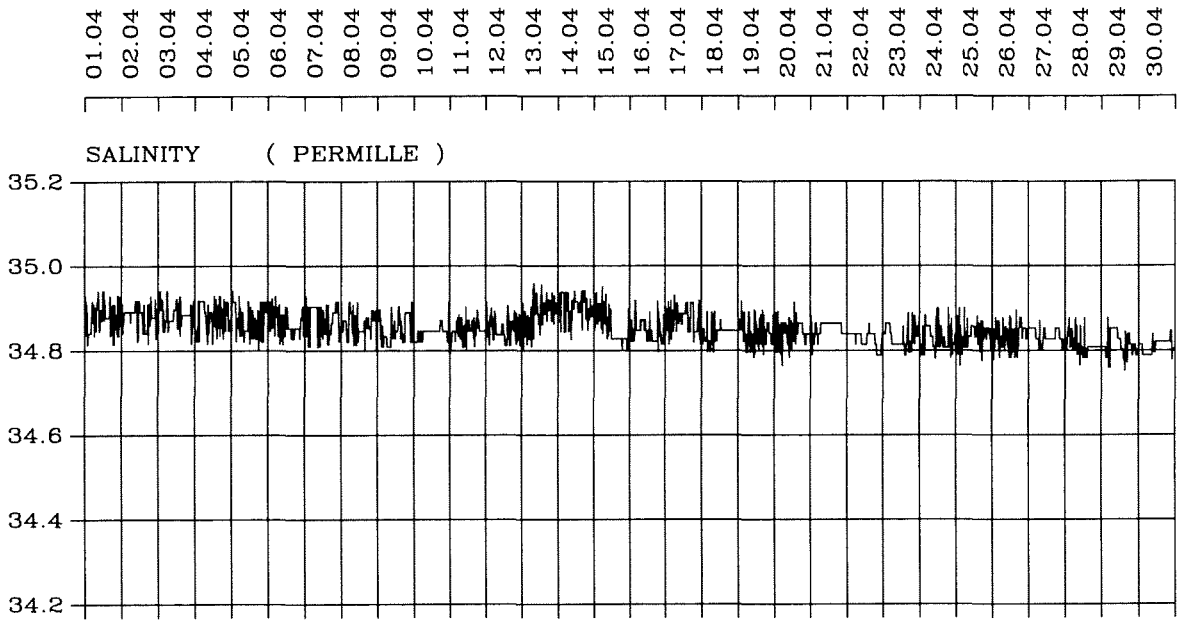
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

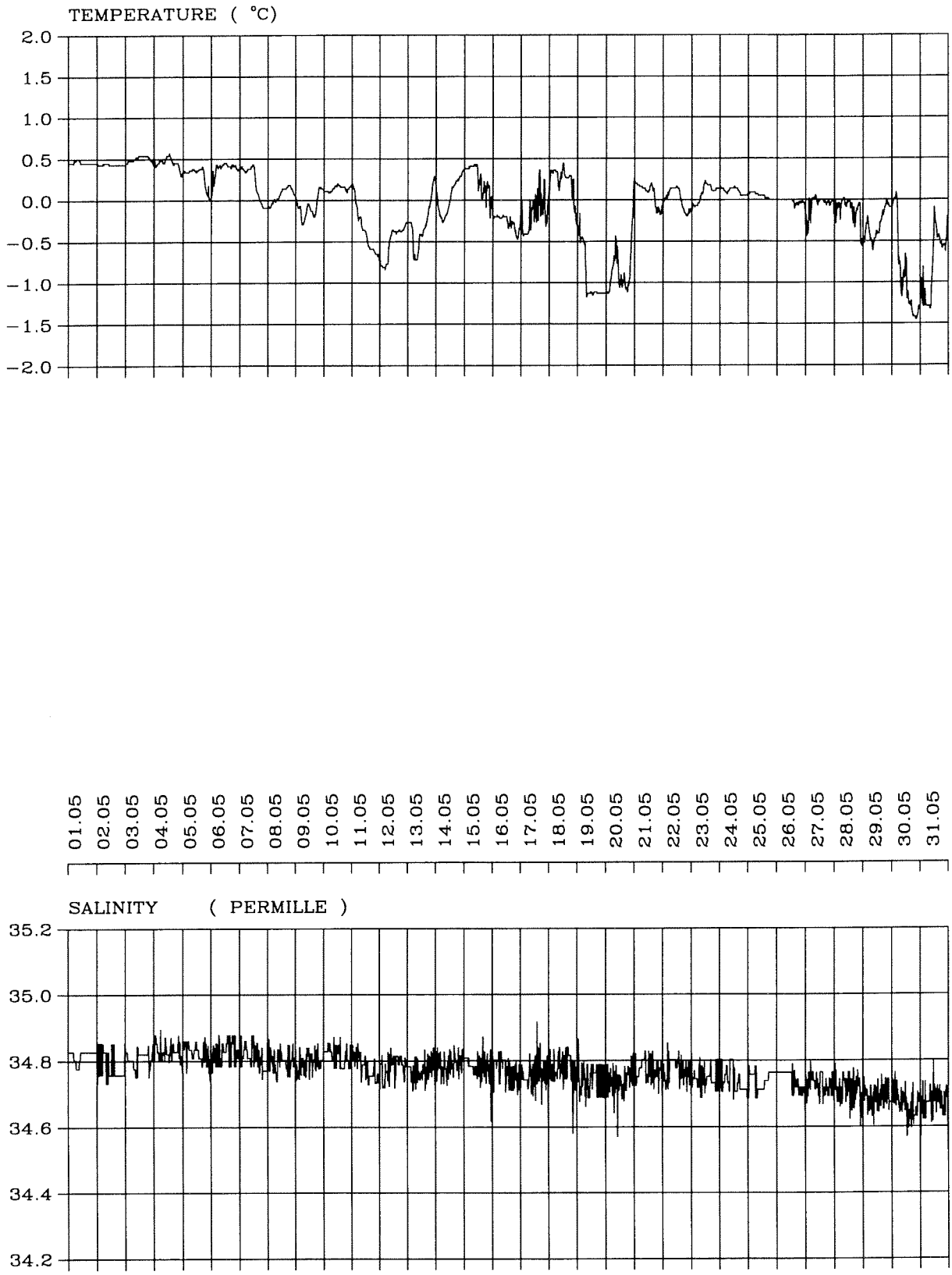
Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1–4–8

Continues.....



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

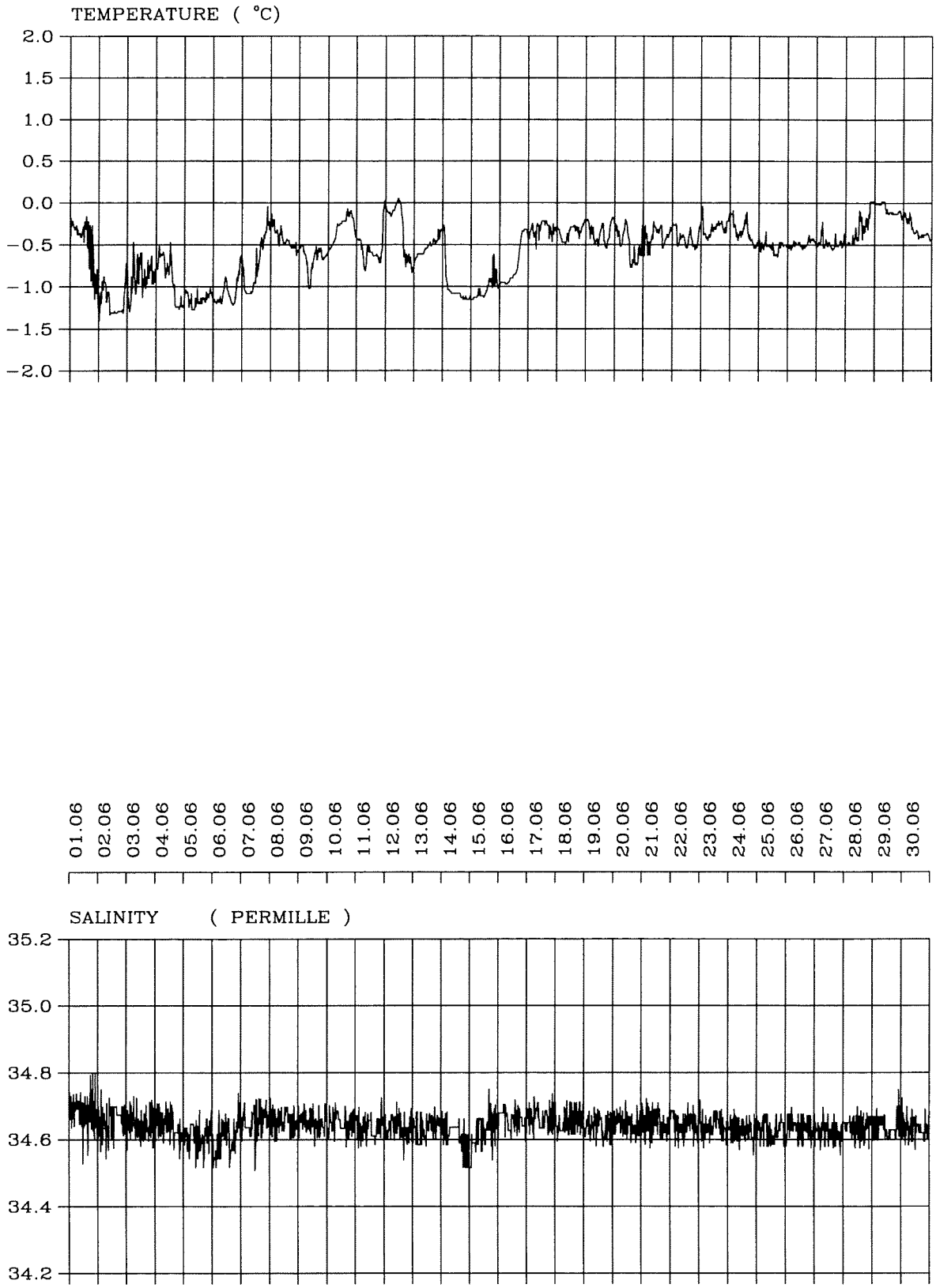
Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1–4–8

Continues.....



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

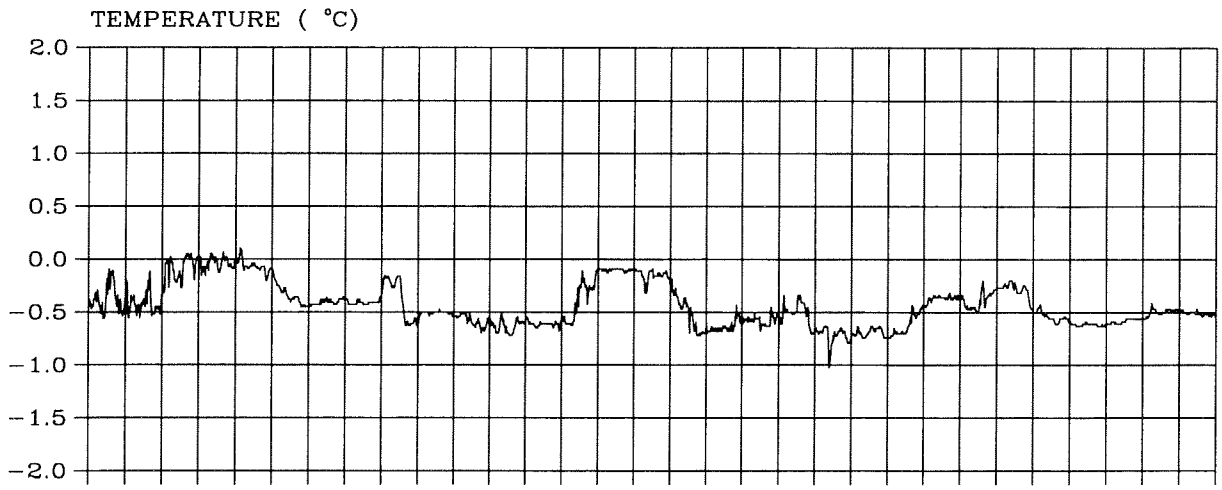
Time interval : 20.00 minutes. Instrument no. : 10805

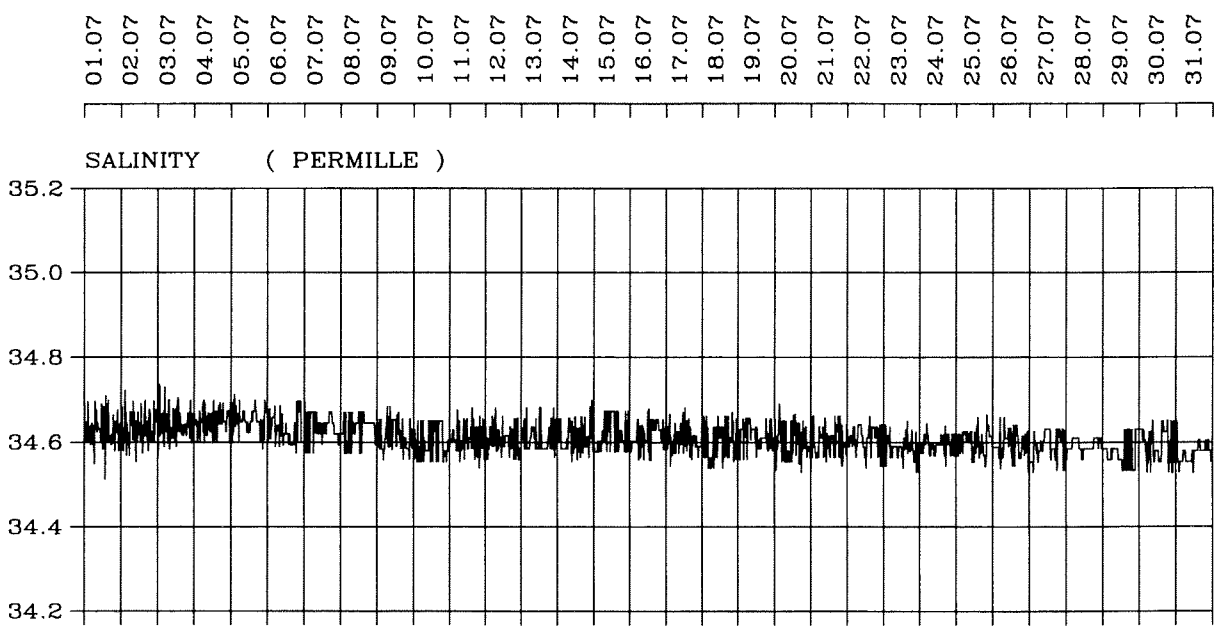
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1–4–8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

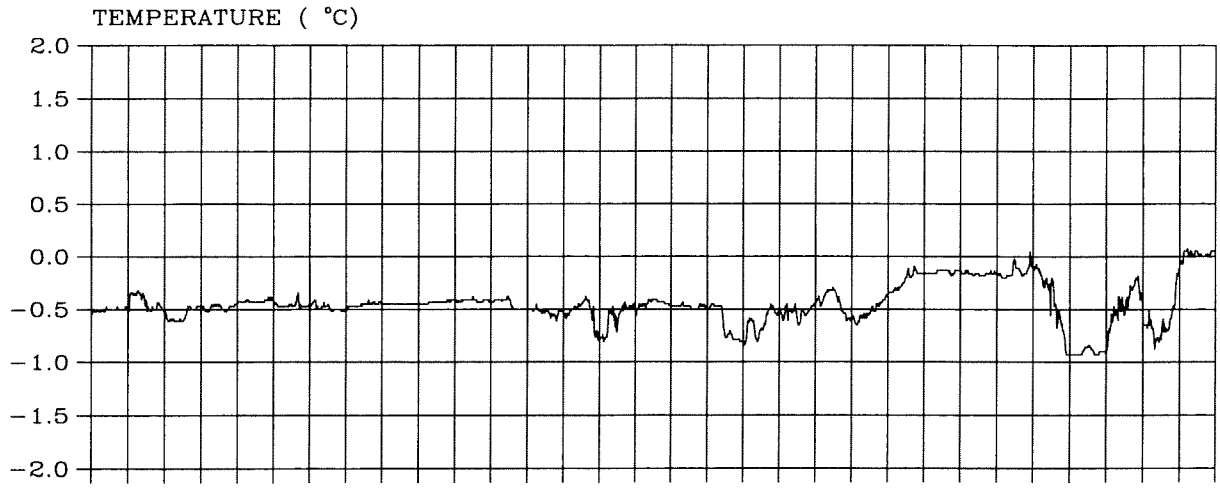
Time interval : 20.00 minutes. Instrument no. : 10805

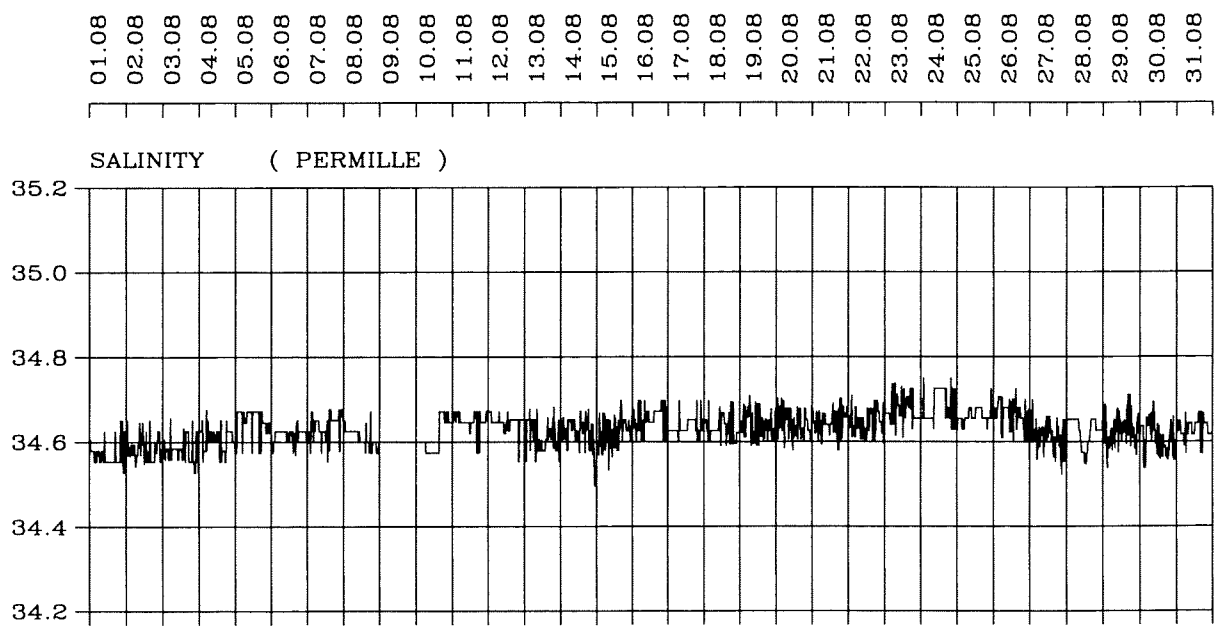
Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

Fig. 1-4-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

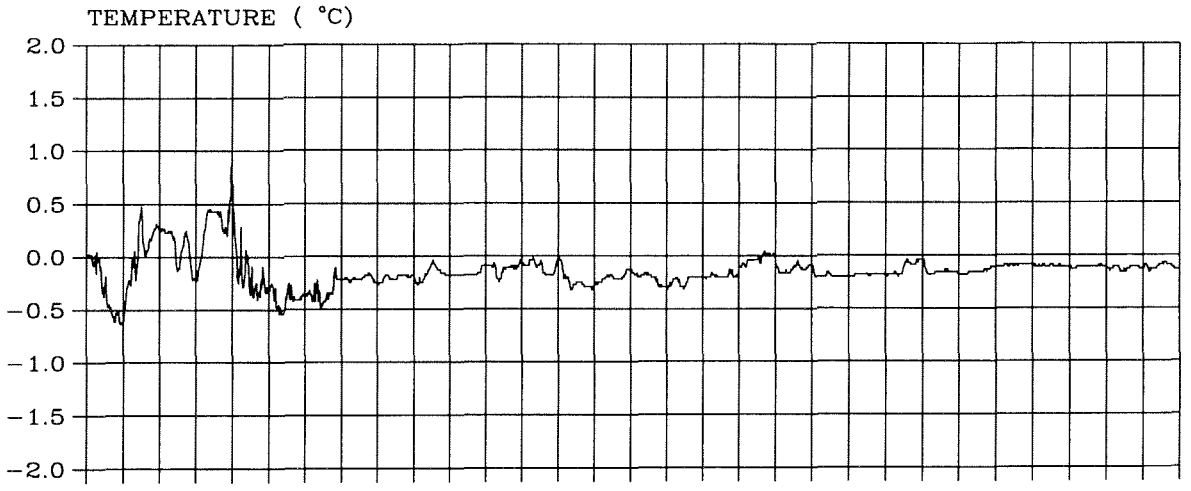
Time interval : 20.00 minutes. Instrument no. : 10805

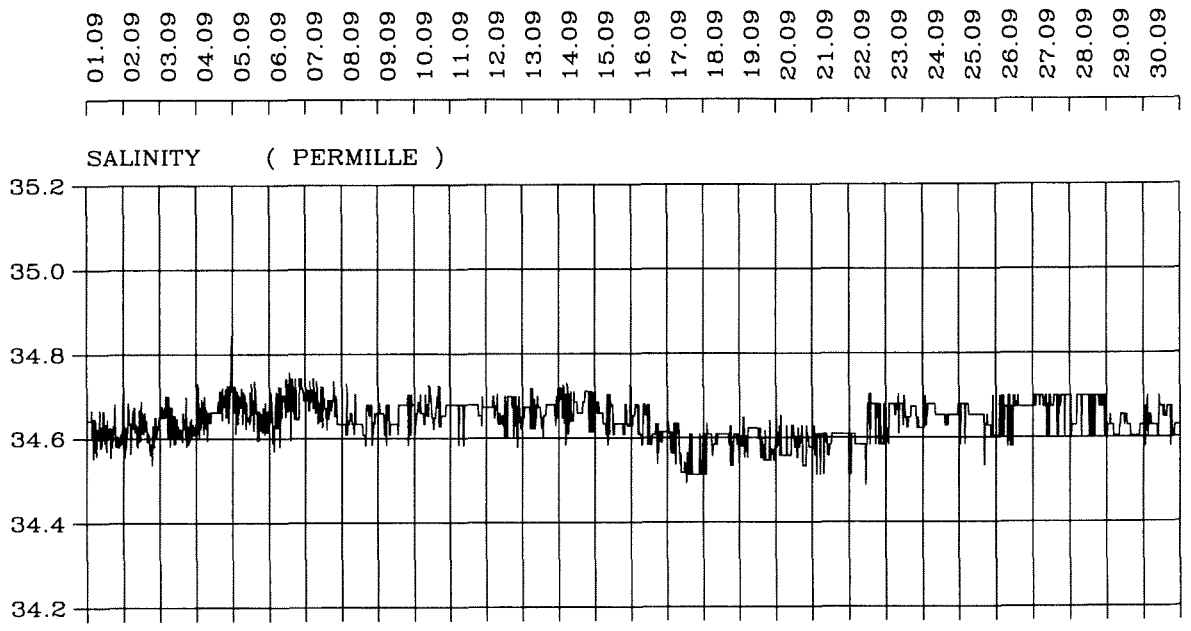
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-4-8

Continues.....





Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 – 1993 01.10 H. 0000

IMR

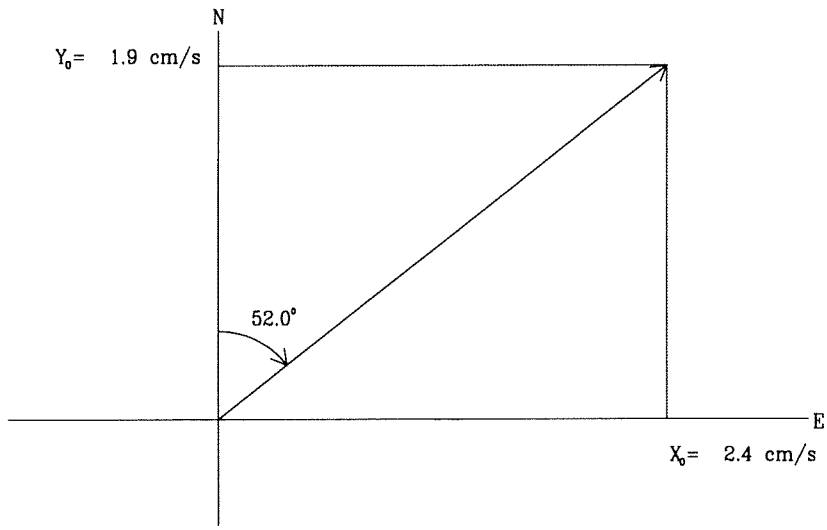
Fig. 1-4-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_j cm/s	g_{xj} °	Y_j cm/s	g_{yj} °	Major axis A_j cm/s	Minor axis B_j cm/s	θ_j °	g_j °	BETA. °
SA	******	0.0	1.4	73.6	2.6	48.1	2.9	-0.6	27.6	53.8	155.5
SSA	******	0.1	0.9	36.5	0.9	53.4	1.3	0.2	45.2	44.9	42.7
MSF	354.37	1.0	1.2	308.0	0.2	311.5	1.2	0.0	81.4	308.1	113.5
MF	327.86	1.1	2.1	124.1	0.6	105.5	2.2	-0.2	74.3	122.7	106.0
M2	12.42	29.0	2.3	41.5	1.1	347.7	2.3	-0.8	72.3	35.2	137.5
S2	12.00	30.0	1.0	67.5	0.4	22.2	1.1	-0.3	71.5	62.1	152.3

MEAN CURRENT



Northern Central Bank, Barents Sea
Position : N 76° 0.07′ E 34° 59.50′
Instrument depth : 240.0 m Bottom depth : 250.0 m
Time interval : 20.00 minutes. Instrument no. : 10805
Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

IMR

Fig. 1-4-9 Harmonic analysis of current.

A discription of the model and its definitions :

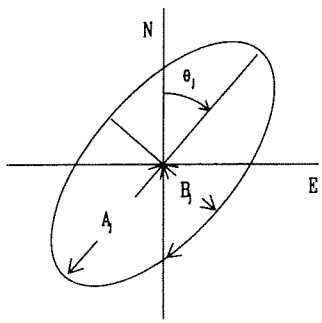
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=0}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

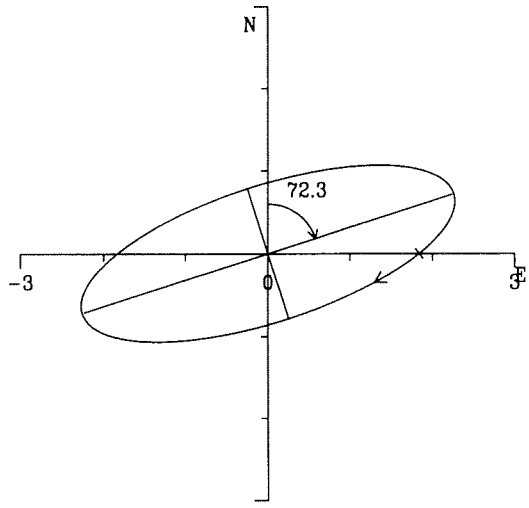
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

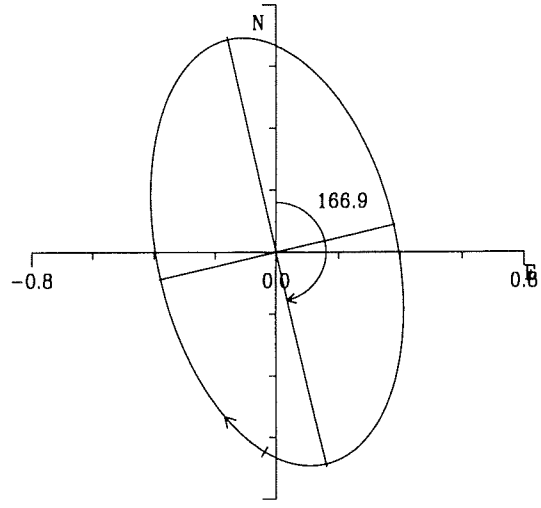
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1500 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

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Fig. 1-4-10 M2 and K1 ellipse.

MEAN VALUES

Speed	7.29 cm/s
NS-component	1.83 cm/s
EW-component	2.41 cm/s
Velocity	3.02 cm/s
in direction	52 °

MAXIMUM

Velocity	40.62 cm/s
in direction	272 °
Temperature	1.96 °C
Salinity	35.032

MINIMUM

Velocity	0.00 cm/s
in direction	48 °
Temperature	-1.67 °C
Salinity	34.486

Northern Central Bank, Barents Sea

Position : N 76° 0.07′ E 34° 59.50′

Instrument depth : 240.0 m Bottom depth : 250.0 m

Time interval : 20.00 minutes. Instrument no. : 10805

Observation period: 1992 13.09 H. 0615 - 1993 01.10 H. 0000

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Fig. 1-4-11

Overall mean values.
Overall maximum values.
Overall minimum values.

Appendix B

AANDERAA RCM CURRENT DATA

Mooring: 2

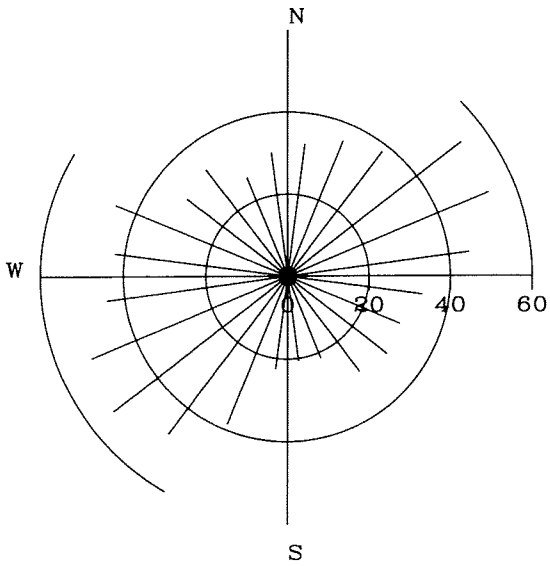
Position: N 76°25.6´ E 34°59.5´

Instrument depths: 60, 110, 210 and 268 m

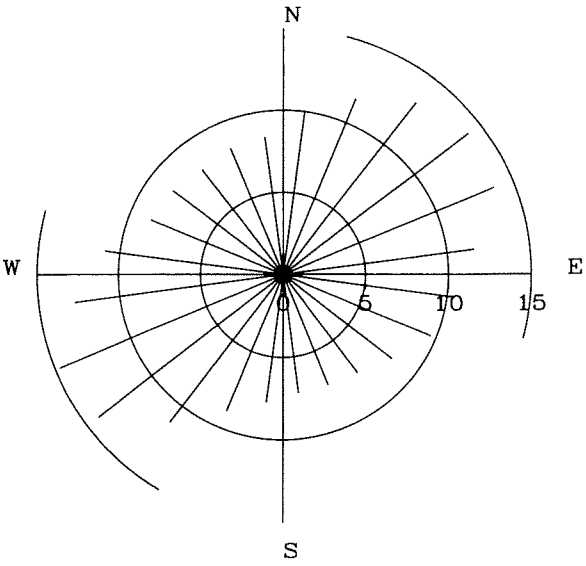
Mooring: 2

Depth: 60 *m*

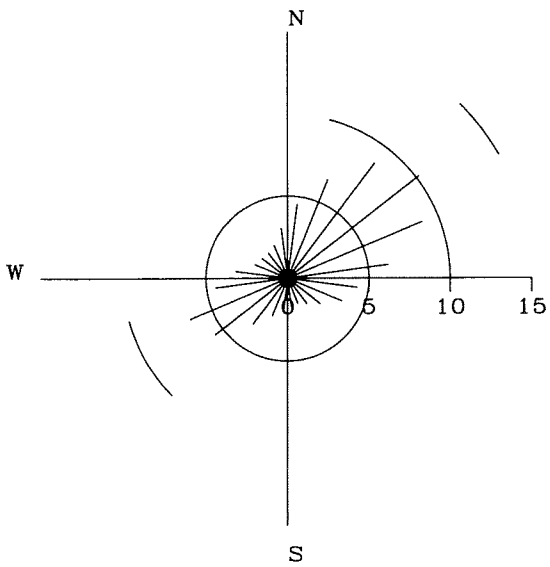
CURRENT VELOCITY DISTRIBUTION



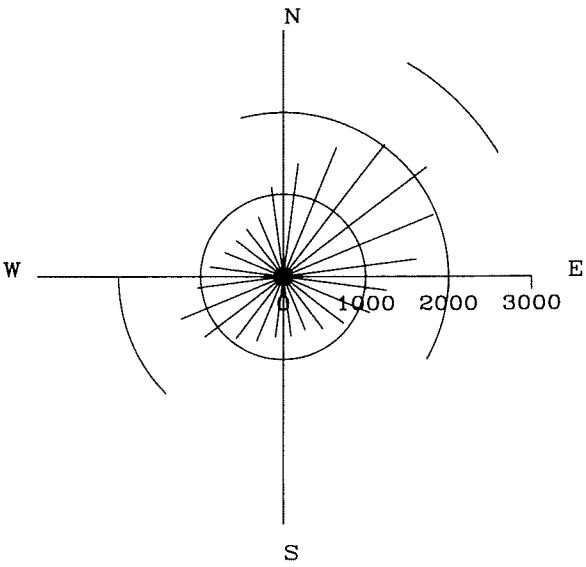
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

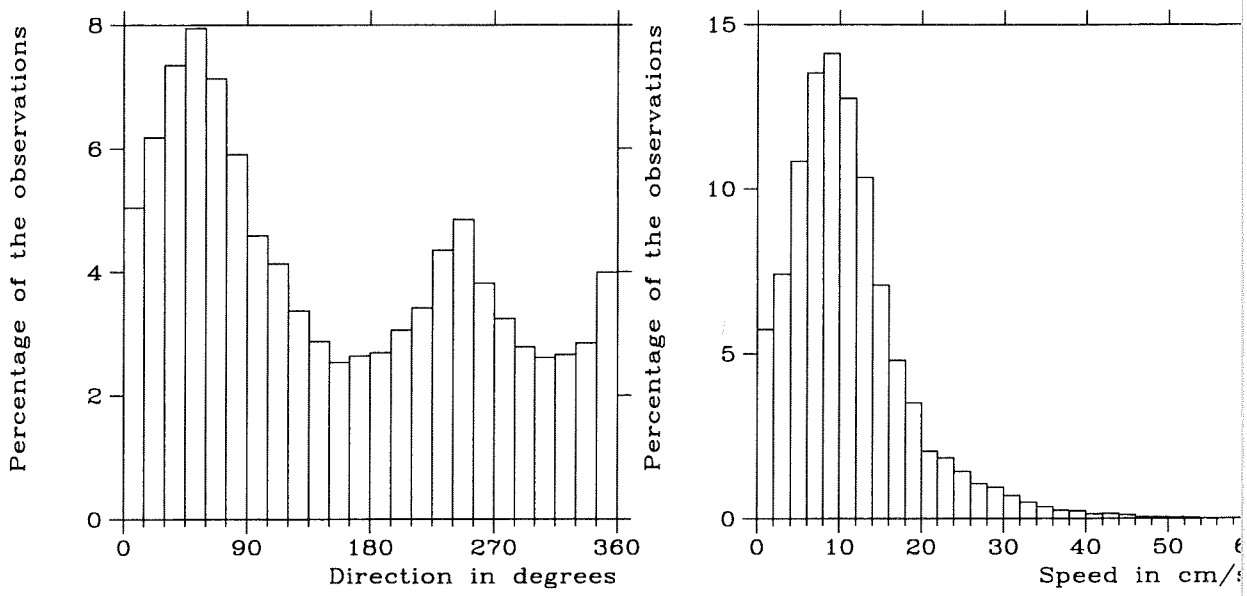
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

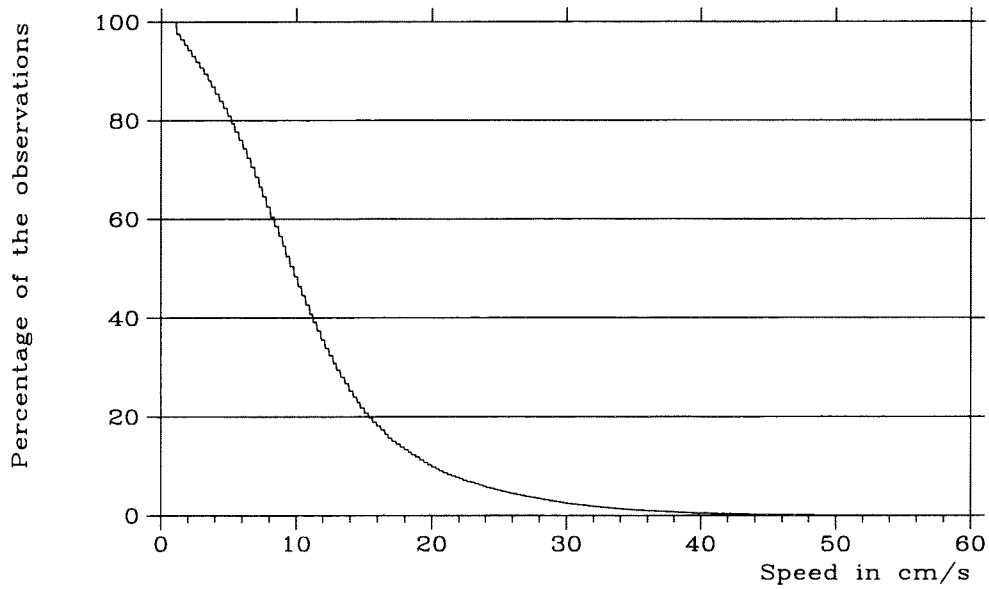
IMR

Fig. 2-1-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

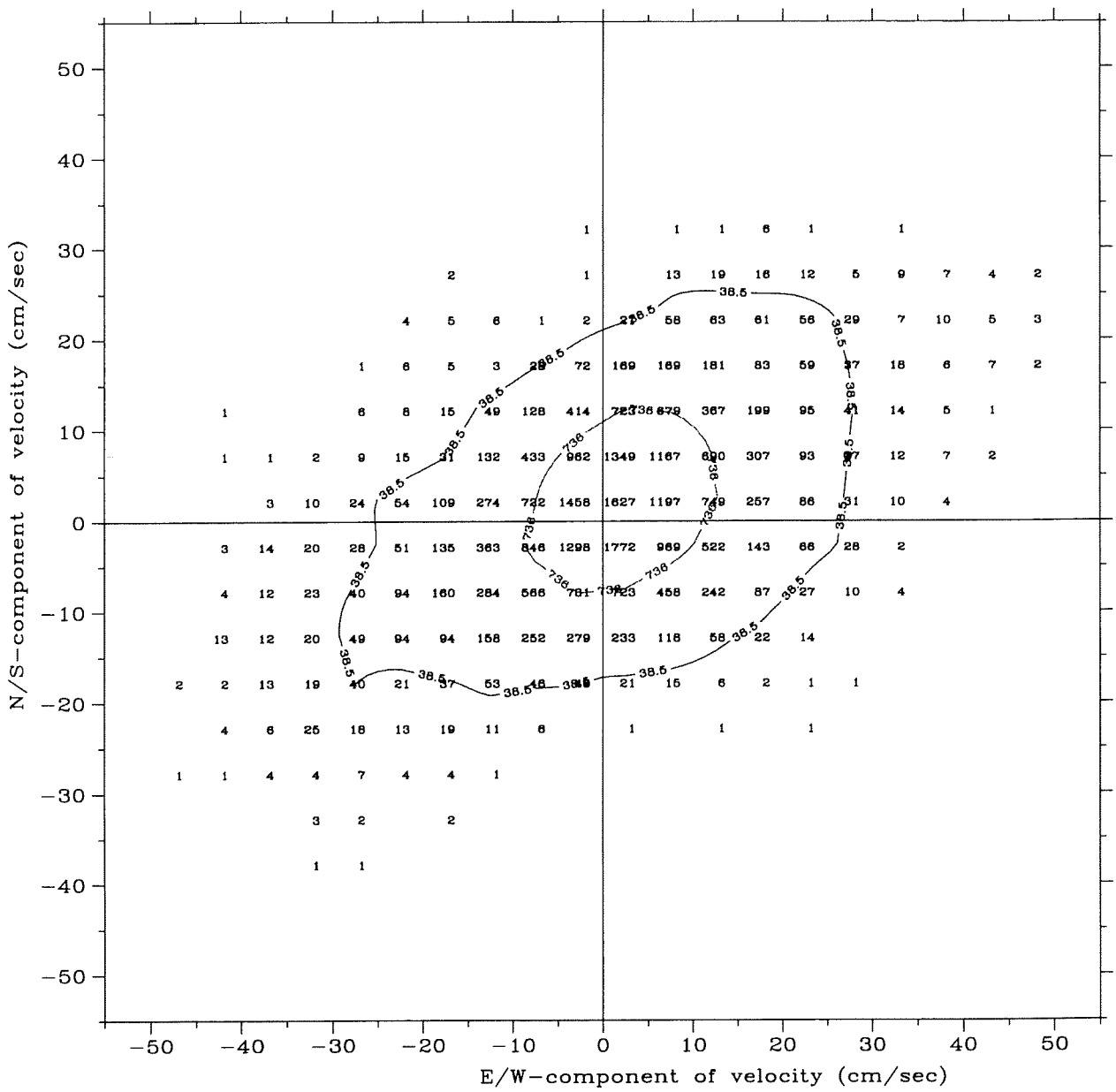
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27544

Isoline for 50% and 96%

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

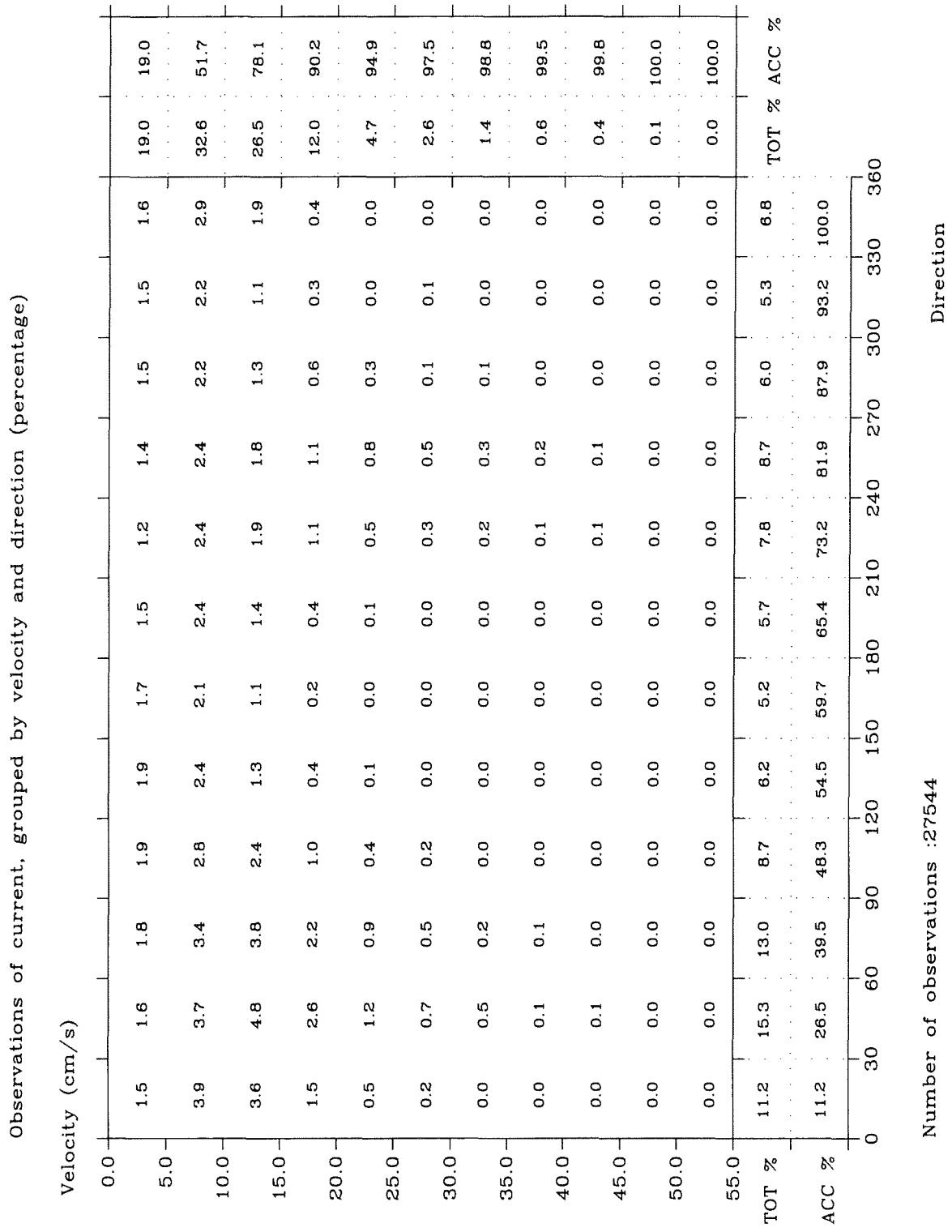
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-1-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

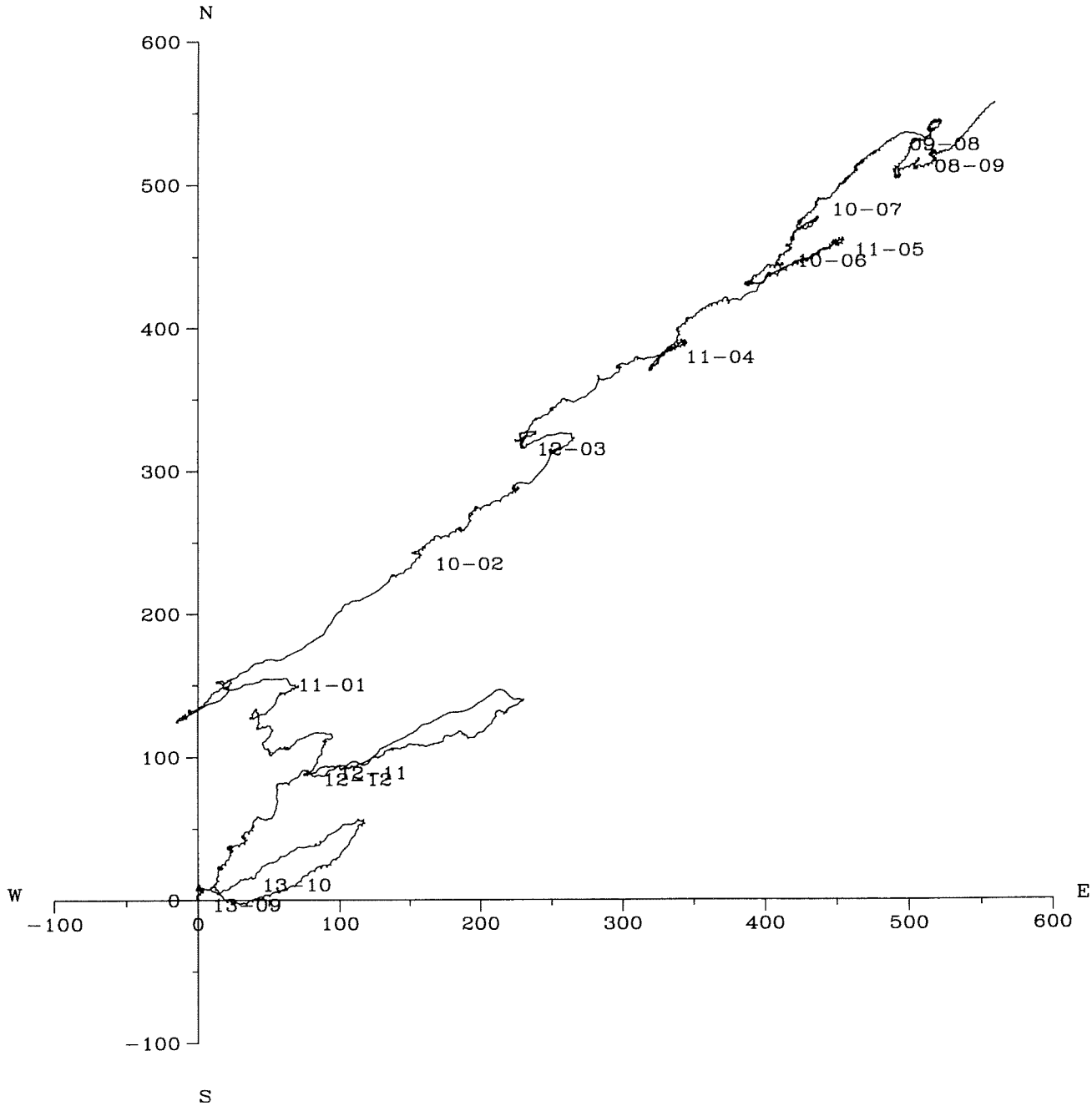
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2–1–4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



Units in km

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

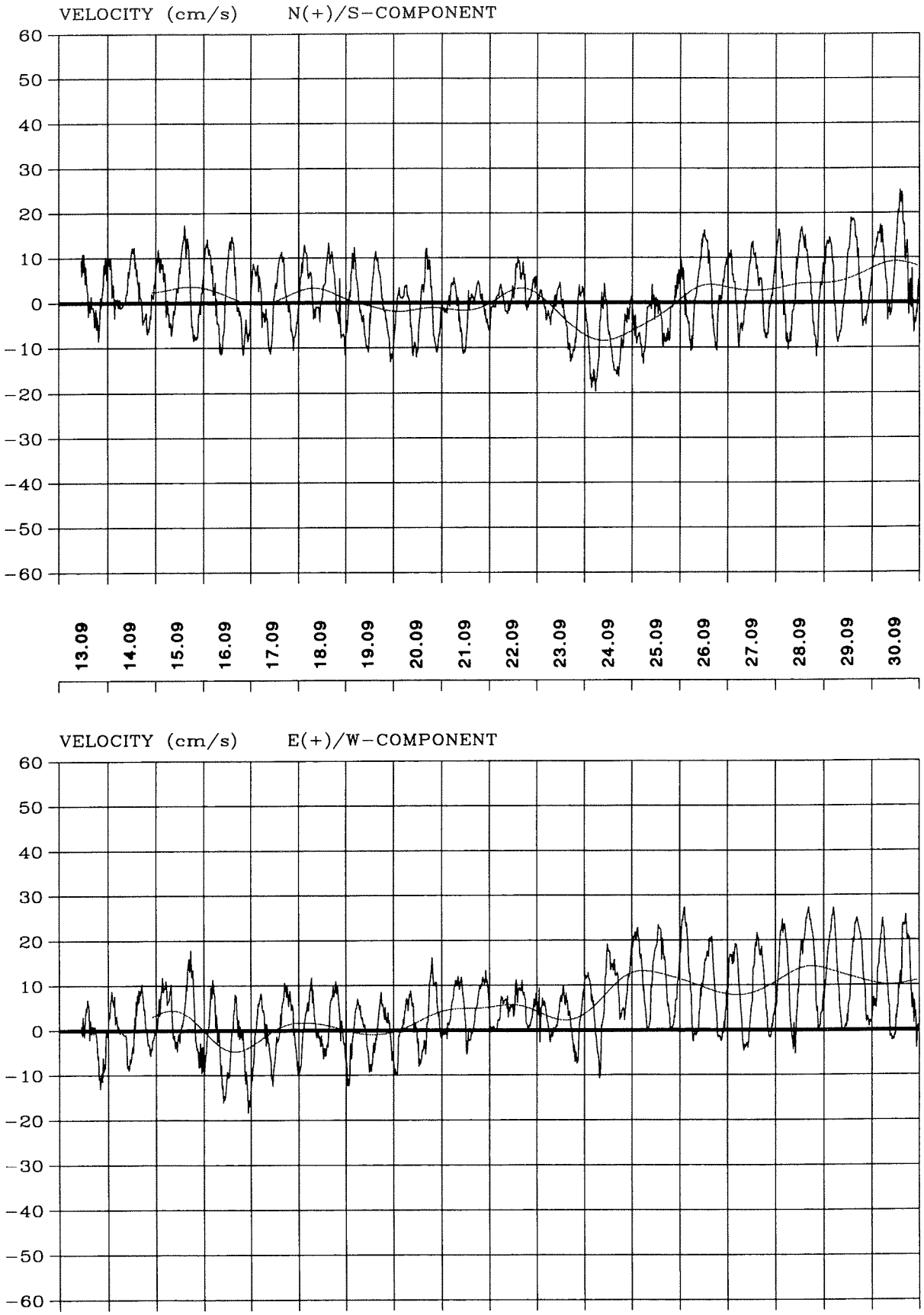
Instrument depth : 60.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-1-5 Progressive vector iagram.



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

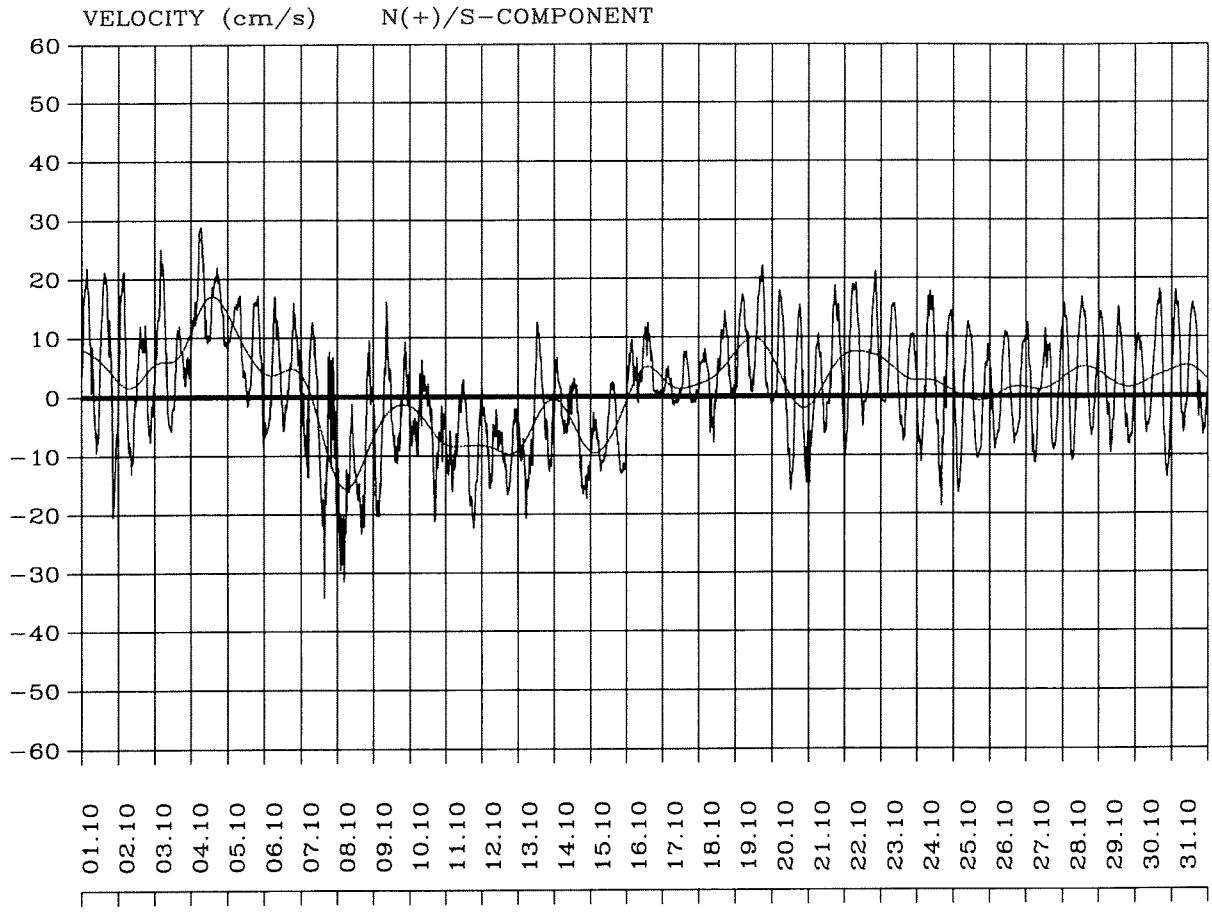
Instrument depth : 60.0 m Bottom depth : 278.0 m

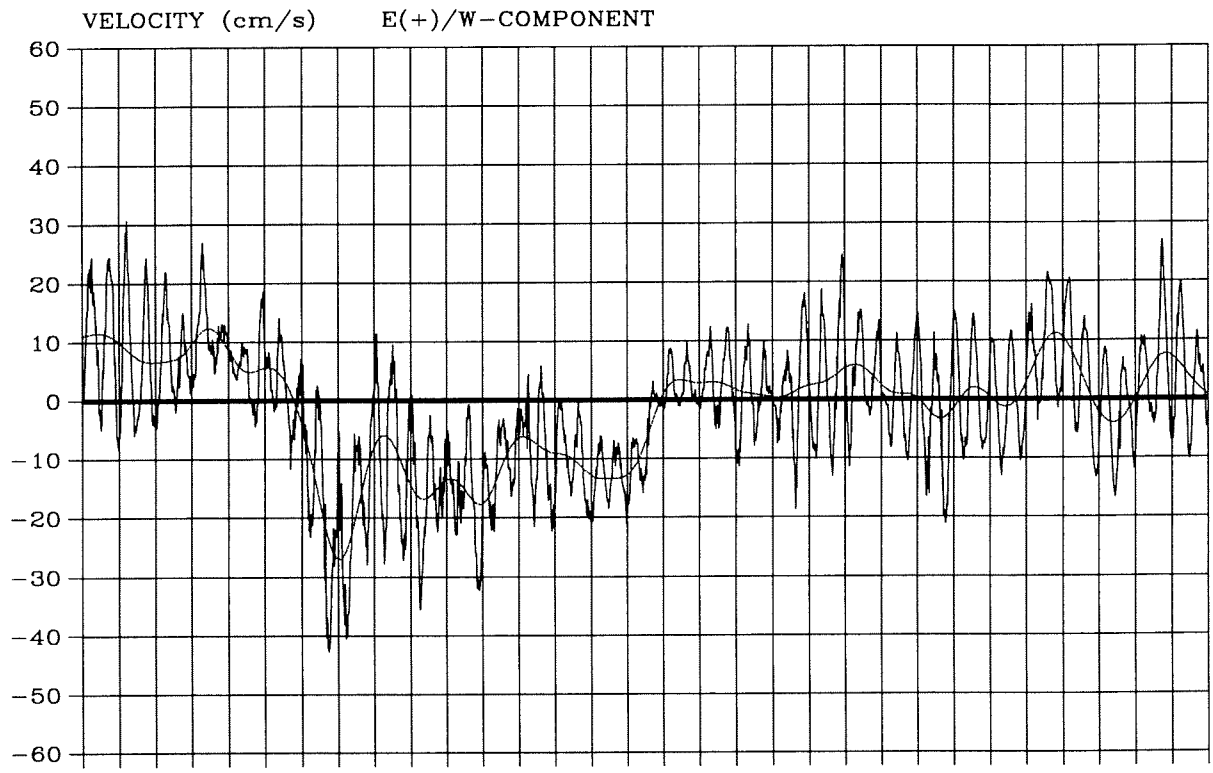
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-6 Current velocity distribution.





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

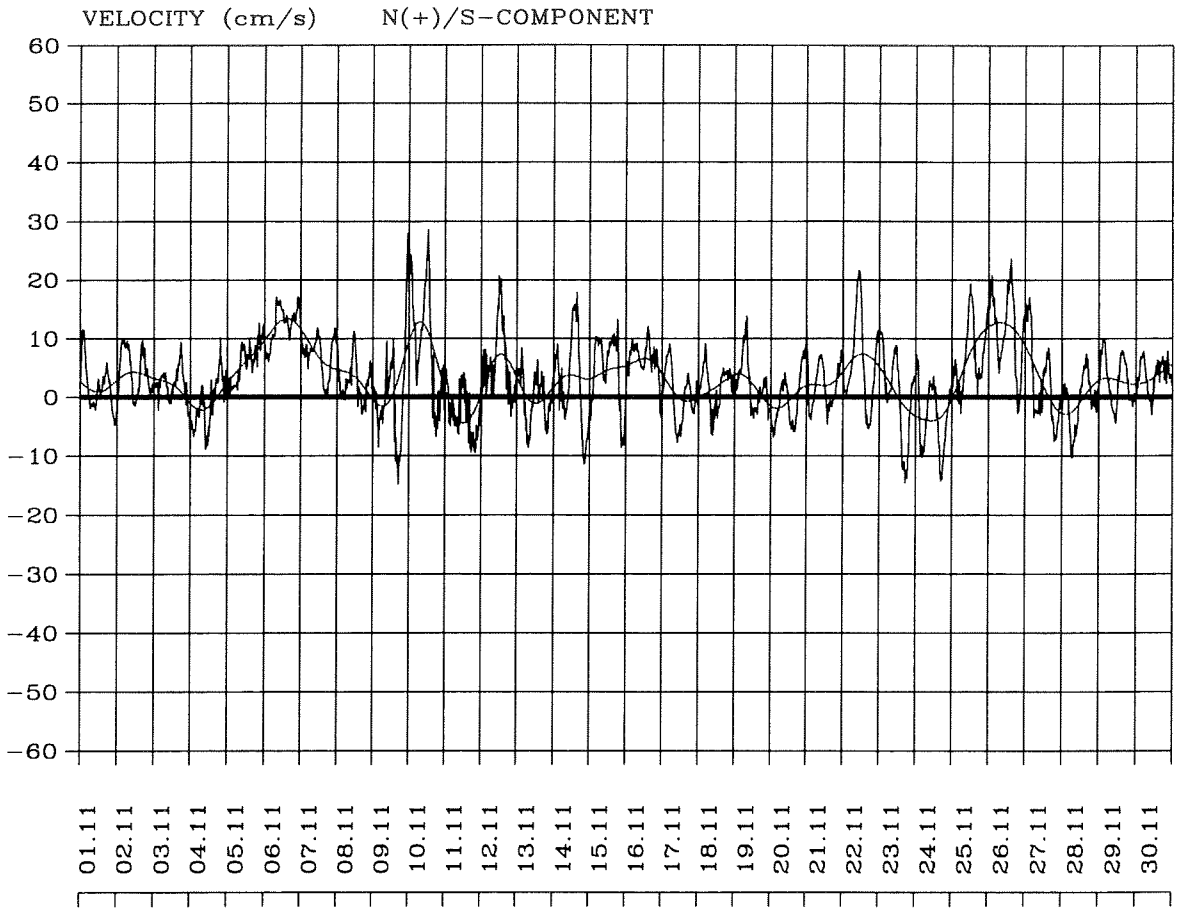
Time interval : 20.00 minutes. Instrument no. : 10793

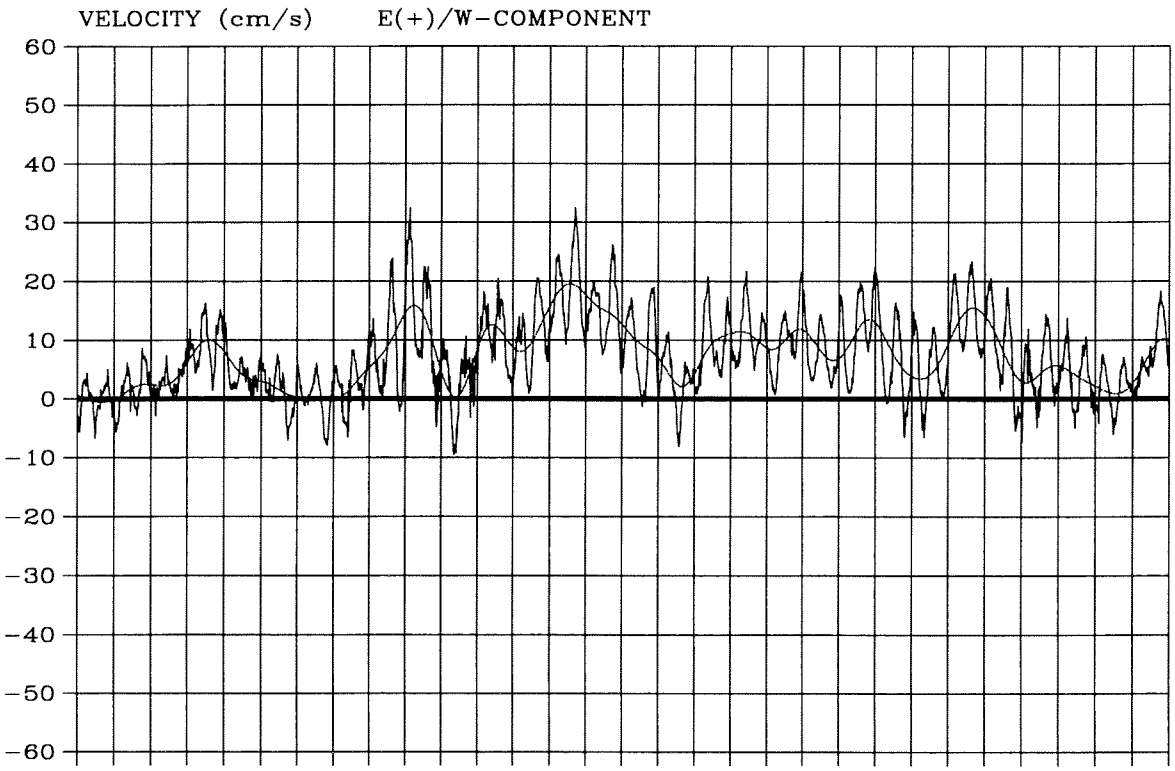
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-1-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

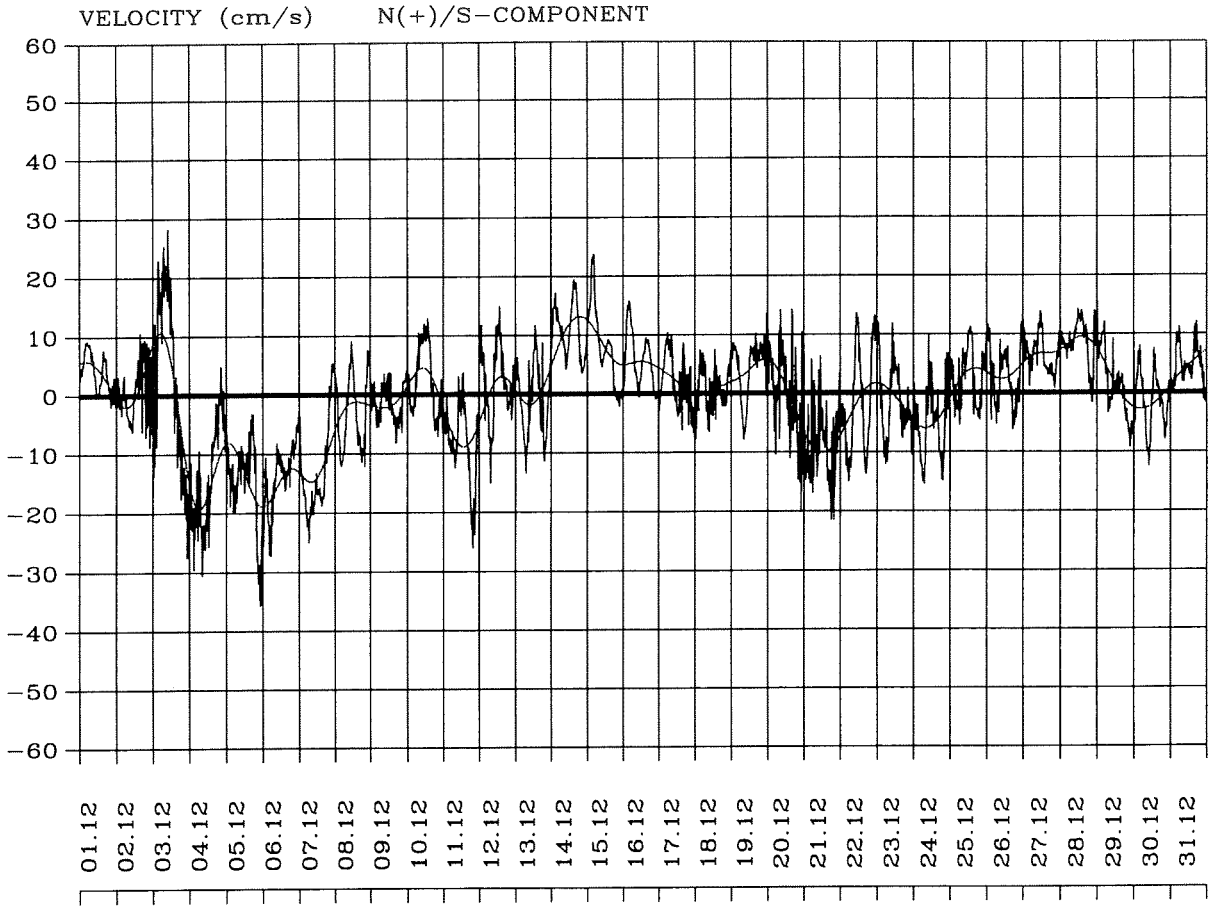
Time interval : 20.00 minutes. Instrument no. : 10793

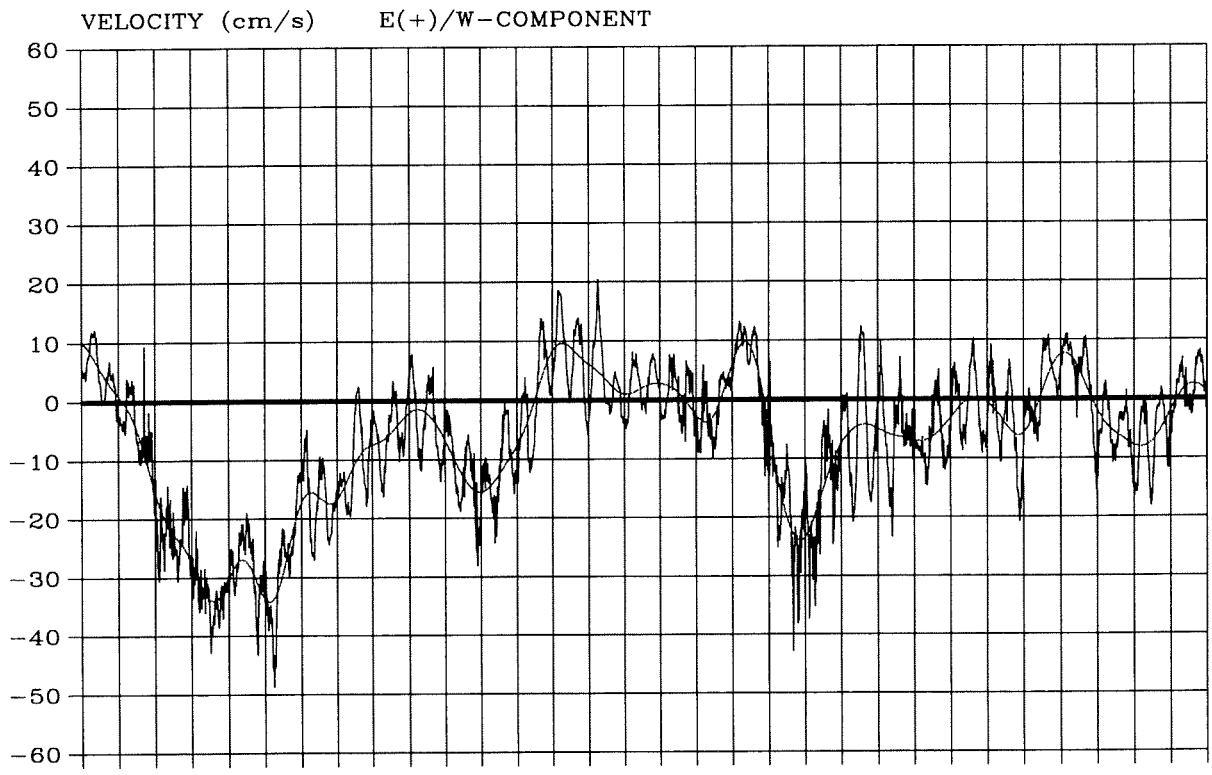
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

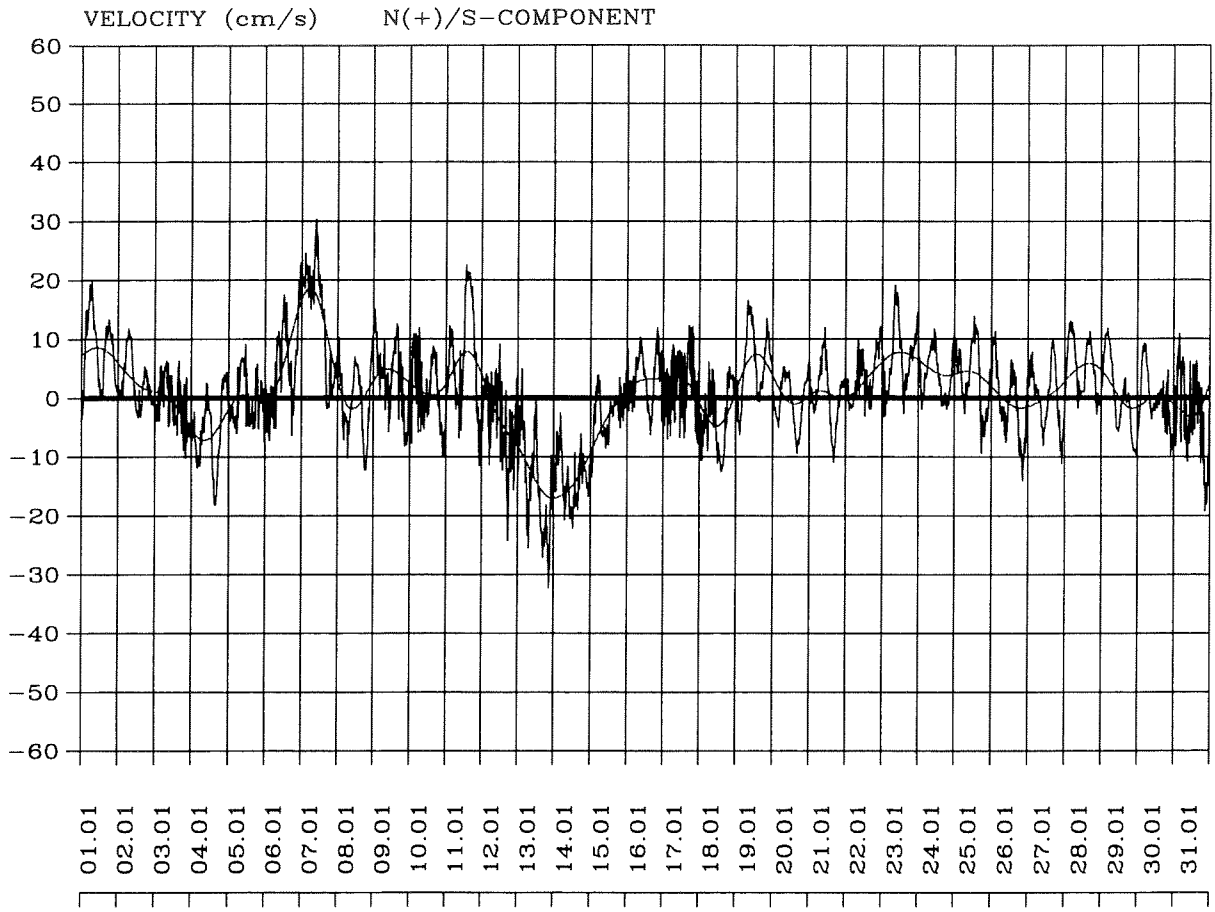
Time interval : 20.00 minutes. Instrument no. : 10793

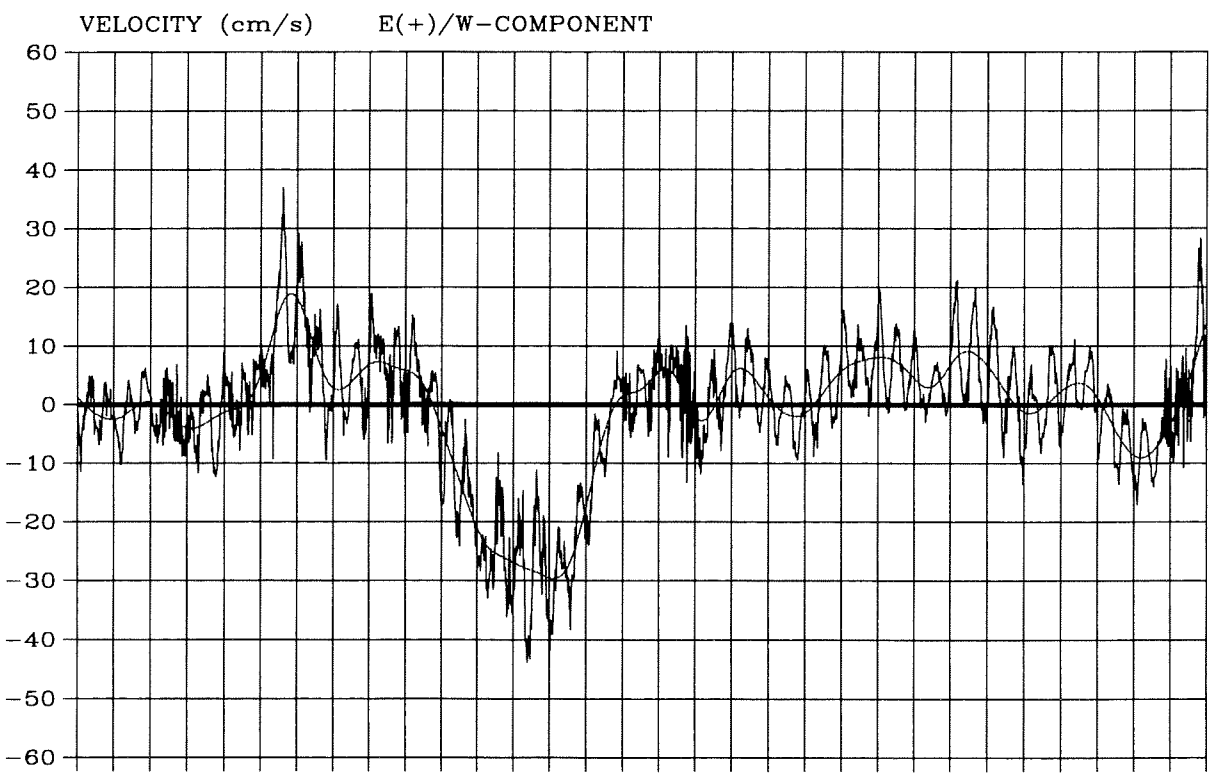
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

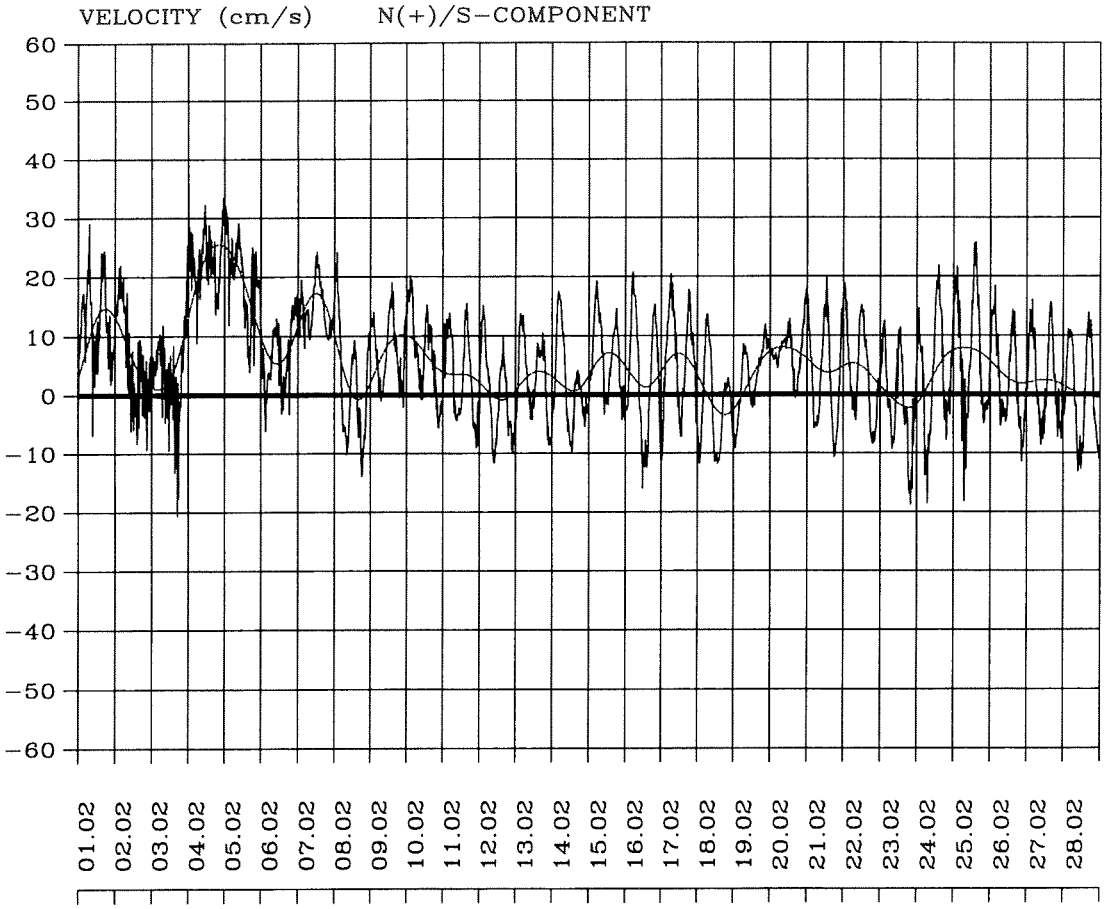
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-6

Continues.....



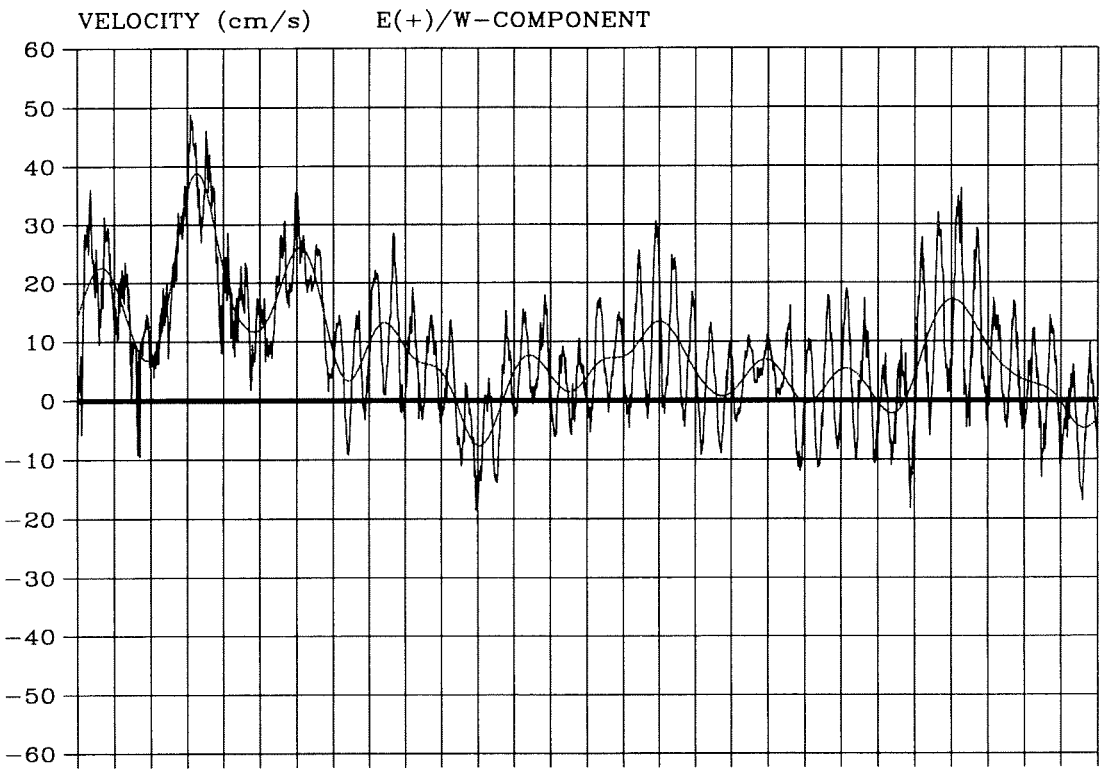


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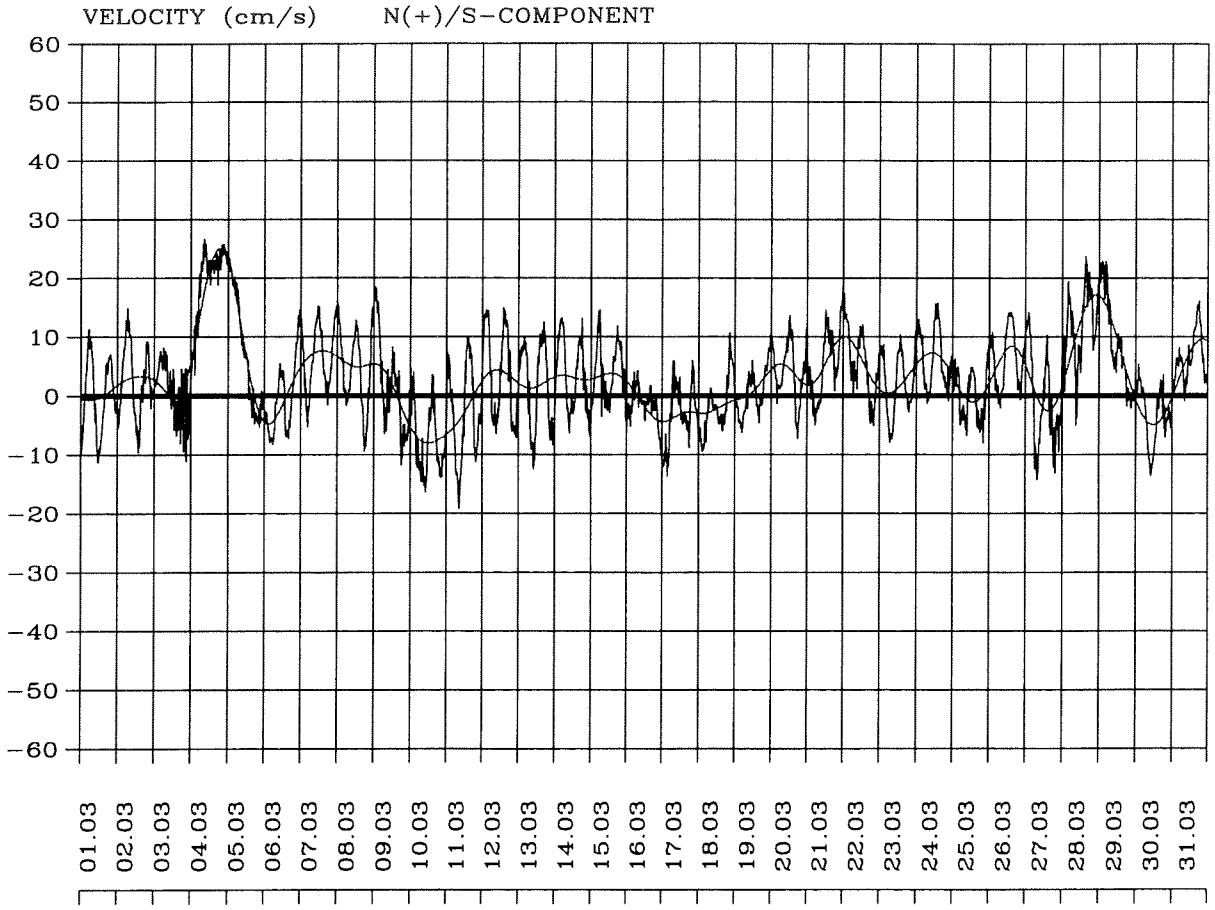
Fig. 2-1-6

Continues.....



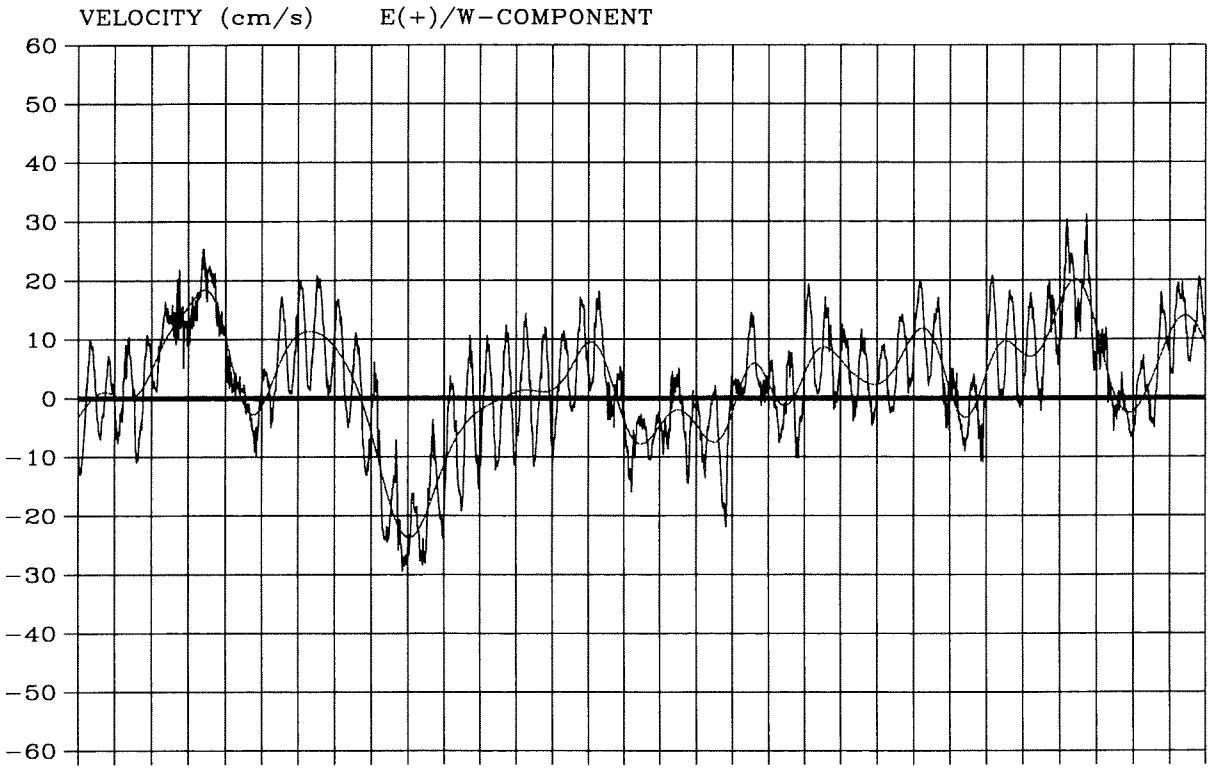


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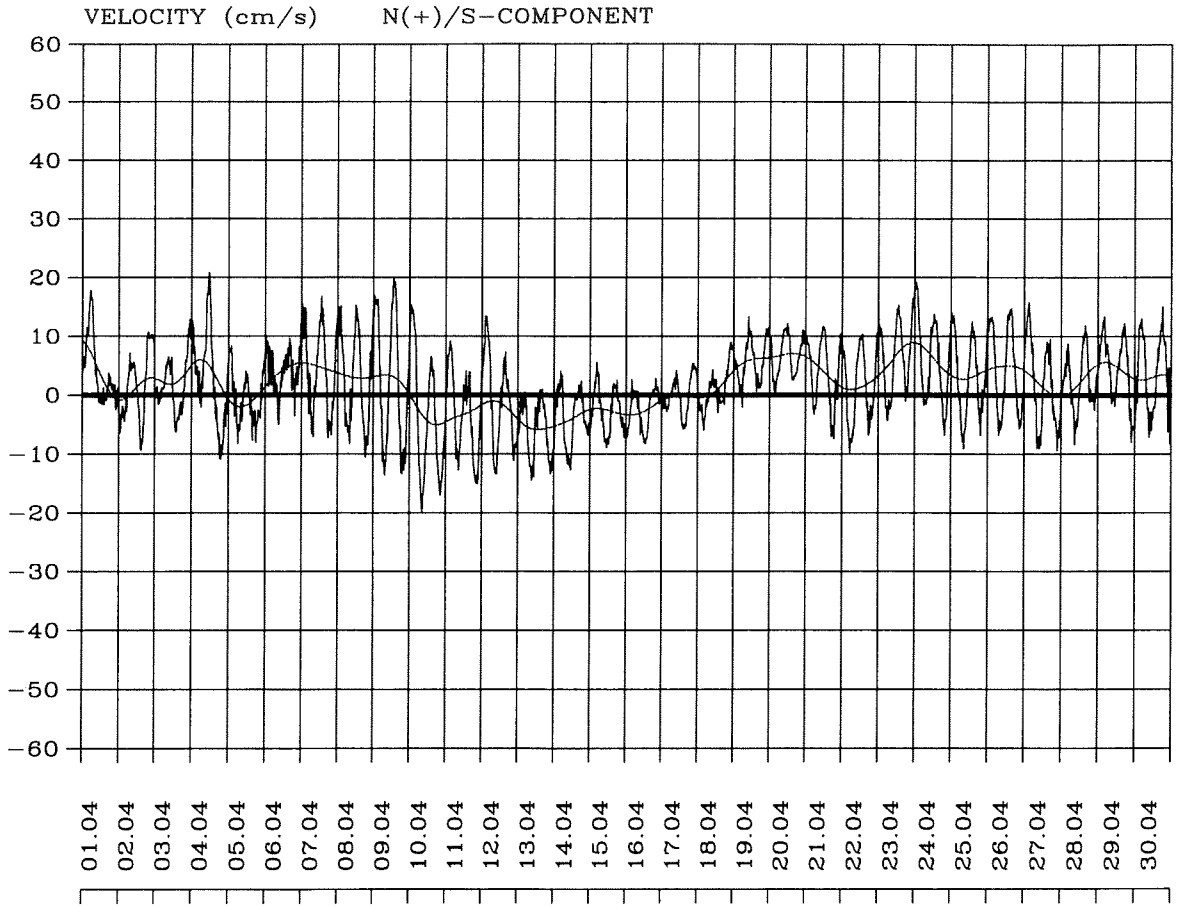
Fig. 2-1-6

Continues.....



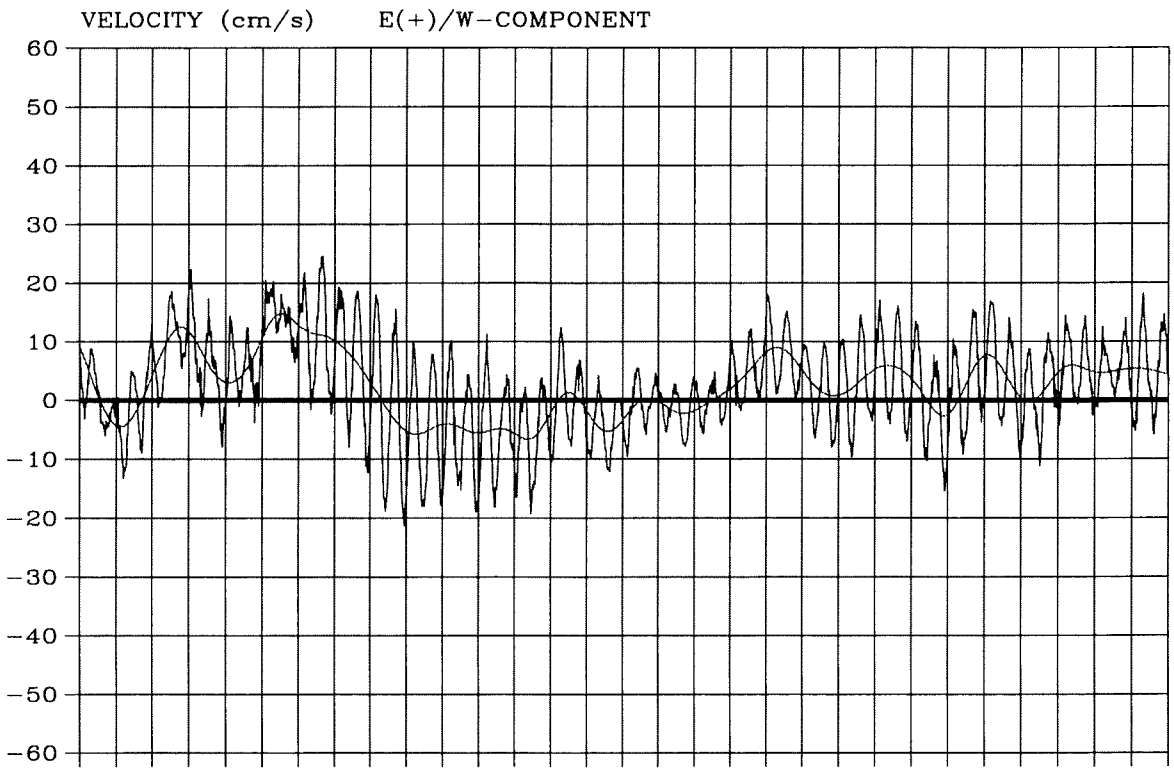


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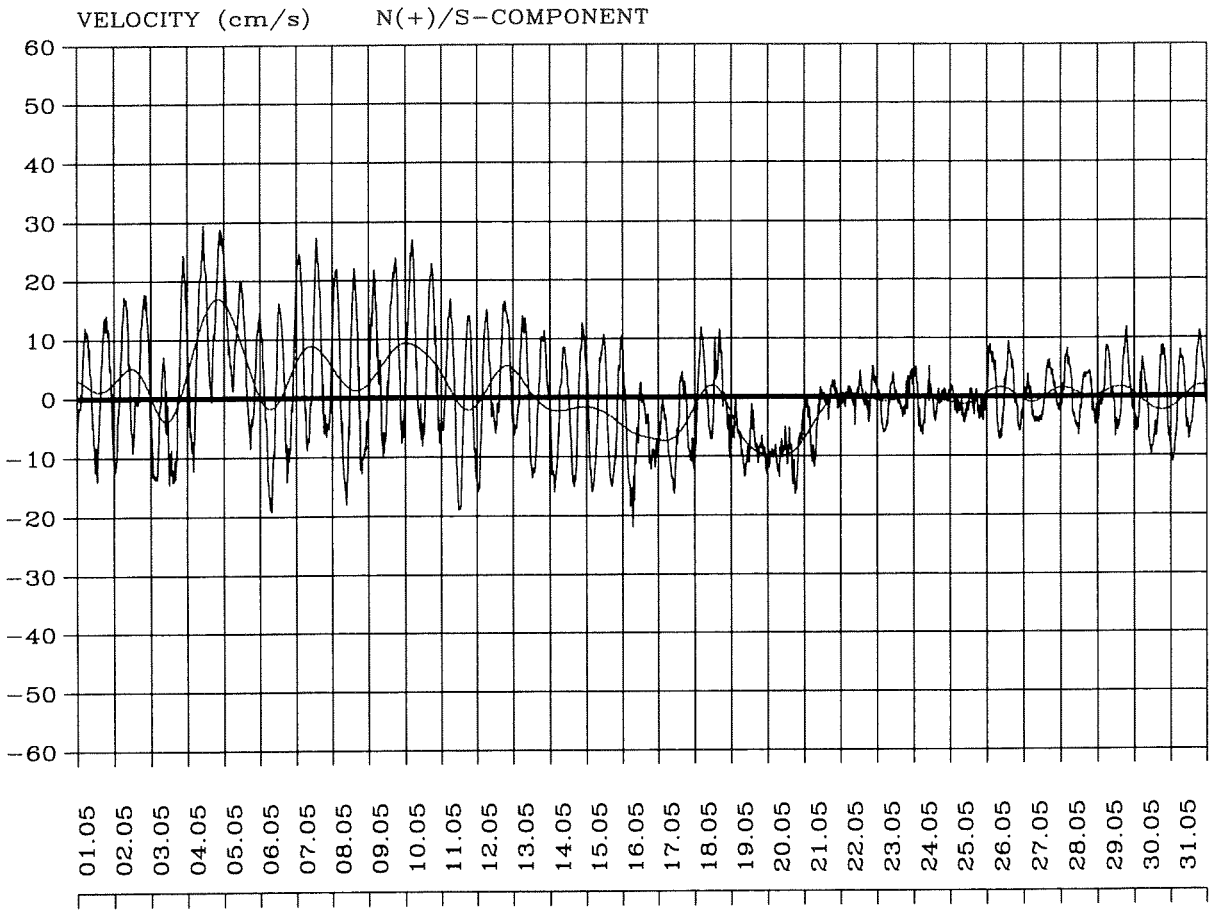
Fig. 2-1-6

Continues.....



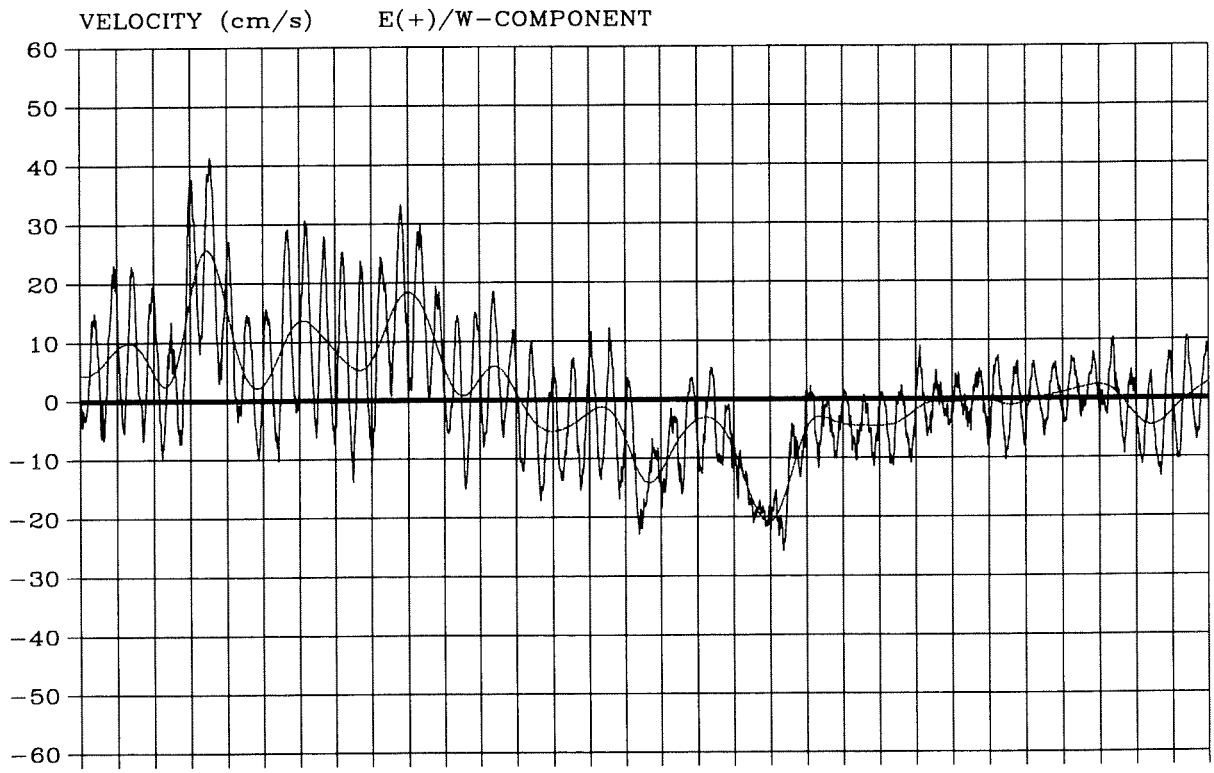


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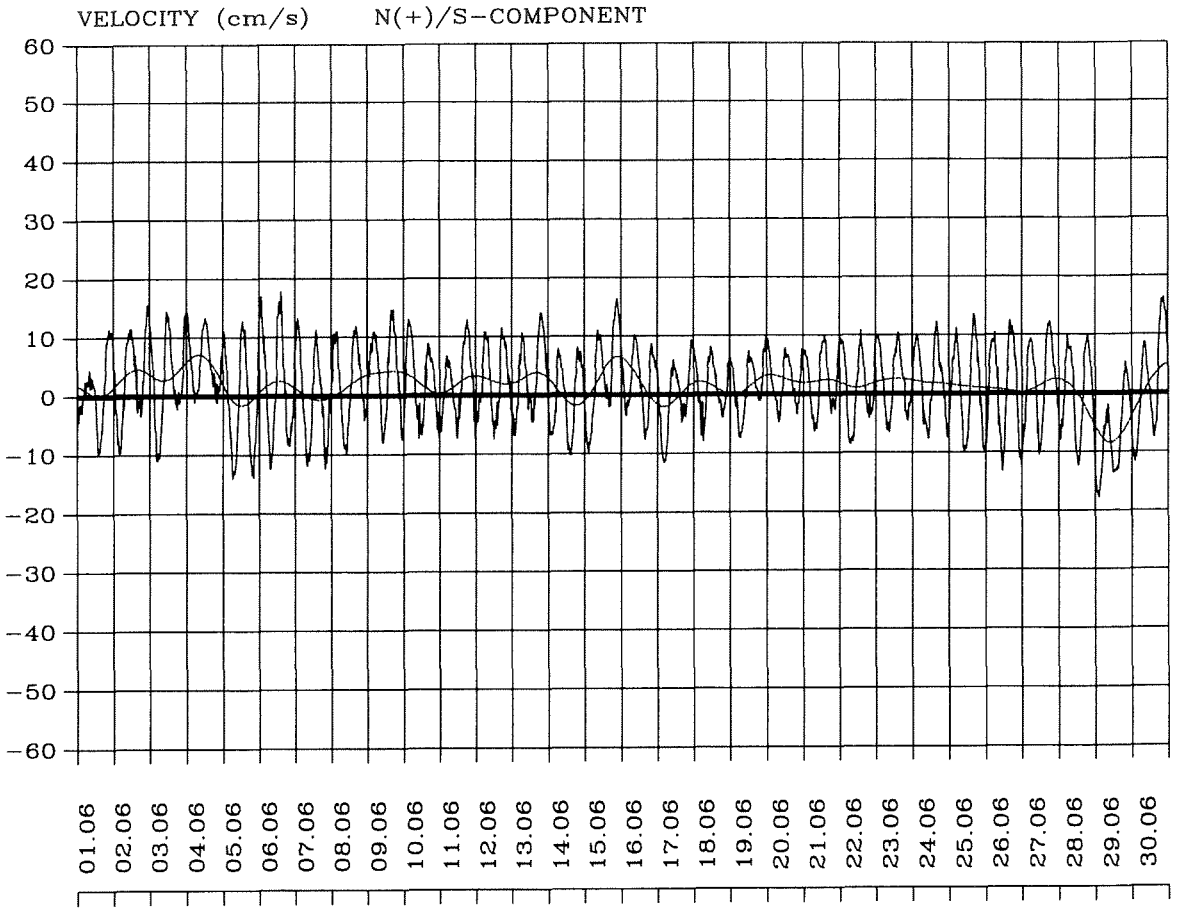
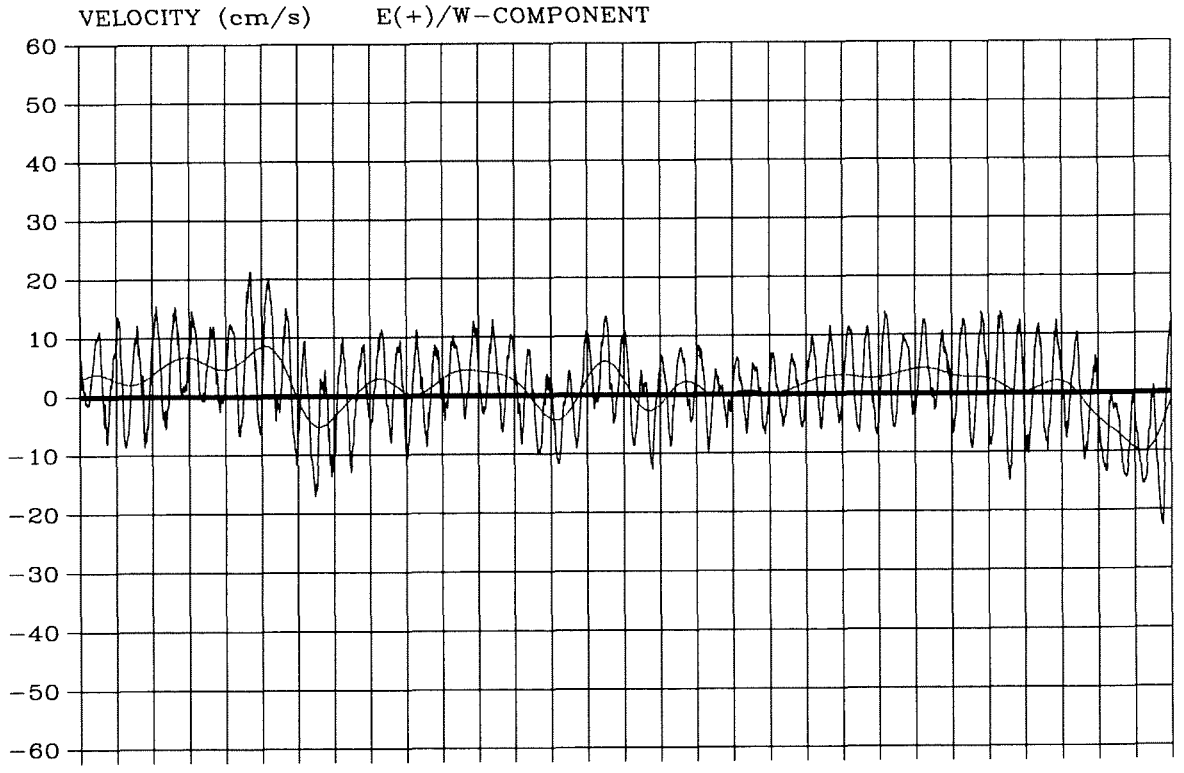
Fig. 2-1-6

Continues.....





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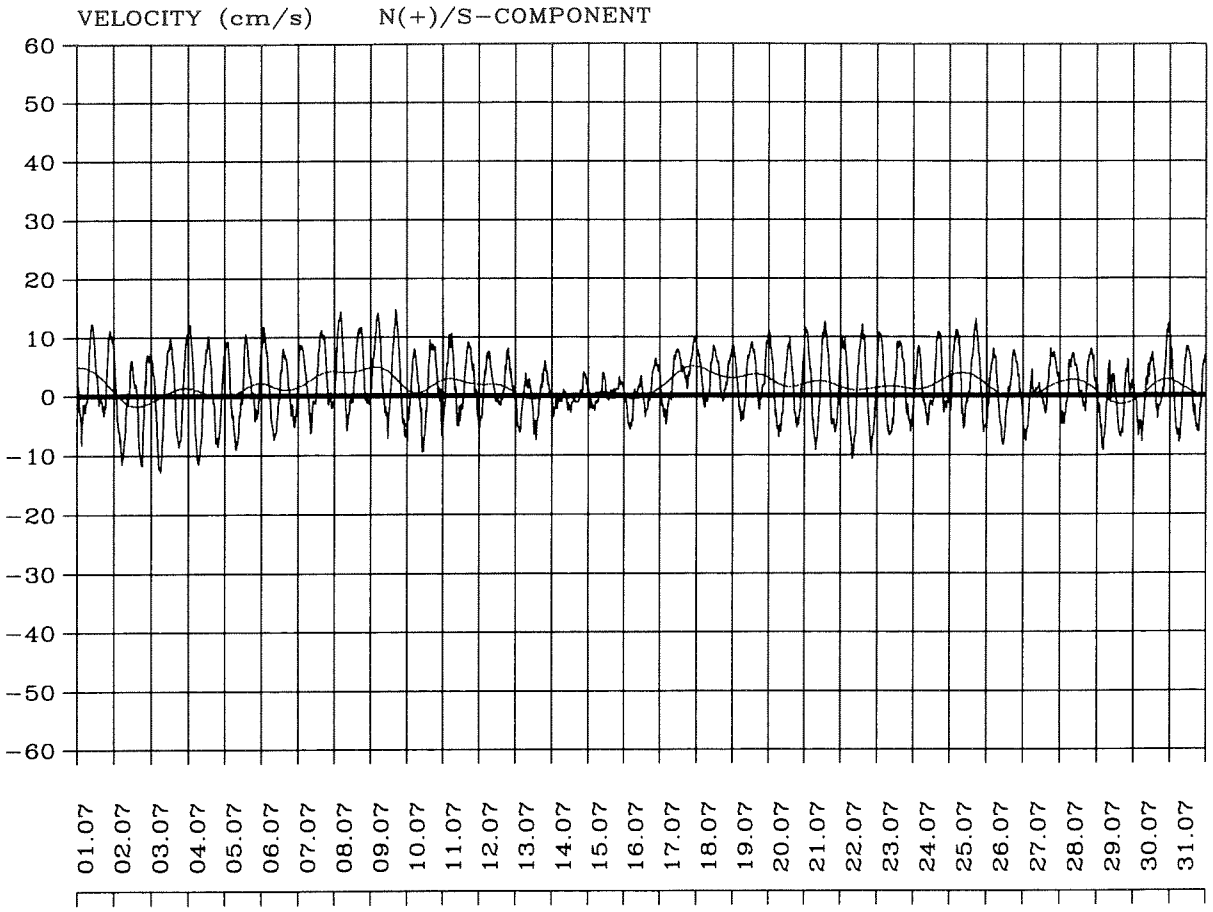
IMR

Fig. 2-1-6

Continues.....



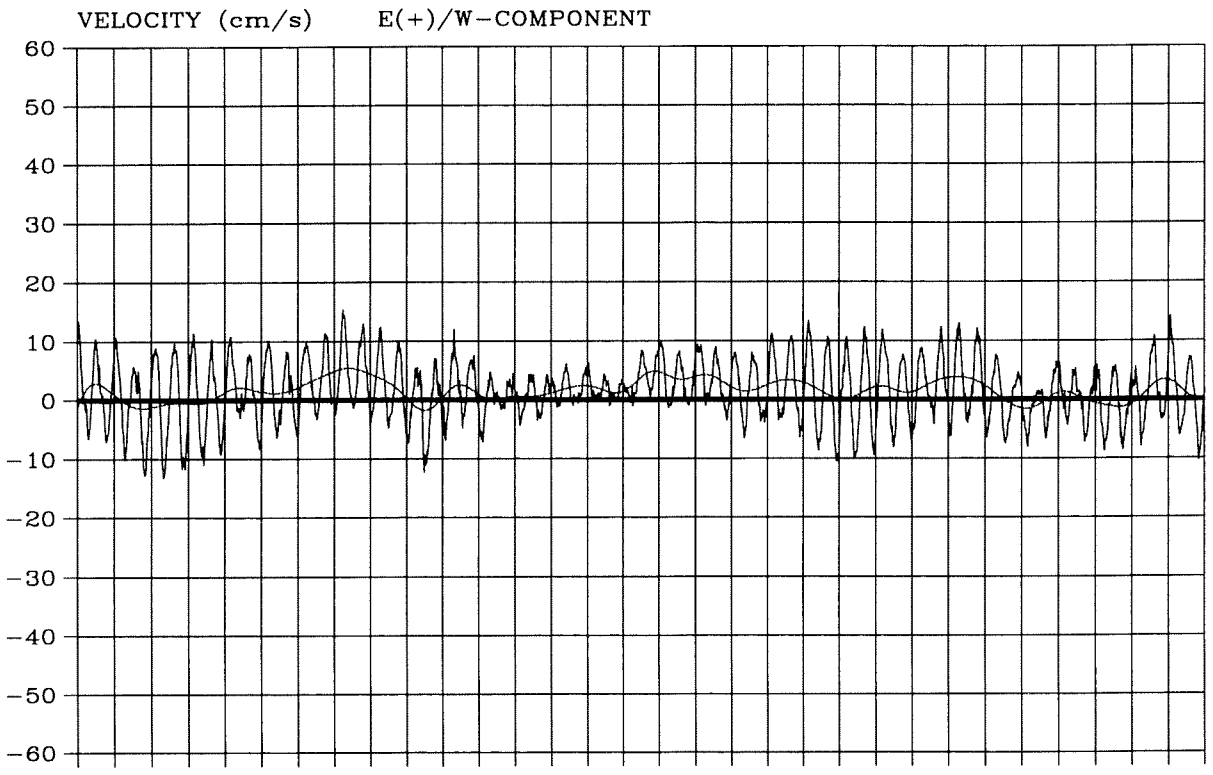


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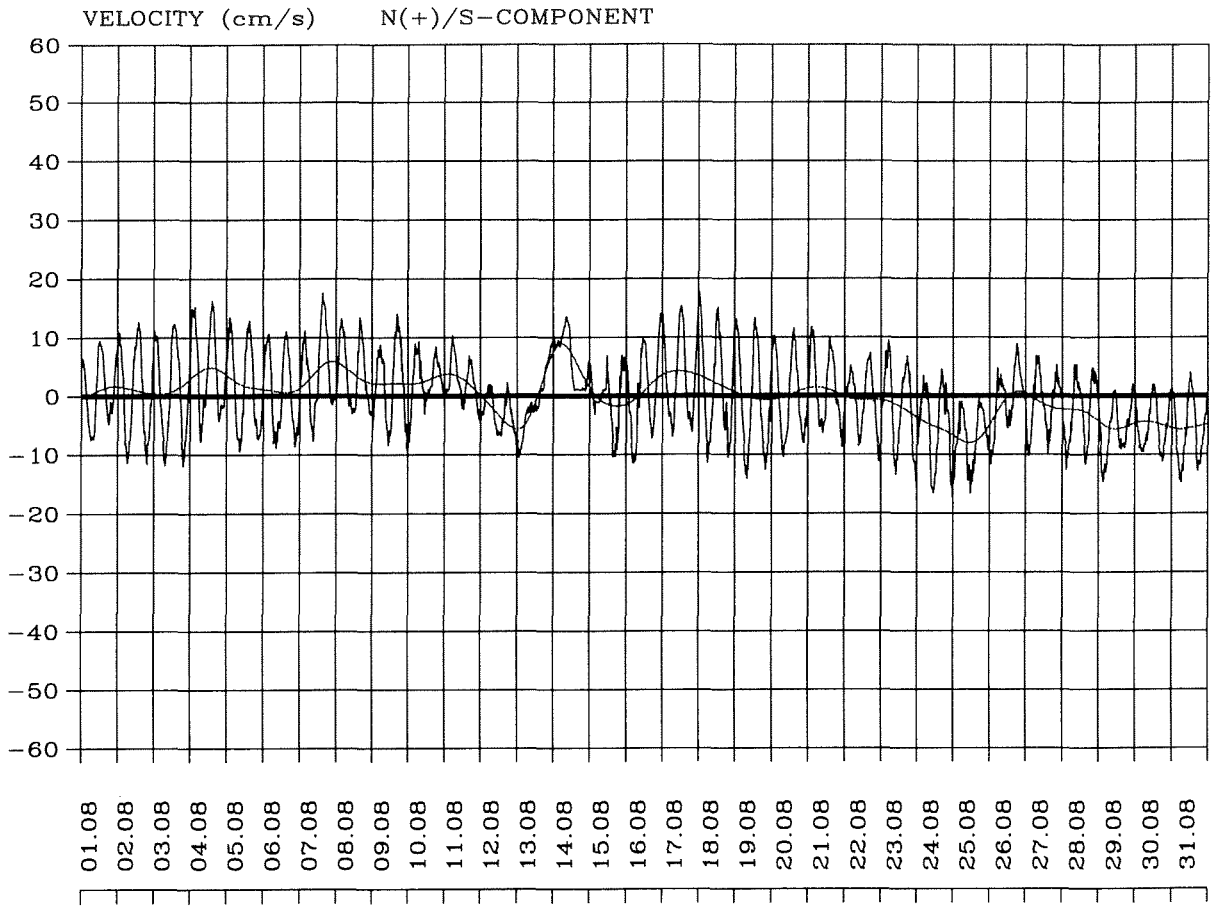
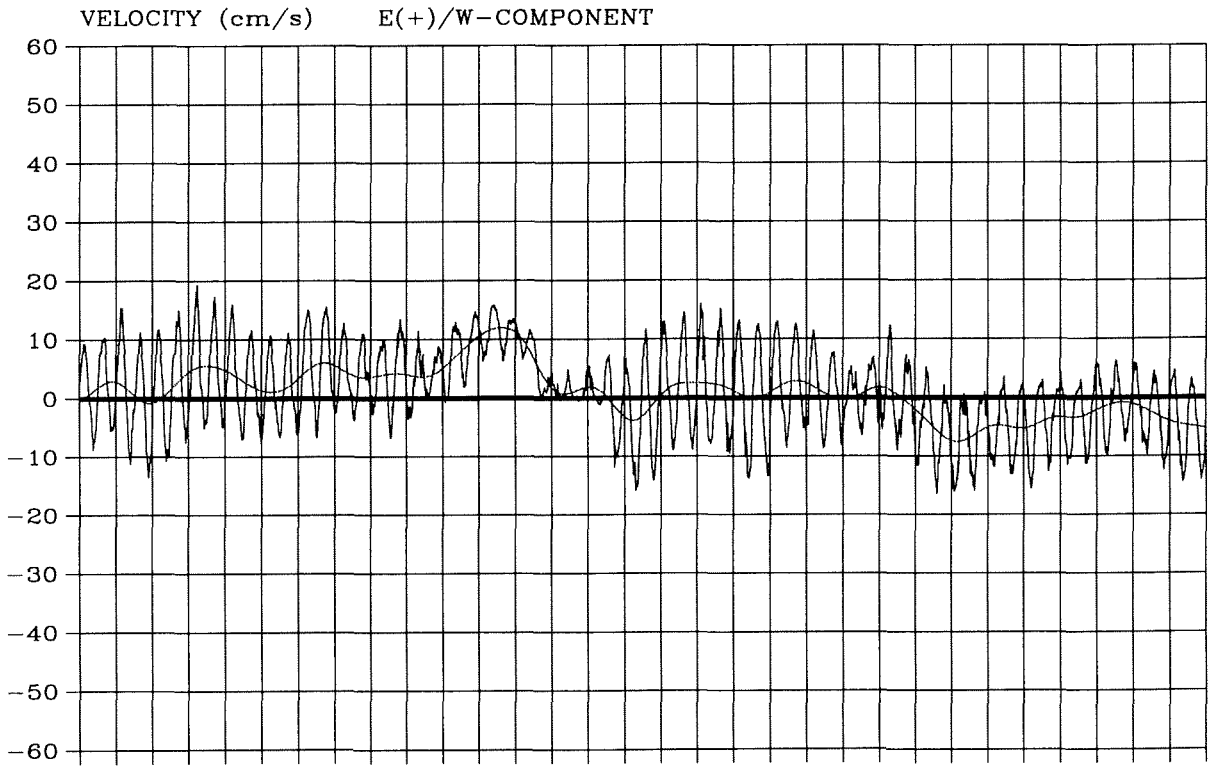
Fig. 2-1-6

Continues.....





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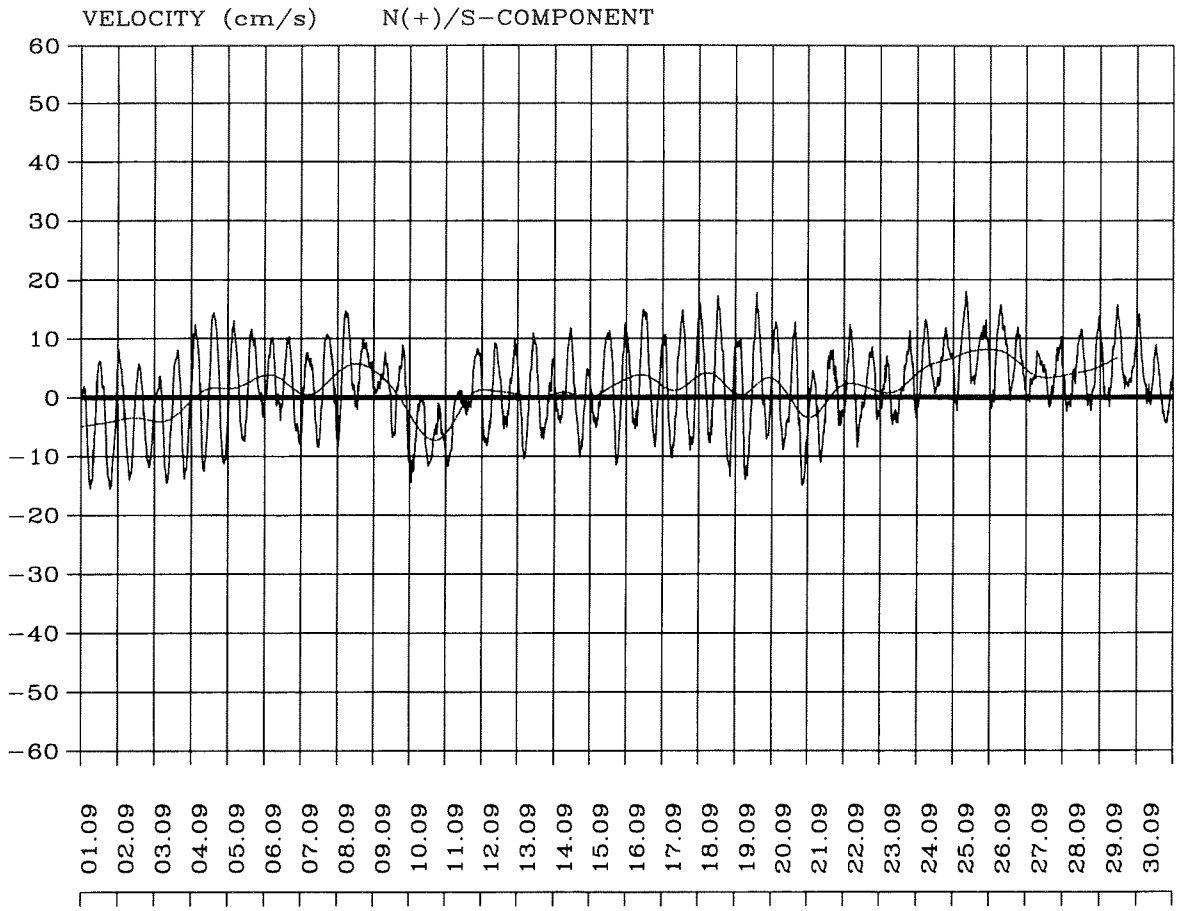
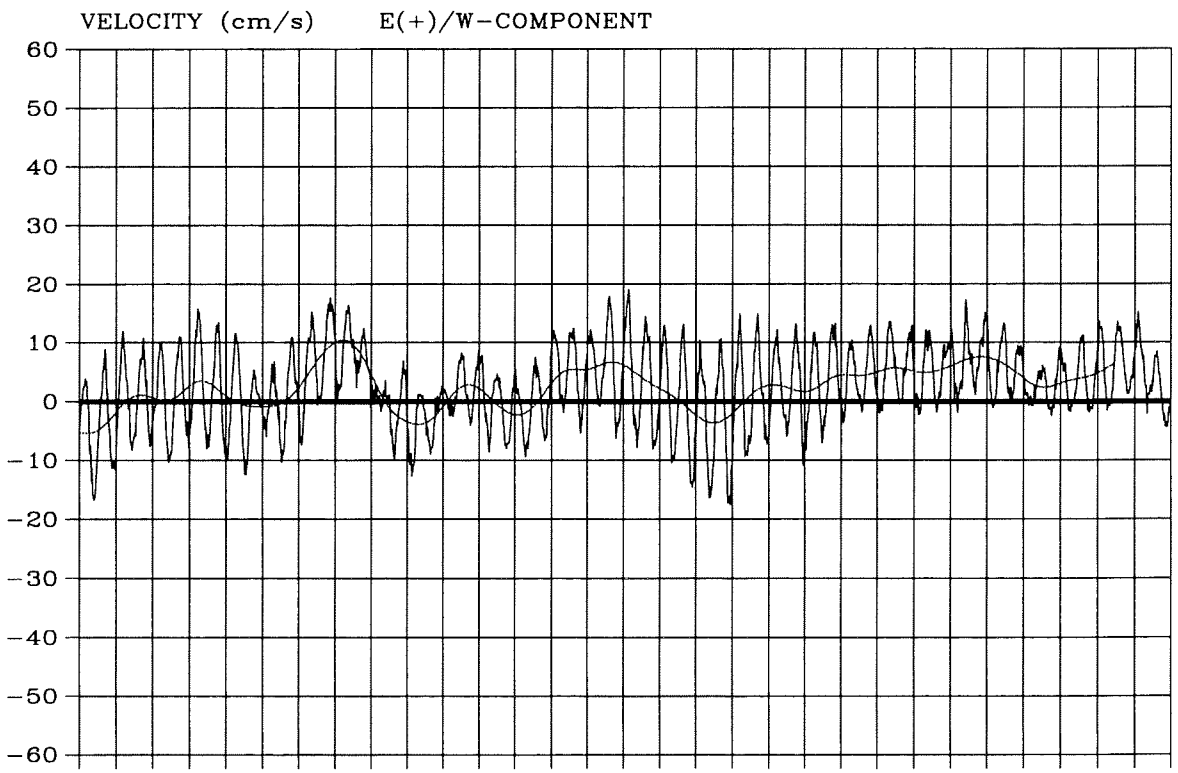
IMR

Fig. 2-1-6

Continues.....





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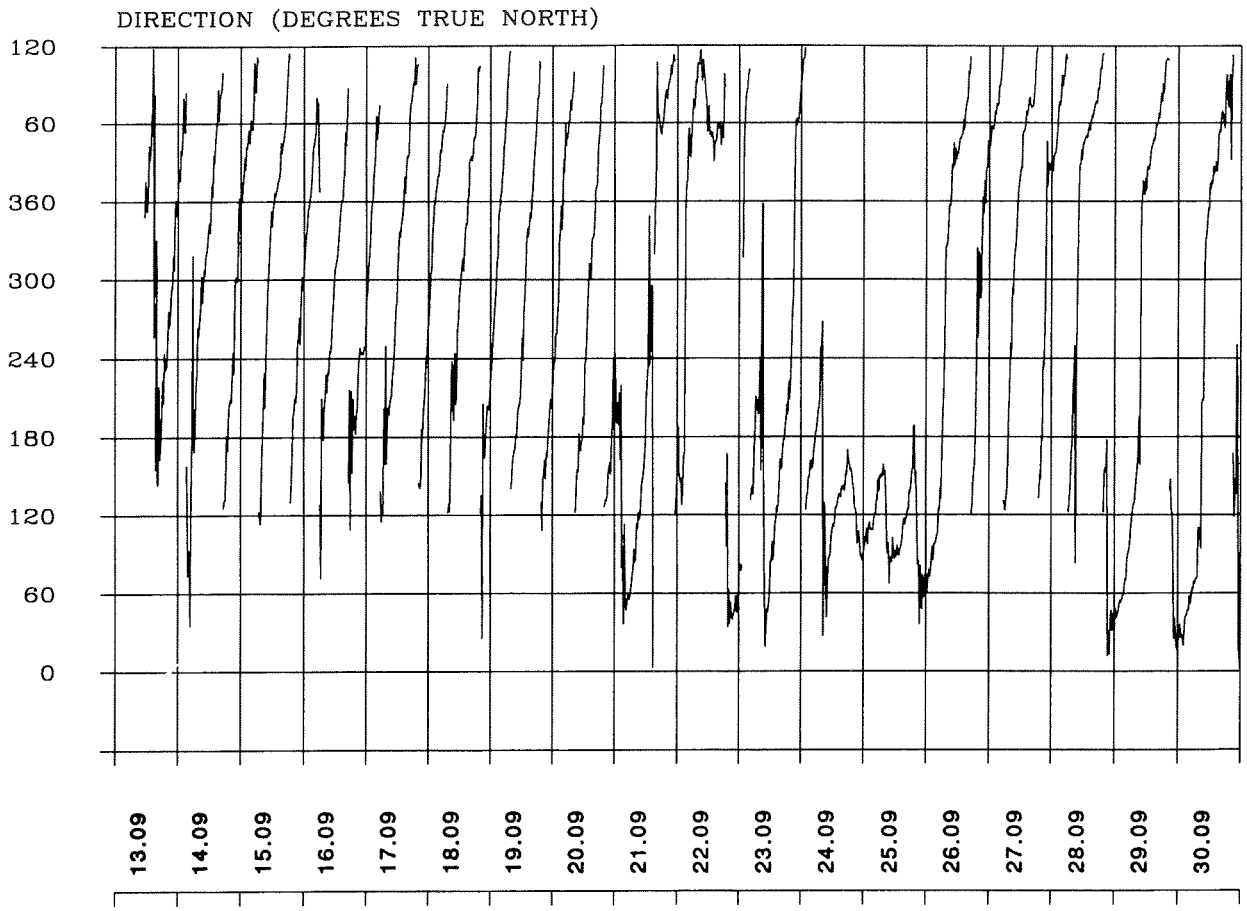
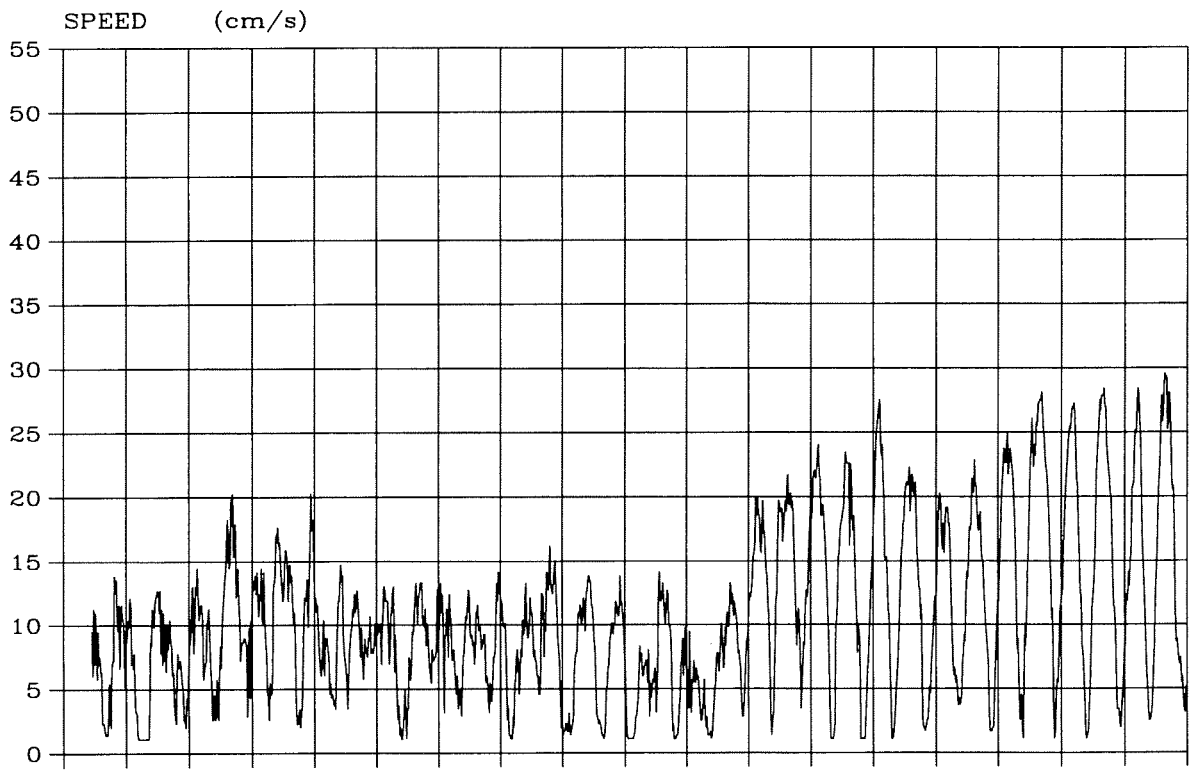
IMR

Fig. 2-1-6

Continues.....





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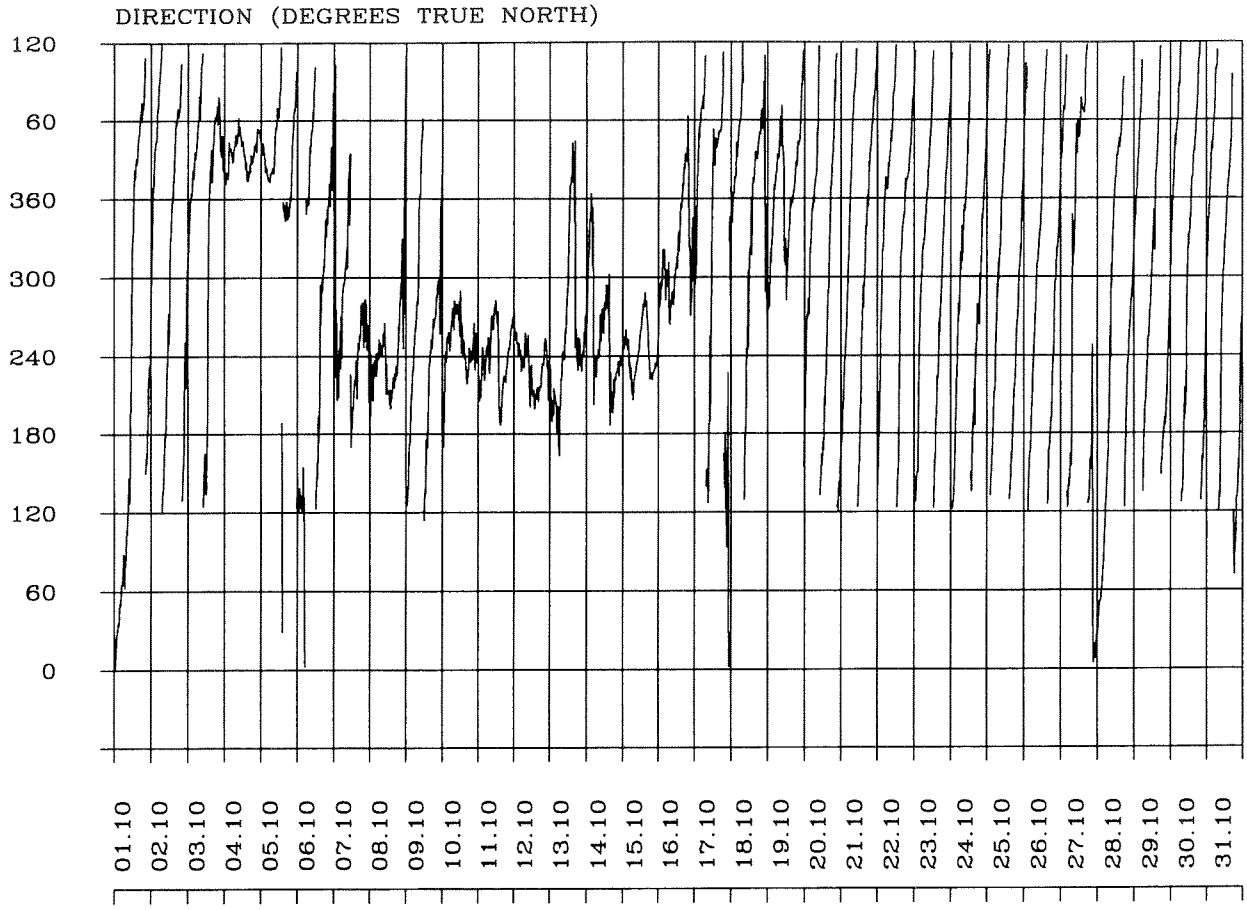
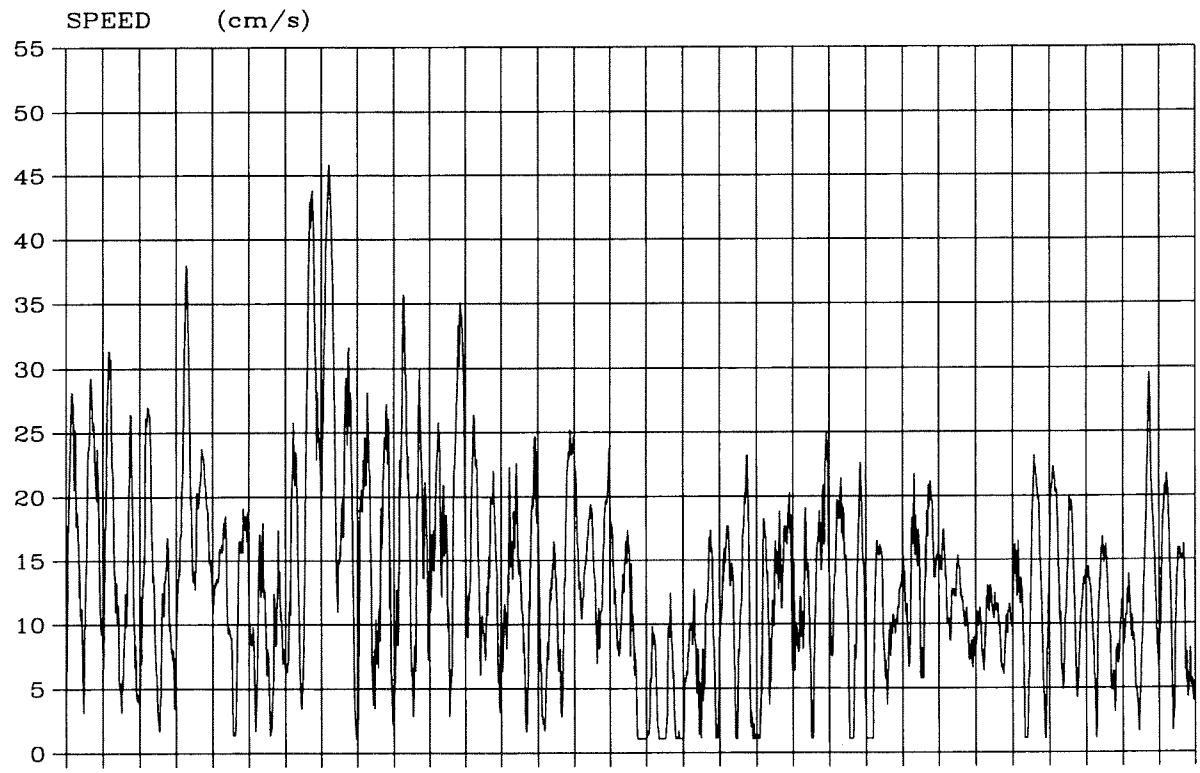
IMR

Fig. 2-1-7 Speed and direction of current.





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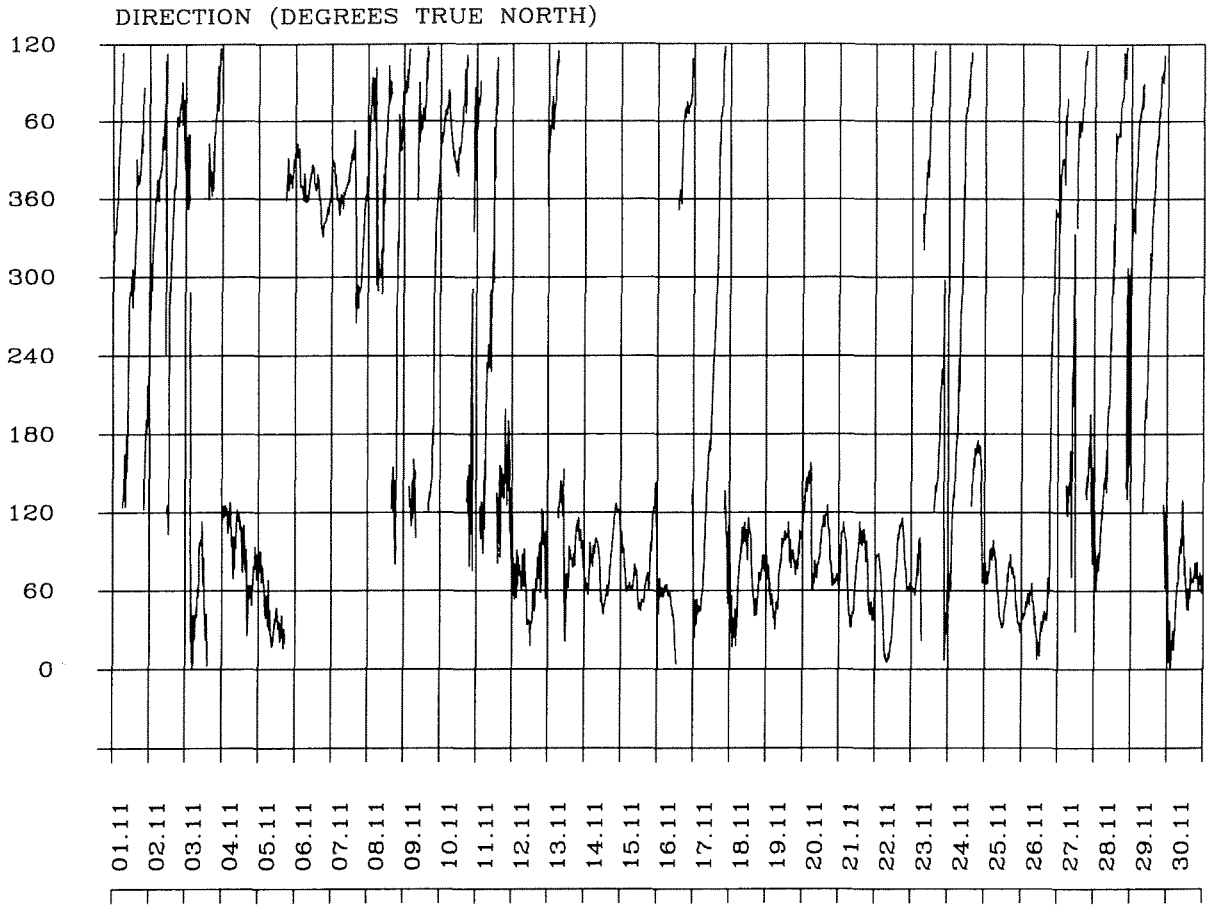
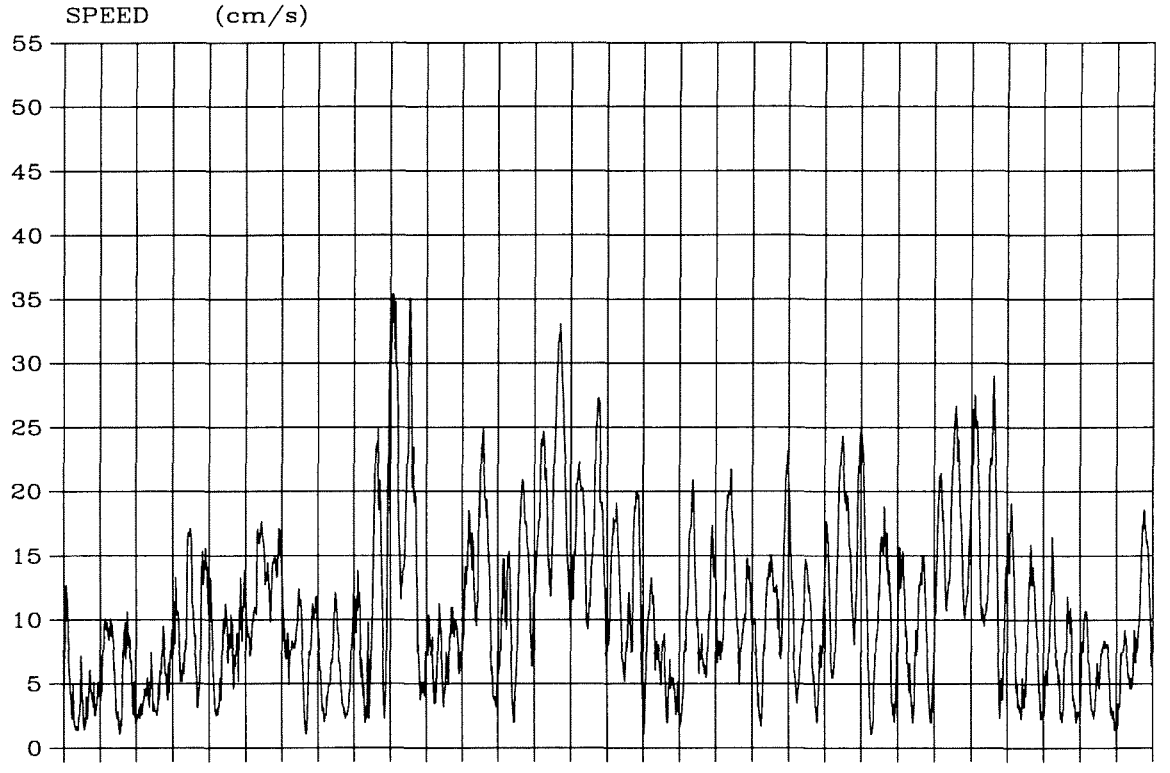
IMR

Fig. 2-1-7

Continues.....





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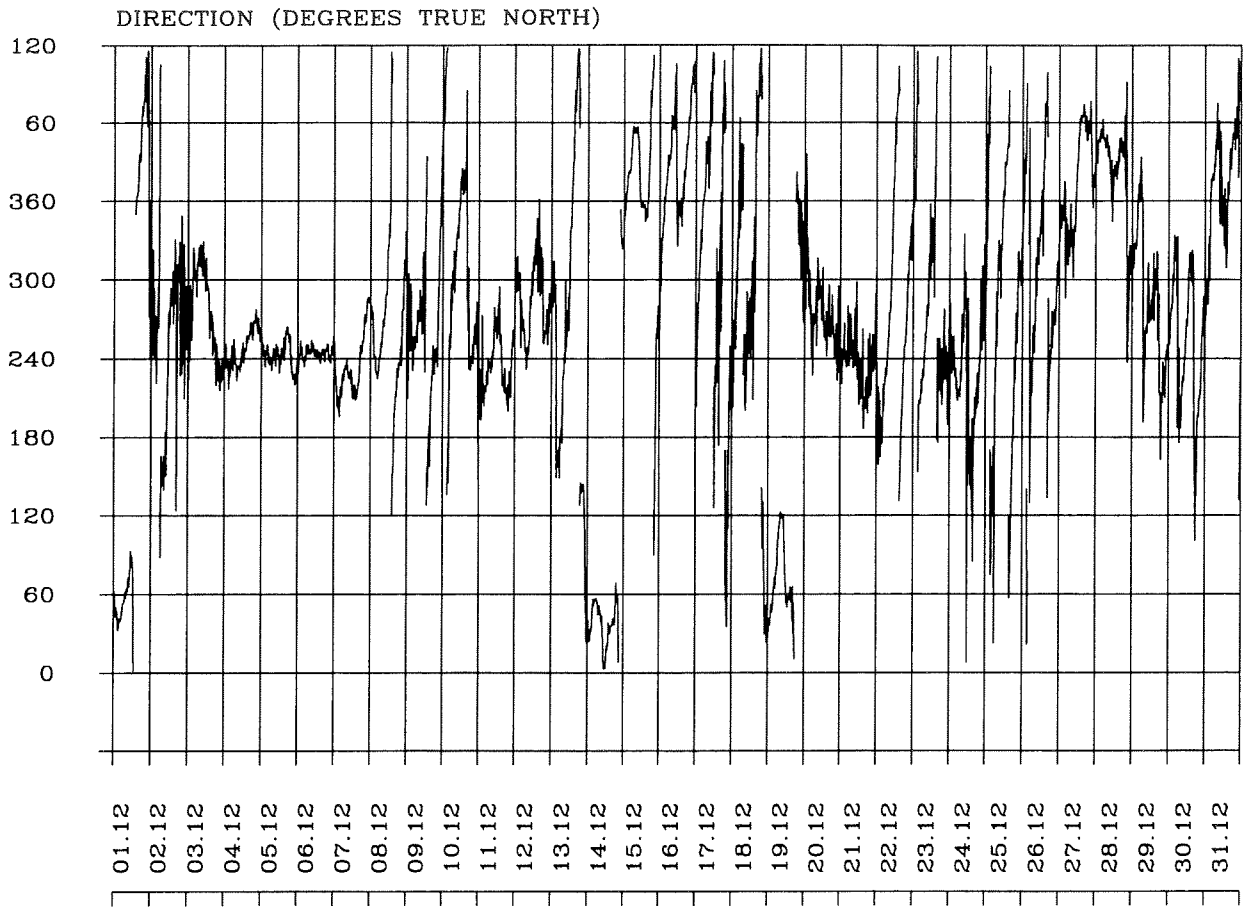
IMR

Fig. 2-1-7

Continues.....



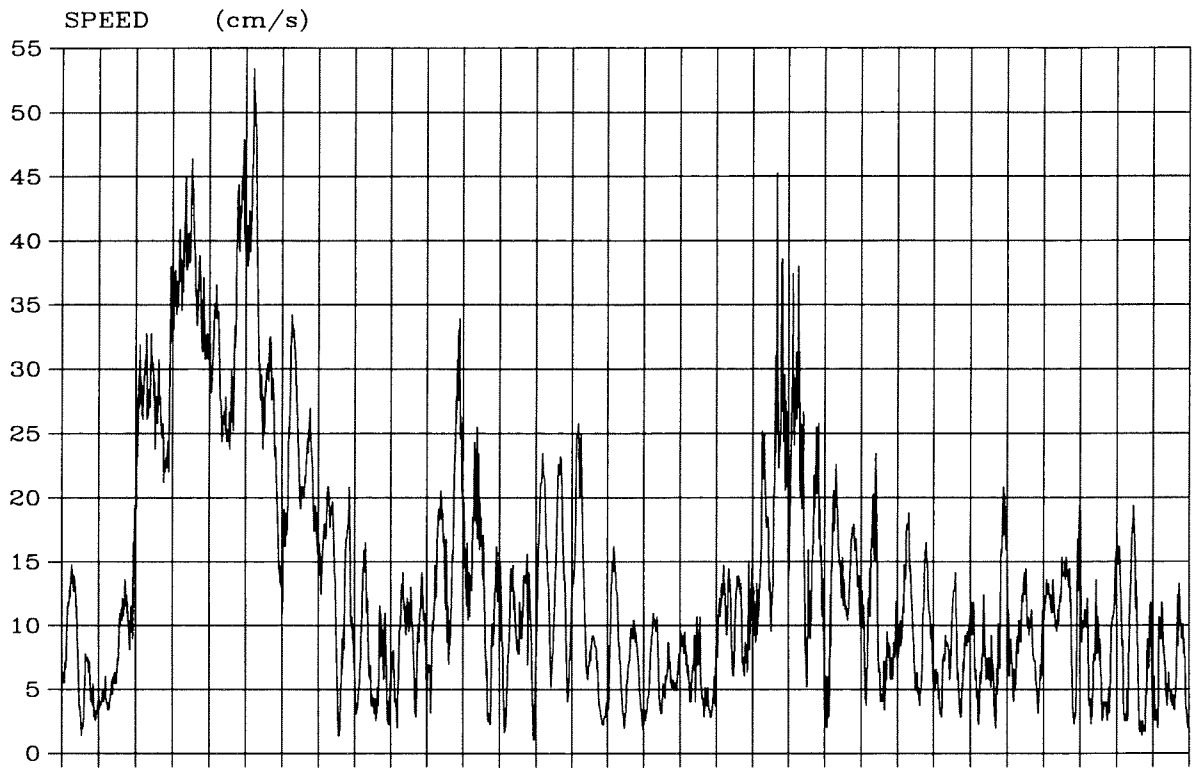


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Fig. 2-1-7

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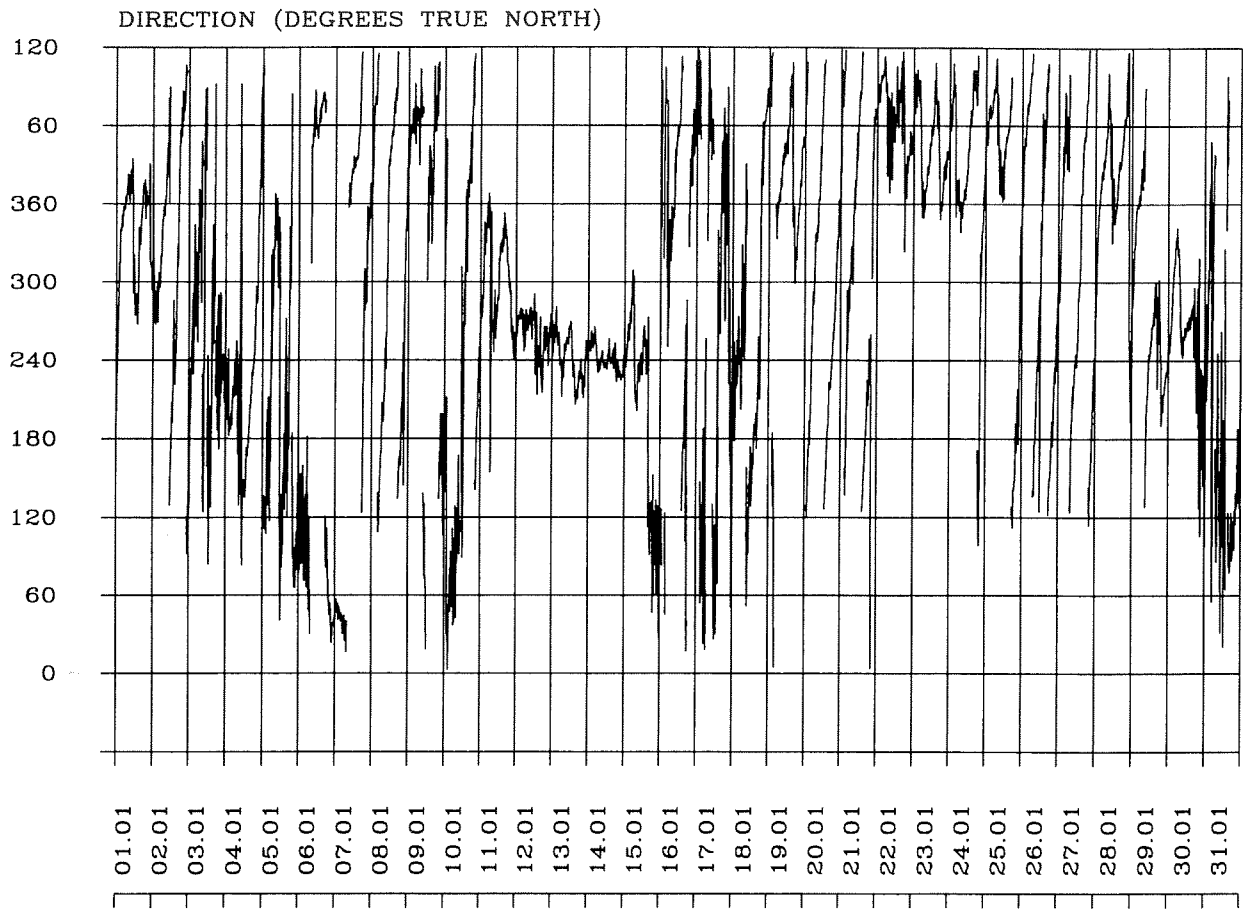

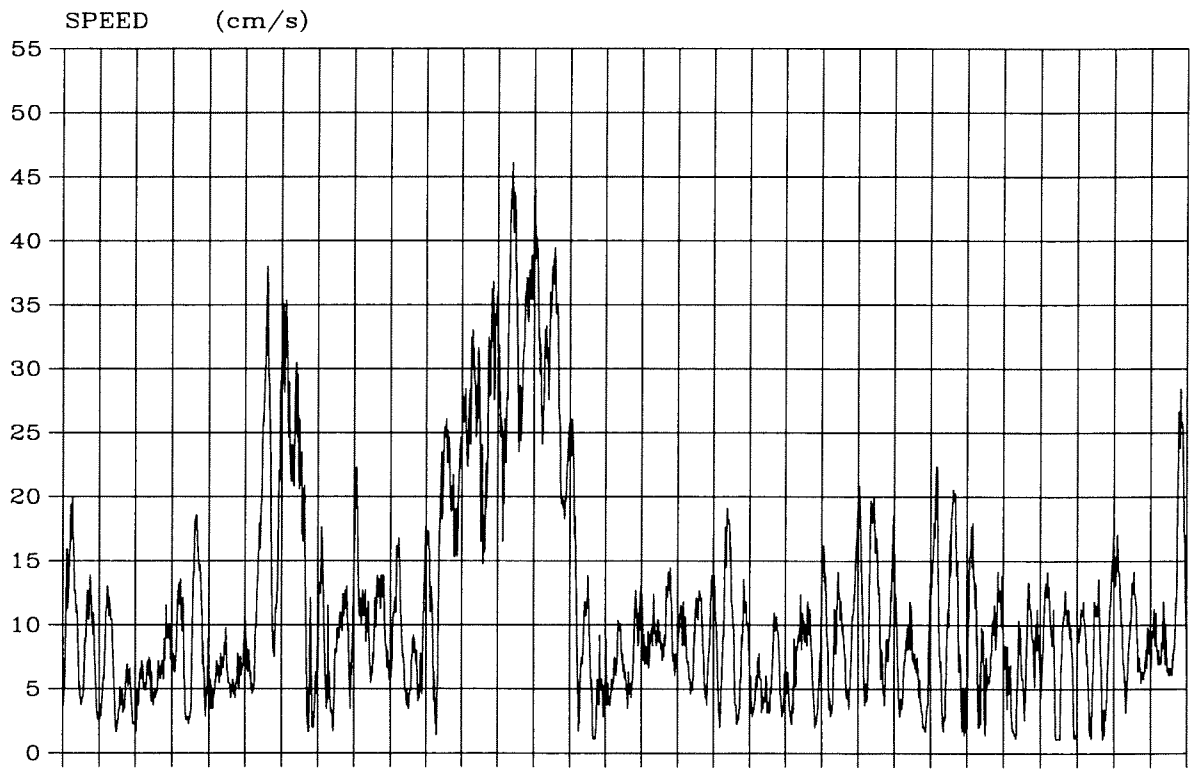

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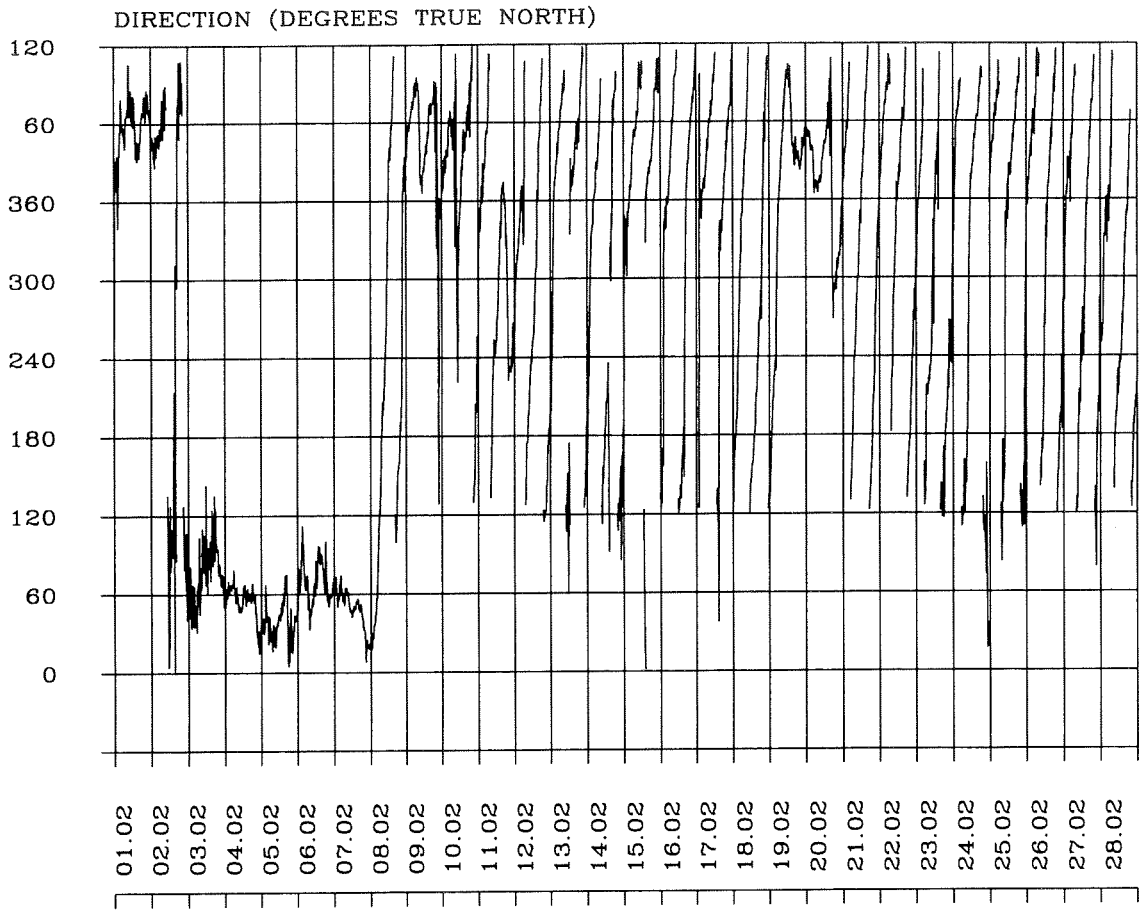
IMR

Fig. 2-1-7

Continues.....



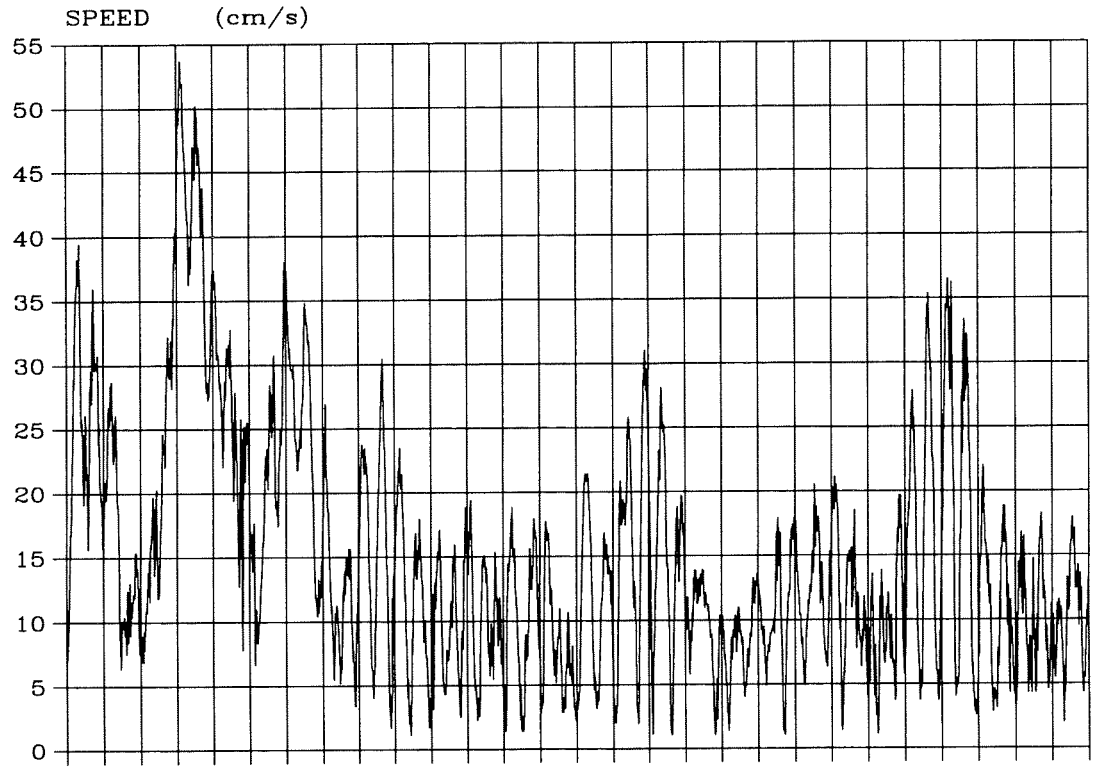


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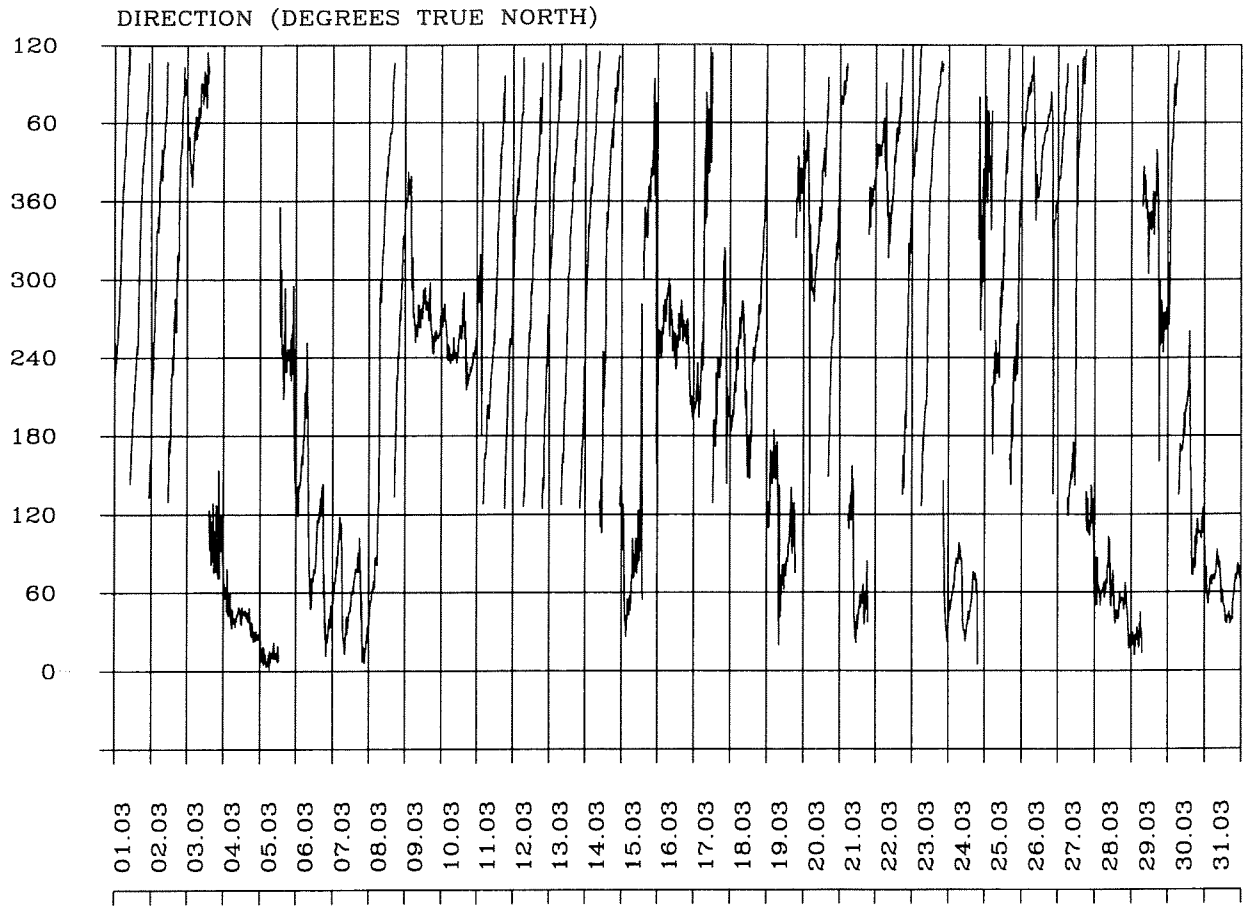
Fig. 2-1-7

Continues.....



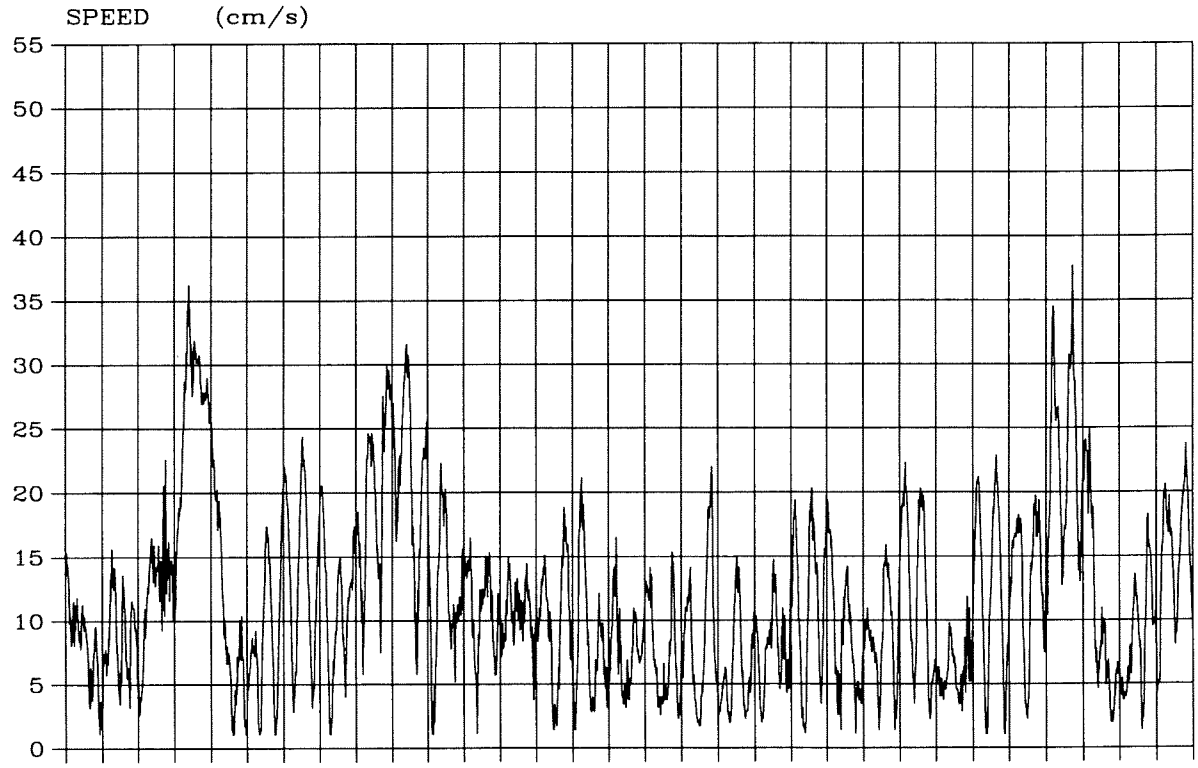


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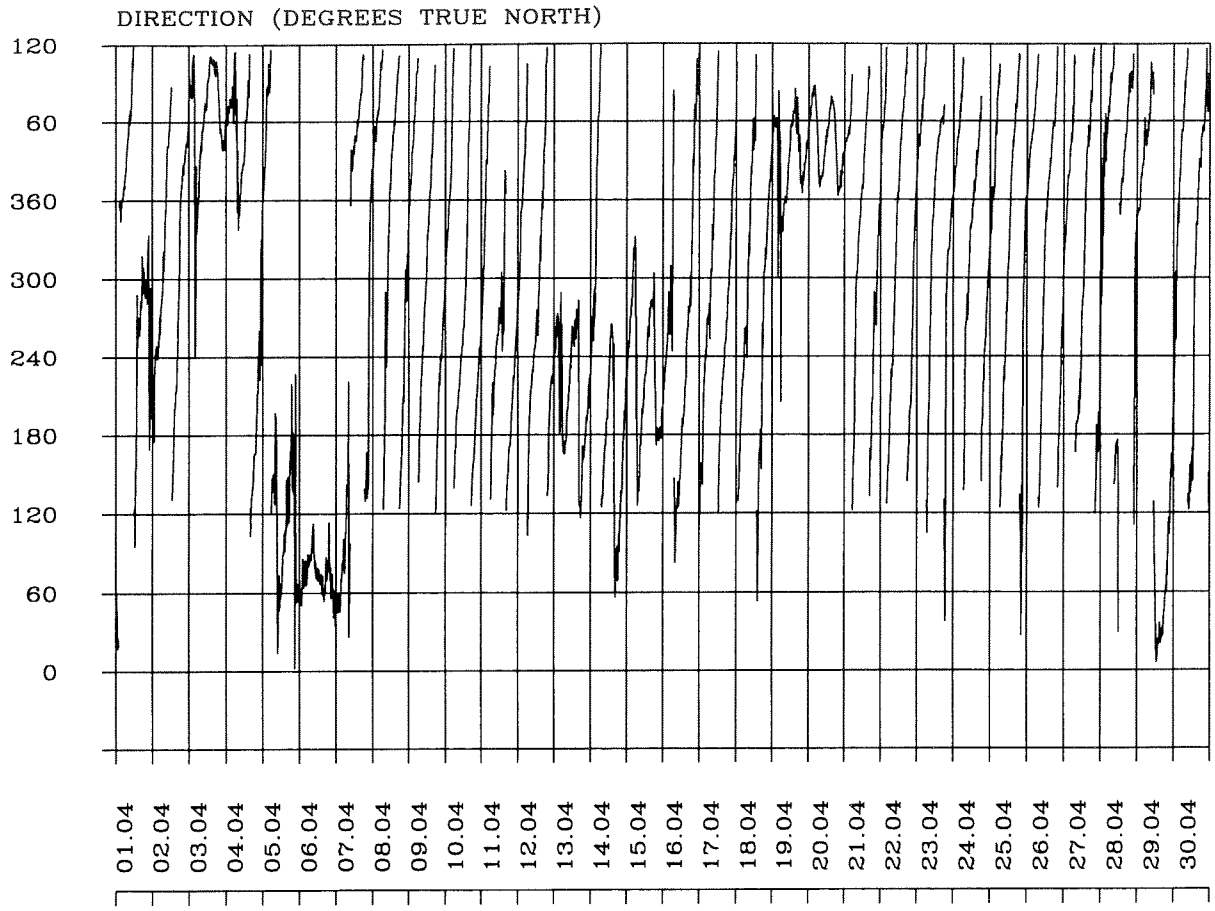
Fig. 2–1–7

Continues.....



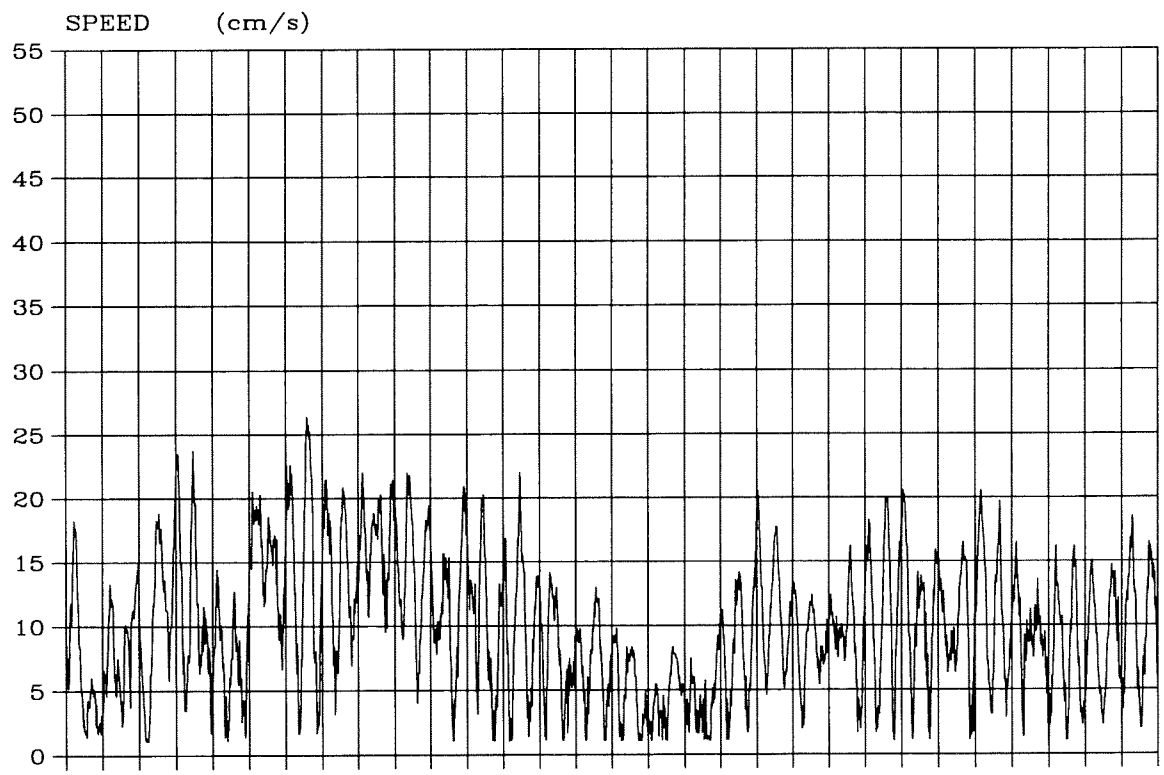


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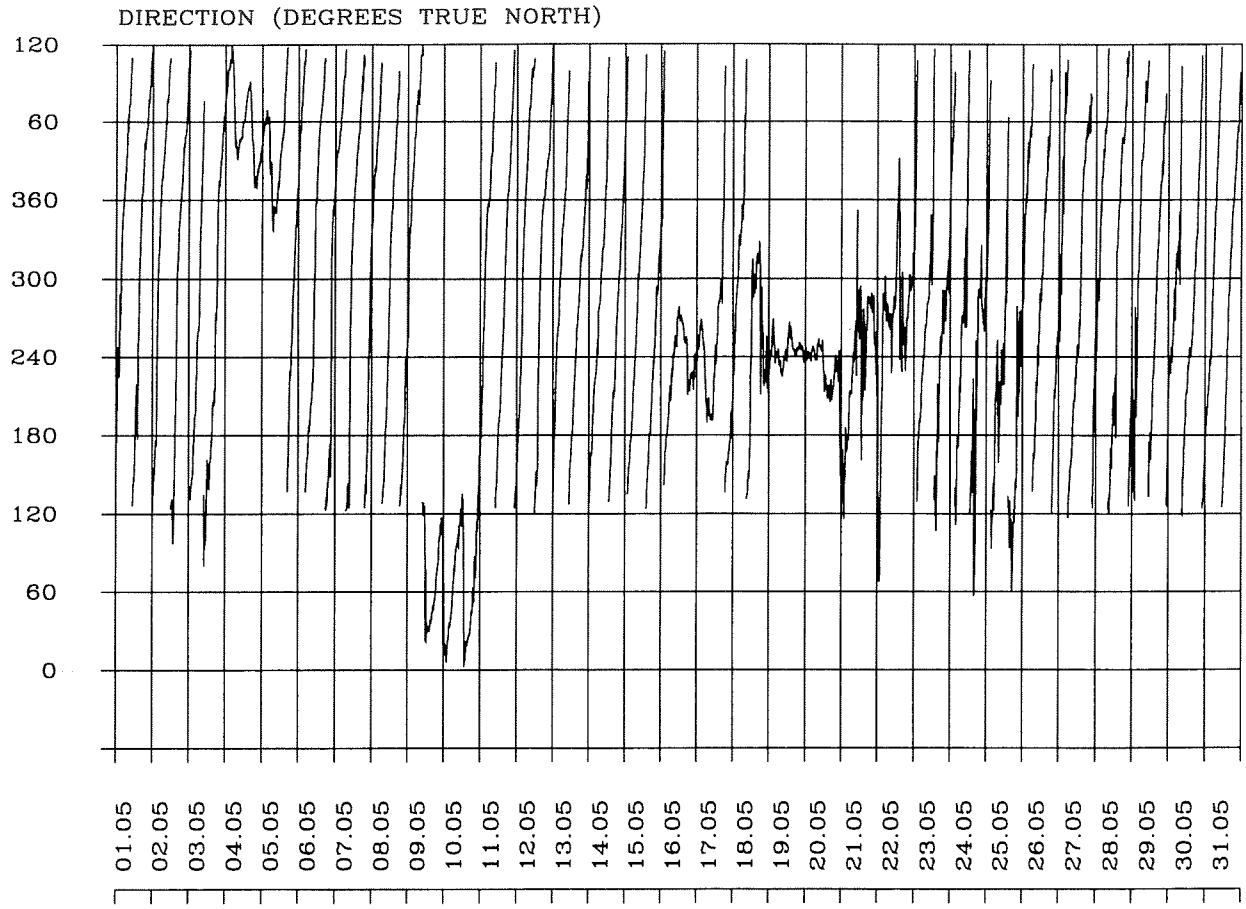
Fig. 2-1-7

Continues.....



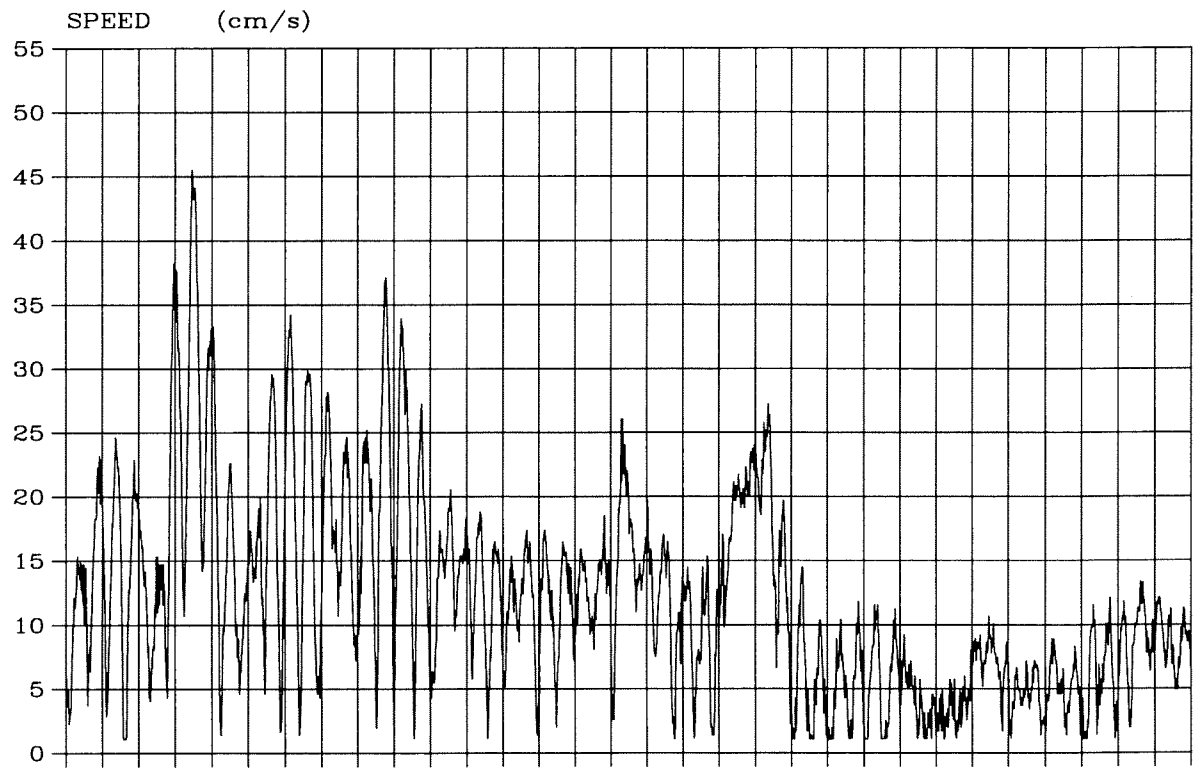


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Fig. 2-1-7

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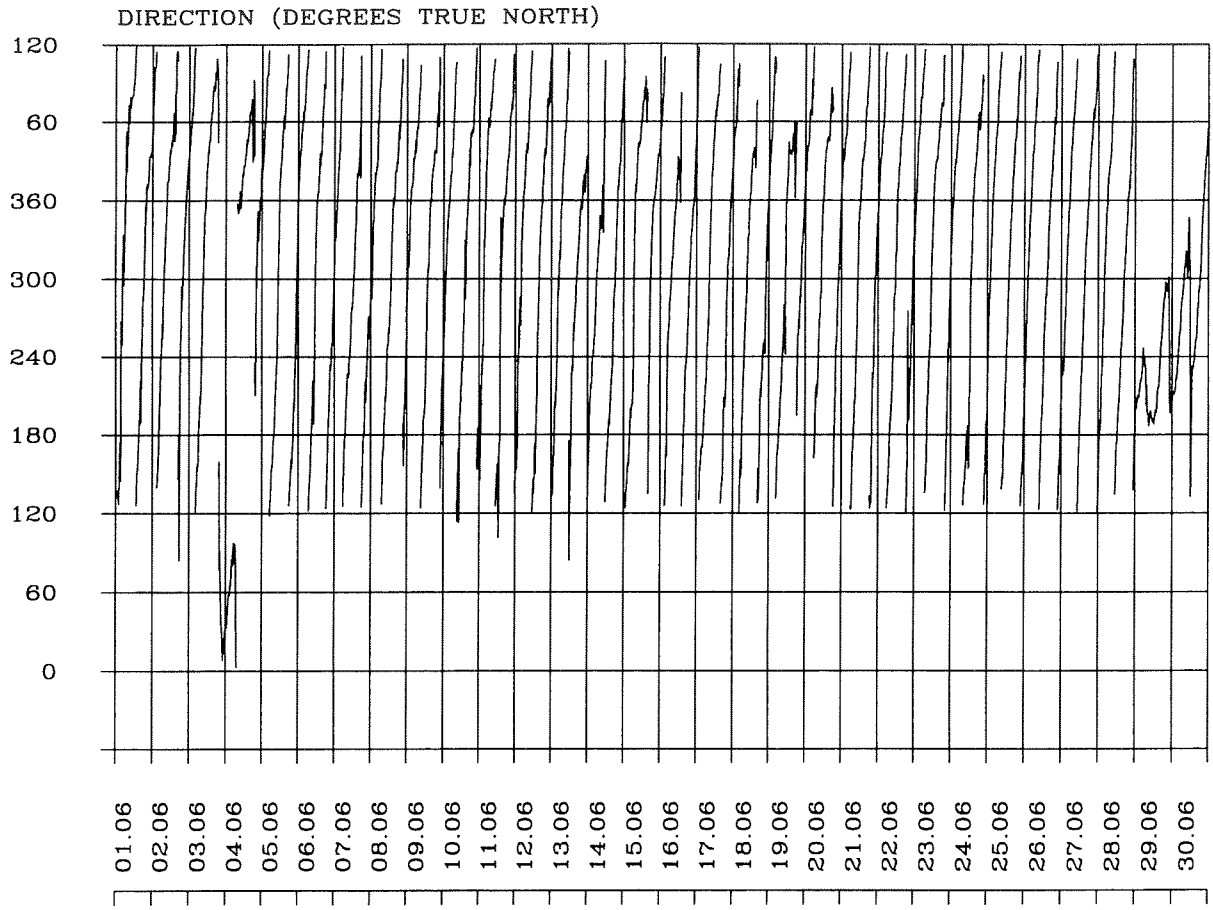

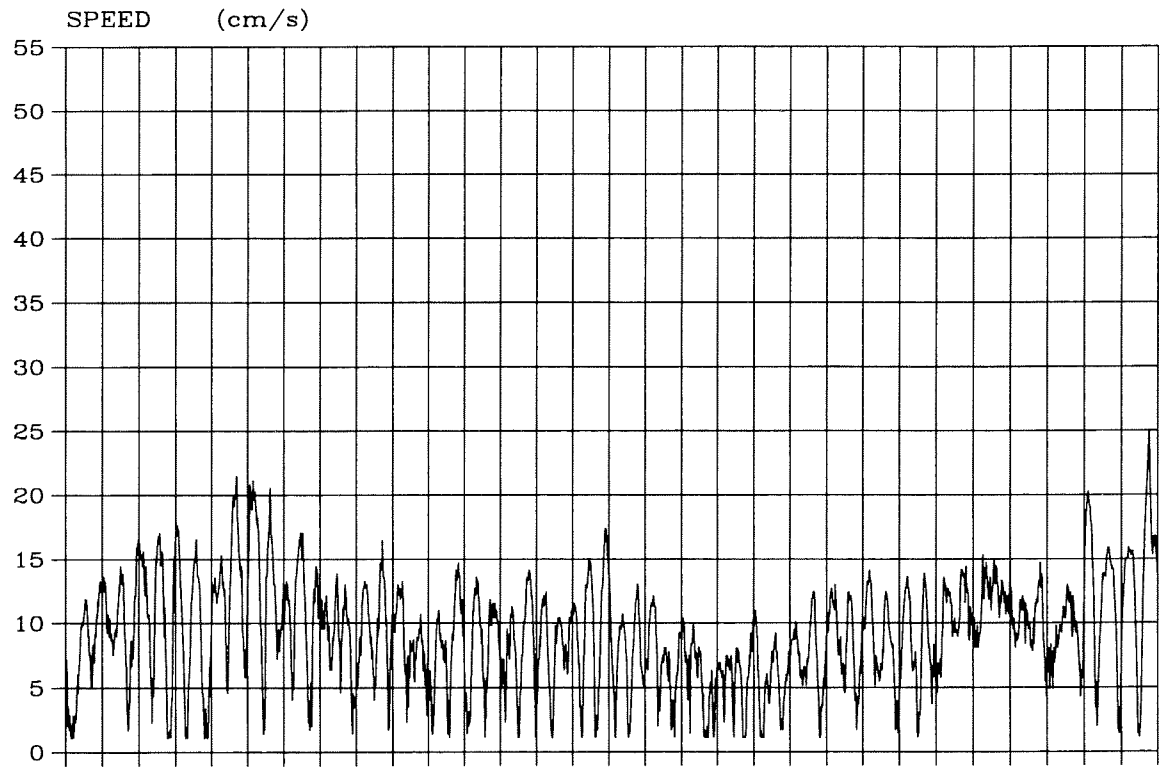

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Fig. 2-1-7

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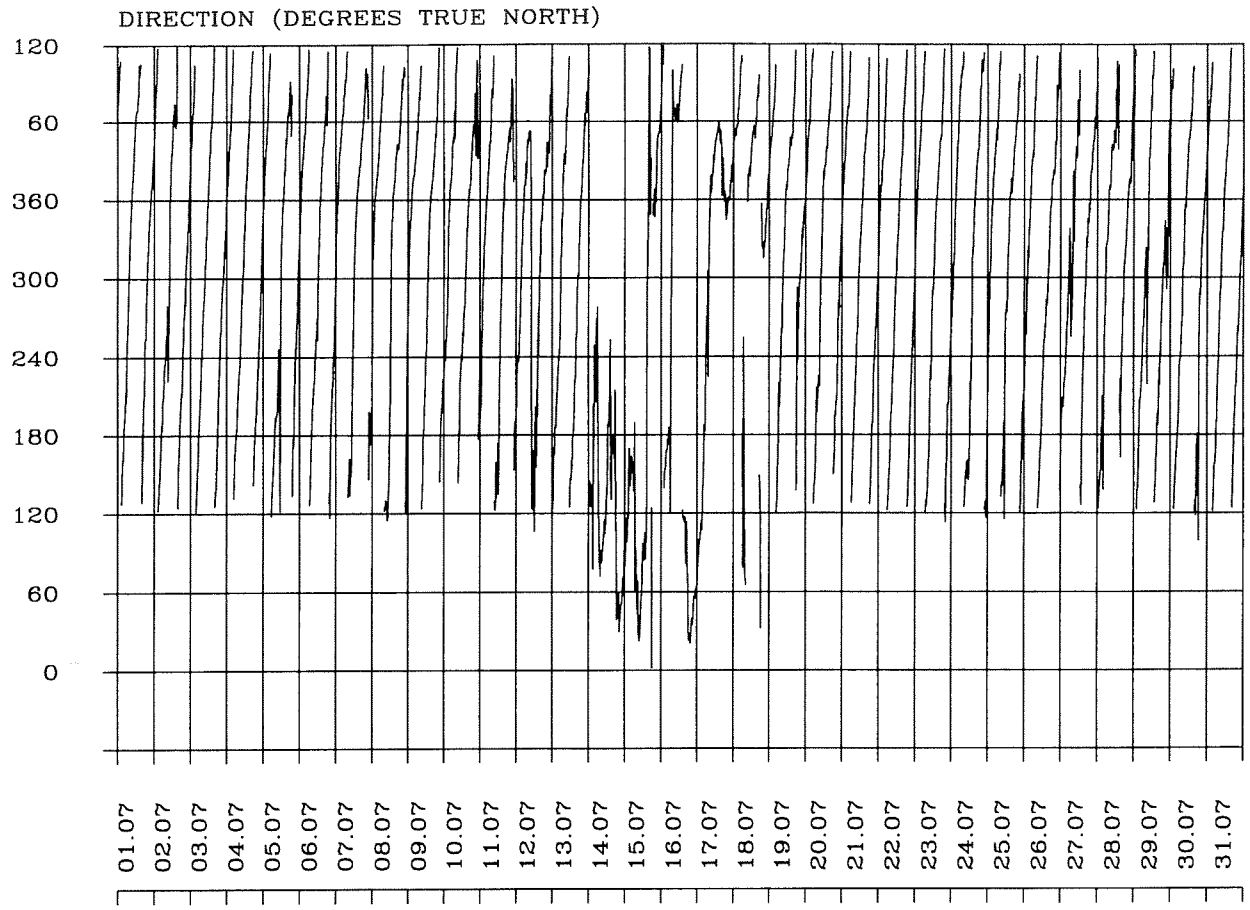

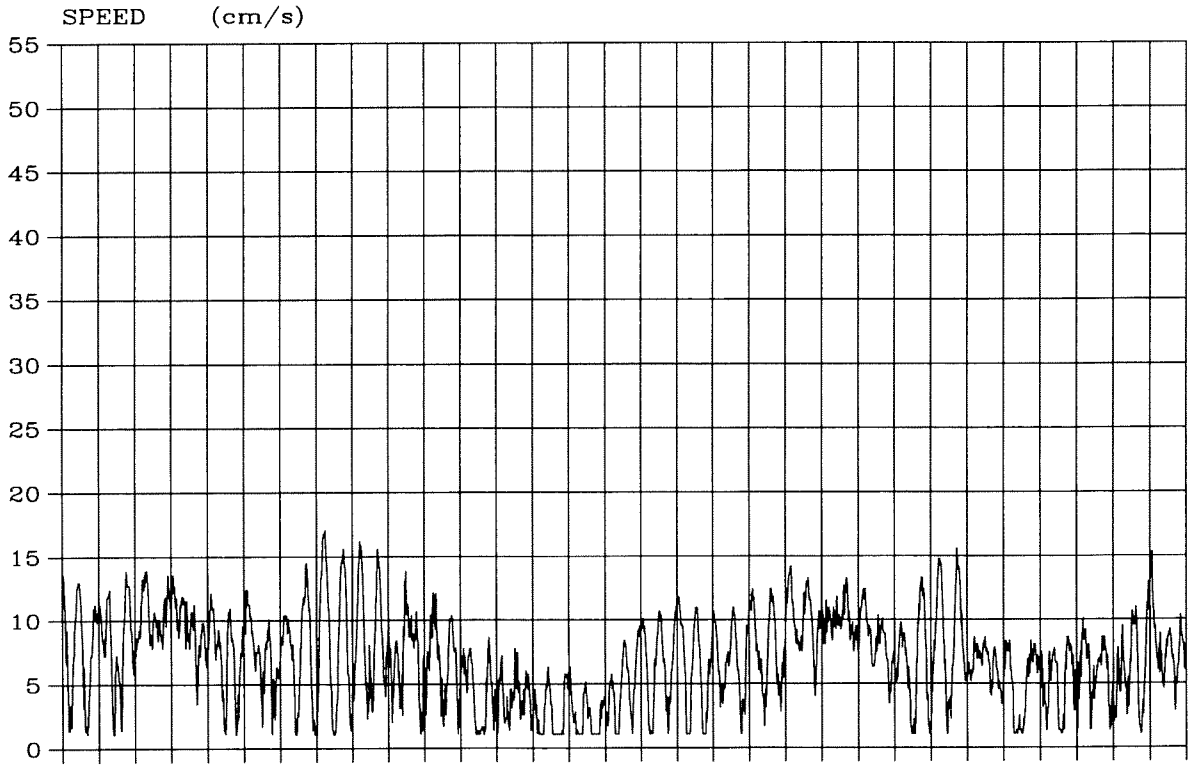

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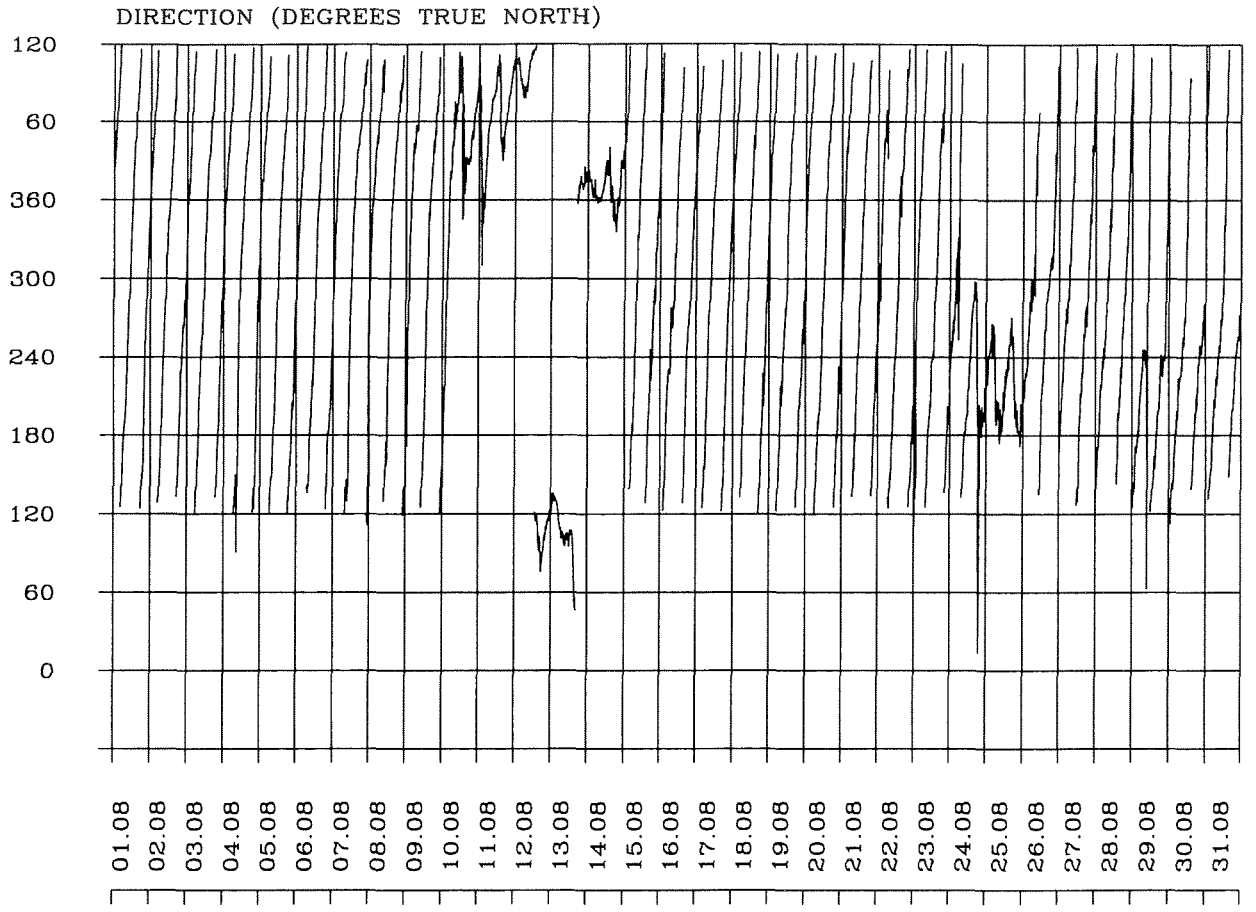
Fig. 2-1-7

Continues.....



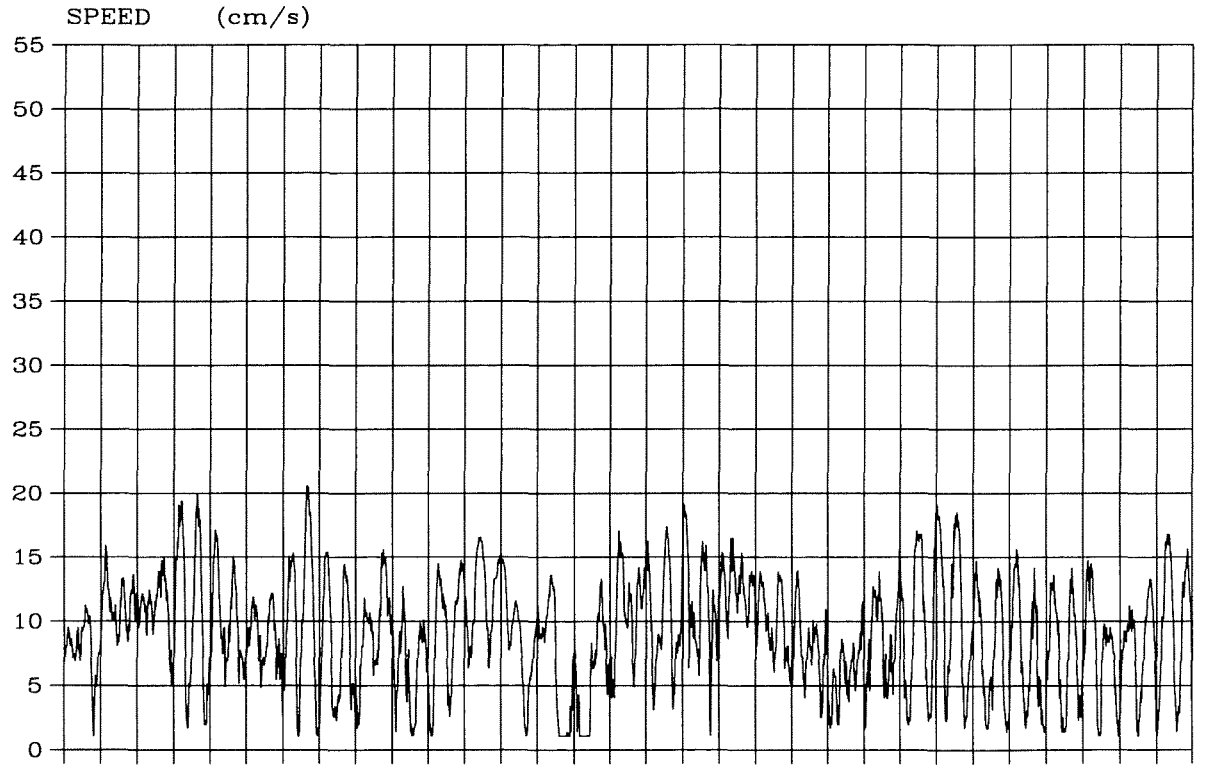


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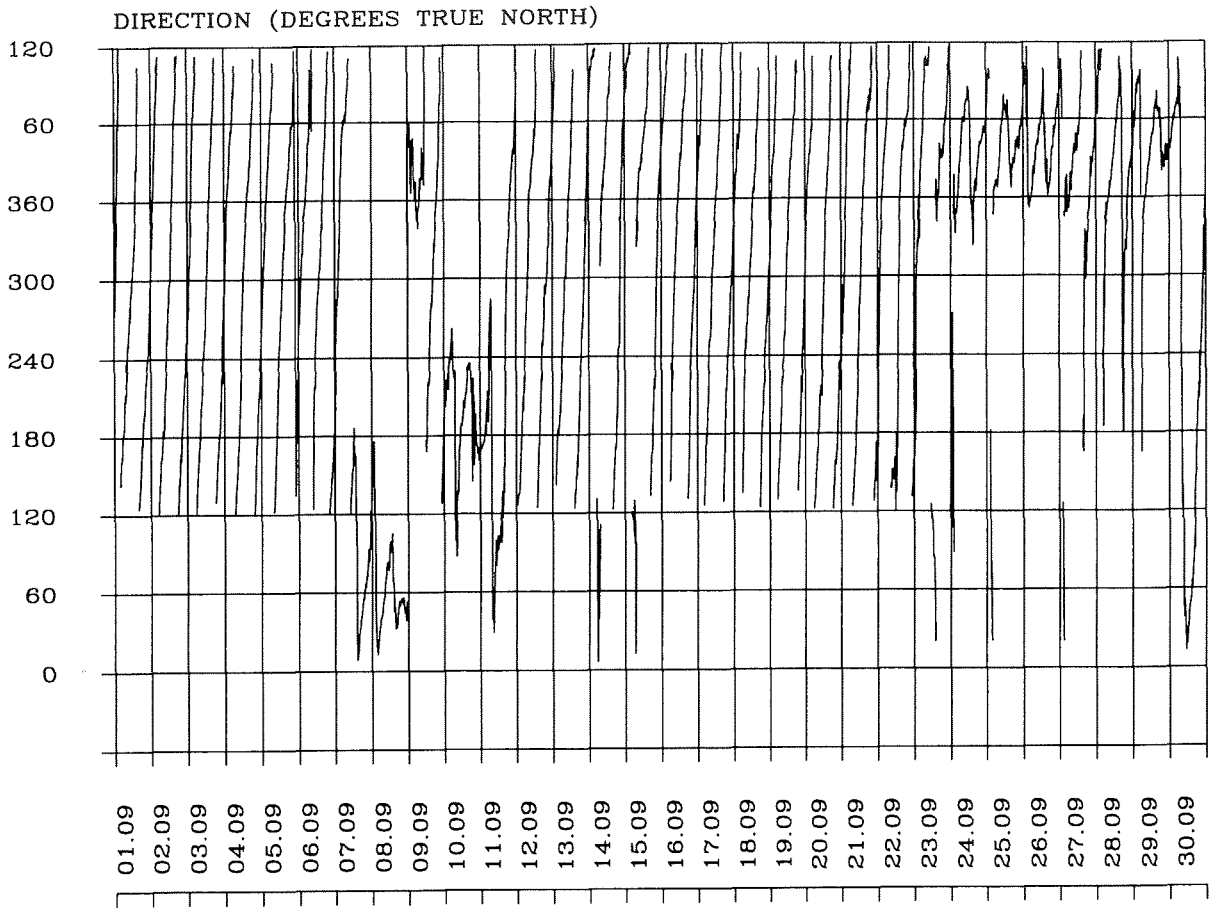
Fig. 2-1-7

Continues.....



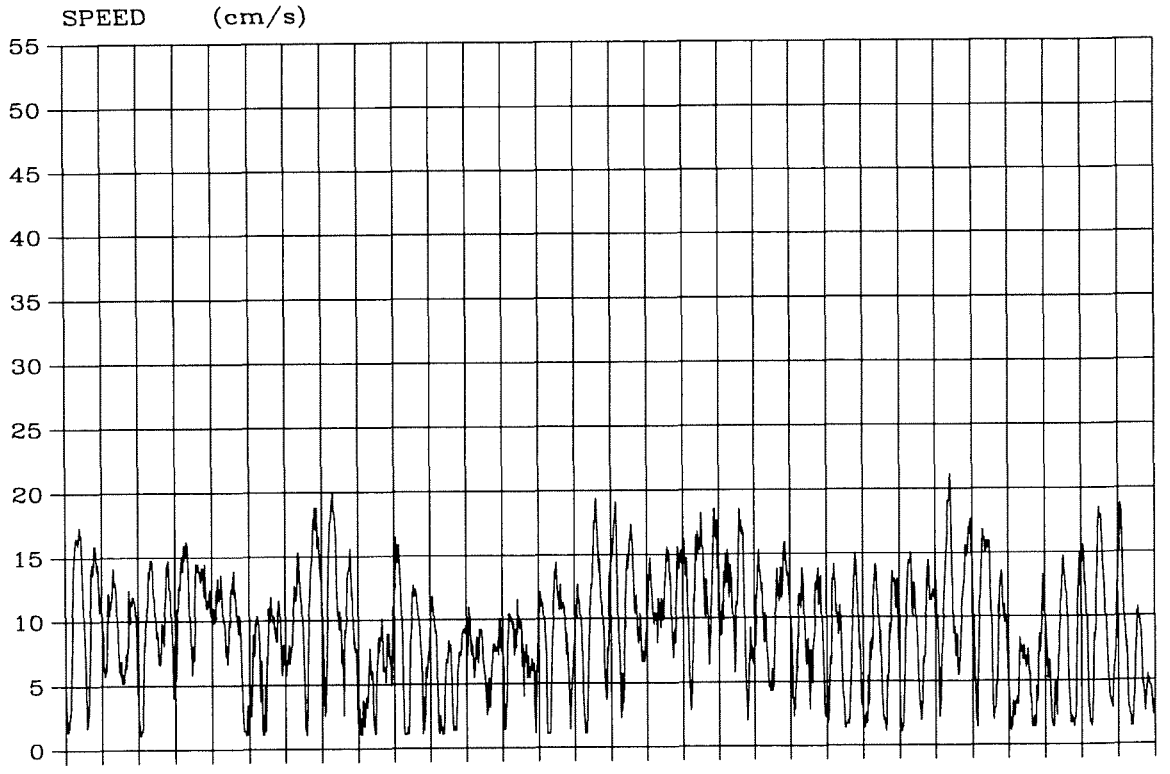


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Fig. 2-1-7

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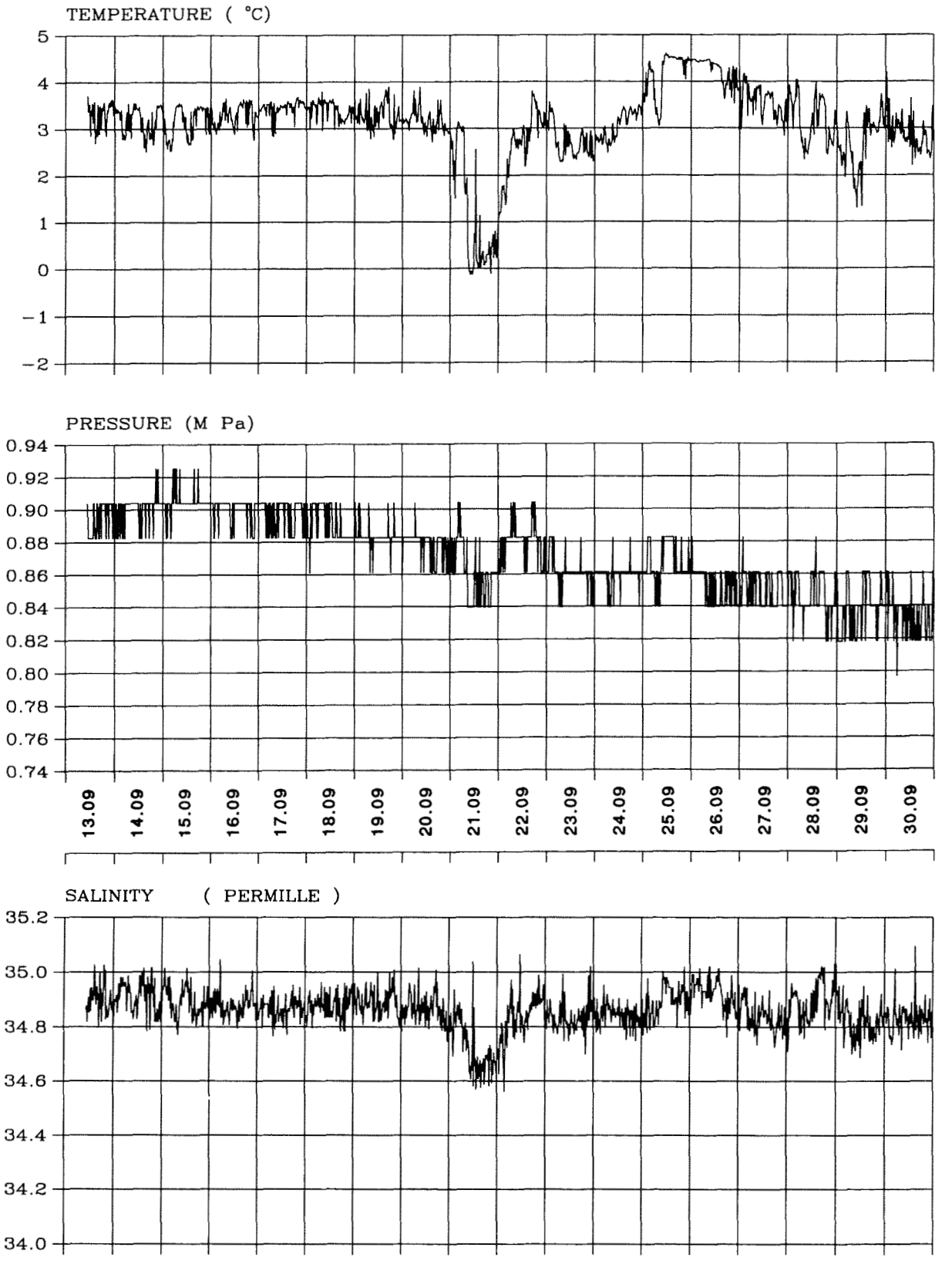


Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

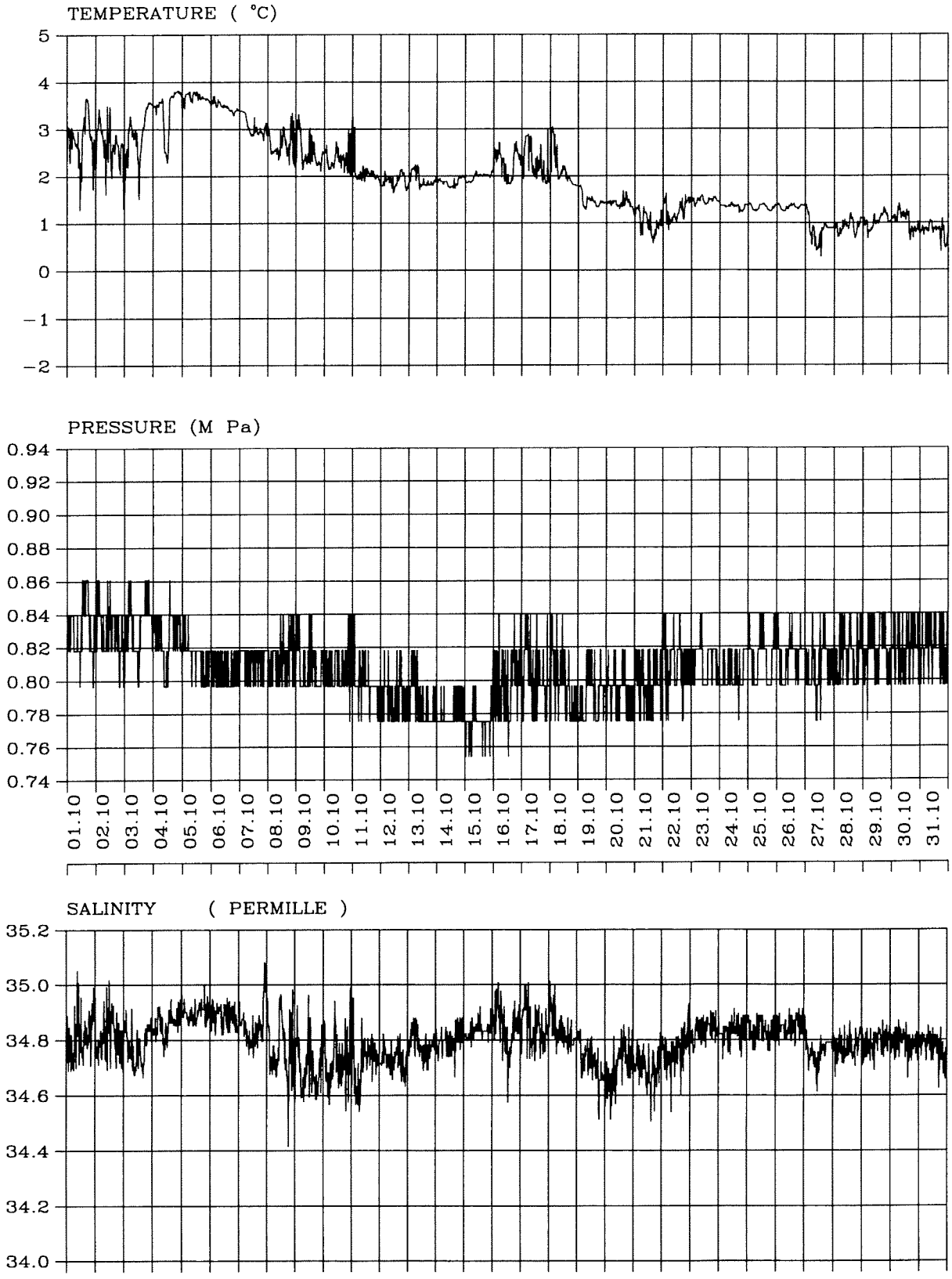
Instrument depth : 60.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8 Temperature, pressure and salinity.



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

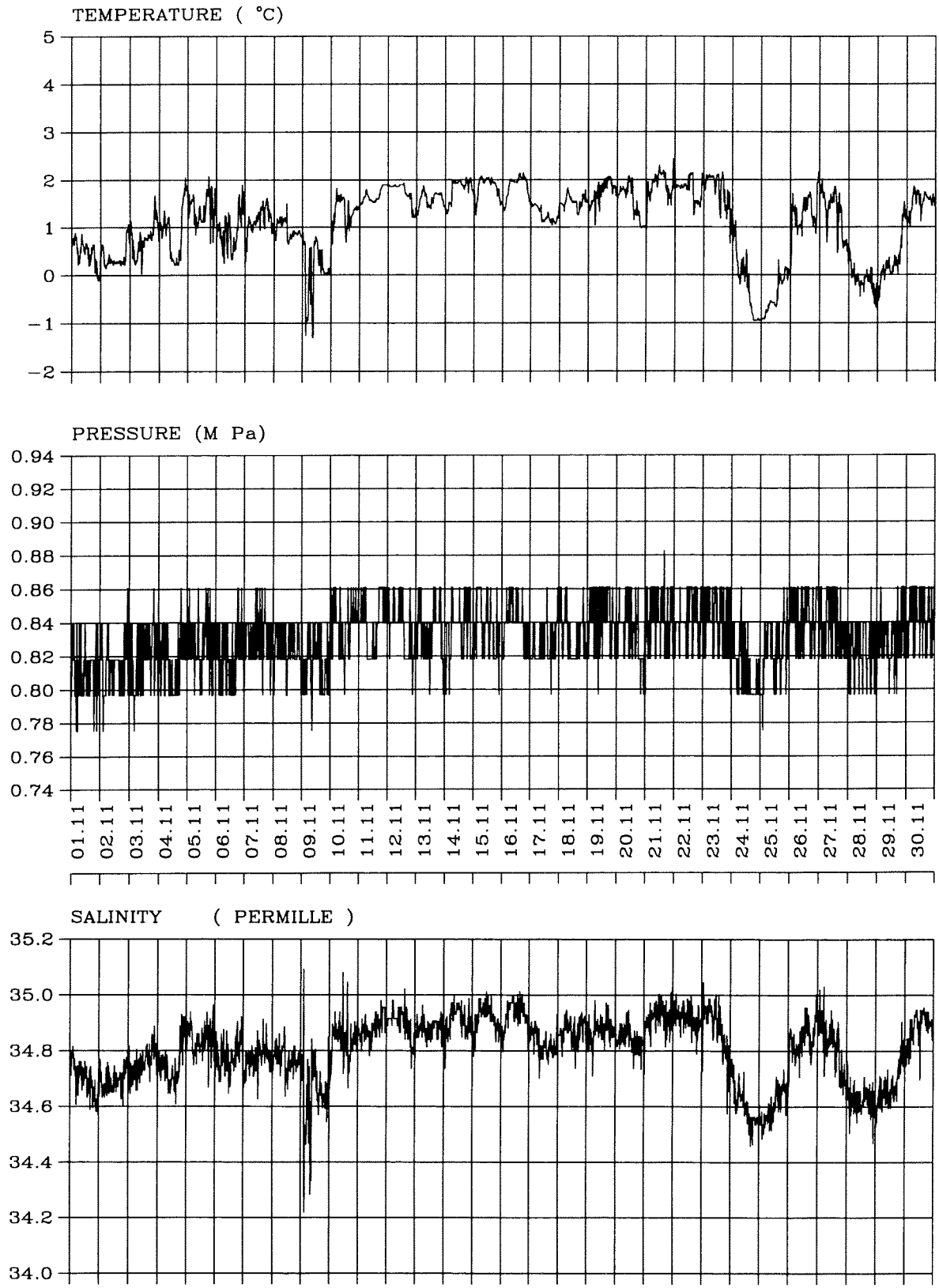
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

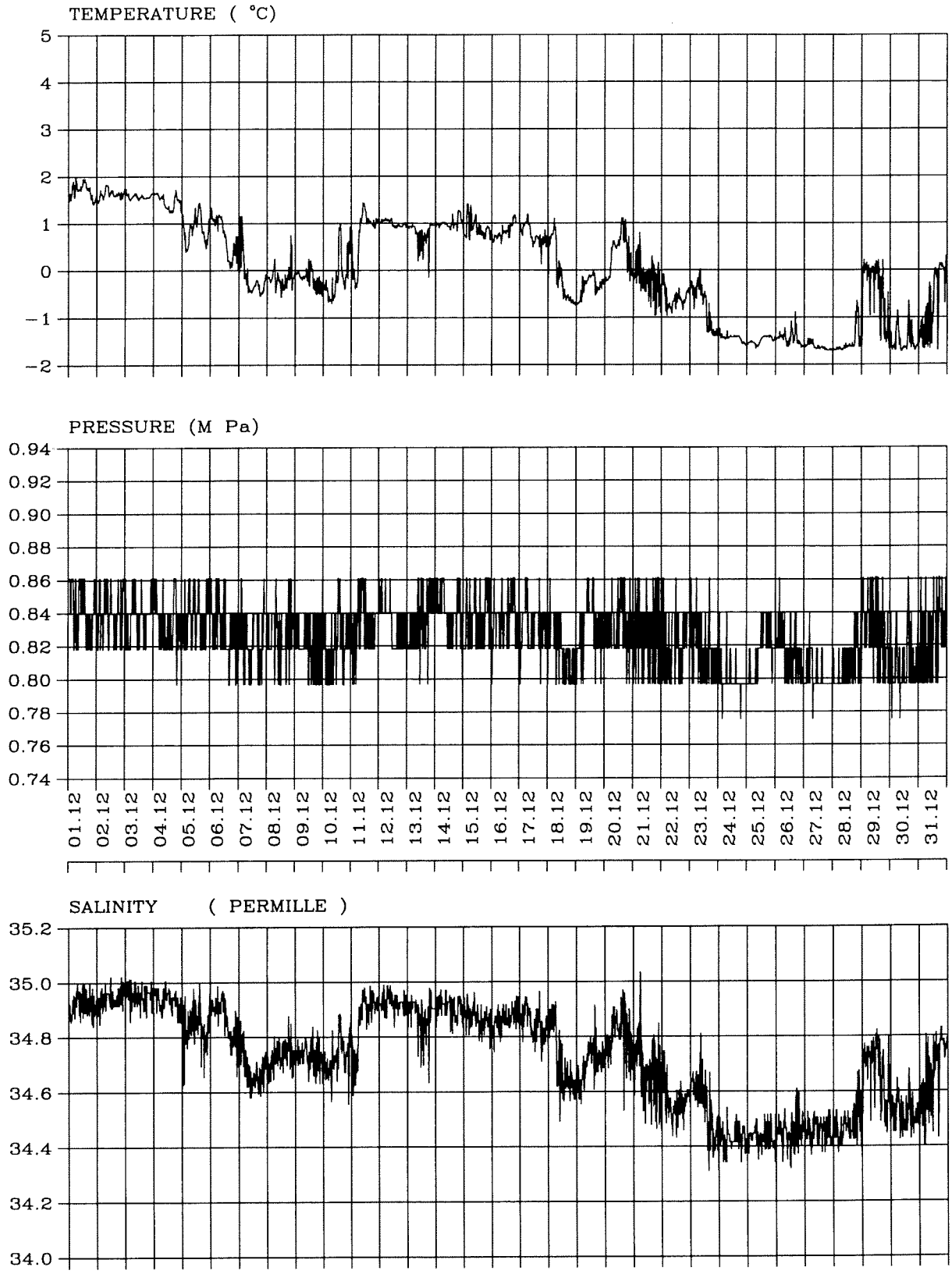
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2–1–8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

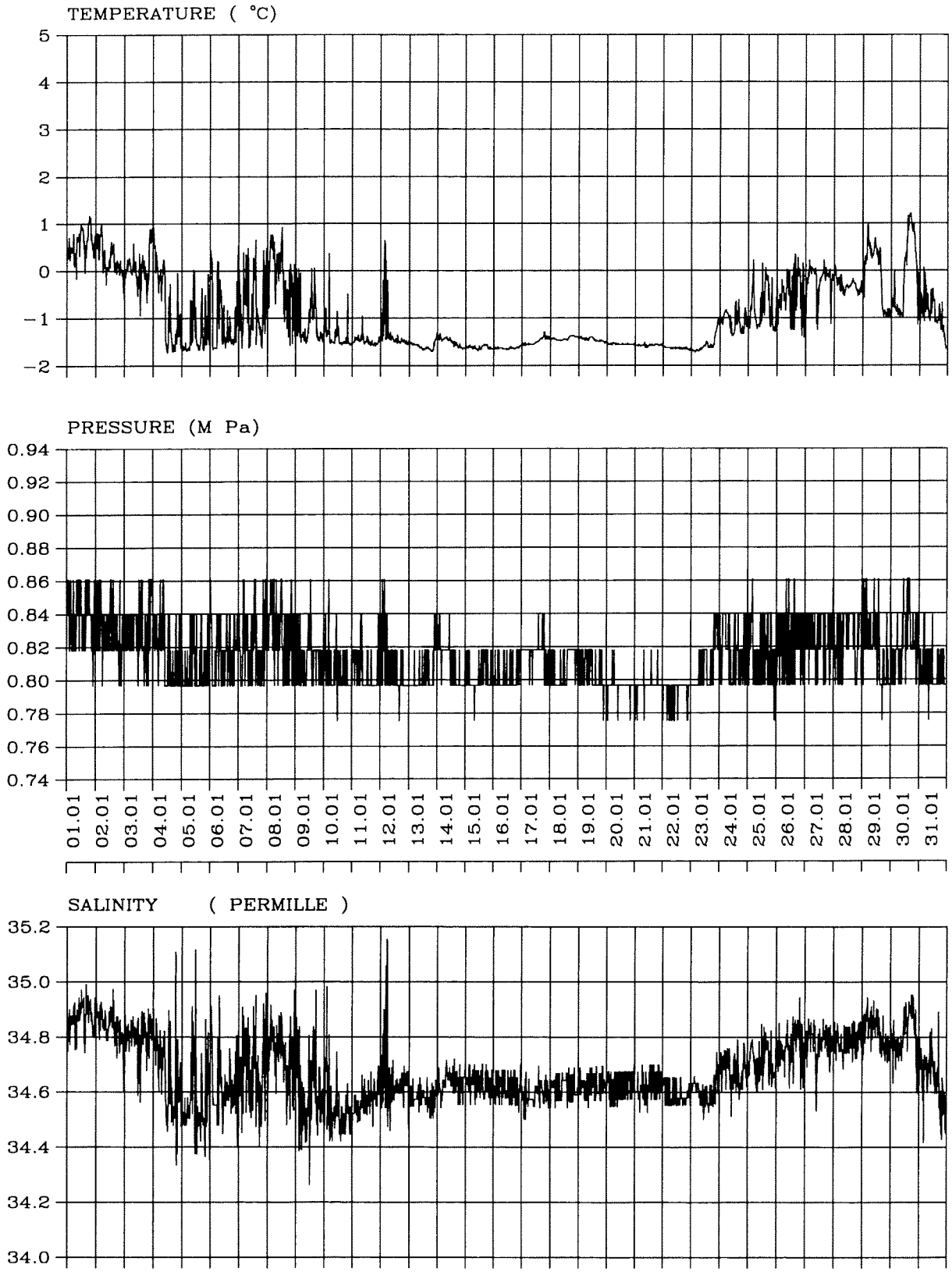
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

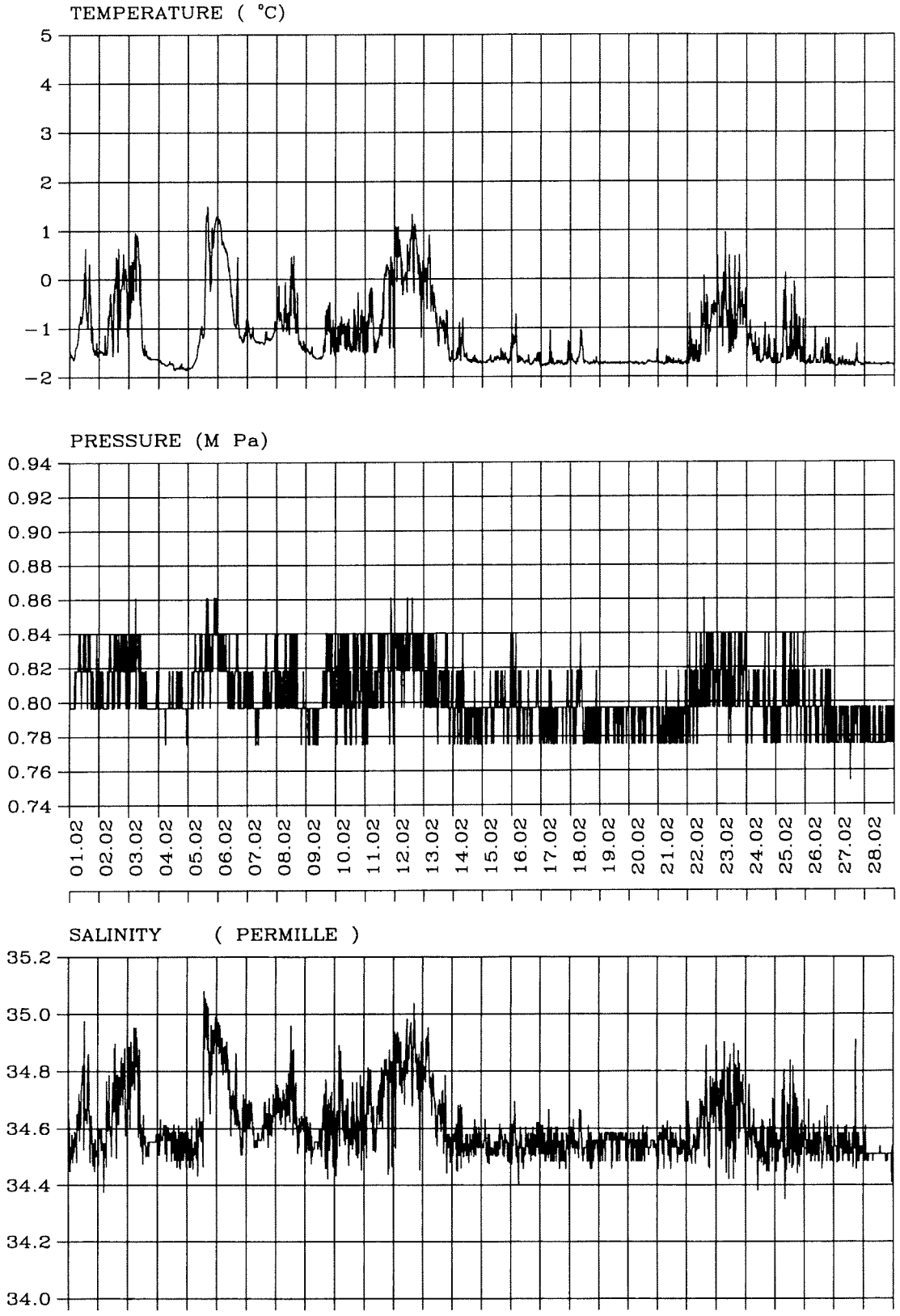
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2–1–8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

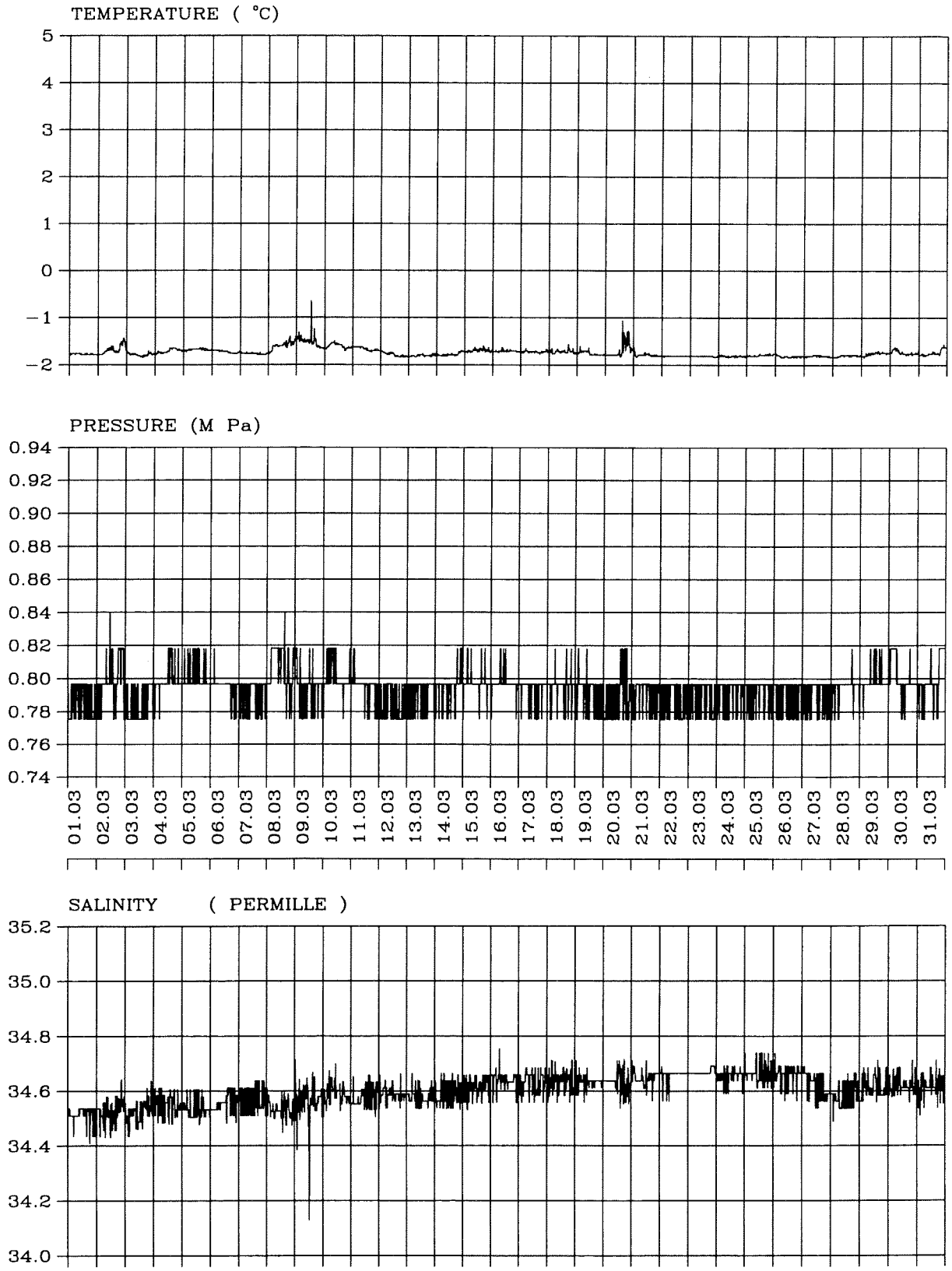
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

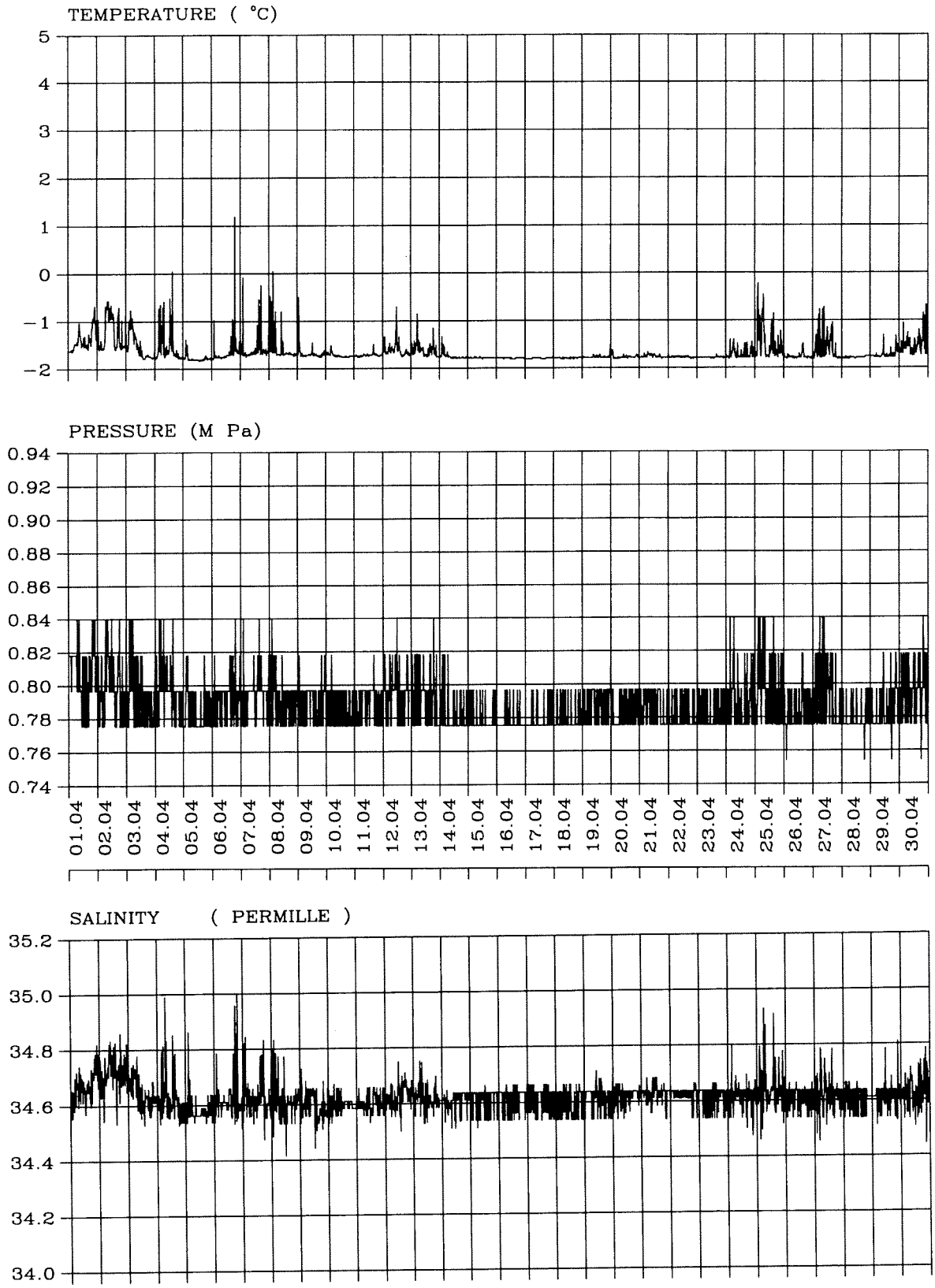
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2–1–8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

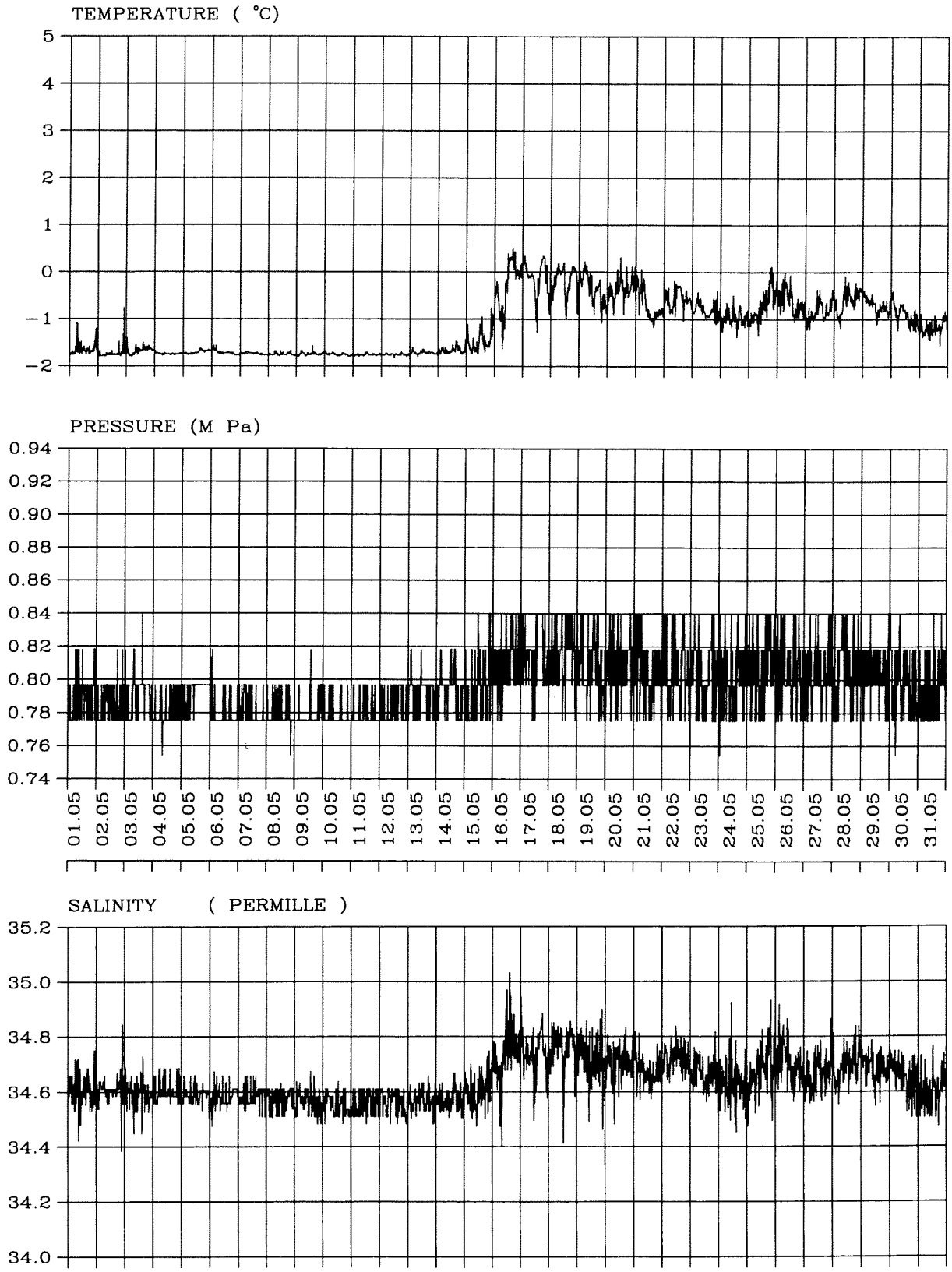
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

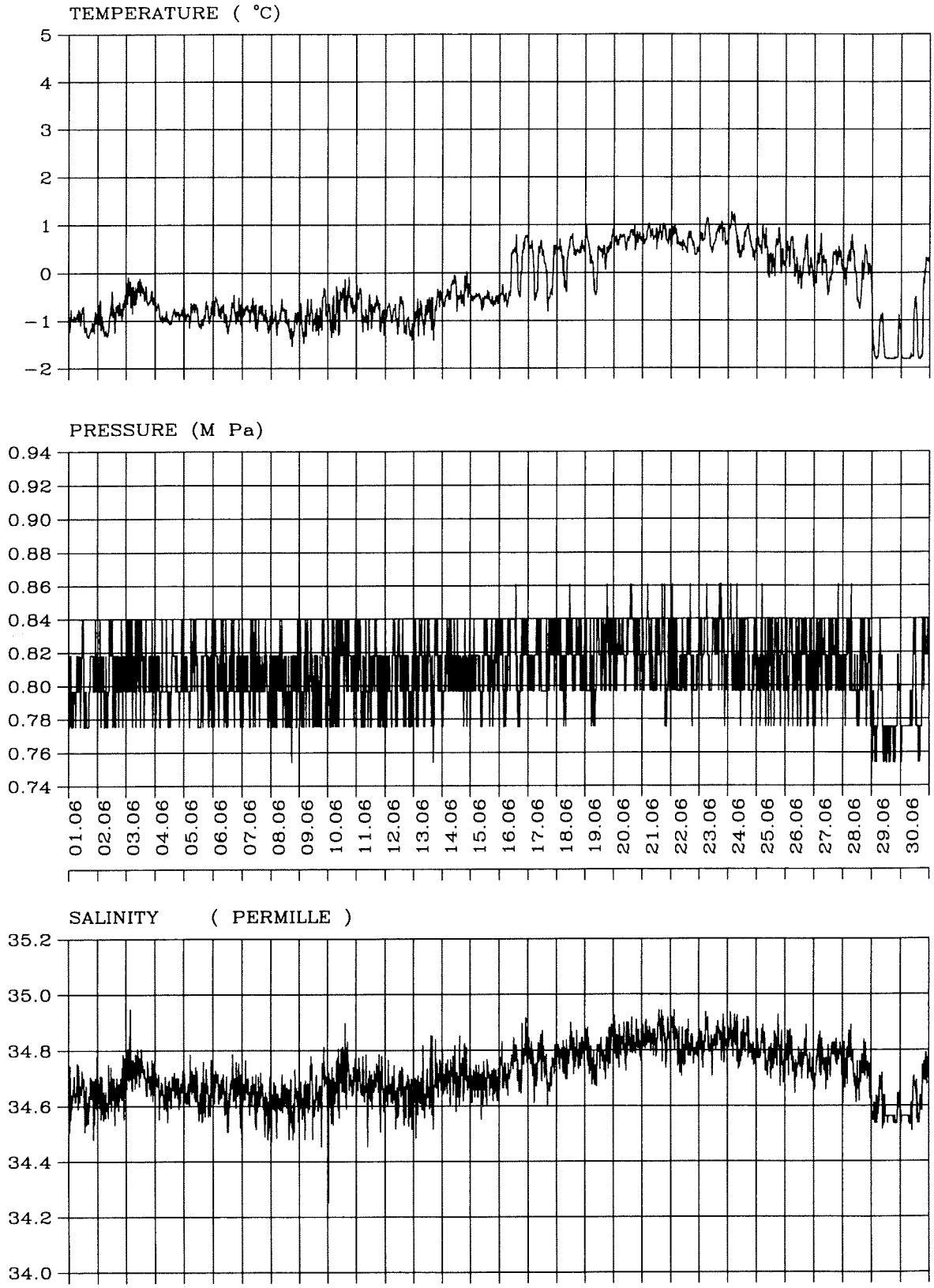
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

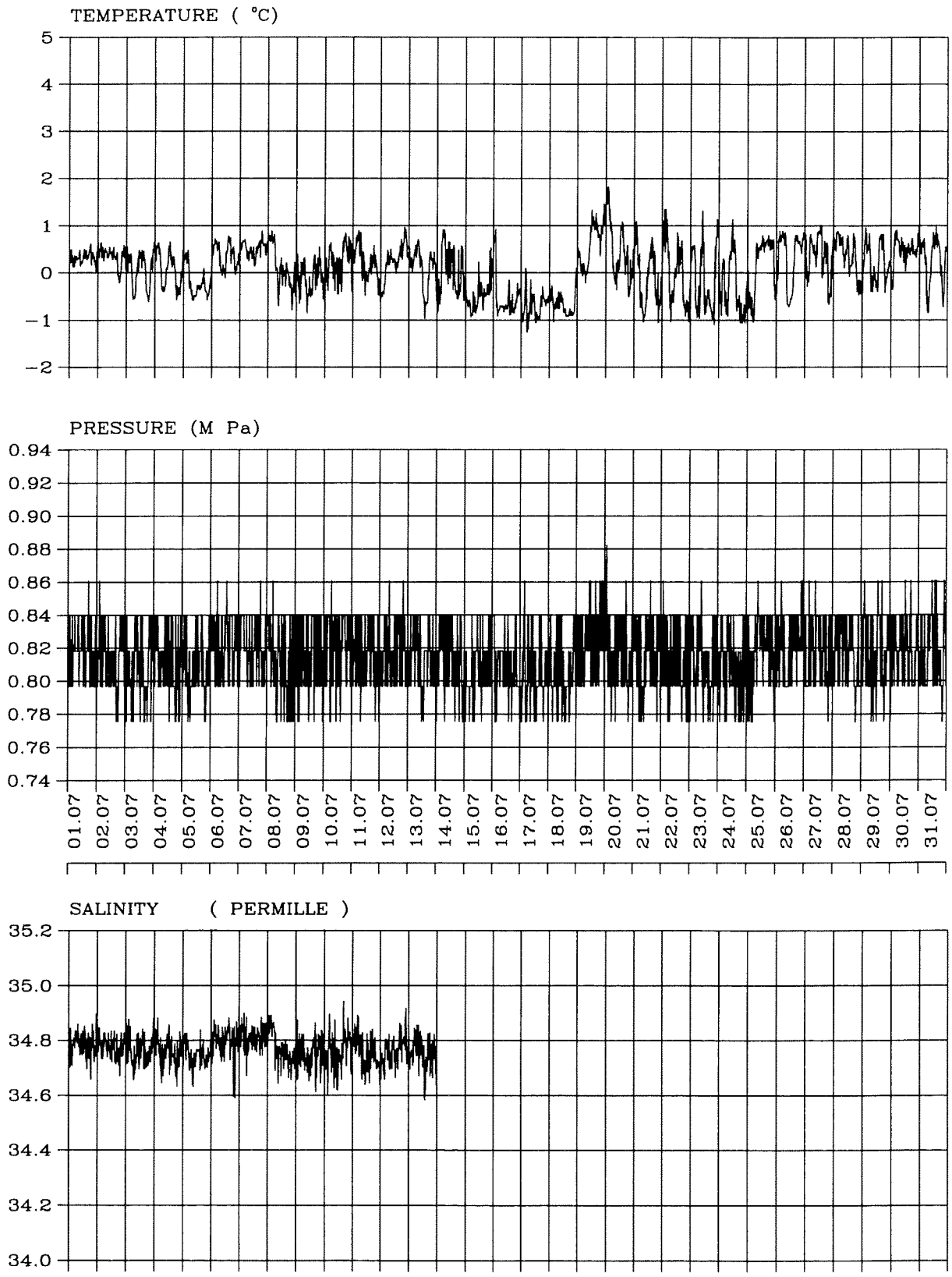
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

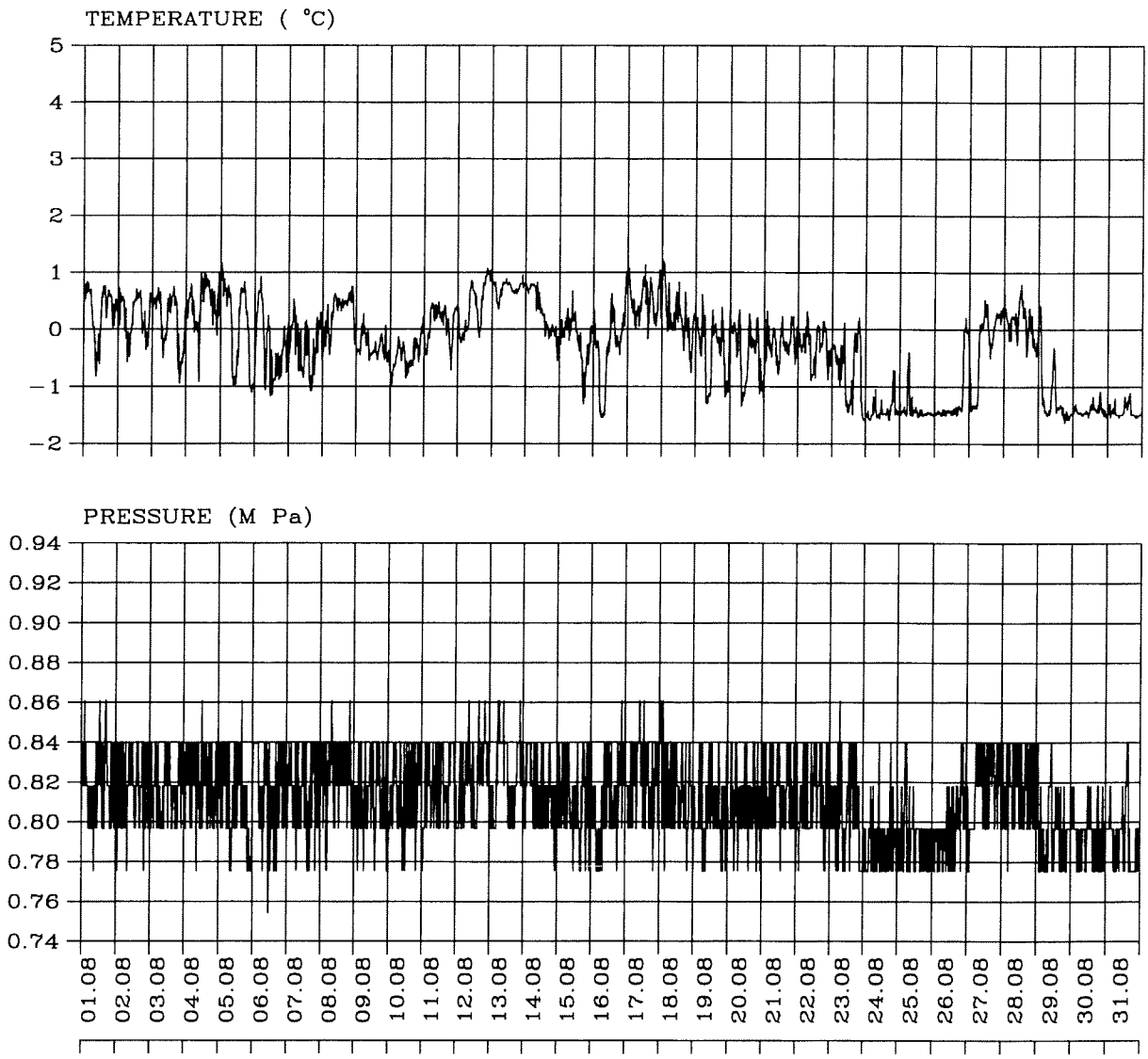
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2–1–8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

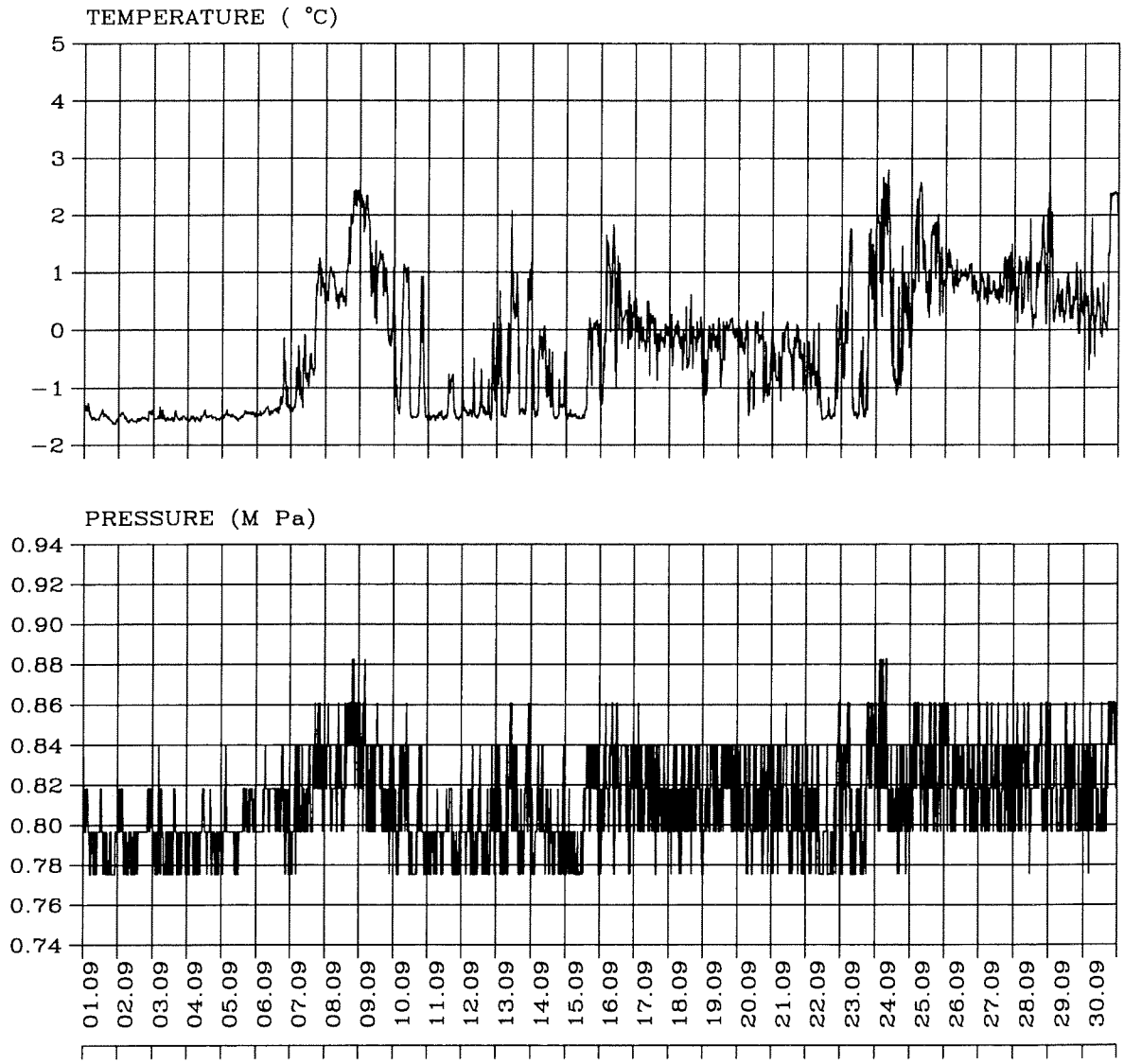
Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-1-8

Continues.....

A discription of the model and its definitions :

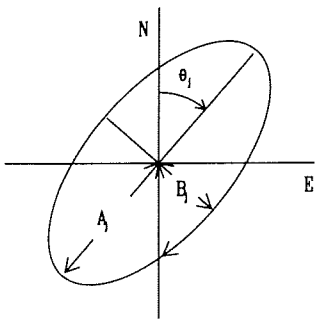
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

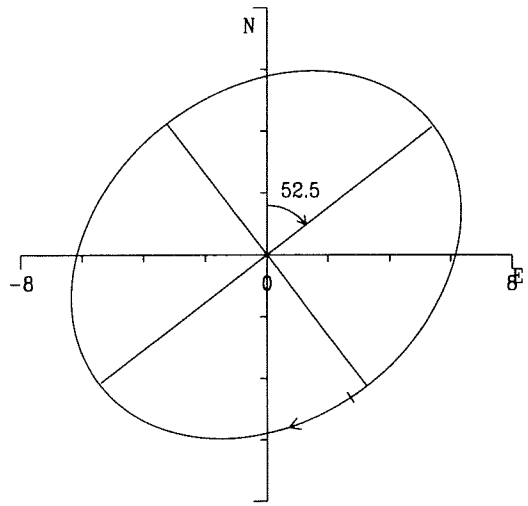
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

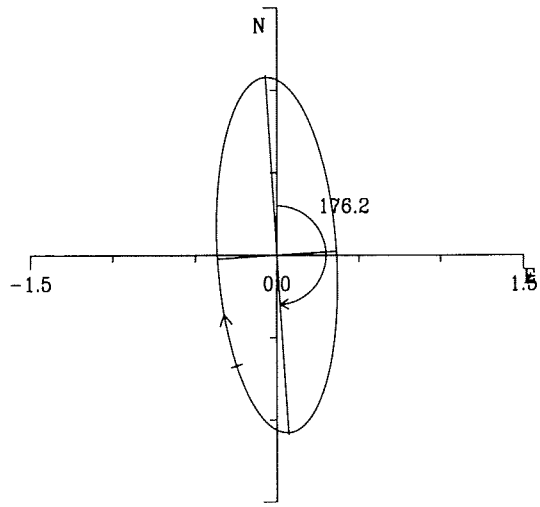
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1700 , marked with a line on the ellipse.

M2-ellipse



K1-ellipse



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 60.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

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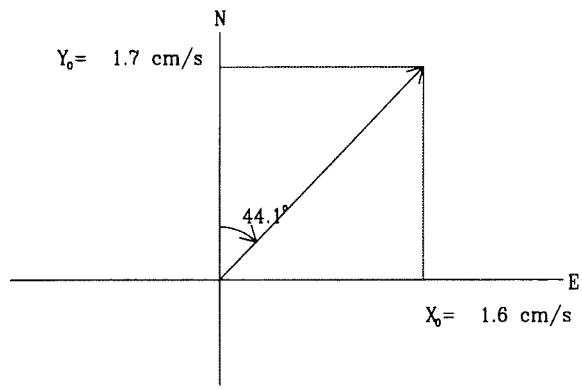
Fig. 2-1-10 M2 and K1 ellipse.

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_j cm/s	g_{xj} °	Y_j cm/s	g_{yj} °	Major axis A_j cm/s	Minor axis B_j cm/s	θ_j °	g_j °	BETA. °
SA	******	0.0	1.0	96.6	1.0	47.2	1.3	-0.6	44.1	71.2	172.9
SSA	******	0.1	1.8	349.9	0.5	332.3	1.9	-0.2	74.2	348.5	166.1
MSM	763.49	0.5	3.0	290.8	1.2	304.2	3.2	0.3	68.5	292.6	117.9
MM	661.31	0.5	1.7	6.6	0.5	351.8	1.7	-0.1	74.4	5.5	163.7
MSF	354.37	1.0	1.0	28.0	0.8	67.1	1.2	0.4	54.0	41.9	25.4
MF	327.86	1.1	2.0	218.9	1.1	244.3	2.2	0.4	242.2	44.6	25.6
K1	23.93	15.0	0.4	223.4	1.1	123.7	1.1	-0.4	176.2	302.4	127.3
N2	12.66	28.4	1.5	31.3	1.4	305.2	1.5	-1.4	64.7	7.9	74.2
M2	12.42	29.0	6.3	71.2	6.0	354.8	6.8	-5.3	52.5	40.3	84.6
H2	12.40	29.0	0.9	335.8	1.1	237.0	1.1	-0.8	343.6	224.5	11.5
S2	12.00	30.0	1.8	124.0	1.7	64.0	2.2	-1.3	49.0	97.4	127.5

MEAN CURRENT



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 60.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

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Fig. 2-1-9 Harmonic analysis of current.

MEAN VALUES

Speed	11.00 cm/s
NS-component	1.68 cm/s
EW-component	1.69 cm/s
Velocity	2.39 cm/s
in direction	45 °

MAXIMUM

Velocity	53.70 cm/s
in direction	59 °
Temperature	4.59 °C
Salinity	35.155

MINIMUM

Velocity	0.00 cm/s
in direction	34 °
Temperature	-1.85 °C
Salinity	34.128

Southern Great Bank, Barents Sea

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Instrument depth : 60.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10793

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

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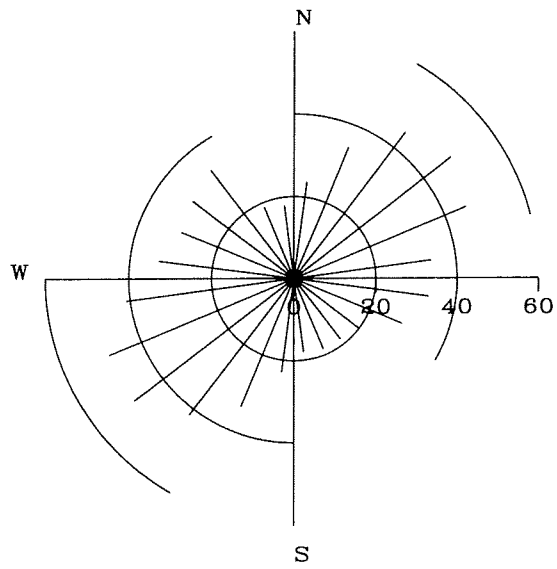
Fig. 2-1-11

Overall mean values.
Overall maximum values.
Overall minimum values.

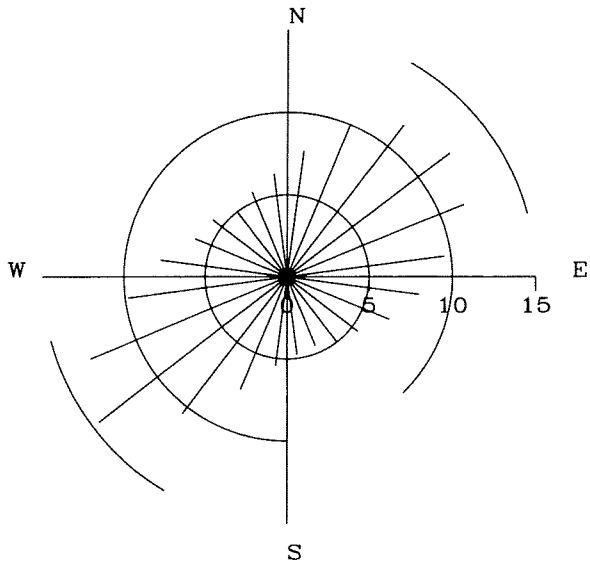
Mooring: 2

Depth: 110 m

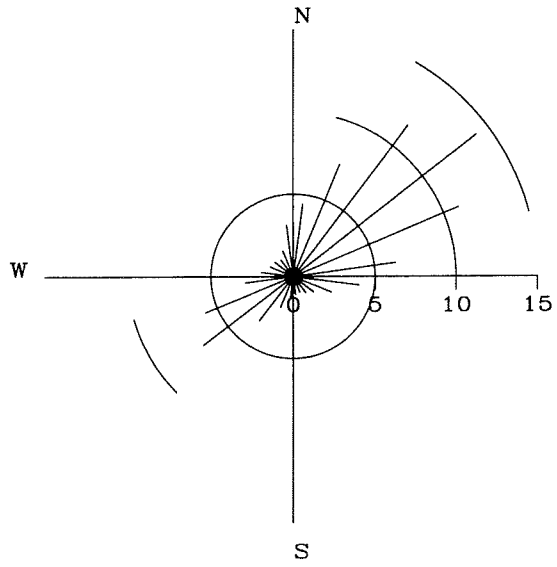
CURRENT VELOCITY DISTRIBUTION



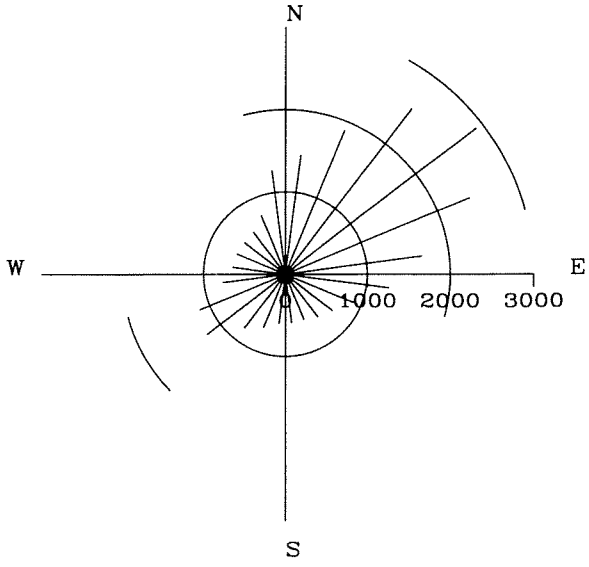
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 110.0 m Bottom depth : 278.0 m

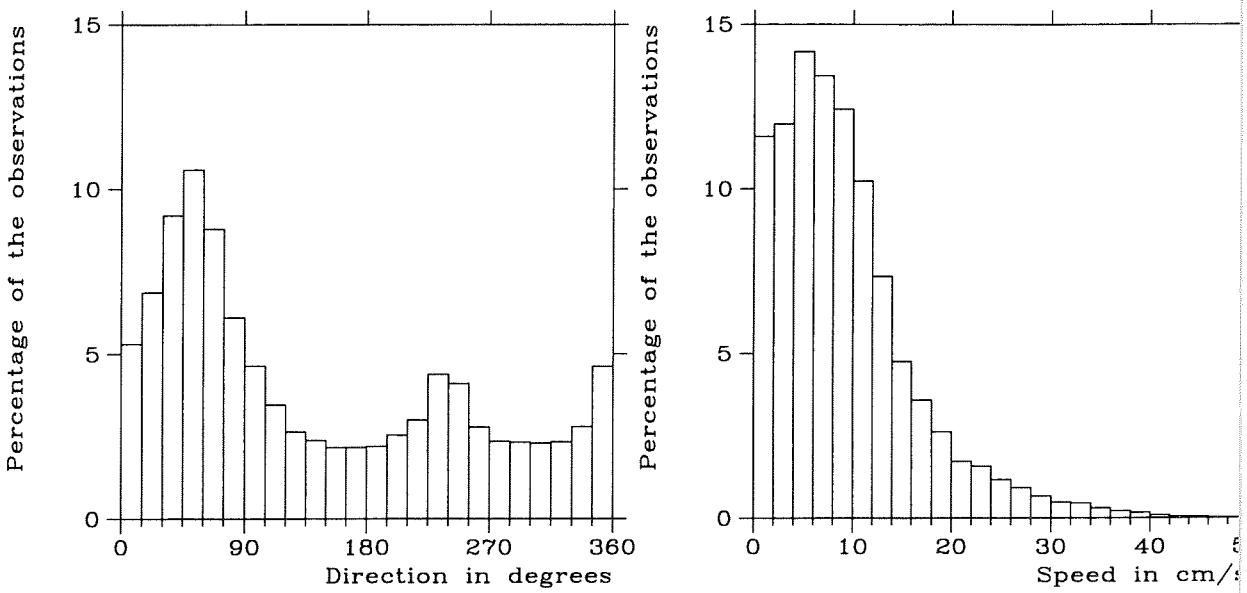
Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

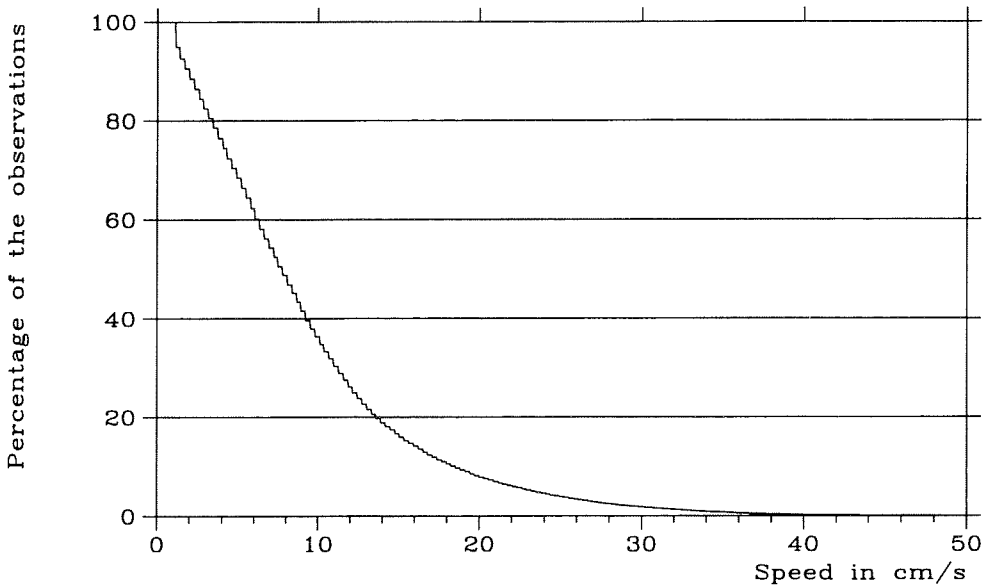
IMR

Fig. 2-2-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

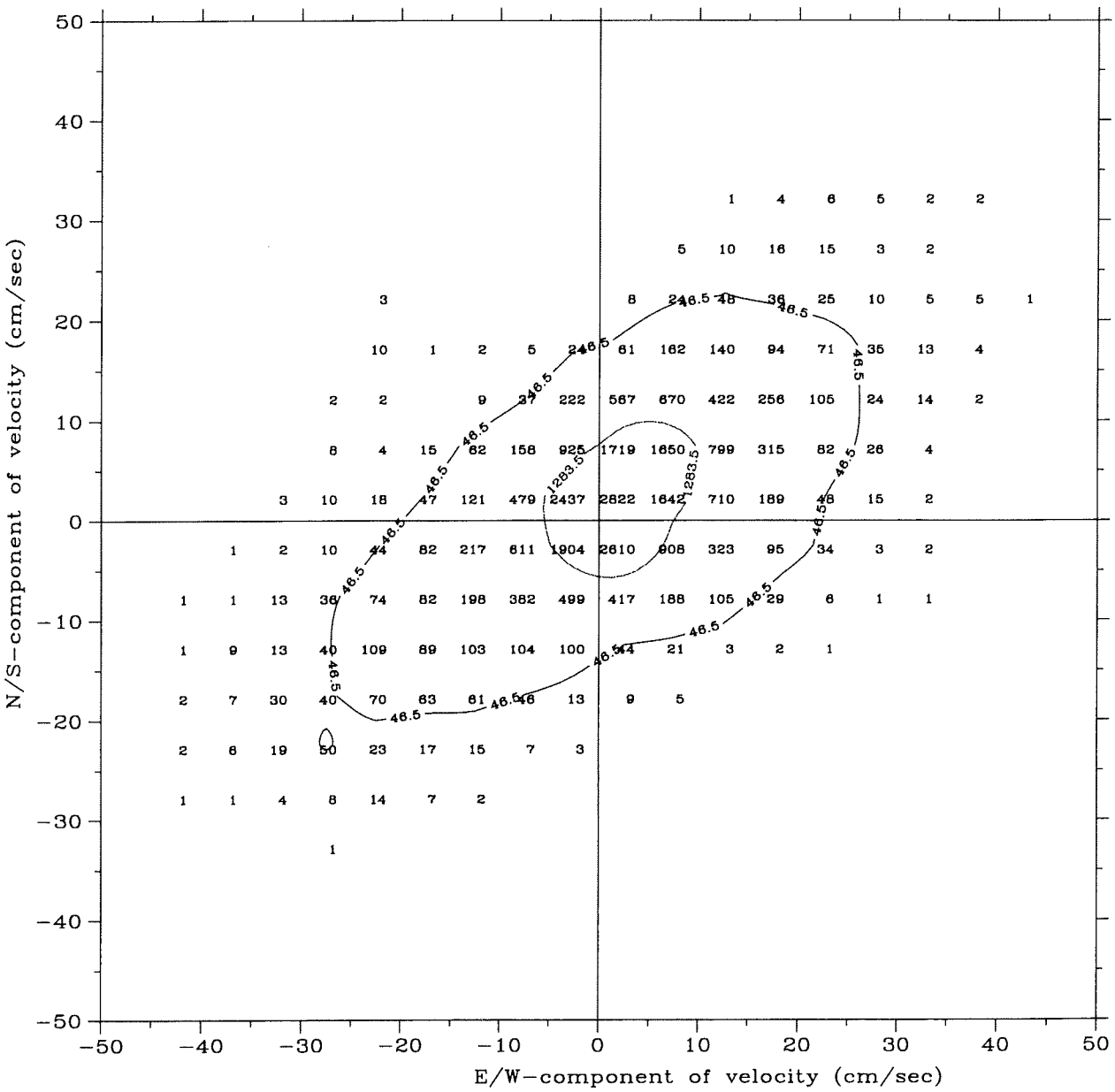
Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27544

Isoline for 50% and 96%

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

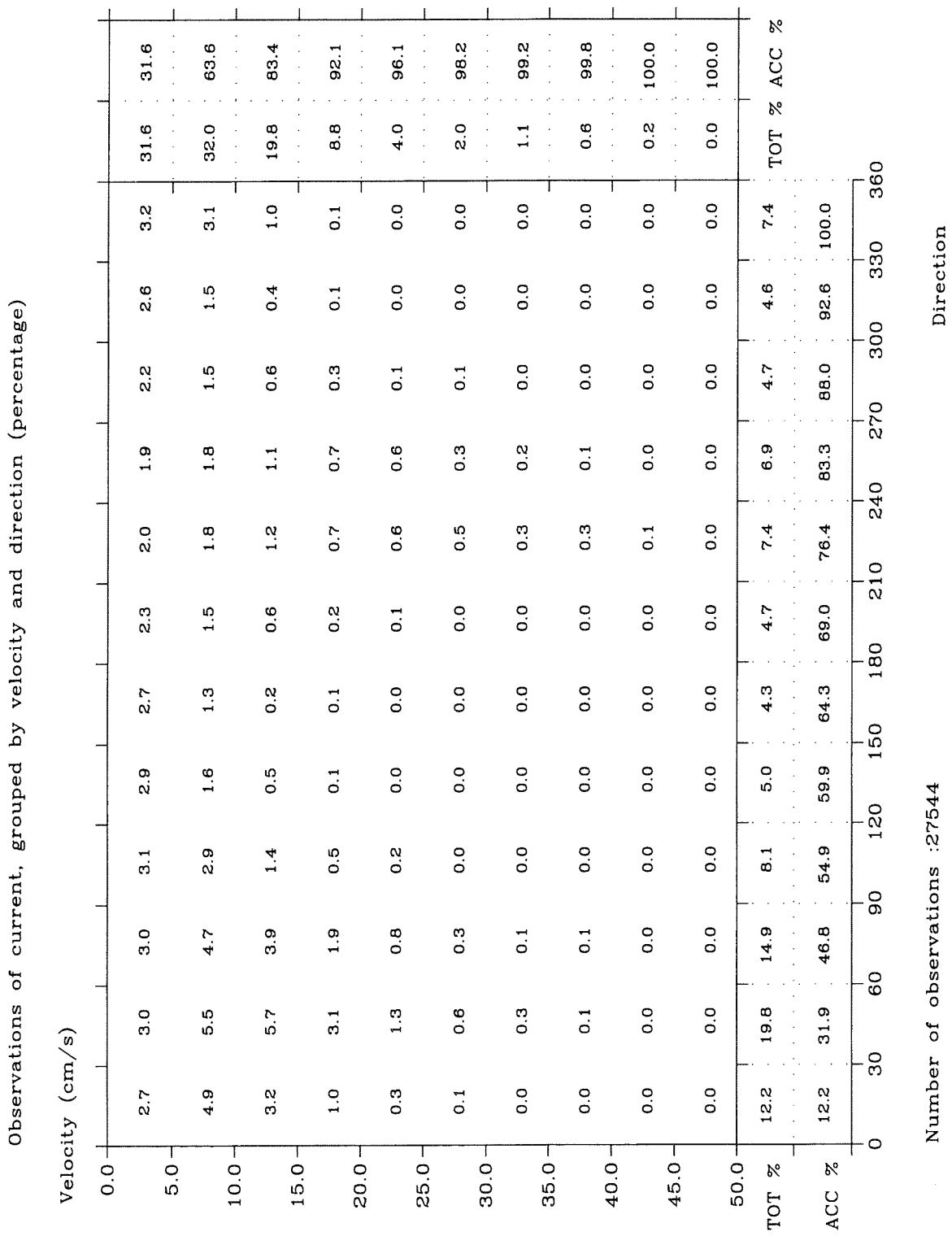
Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

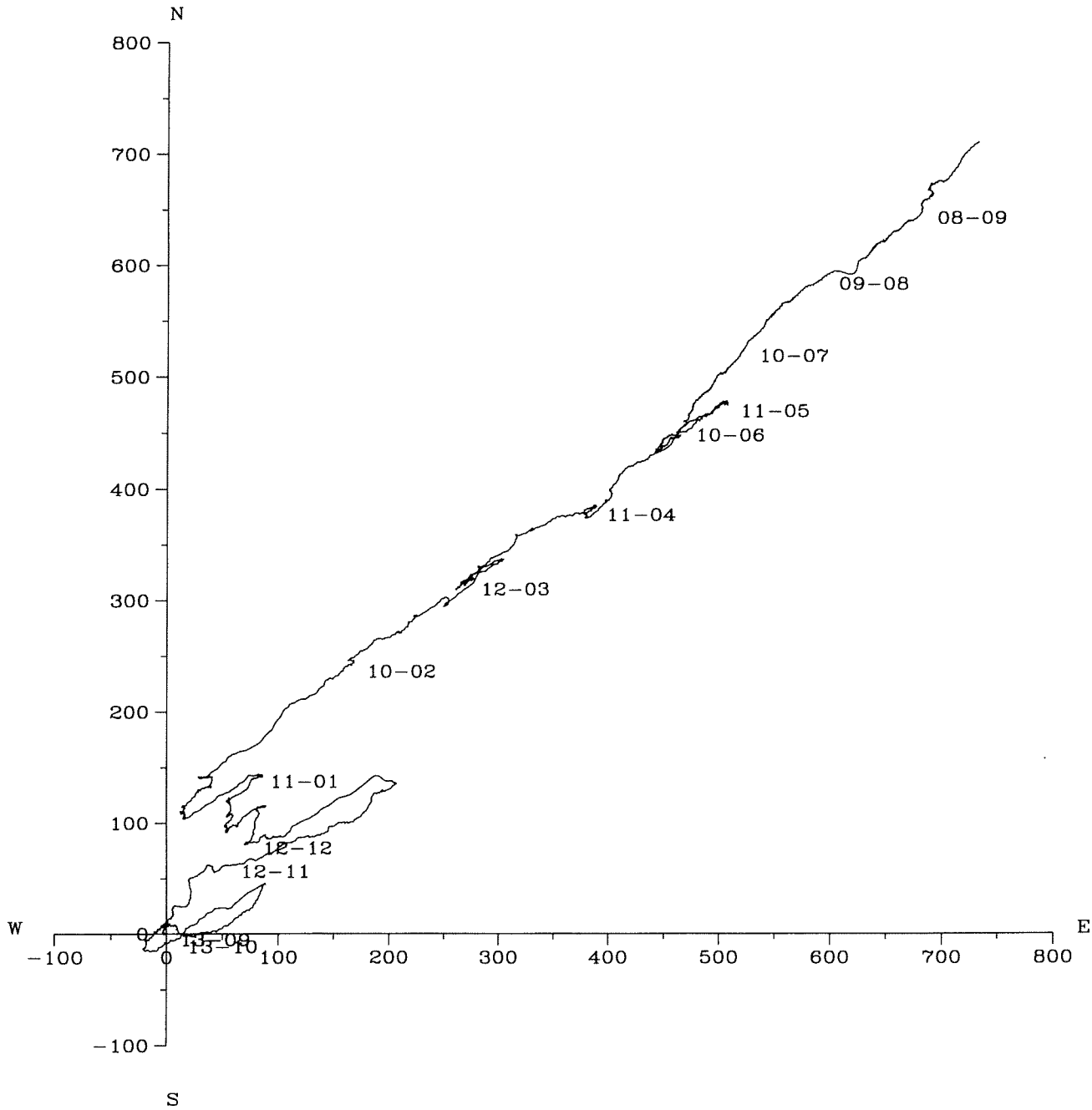
Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



Units in km

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

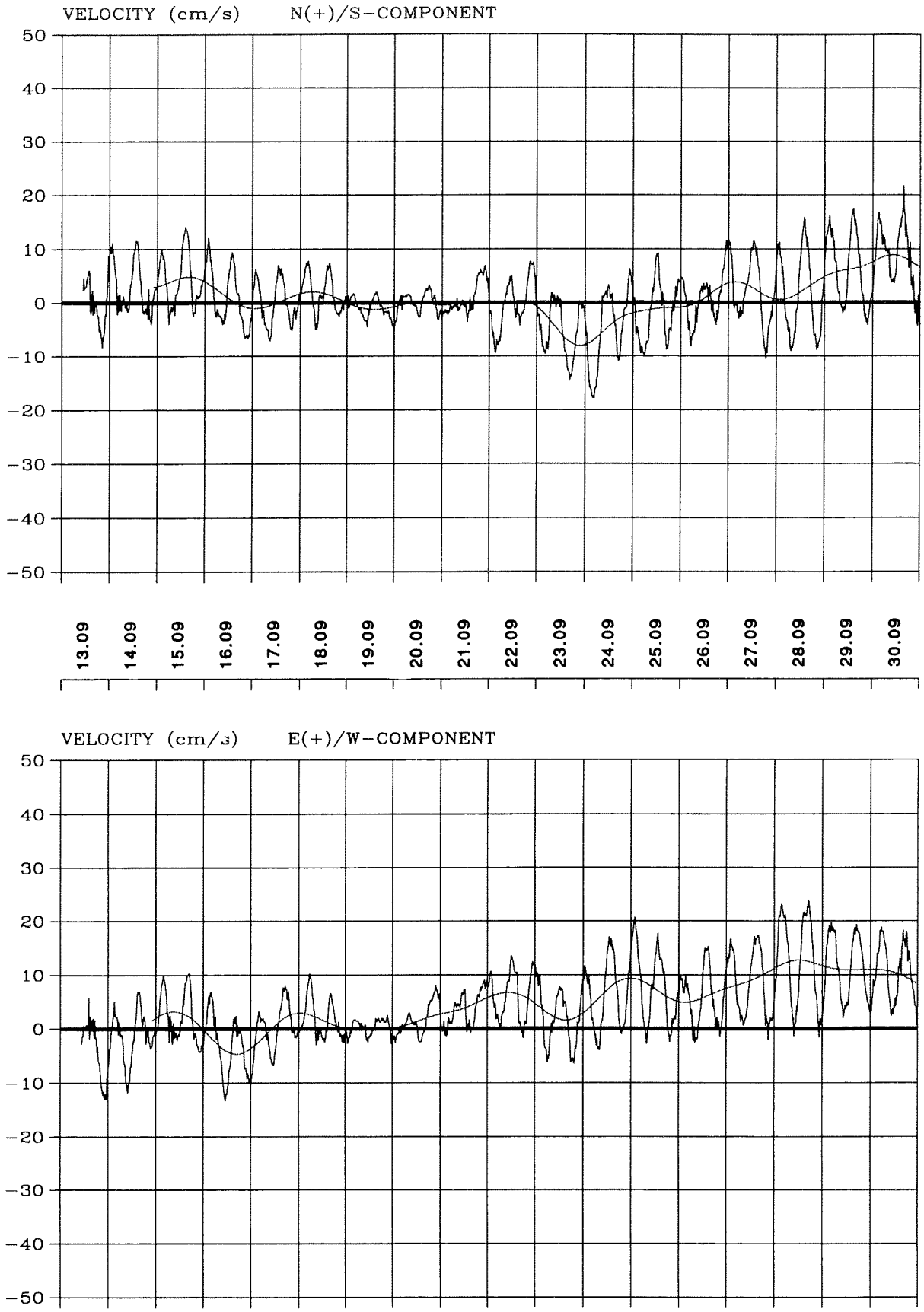
Instrument depth : 110.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-2-5 Progressive vector diagram.



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

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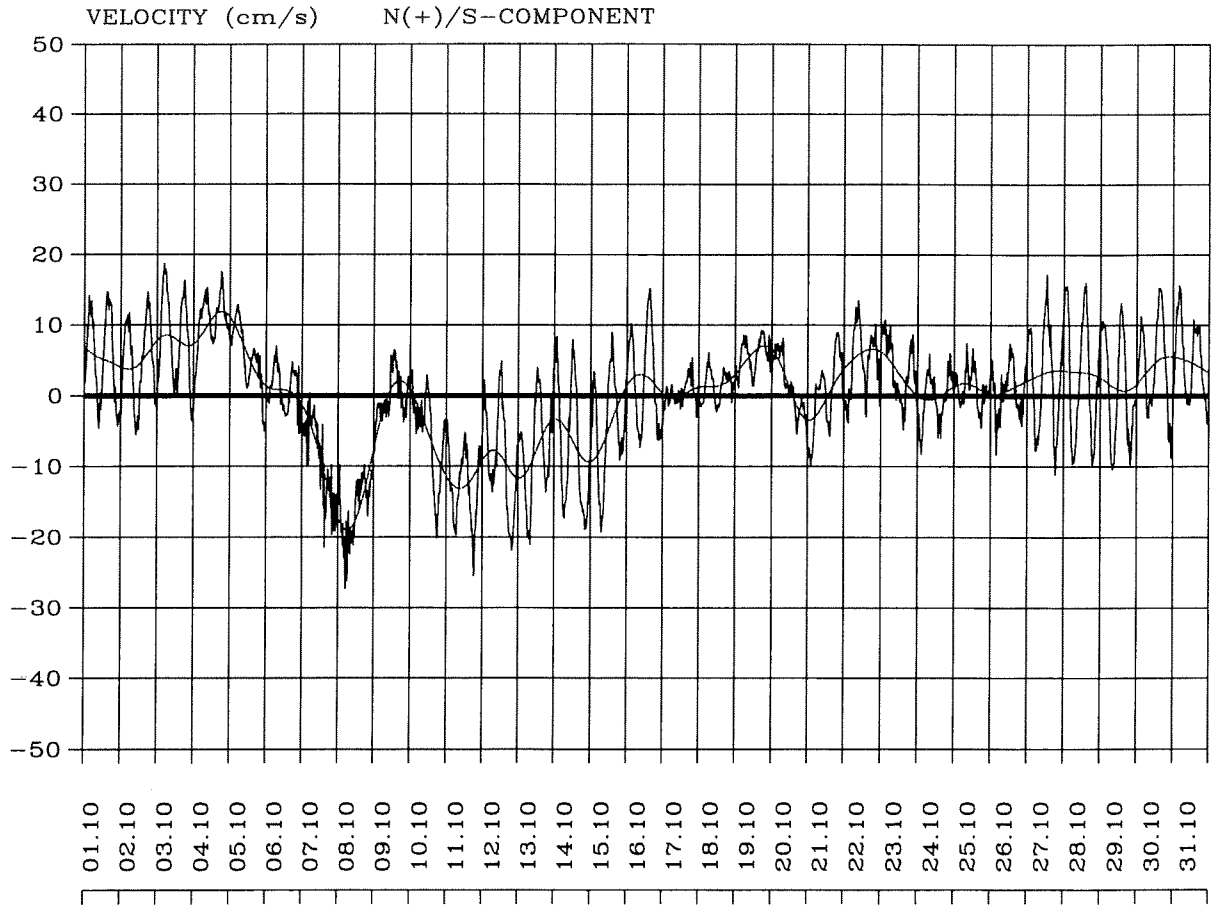
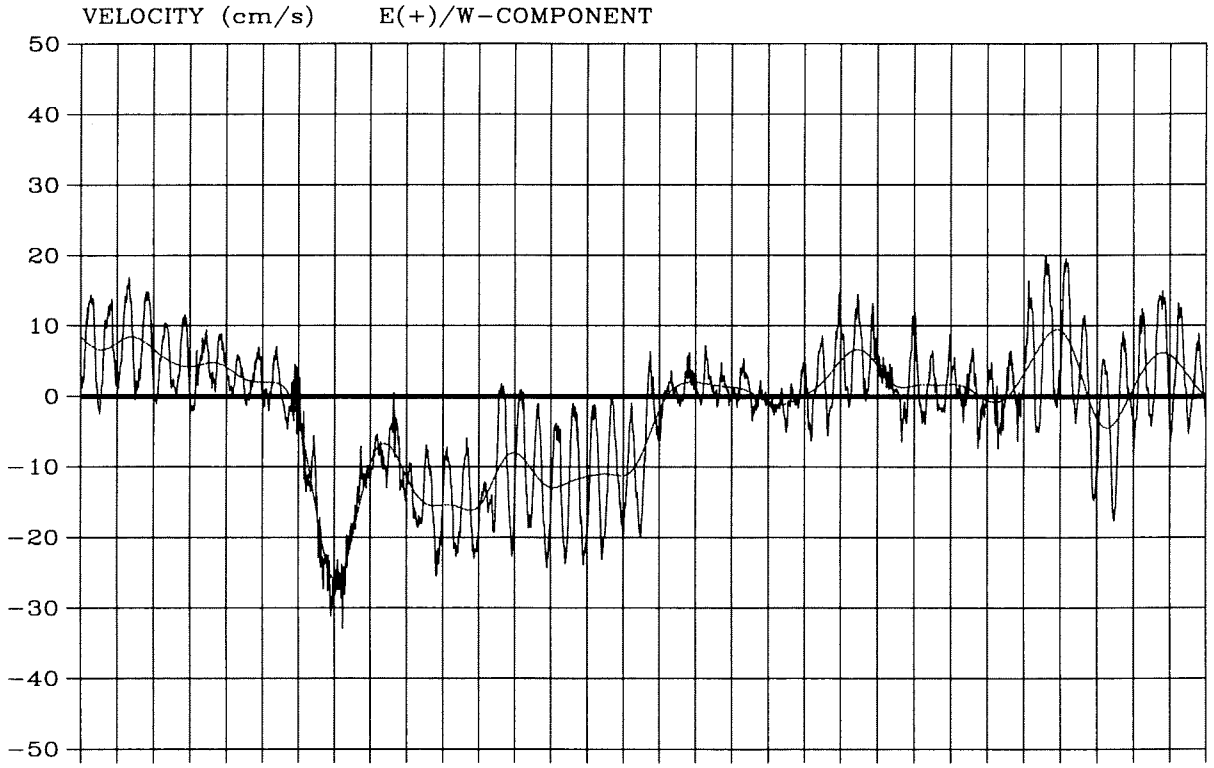
Fig. 2-2-6 Current velocity distribution.





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

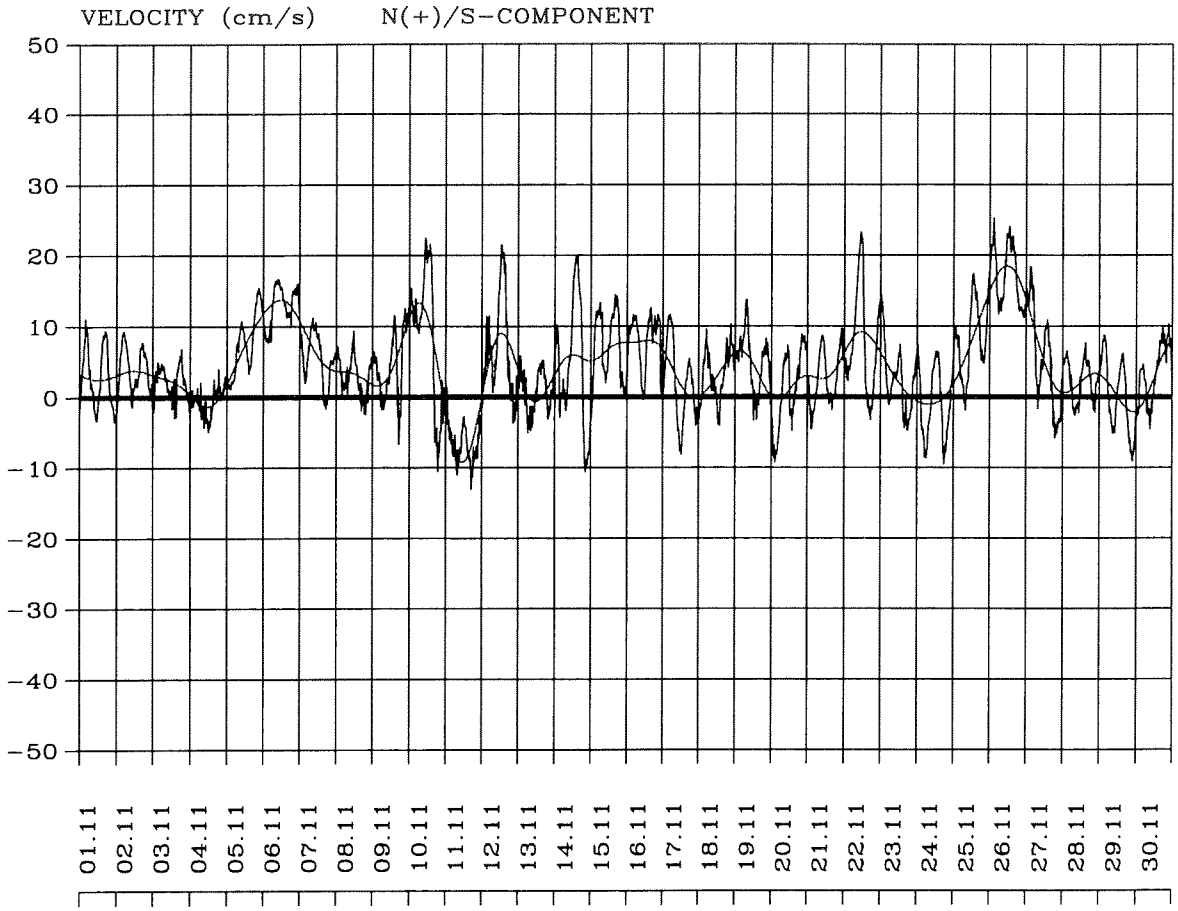
Time interval : 20.00 minutes. Instrument no. : 10797

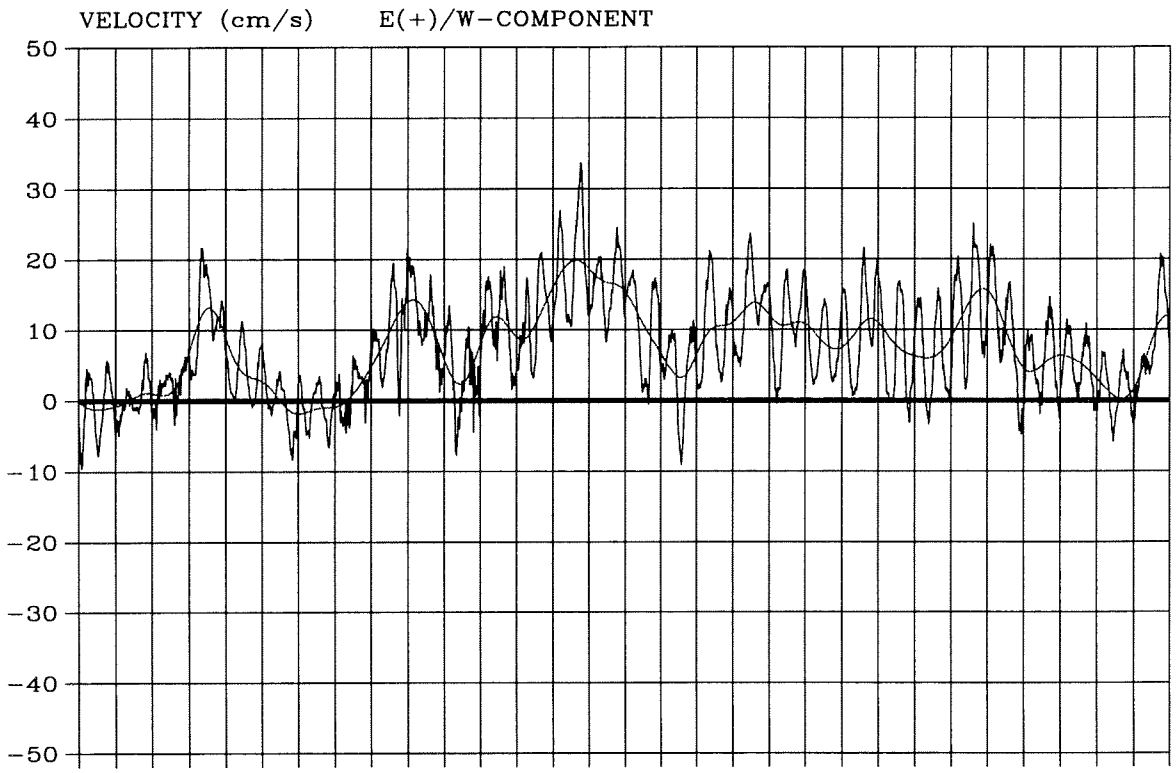
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 110.0 m Bottom depth : 278.0 m

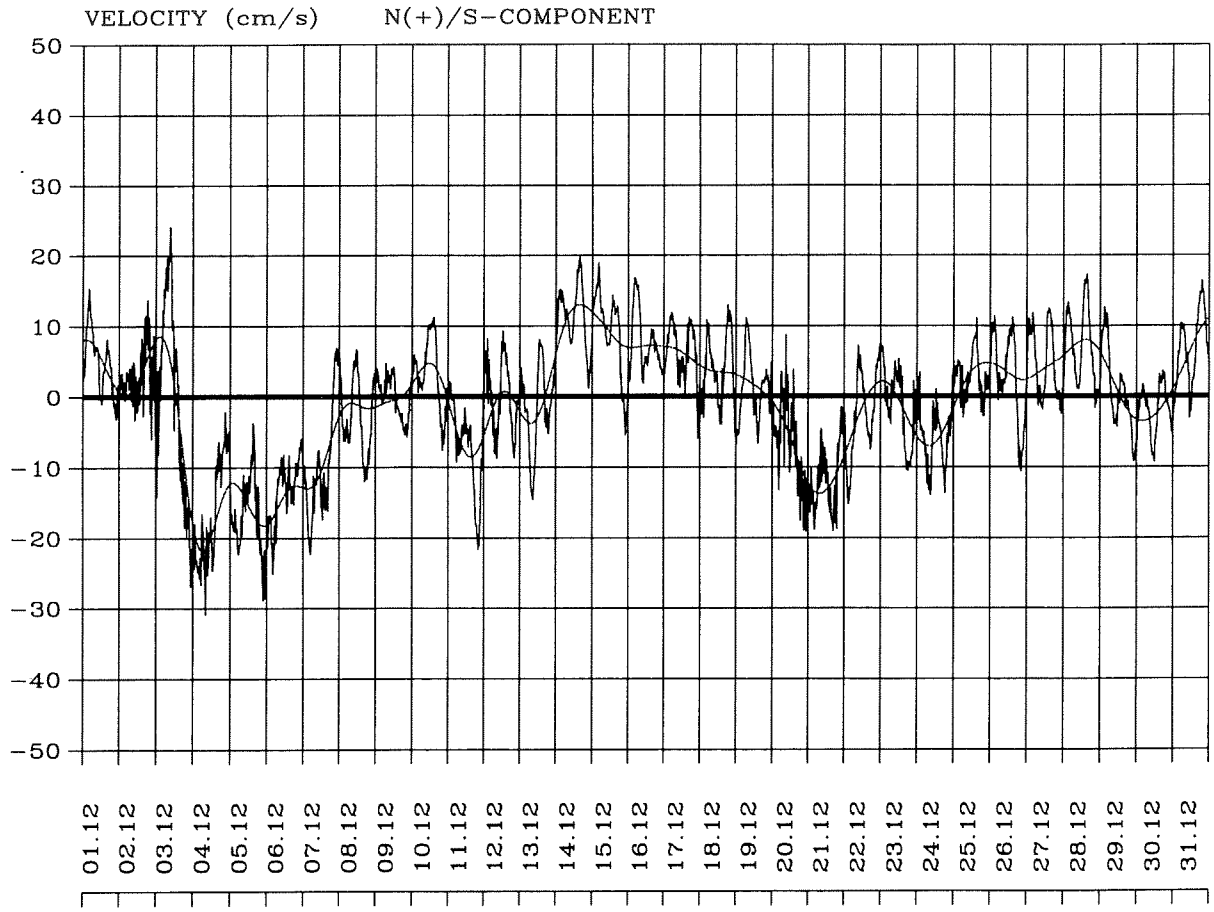
Time interval : 20.00 minutes. Instrument no. : 10797

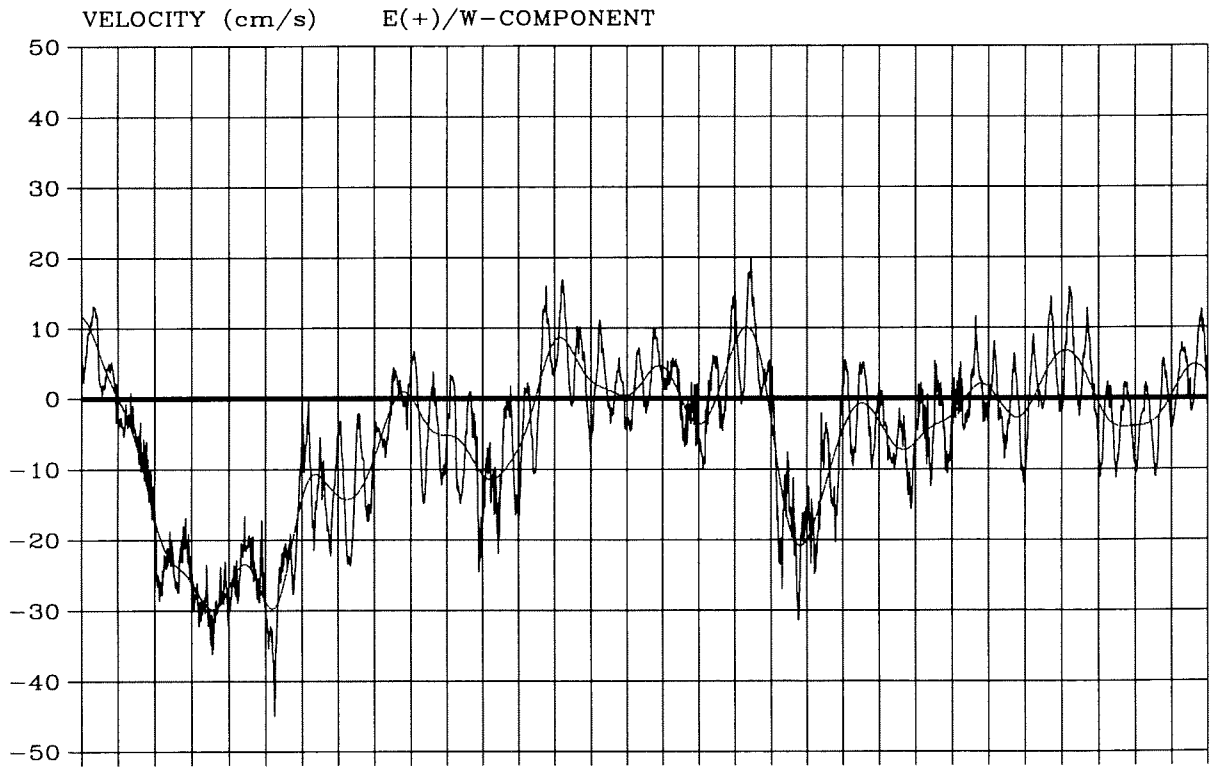
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-2-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

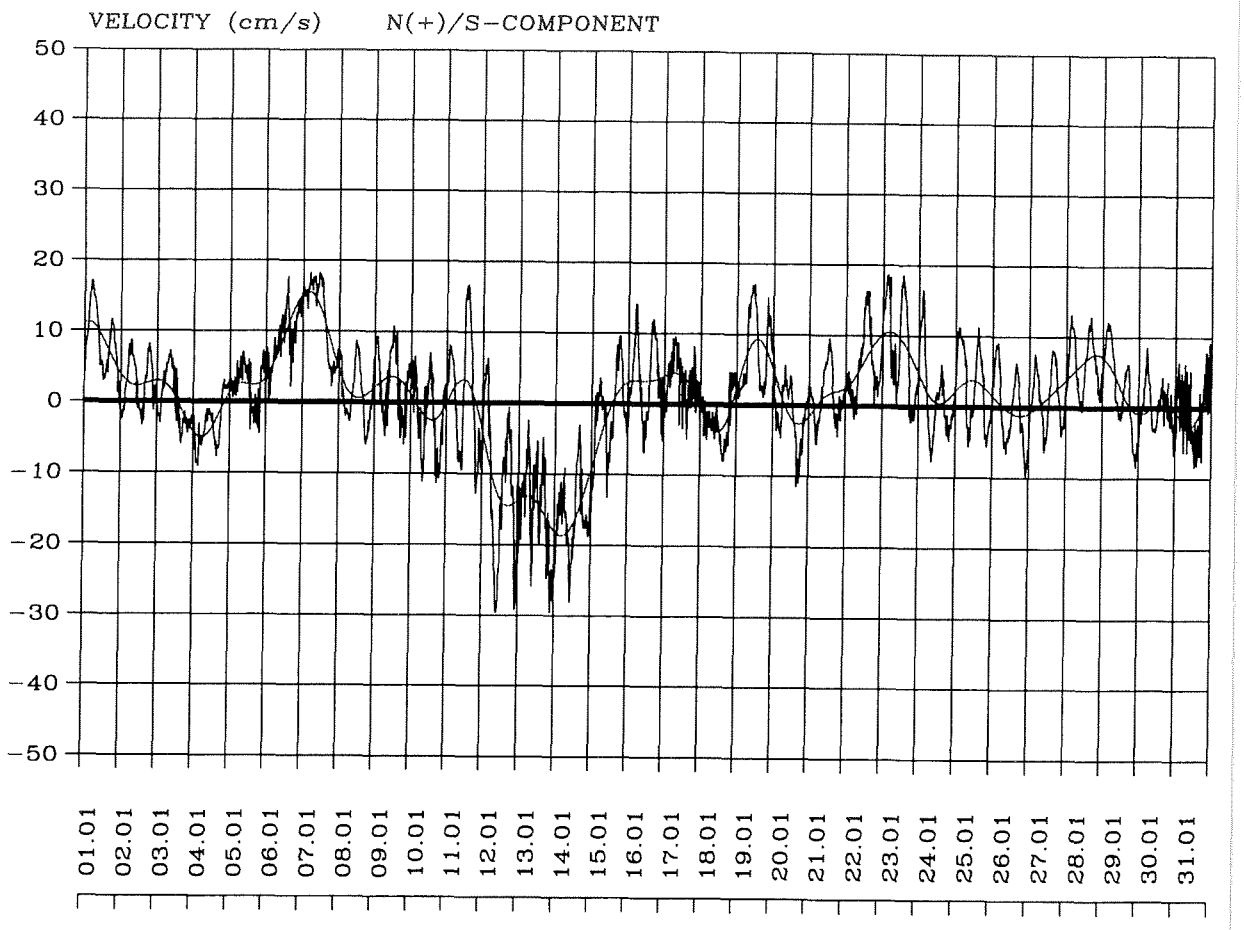
Time interval : 20.00 minutes. Instrument no. : 10797

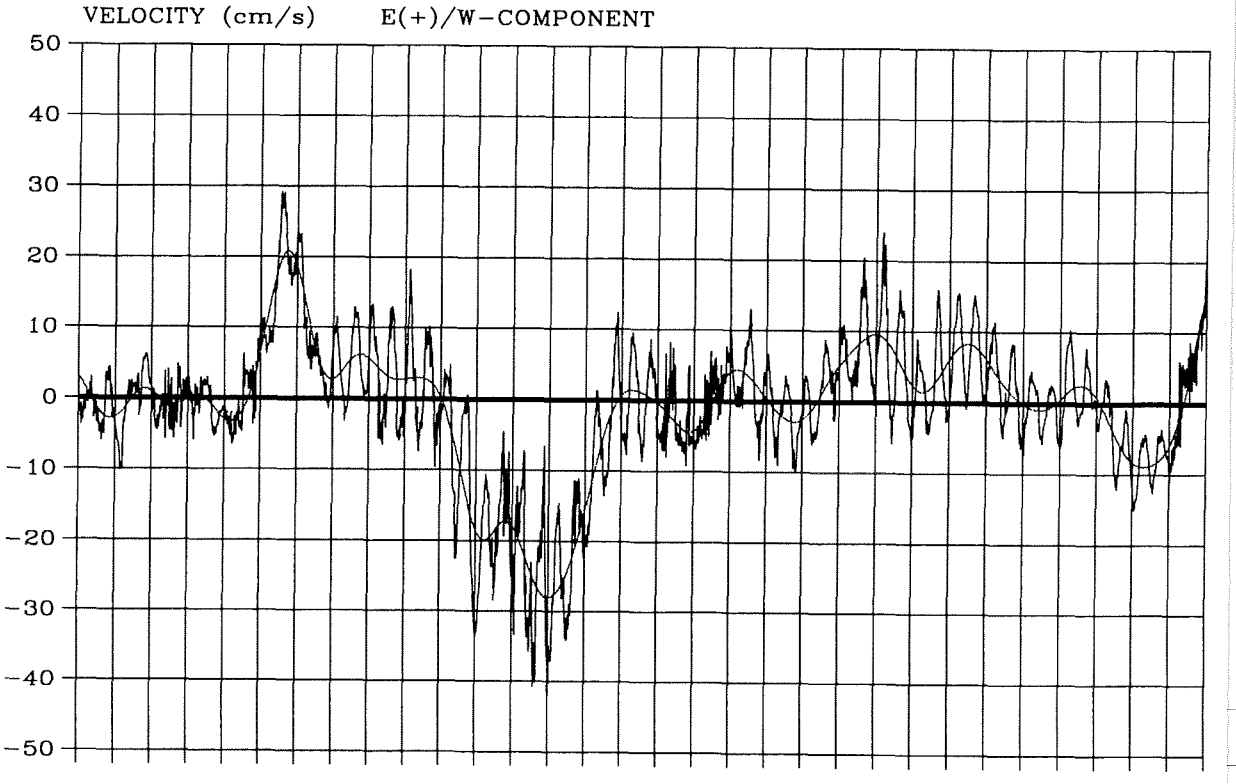
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-2-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 110.0 m Bottom depth : 278.0 m

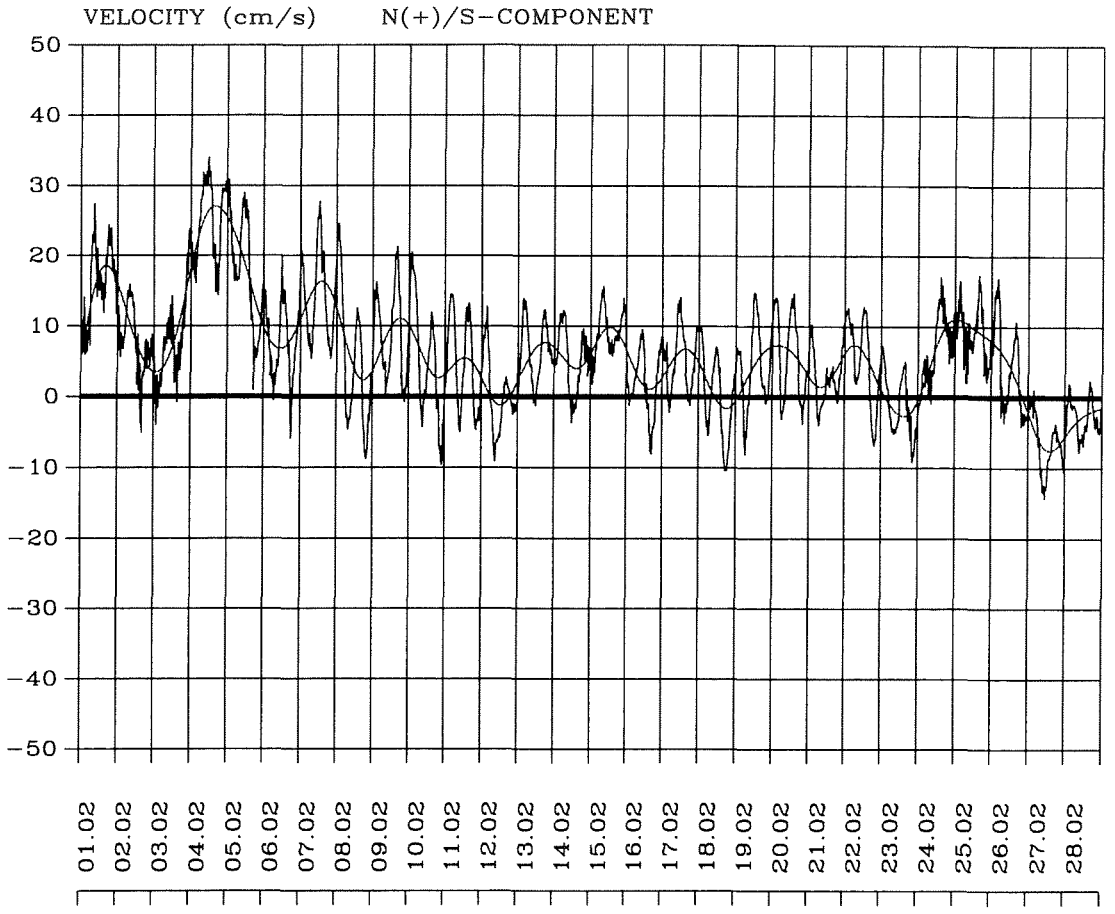
Time interval : 20.00 minutes. Instrument no. : 10797

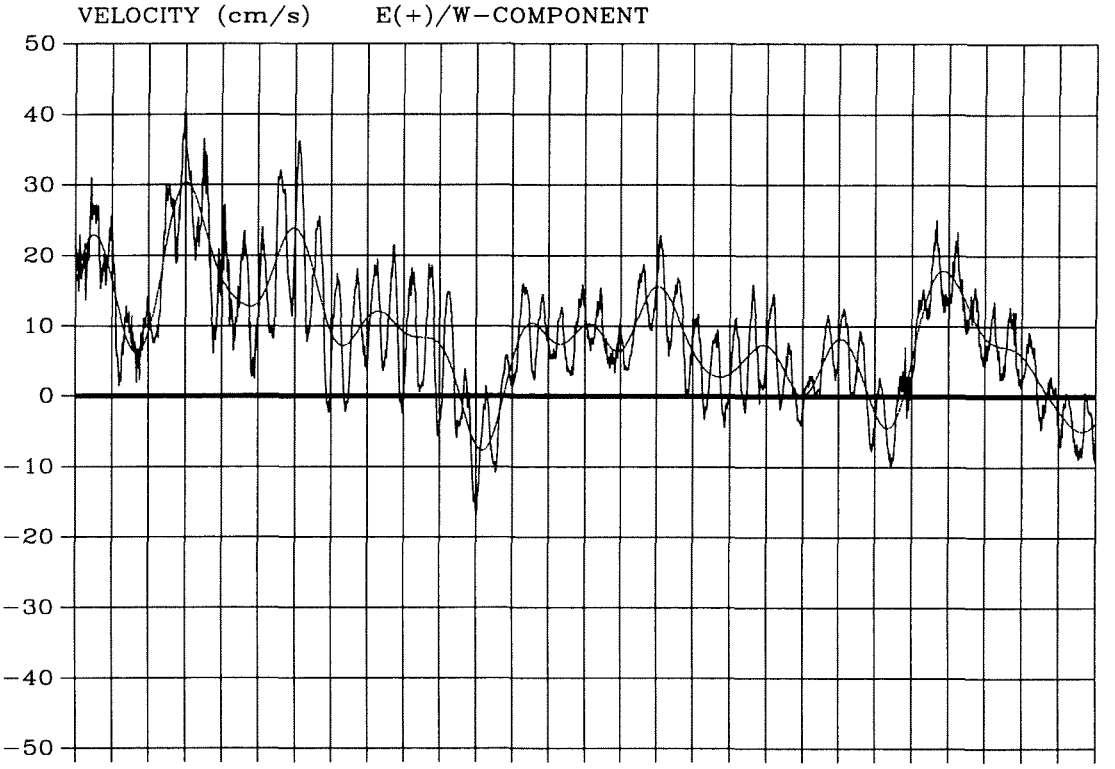
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-6

Continues.....





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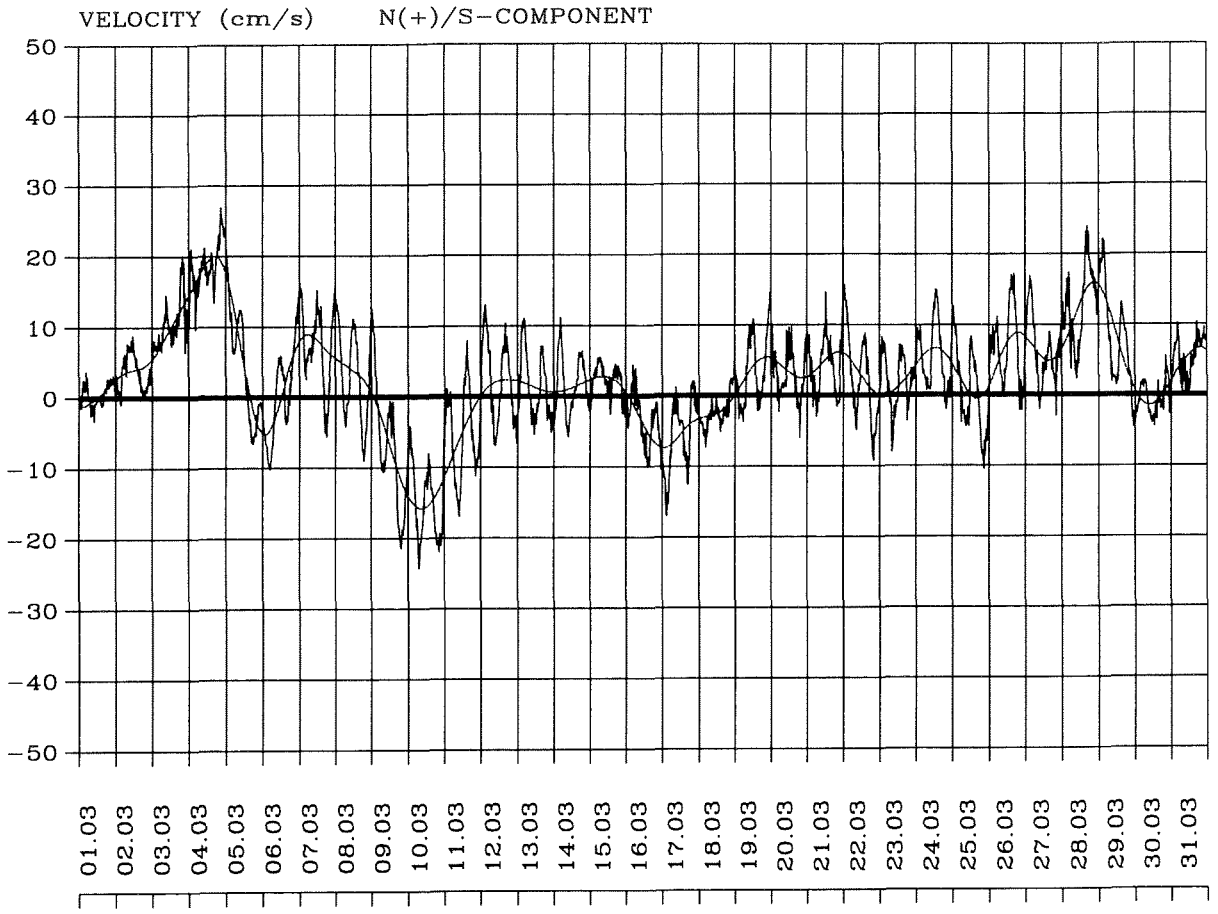
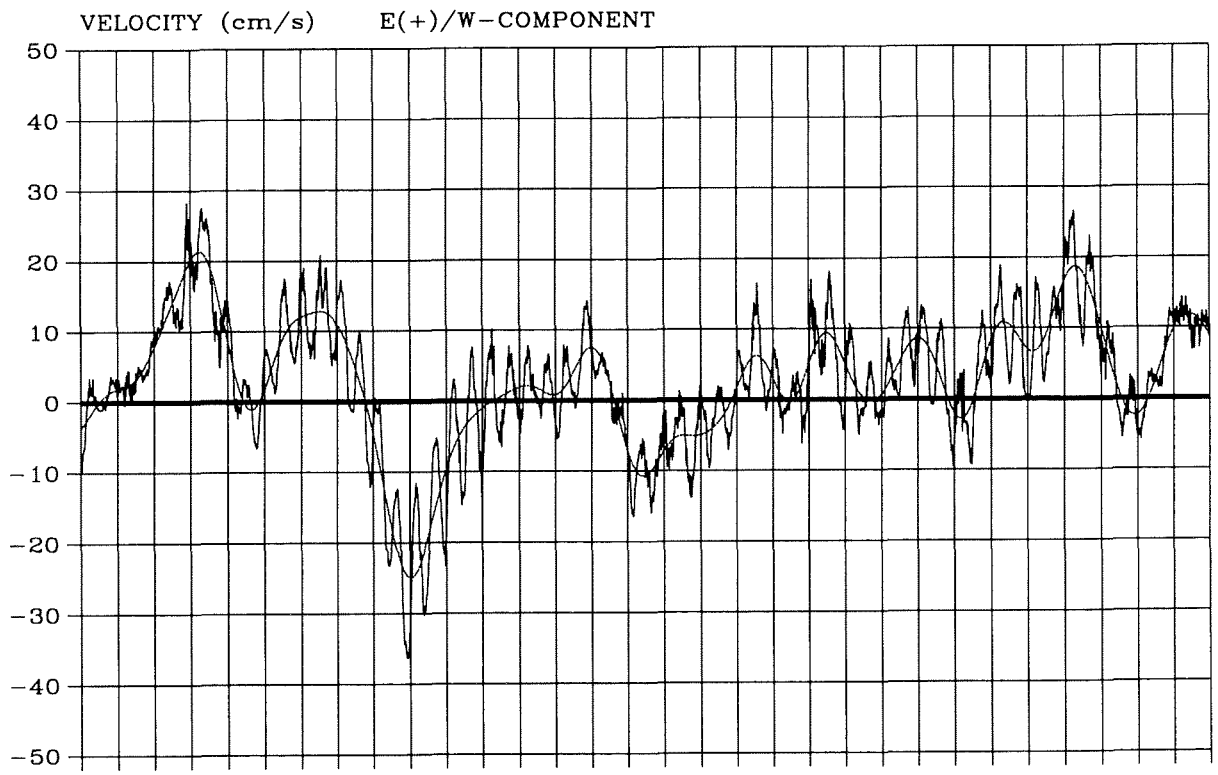
IMR

Fig. 2-2-6

Continues.....





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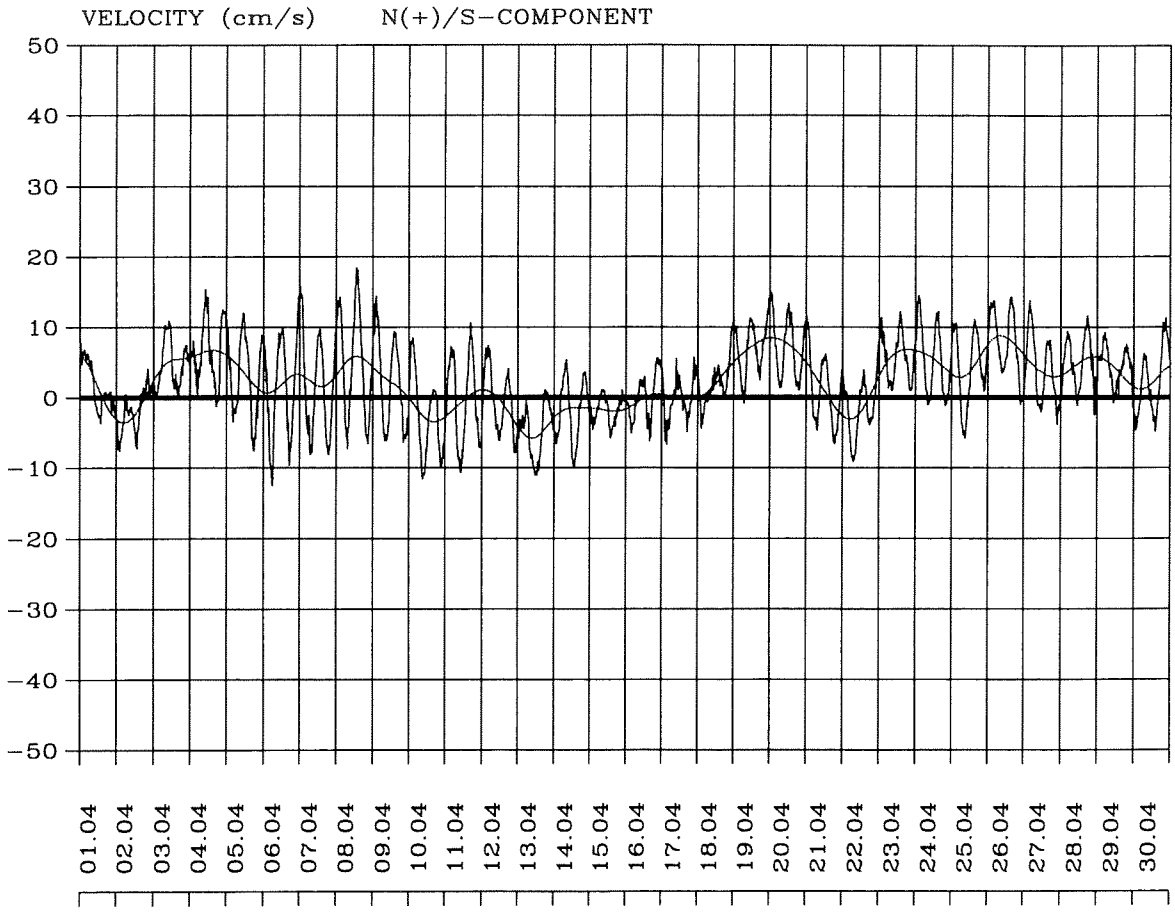
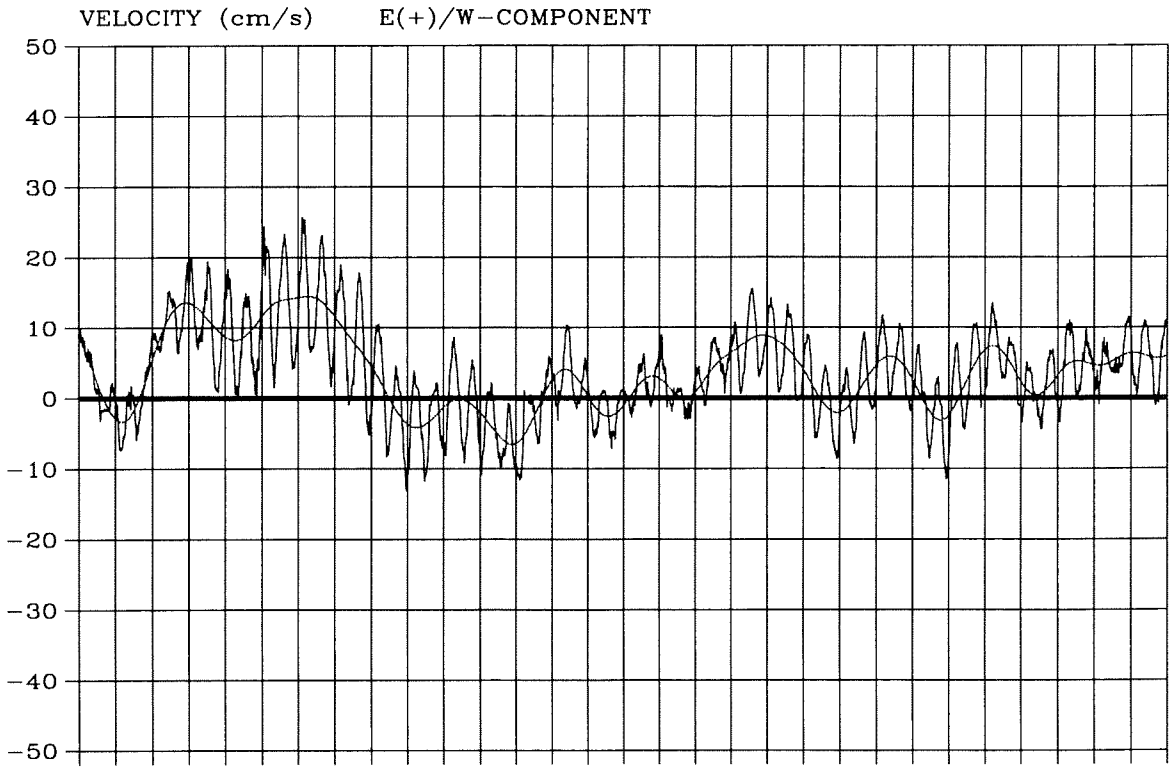
IMR

Fig. 2-2-6

Continues.....





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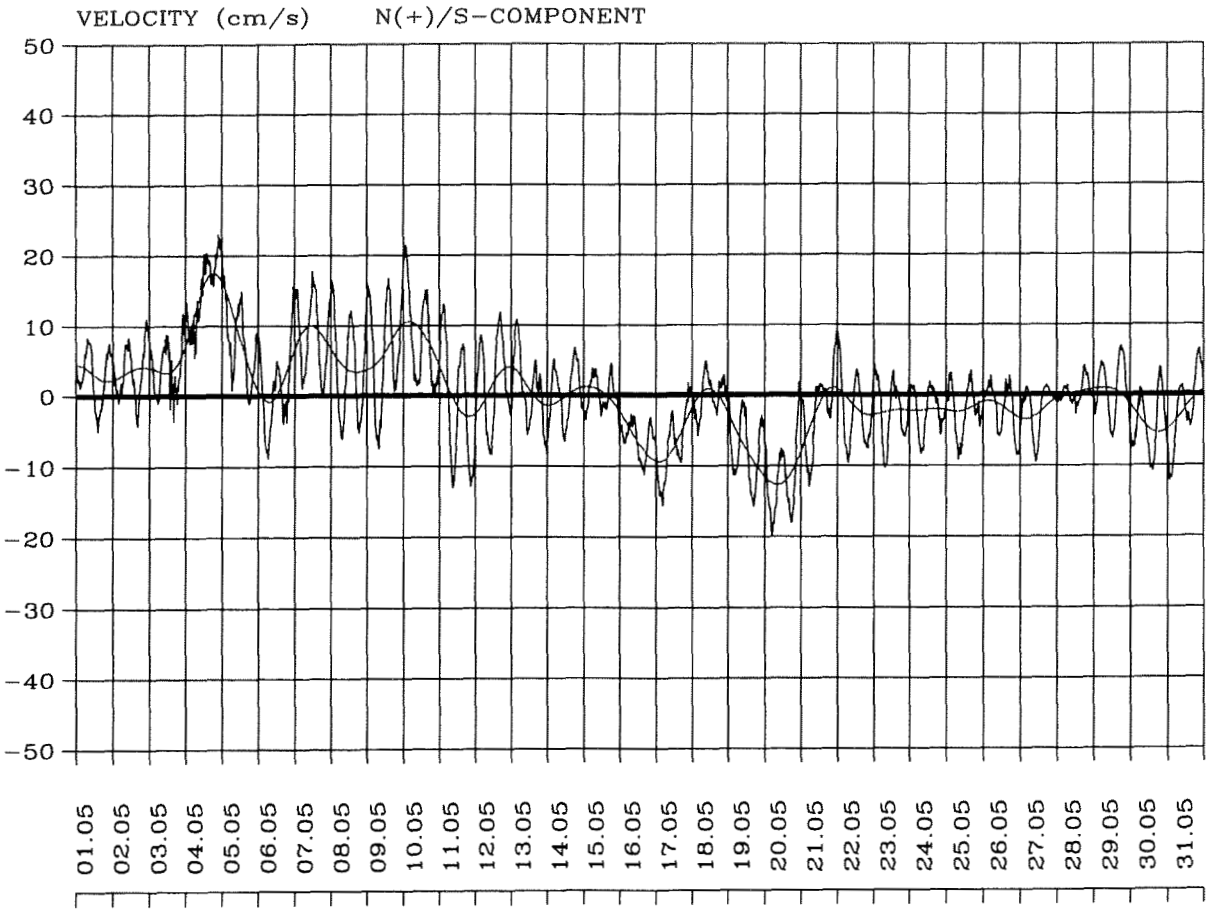
IMR

Fig. 2-2-6

Continues.....



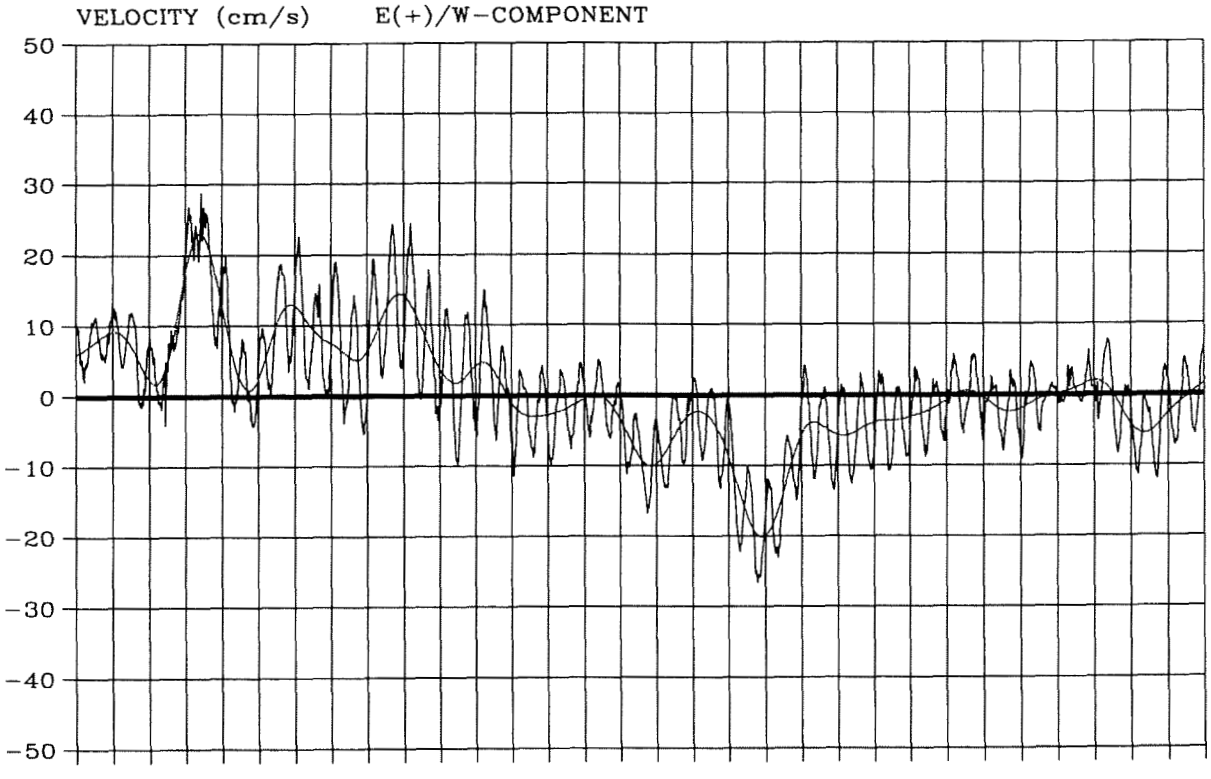


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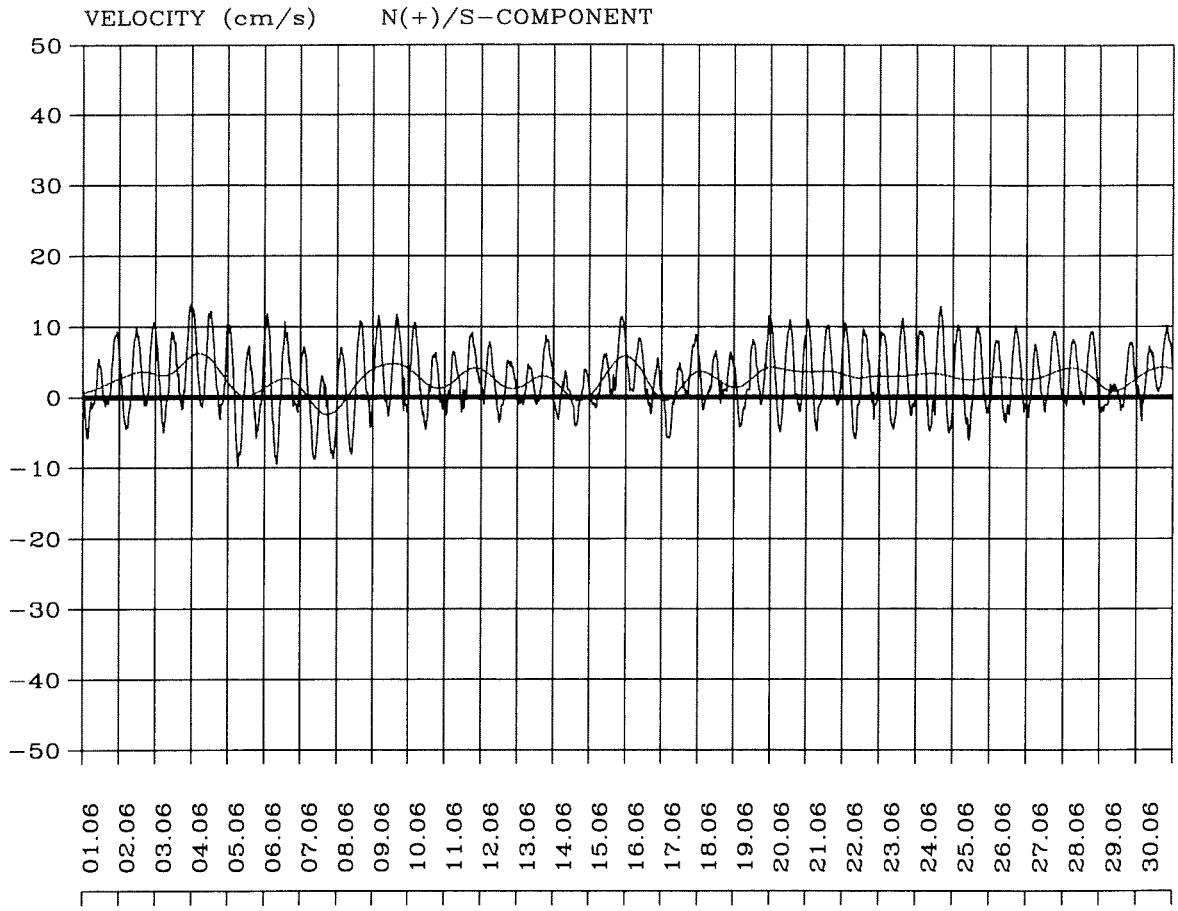
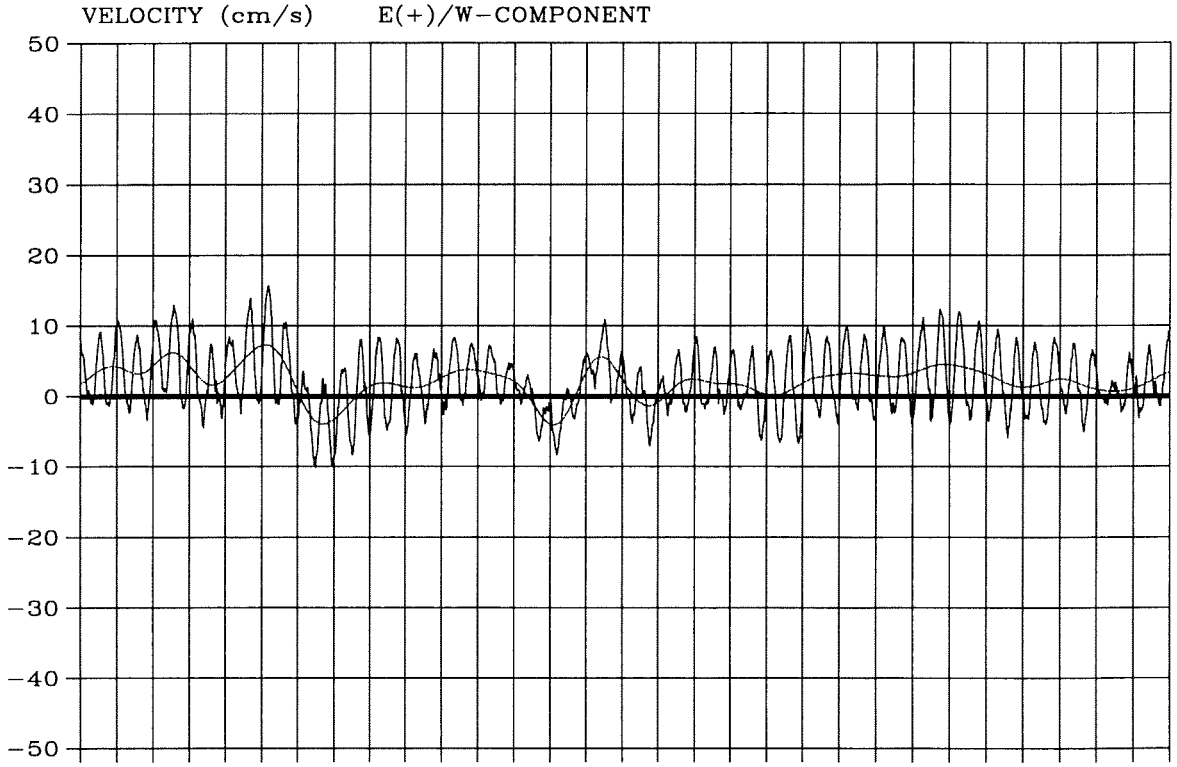
Fig. 2-2-6

Continues.....





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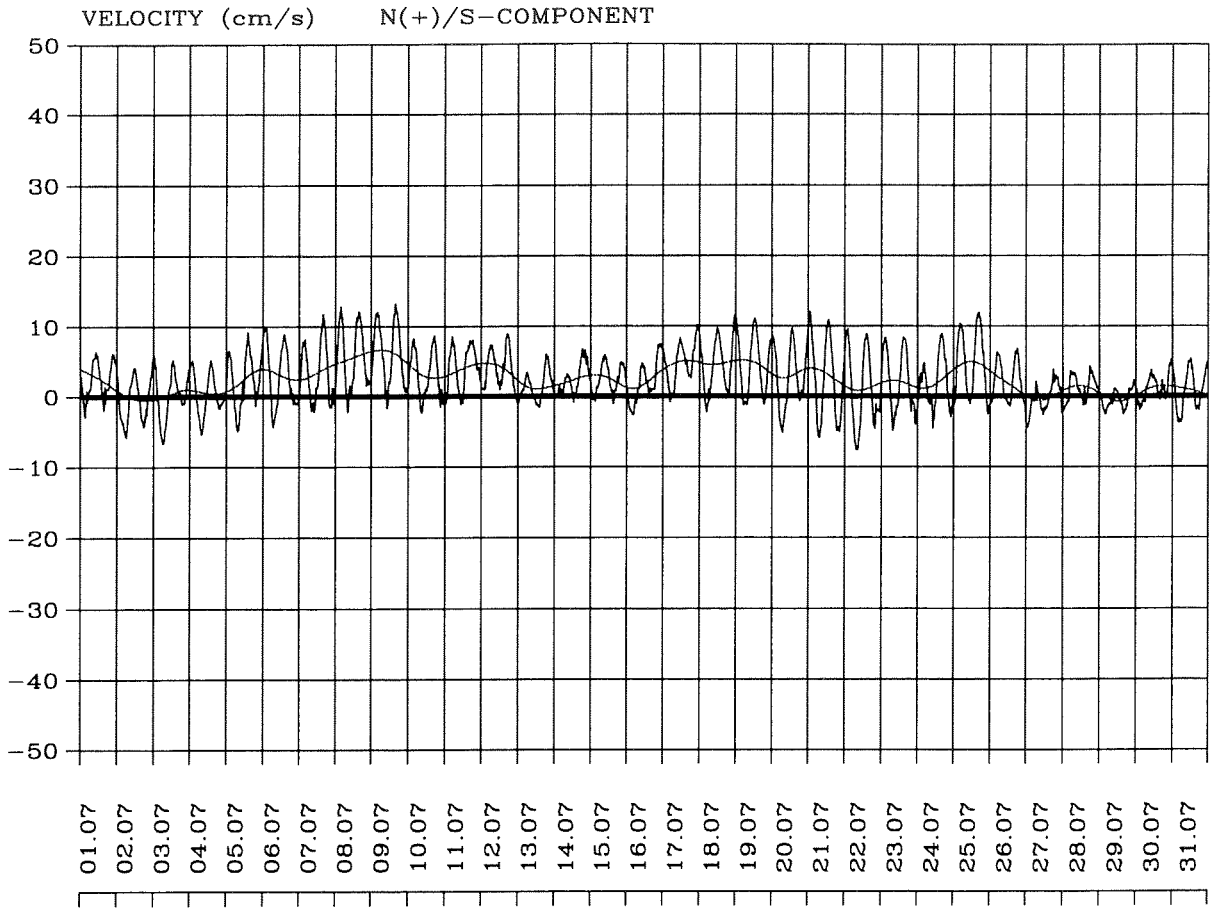
IMR

Fig. 2-2-6

Continues.....



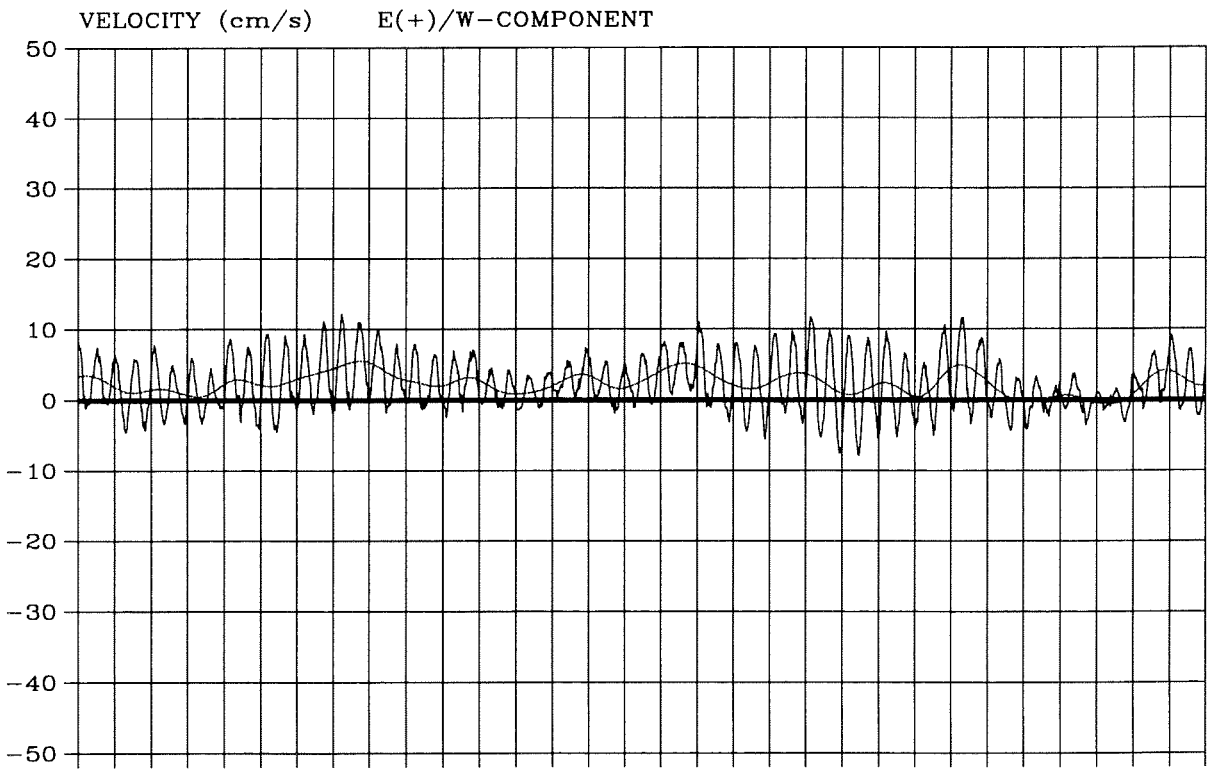


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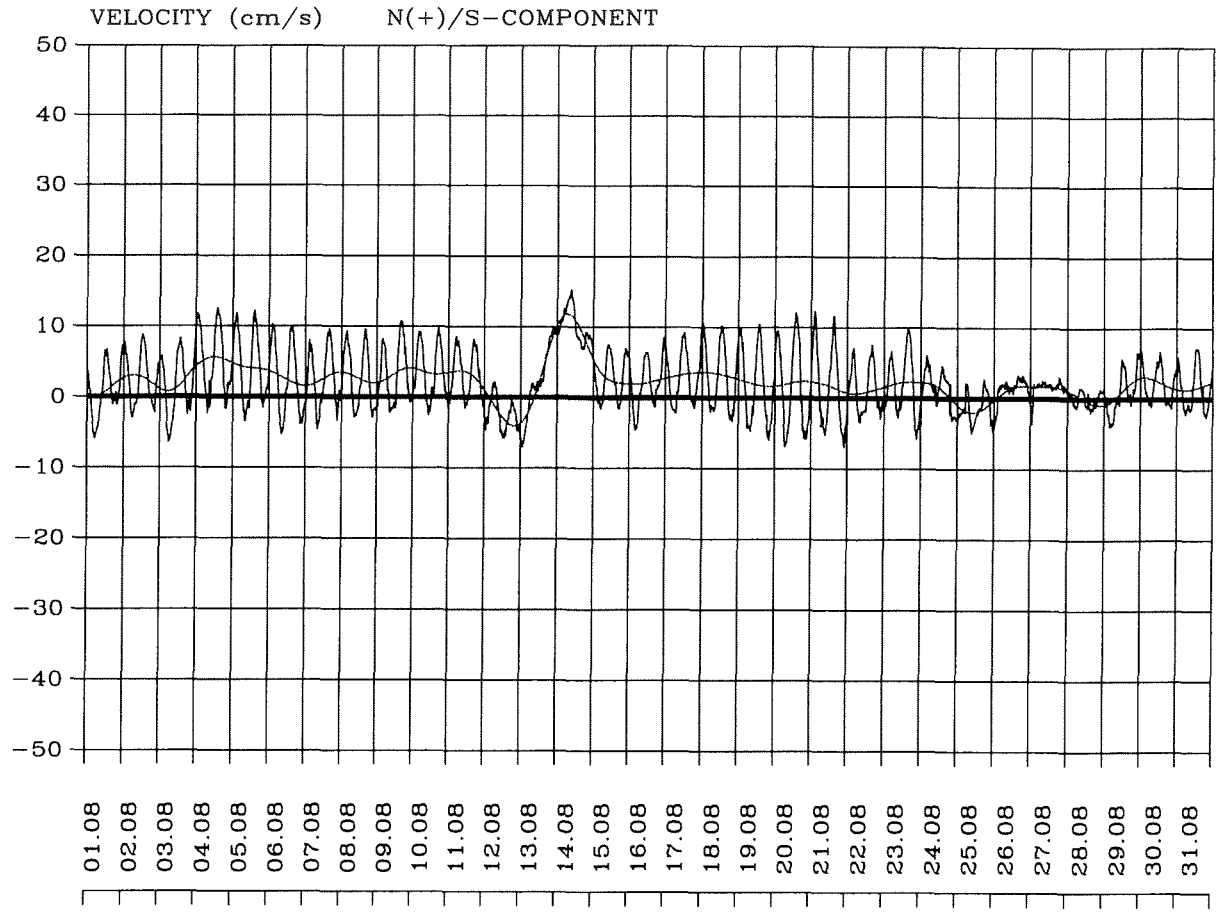
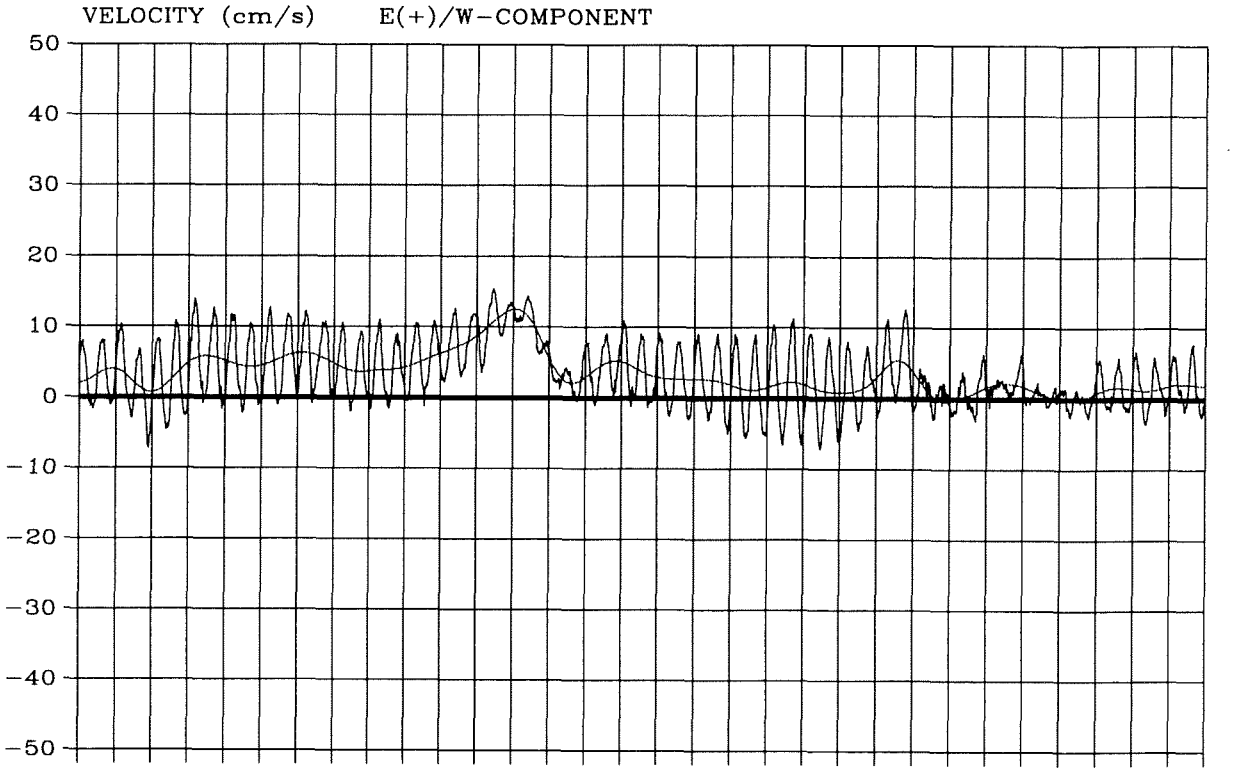
Fig. 2-2-6

Continues.....





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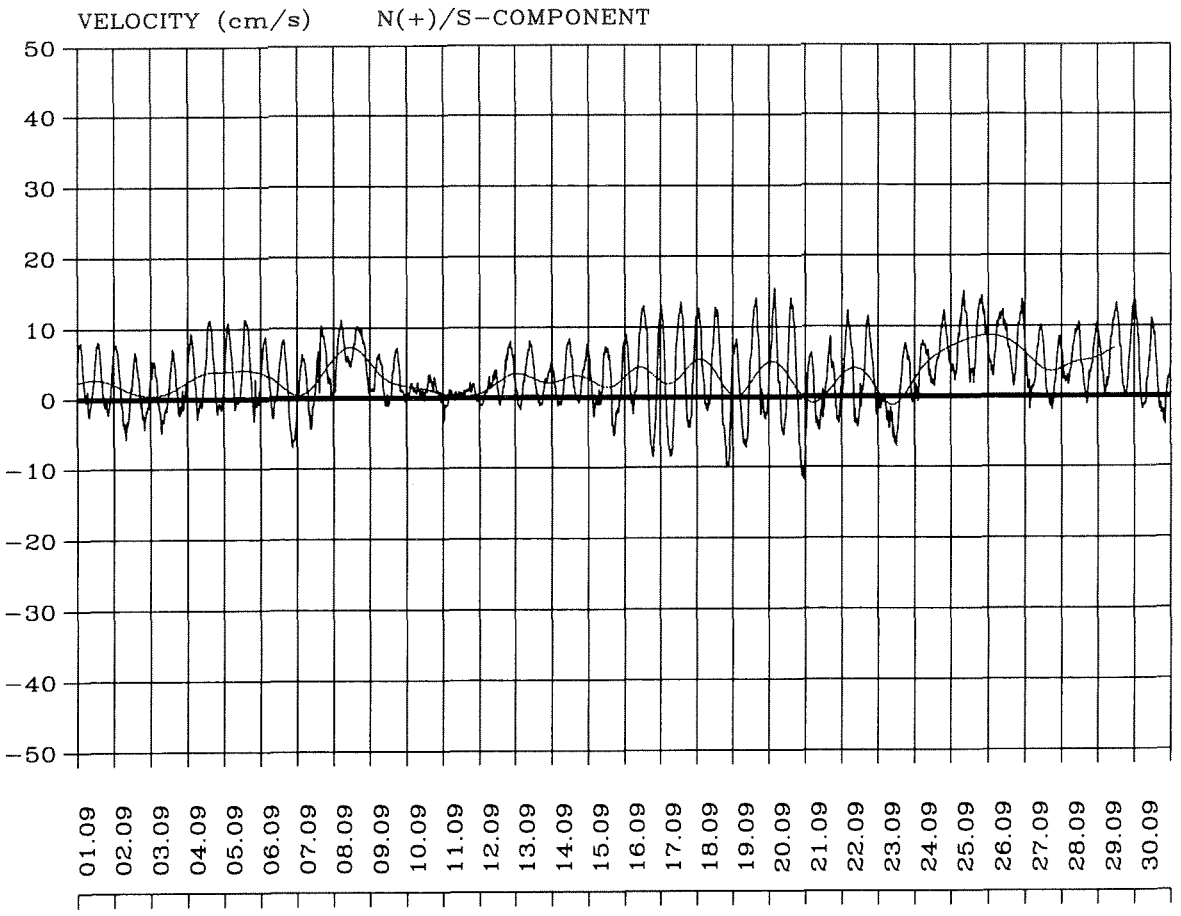
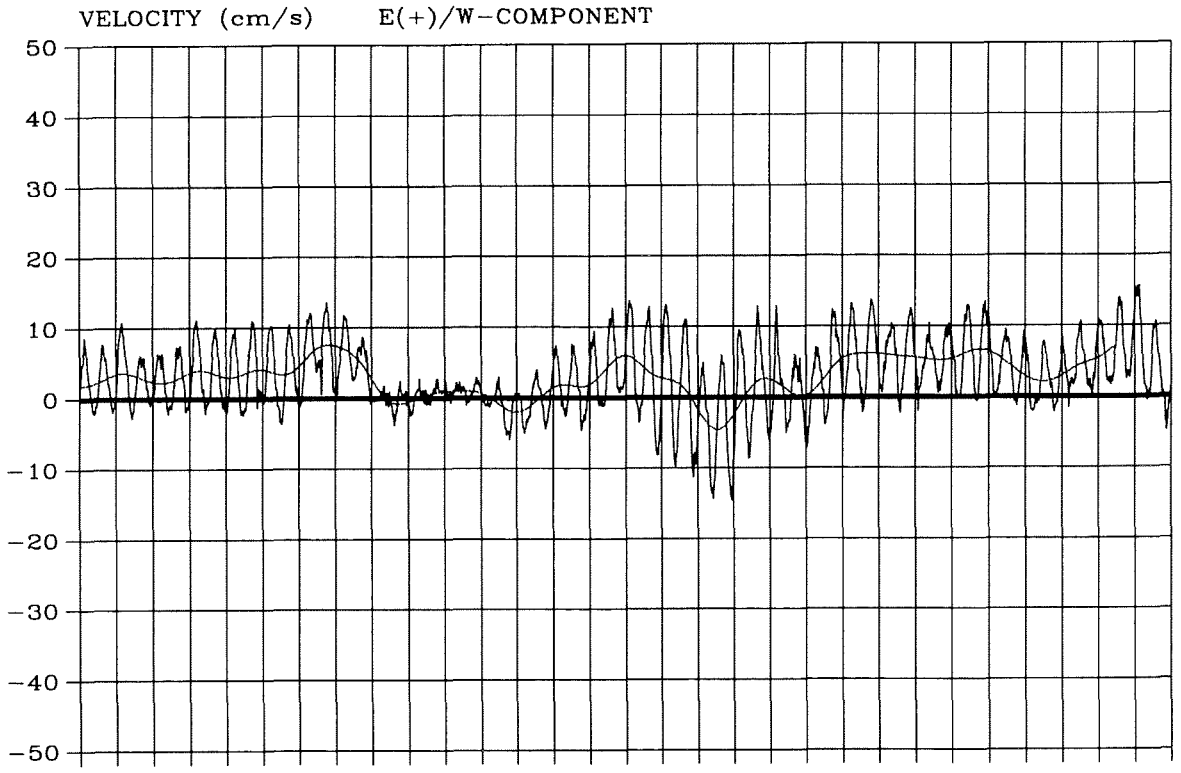
IMR

Fig. 2-2-6

Continues.....





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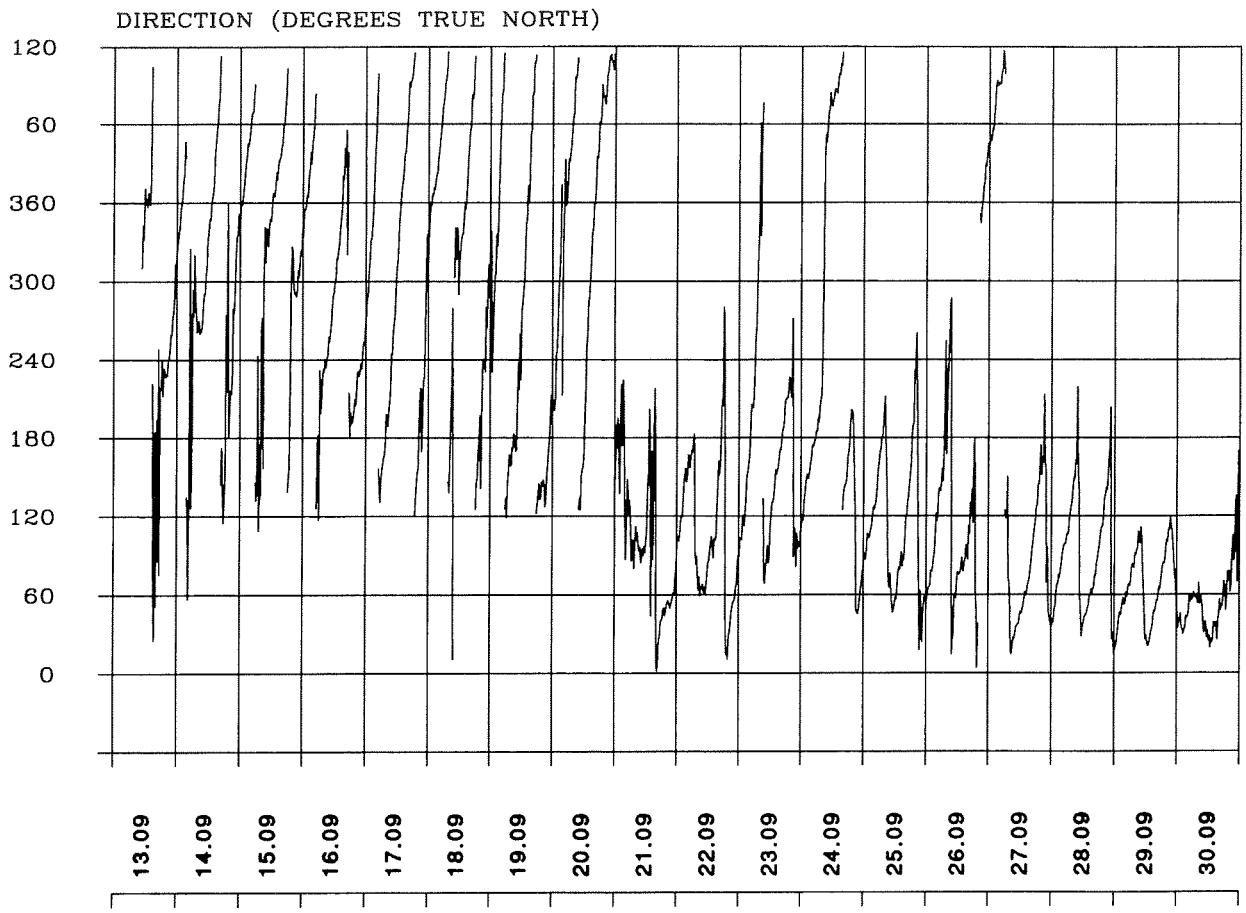
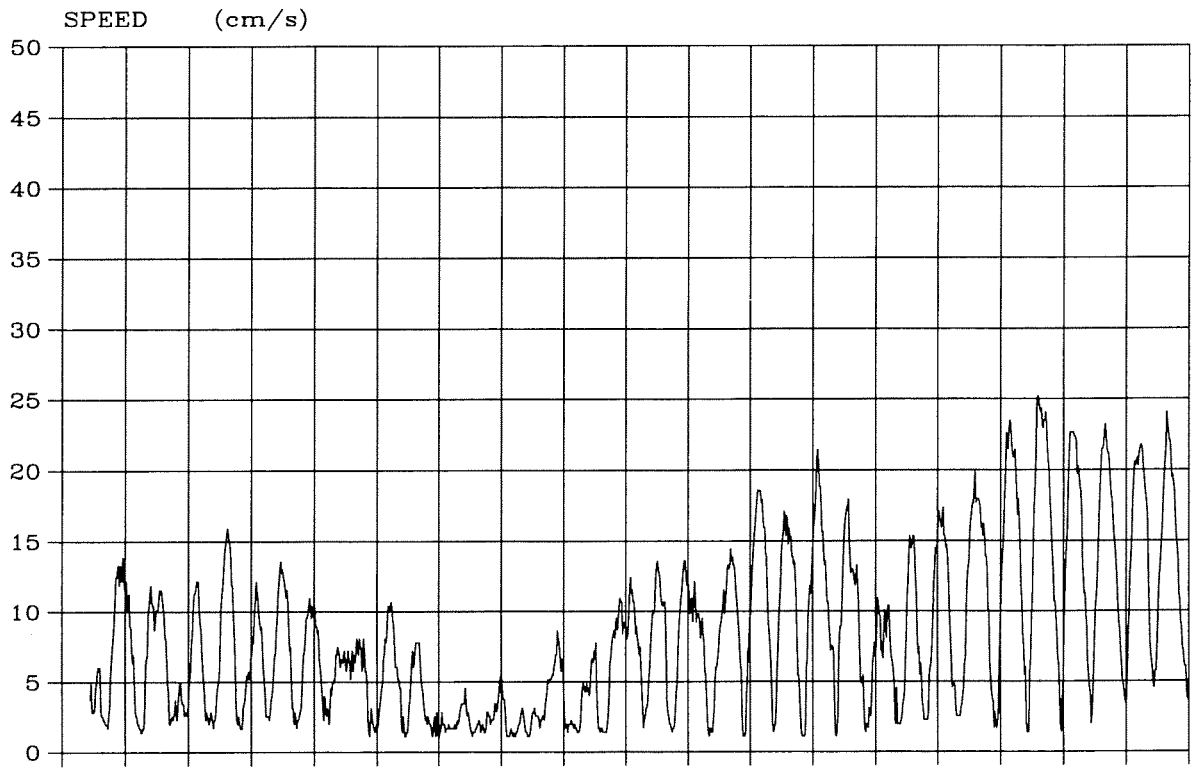
IMR

Fig. 2-2-6

Continues.....





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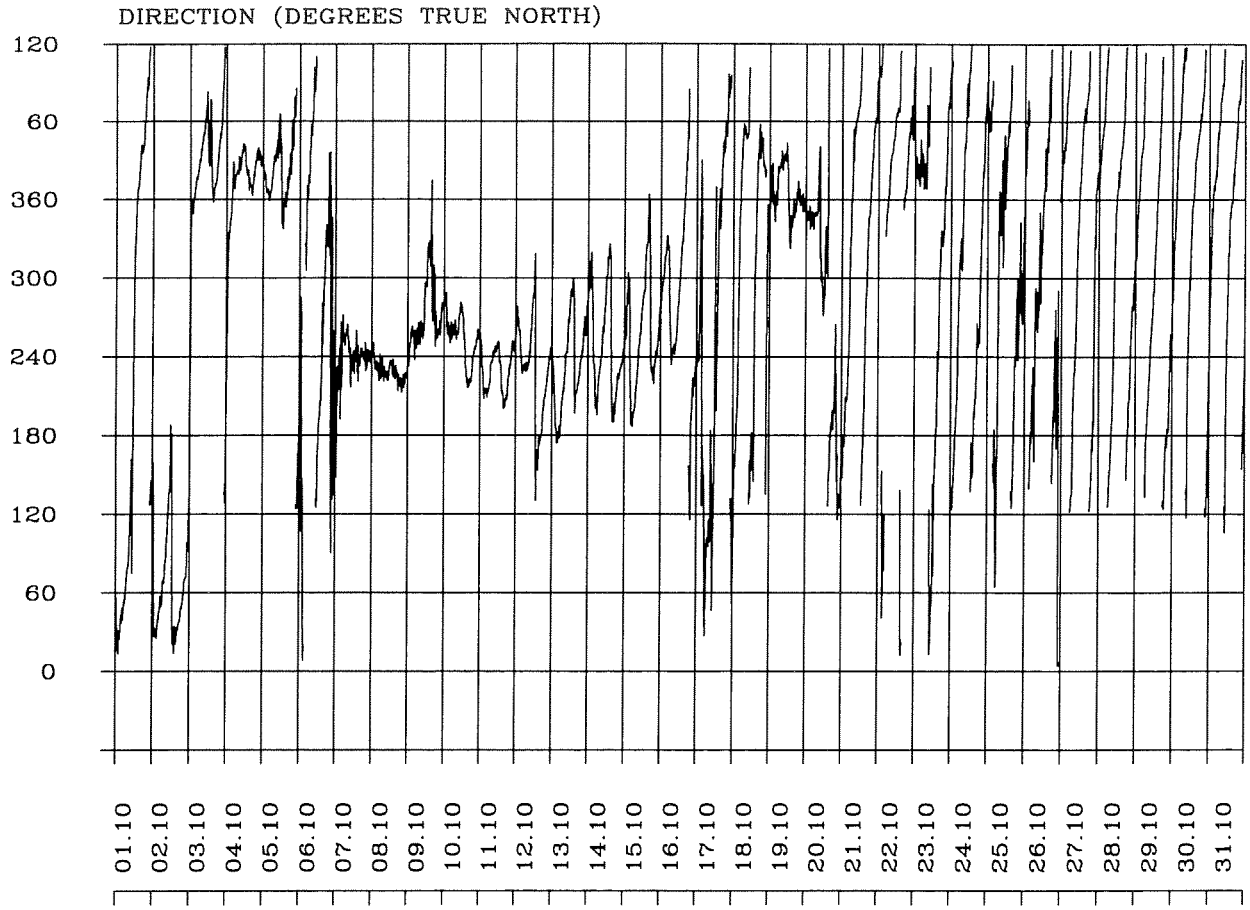
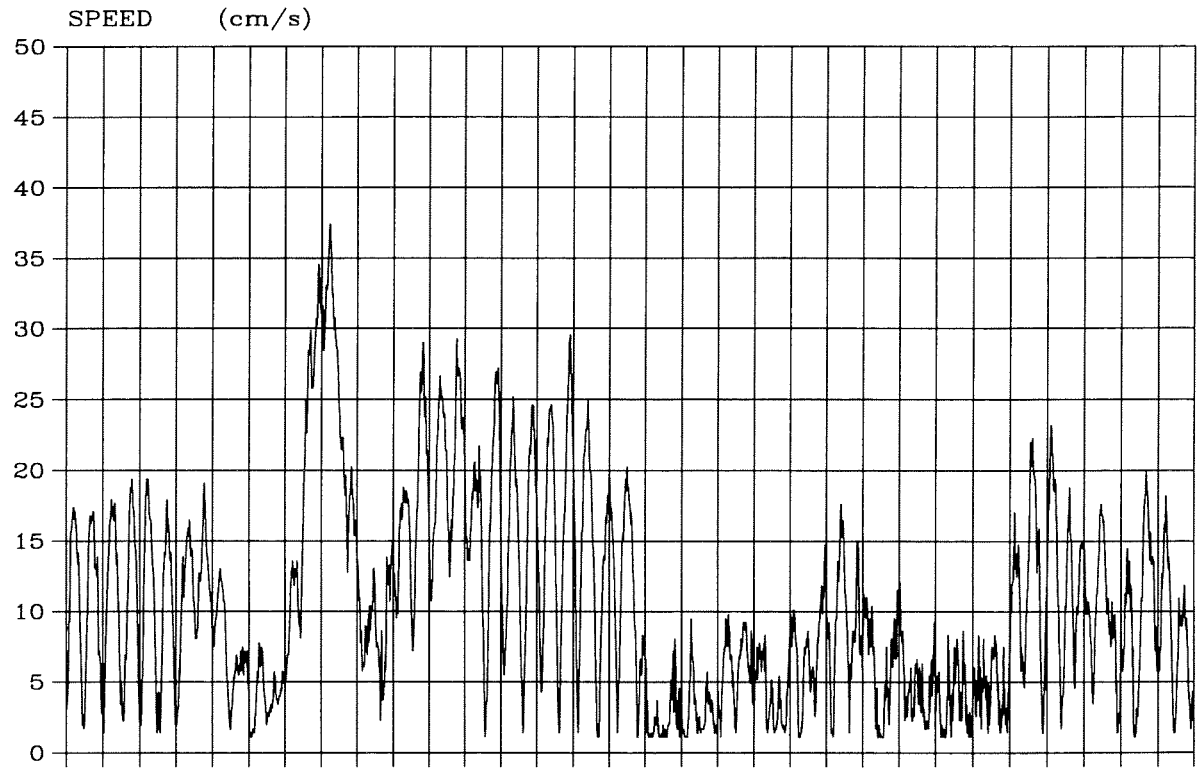
IMR

Fig. 2-2-7 Speed and direction of current.





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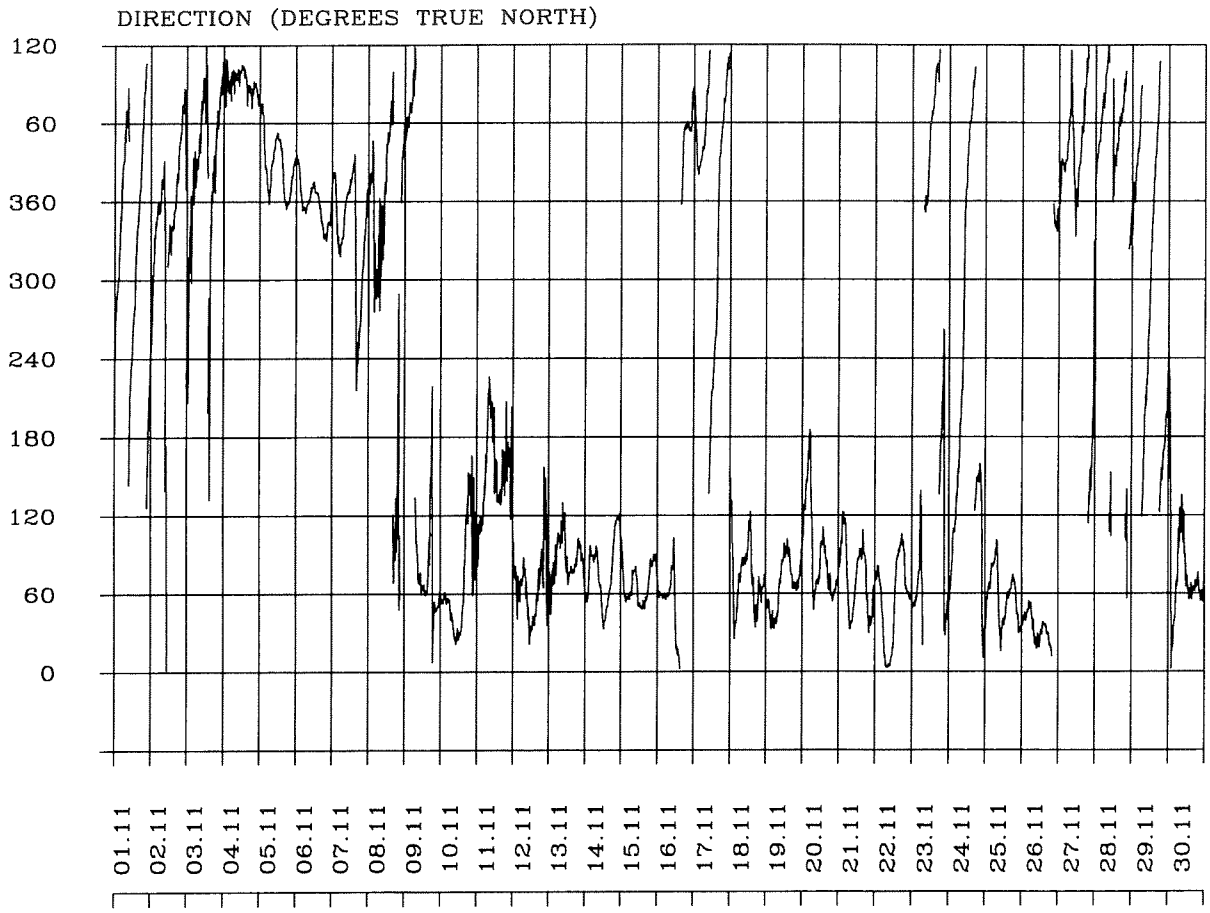
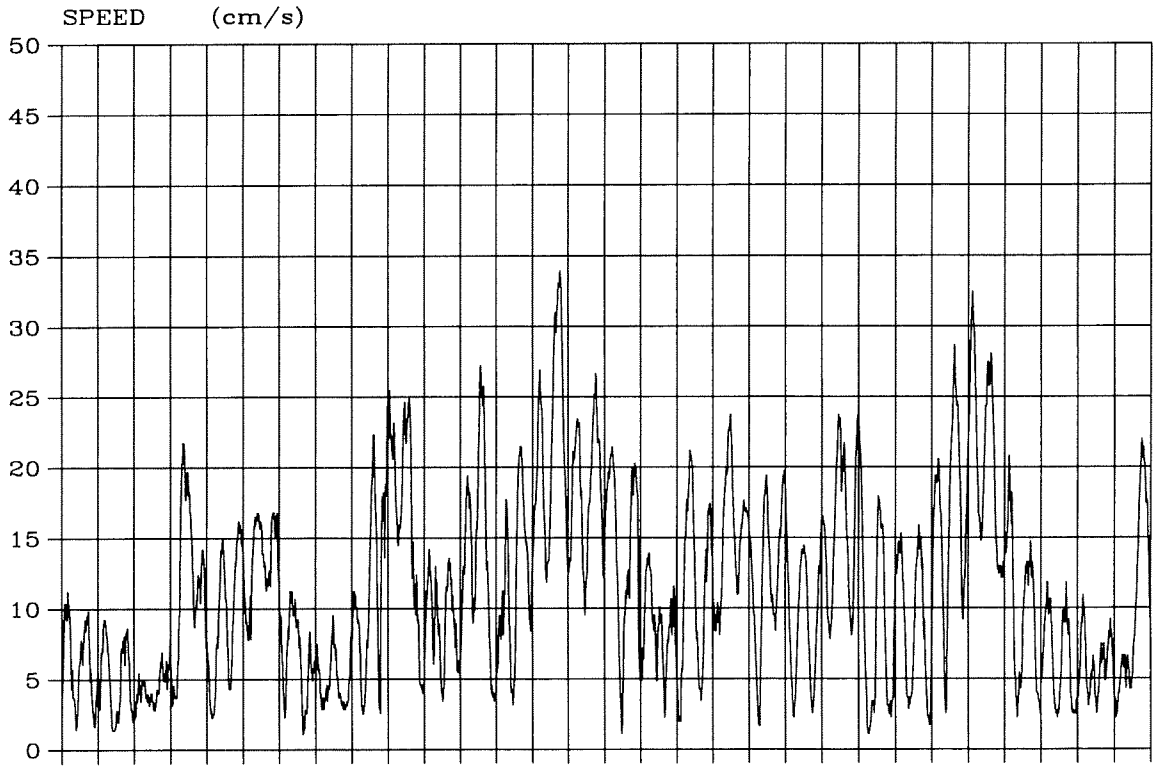
IMR

Fig. 2-2-7

Continues.....





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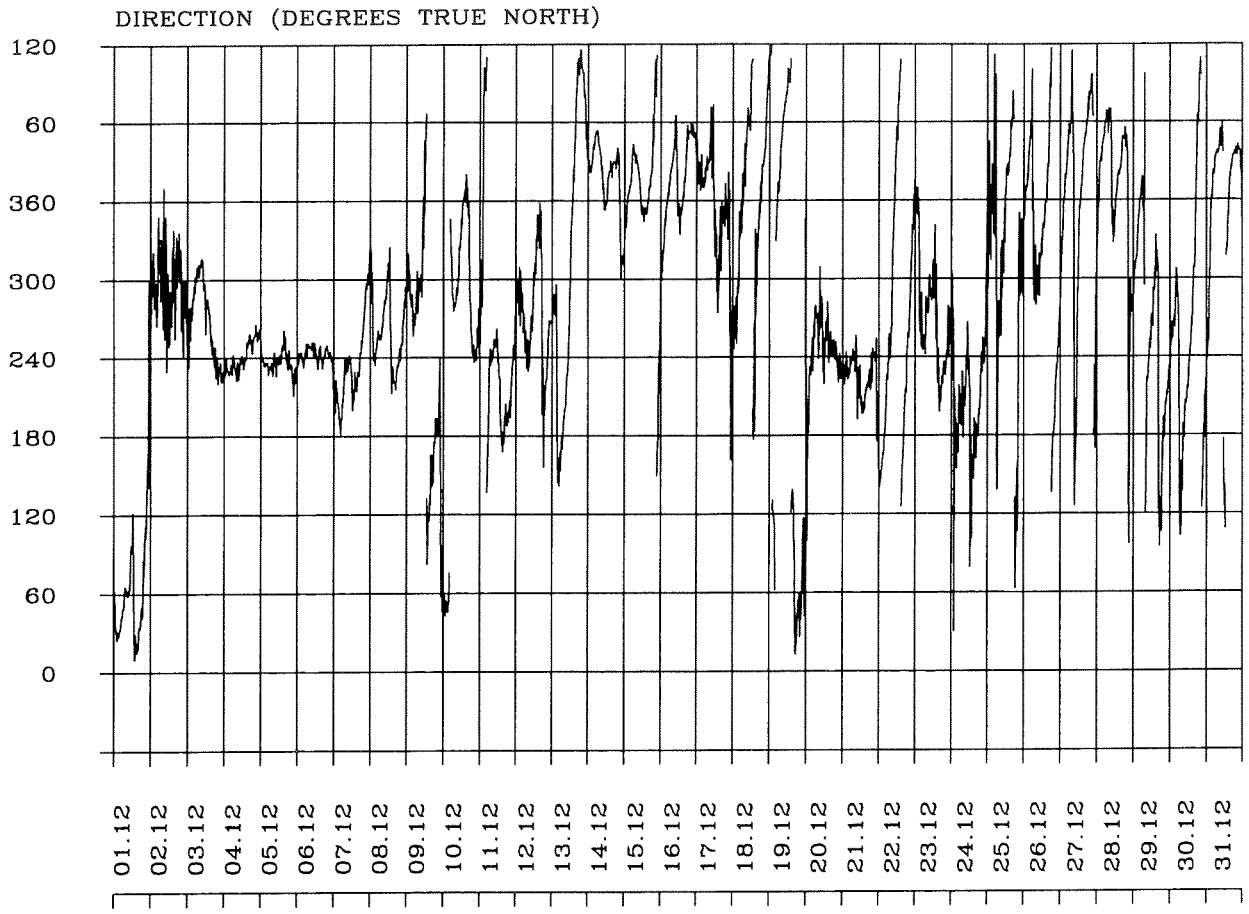
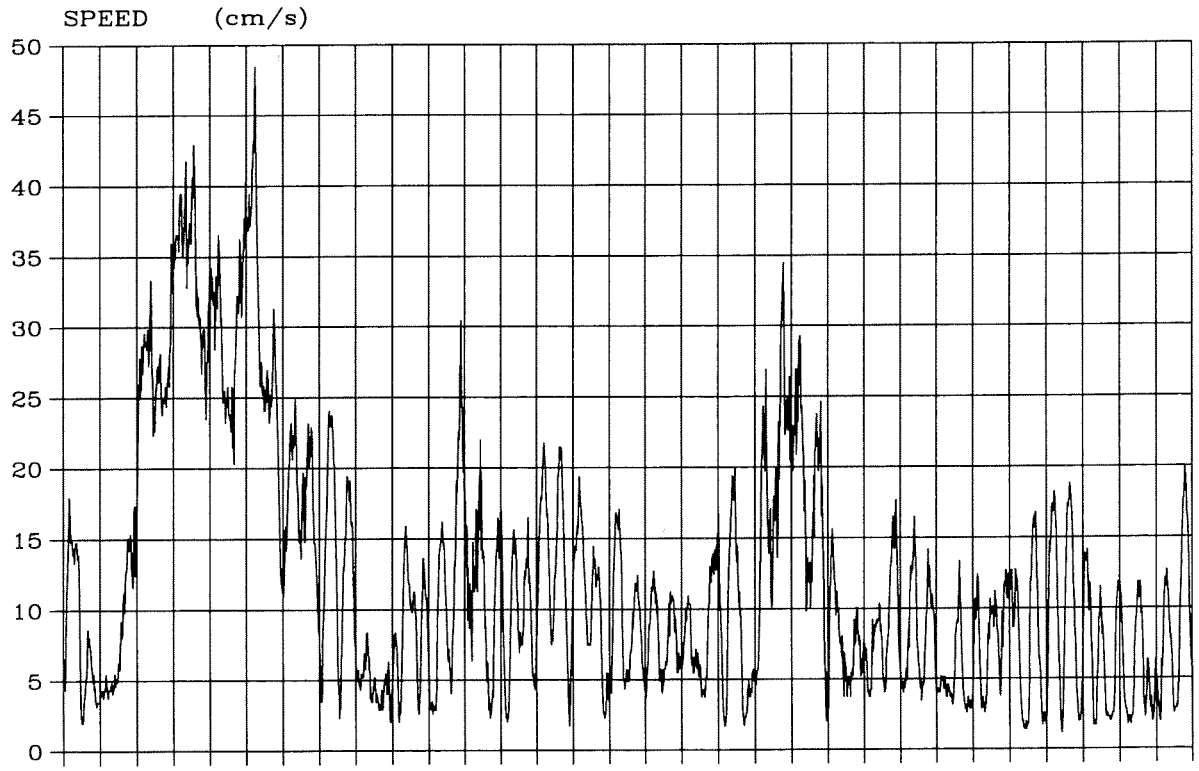
IMR

Fig. 2-2-7

Continues.....





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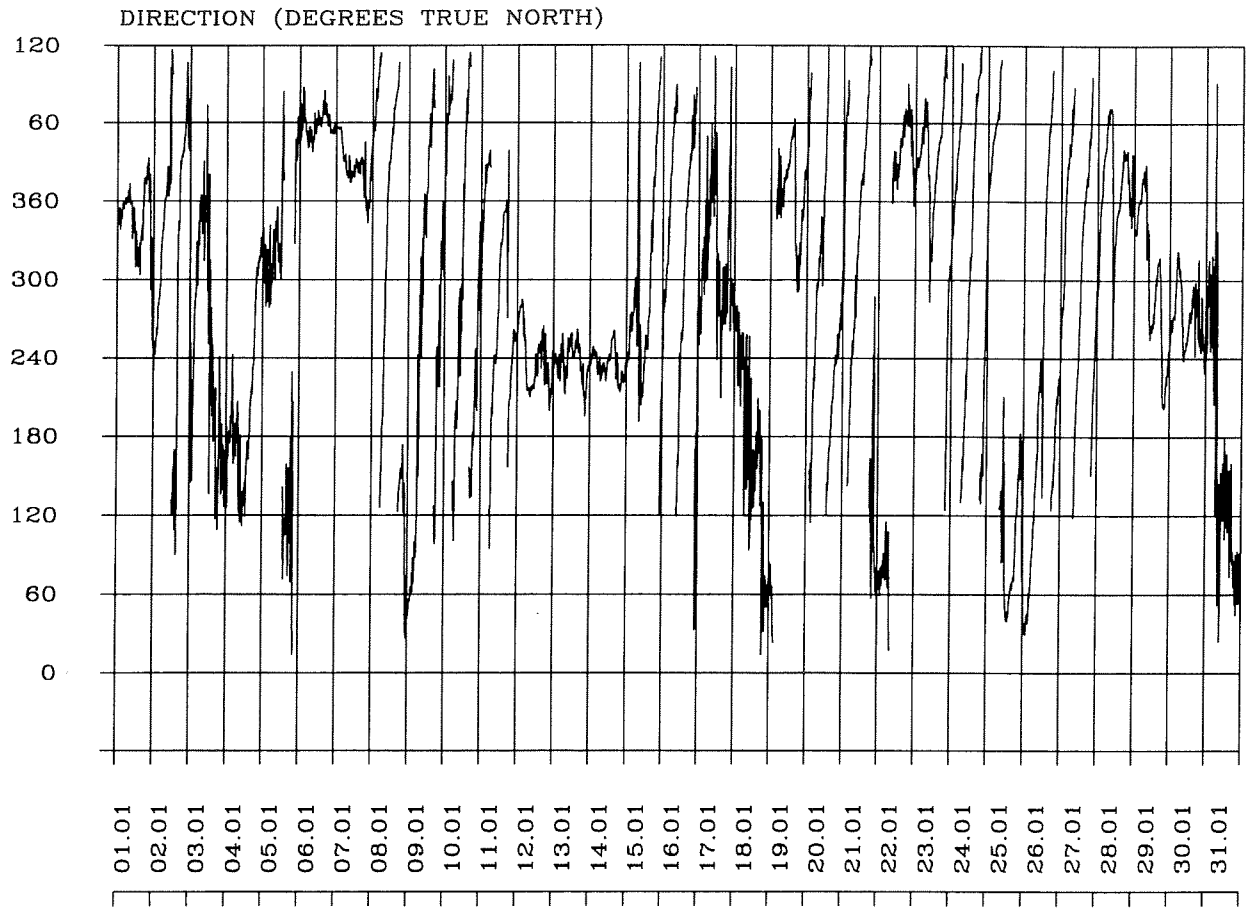
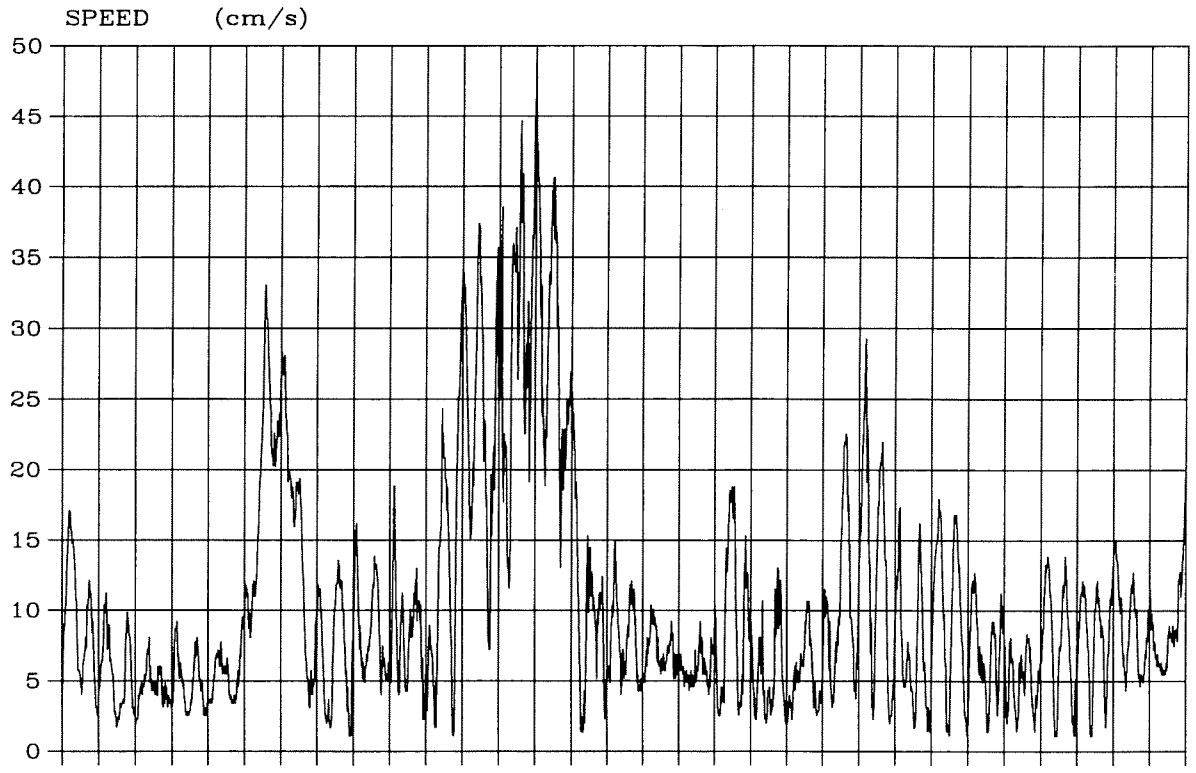
IMR

Fig. 2-2-7

Continues.....





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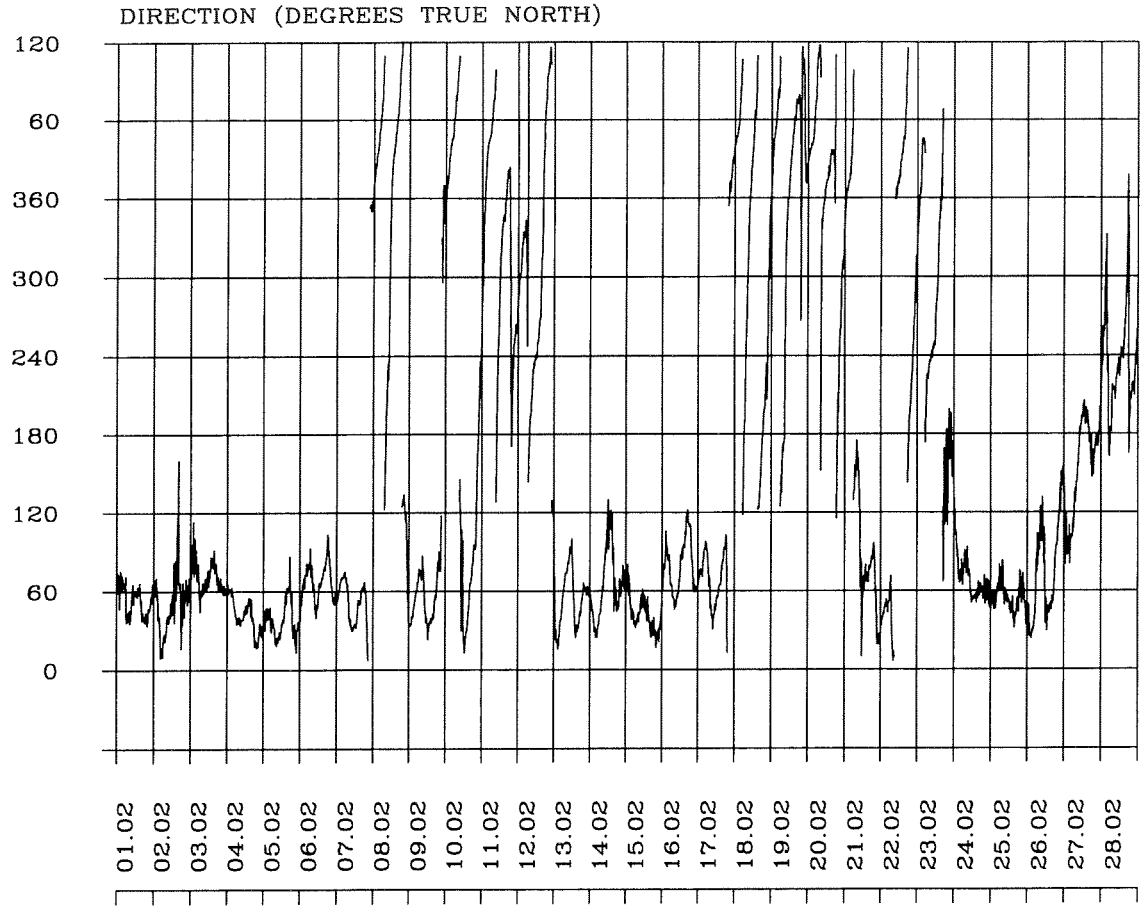
IMR

Fig. 2-2-7

Continues.....



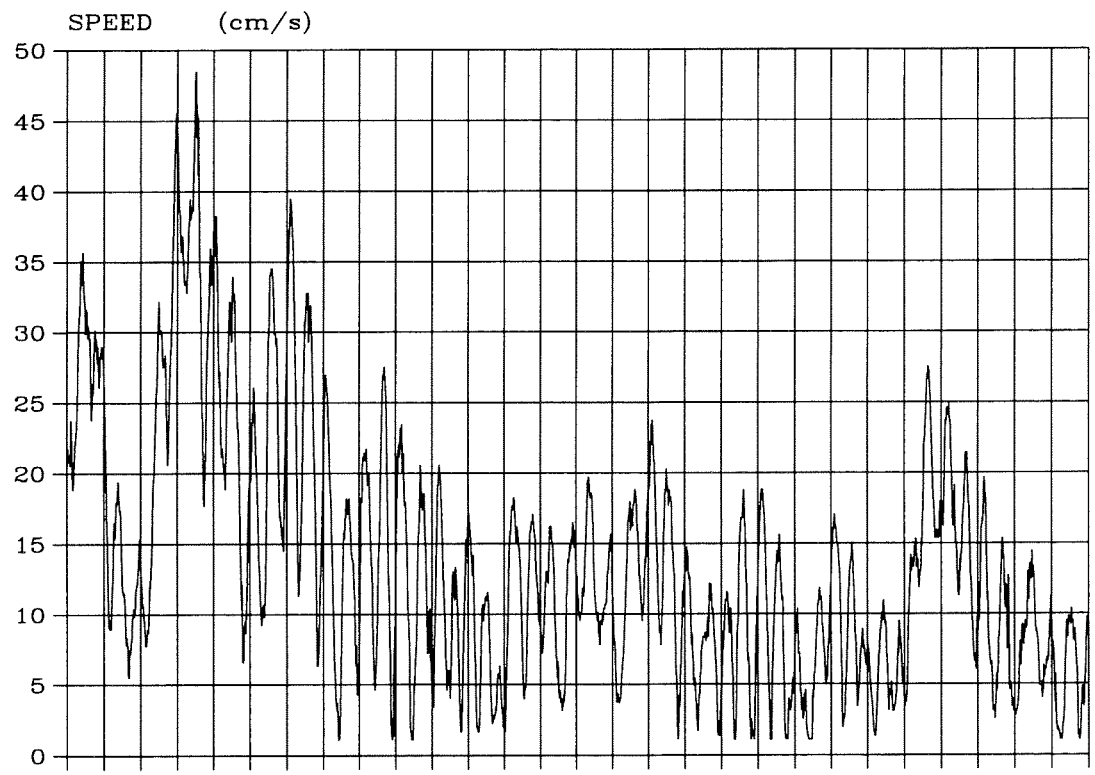


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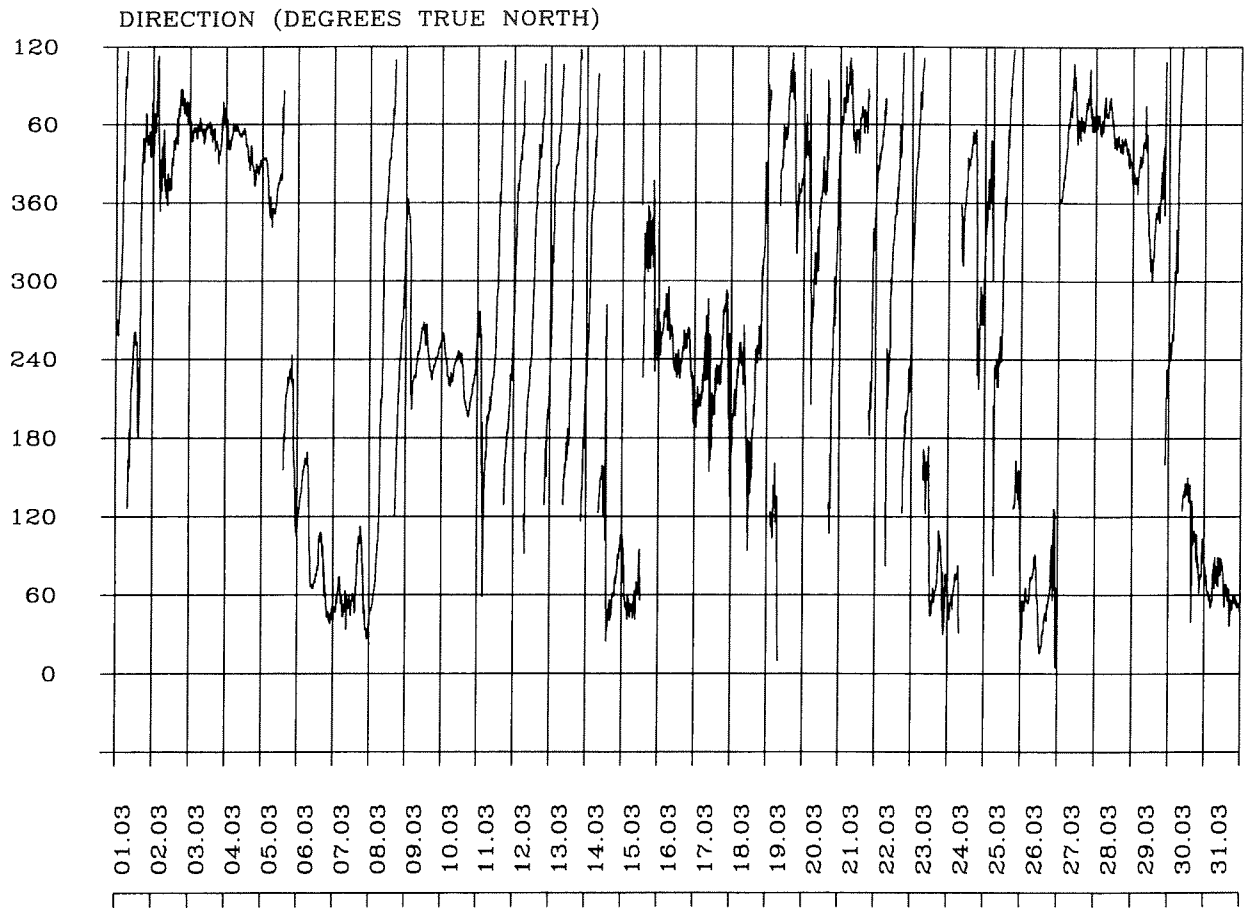
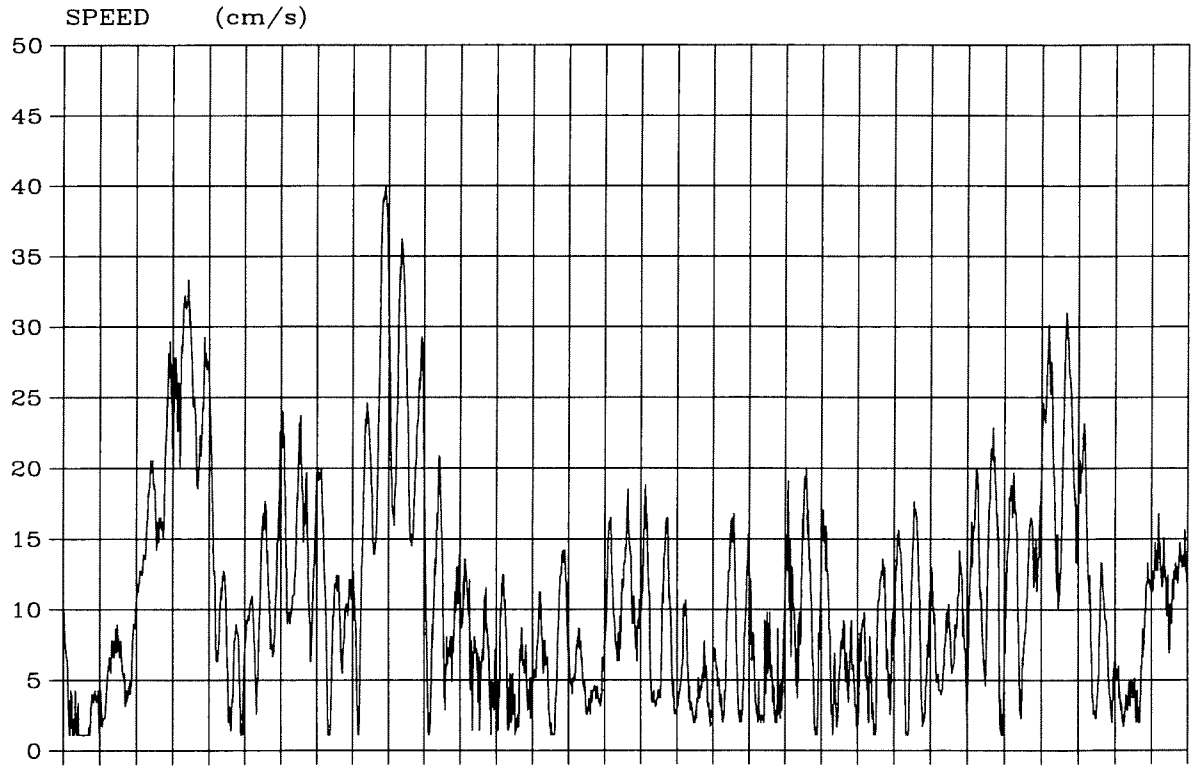
Fig. 2-2-7

Continues.....





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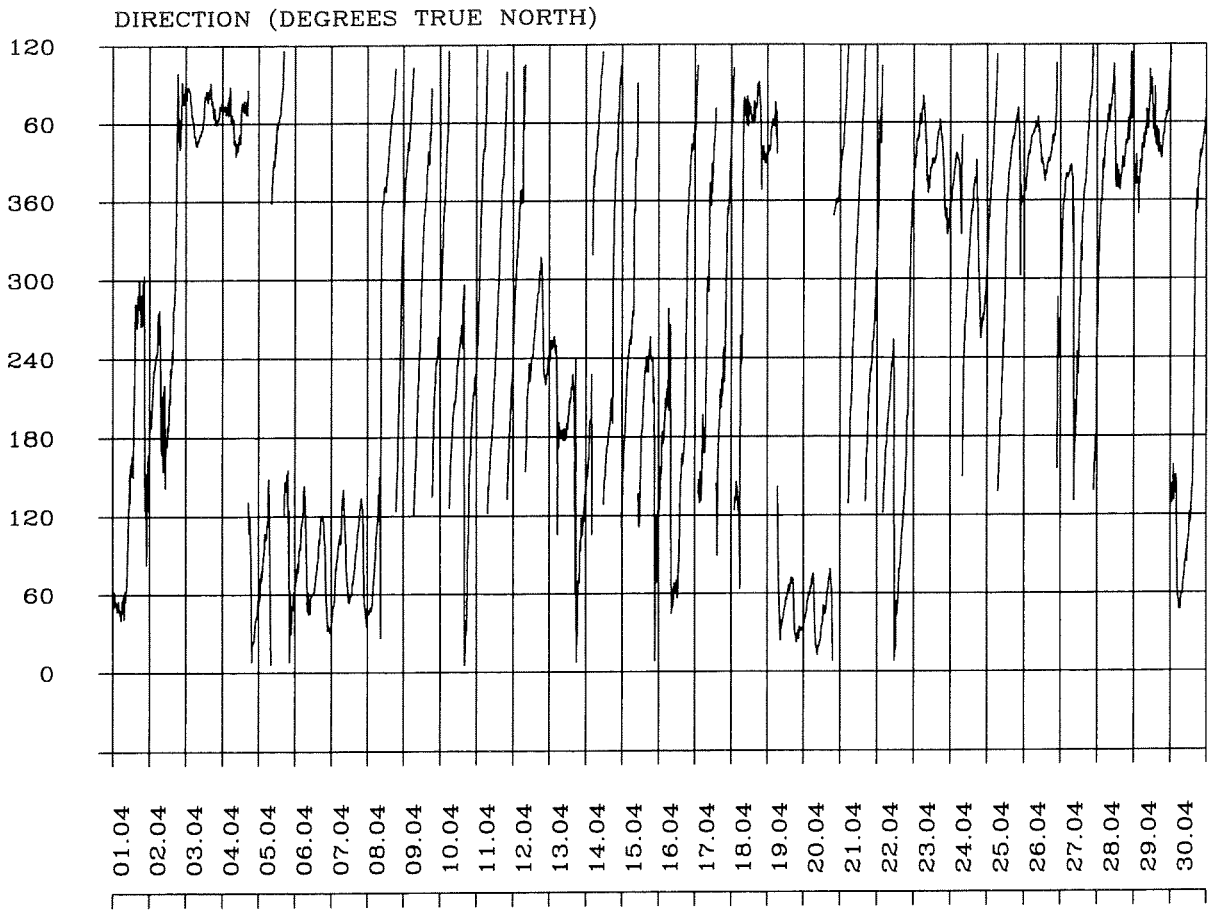
IMR

Fig. 2-2-7

Continues.....



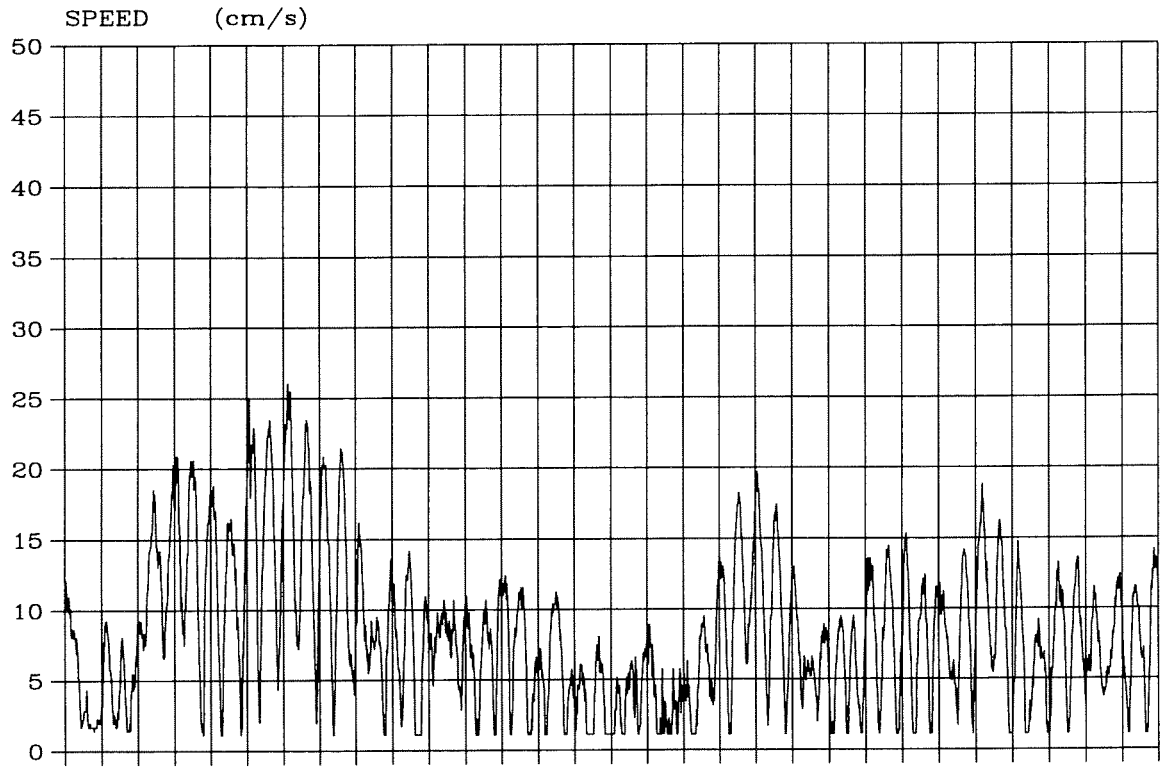


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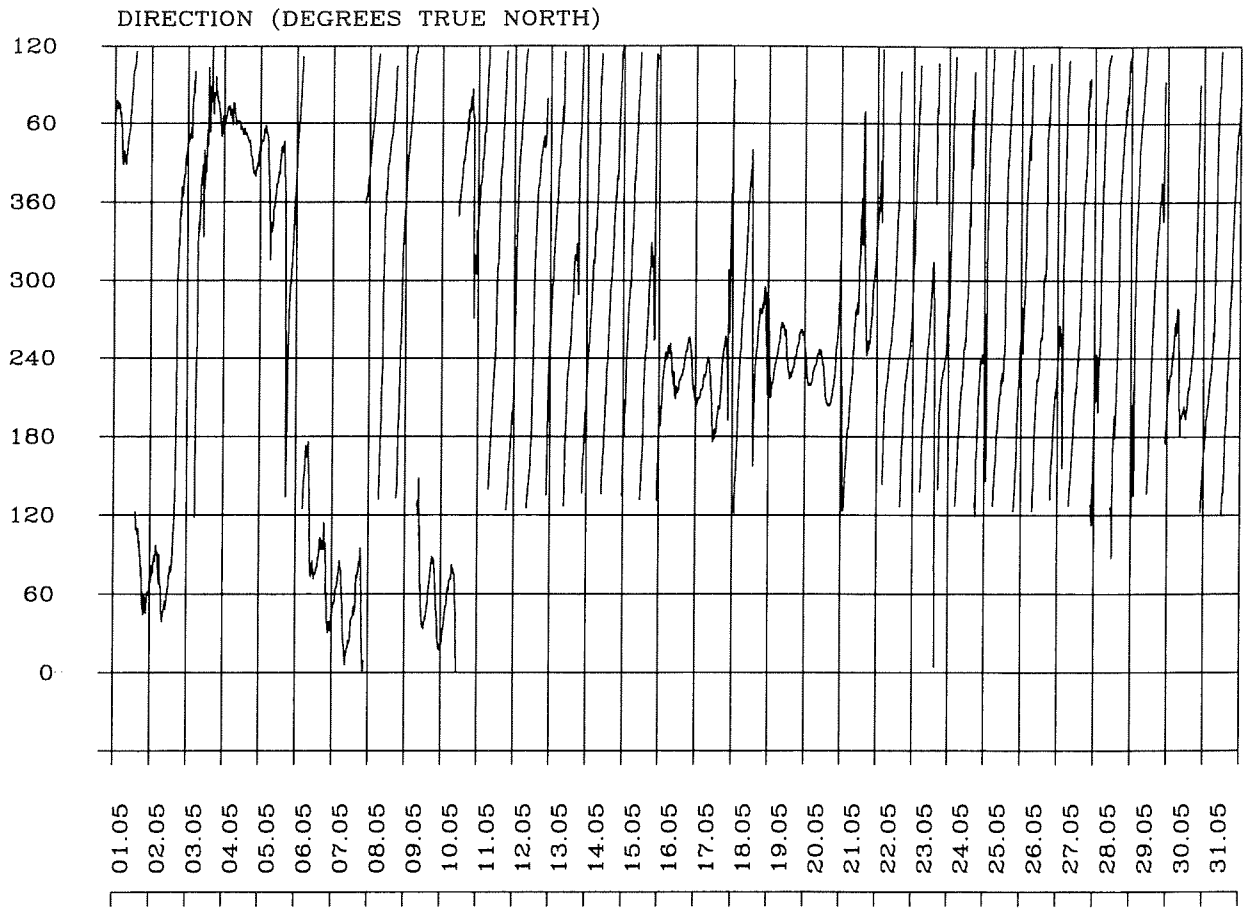
Fig. 2-2-7

Continues.....



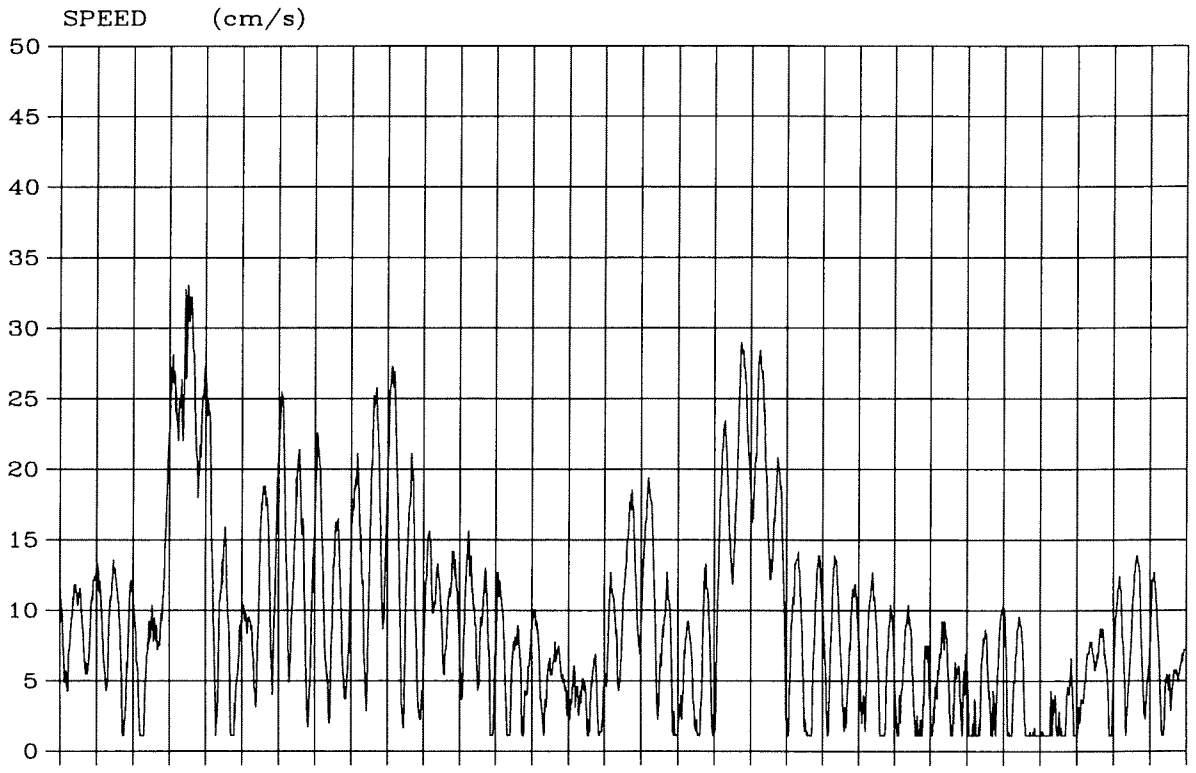


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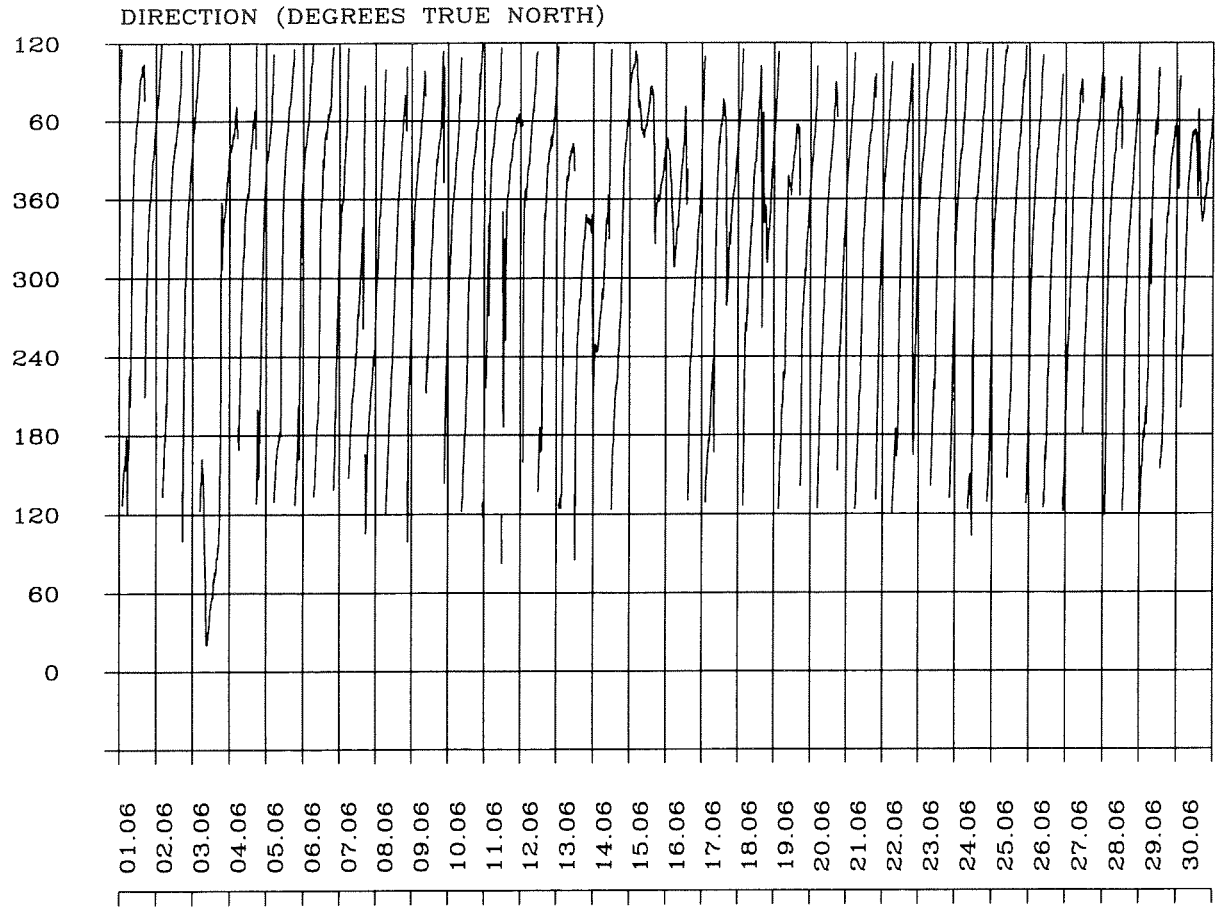
Fig. 2-2-7

Continues.....



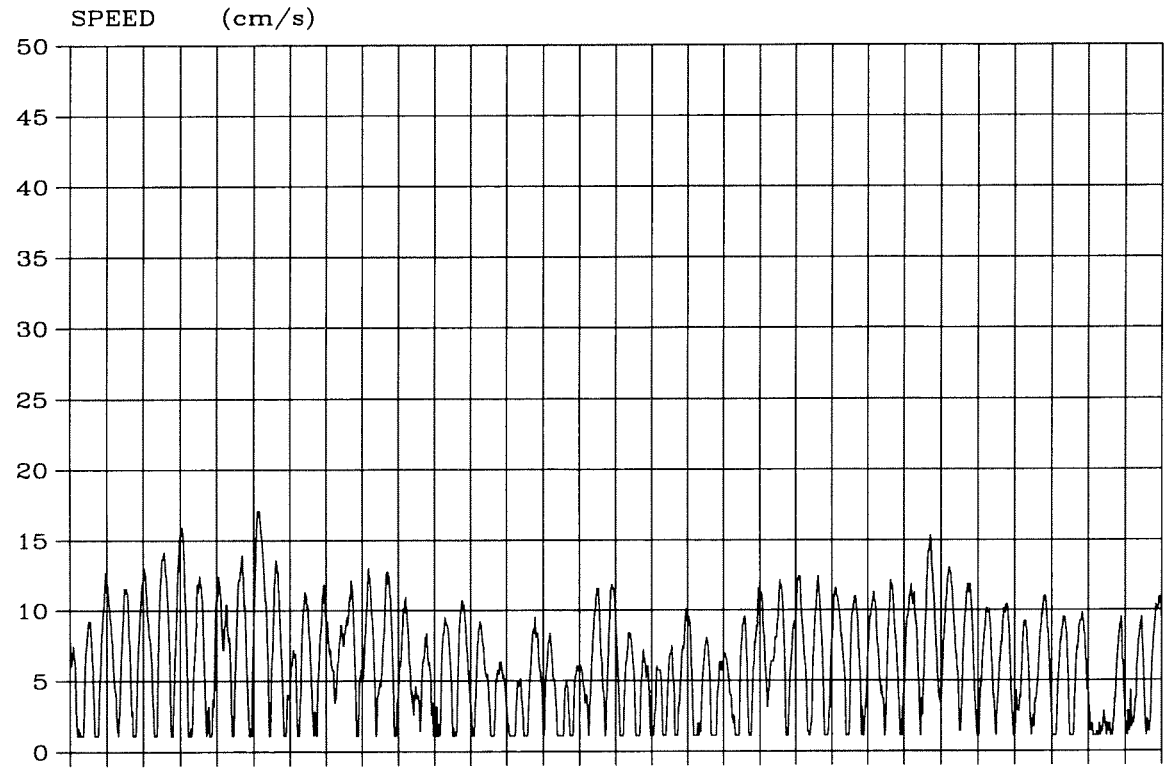


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Fig. 2-2-7

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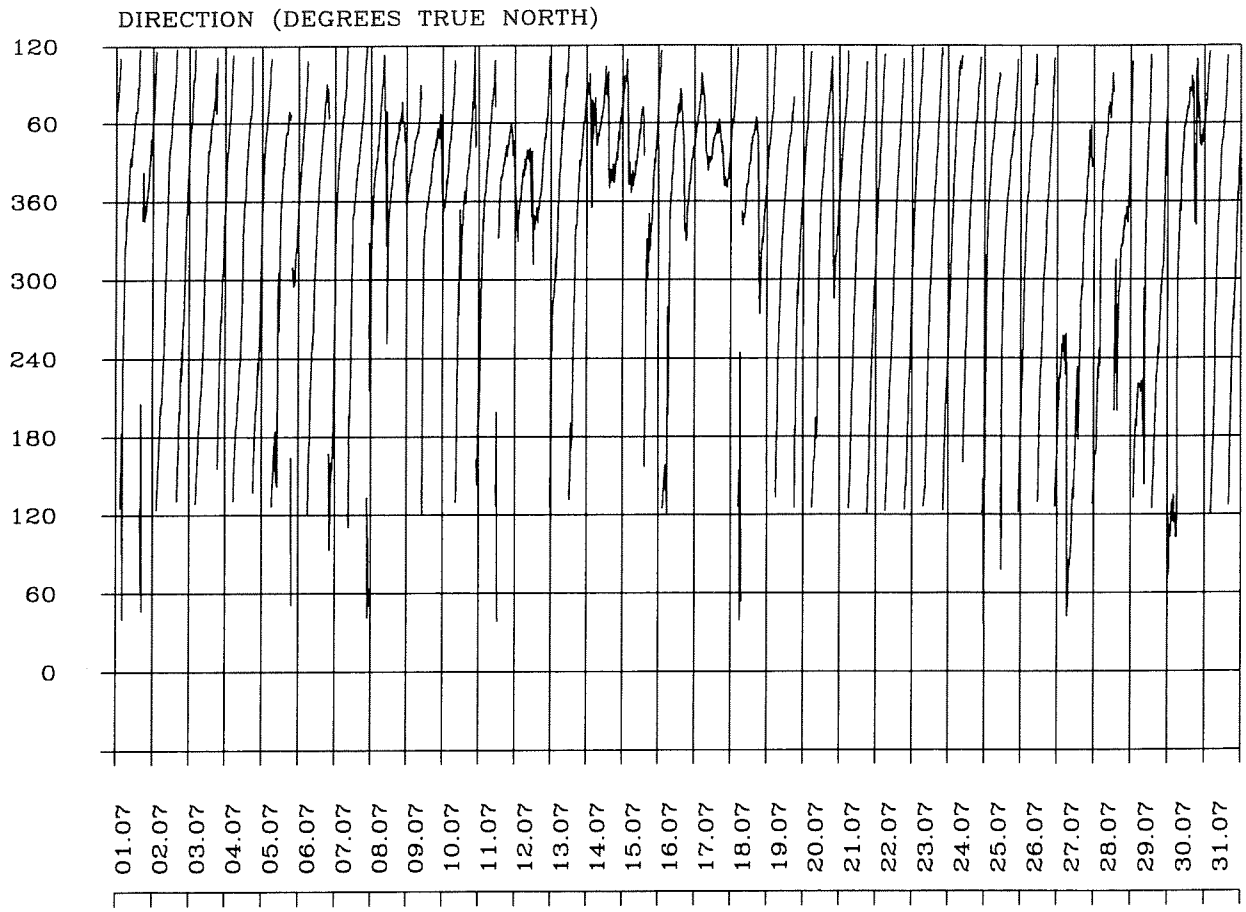

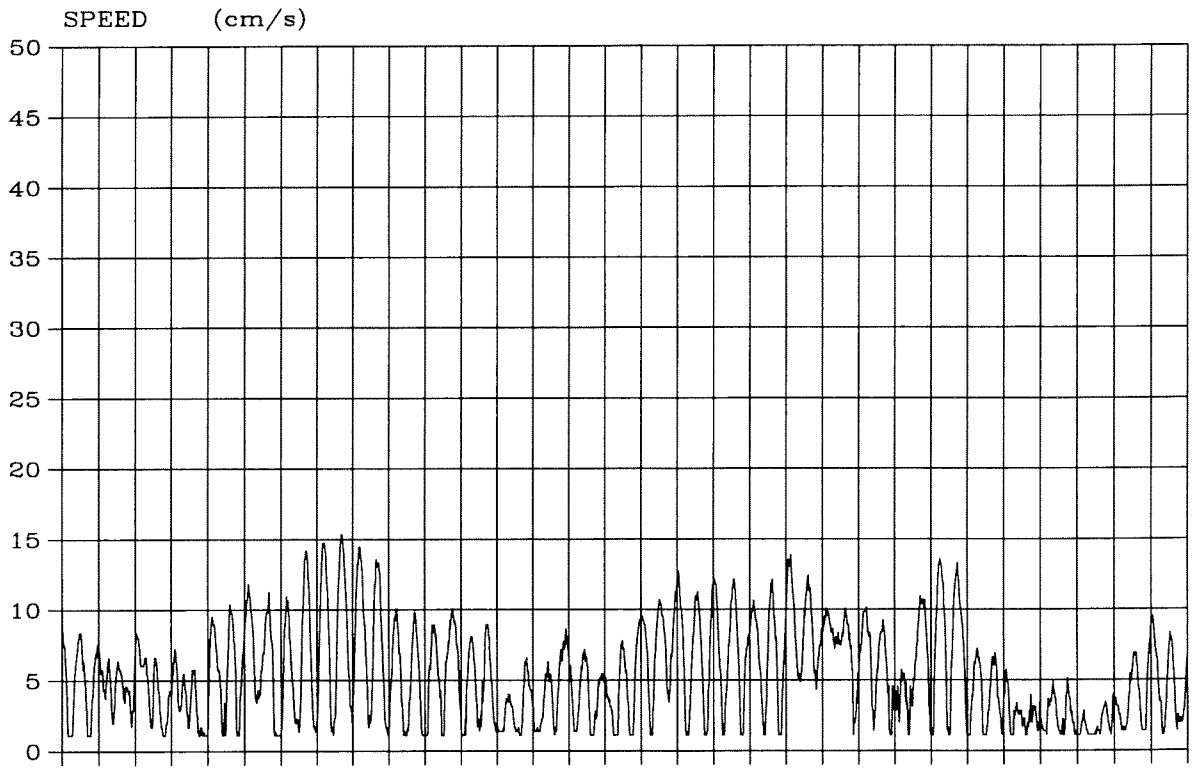

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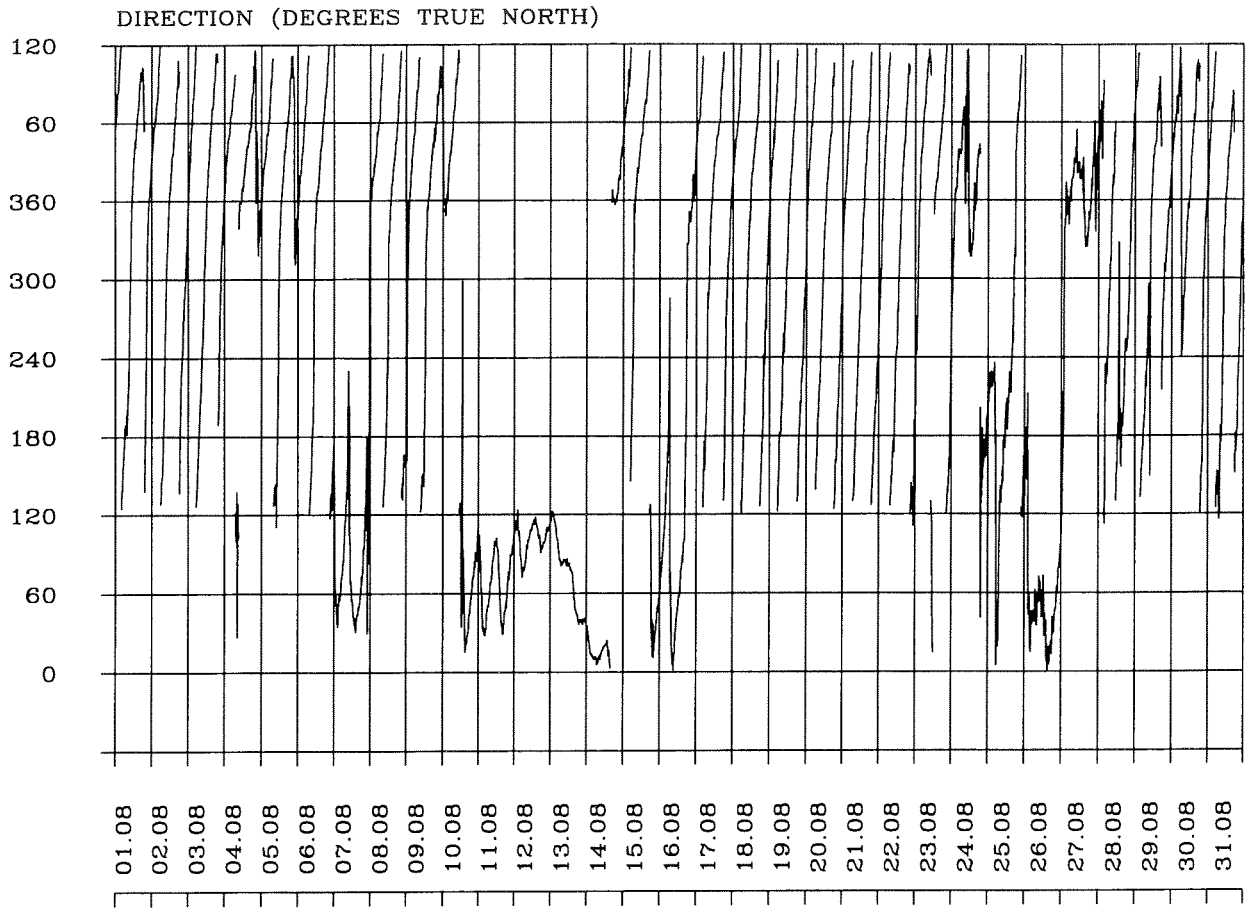
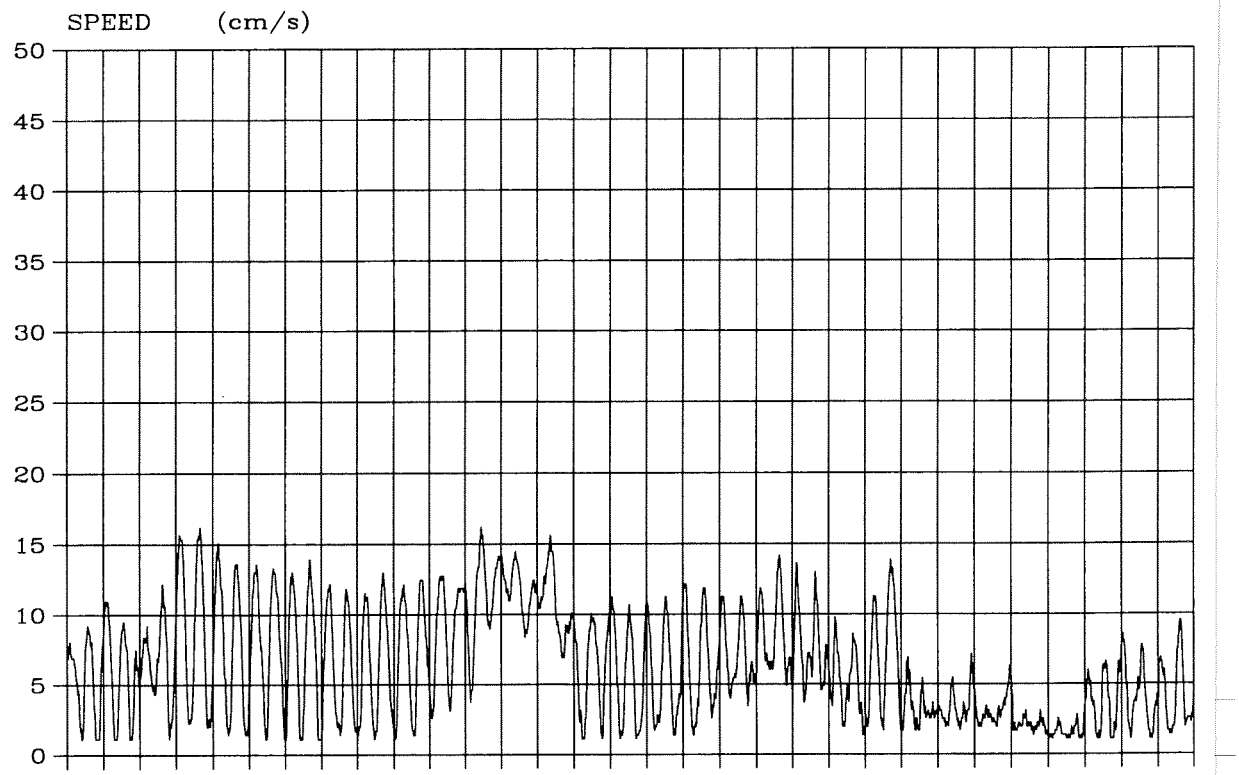
Fig. 2-2-7

Continues.....





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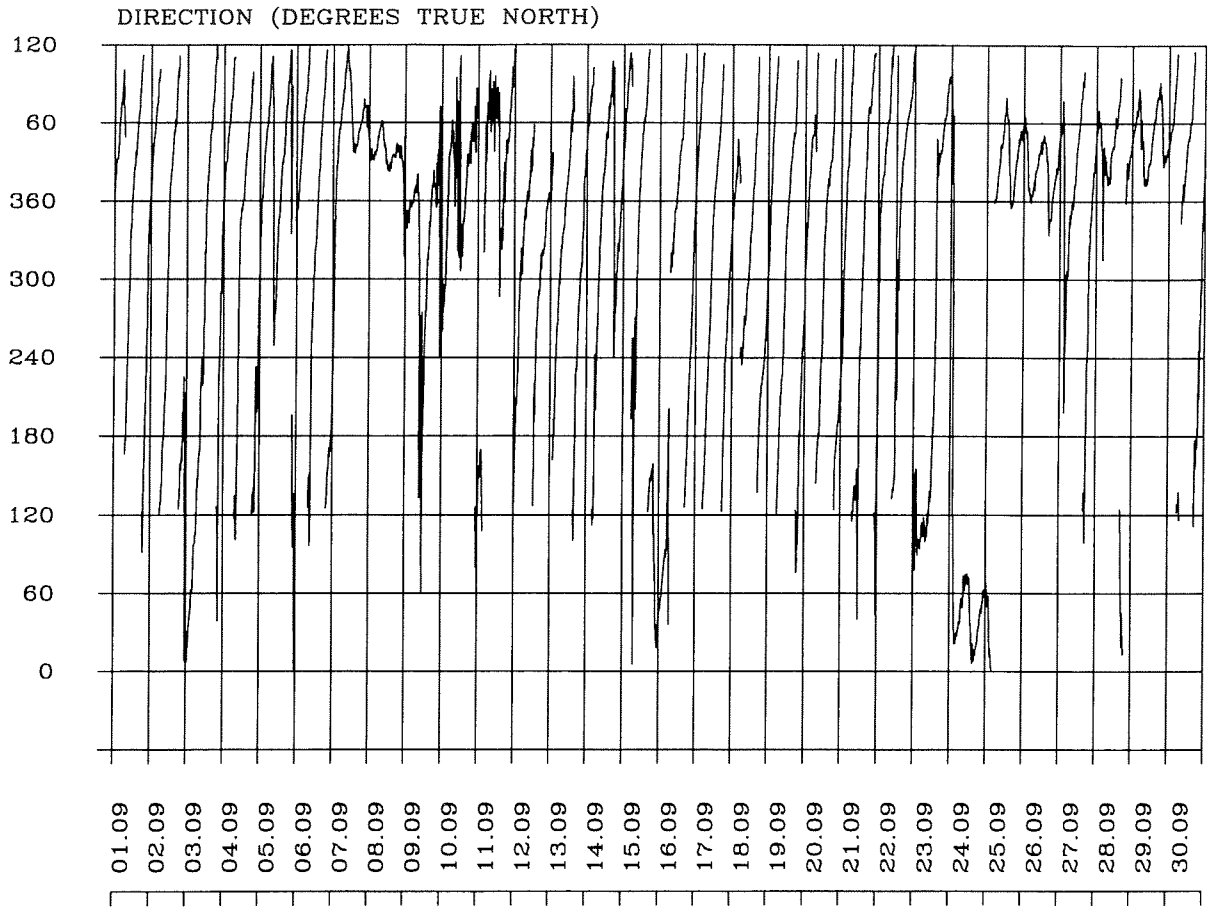
IMR

Fig. 2-2-7

Continues.....



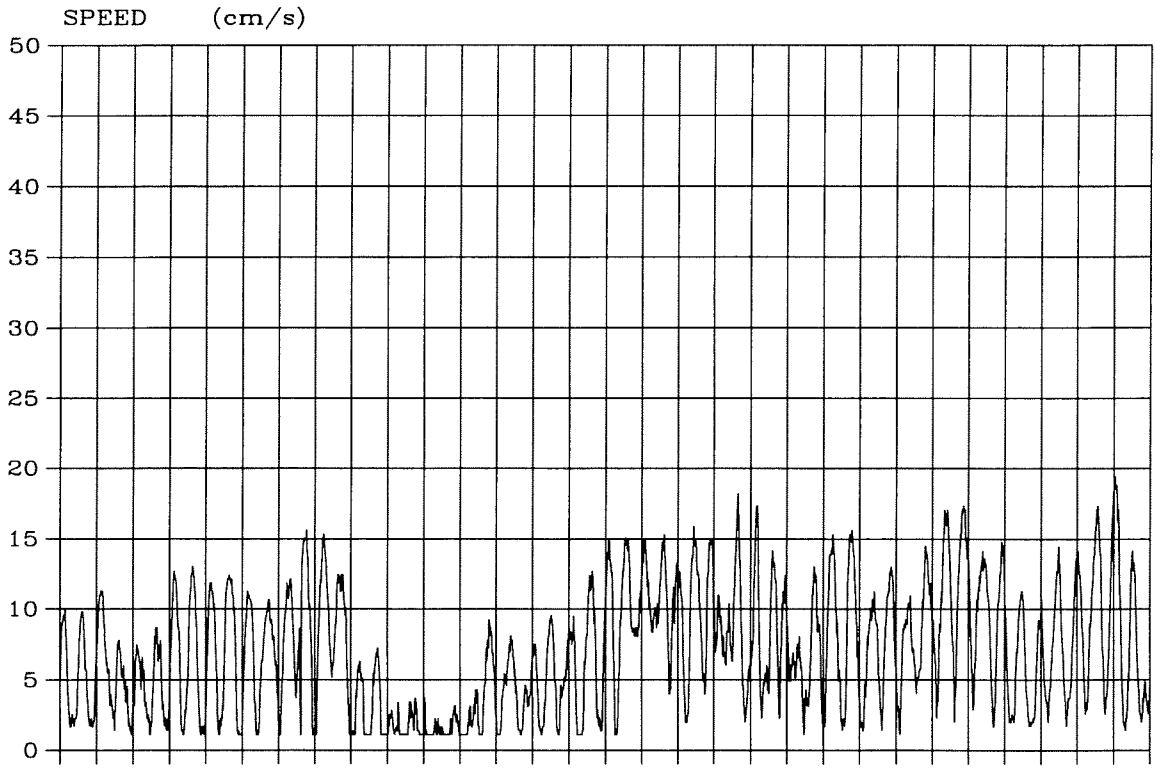


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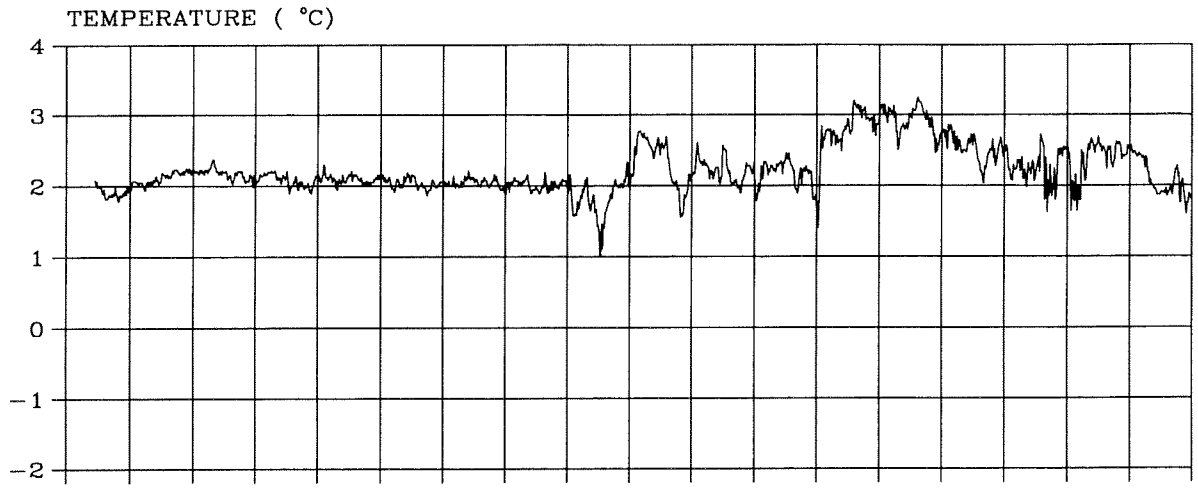
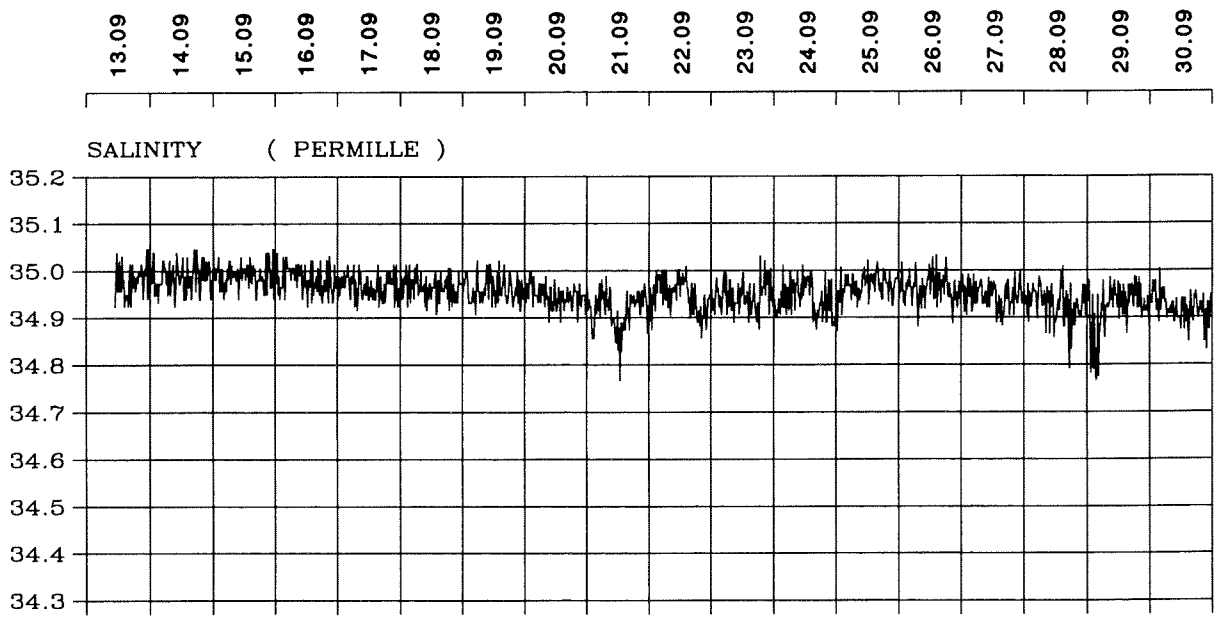
Fig. 2-2-7

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

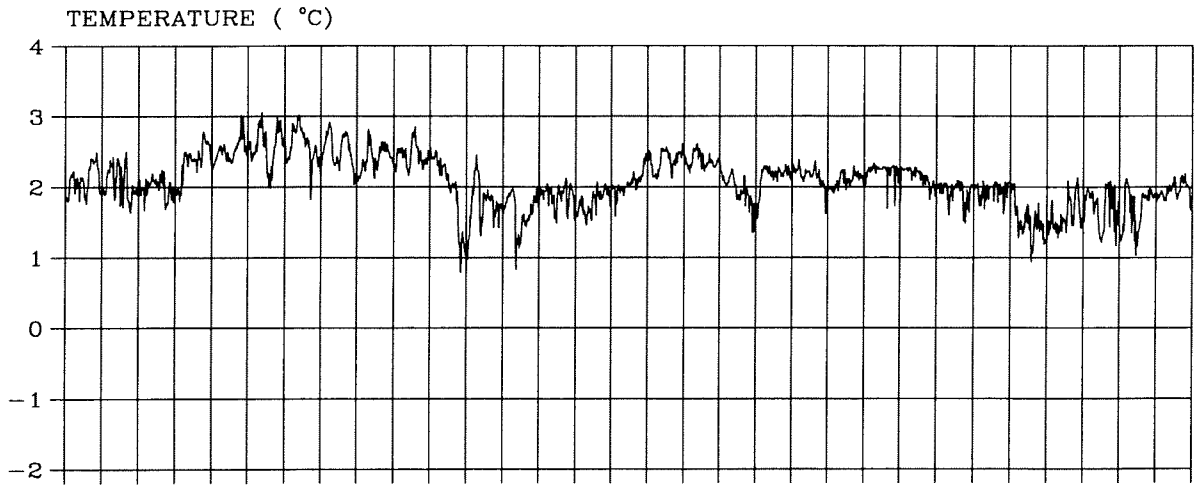
Instrument depth : 110.0 m Bottom depth : 278.0 m

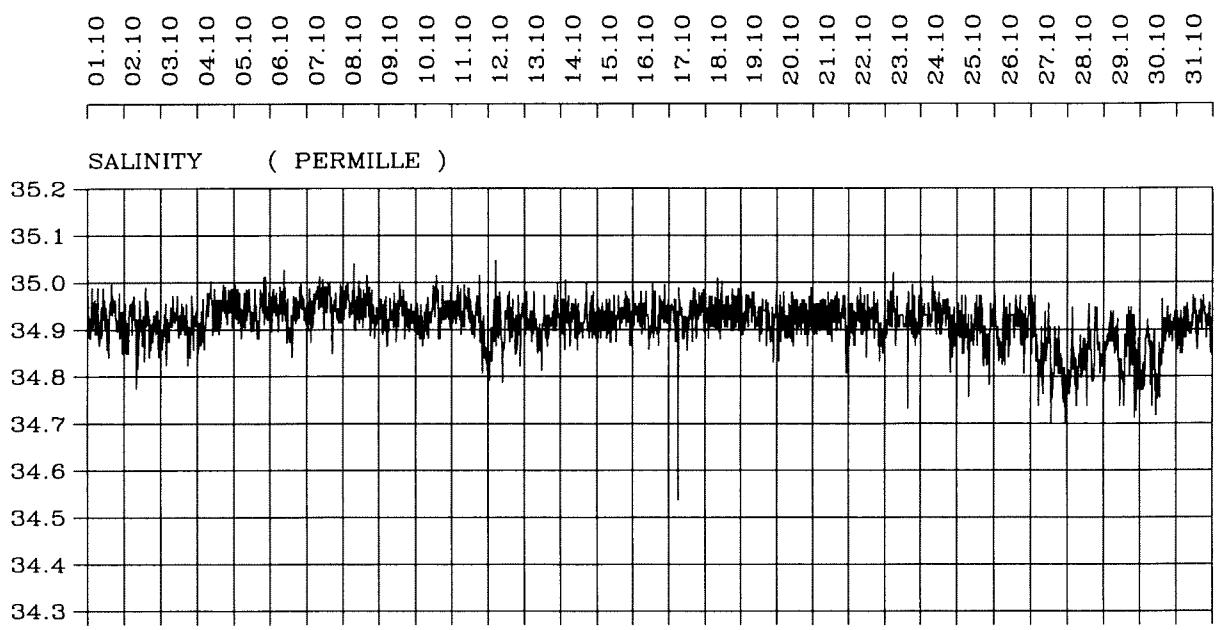
Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8 Temperature and salinity.





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 110.0 m Bottom depth : 278.0 m

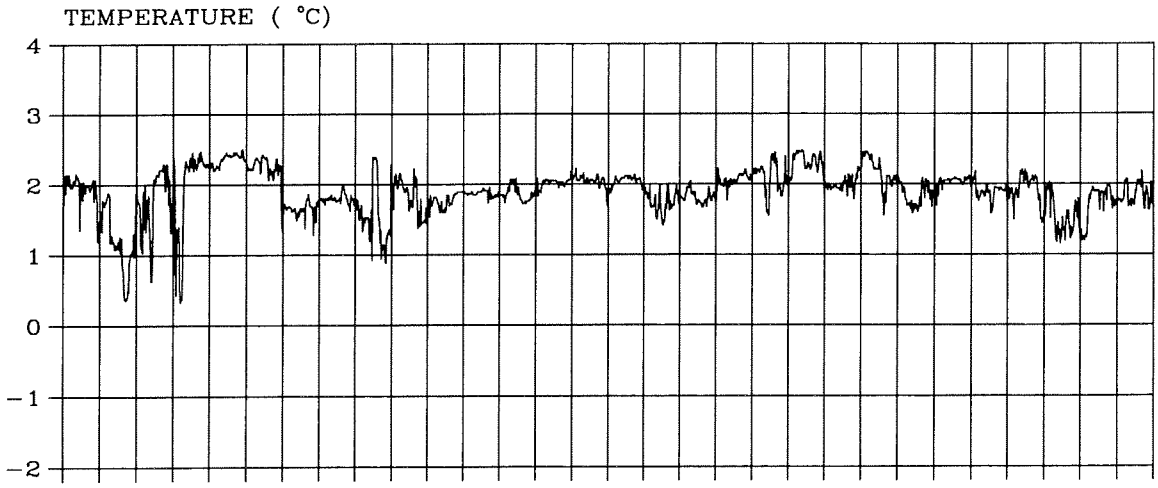
Time interval : 20.00 minutes. Instrument no. : 10797

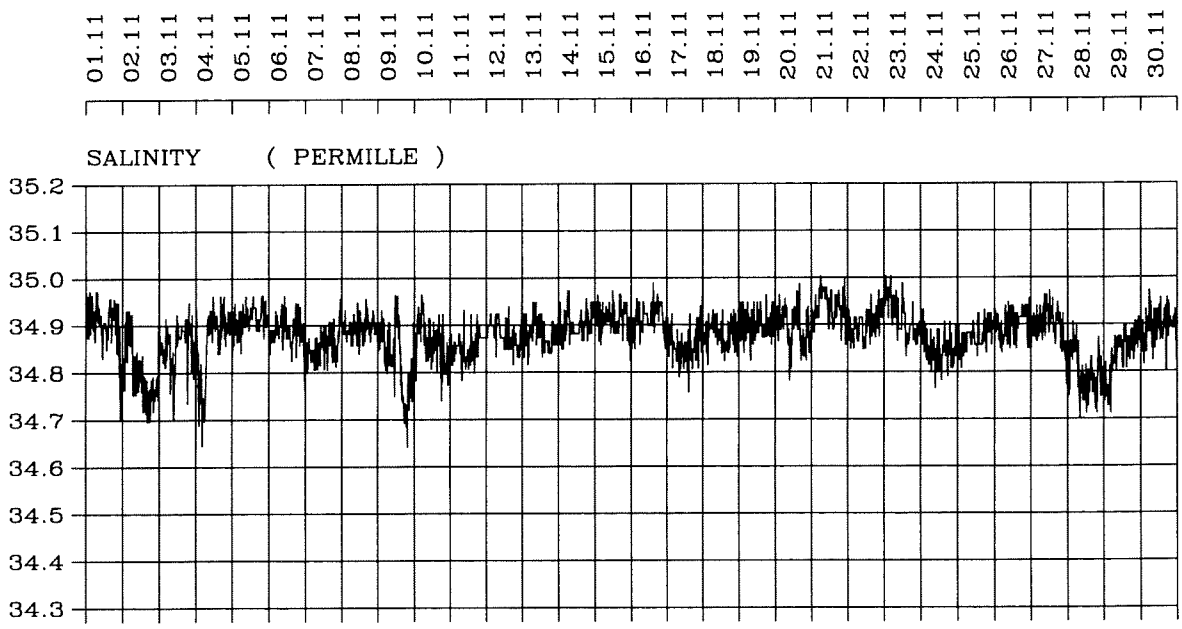
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





Southern Great Bank, Barents Sea

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Instrument depth : 110.0 m Bottom depth : 278.0 m

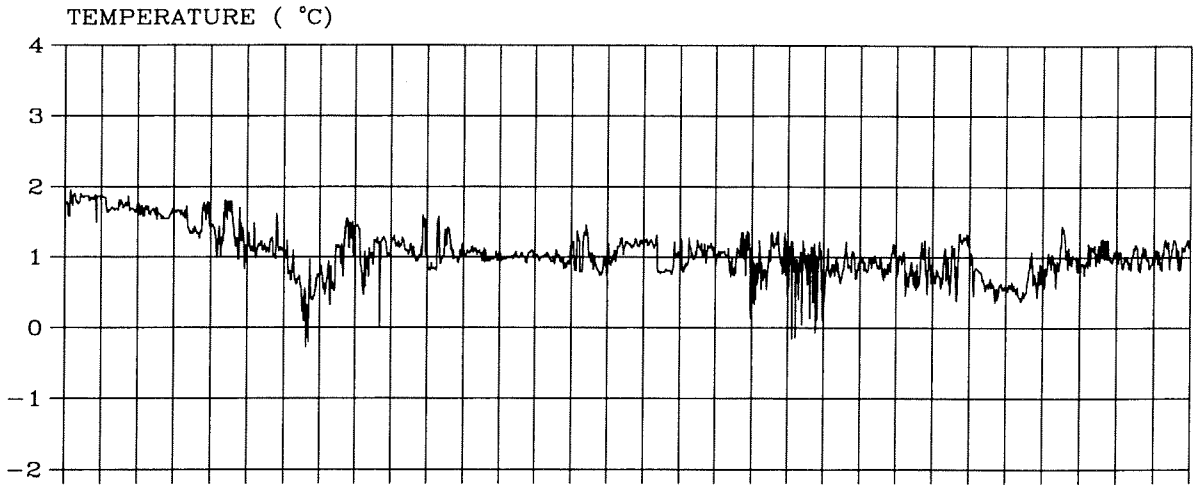
Time interval : 20.00 minutes. Instrument no. : 10797

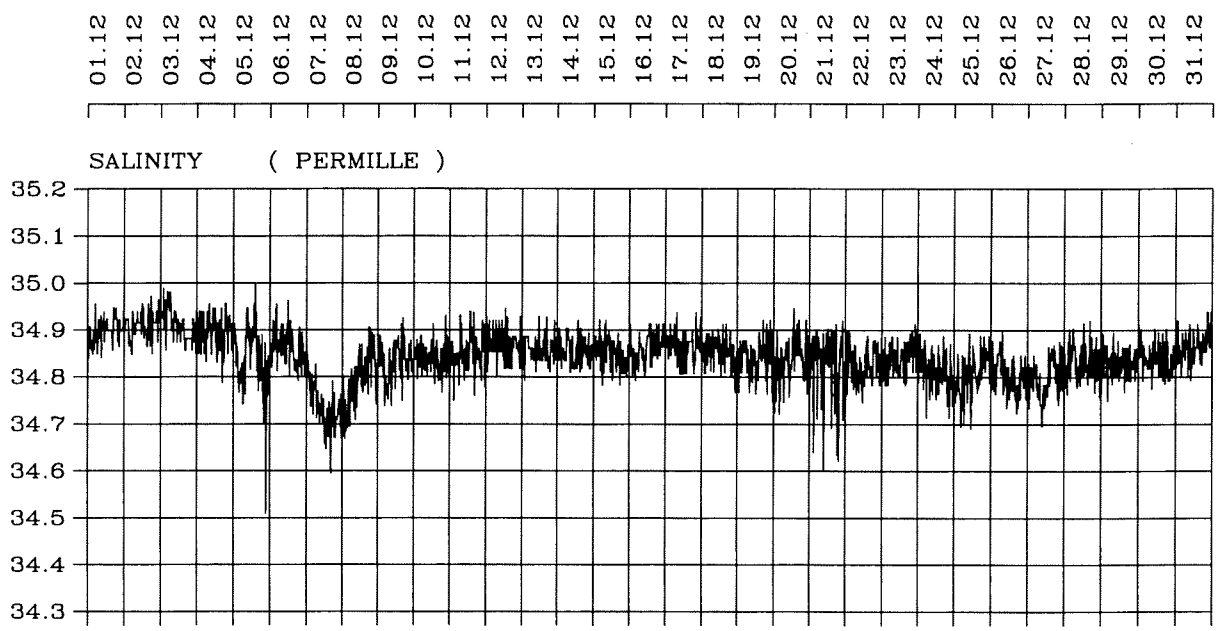
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





Southern Great Bank, Barents Sea

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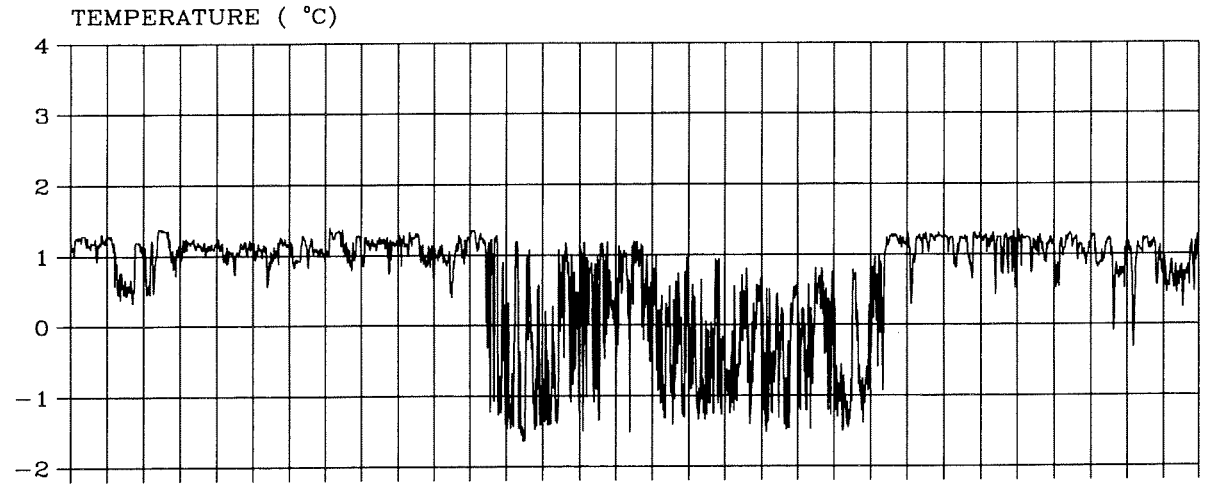
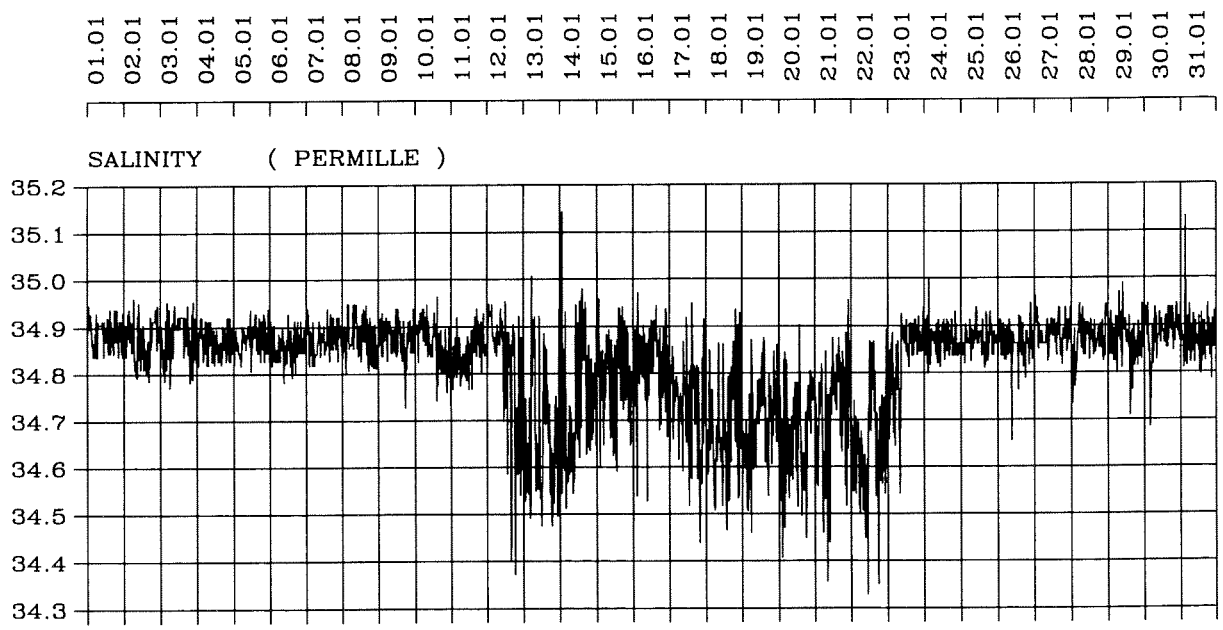
IMR

Fig. 2-2-8

Continues.....





Southern Great Bank, Barents Sea

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Instrument depth : 110.0 m Bottom depth : 278.0 m

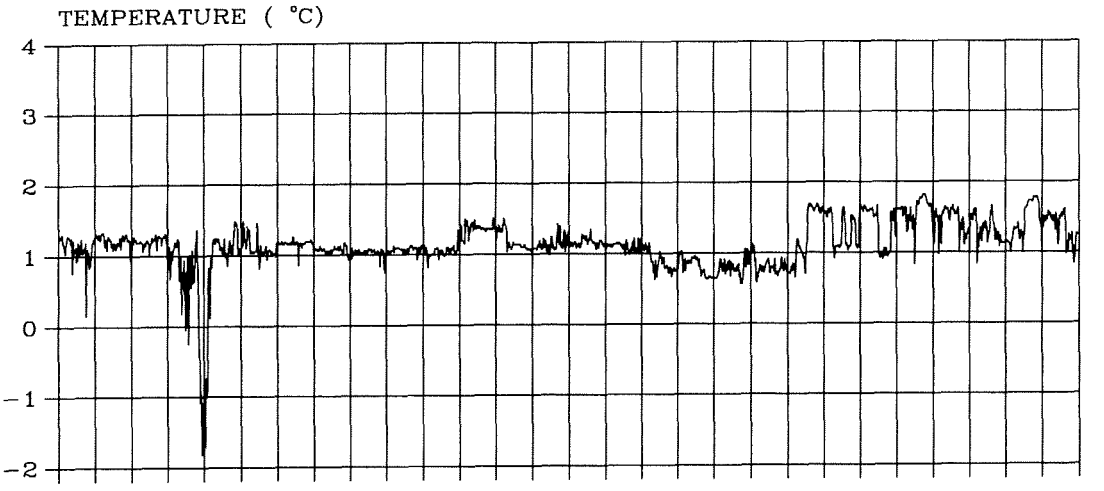
Time interval : 20.00 minutes. Instrument no. : 10797

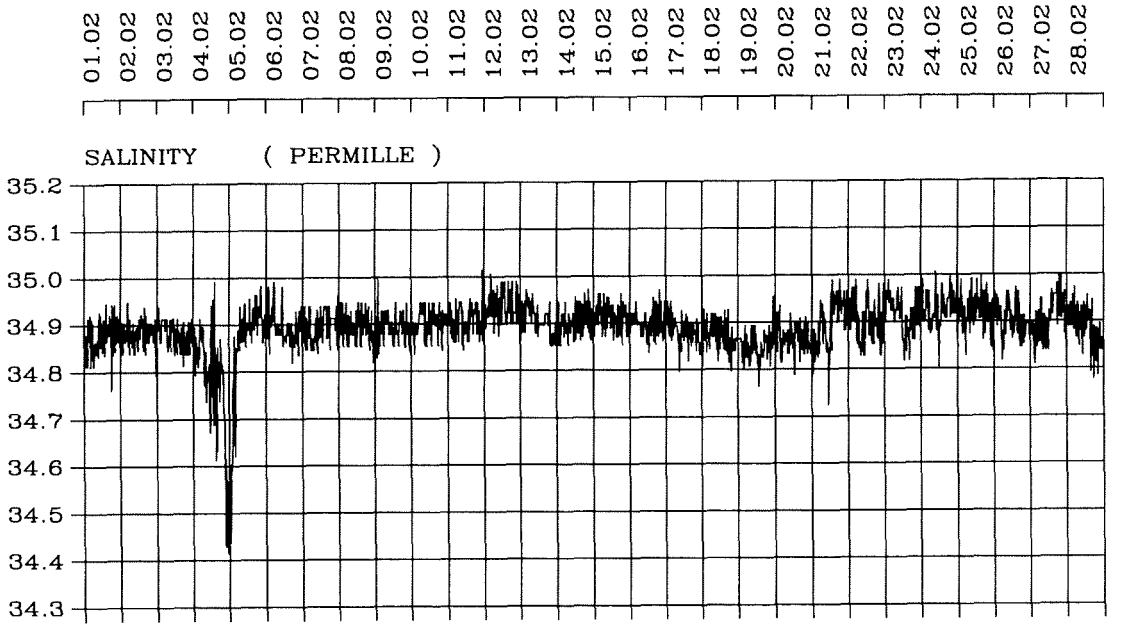
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





Southern Great Bank, Barents Sea

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Instrument depth : 110.0 m Bottom depth : 278.0 m

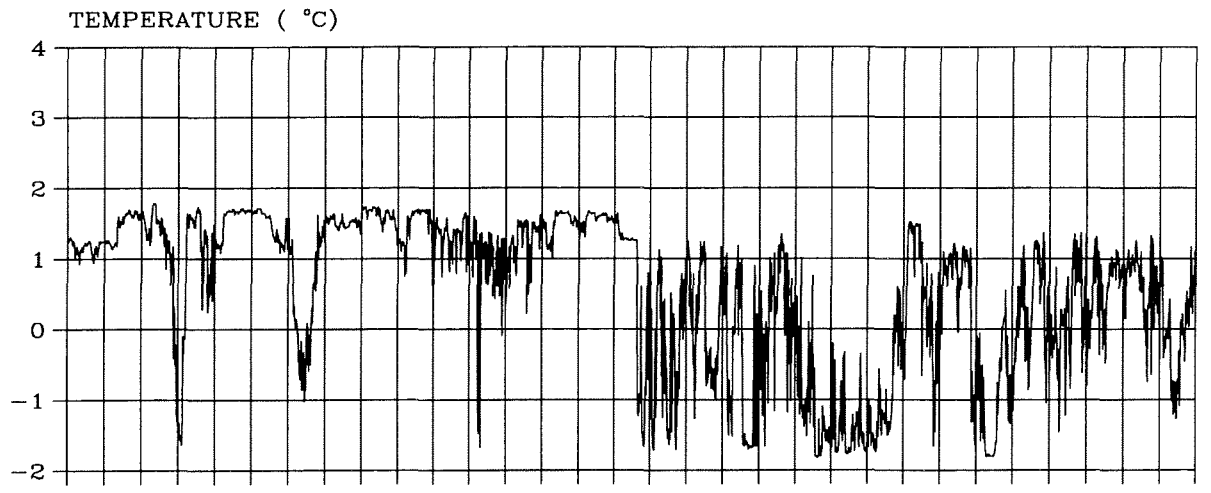
Time interval : 20.00 minutes. Instrument no. : 10797

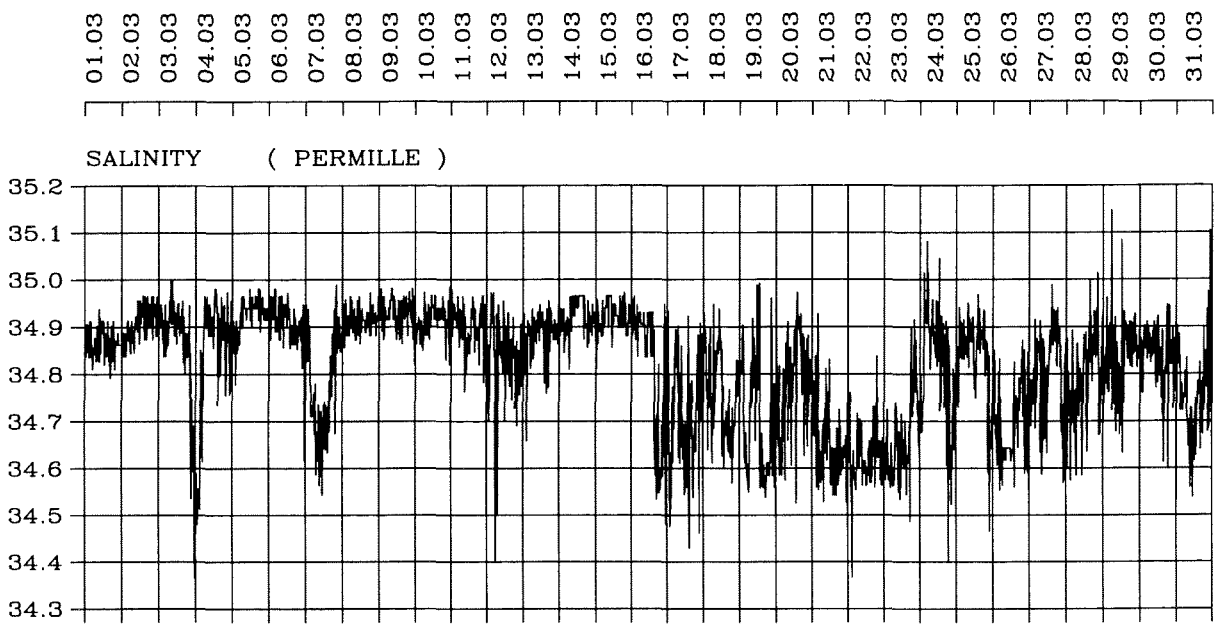
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





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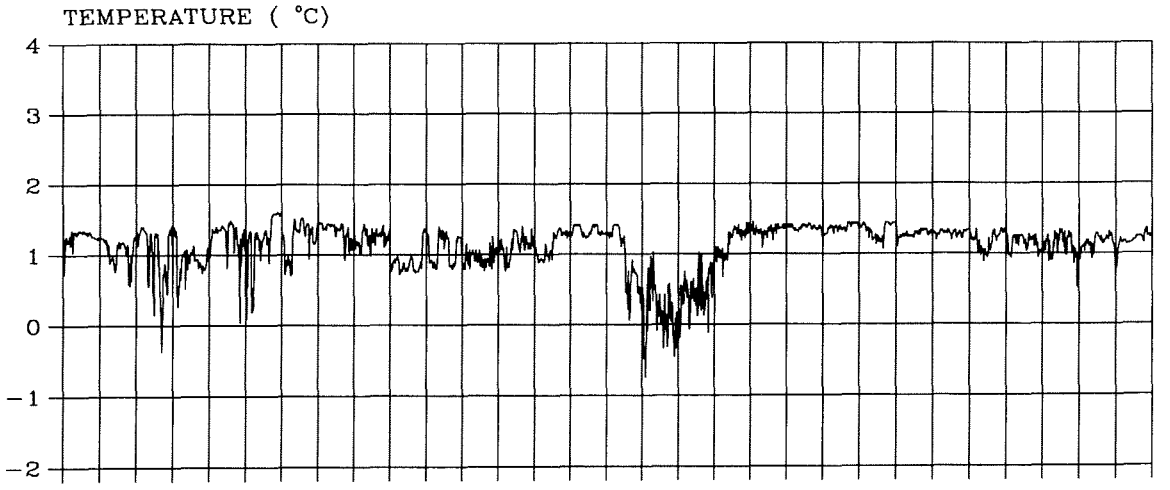
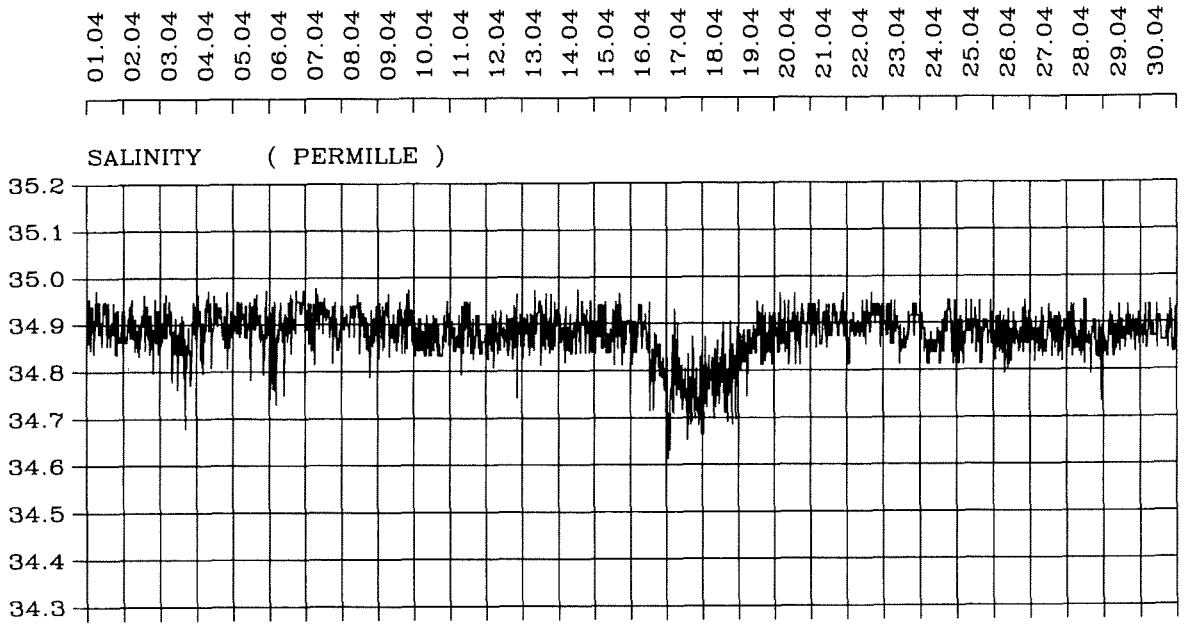
IMR

Fig. 2-2-8

Continues.....





Southern Great Bank, Barents Sea

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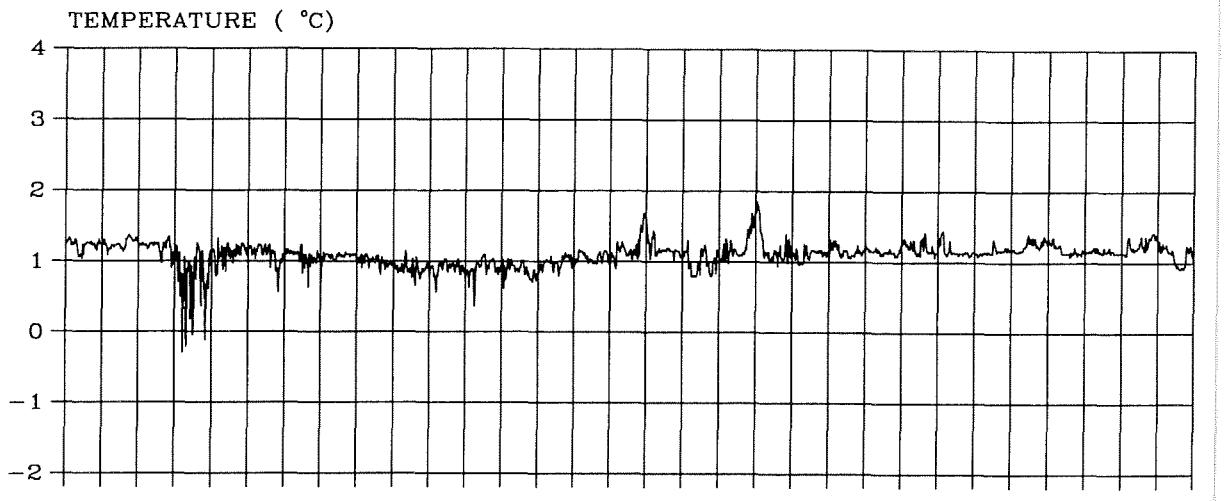
Time interval : 20.00 minutes. Instrument no. : 10797

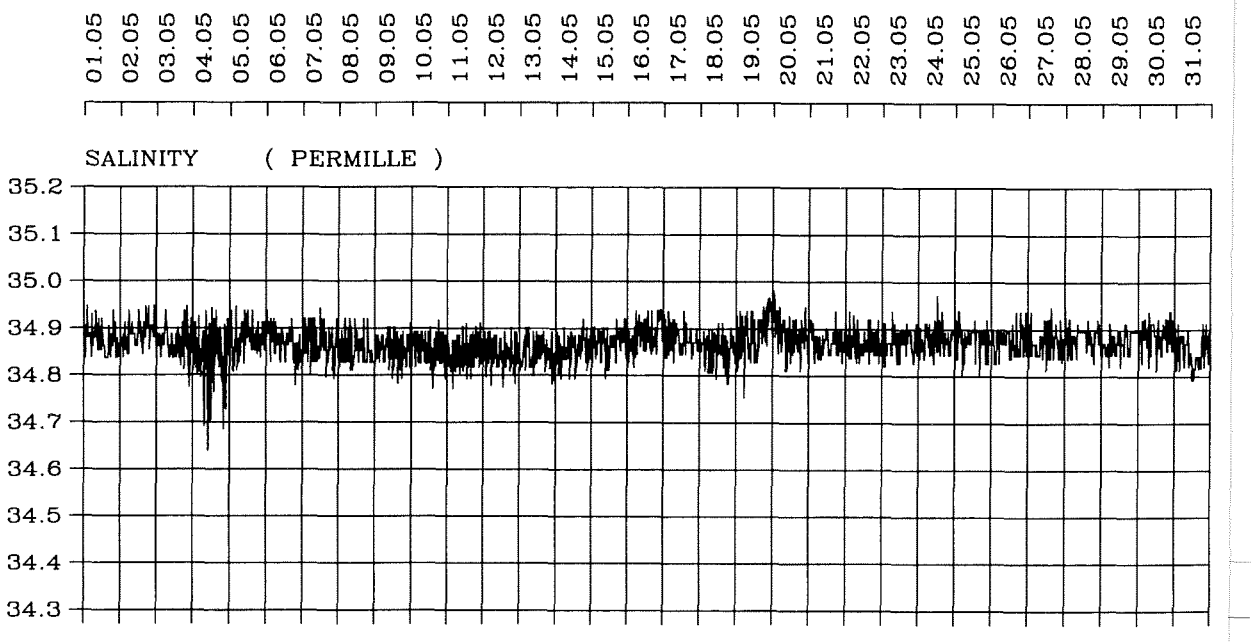
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





Southern Great Bank, Barents Sea

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Instrument depth : 110.0 m Bottom depth : 278.0 m

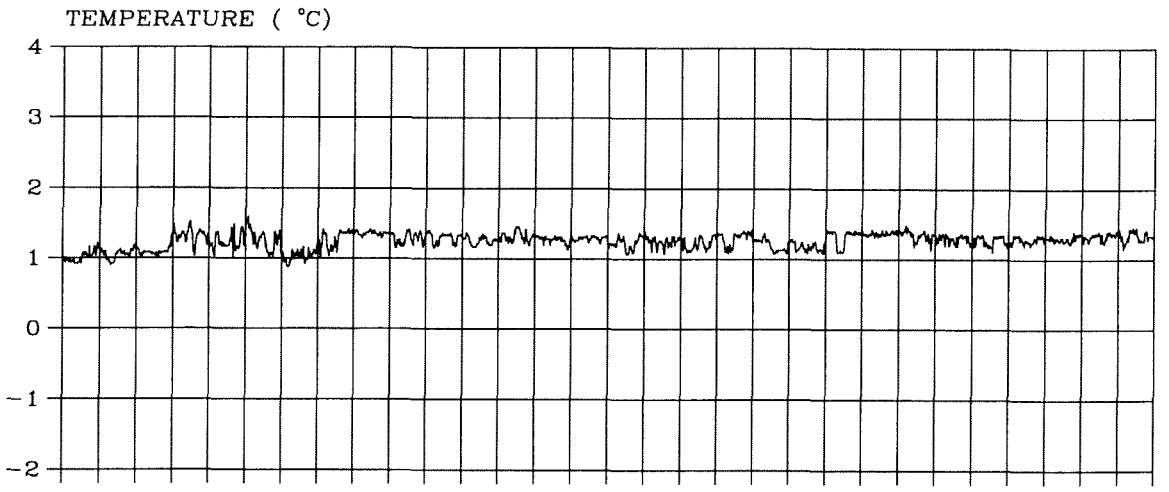
Time interval : 20.00 minutes. Instrument no. : 10797

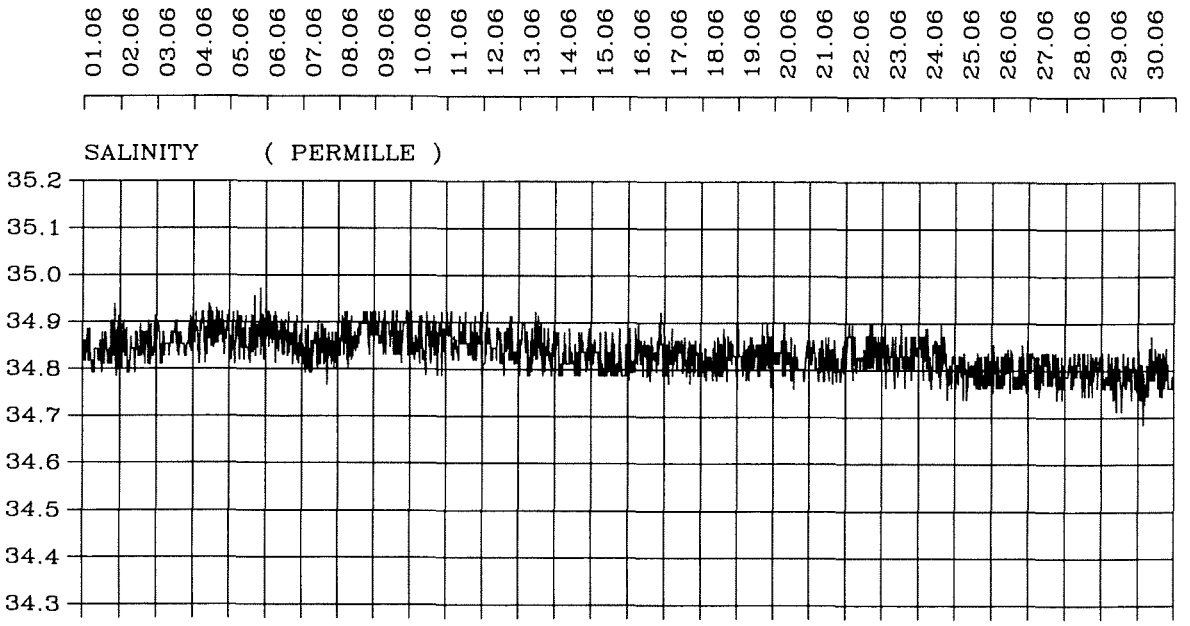
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





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Instrument depth : 110.0 m Bottom depth : 278.0 m

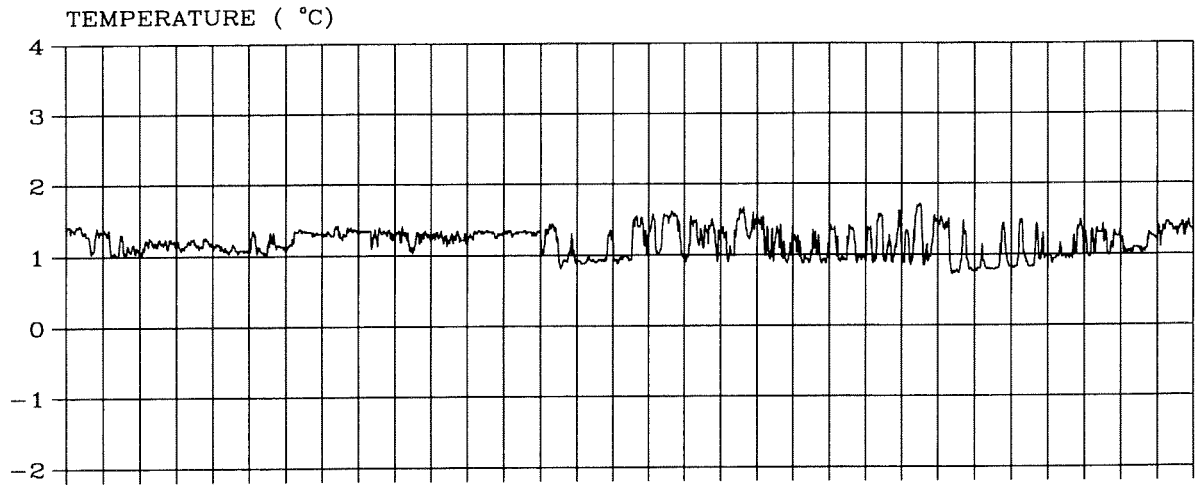
Time interval : 20.00 minutes. Instrument no. : 10797

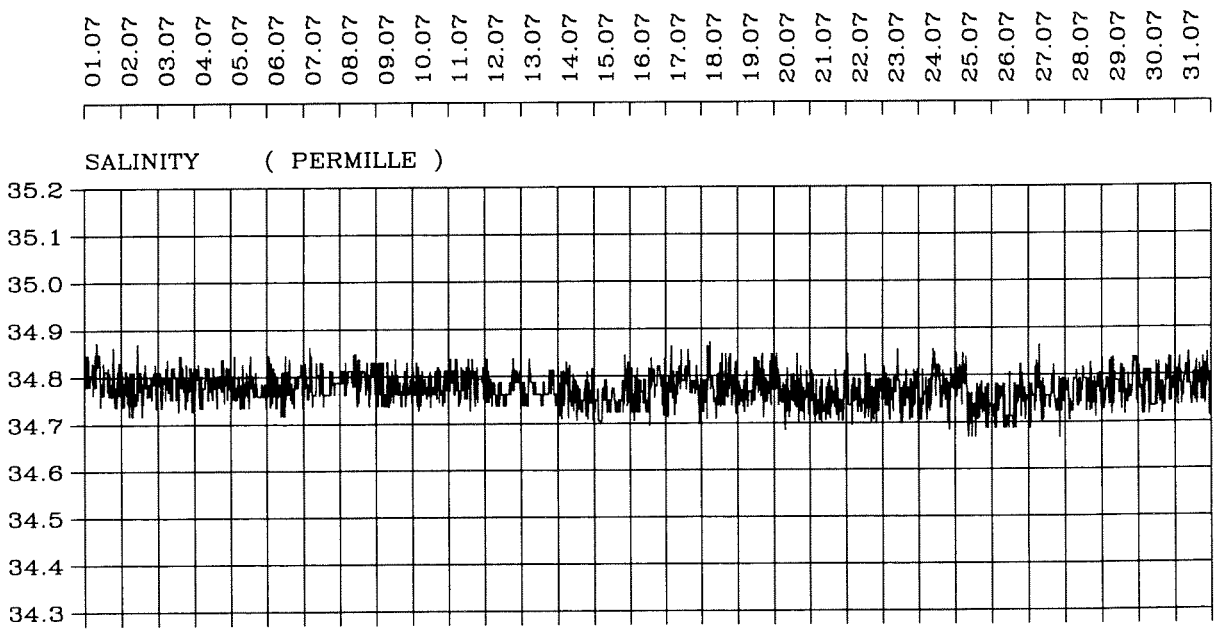
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





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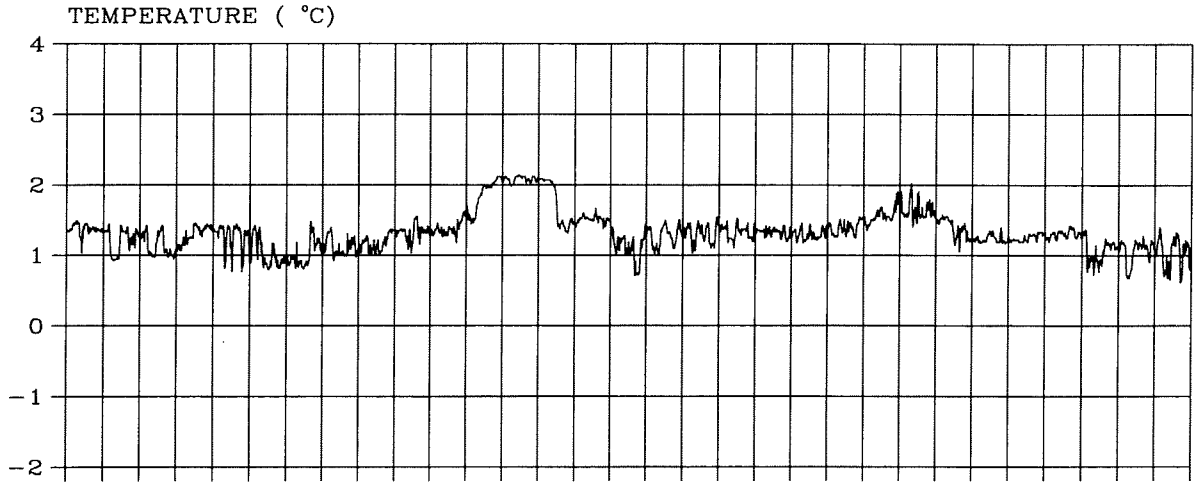
Time interval : 20.00 minutes. Instrument no. : 10797

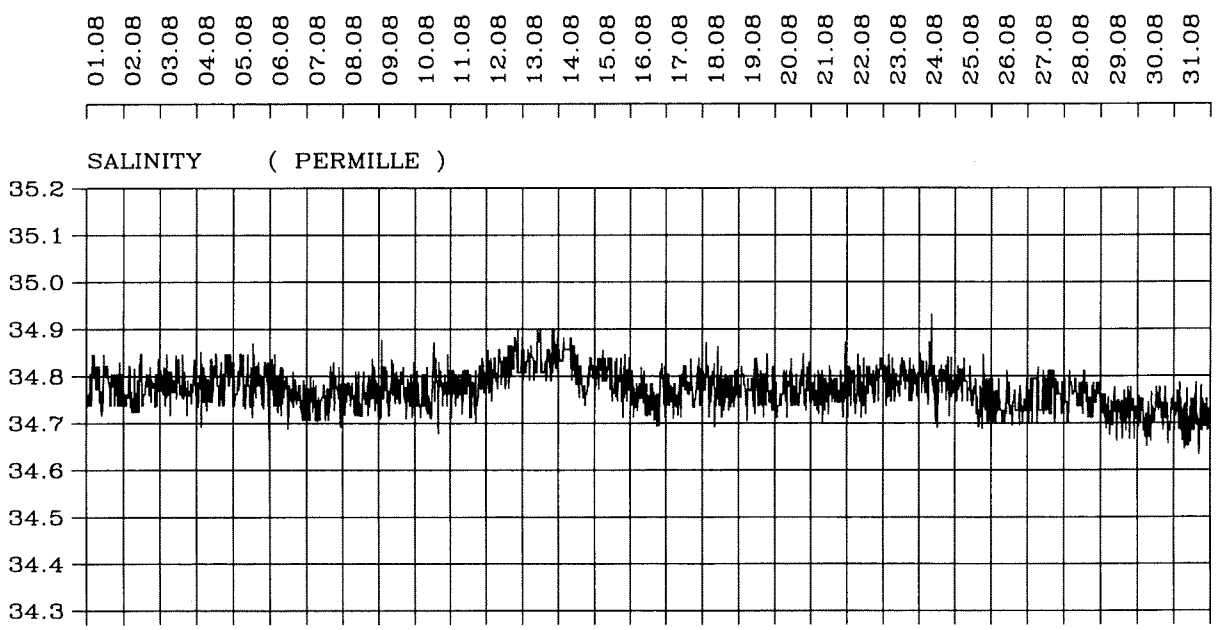
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





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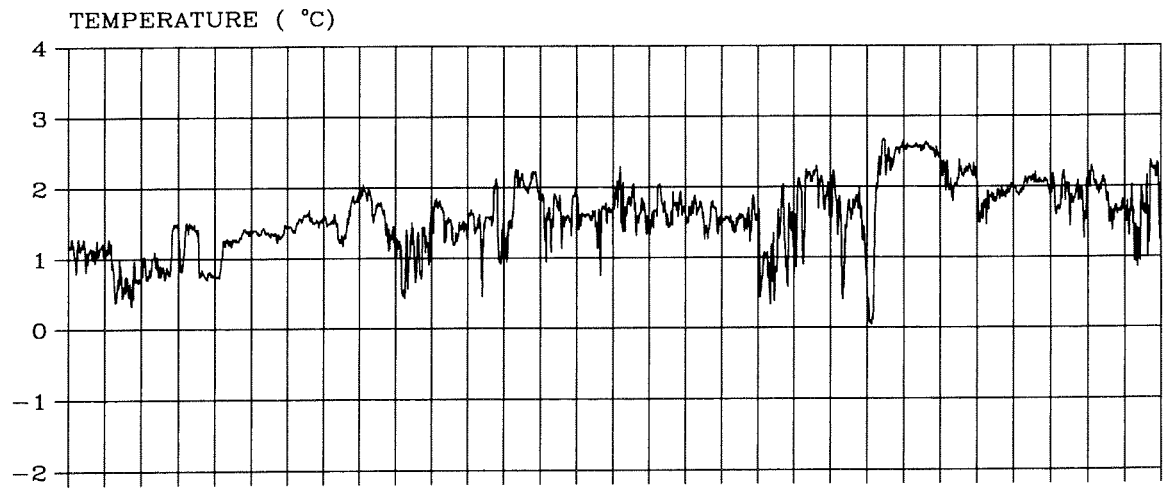
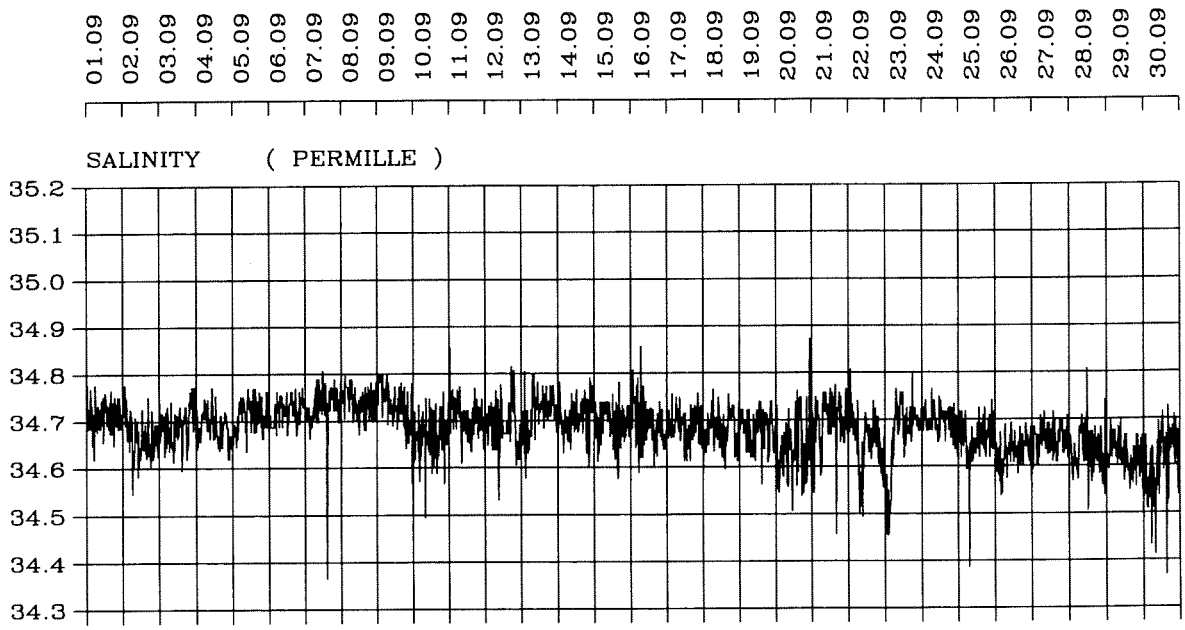
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-8

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

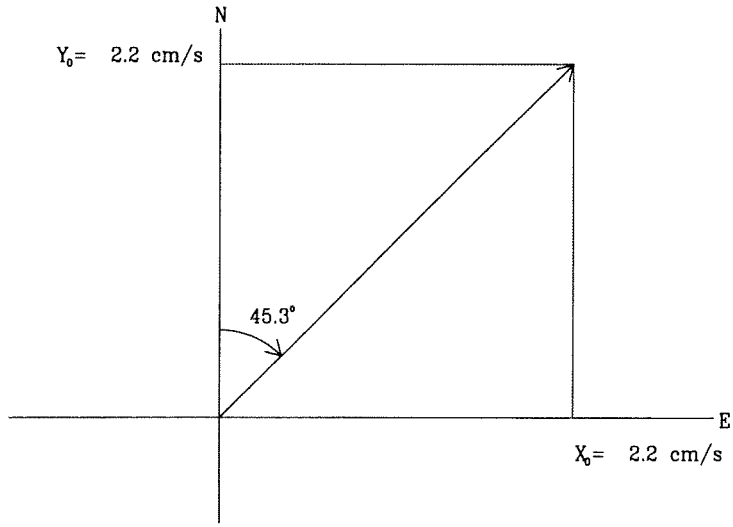
Fig. 2-2-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_i cm/s	g_{xi} °	Y_i cm/s	g_{yi} °	Major axis A_i cm/s	Minor axis B_i cm/s	θ_i °	g_i °	BETA. °
SA	******	0.0	1.0	107.1	0.5	67.5	1.1	-0.3	67.7	100.8	22.4
SSA	******	0.1	1.8	331.0	0.9	296.4	1.9	-0.5	66.3	325.0	142.6
MSM	763.49	0.5	2.8	288.1	1.4	299.8	3.1	0.3	63.7	290.4	115.7
MM	661.31	0.5	1.7	16.4	0.4	356.5	1.7	-0.1	257.1	195.4	173.6
MF	327.86	1.1	1.8	222.2	1.2	230.4	2.1	0.1	236.6	44.7	25.7
N2	12.66	28.4	1.1	47.6	1.0	325.8	1.1	-1.0	50.9	12.6	78.9
M2	12.42	29.0	5.0	77.9	4.7	6.6	5.5	-3.9	49.4	46.4	90.7
S2	12.00	30.0	1.8	125.3	1.8	62.1	2.2	-1.3	43.3	92.2	122.3

MEAN CURRENT



Southern Great Bank, Barents Sea
Position : N 76° 25.58′ E 34° 59.46′
Instrument depth : 110.0 m Bottom depth : 278.0 m
Time interval : 20.00 minutes. Instrument no. : 10797
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-2-9 Harmonic analysis of current.

A discription of the model and its definitions :

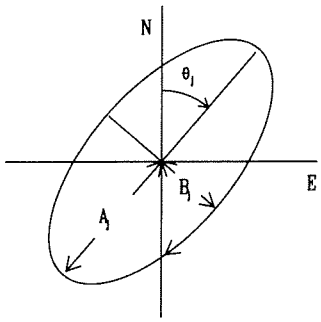
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

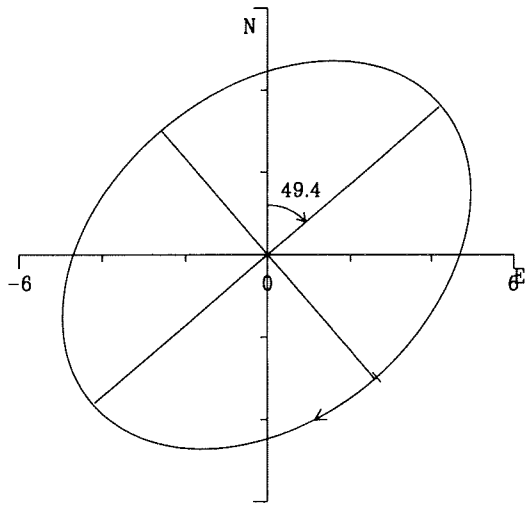
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

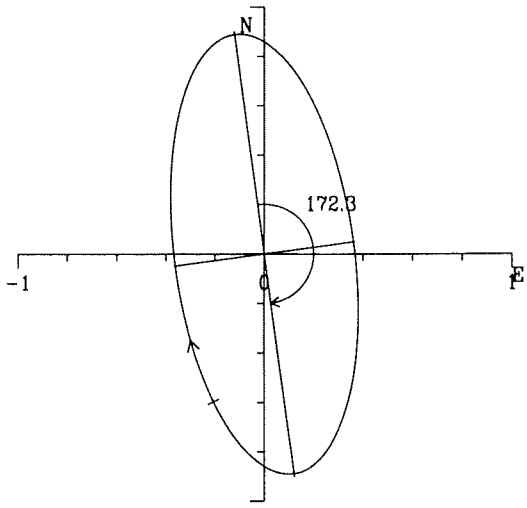
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1700 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 110.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-2-10 M2 and K1 ellipse.

MEAN VALUES

Speed	9.23 cm/s
NS-component	2.15 cm/s
EW-component	2.21 cm/s
Velocity	3.09 cm/s
in direction	45 °

MAXIMUM

Velocity	48.76 cm/s
in direction	237 °
Temperature	3.24 °C
Salinity	35.148

MINIMUM

Velocity	0.00 cm/s
in direction	218 °
Temperature	-1.82 °C
Salinity	34.329

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 110.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10797

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

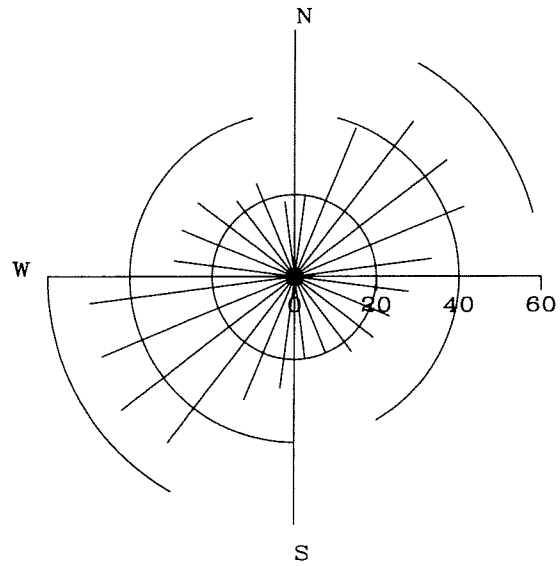
Fig. 2-2-11

Overall mean values.
Overall maximum values.
Overall minimum values.

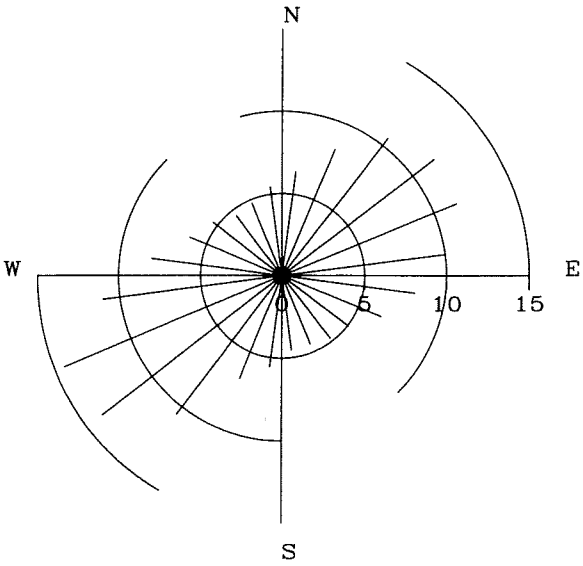
Mooring: 2

Depth: 210 m

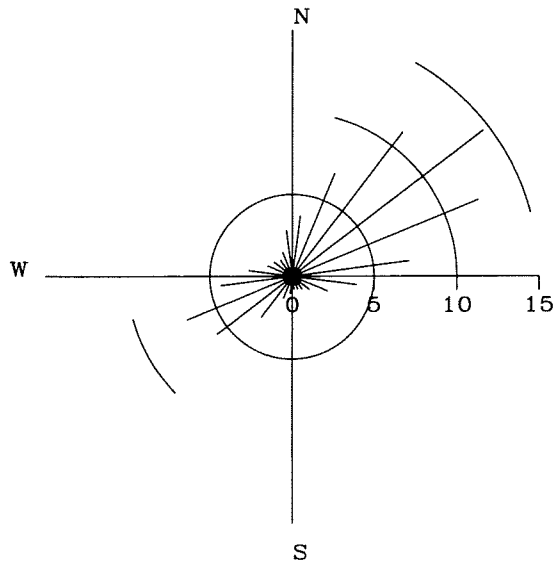
CURRENT VELOCITY DISTRIBUTION



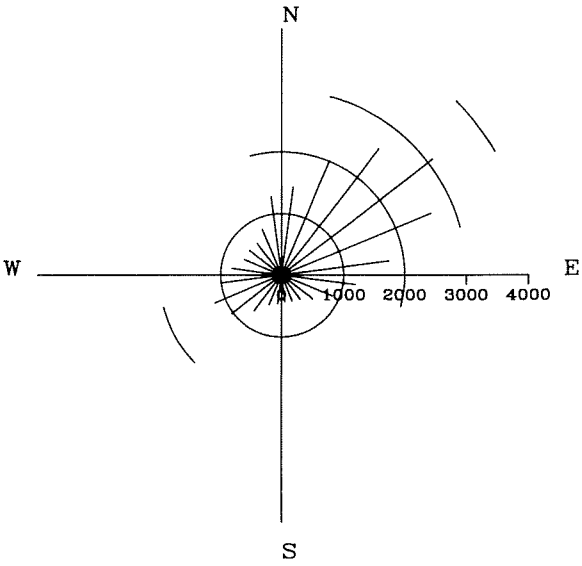
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 210.0 m Bottom depth : 278.0 m

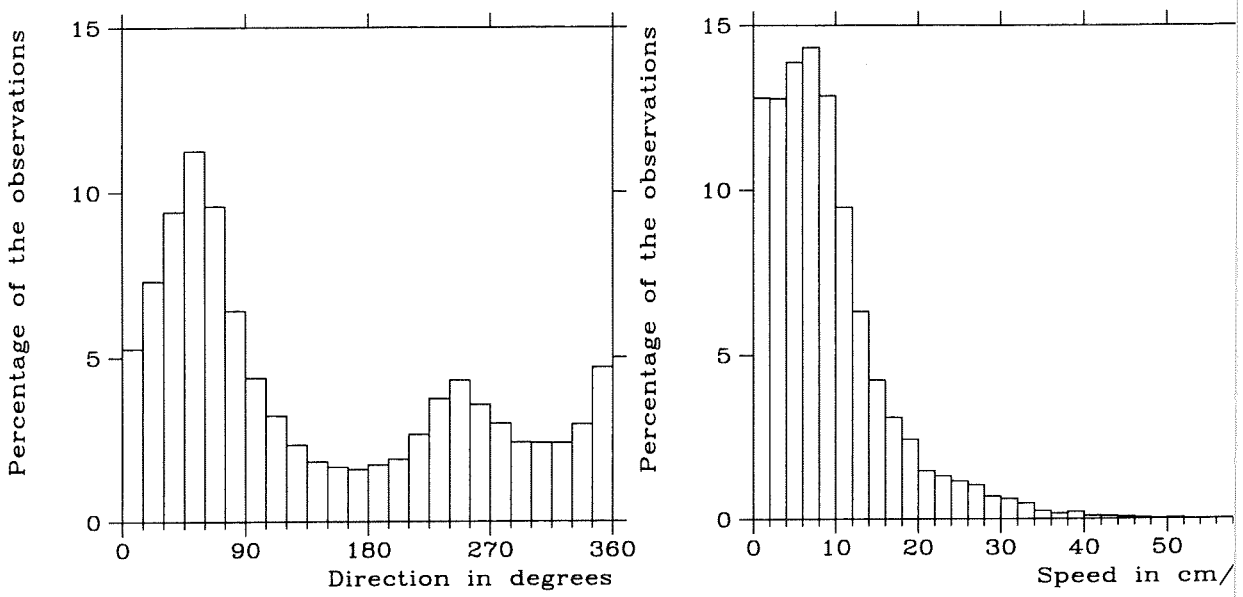
Time interval : 20.00 minutes. Instrument no. : 10798

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

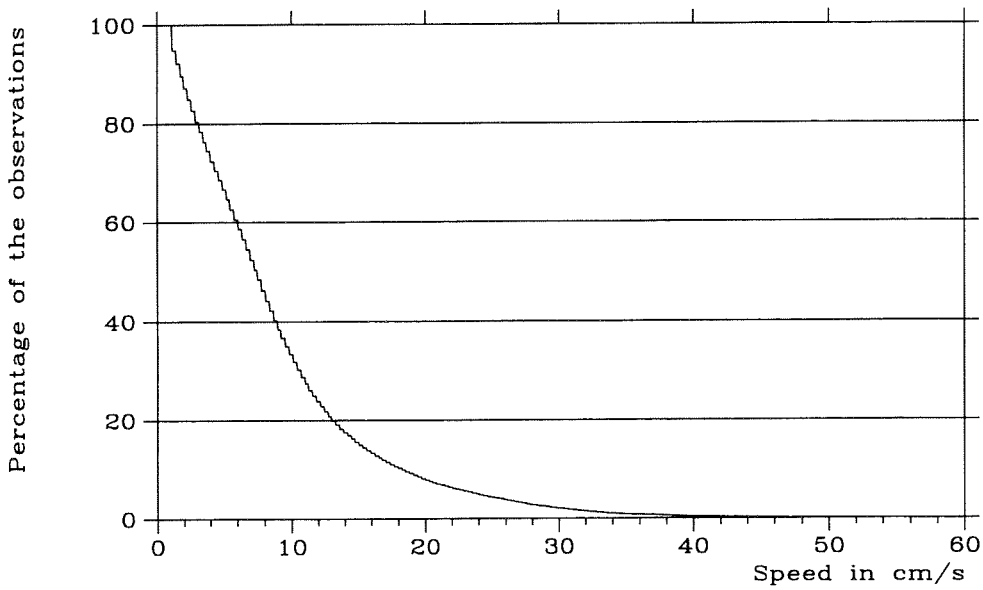
IMR

Fig. 2-3-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 210.0 m Bottom depth : 278.0 m

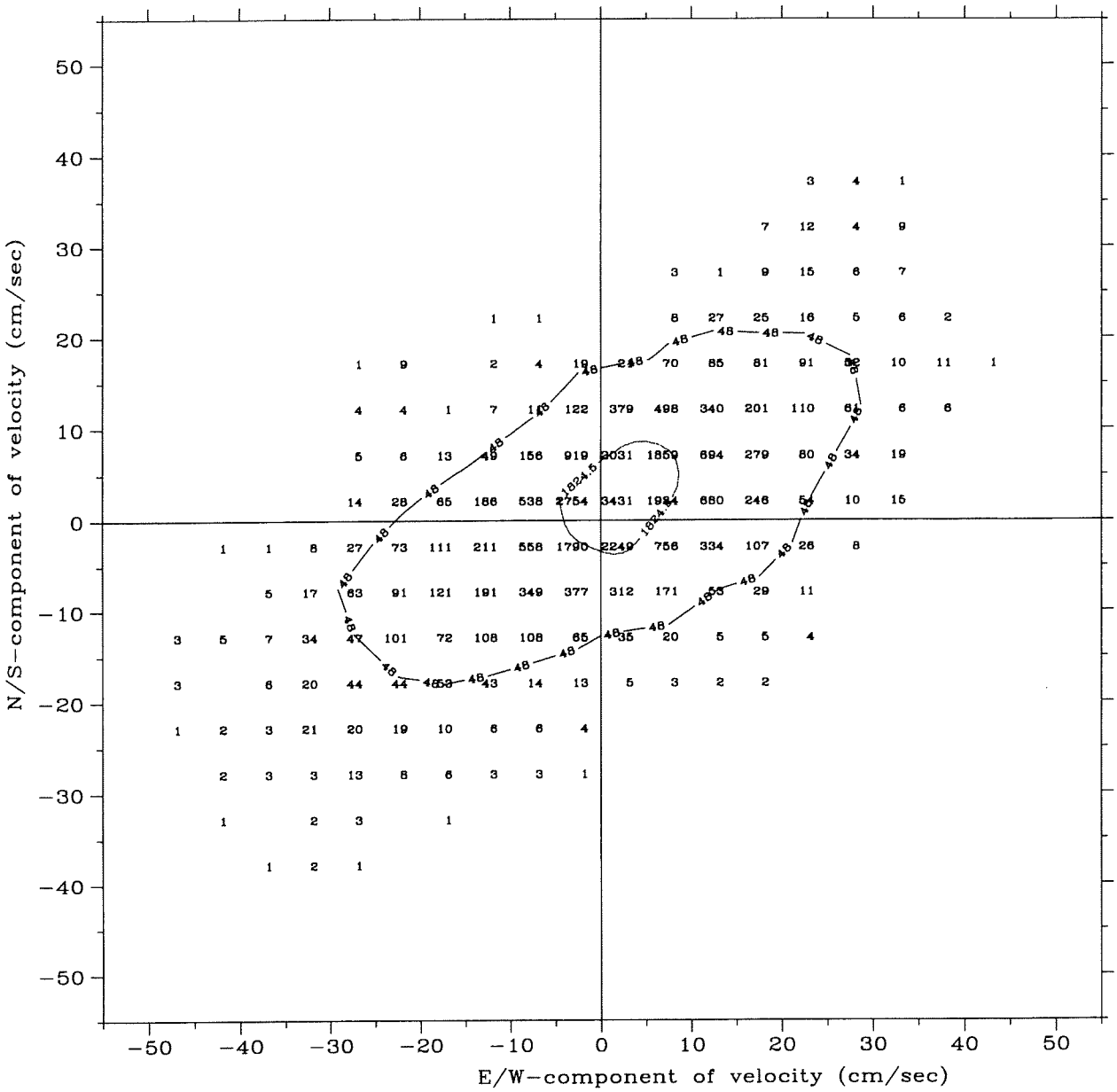
Time interval : 20.00 minutes. Instrument no. : 10798

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-3-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27544

Isoline for 50% and 96%

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 210.0 m Bottom depth : 278.0 m

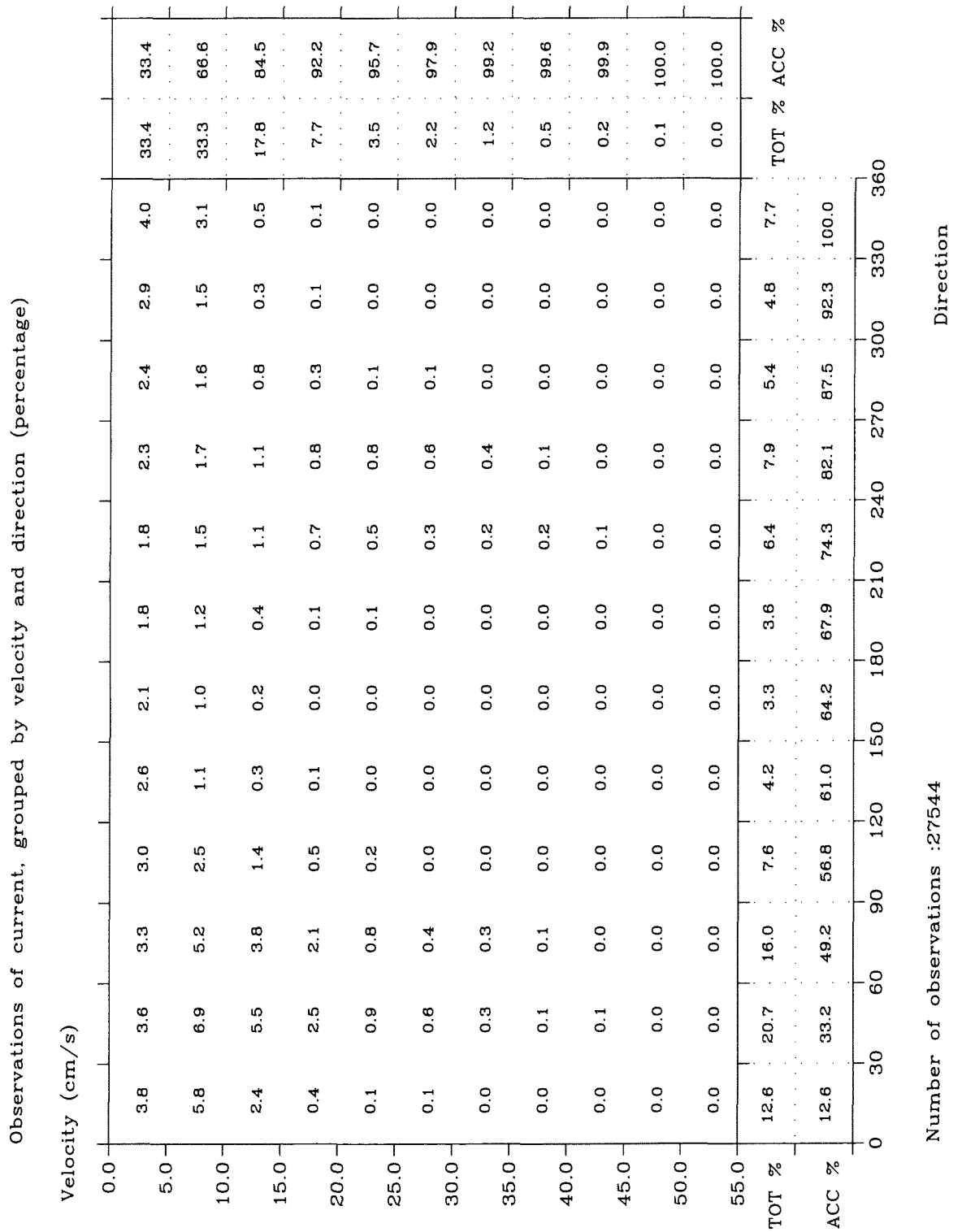
Time interval : 20.00 minutes. Instrument no. : 10798

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-3-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 210.0 m Bottom depth : 278.0 m

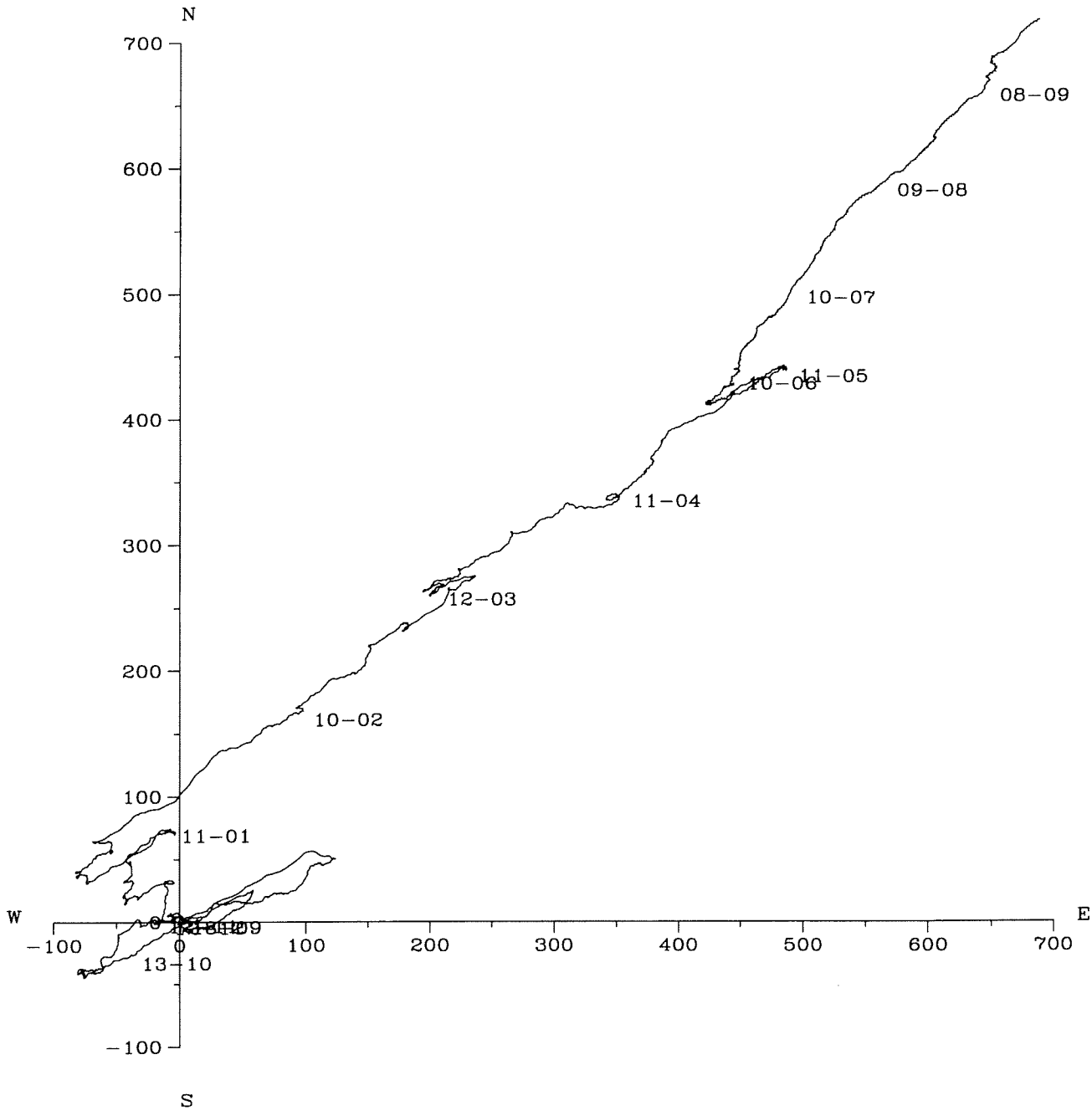
Time interval : 20.00 minutes. Instrument no. : 10798

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-3-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



Units in km

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

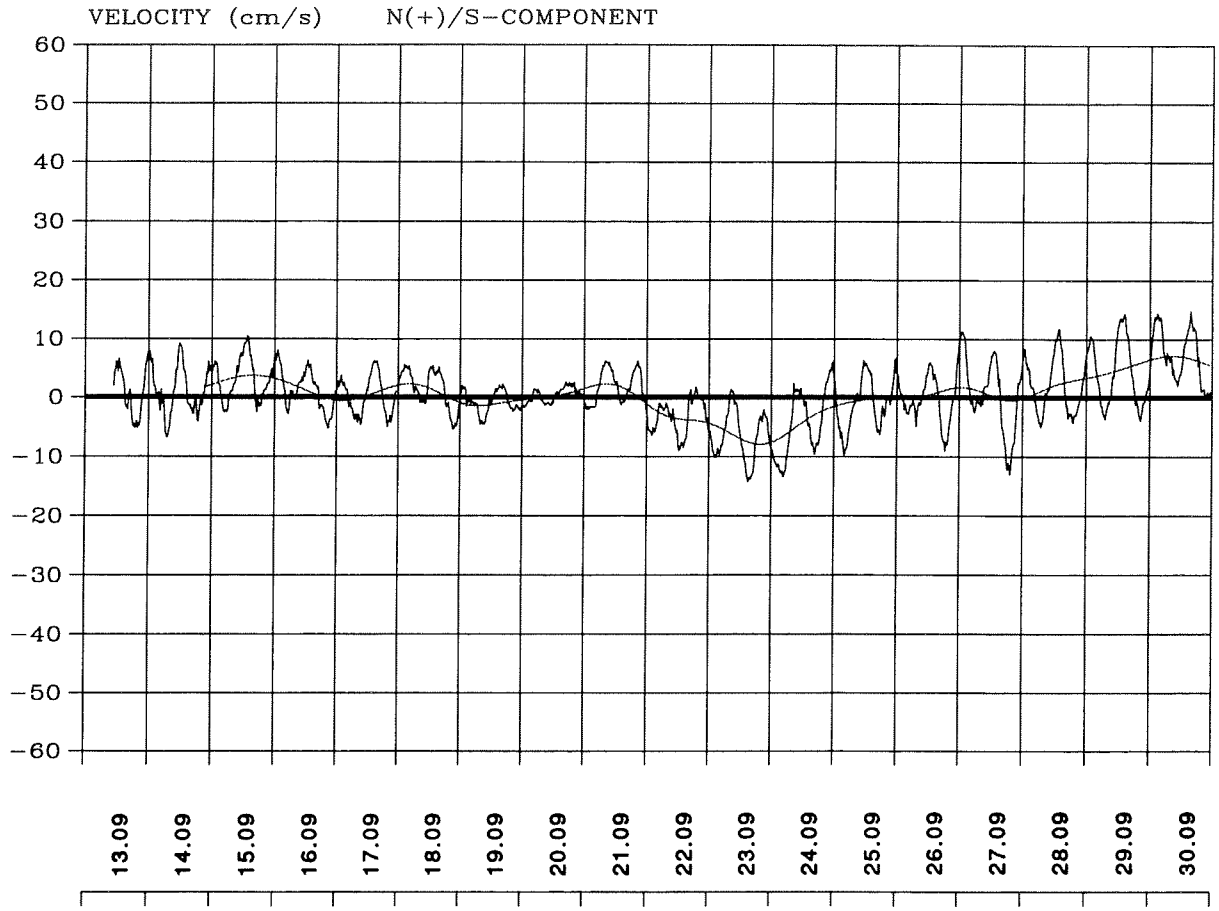
Instrument depth : 210.0 m Bottom depth : 278.0 m

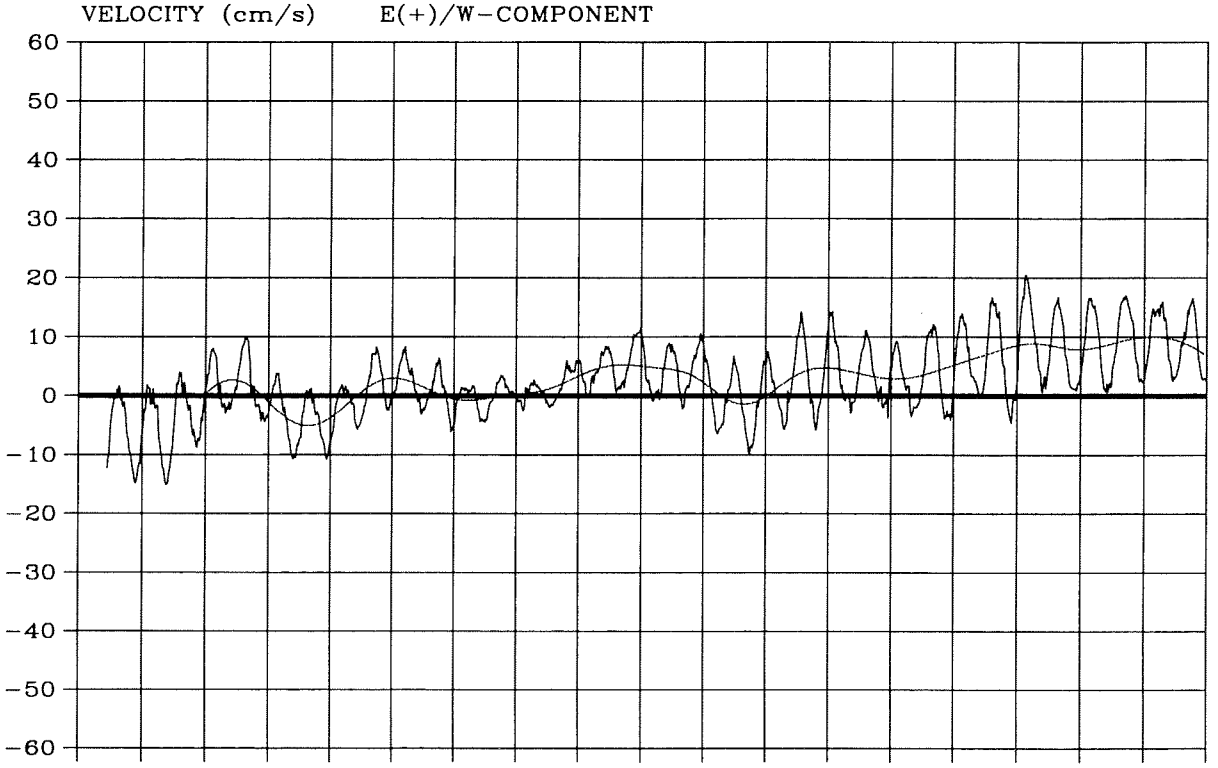
Time interval : 20.00 minutes. Instrument no. : 10798

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-3-5 Progressive vector diagram.





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

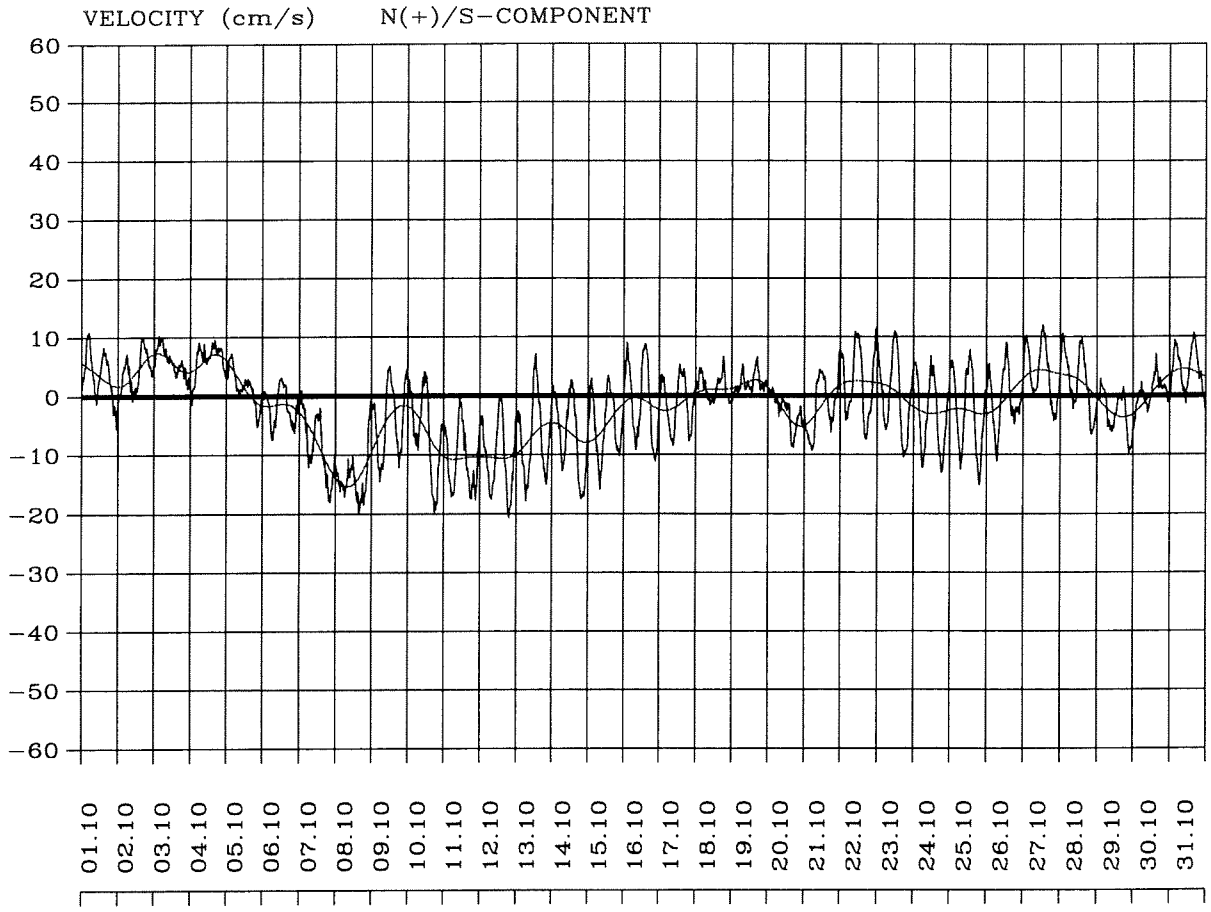
Instrument depth : 210.0 m Bottom depth : 278.0 m

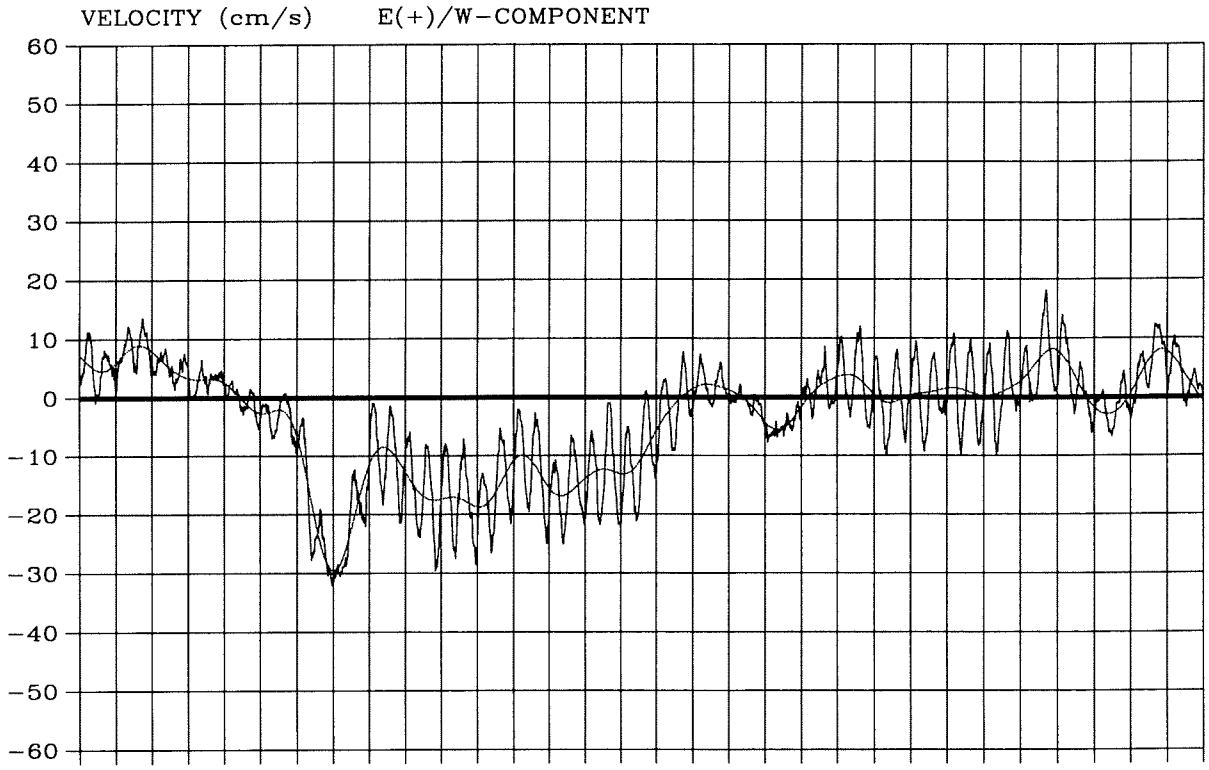
Time interval : 20.00 minutes. Instrument no. : 10798

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-3-6 Current velocity distribution.





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 210.0 m Bottom depth : 278.0 m

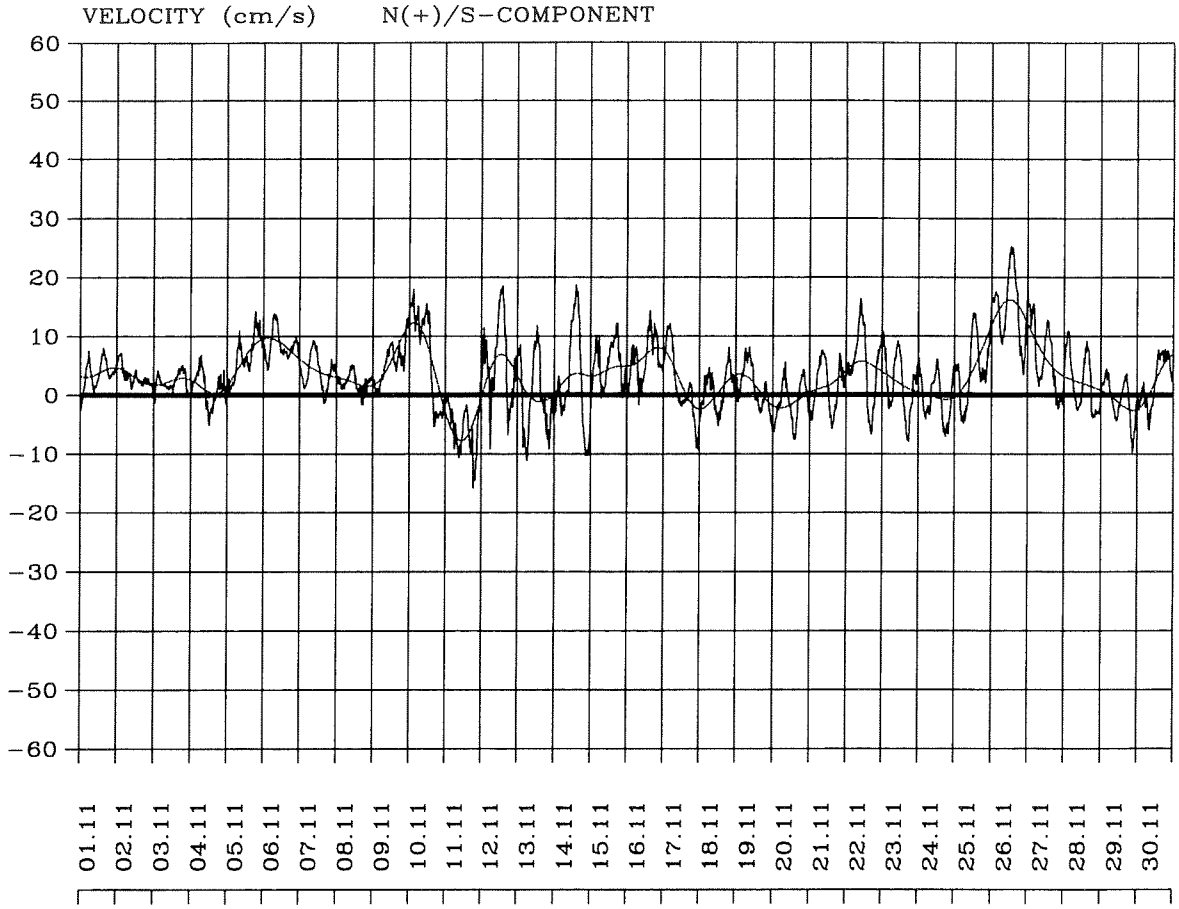
Time interval : 20.00 minutes. Instrument no. : 10798

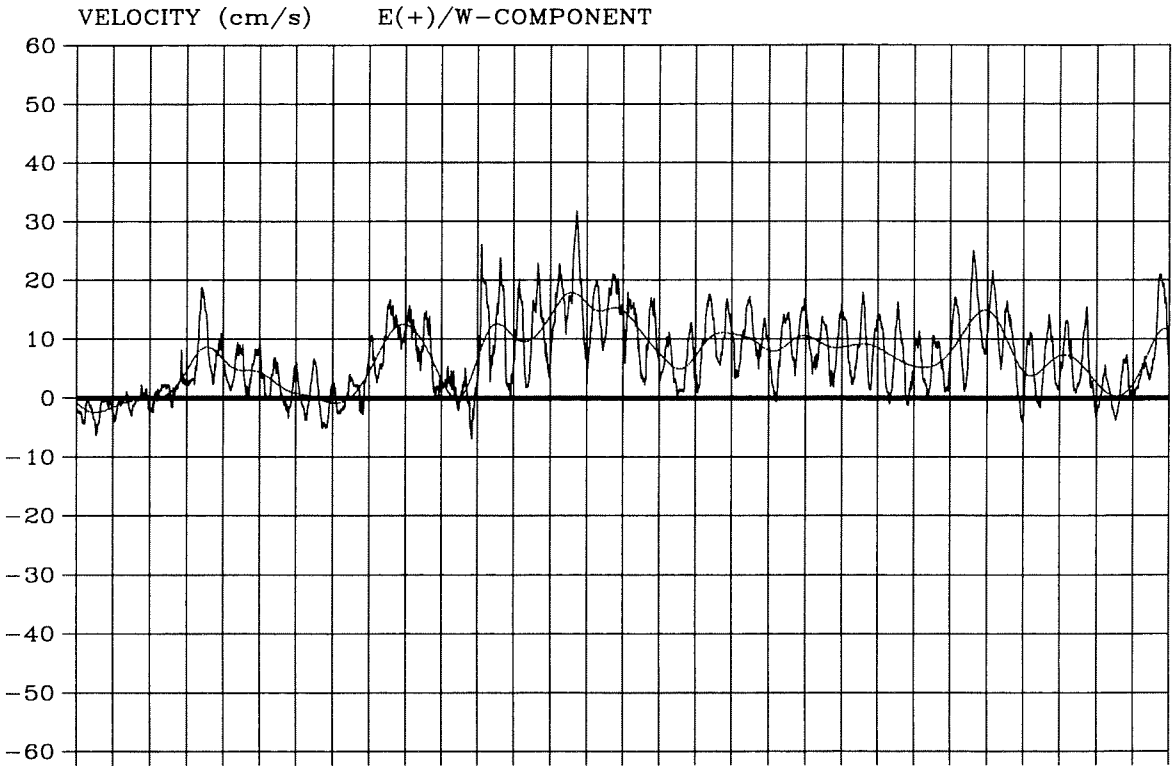
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-3-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 210.0 m Bottom depth : 278.0 m

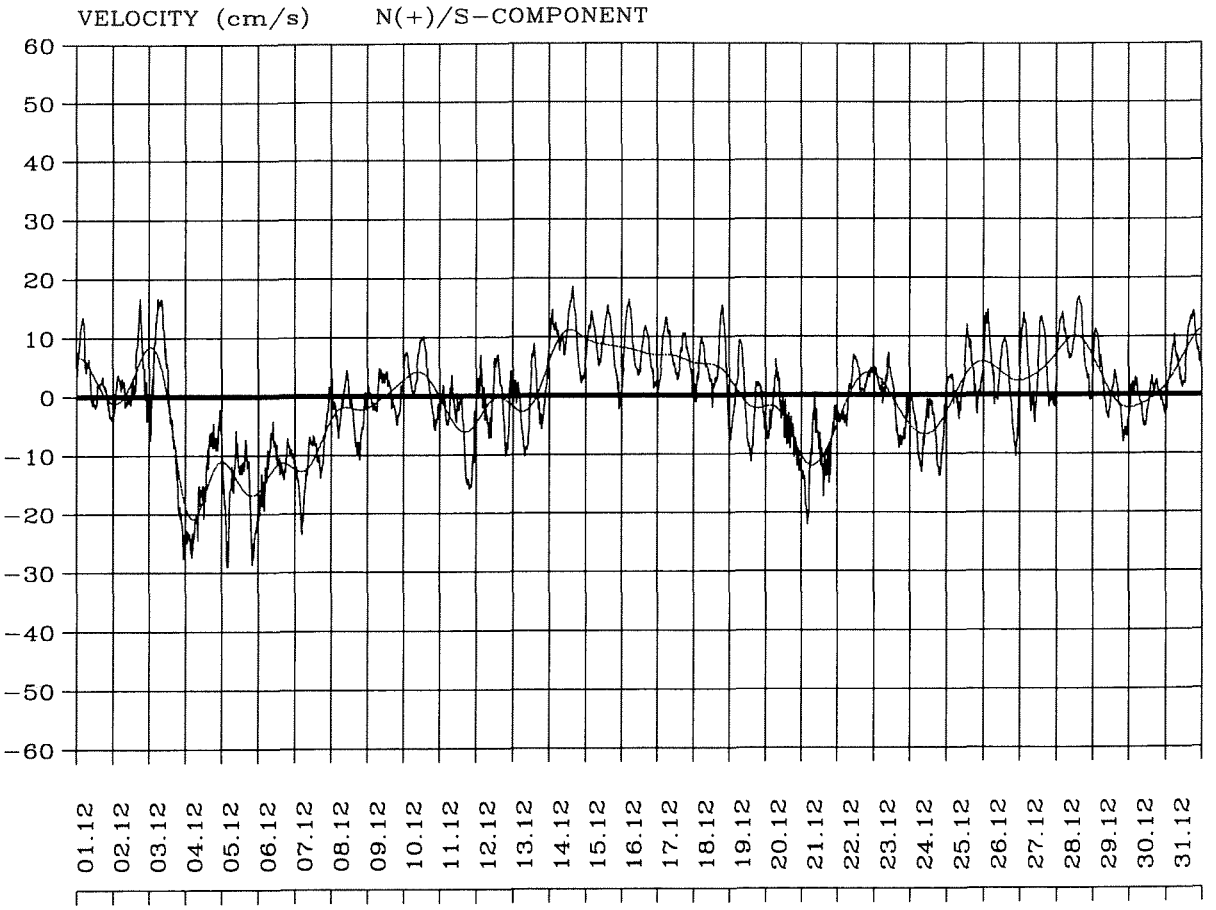
Time interval : 20.00 minutes. Instrument no. : 10798

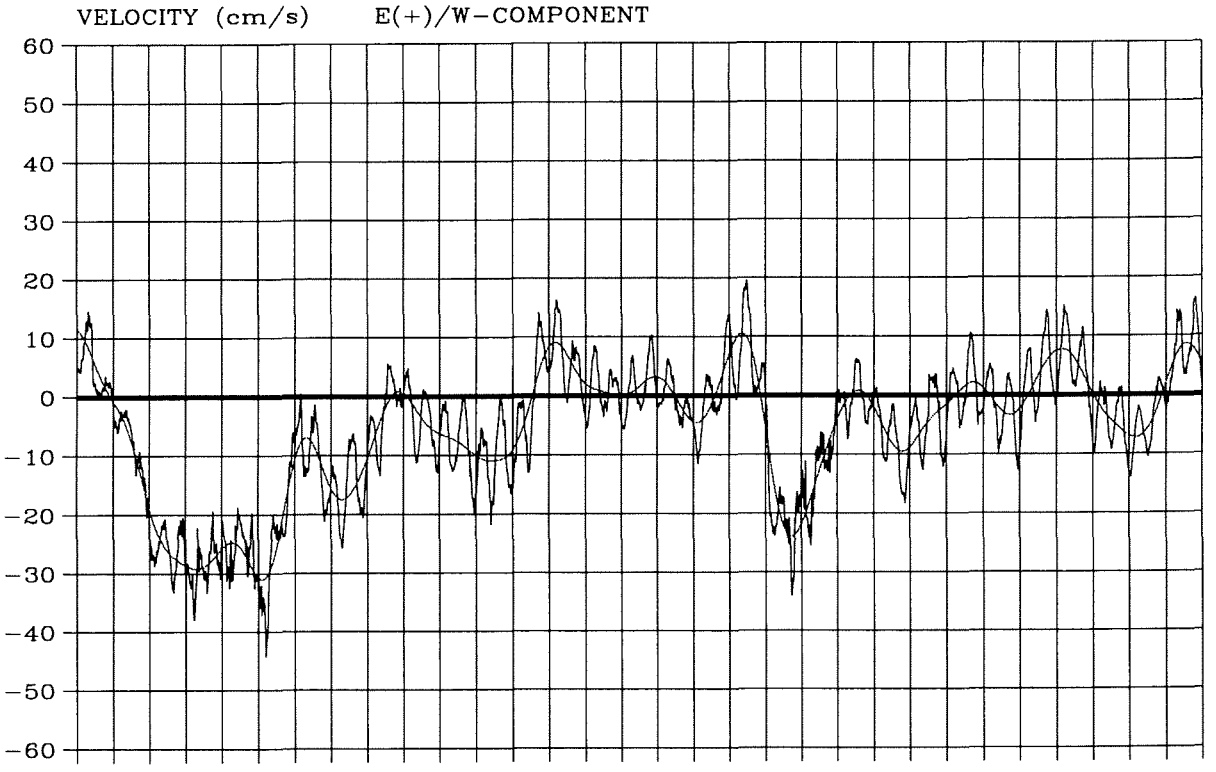
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-3-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 210.0 m Bottom depth : 278.0 m

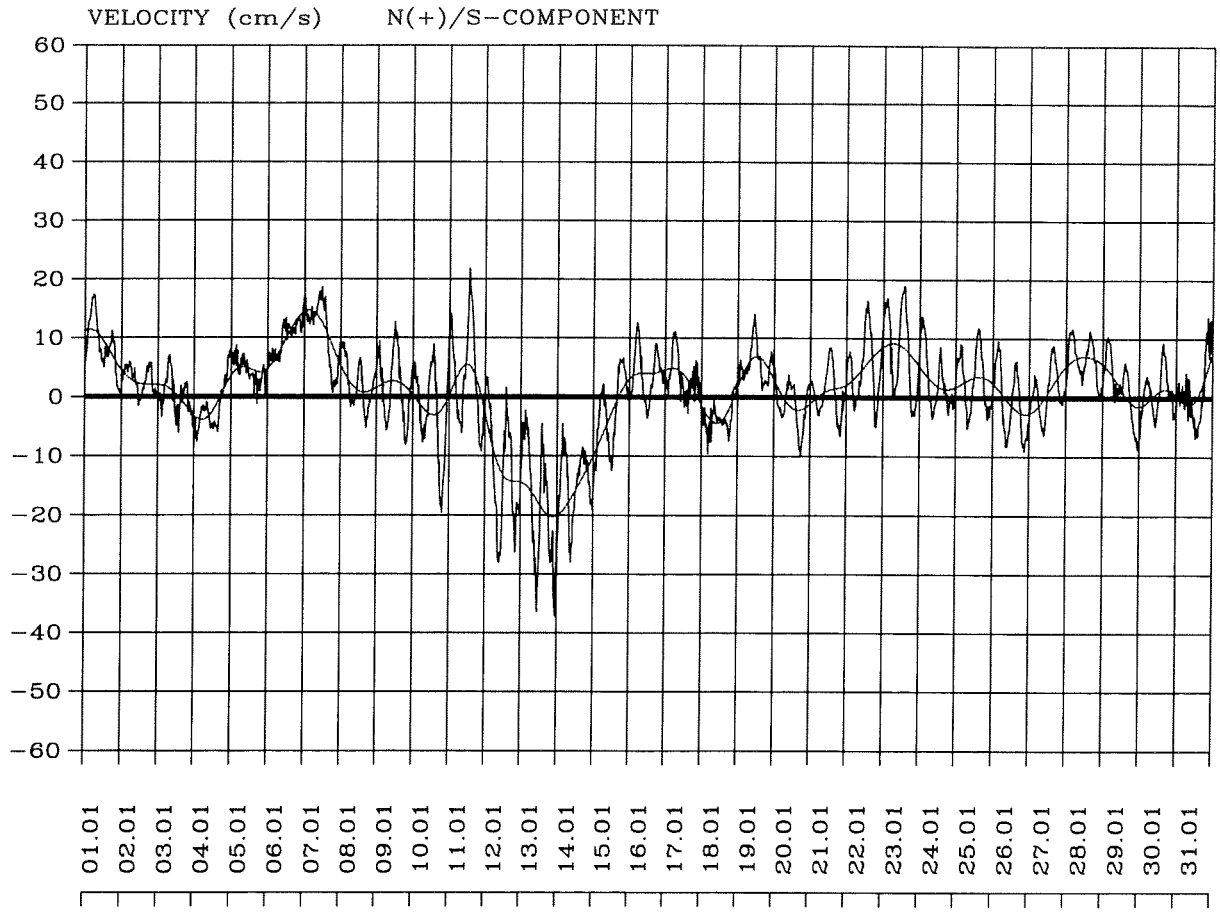
Time interval : 20.00 minutes. Instrument no. : 10798

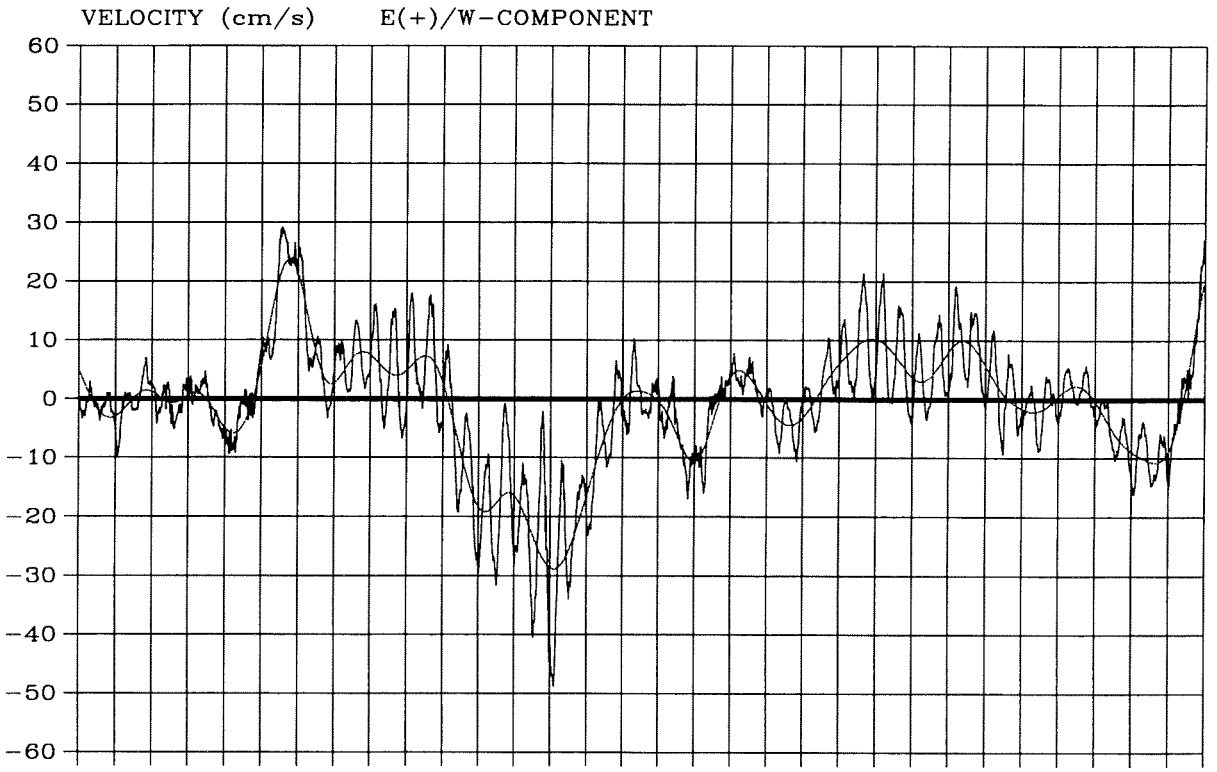
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-3-6

Continues.....





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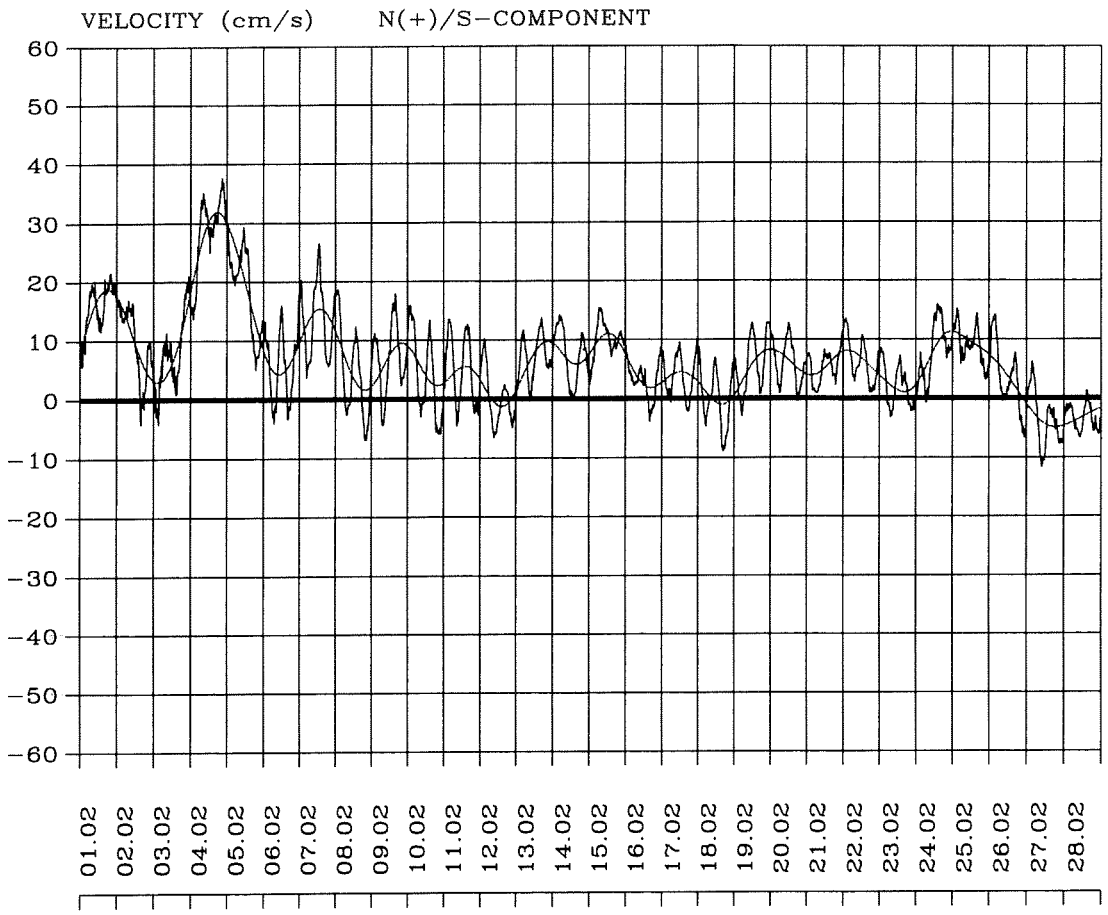
Time interval : 20.00 minutes. Instrument no. : 10798

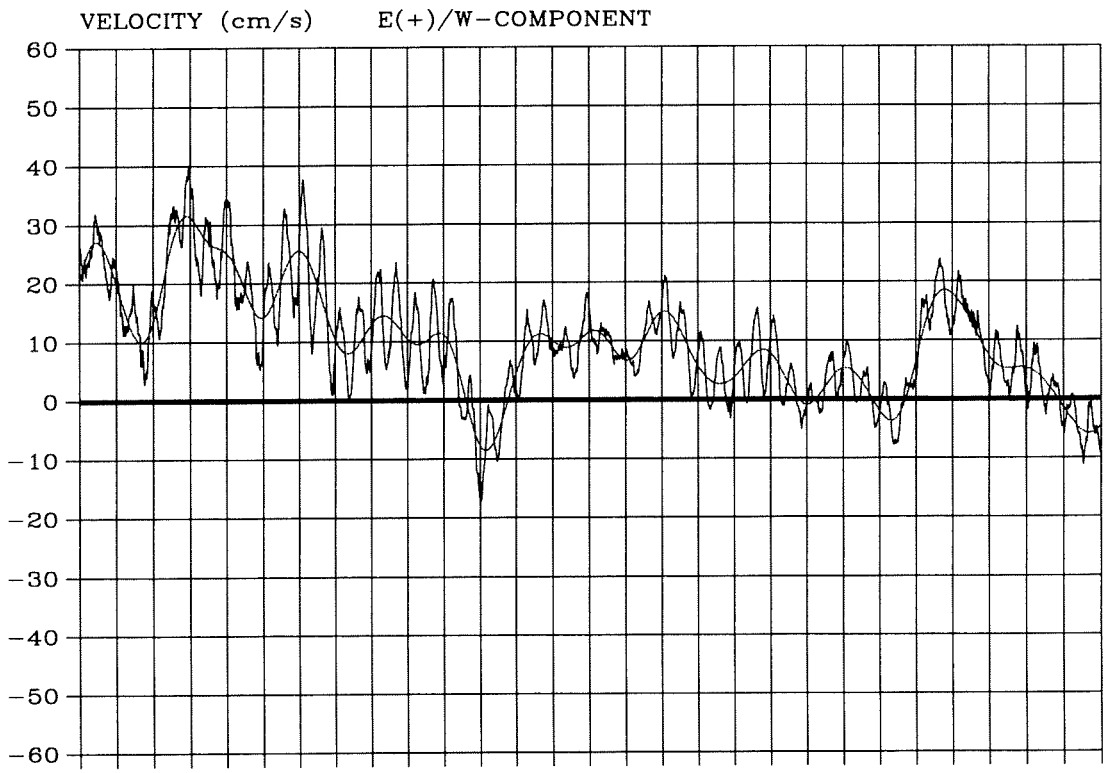
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-3-6

Continues.....





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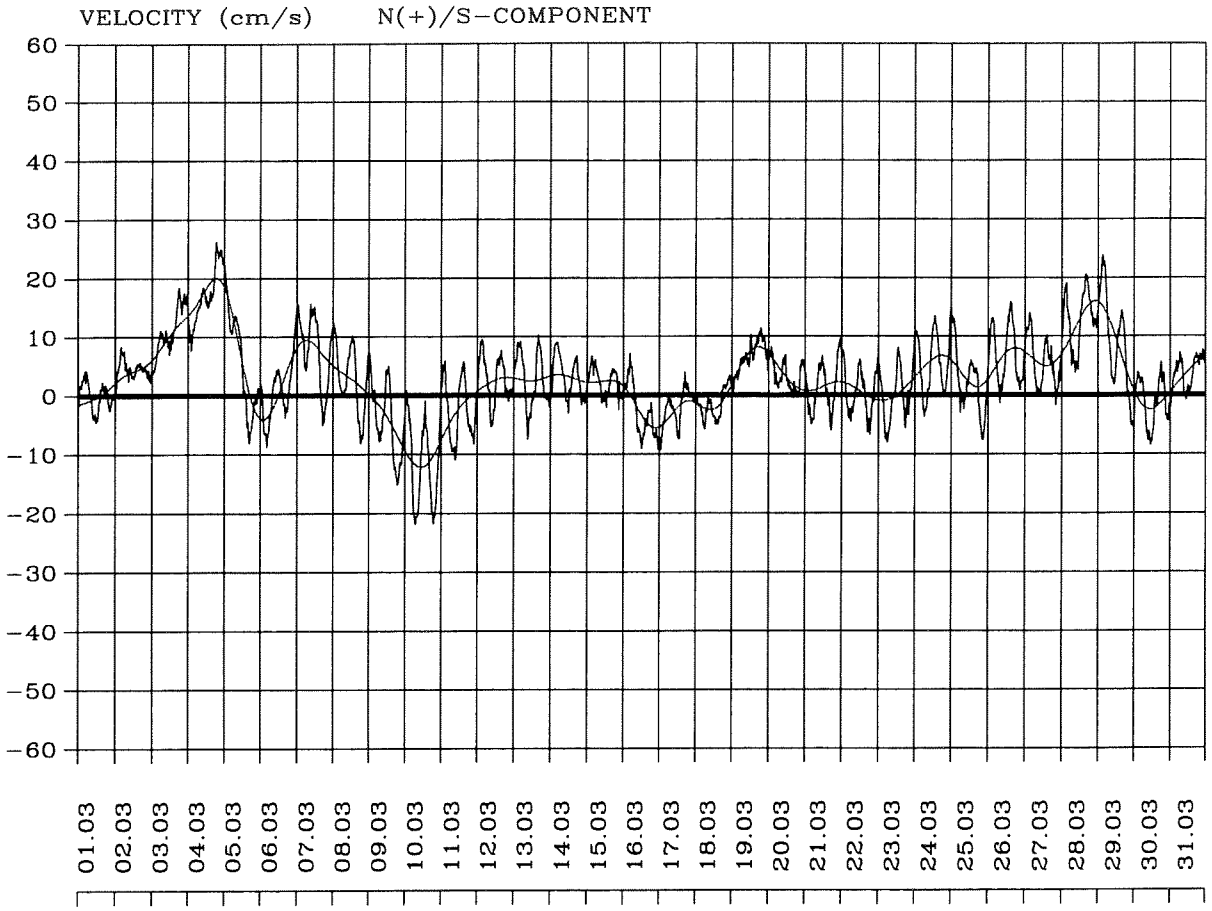
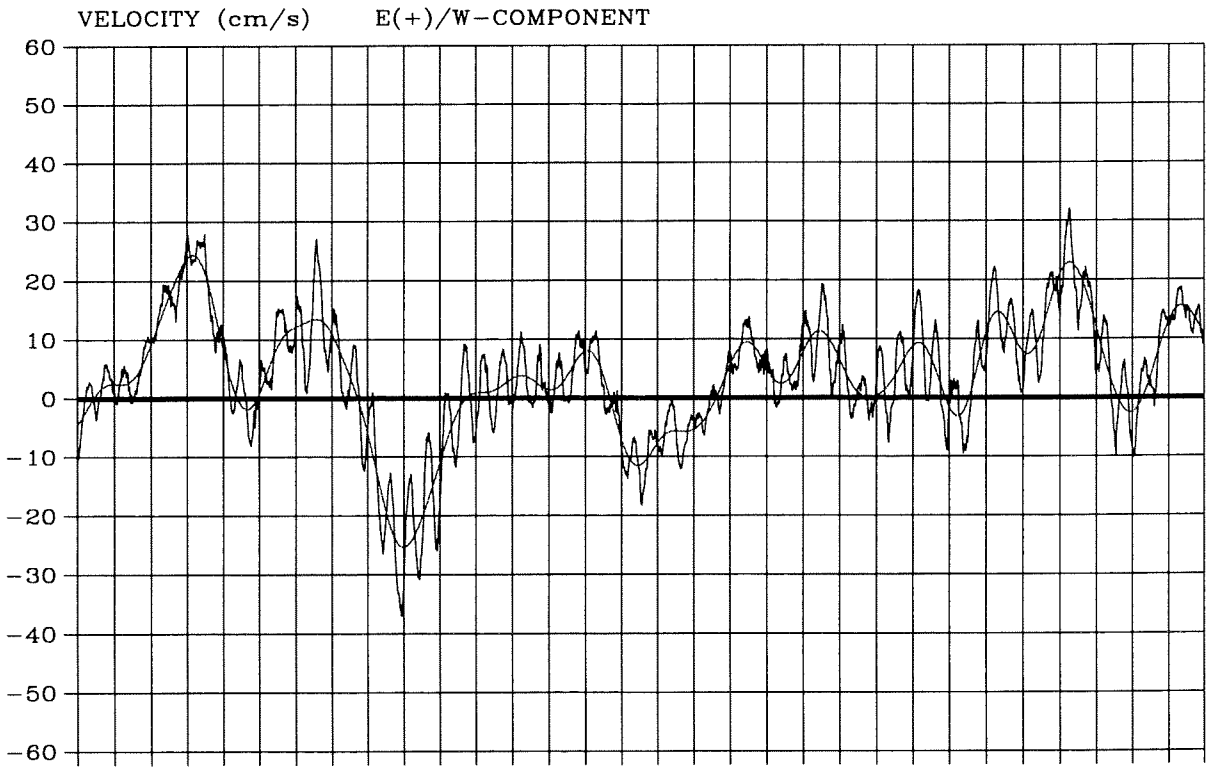
IMR

Fig. 2-3-6

Continues.....





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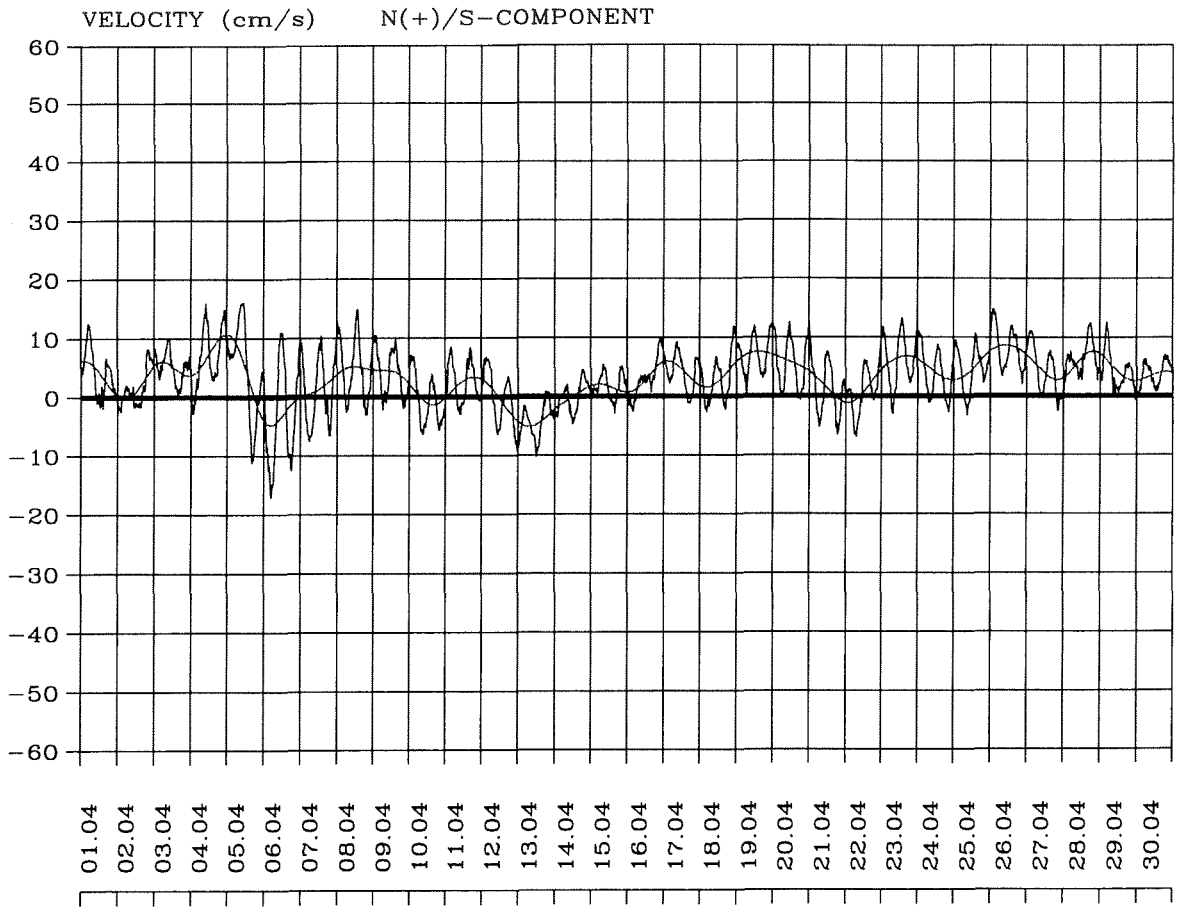
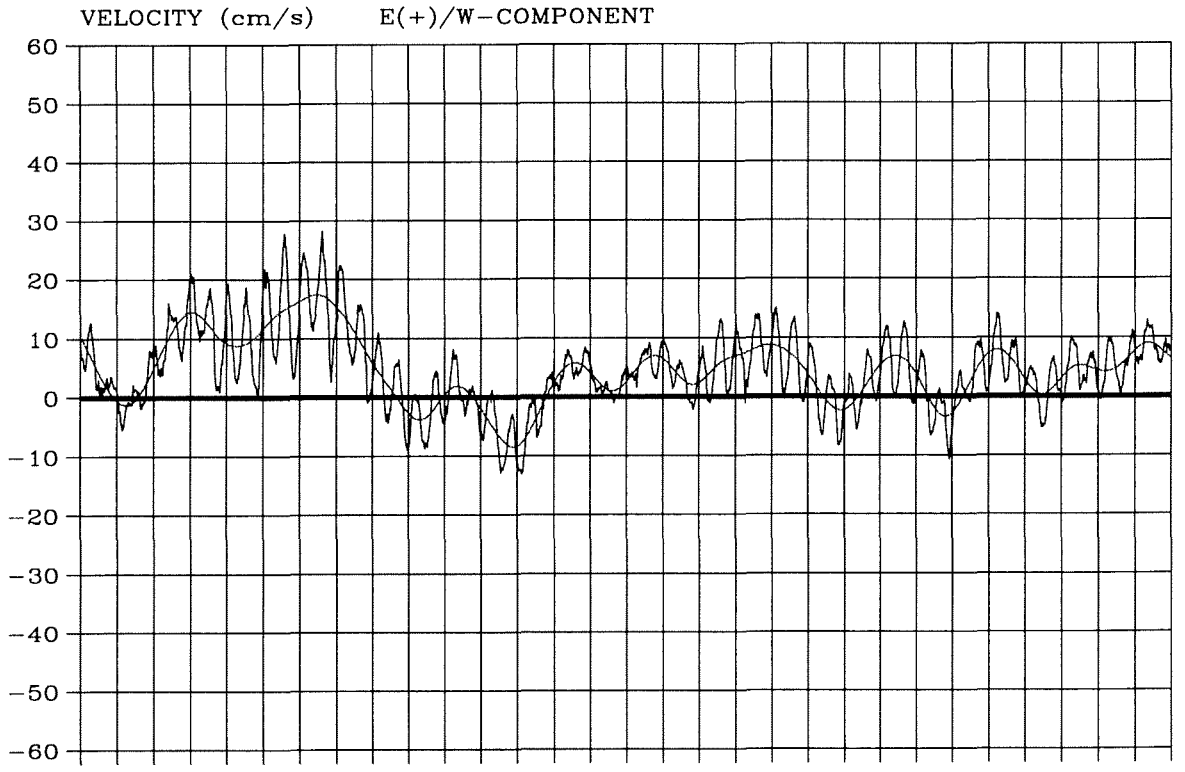
IMR

Fig. 2-3-6

Continues.....





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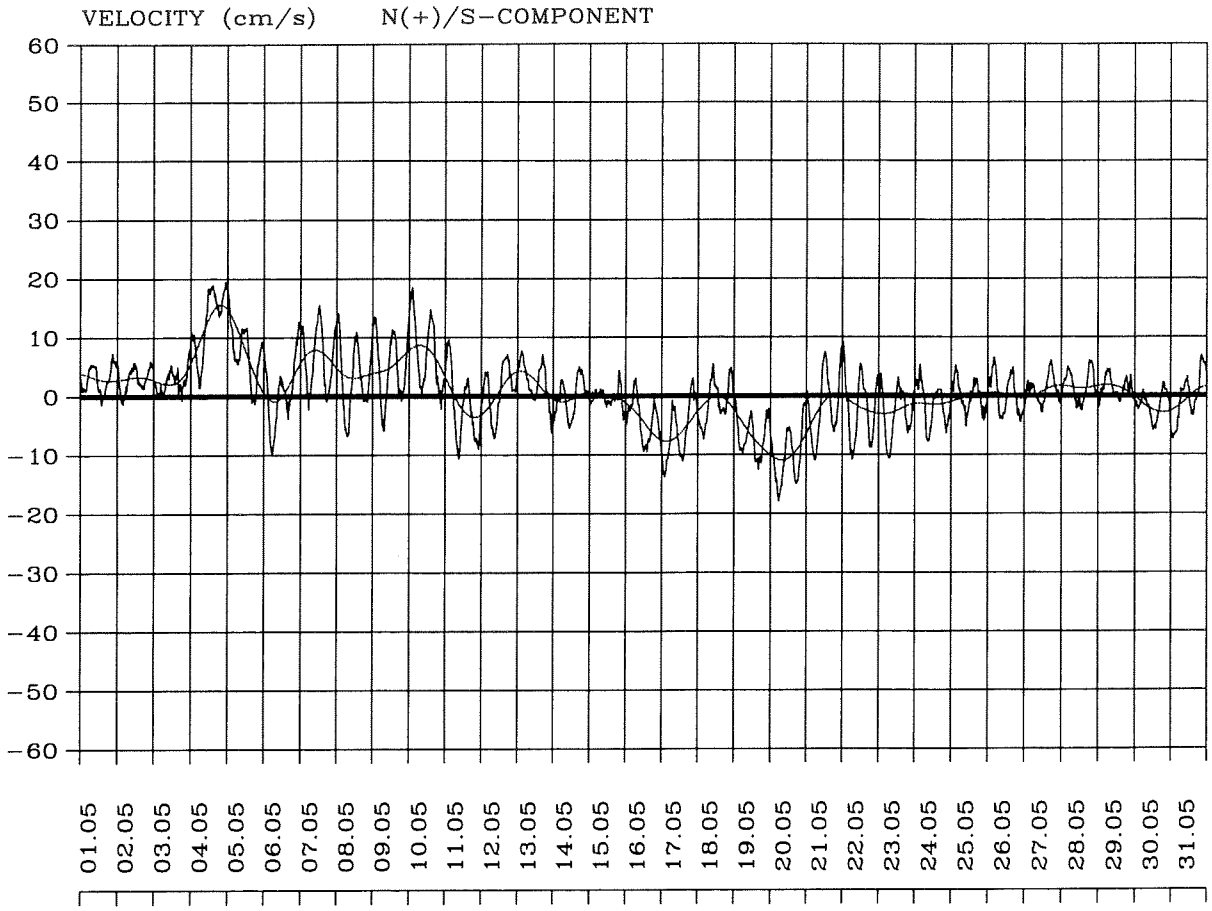
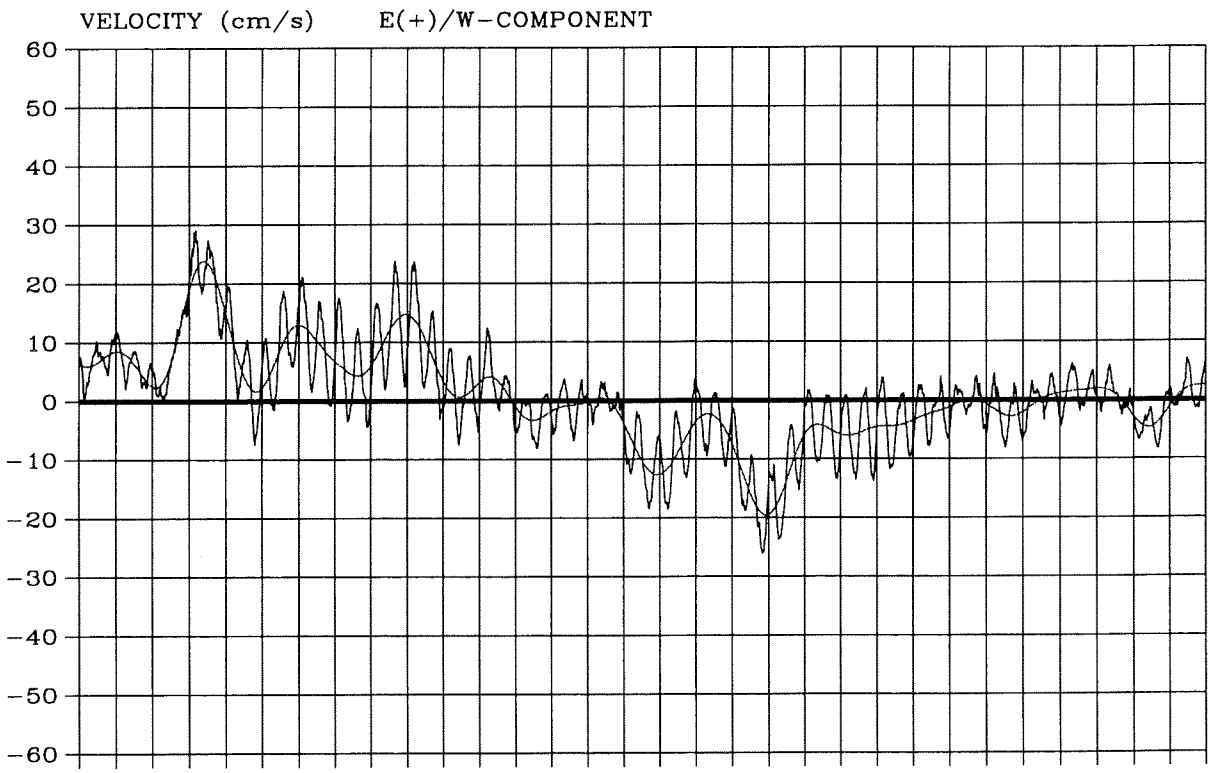
IMR

Fig. 2-3-6

Continues.....





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Time interval : 20.00 minutes. Instrument no. : 10798

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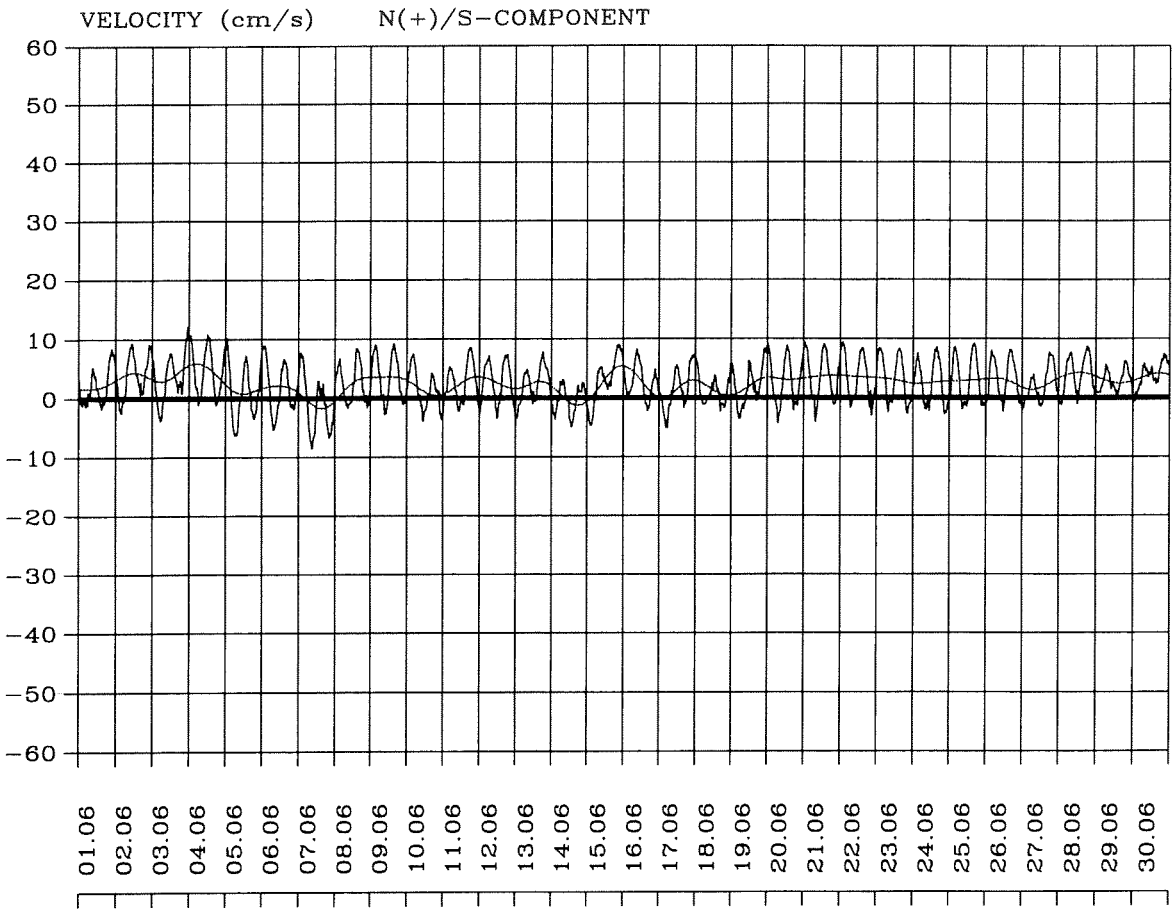
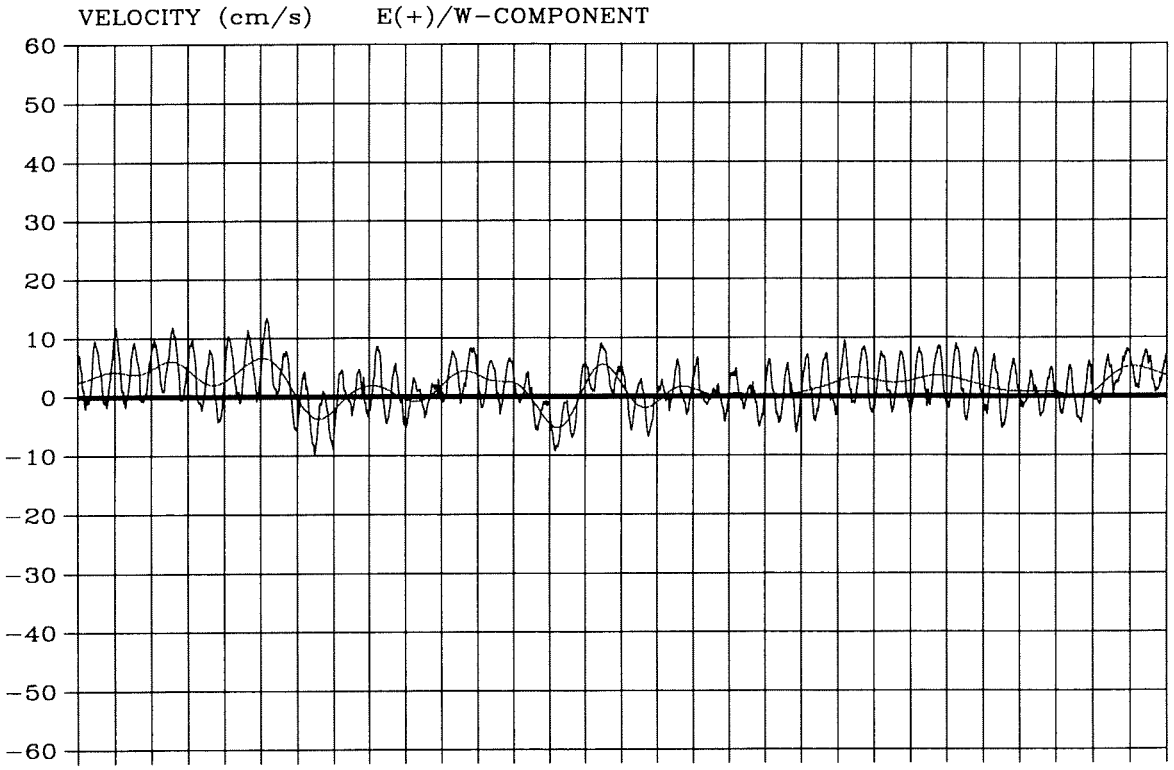
IMR

Fig. 2-3-6

Continues.....





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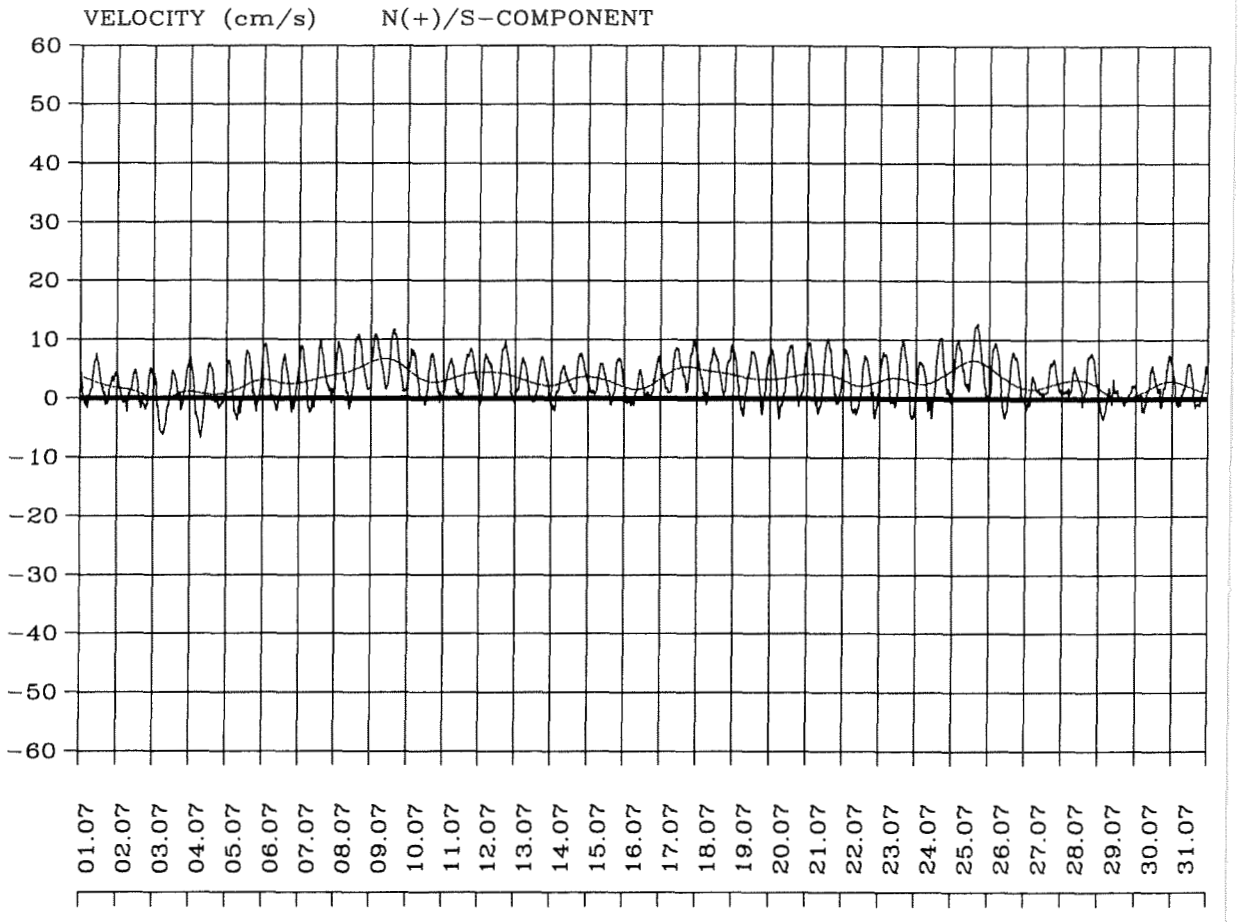
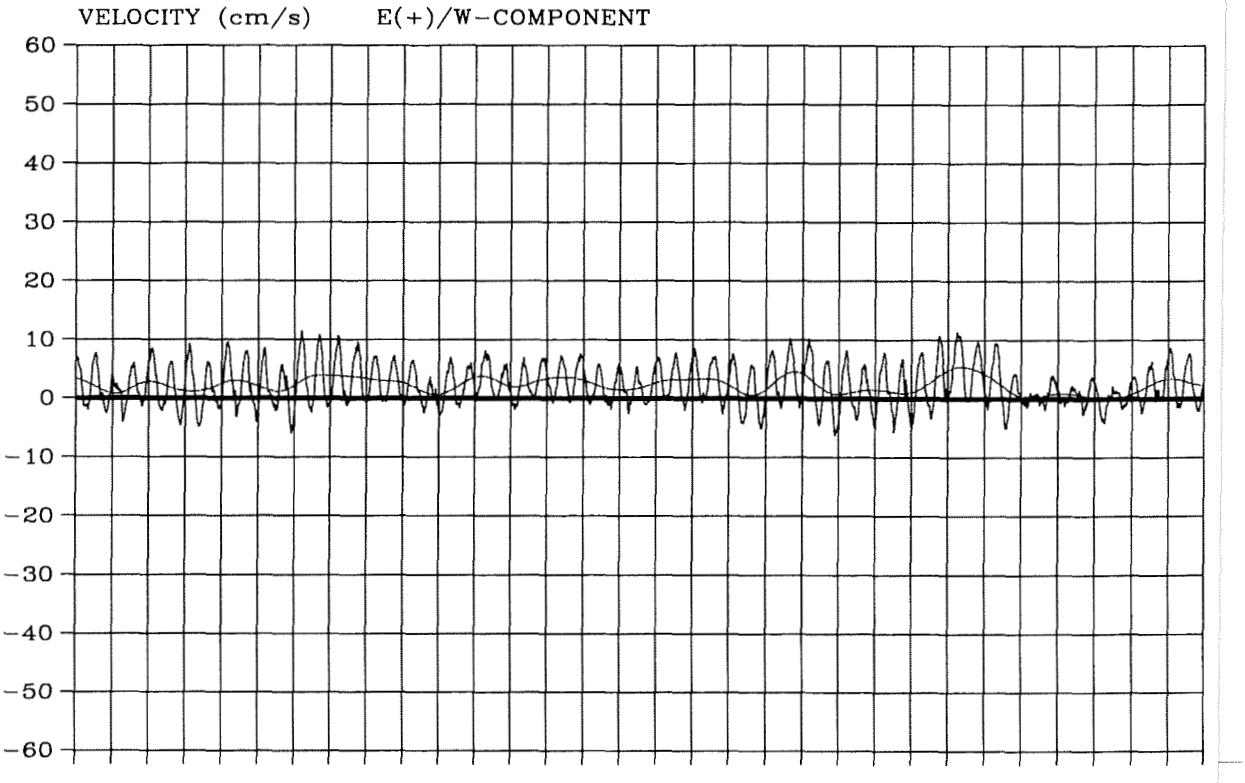
IMR

Fig. 2-3-6

Continues.....





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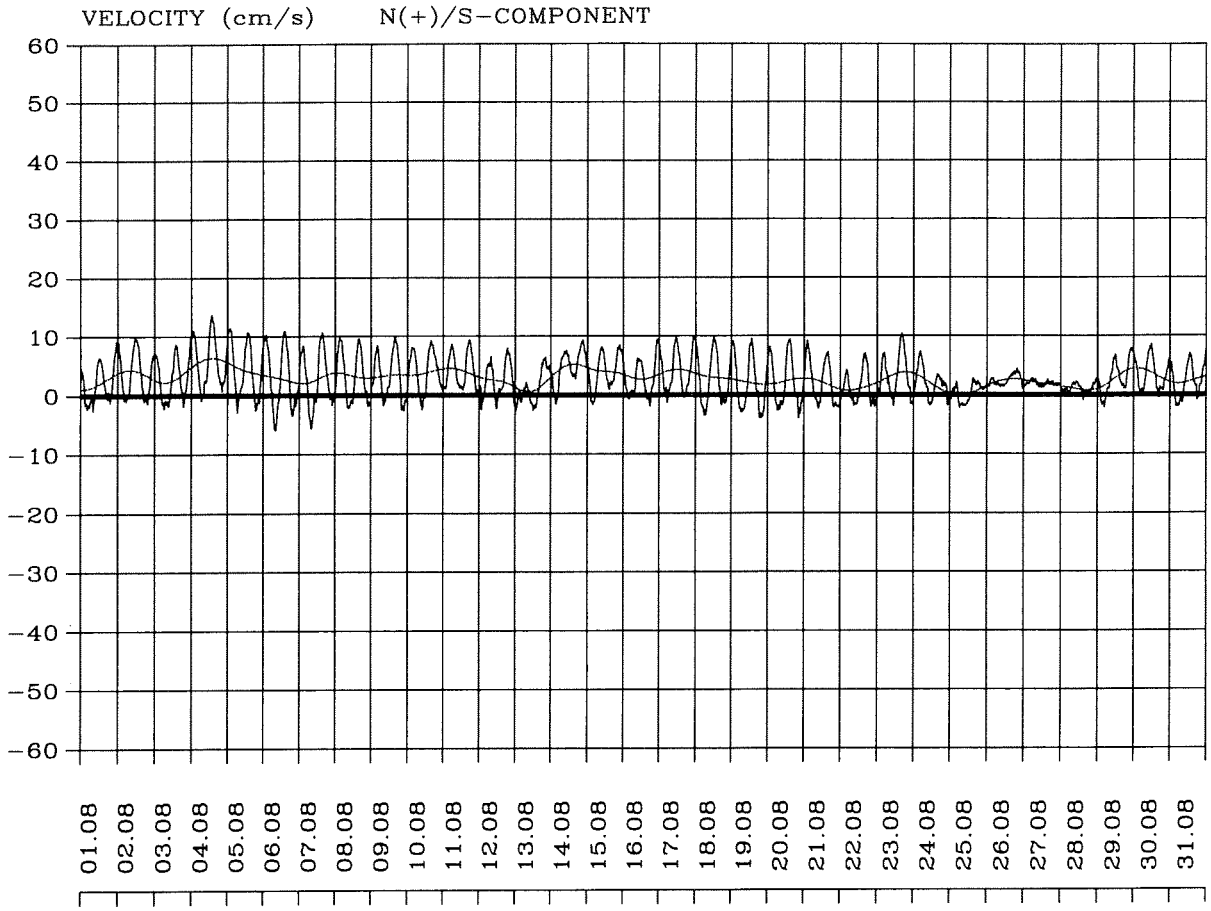
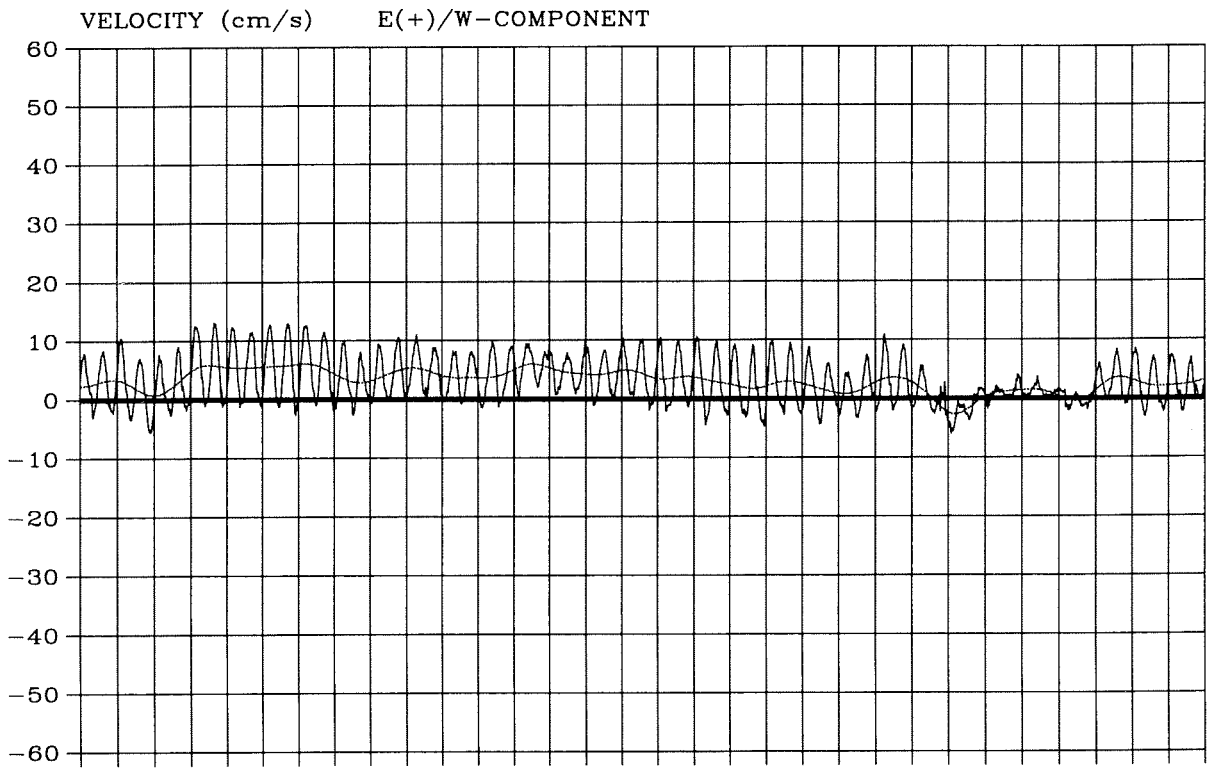
IMR

Fig. 2-3-6

Continues.....





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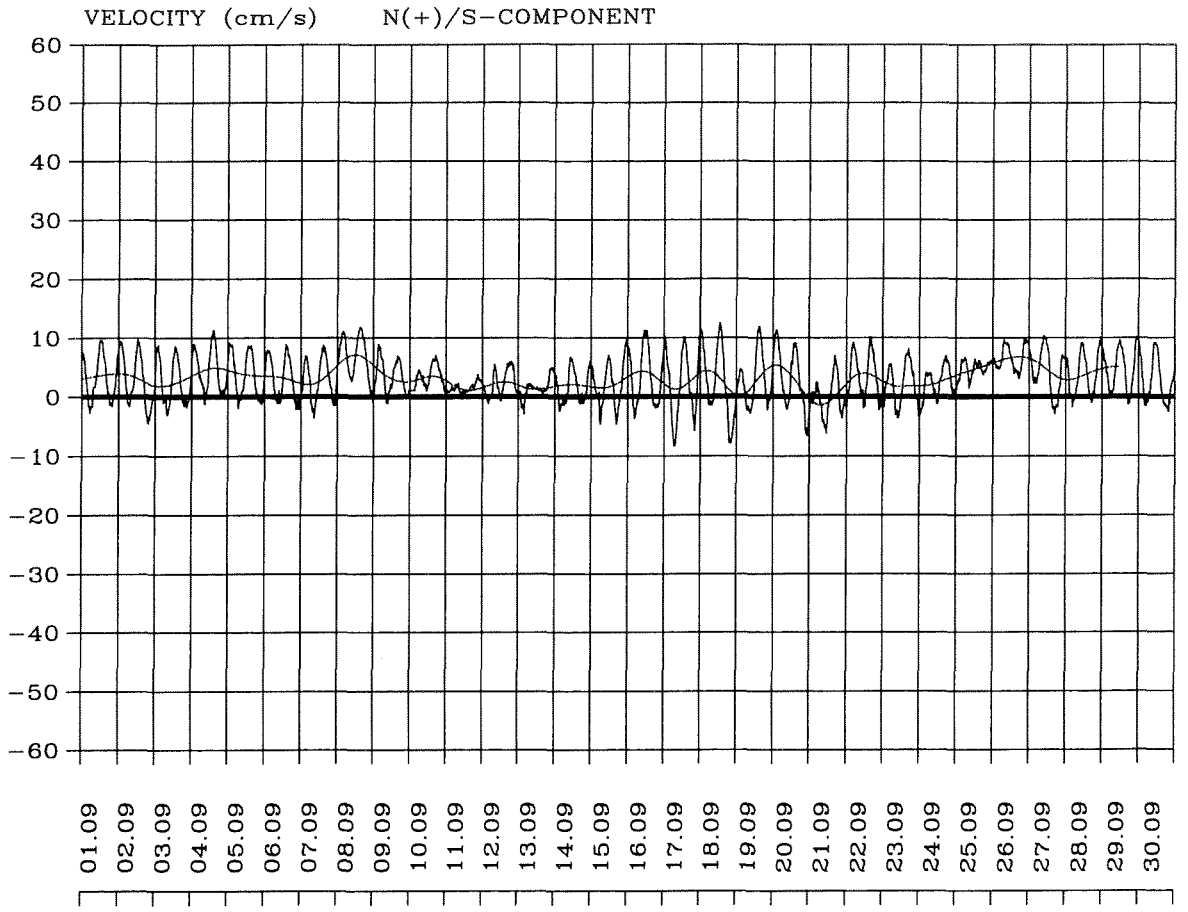
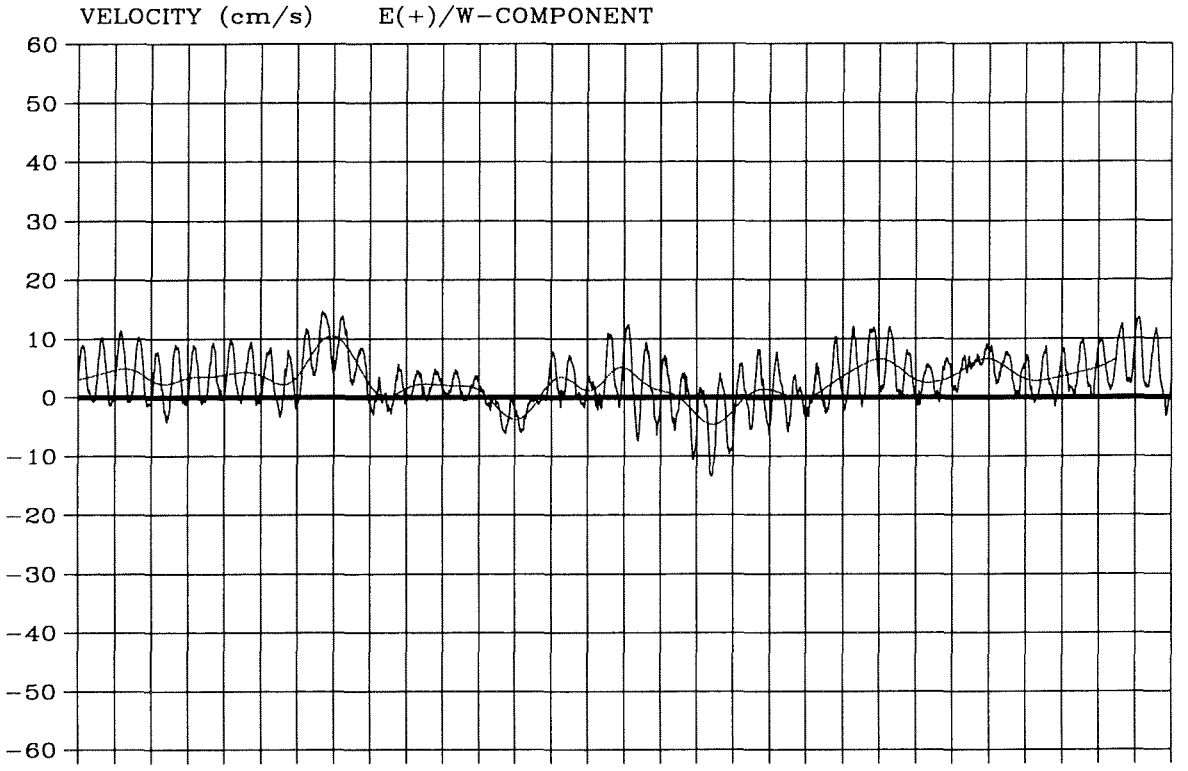
IMR

Fig. 2-3-6

Continues.....





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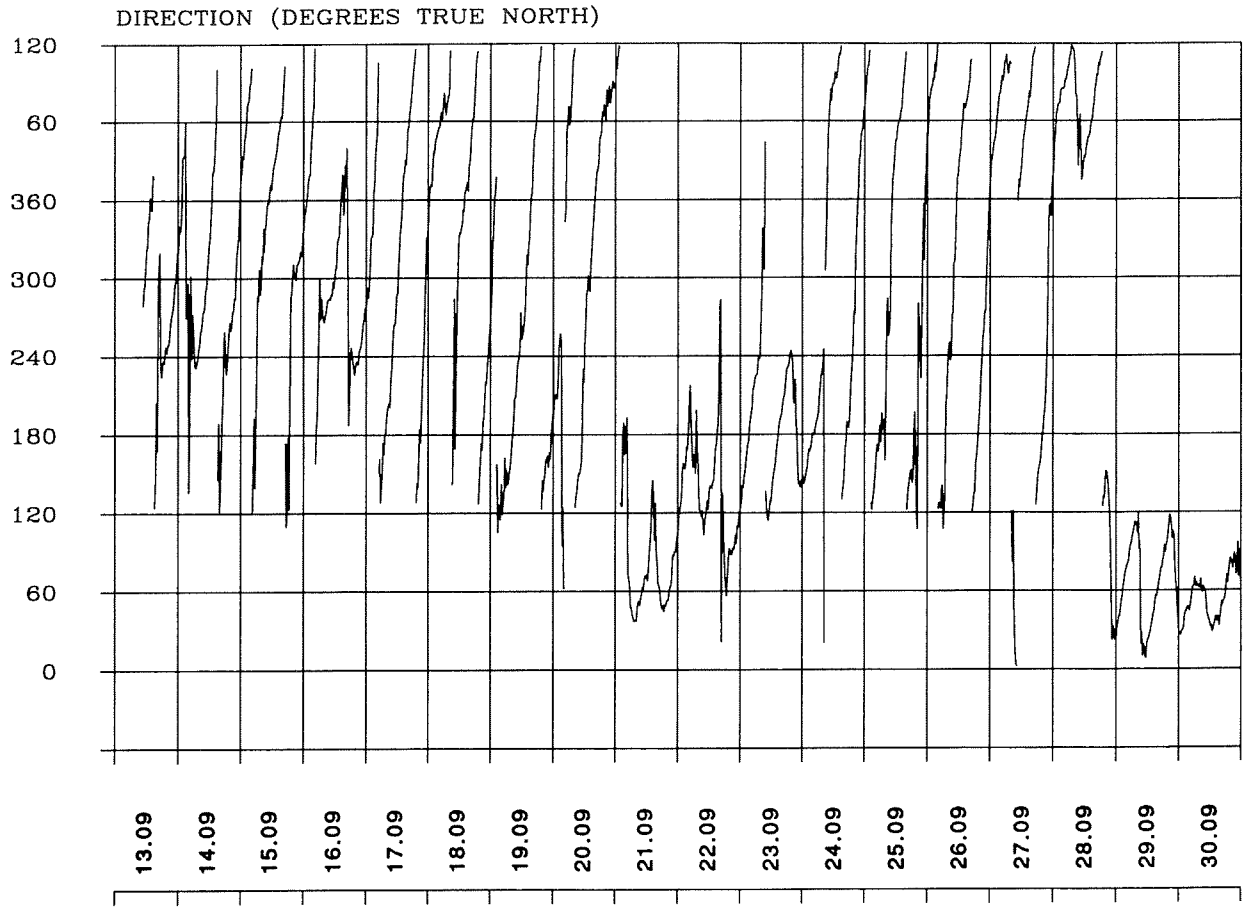
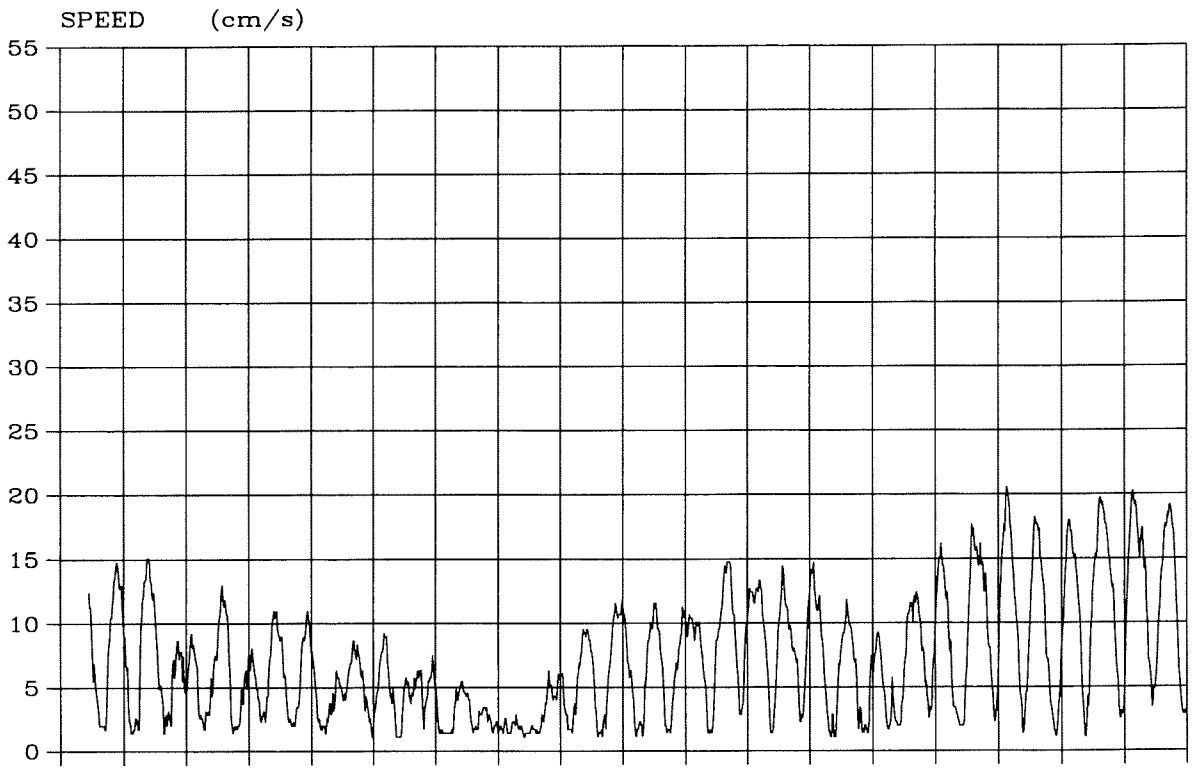
IMR

Fig. 2-3-6

Continues.....





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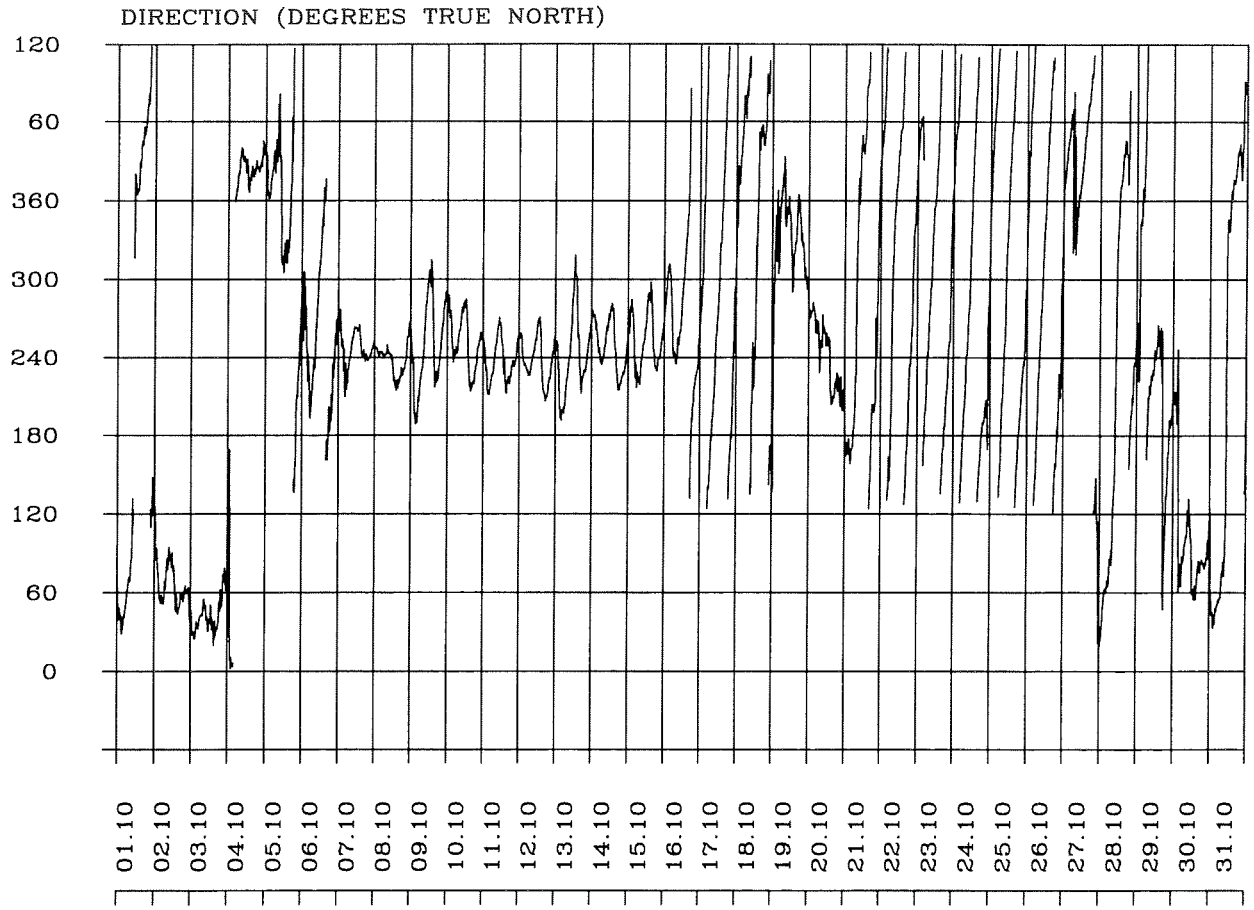
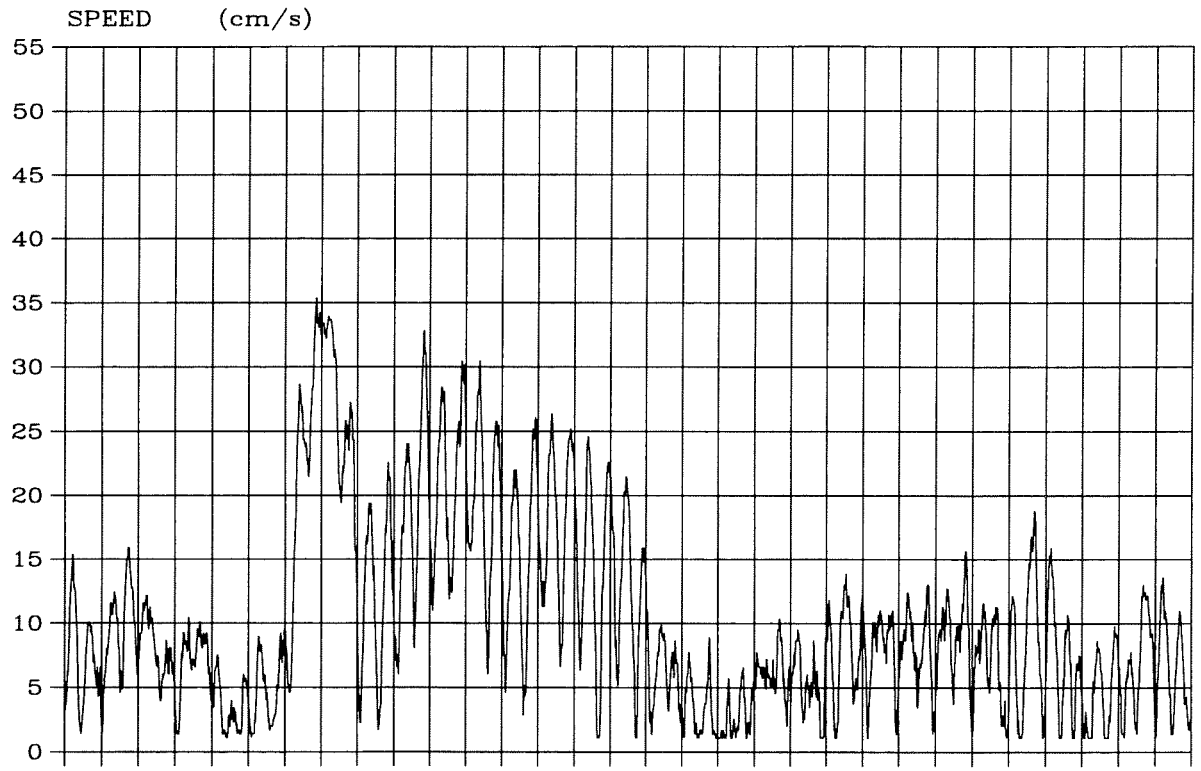
IMR

Fig. 2-3-7

Speed and direction of current.





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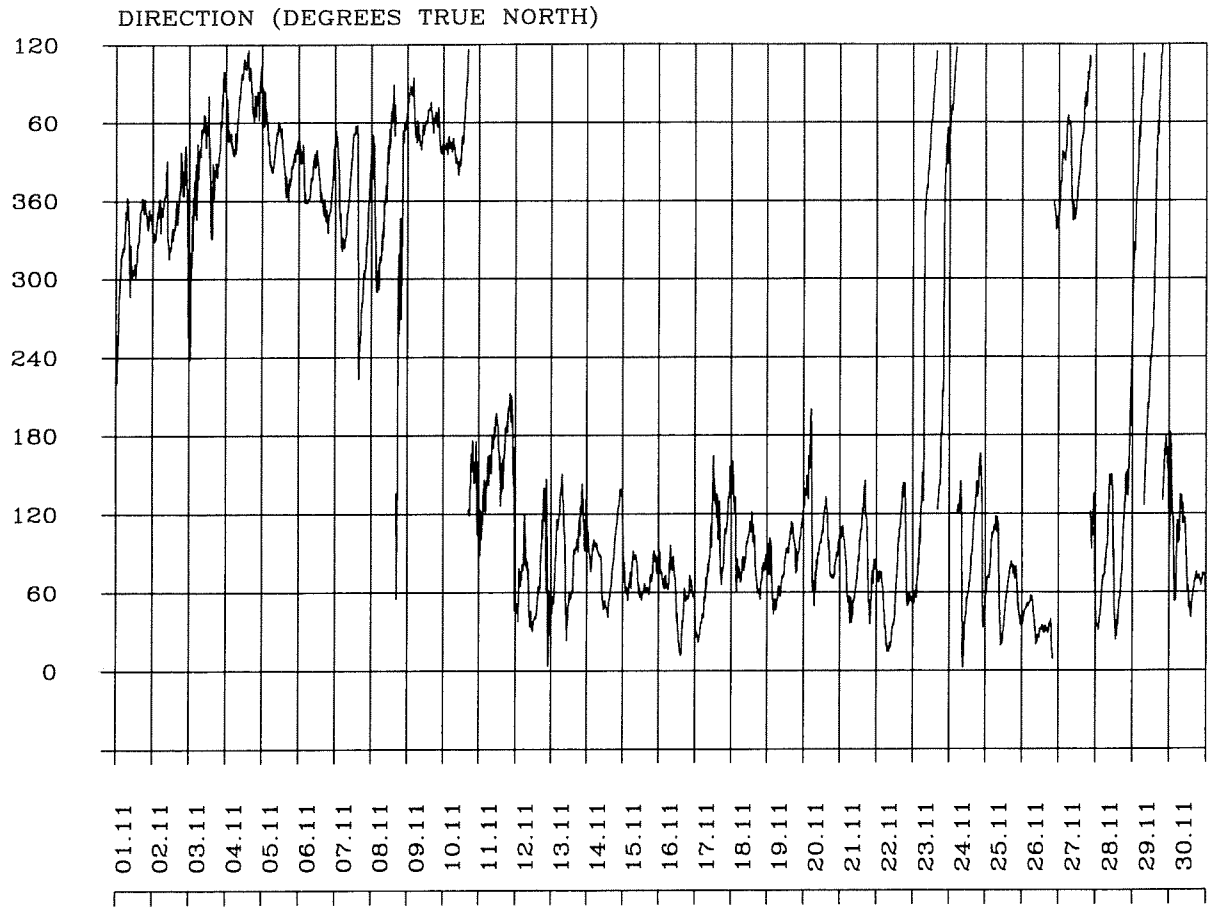
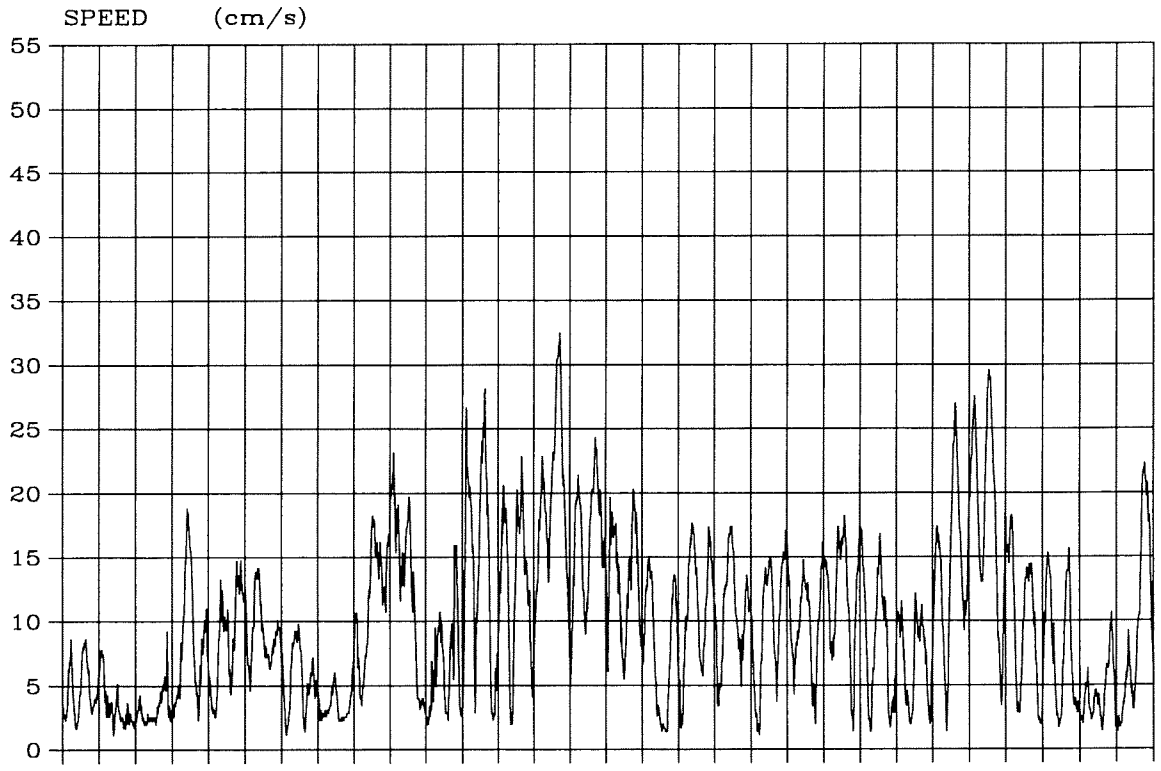
IMR

Fig. 2-3-7

Continues.....





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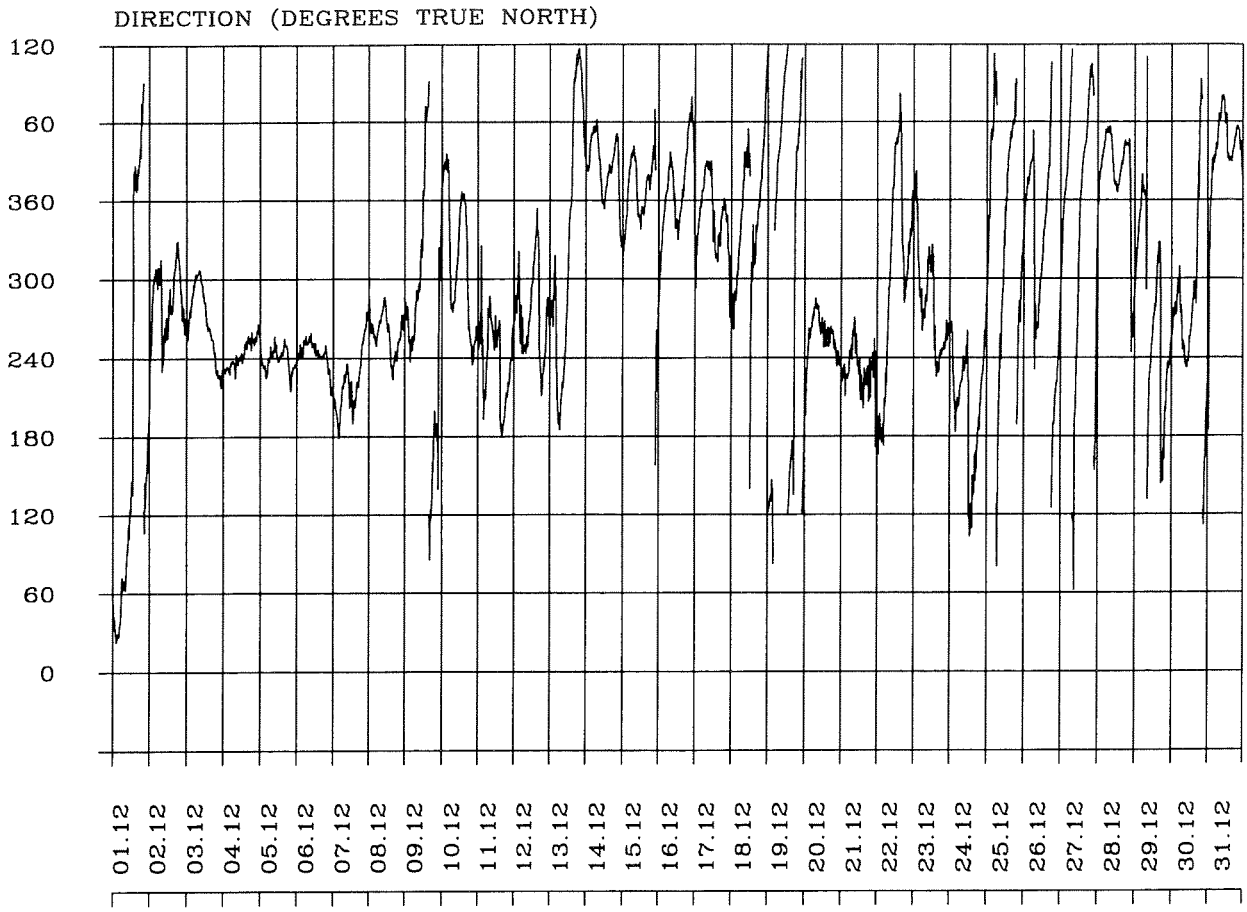
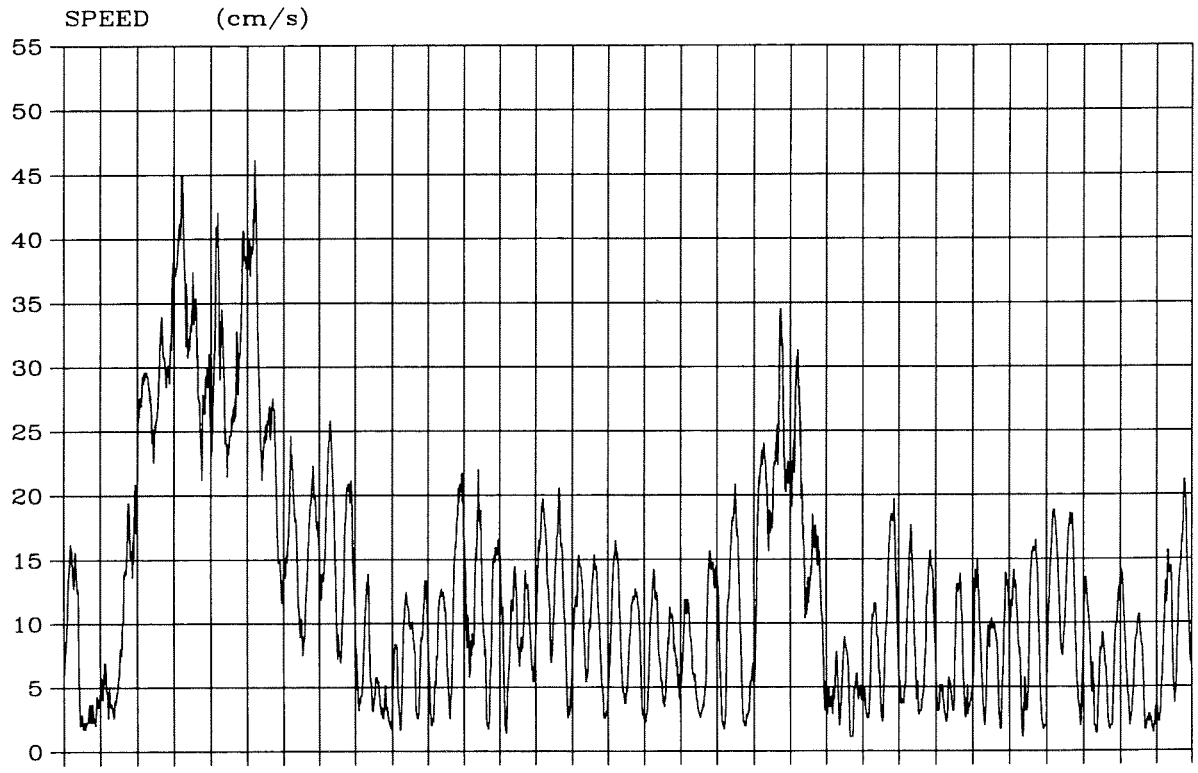
IMR

Fig. 2-3-7

Continues.....





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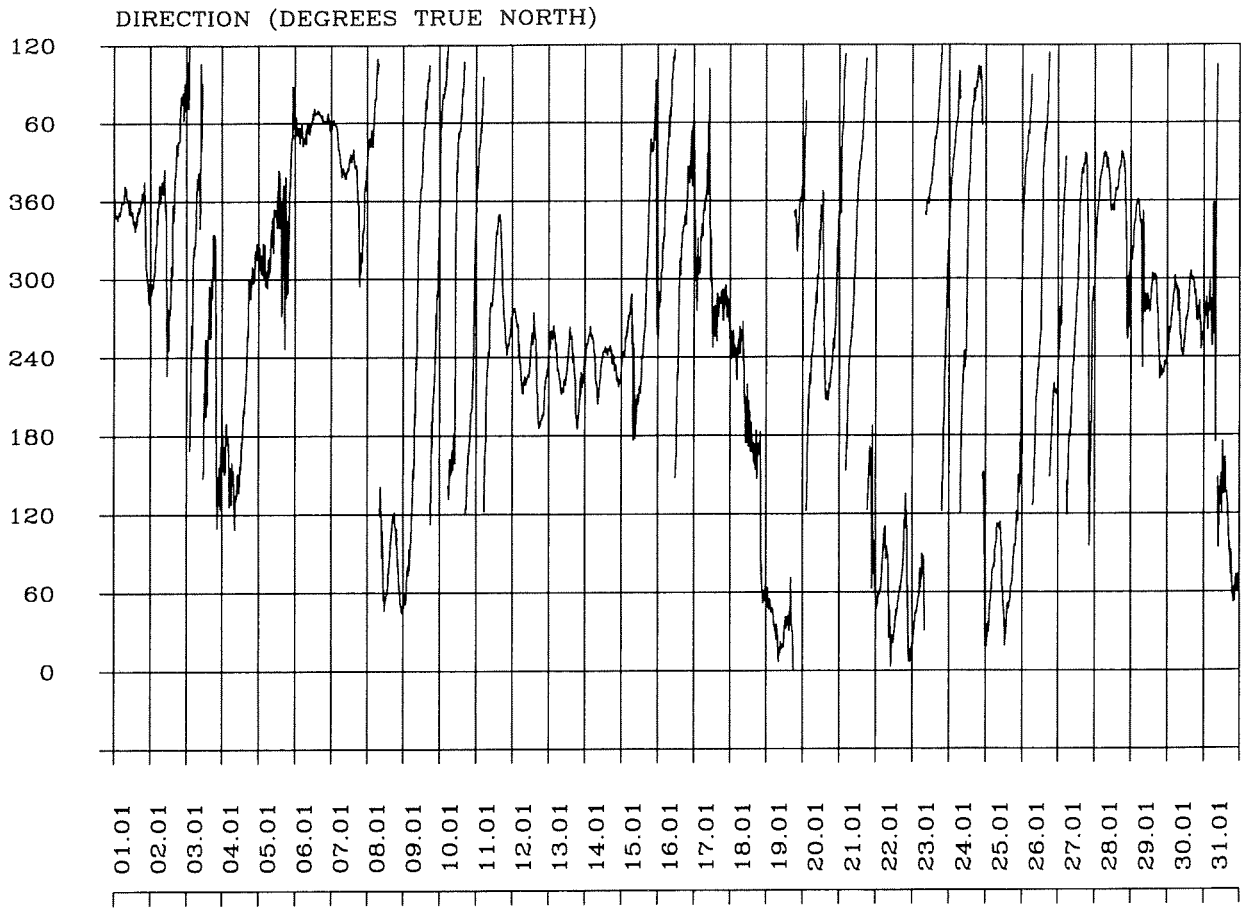
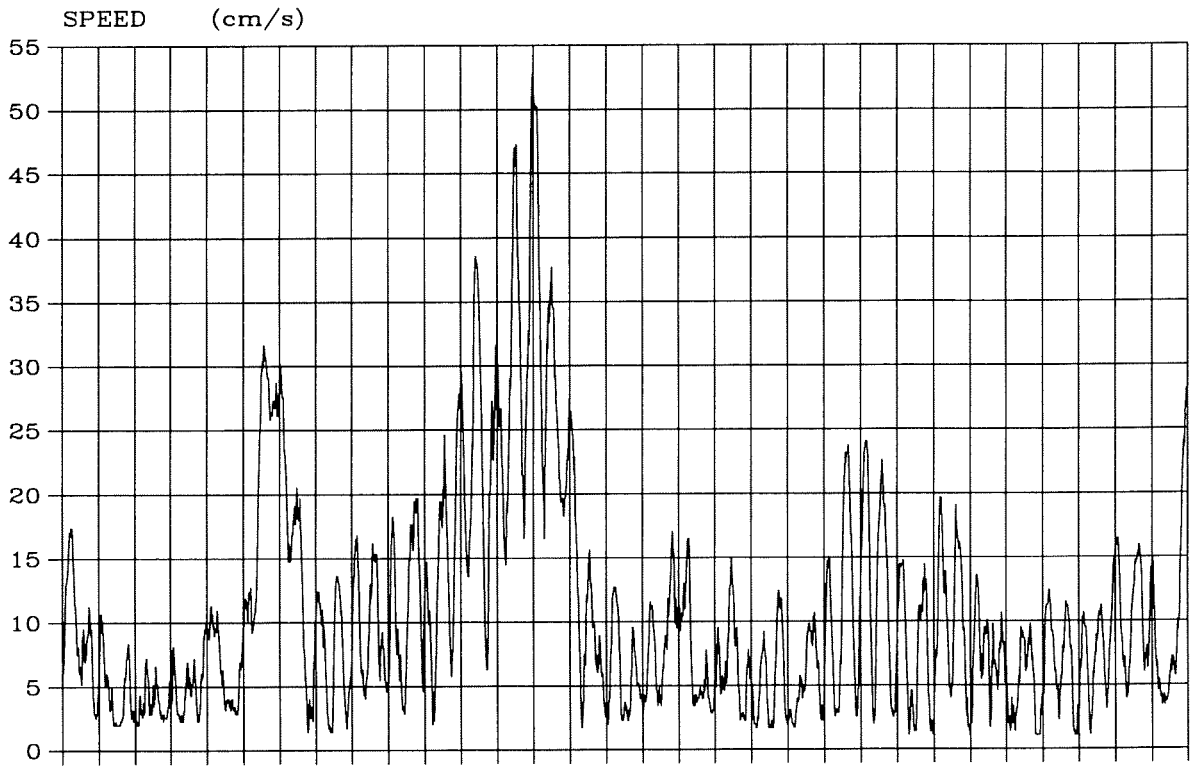
IMR

Fig. 2-3-7

Continues.....





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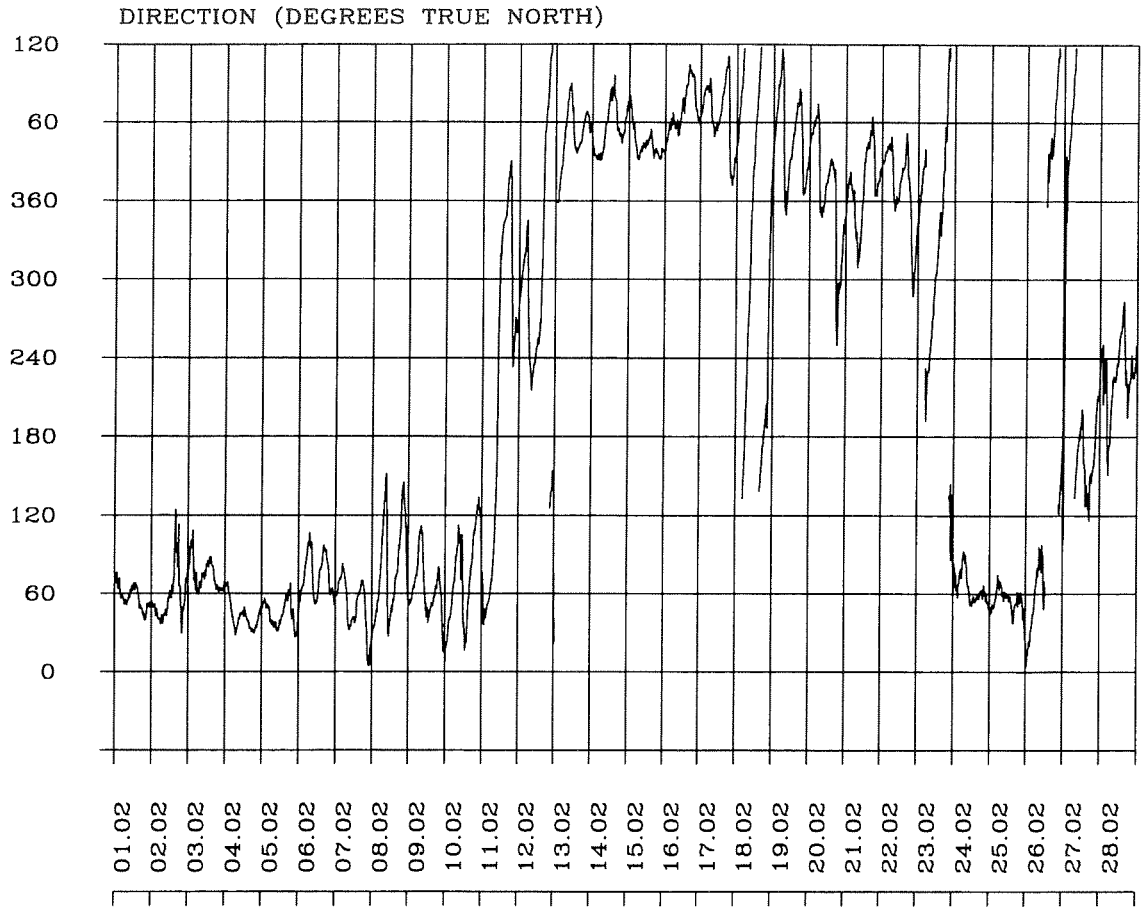
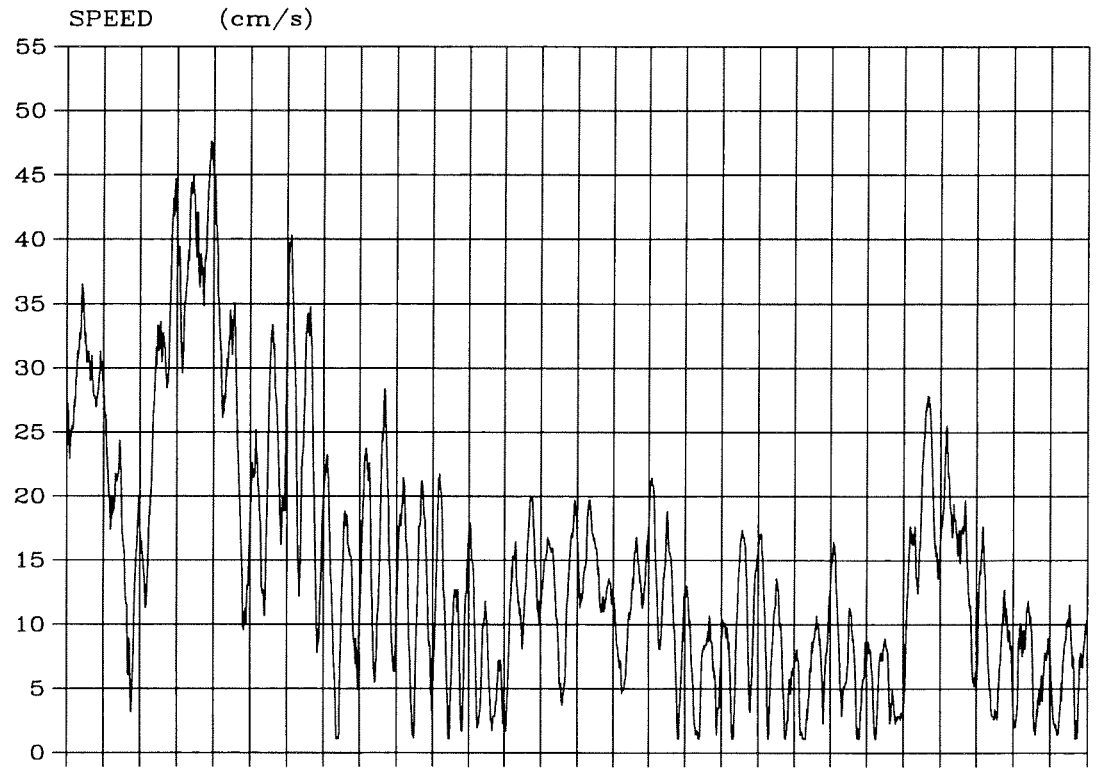
IMR

Fig. 2-3-7

Continues.....





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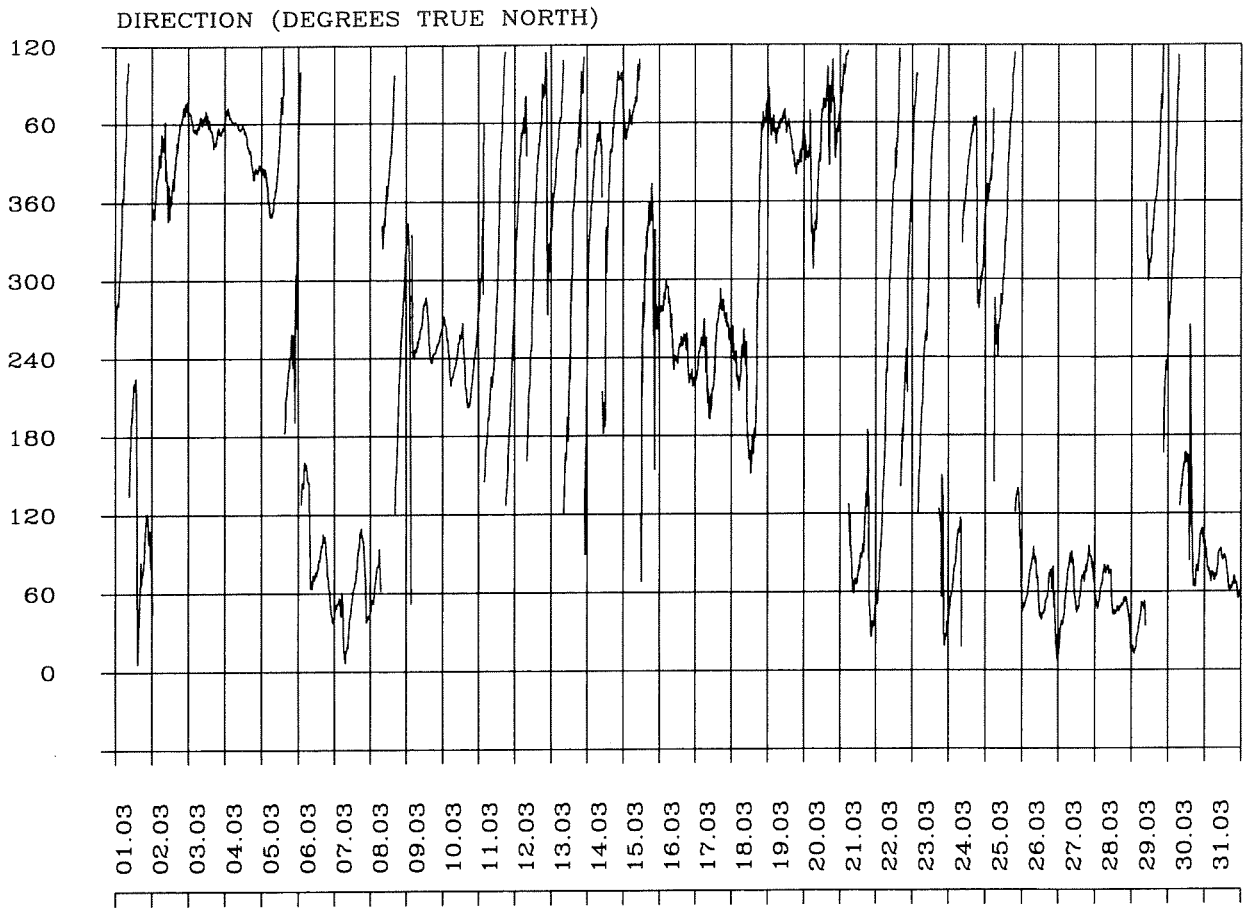
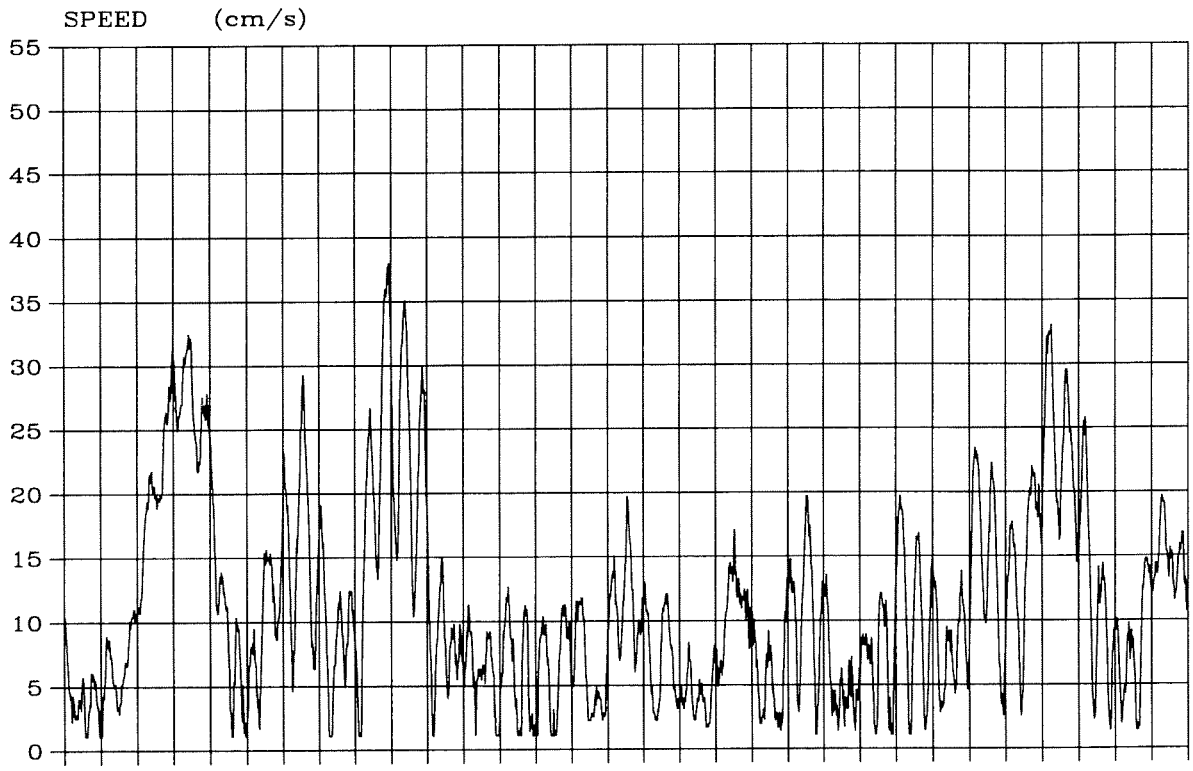
IMR

Fig. 2-3-7

Continues.....





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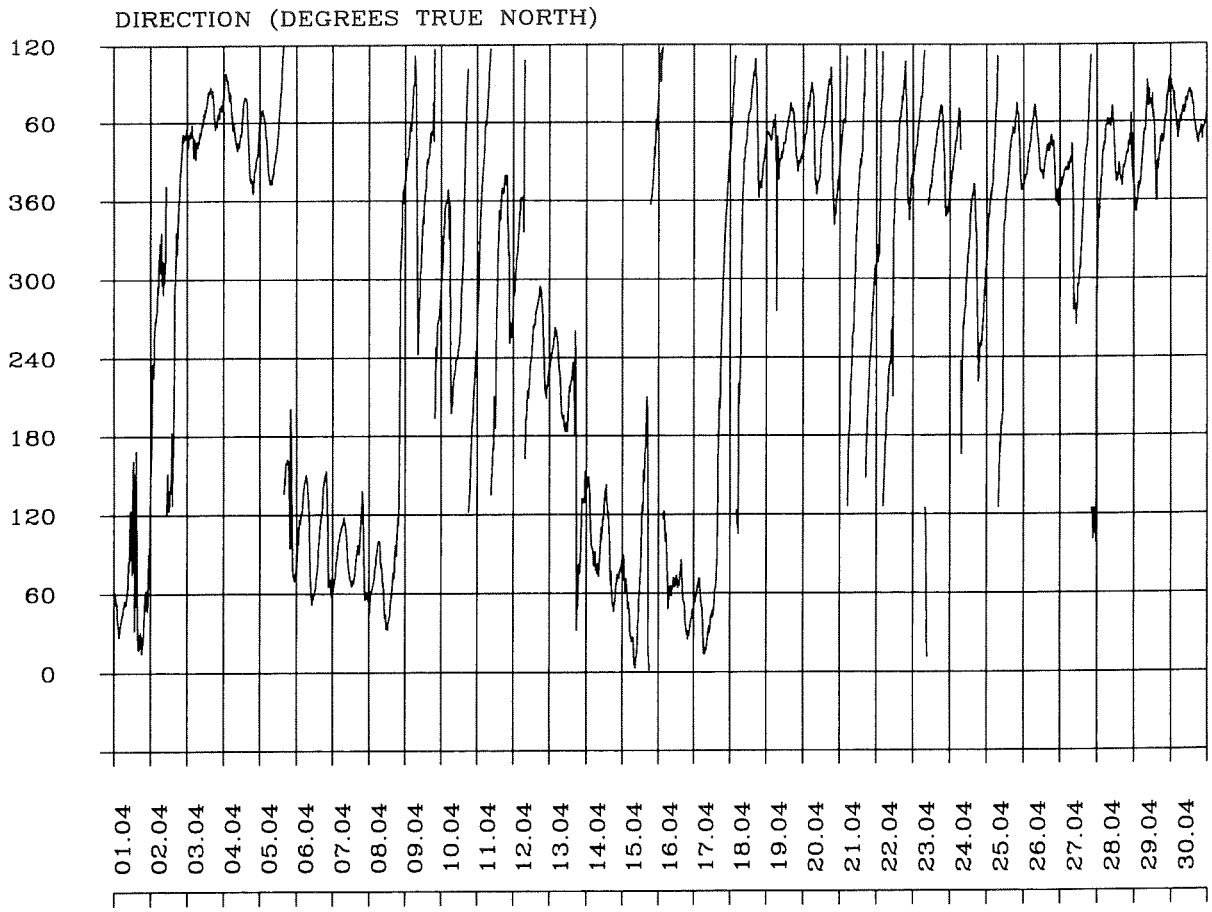
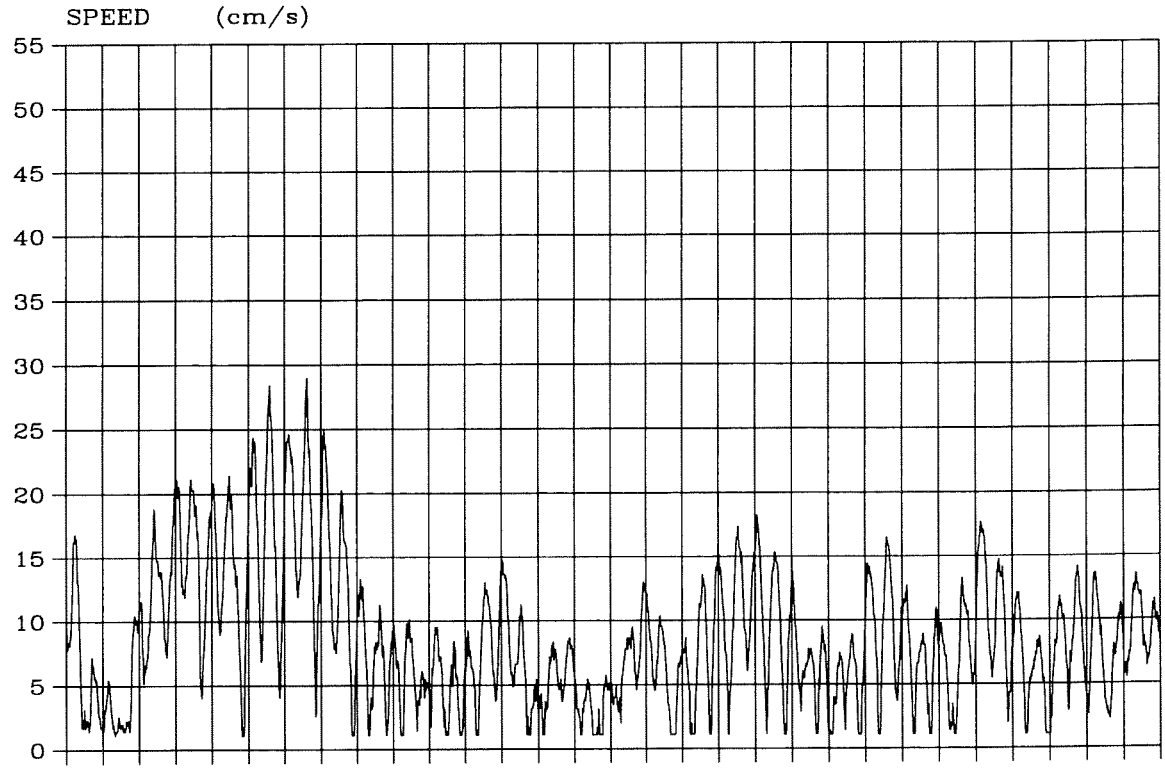
IMR

Fig. 2-3-7

Continues.....





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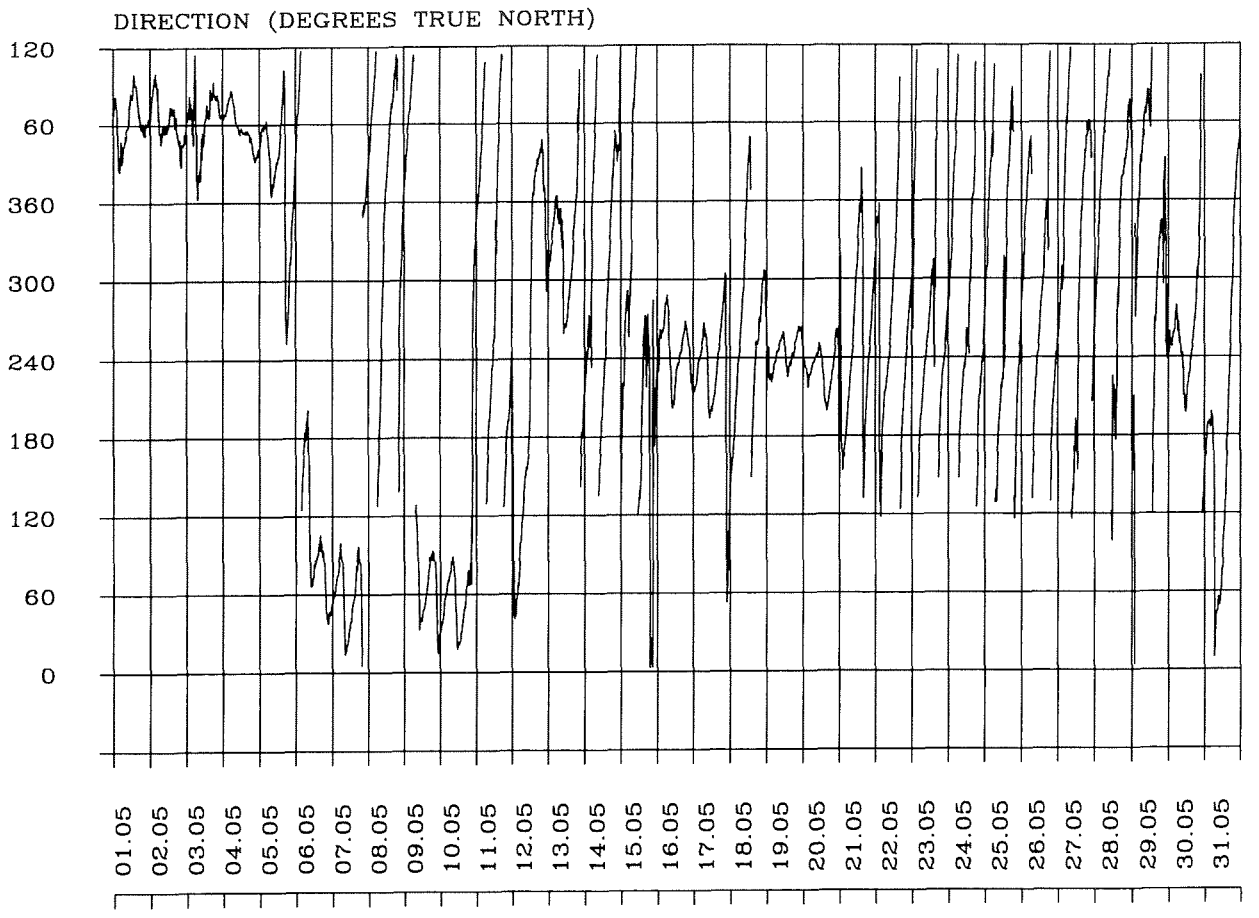
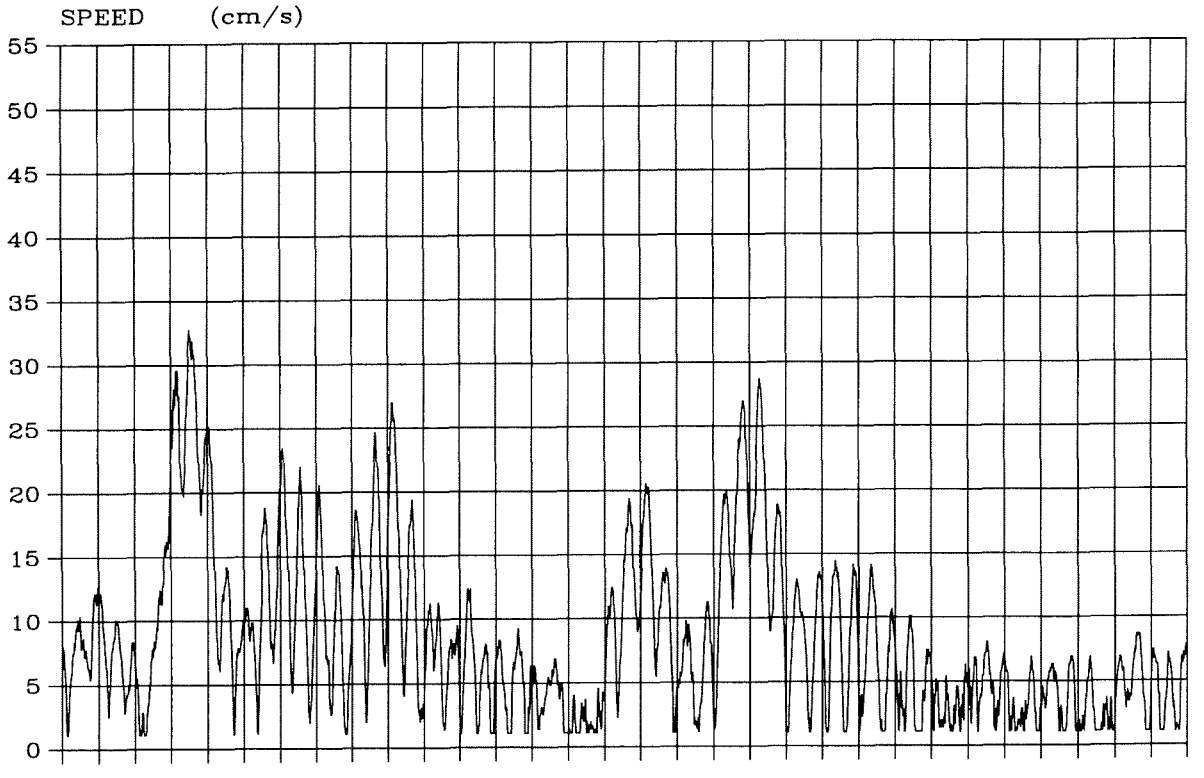
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-3-7

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 210.0 m Bottom depth : 278.0 m

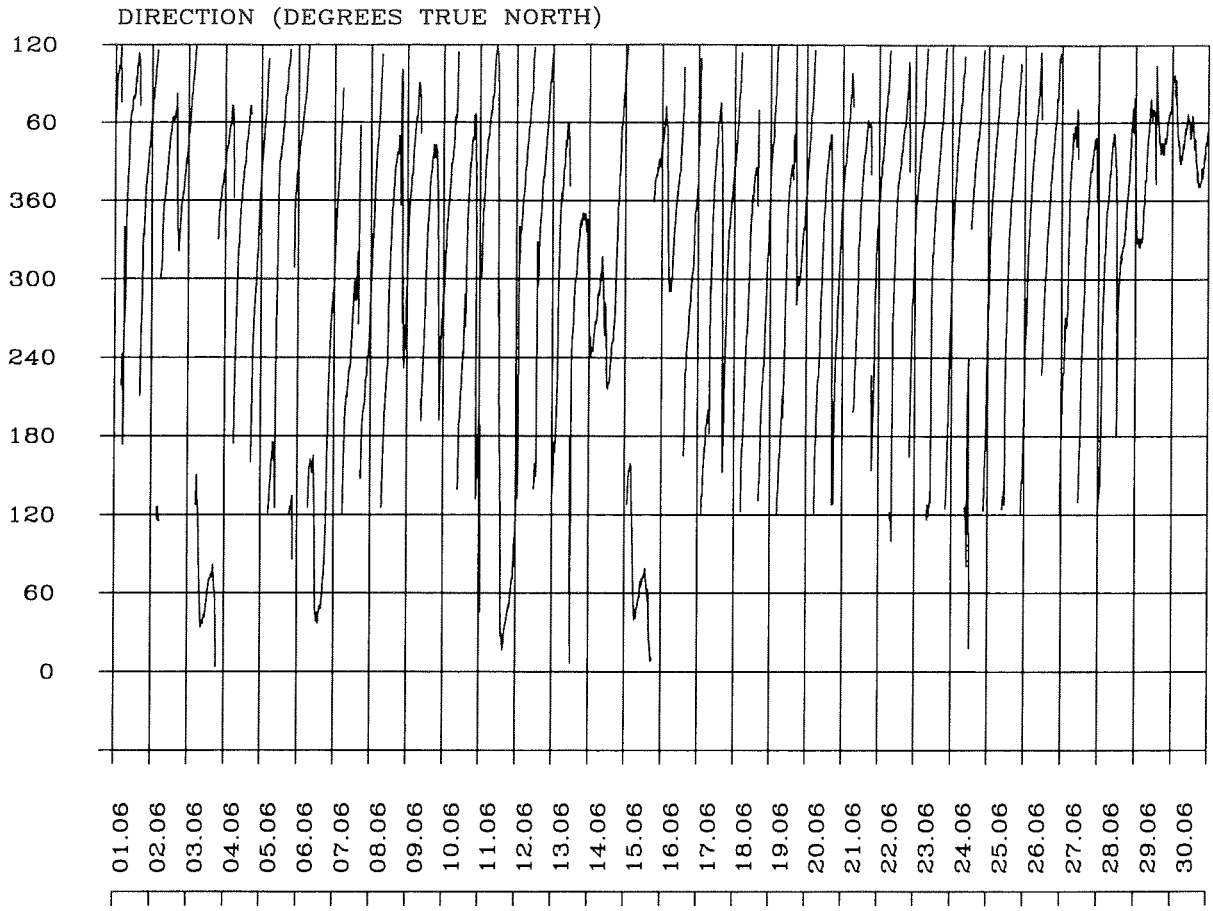
Time interval : 20.00 minutes. Instrument no. : 10798

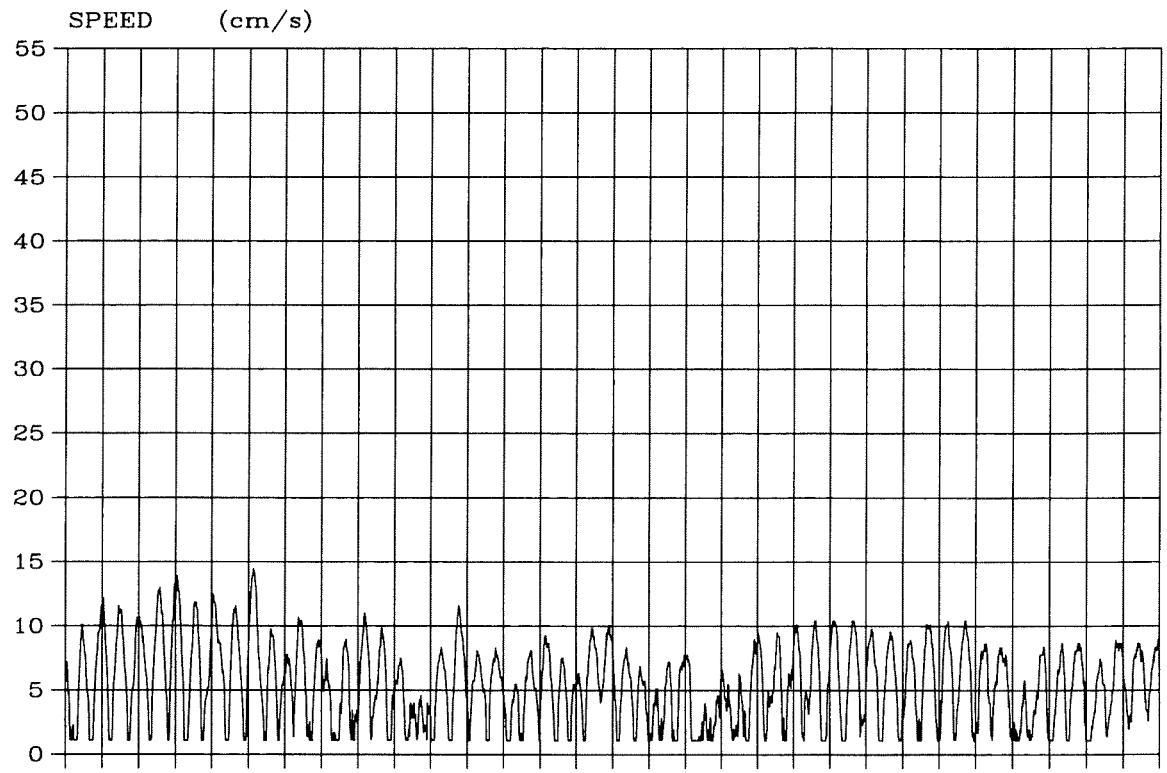
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-3-7

Continues.....





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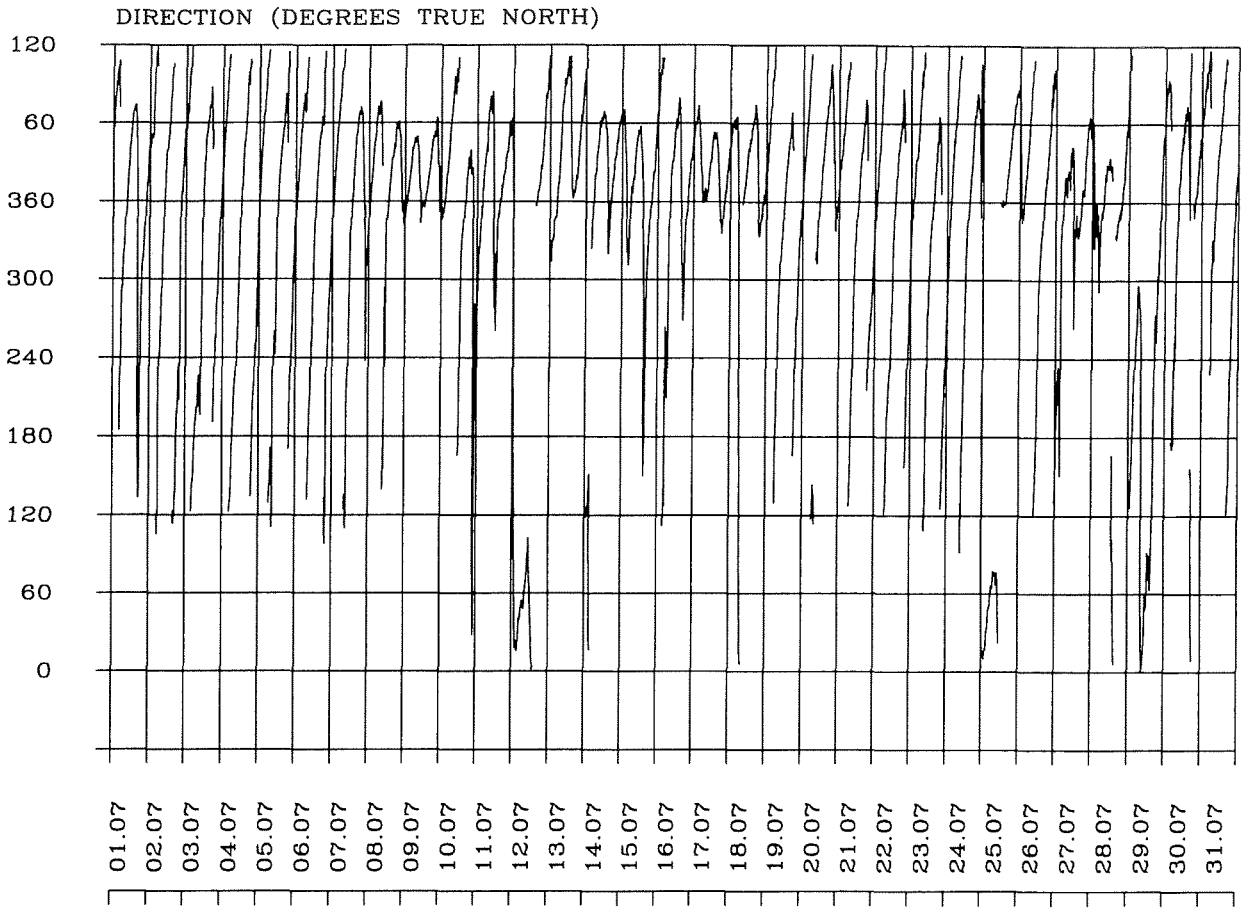
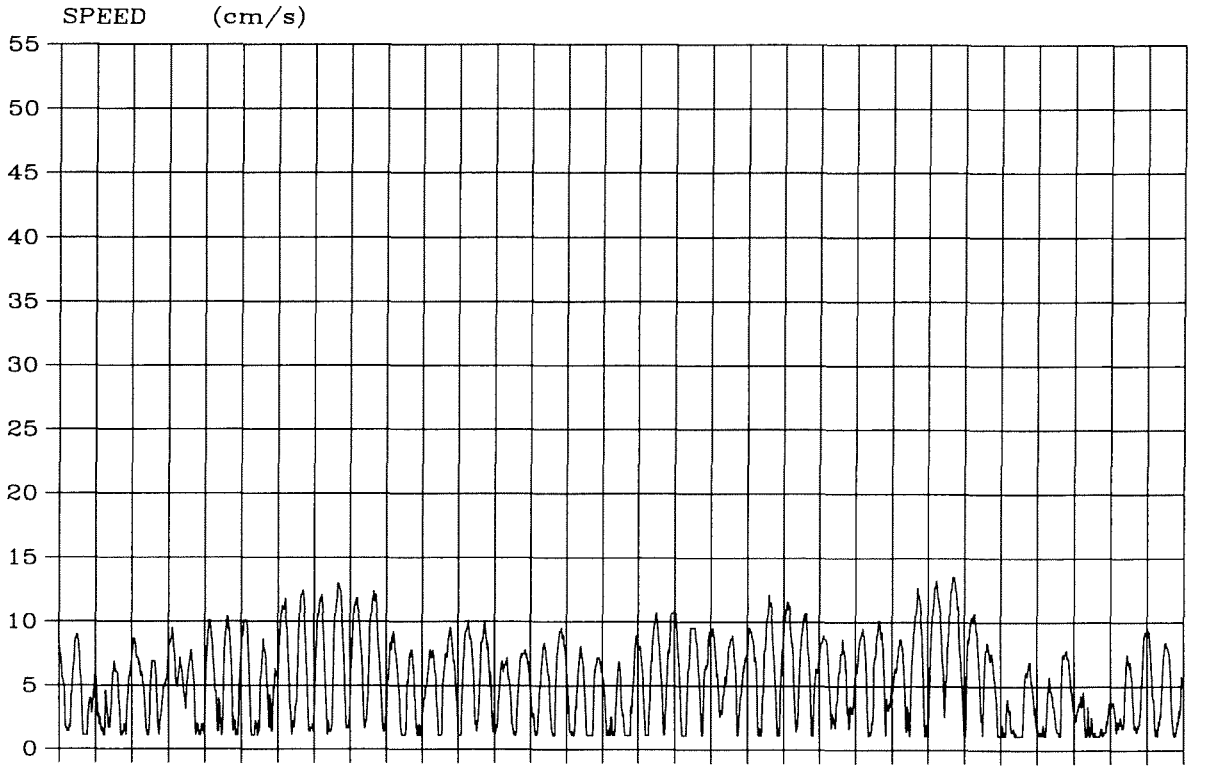
IMR

Fig. 2-3-7

Continues.....





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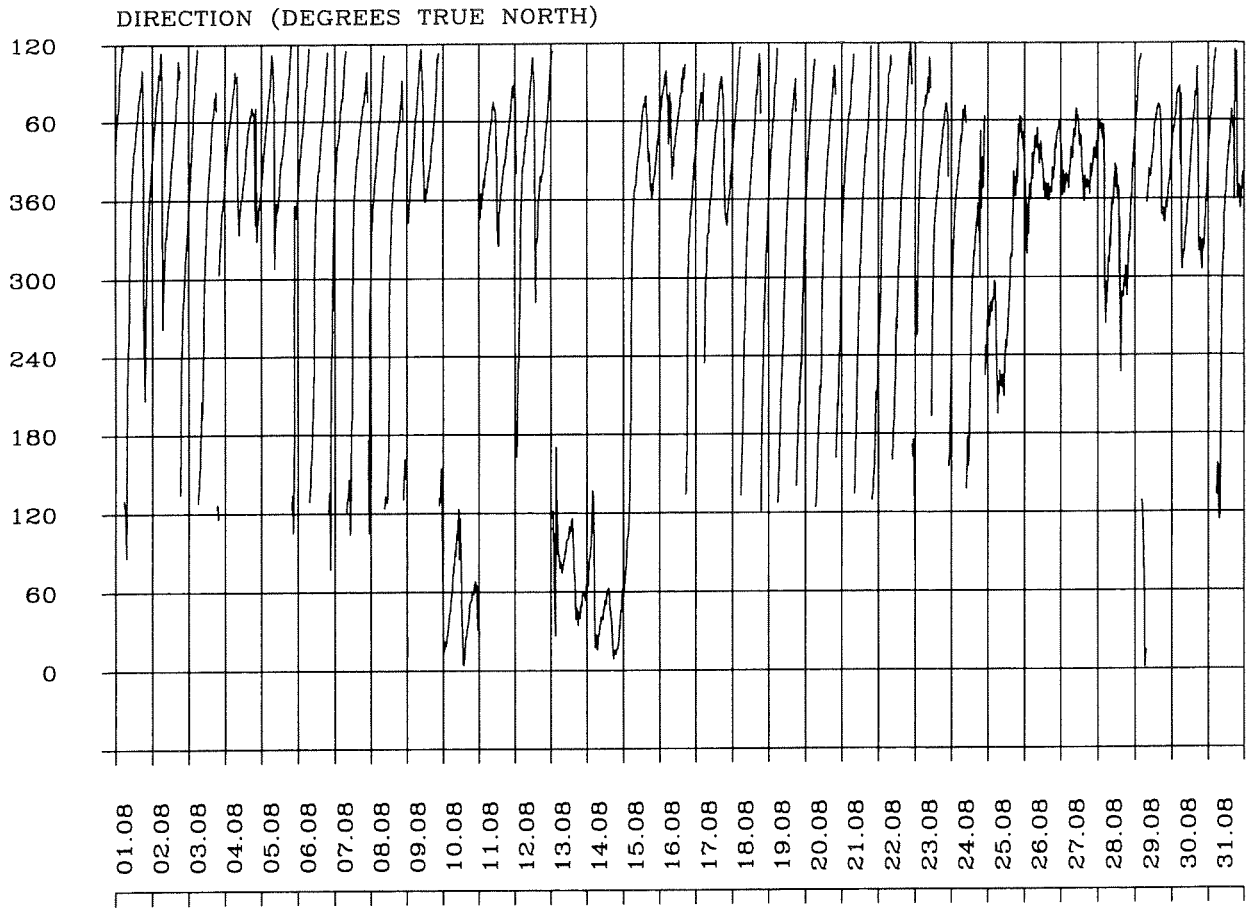
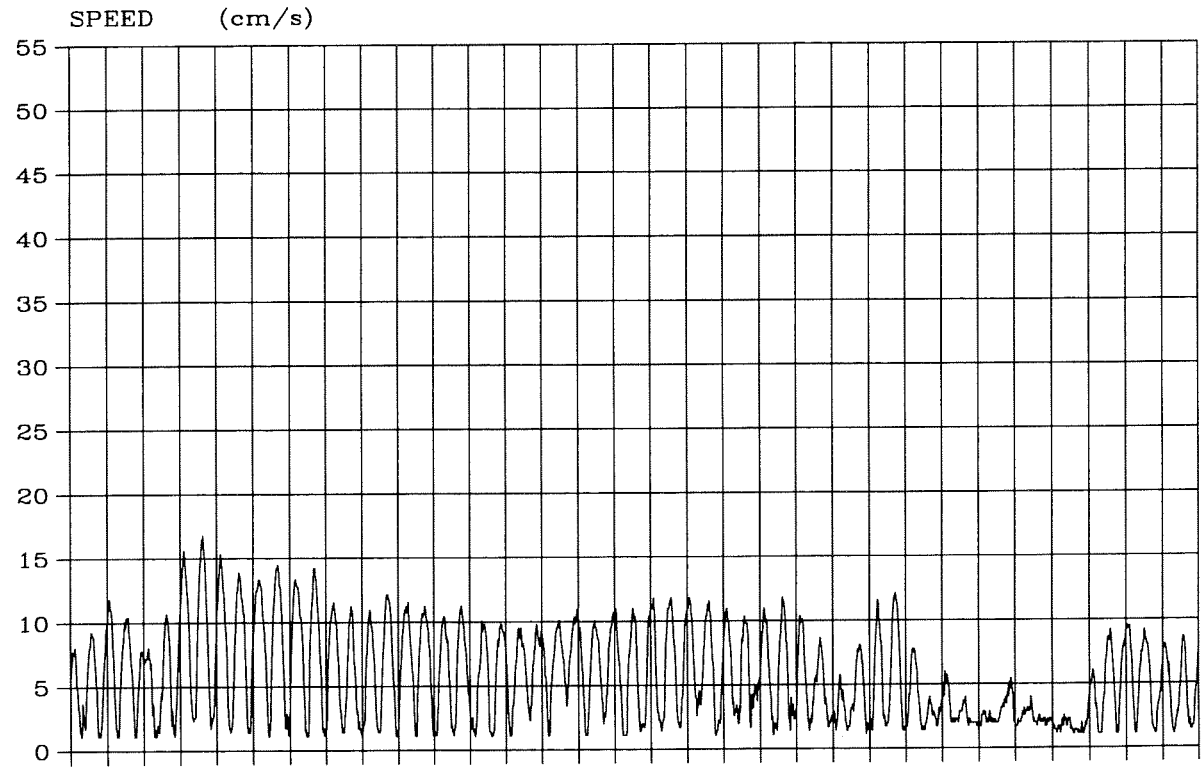
IMR

Fig. 2-3-7

Continues.....





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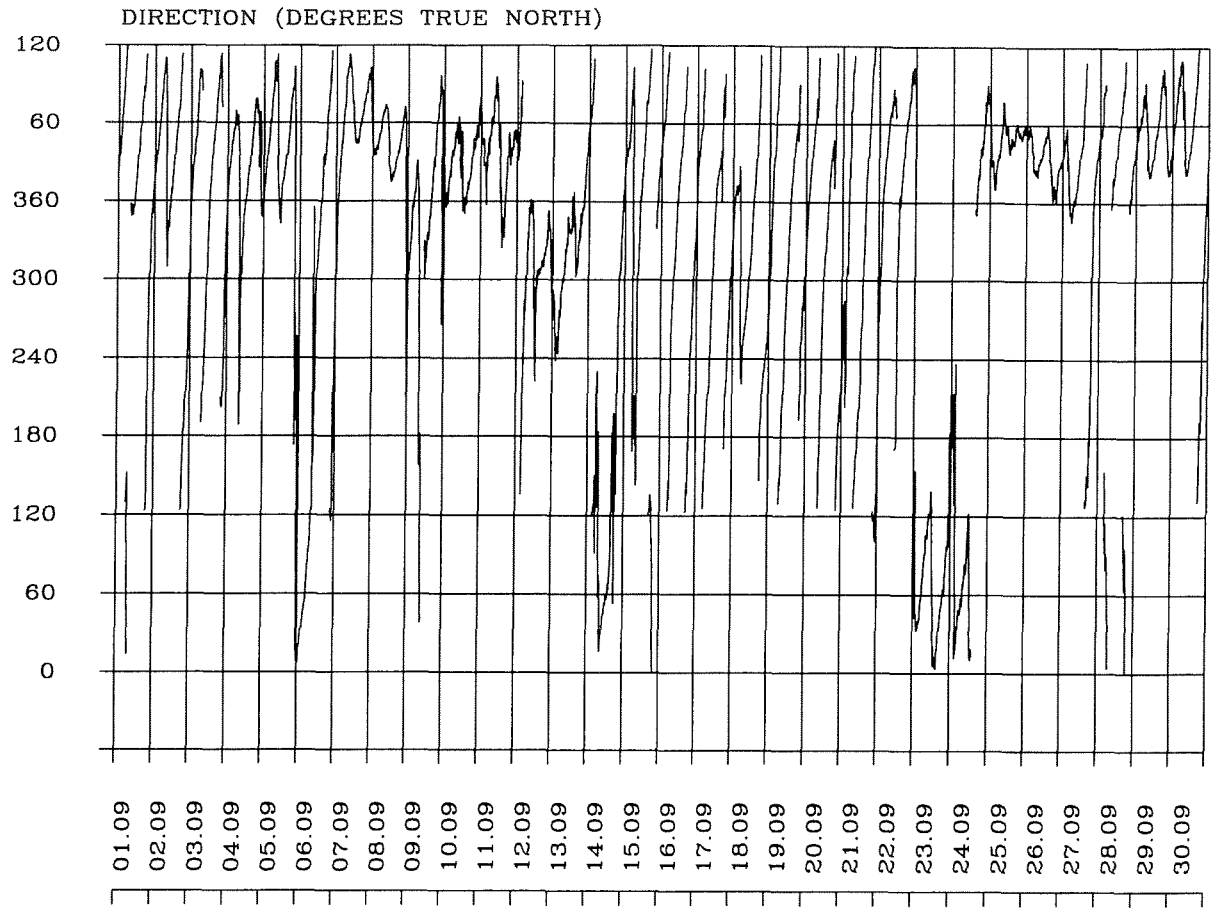
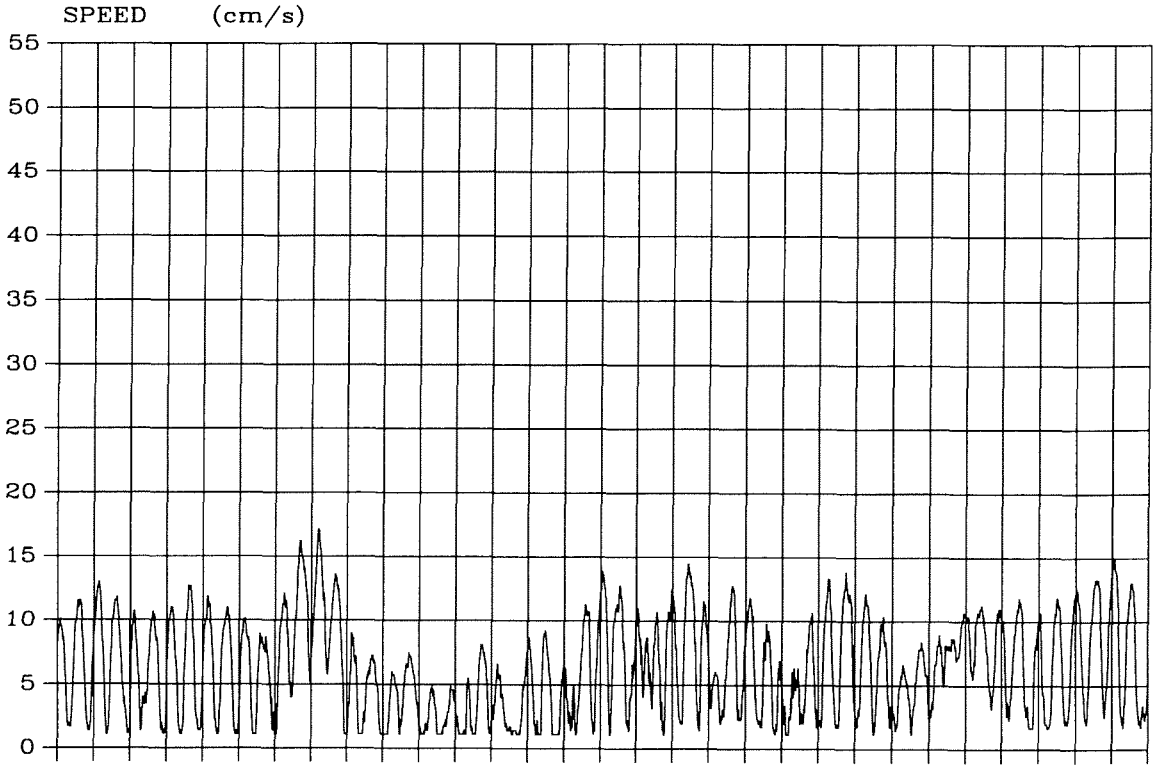
IMR

Fig. 2-3-7

Continues.....





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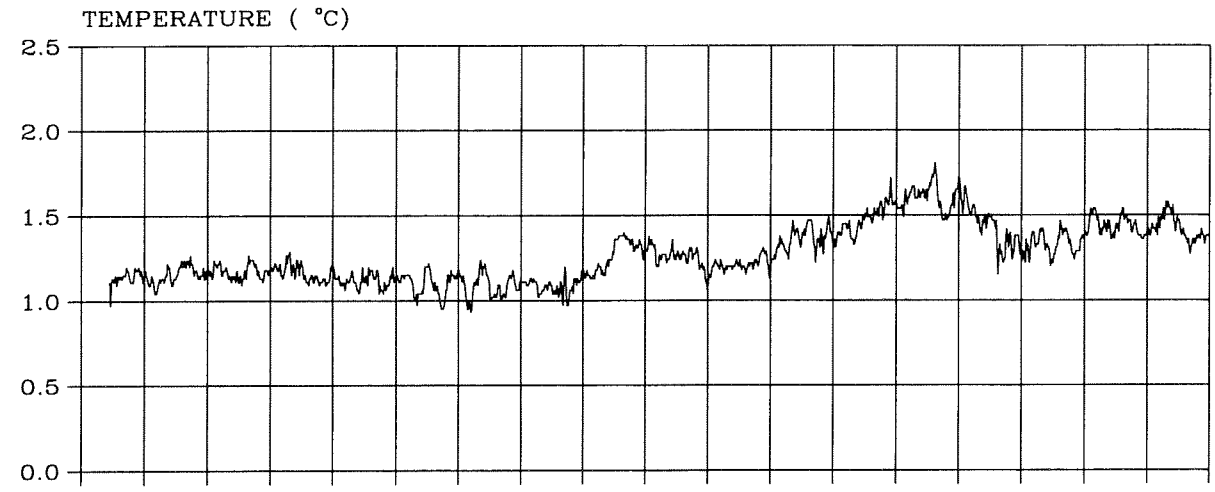
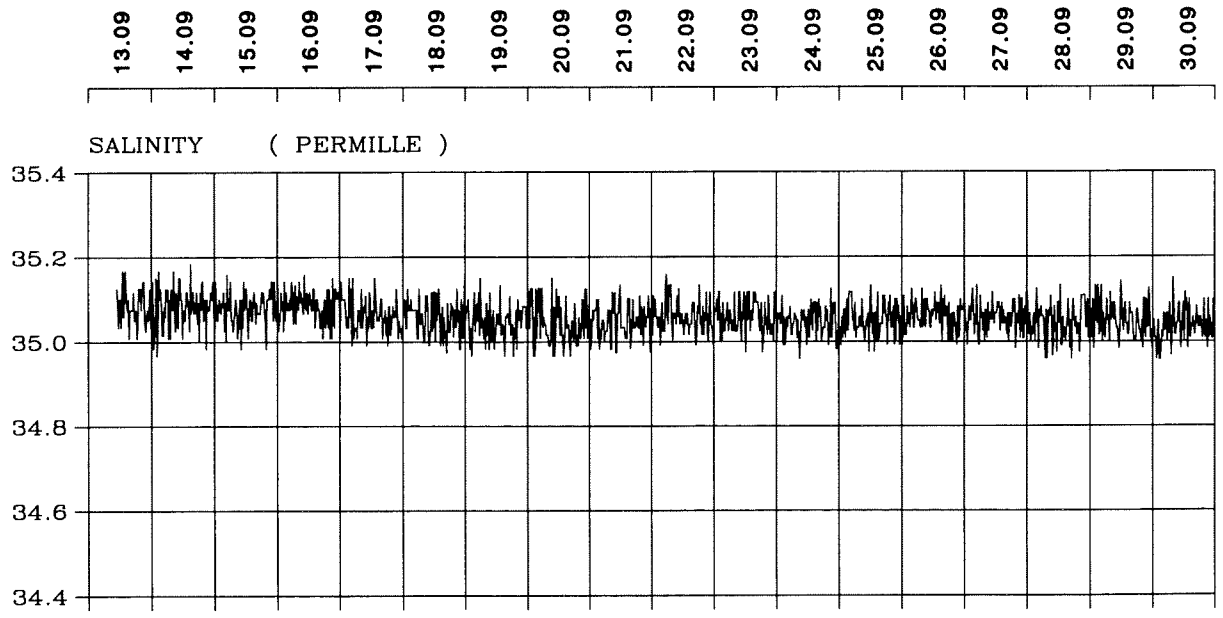
IMR

Fig. 2-3-7

Continues.....





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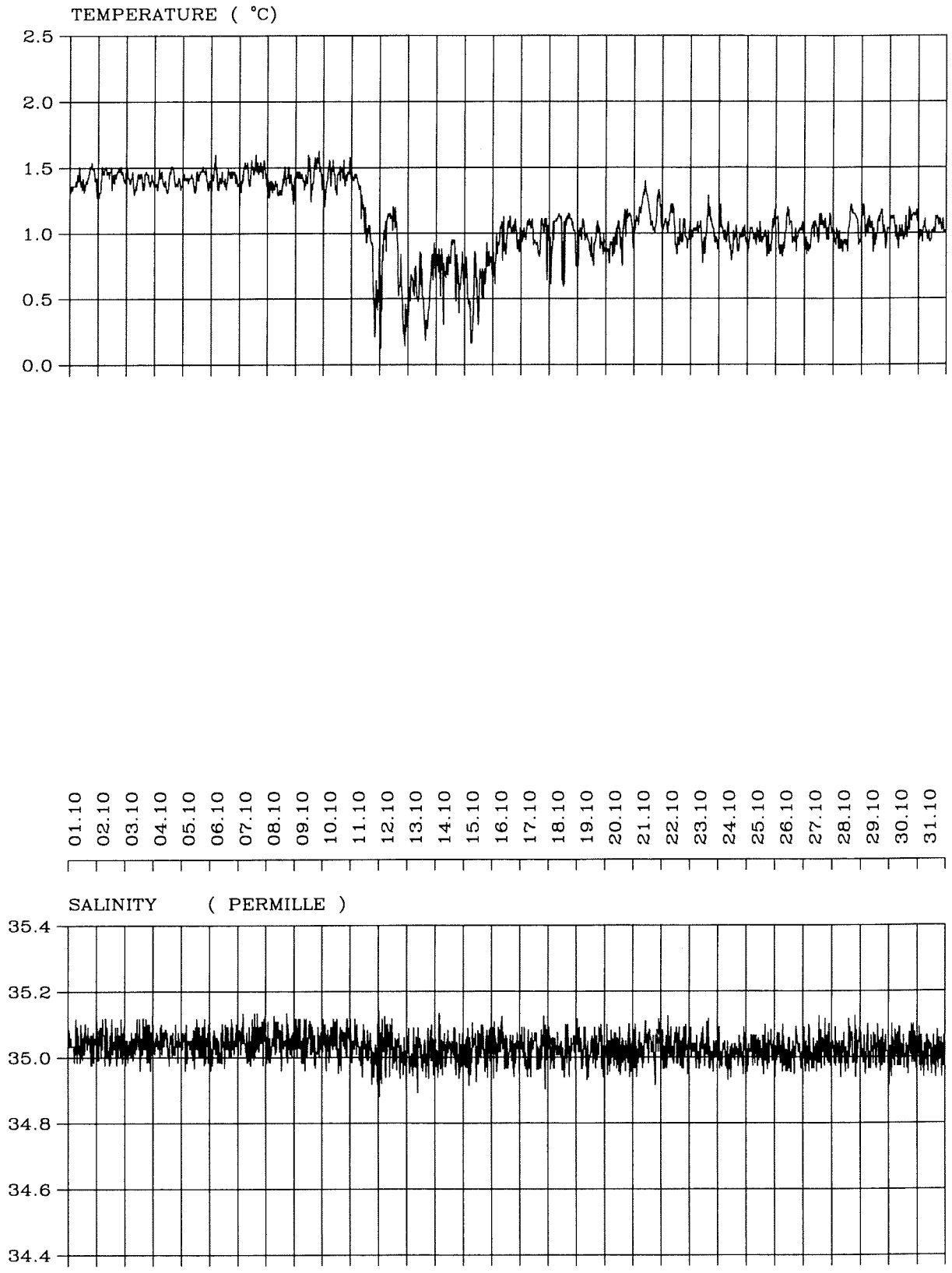
IMR

Fig. 2-3-8 Temperature and salinity.



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Time interval : 20.00 minutes. Instrument no. : 10798

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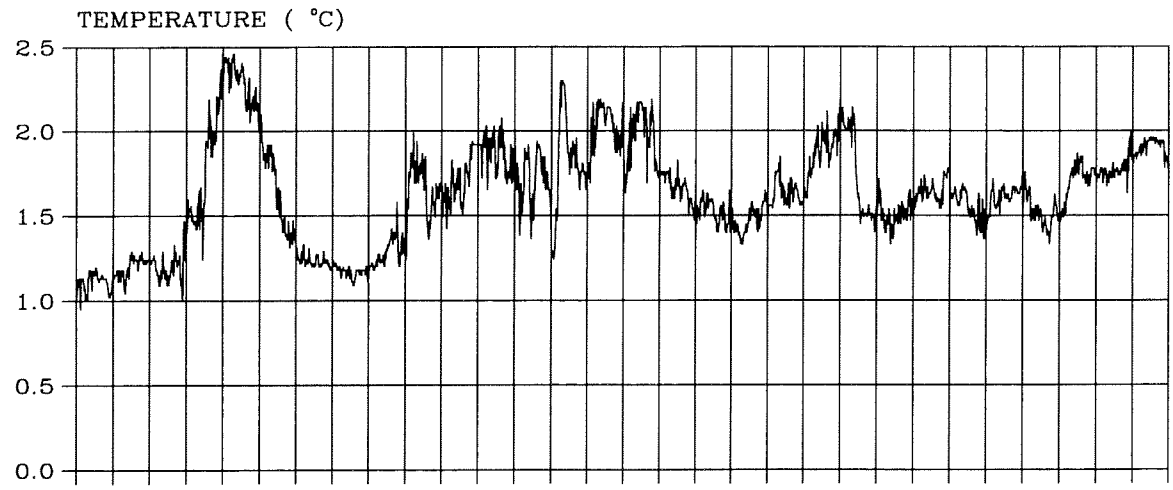
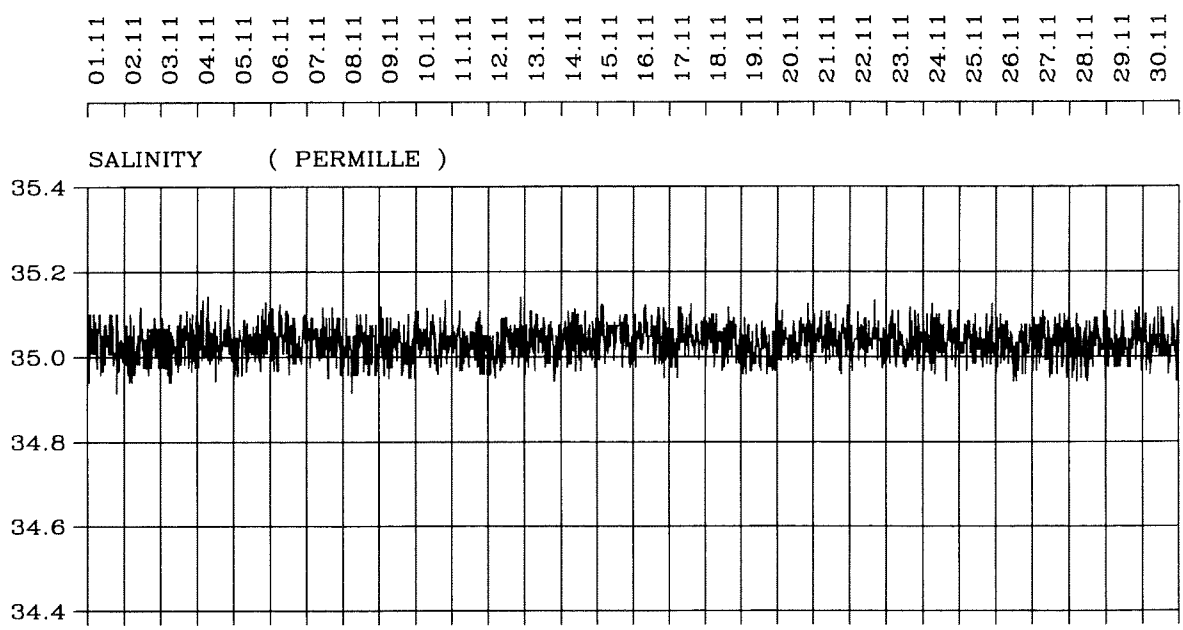
IMR

Fig. 2-3-8

Continues.....





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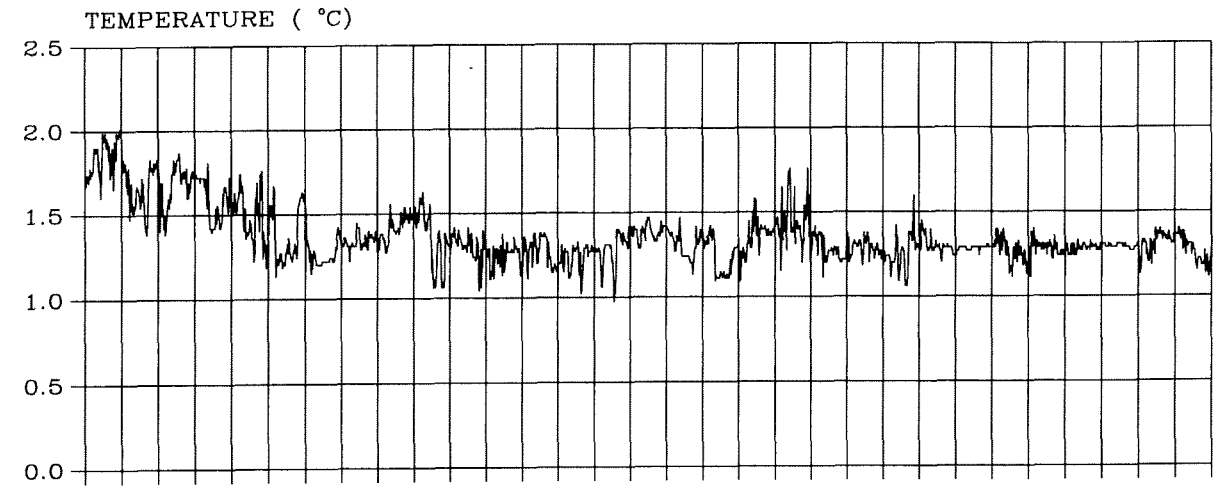
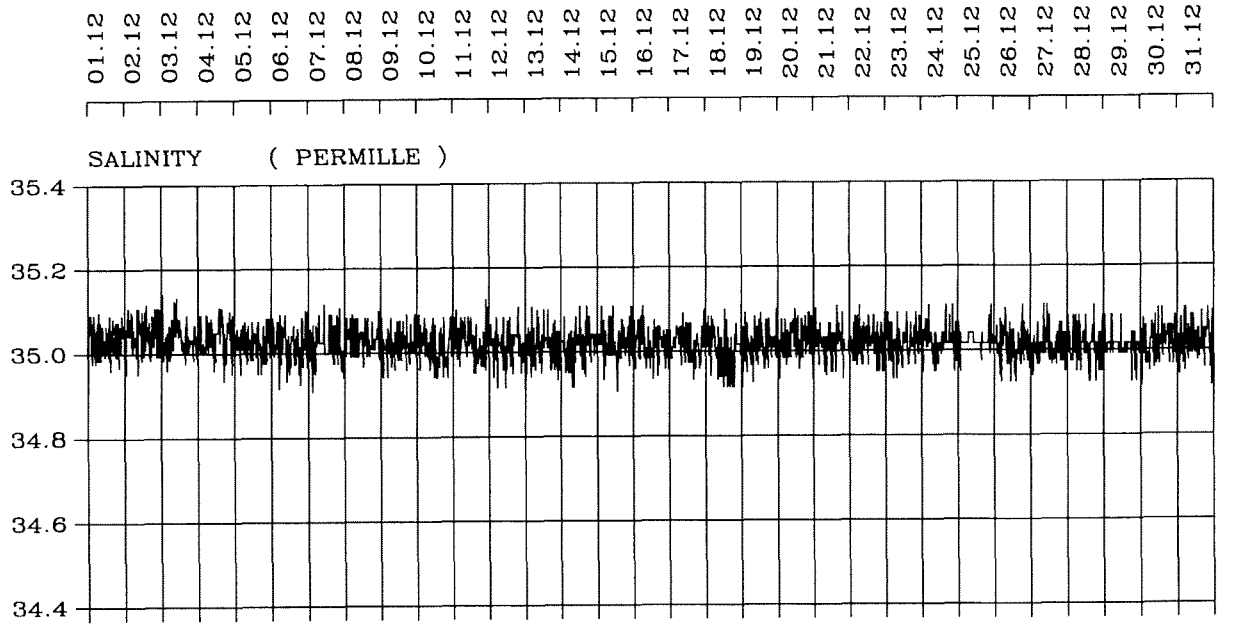
IMR

Fig. 2-3-8

Continues.....





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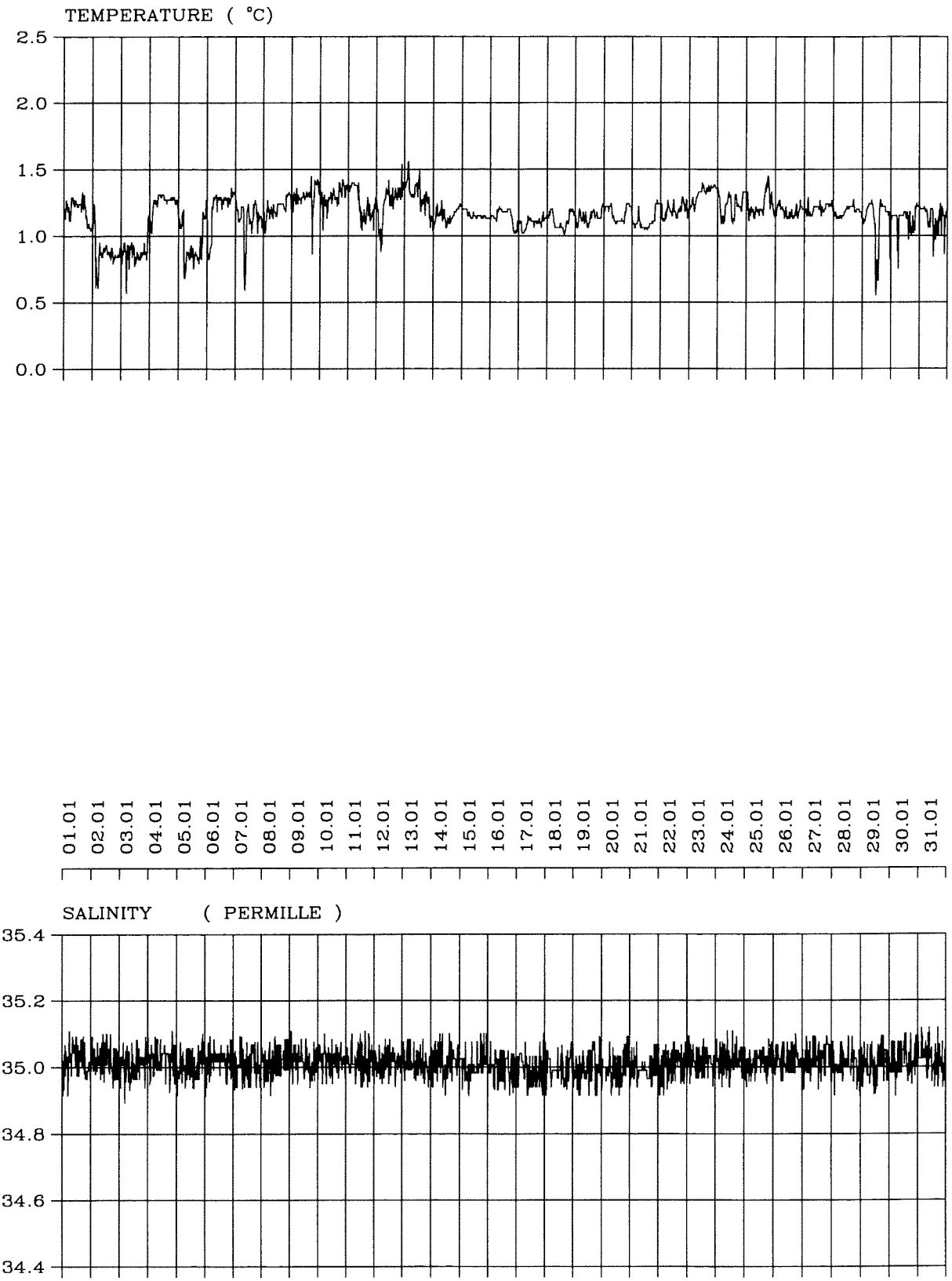
IMR

Fig. 2-3-8

Continues.....



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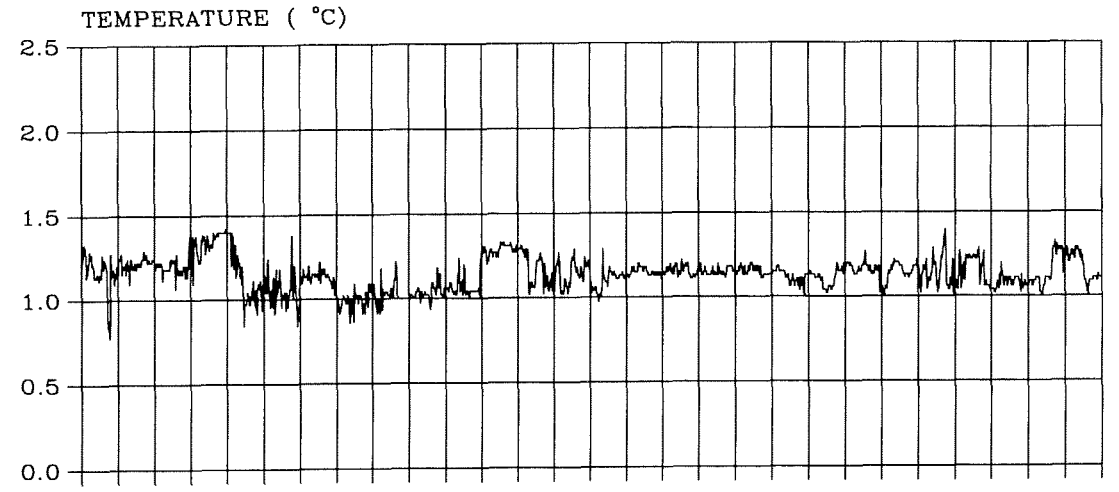
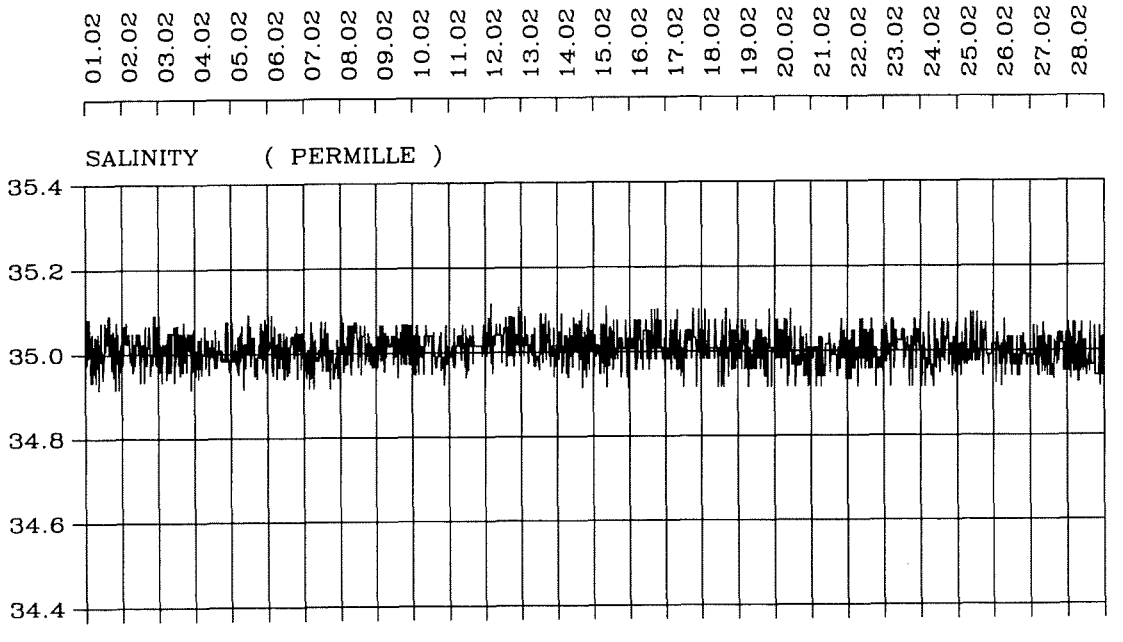
IMR

Fig. 2-3-8

Continues.....





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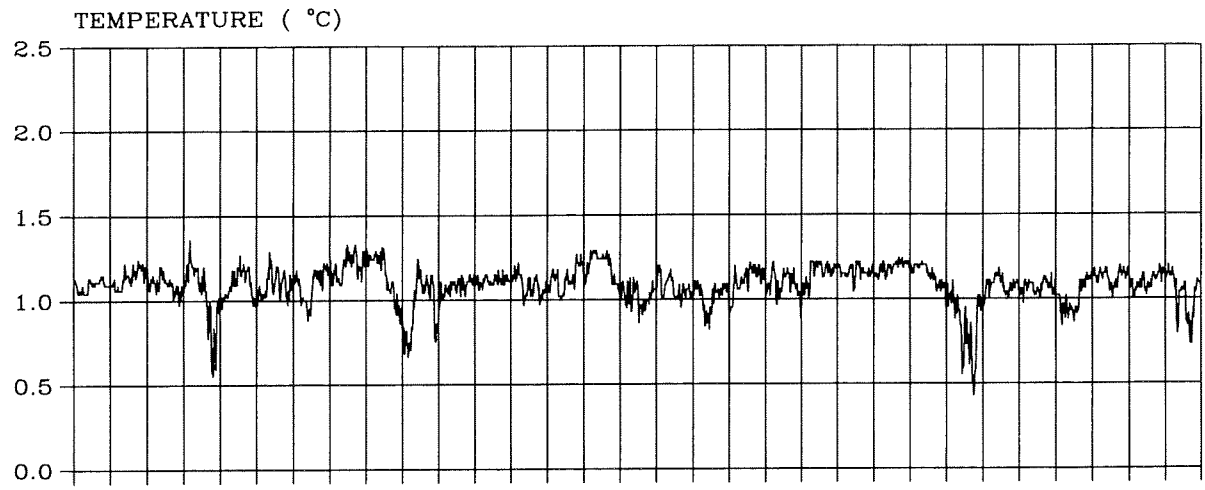
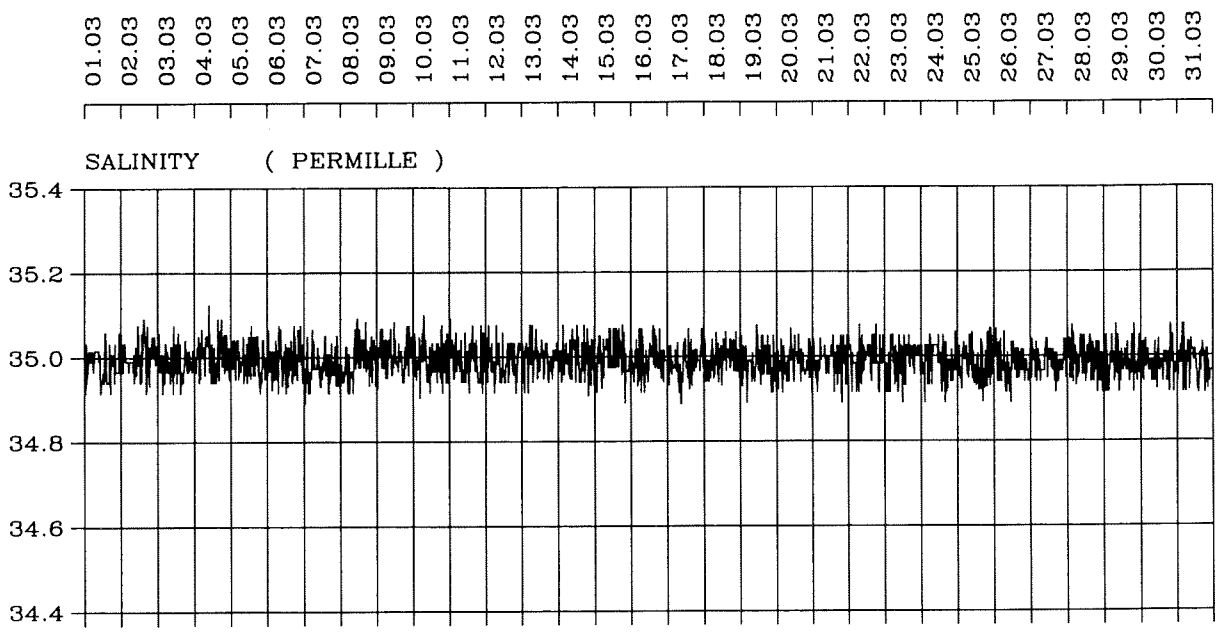
IMR

Fig. 2-3-8

Continues.....





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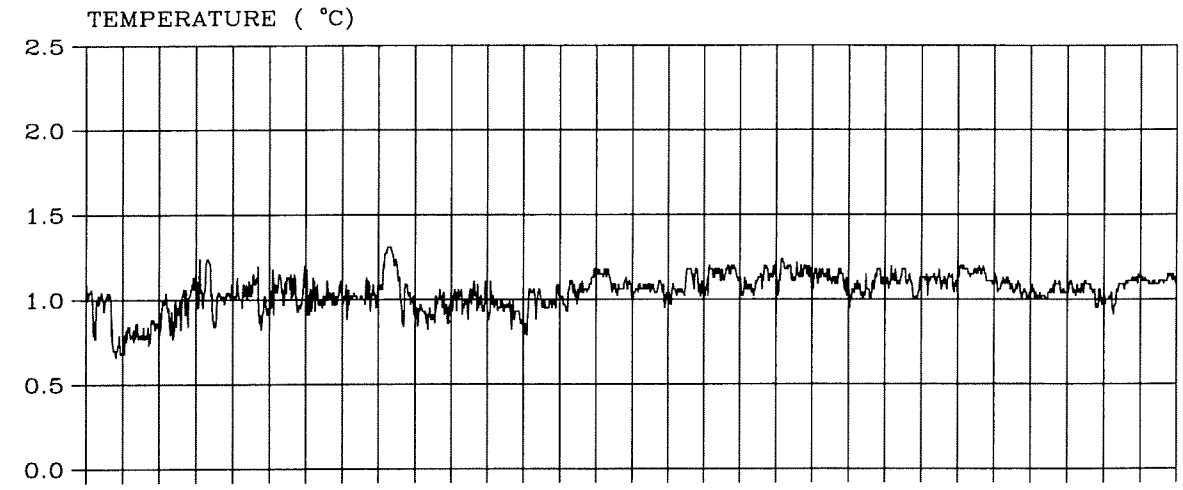
IMR

Fig. 2-3-8

Continues.....



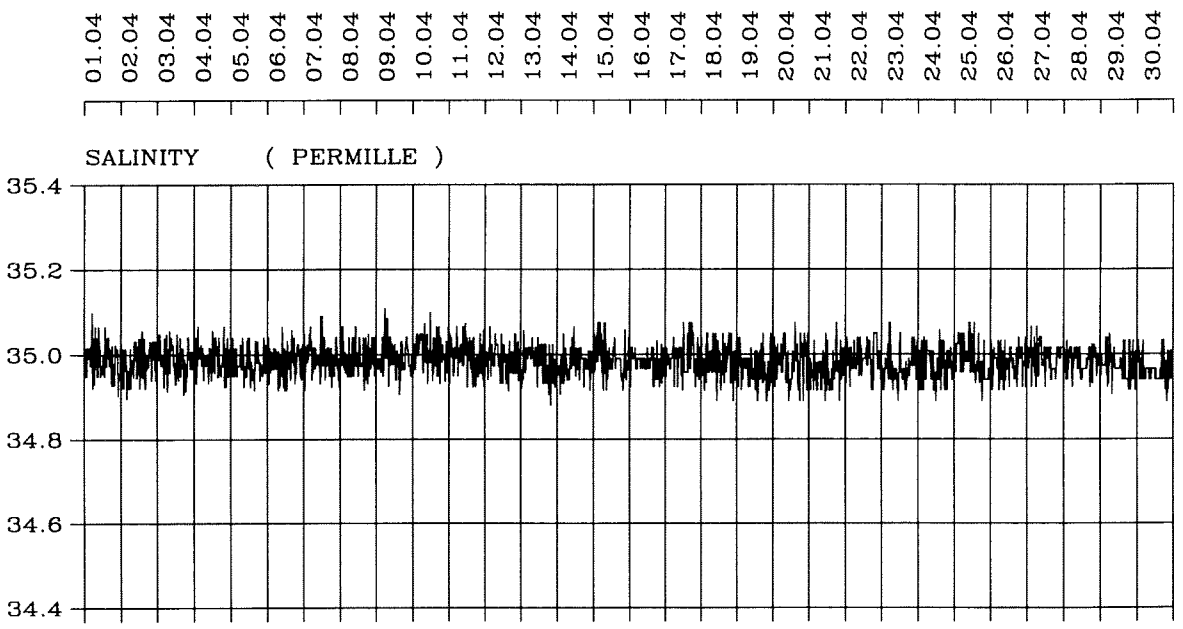


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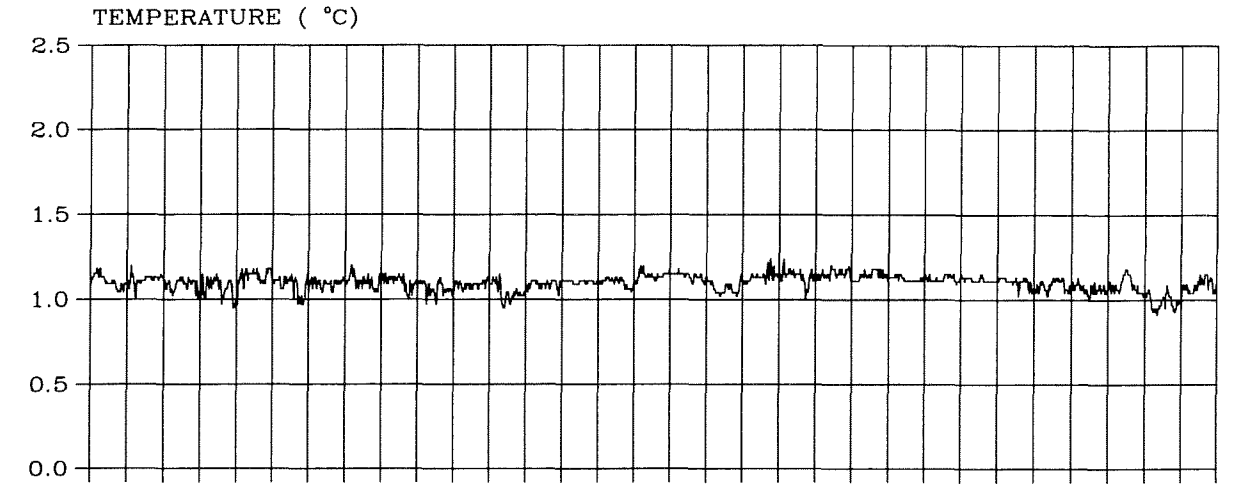
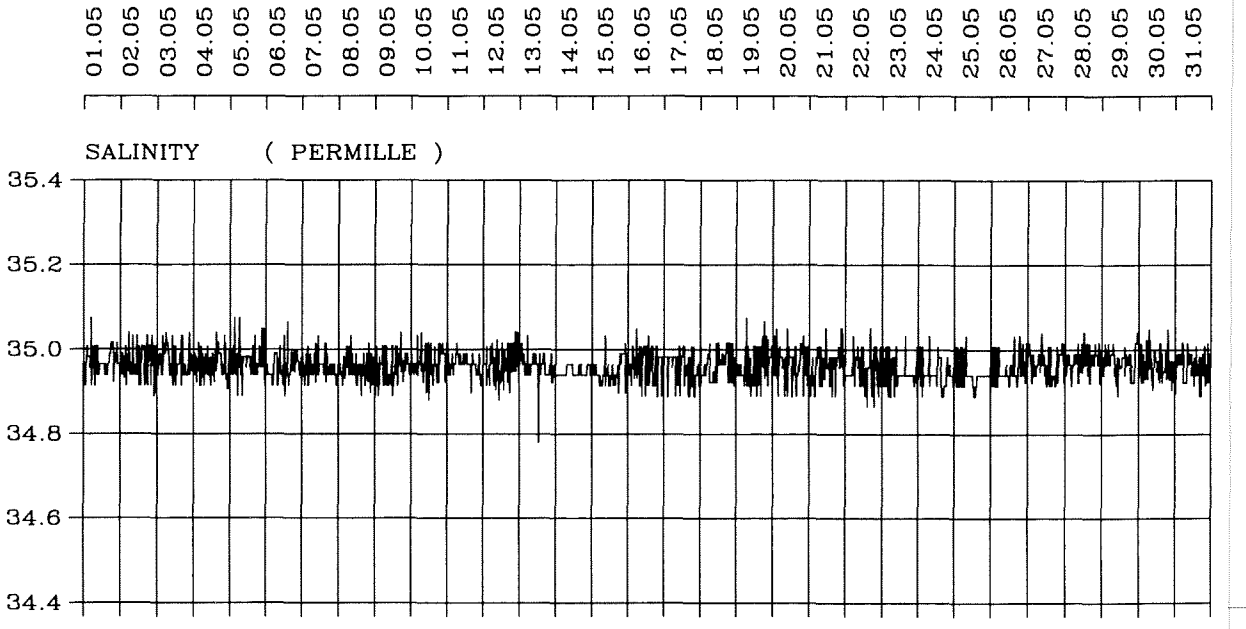
Fig. 2-3-8

Continues.....





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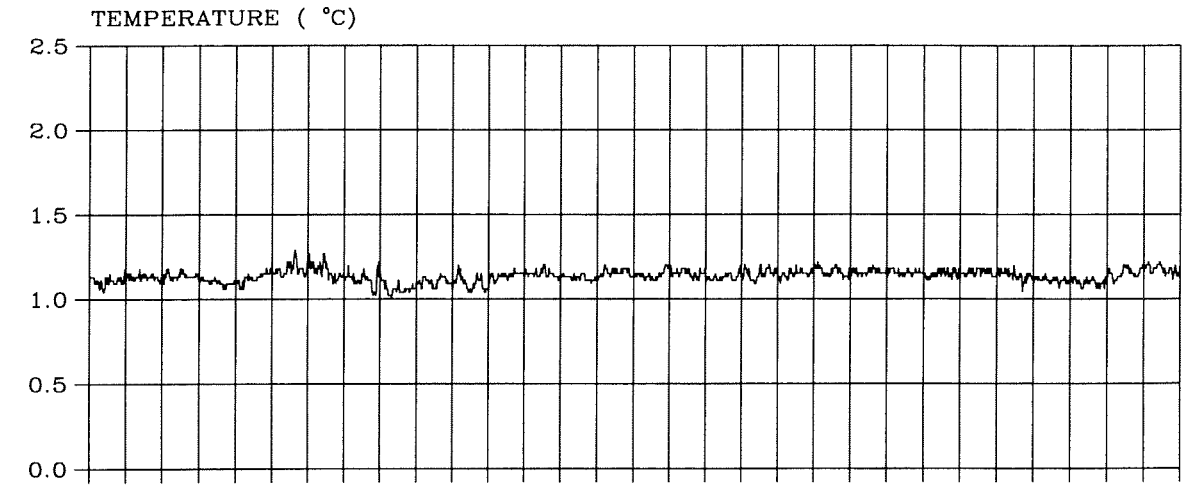
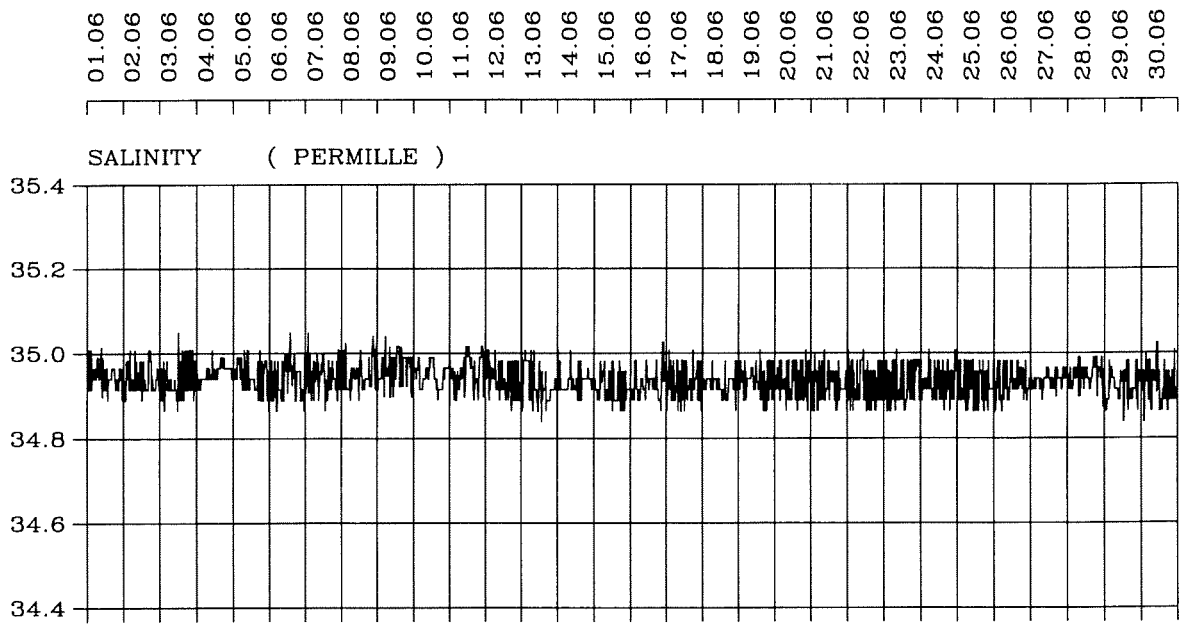
IMR

Fig. 2-3-8

Continues.....





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IMR

Fig. 2-3-8

Continues.....

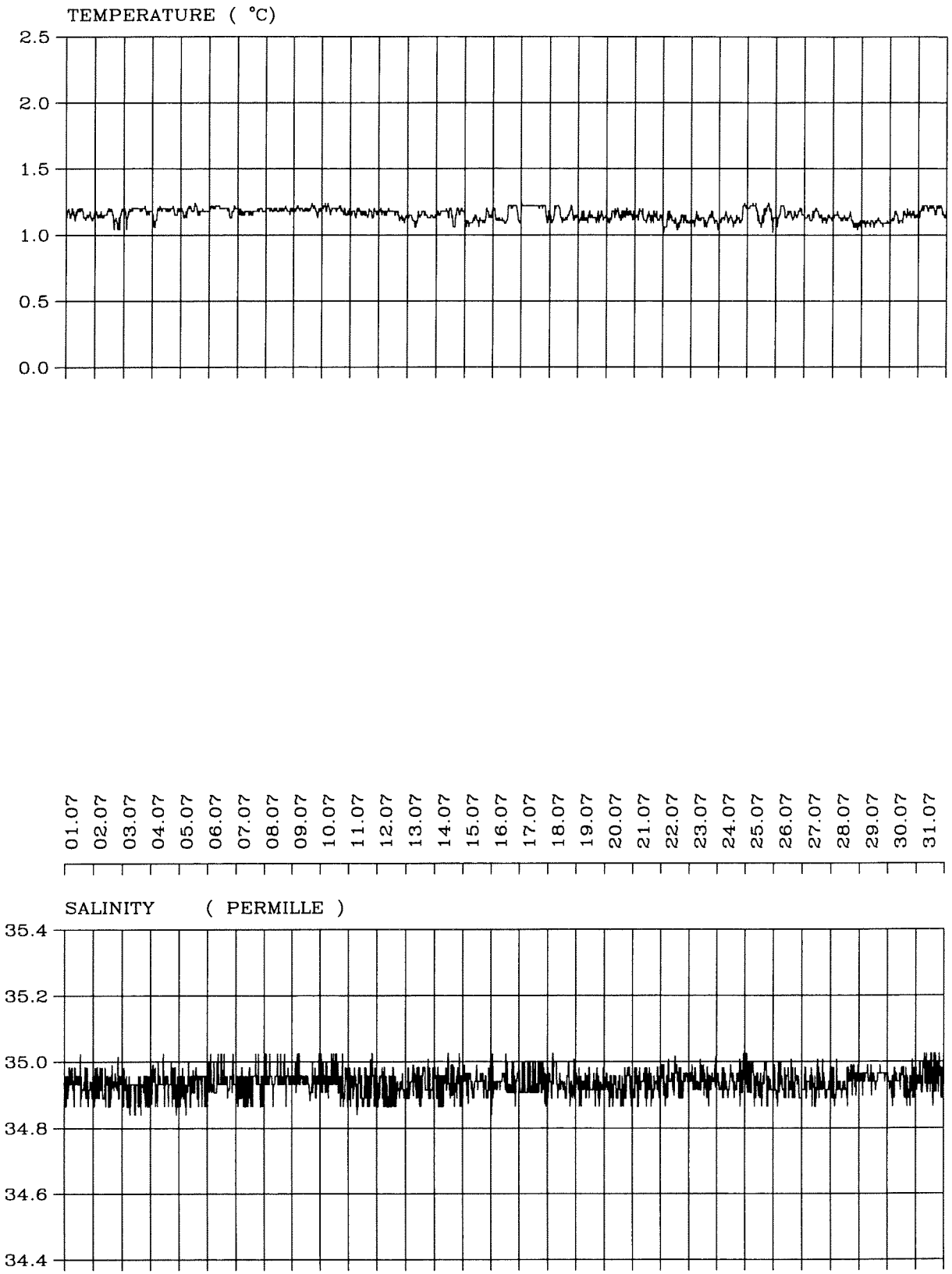

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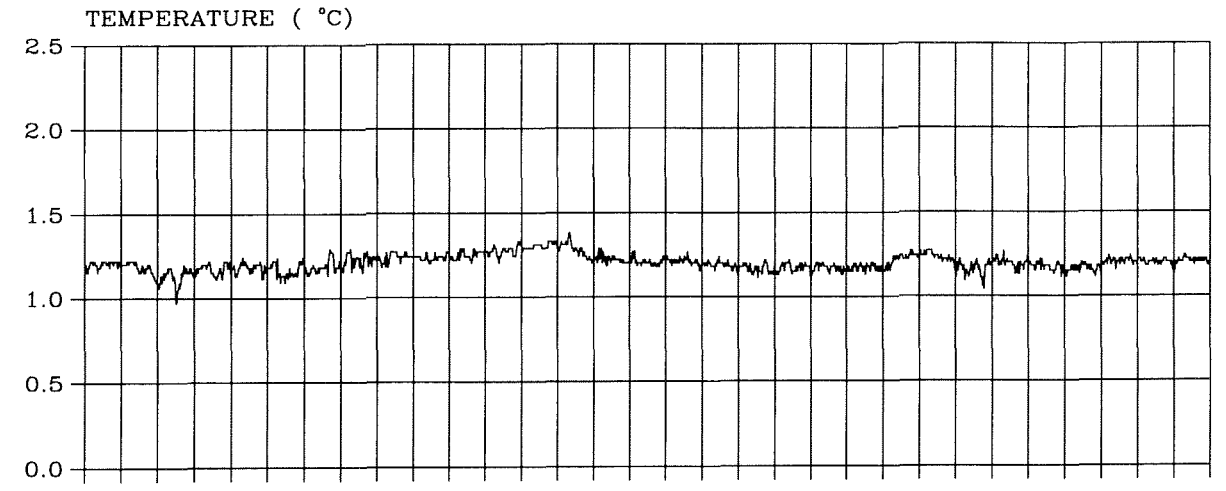
Fig. 2-3-8

Continues.....



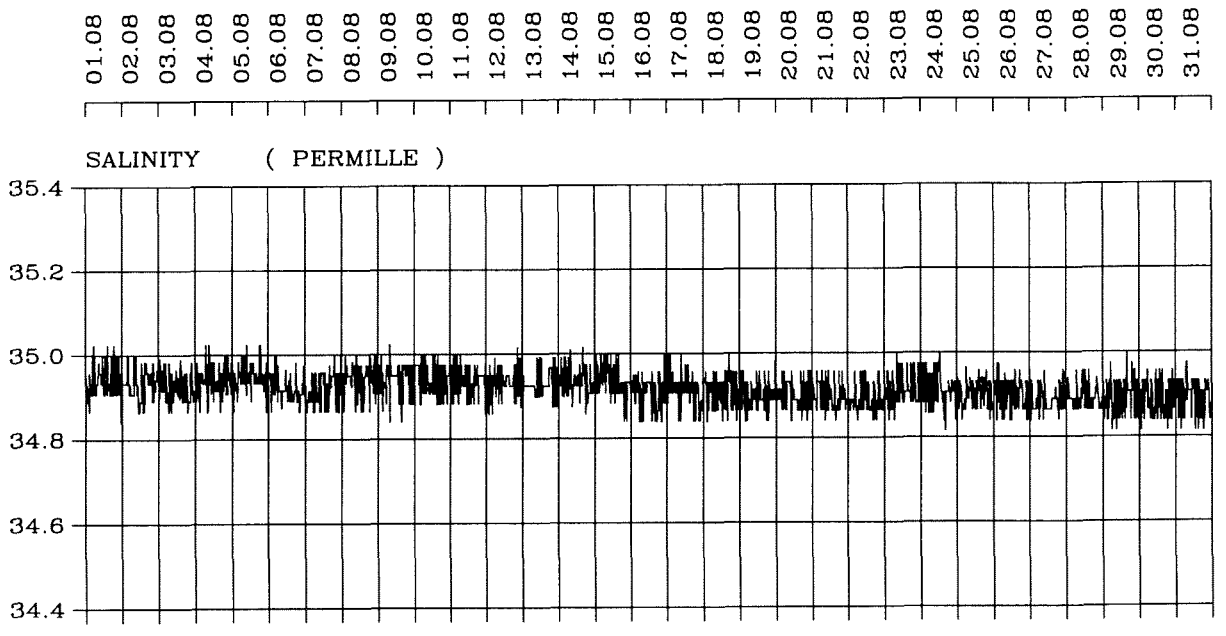


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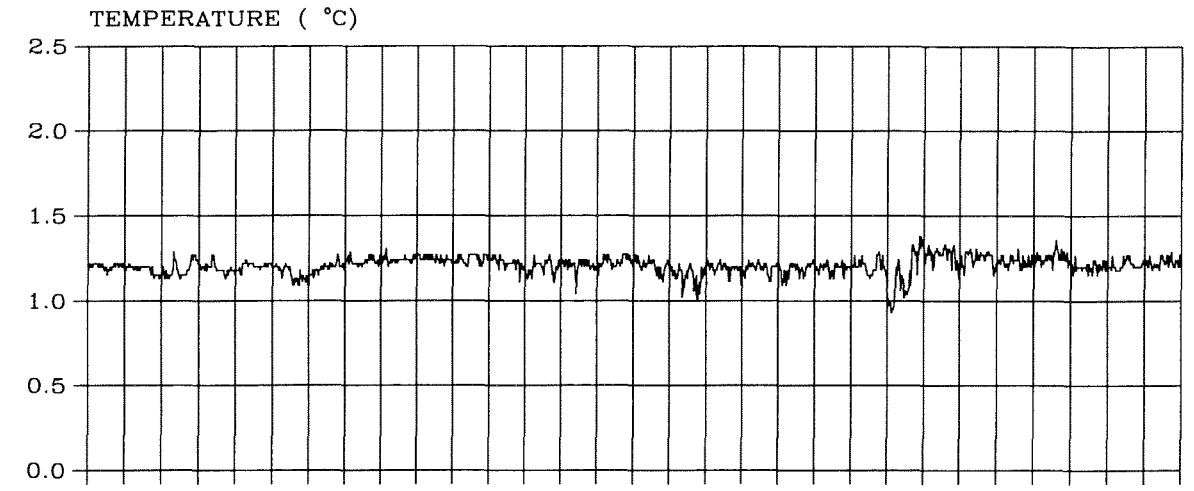
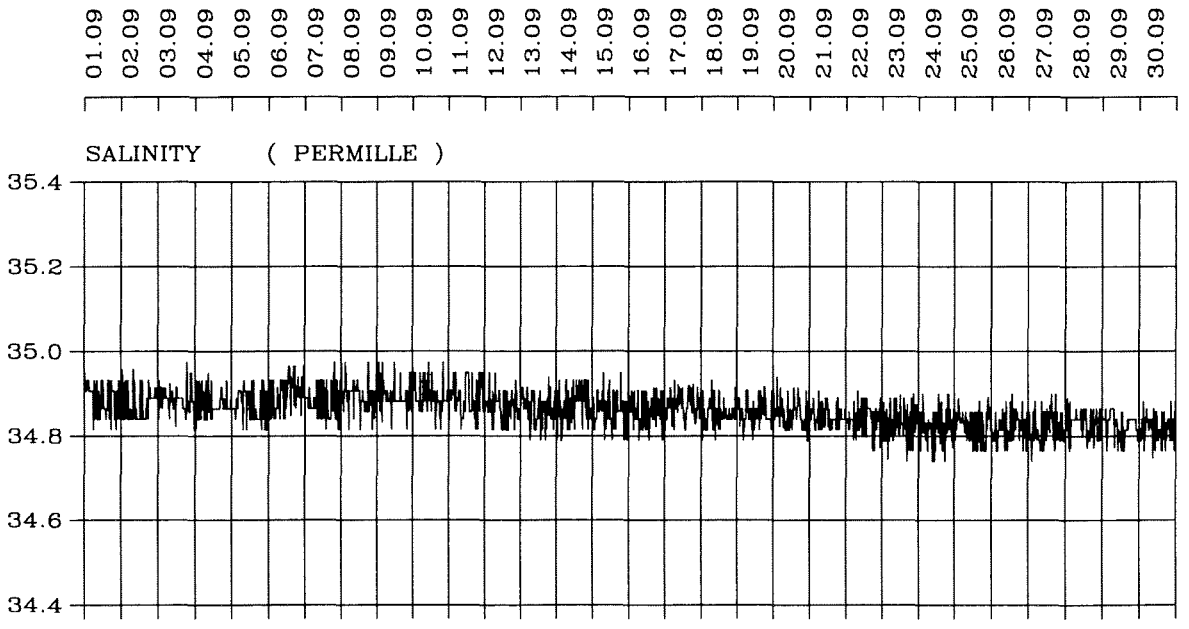
Fig. 2-3-8

Continues.....





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IMR

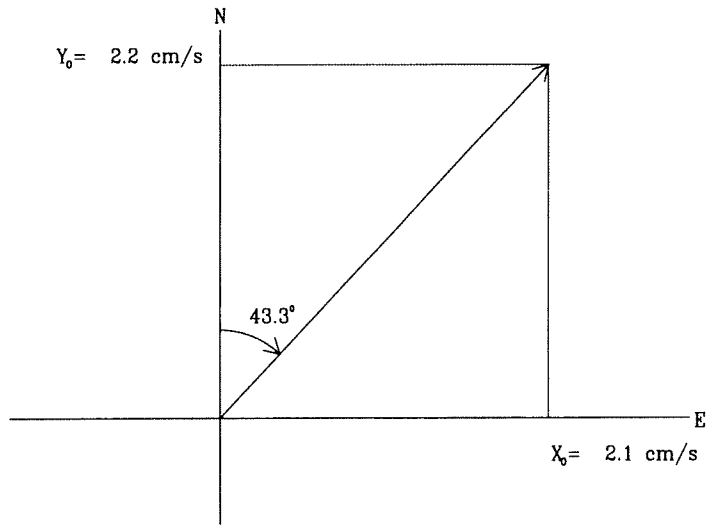
Fig. 2-3-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_j cm/s	g_{xj} °	Y_j cm/s	g_{yj} °	Major axis A_j cm/s	Minor axis B_j cm/s	θ_j °	g_j °	BETA. °
SA	******	0.0	1.9	96.8	1.1	95.7	2.2	-0.0	60.3	96.5	18.2
SSA	******	0.1	2.0	325.2	1.4	285.7	2.4	-0.8	58.0	313.5	131.1
MSM	763.49	0.5	2.9	289.5	1.2	298.4	3.1	0.2	67.3	290.8	116.1
MM	661.31	0.5	1.7	14.9	0.3	342.1	1.8	-0.2	261.8	194.2	172.4
MF	327.86	1.1	2.0	223.8	1.2	225.6	2.3	0.0	239.4	44.3	25.3
M2	12.42	29.0	4.5	73.4	4.1	359.3	4.8	-3.6	54.5	45.4	89.7
S2	12.00	30.0	1.8	118.9	1.8	53.2	2.1	-1.4	46.9	87.8	117.9

MEAN CURRENT



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IMR

Fig. 2-3-9 Harmonic analysis of current.

A discription of the model and its definitions :

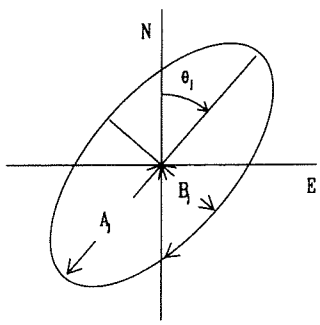
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

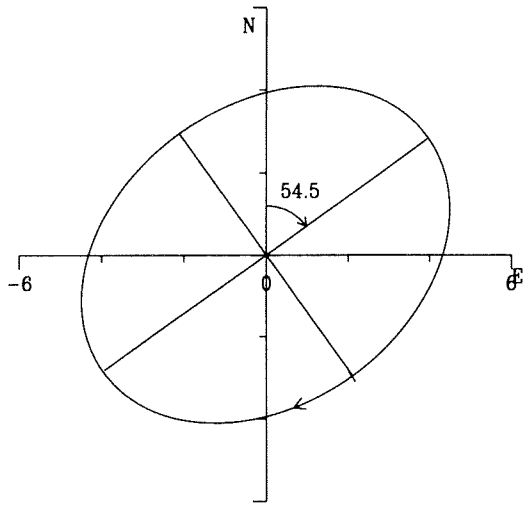
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

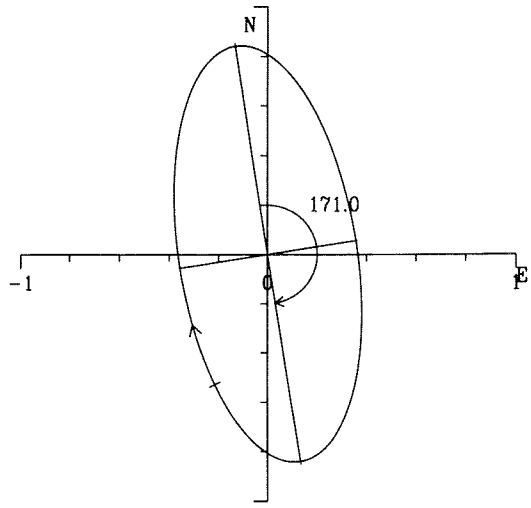
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1700 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



Southern Great Bank, Barents Sea

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Instrument depth : 210.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10798

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

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Fig. 2-3-10 M2 and K1 ellipse.

MEAN VALUES

Speed	8.98 cm/s
NS-component	2.18 cm/s
EW-component	2.08 cm/s
Velocity	3.01 cm/s
in direction	43 °

MAXIMUM

Velocity	52.83 cm/s
in direction	237 °
Temperature	2.46 °C
Salinity	35.185

MINIMUM

Velocity	0.00 cm/s
in direction	331 °
Temperature	0.12 °C
Salinity	34.739

Southern Great Bank, Barents Sea

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IMR

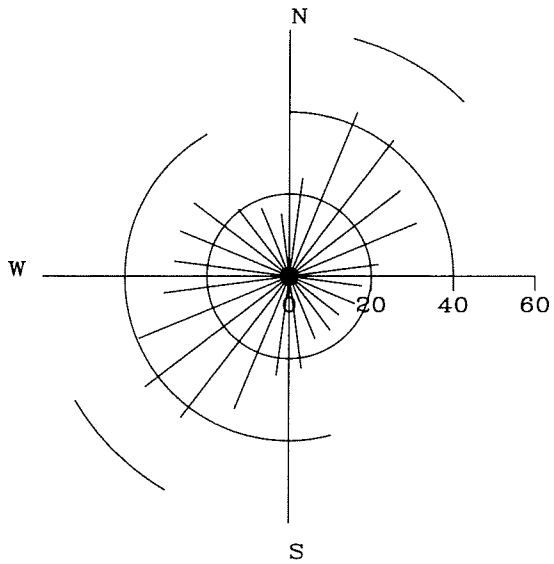
Fig. 2-3-11

Overall mean values.
Overall maximum values.
Overall minimum values.

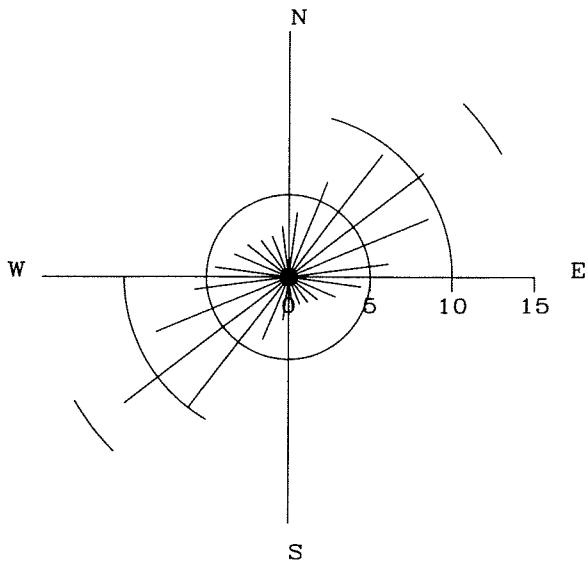
Mooring: 2

Depth: 268 *m*

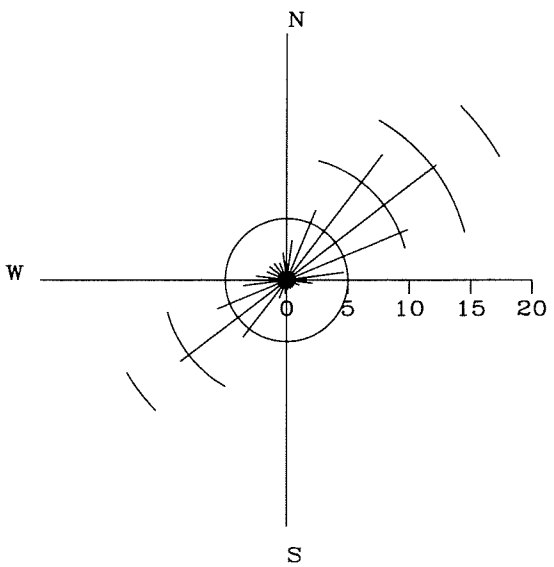
CURRENT VELOCITY DISTRIBUTION



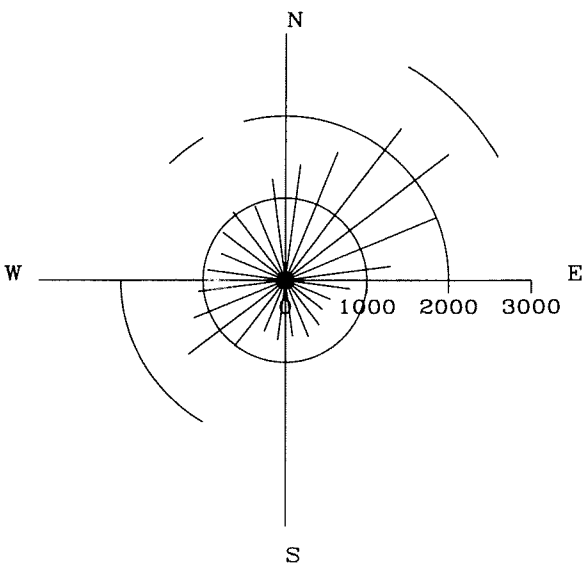
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

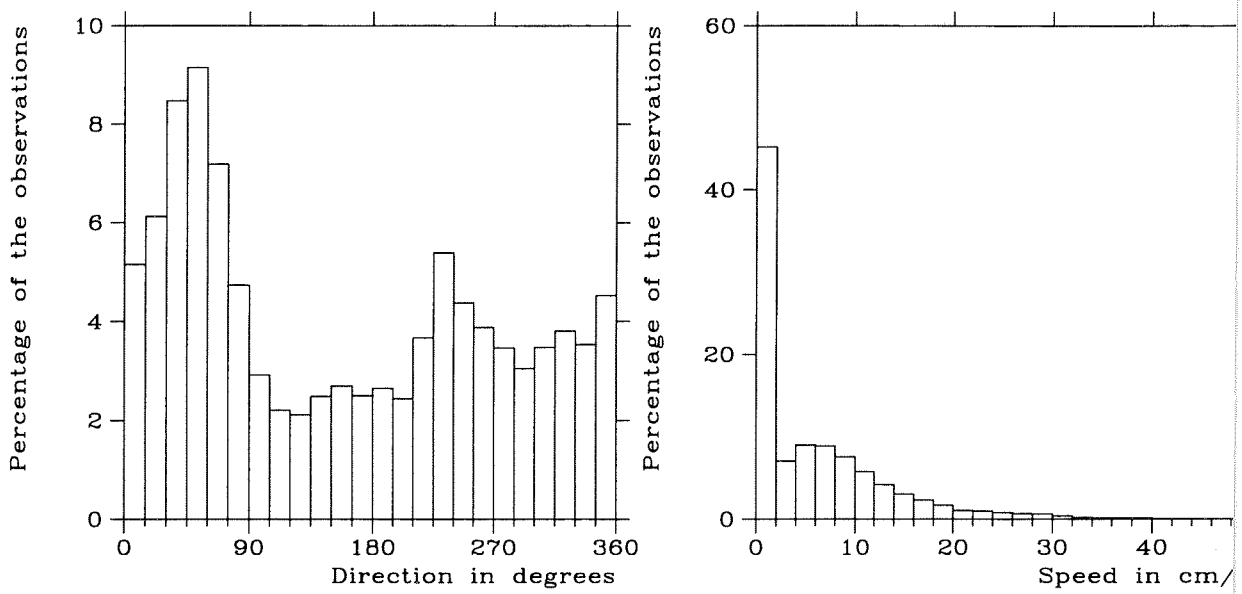
Number of observations :27544

Southern Great Bank, Barents Sea
Position : N 76° 25.58′ E 34° 59.46′
Instrument depth : 268.0 m Bottom depth : 278.0 m
Time interval : 20.00 minutes. Instrument no. : 10800
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

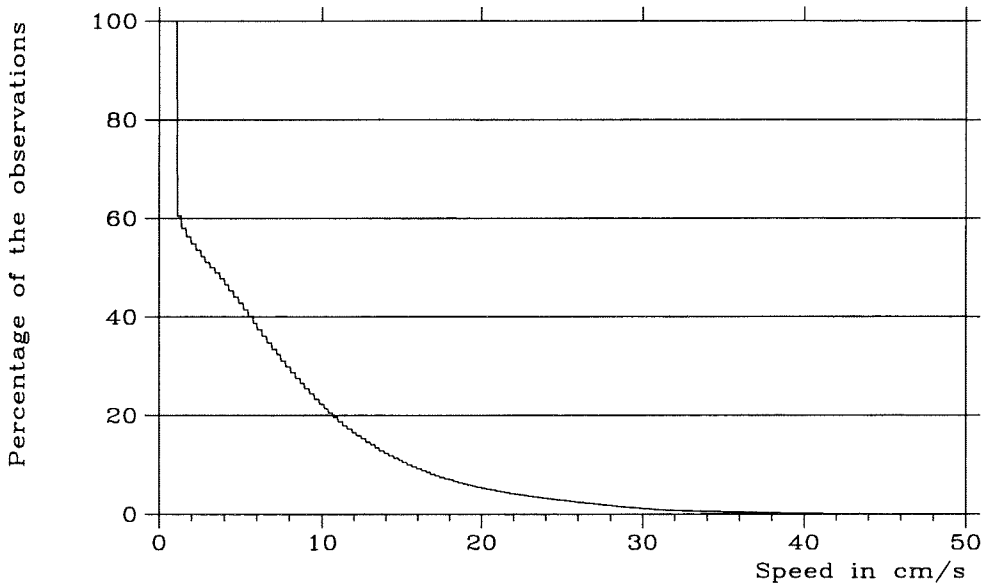
IMR

Fig. 2-4-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

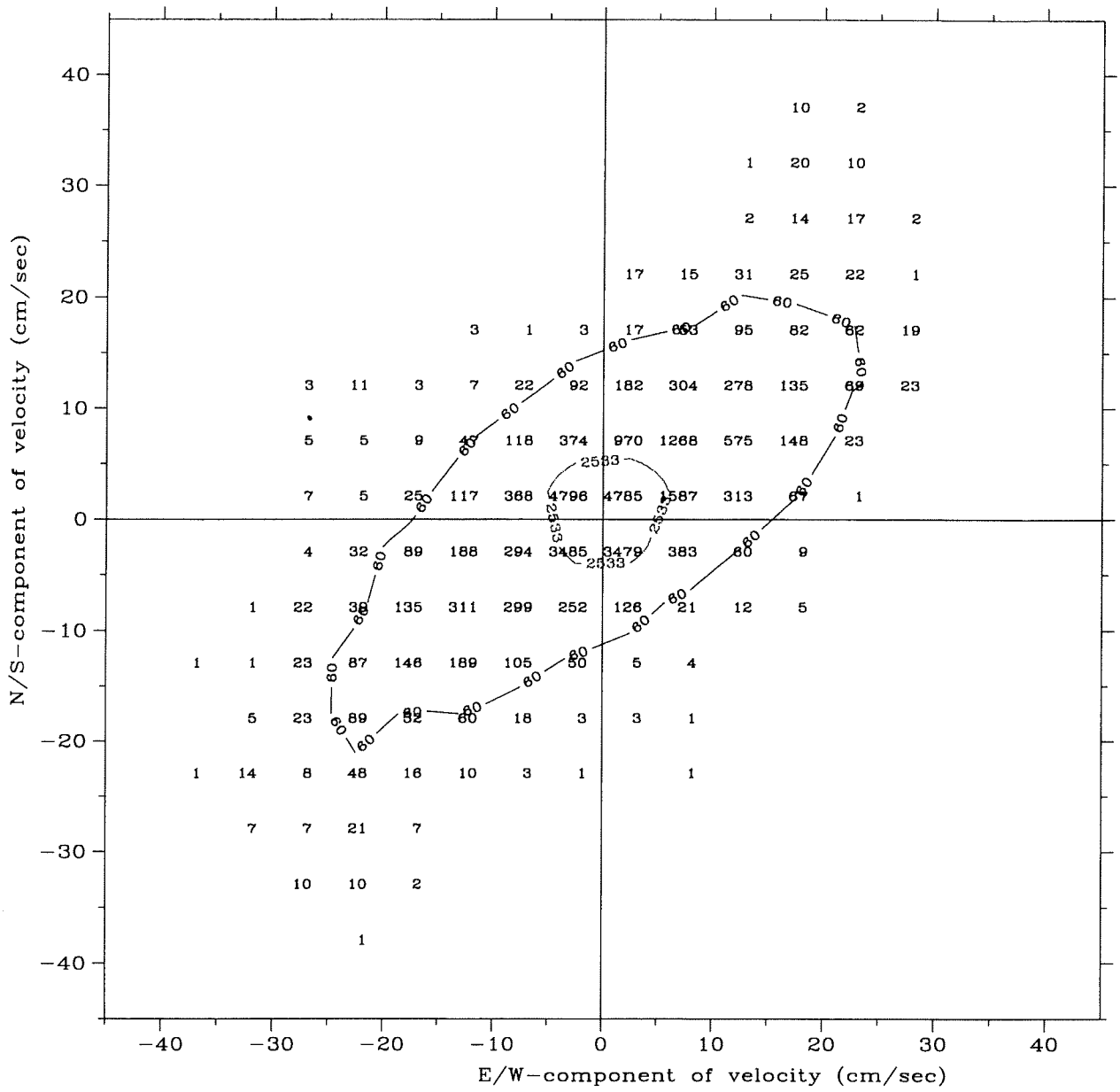
Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations :27544

Isoline for 50% and 96%

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

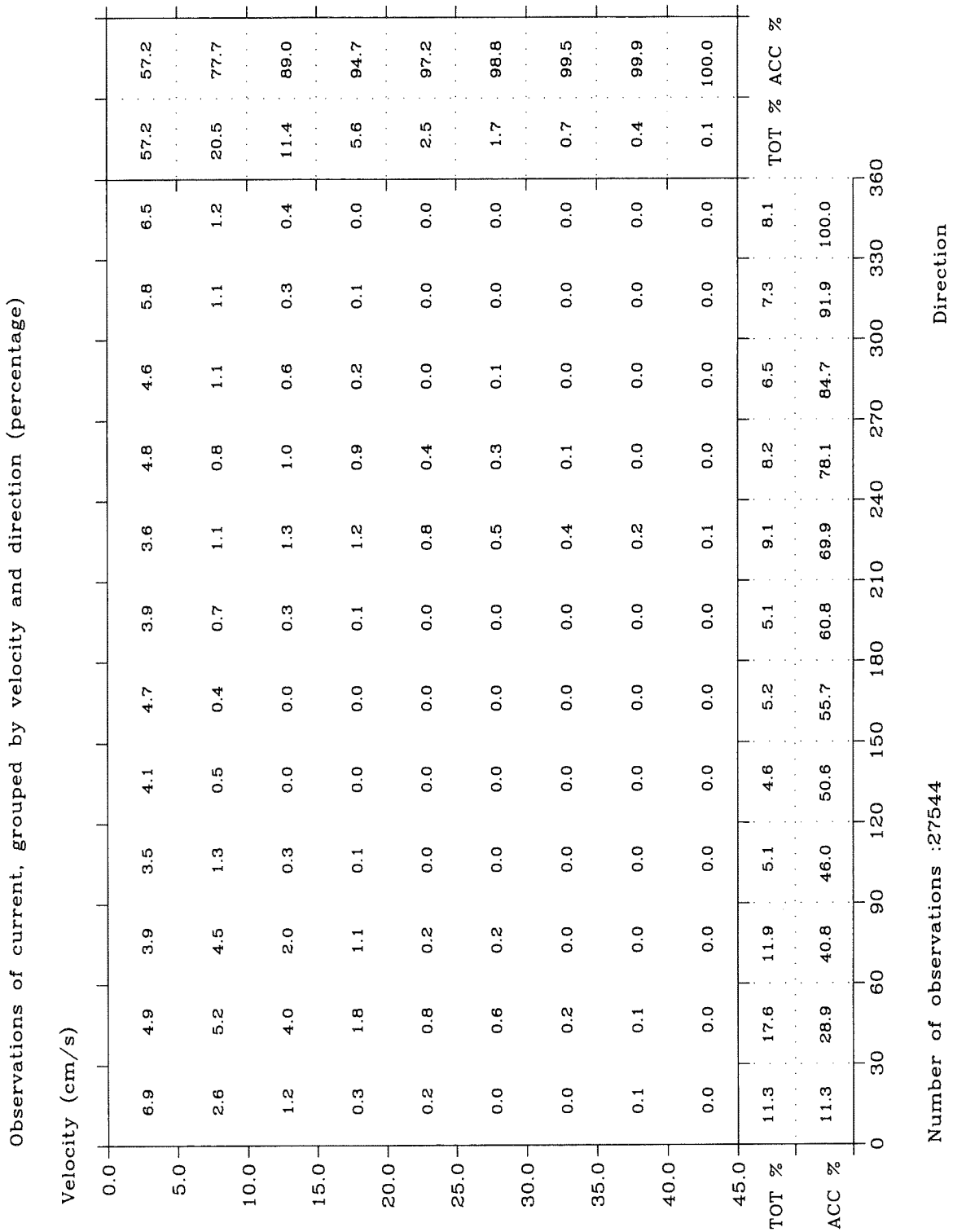
Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

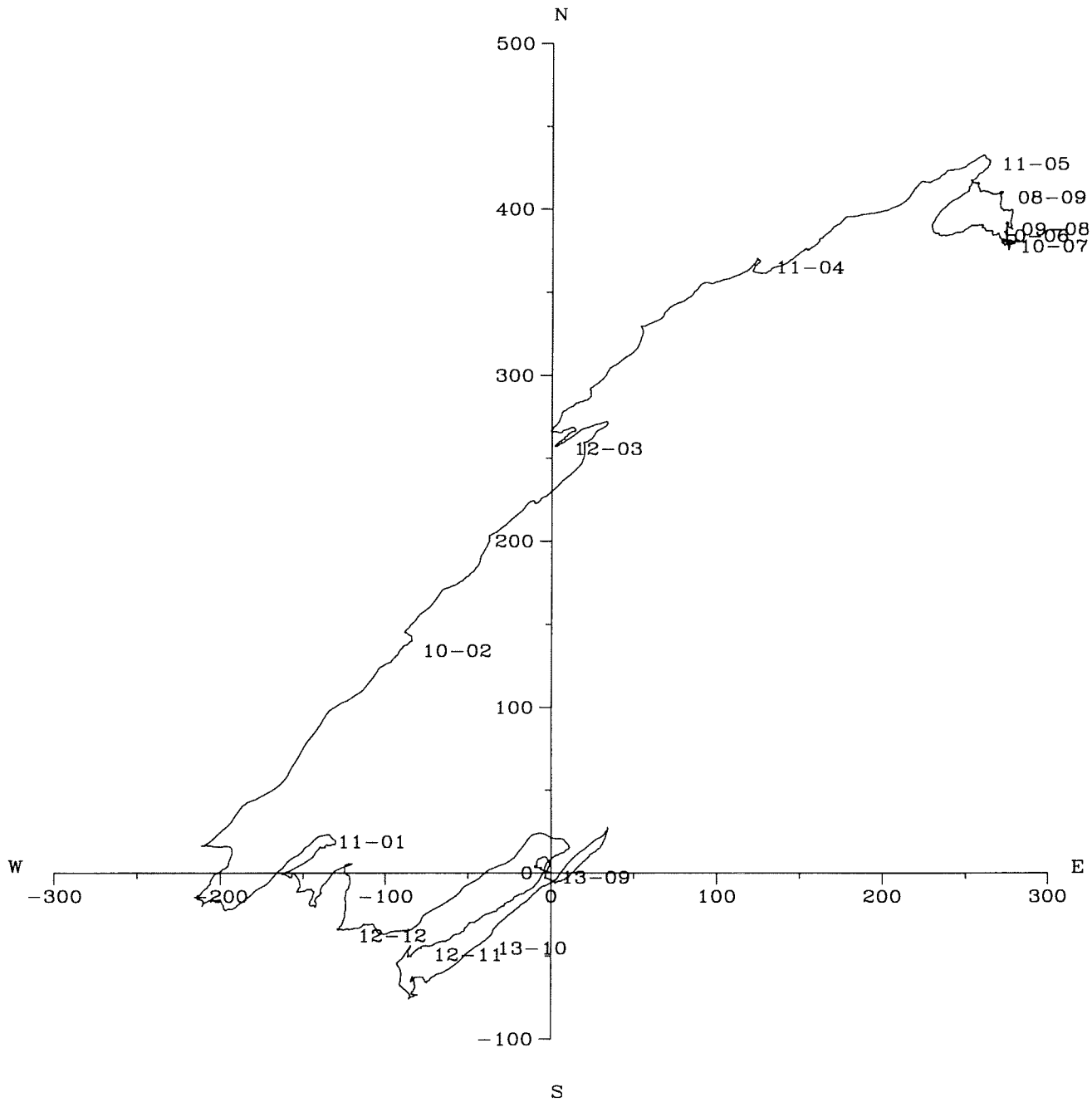
Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



Units in km

Number of observations :27544

Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

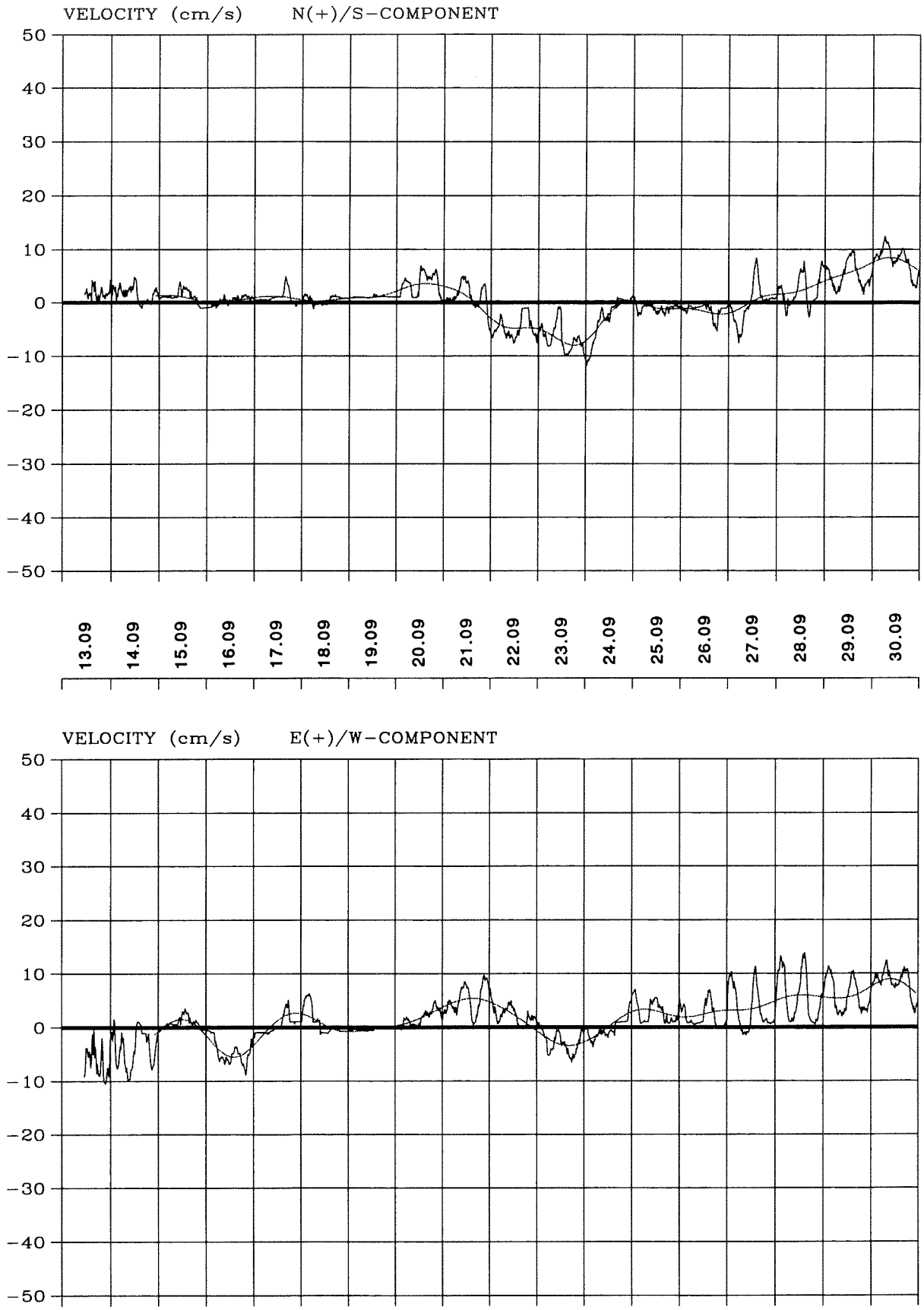
Instrument depth : 268.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 − 1993 01.10 H. 0000

IMR

Fig. 2−4−5 Progressive vector diagram.



Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

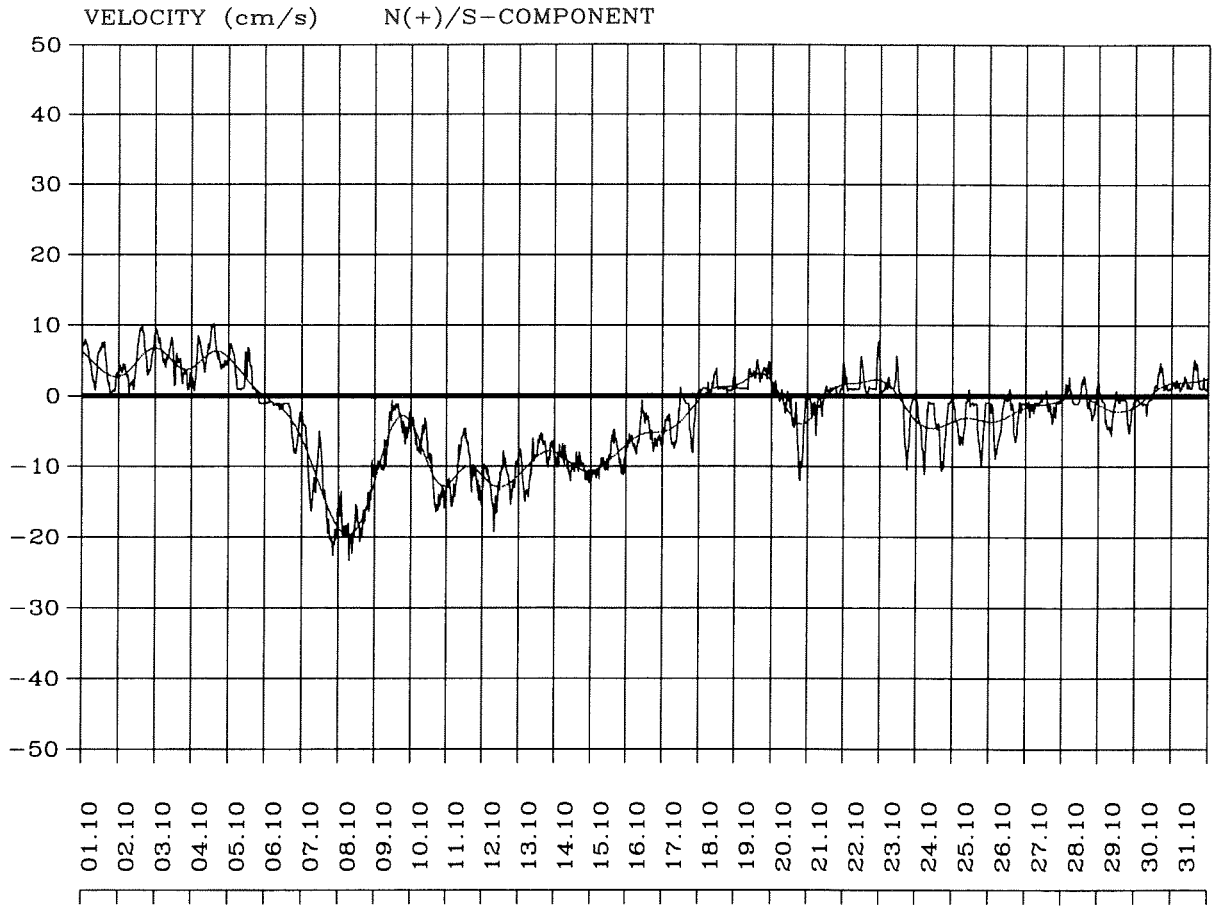
Instrument depth : 268.0 m Bottom depth : 278.0 m

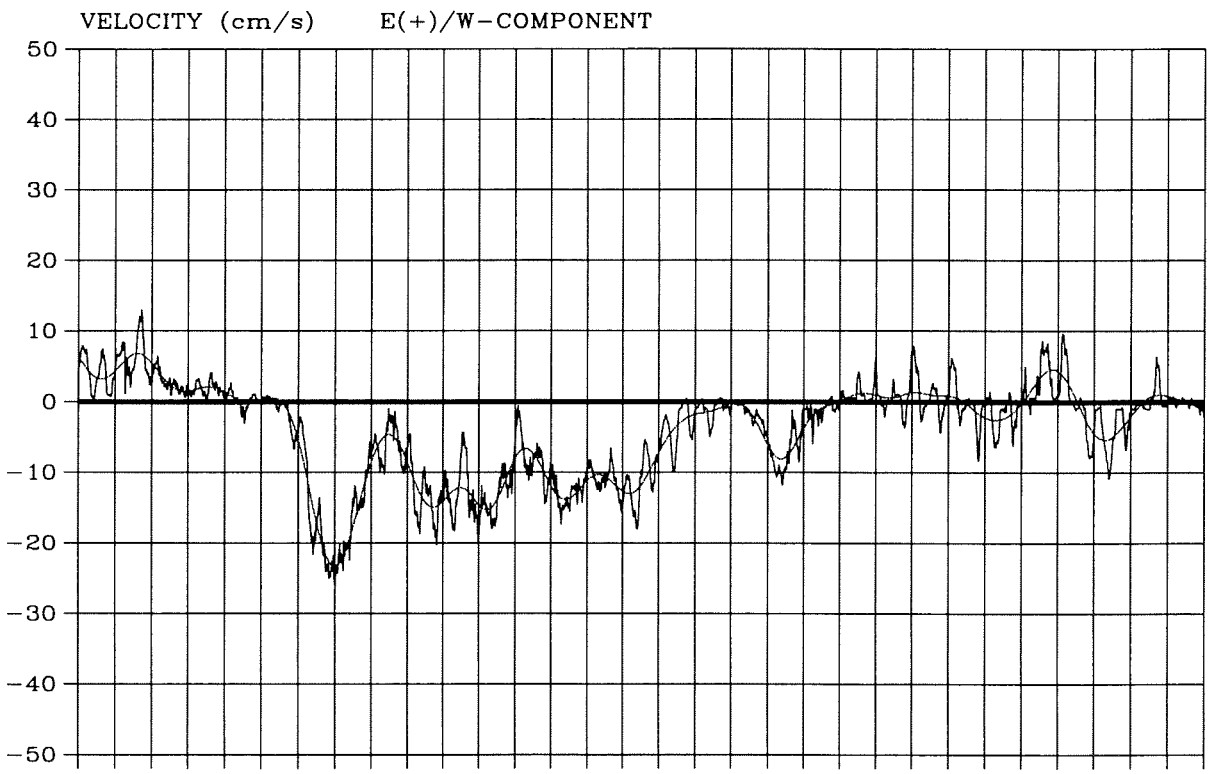
Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-6 Current velocity distribution.





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 268.0 m Bottom depth : 278.0 m

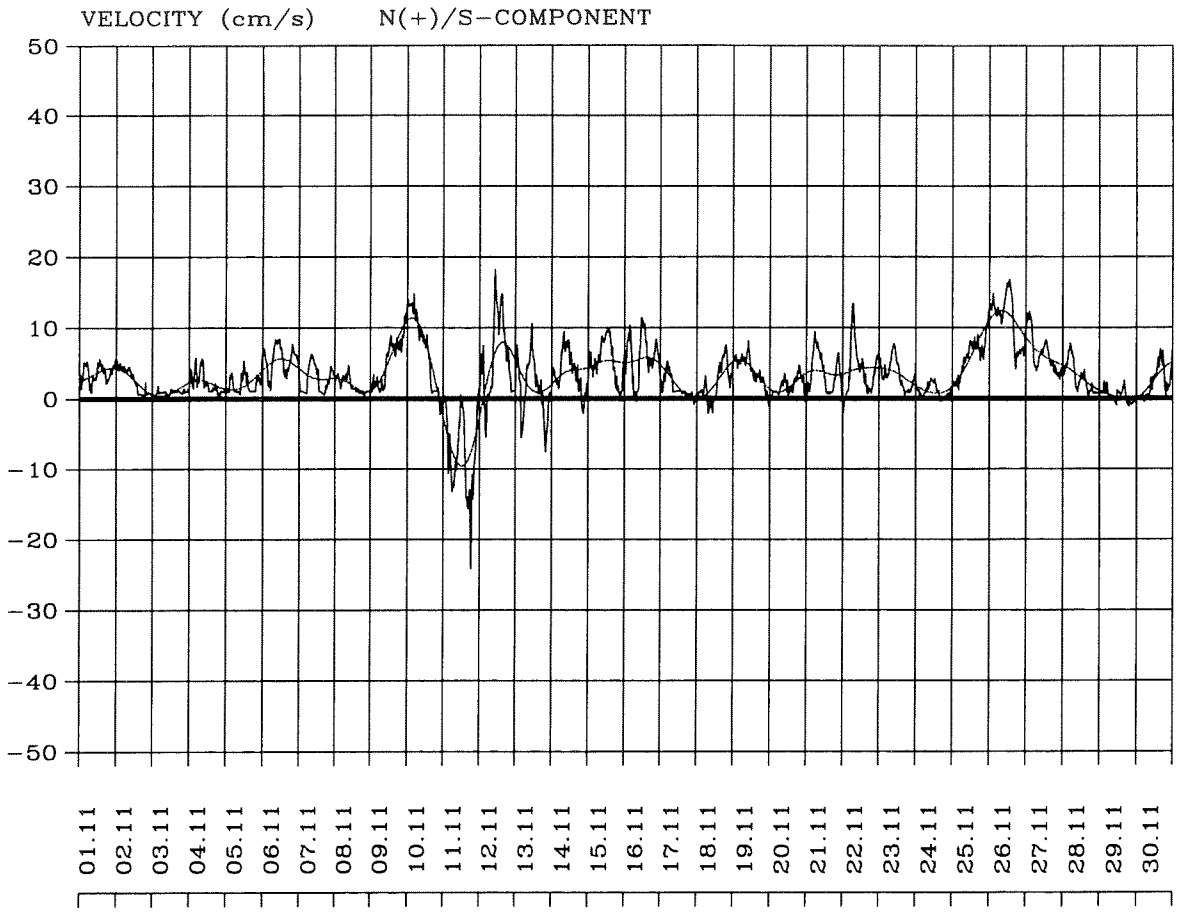
Time interval : 20.00 minutes. Instrument no. : 10800

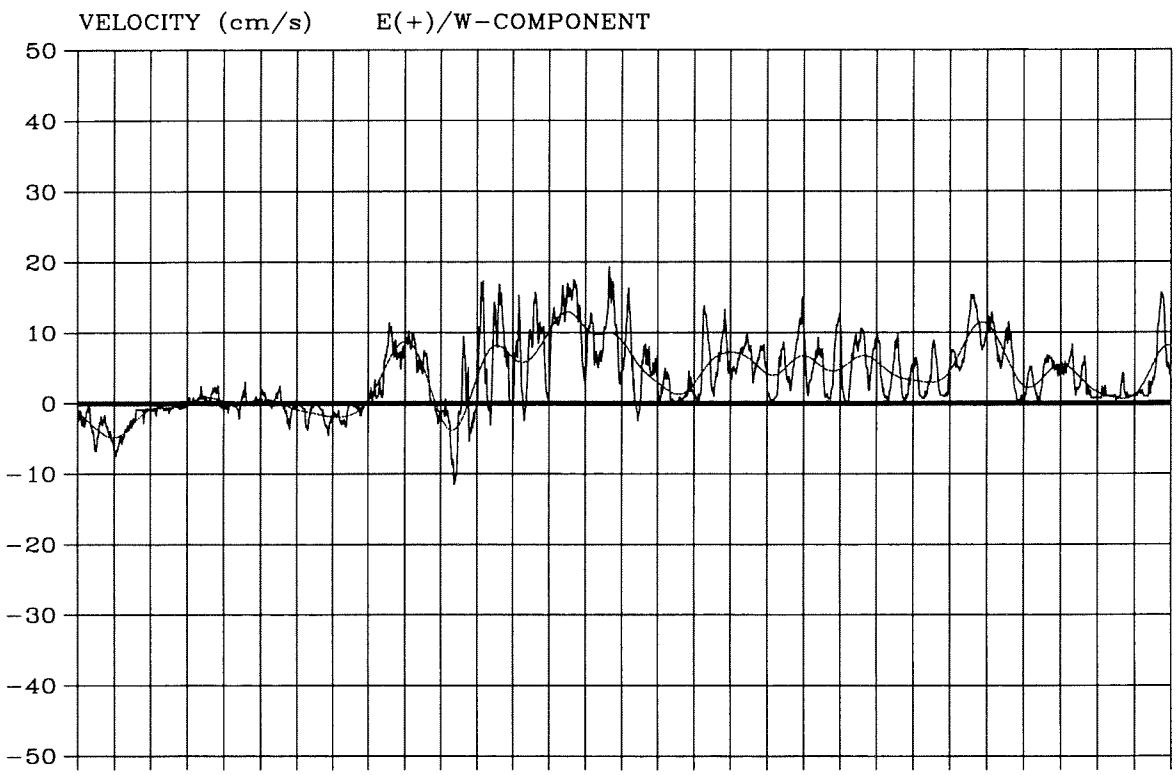
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

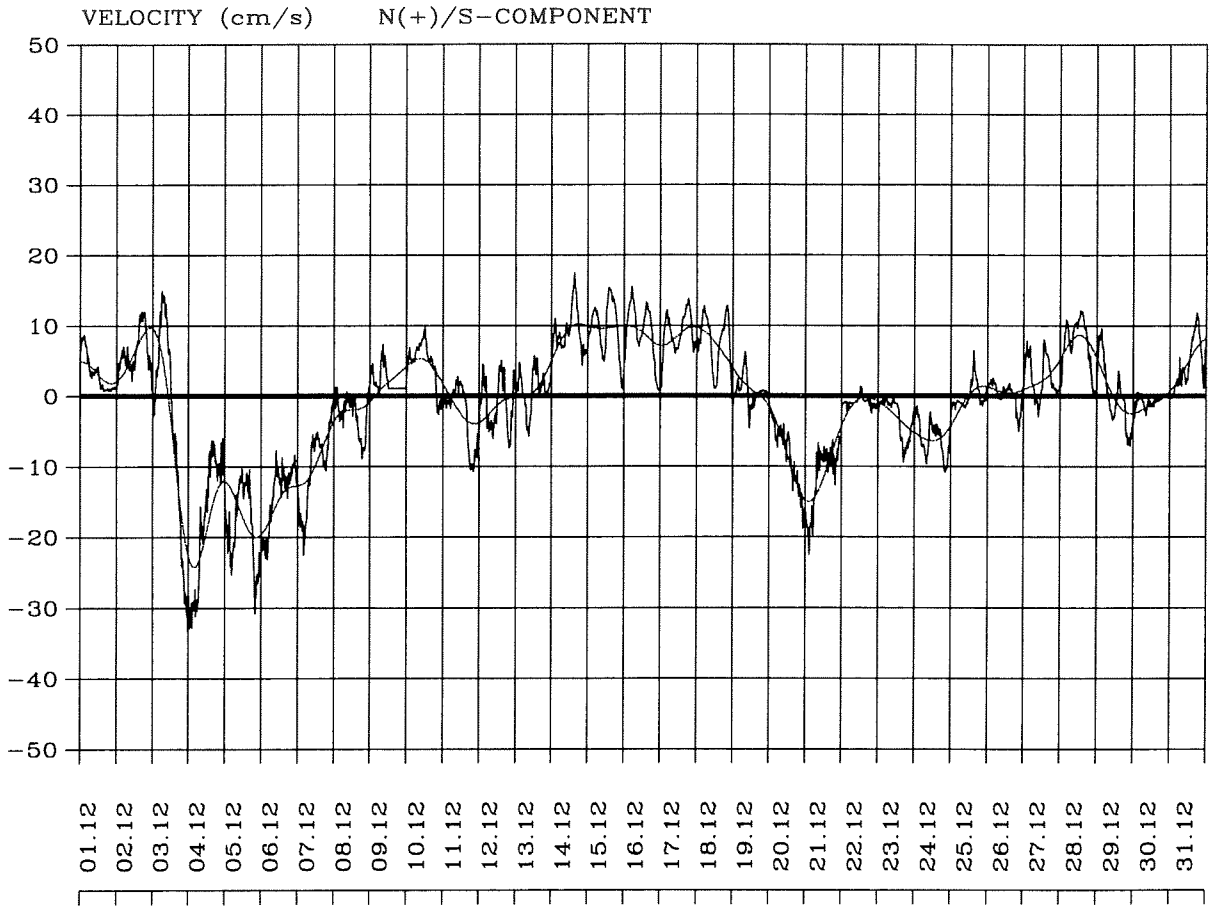
Time interval : 20.00 minutes. Instrument no. : 10800

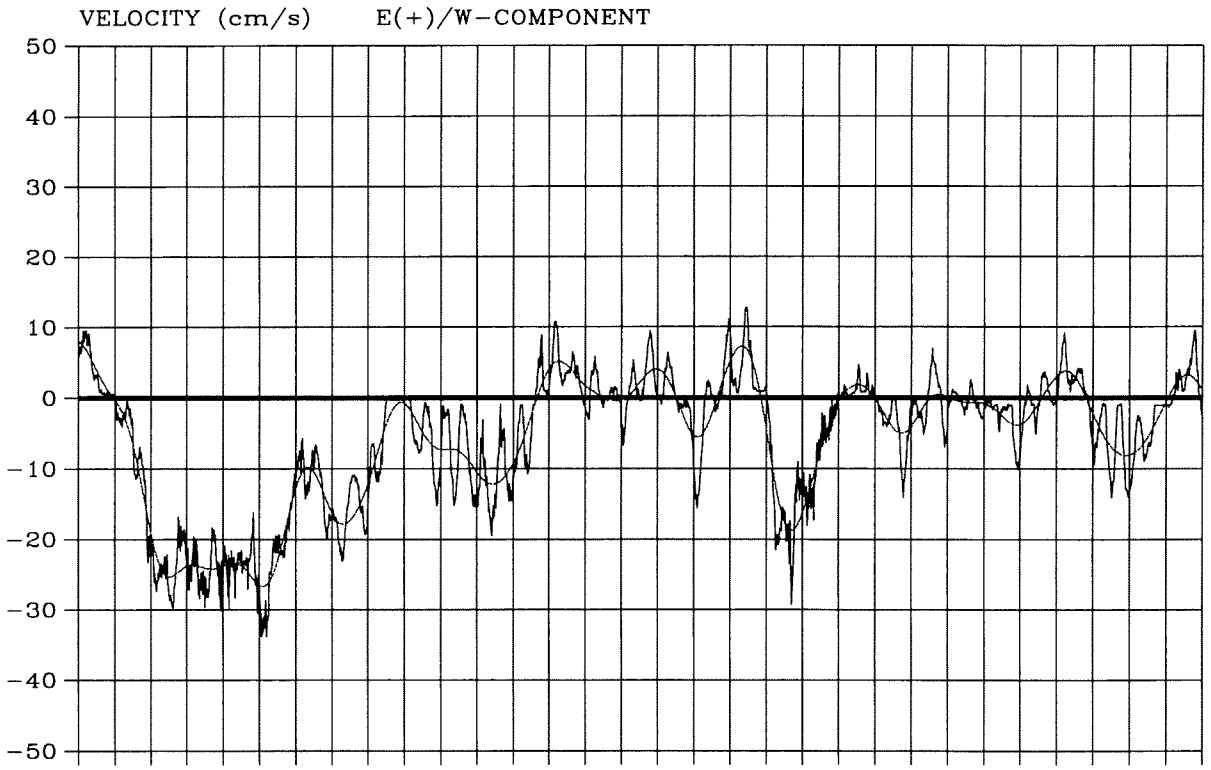
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

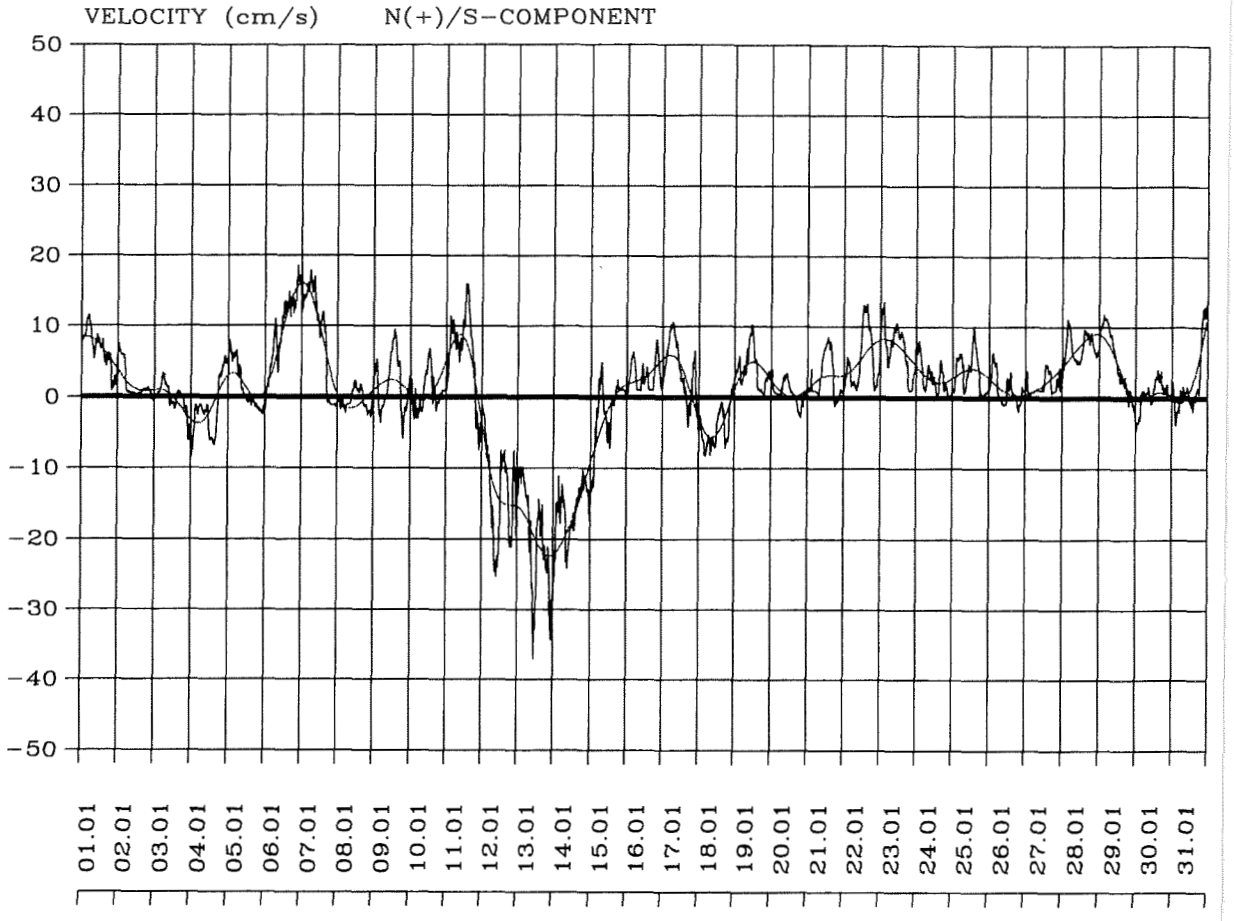
Time interval : 20.00 minutes. Instrument no. : 10800

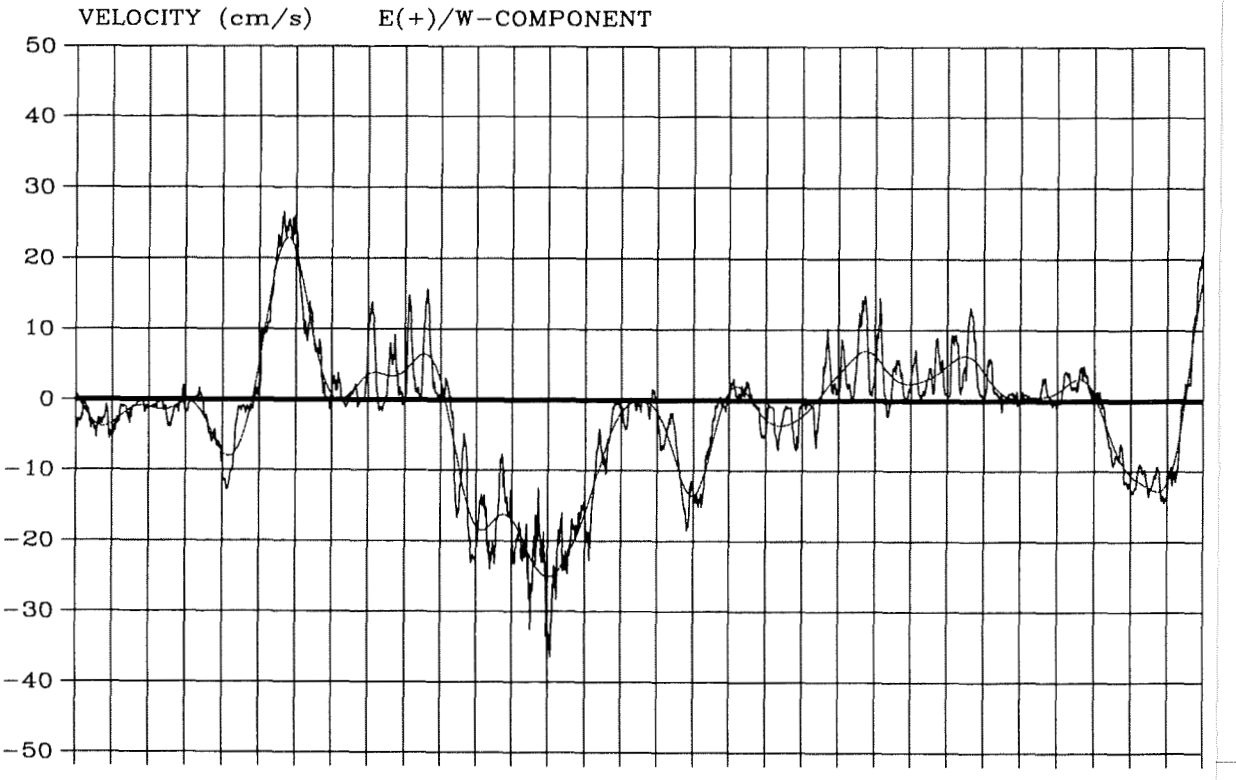
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 268.0 m Bottom depth : 278.0 m

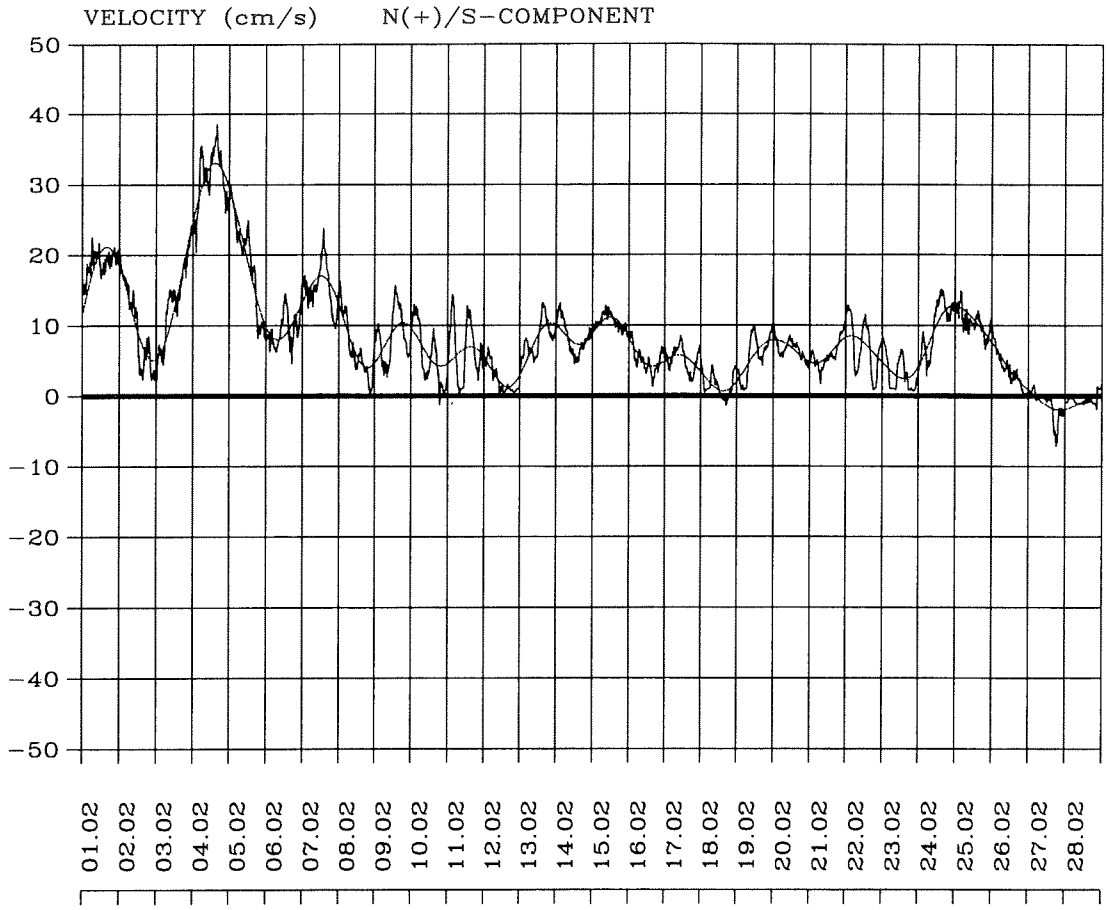
Time interval : 20.00 minutes. Instrument no. : 10800

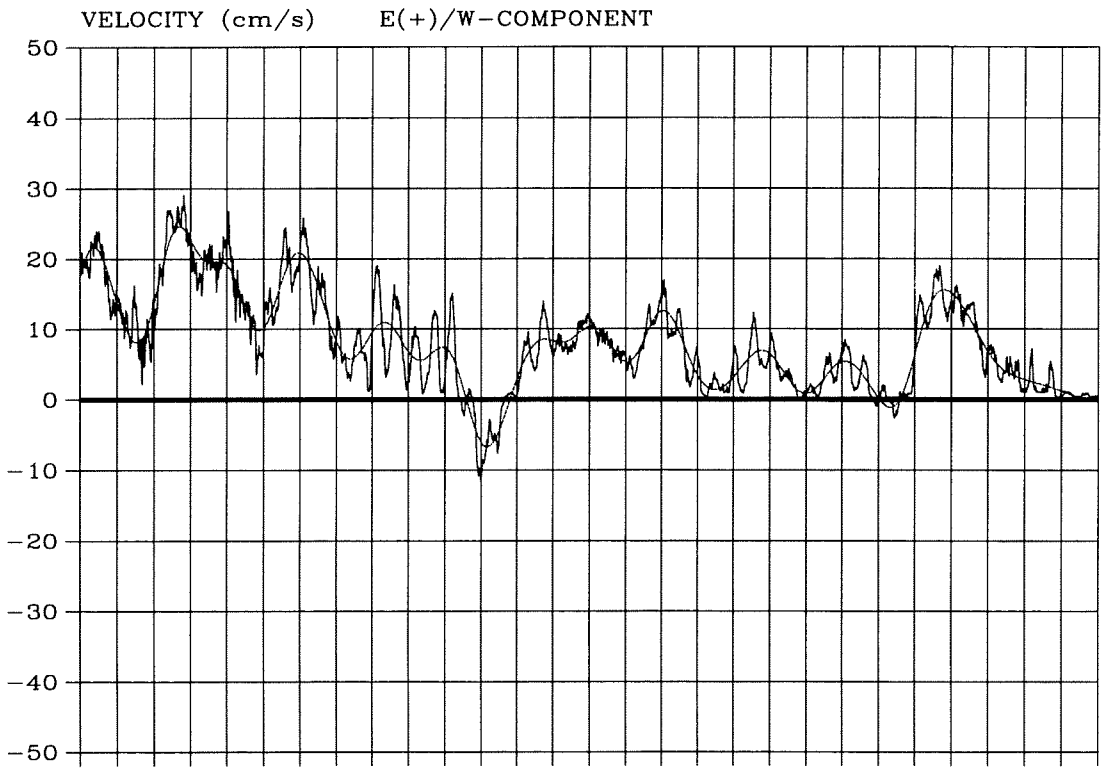
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 268.0 m Bottom depth : 278.0 m

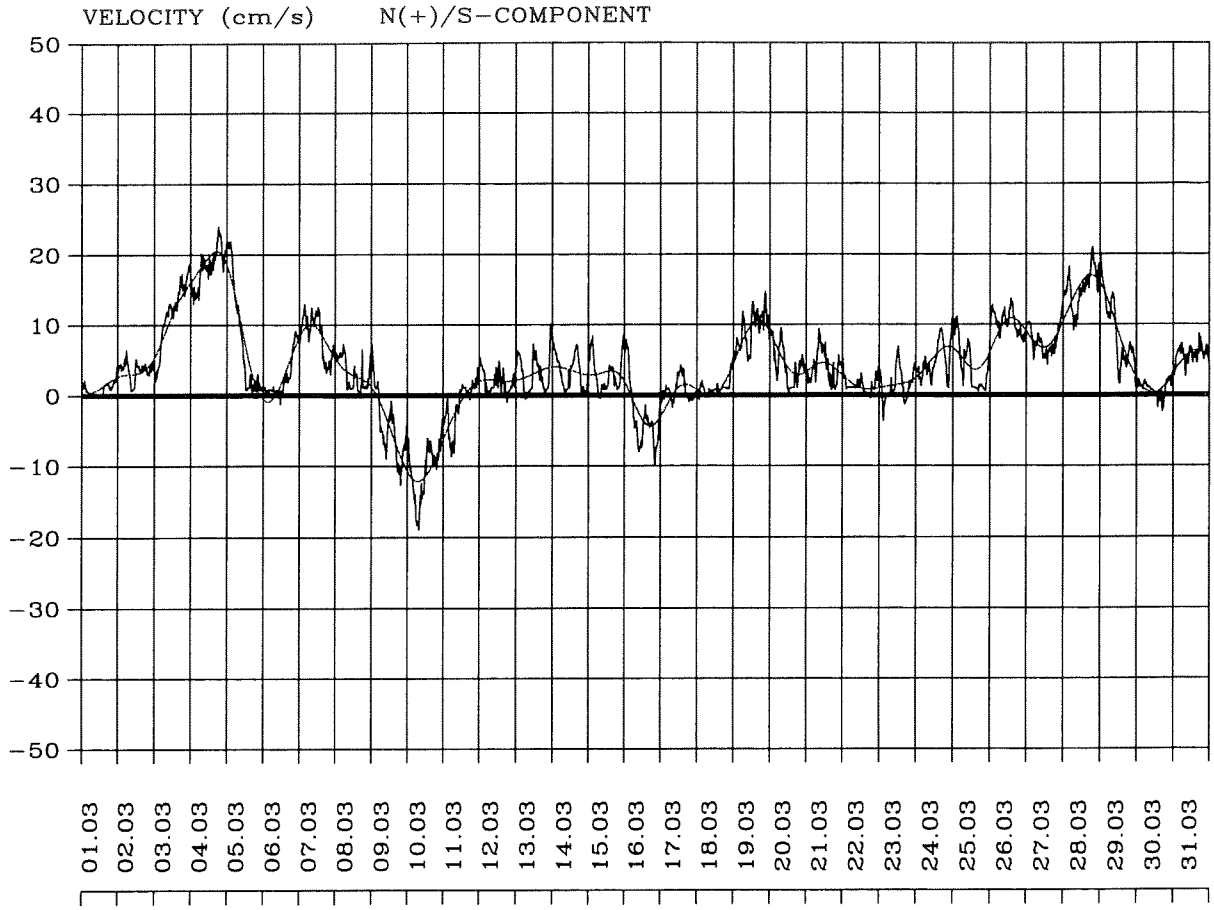
Time interval : 20.00 minutes. Instrument no. : 10800

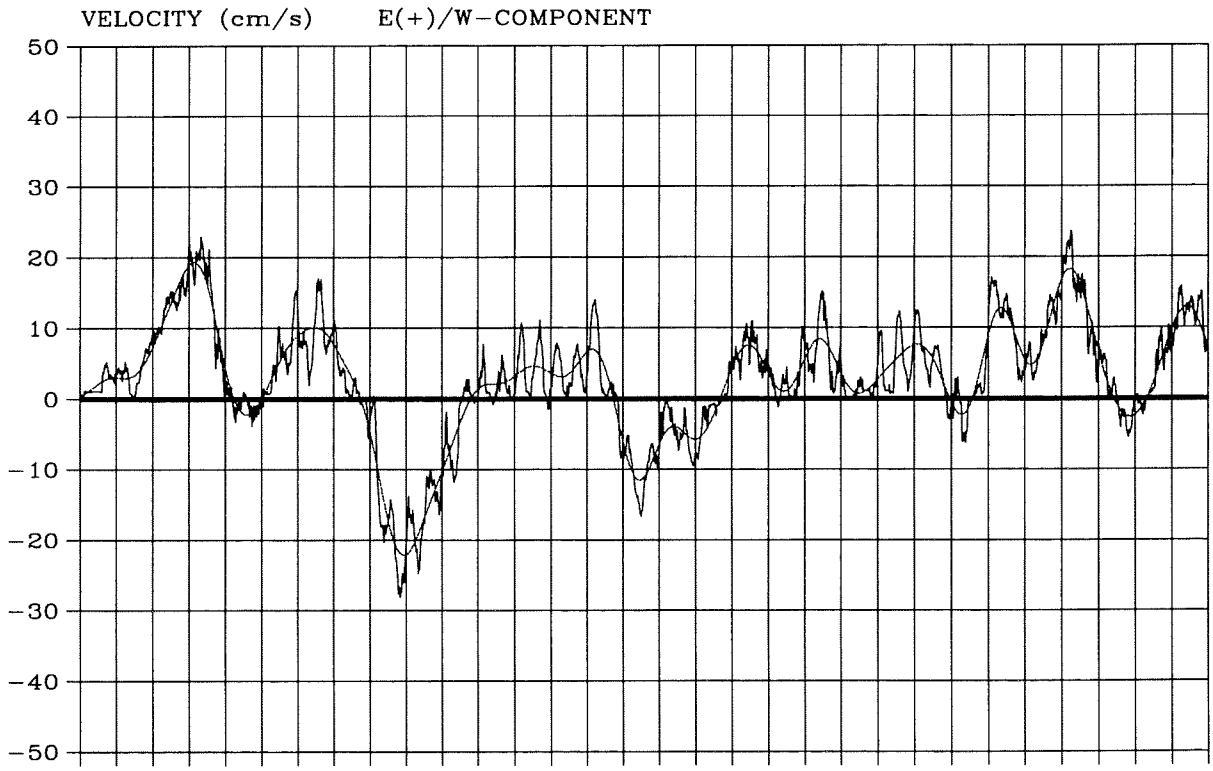
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

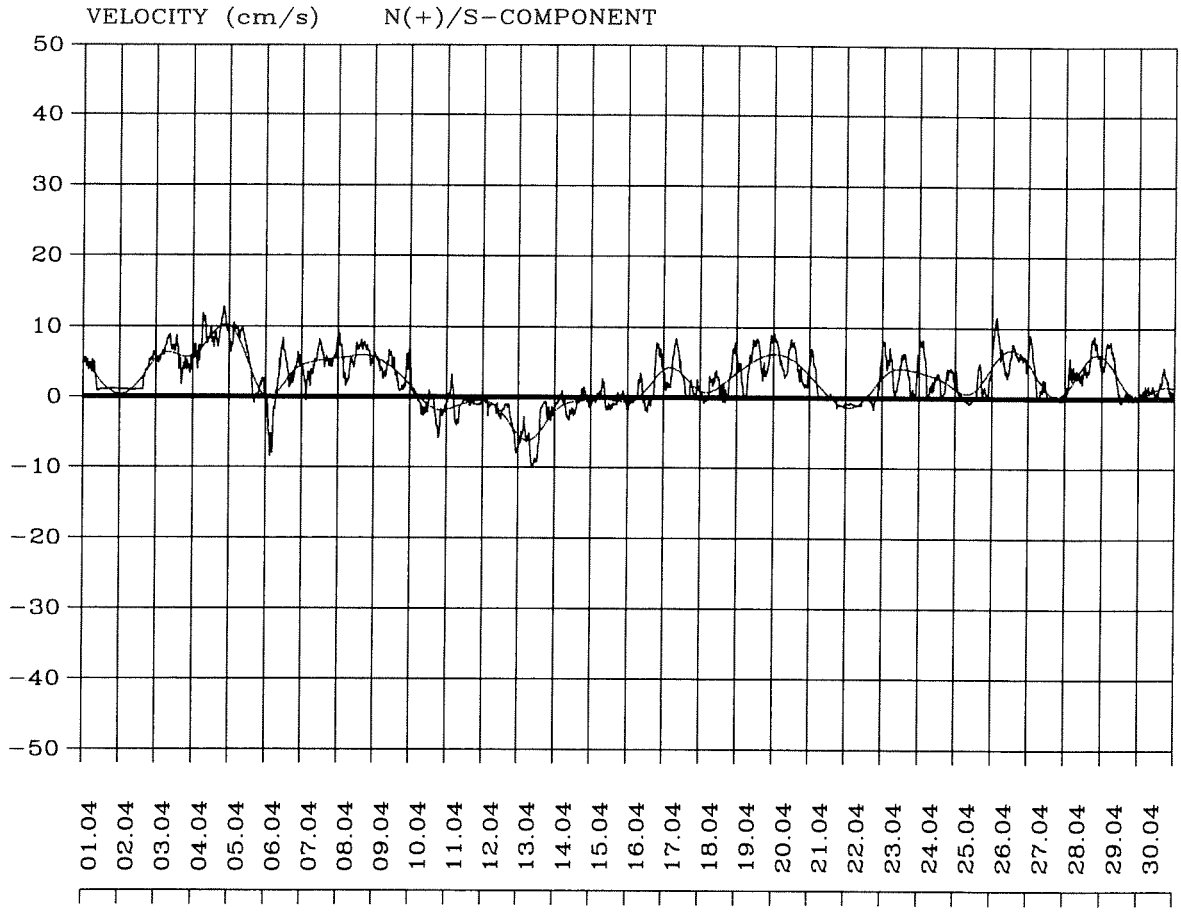
Time interval : 20.00 minutes. Instrument no. : 10800

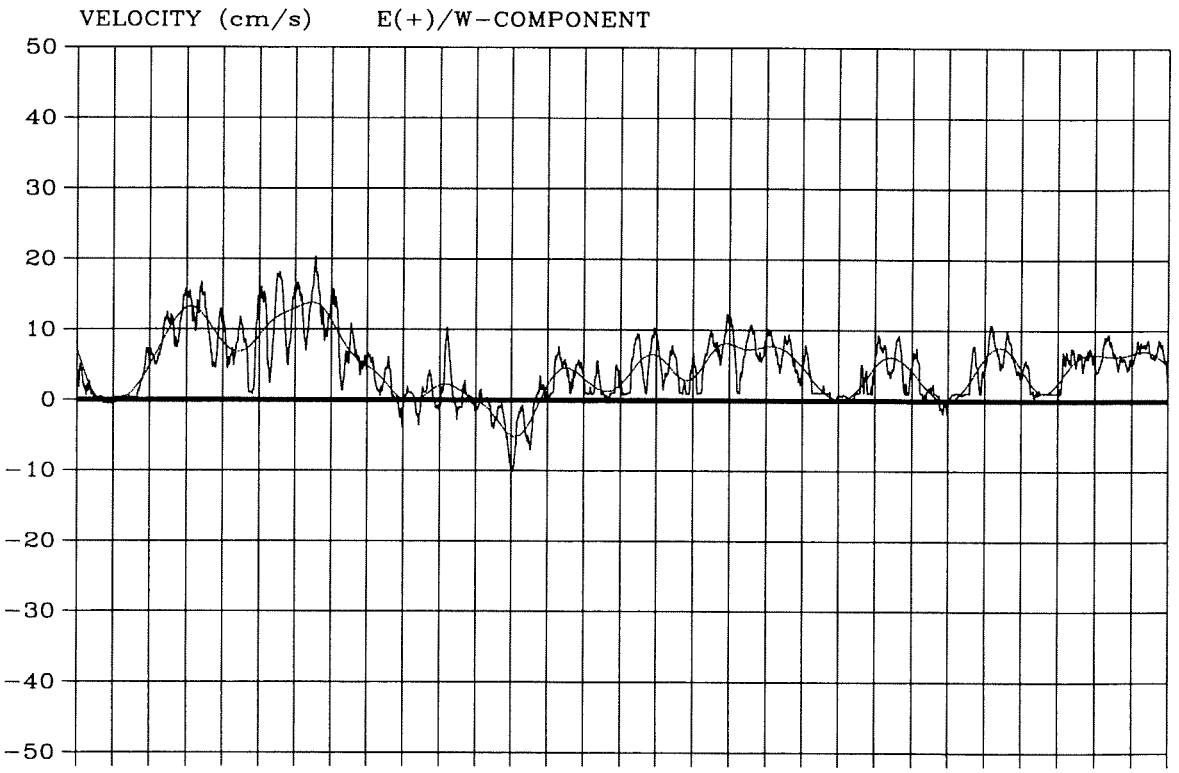
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

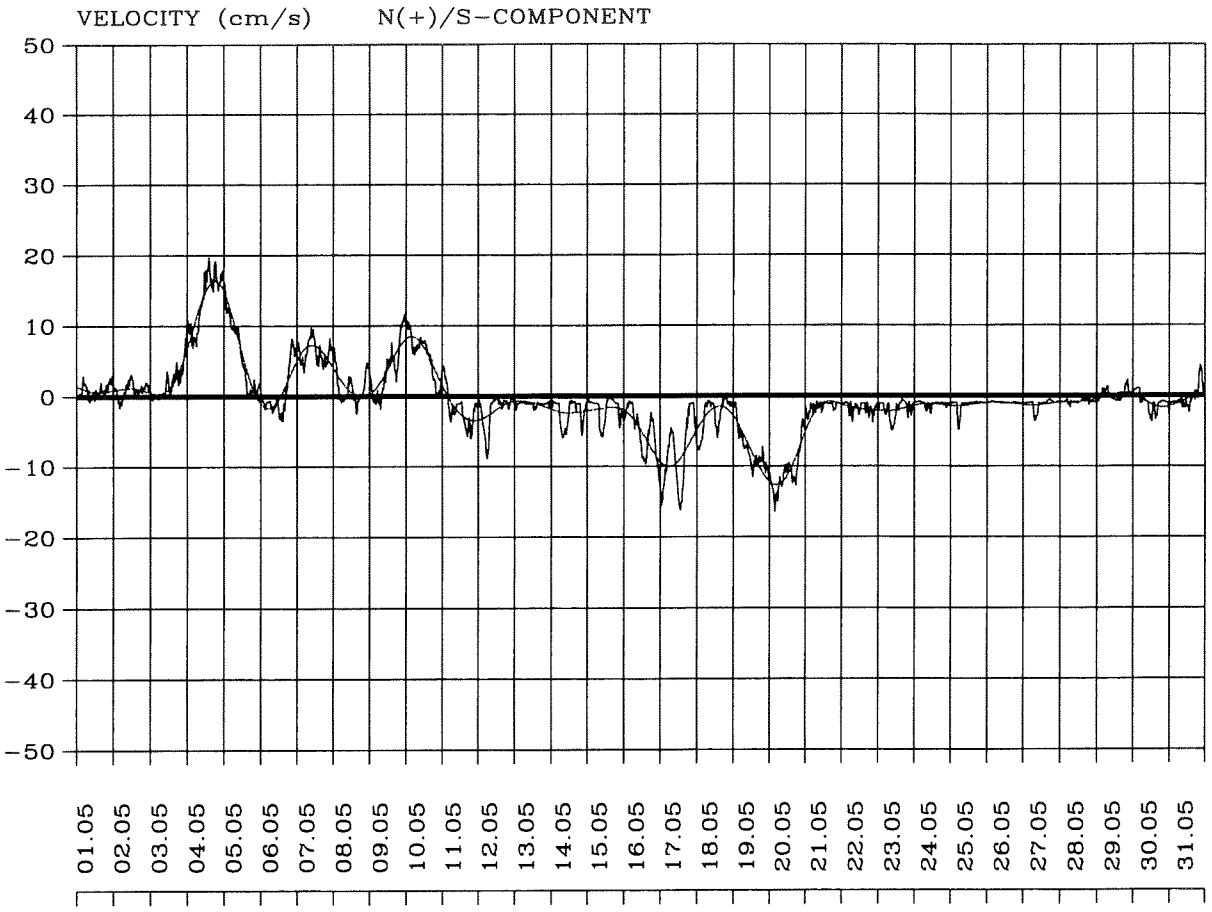
Time interval : 20.00 minutes. Instrument no. : 10800

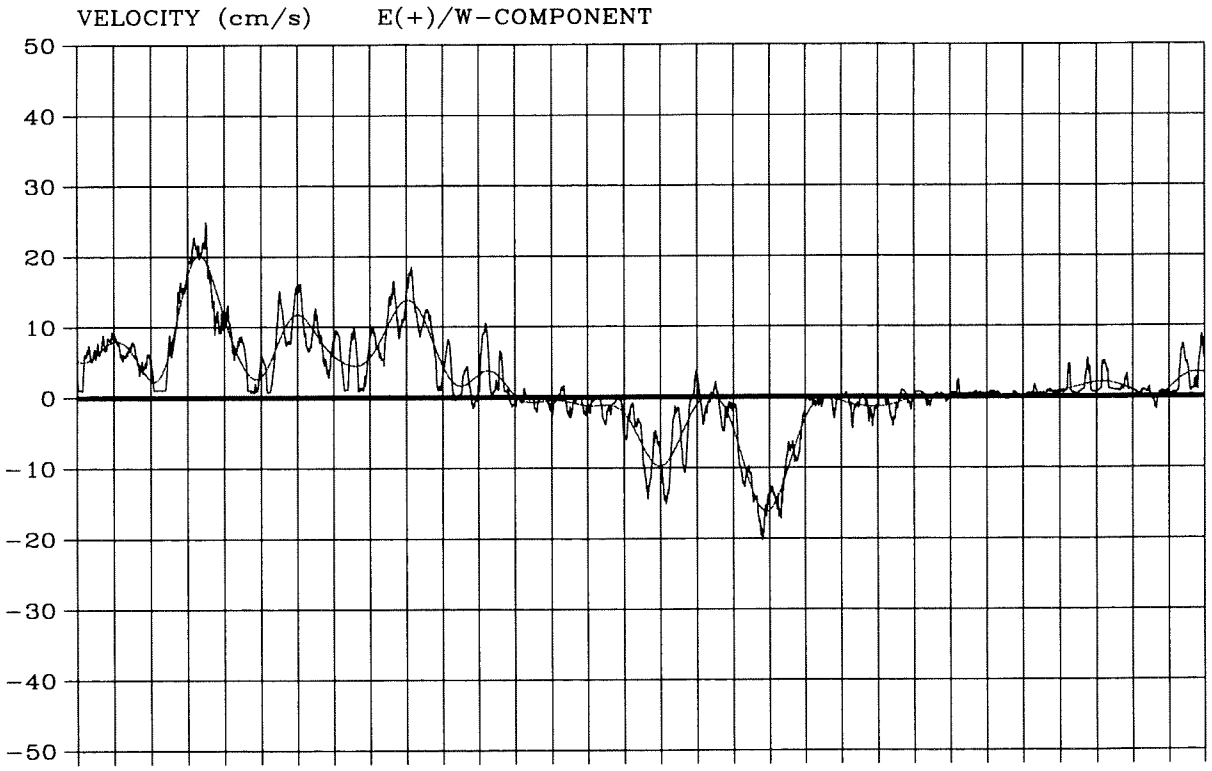
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

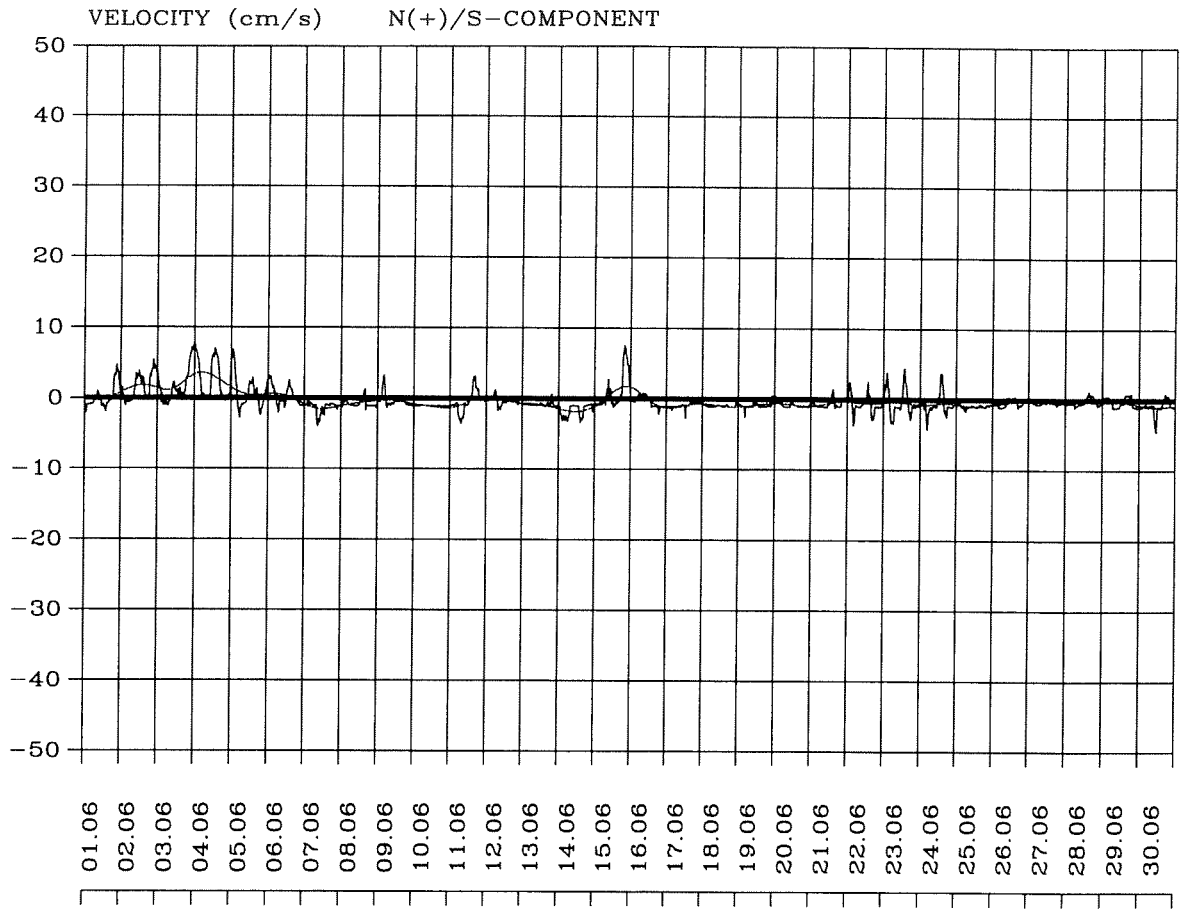
Time interval : 20.00 minutes. Instrument no. : 10800

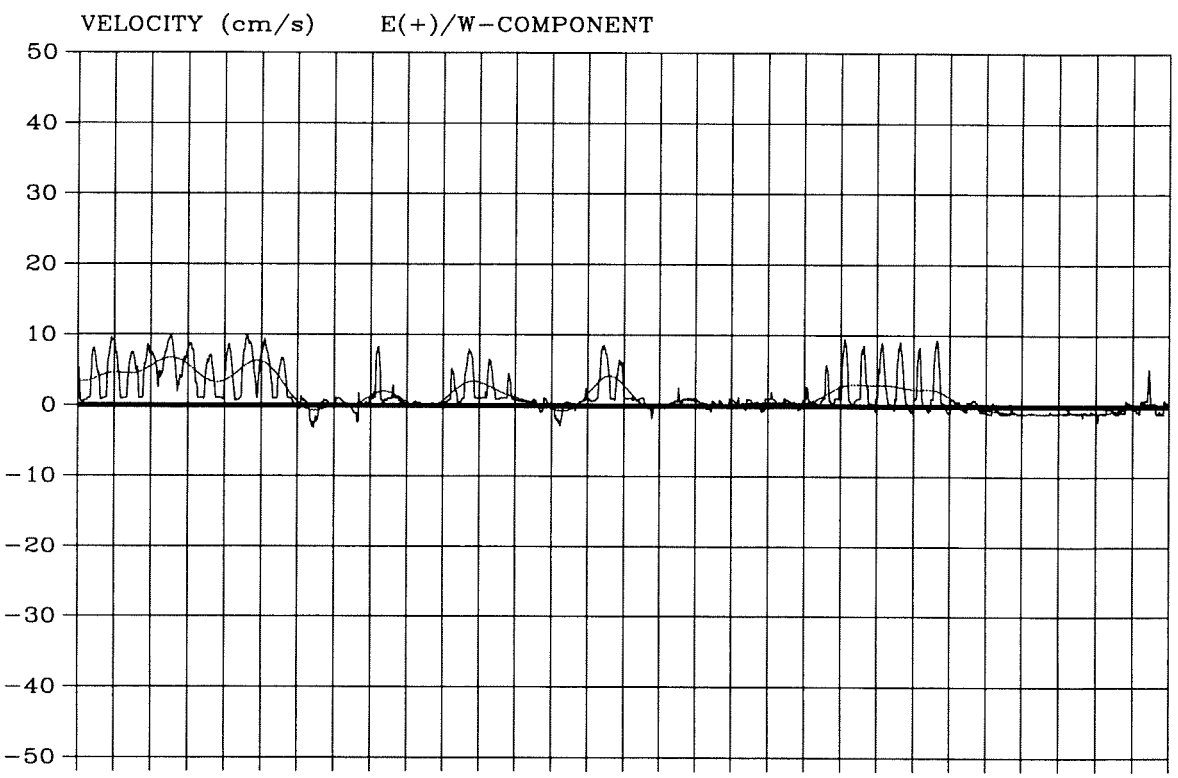
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

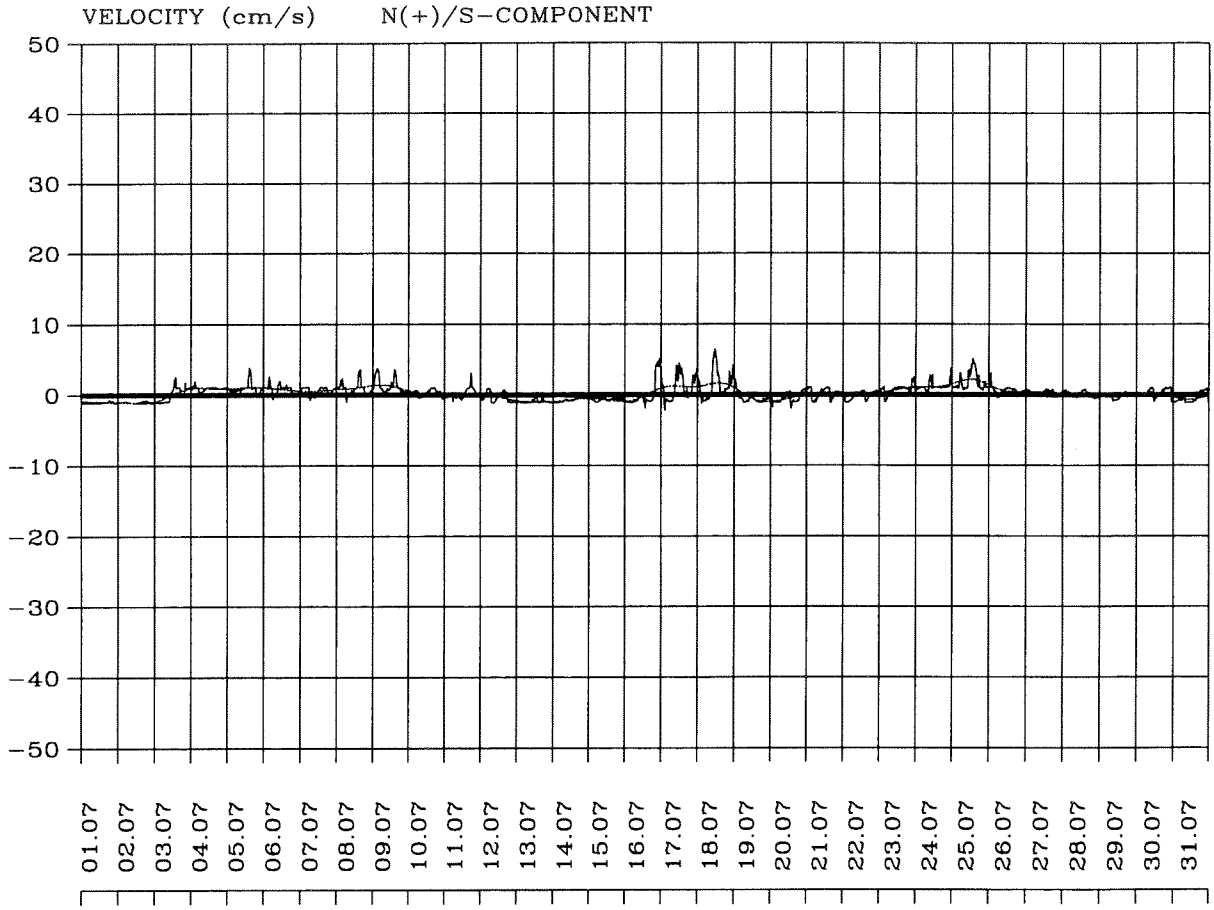
Time interval : 20.00 minutes. Instrument no. : 10800

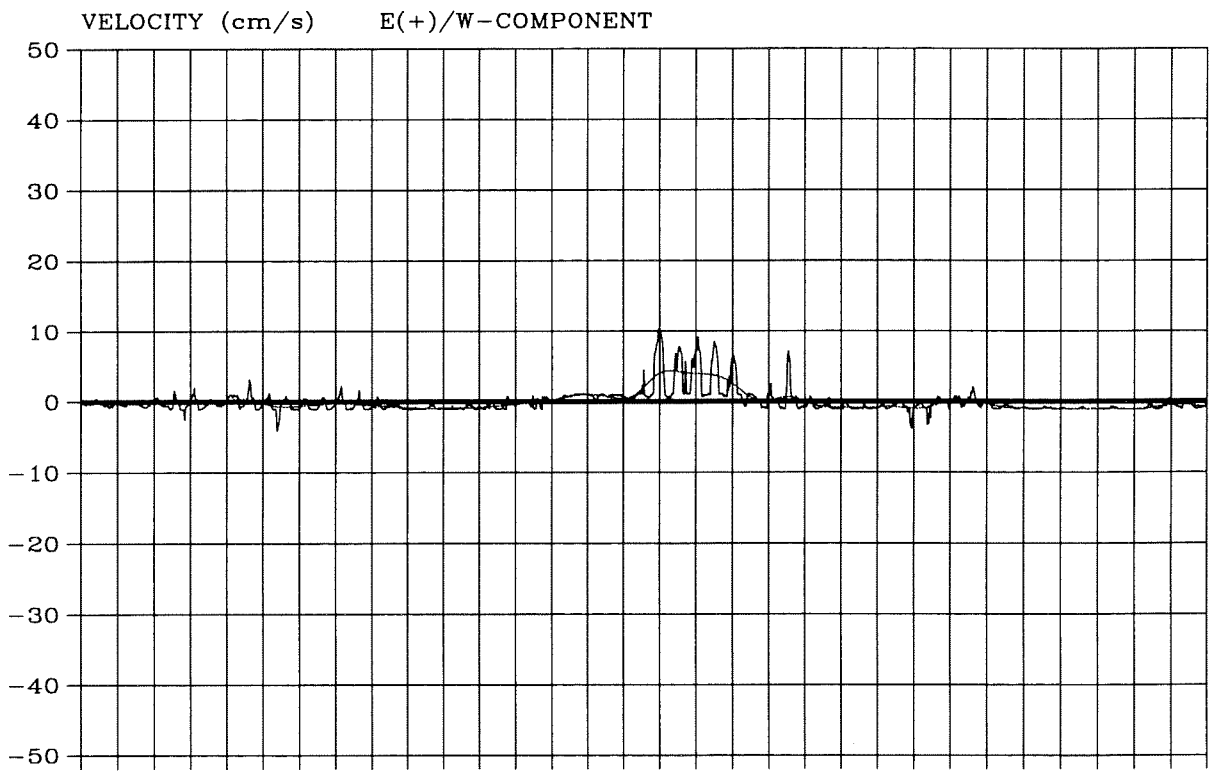
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

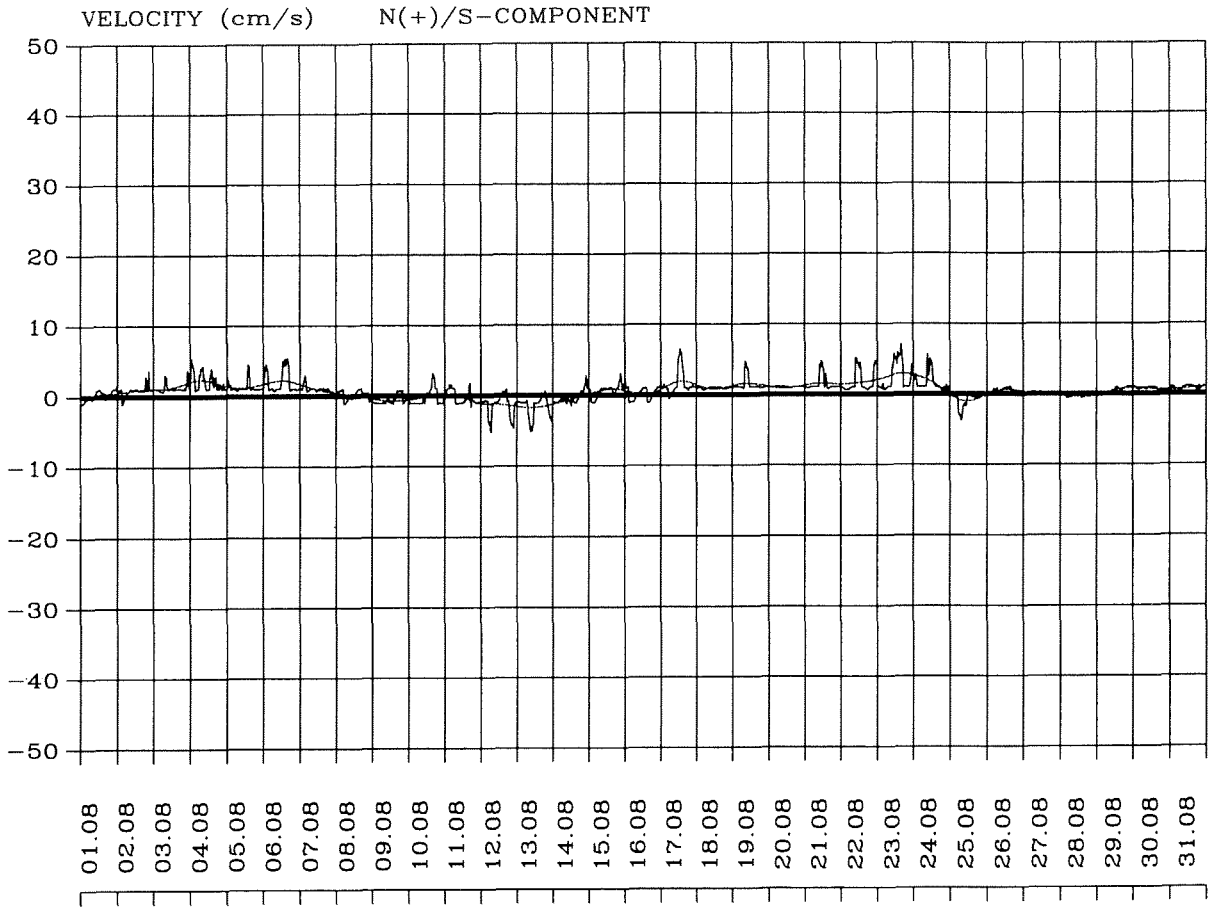
Time interval : 20.00 minutes. Instrument no. : 10800

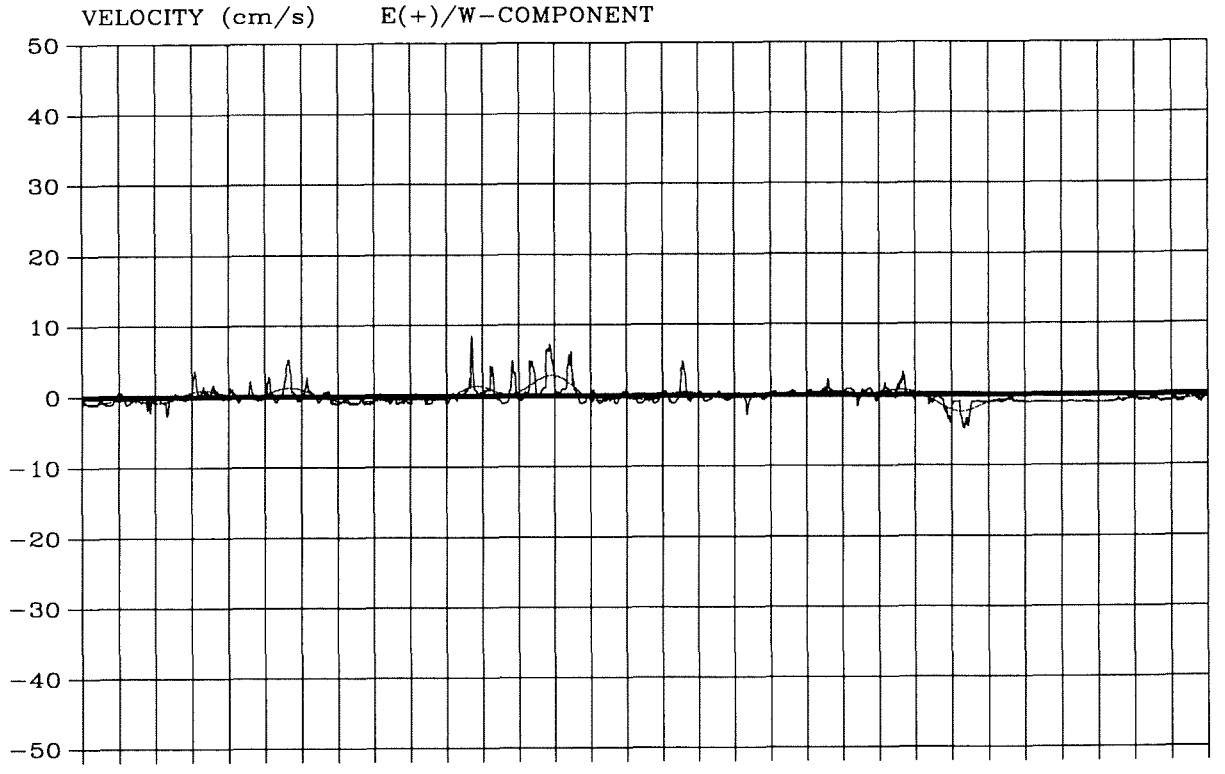
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

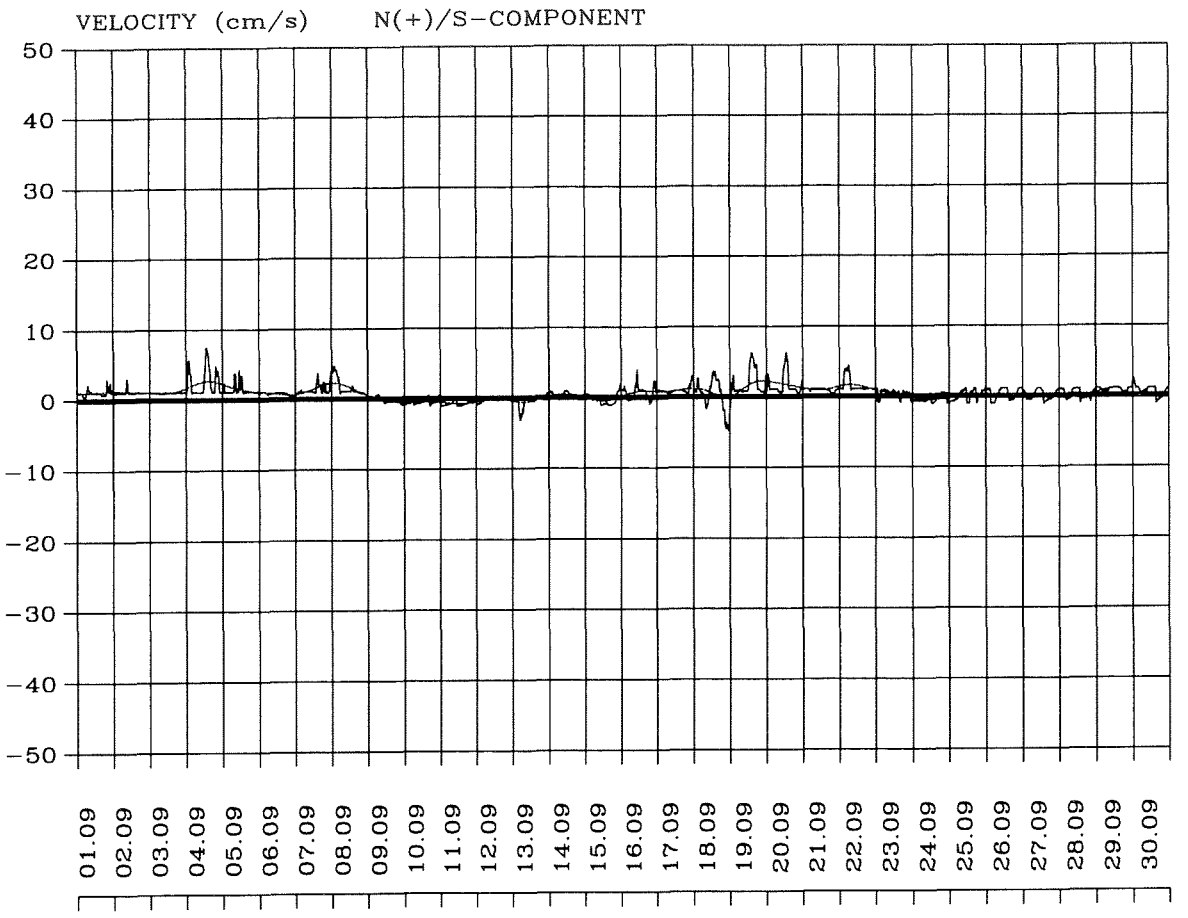
Time interval : 20.00 minutes. Instrument no. : 10800

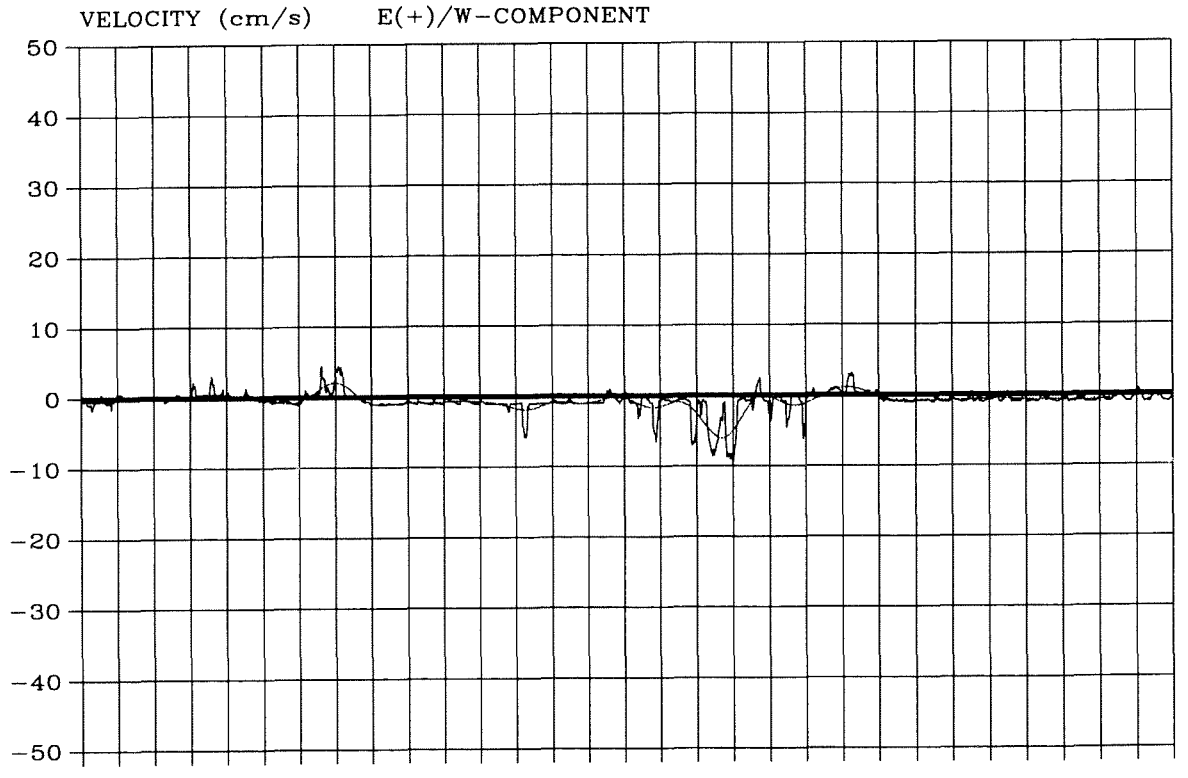
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

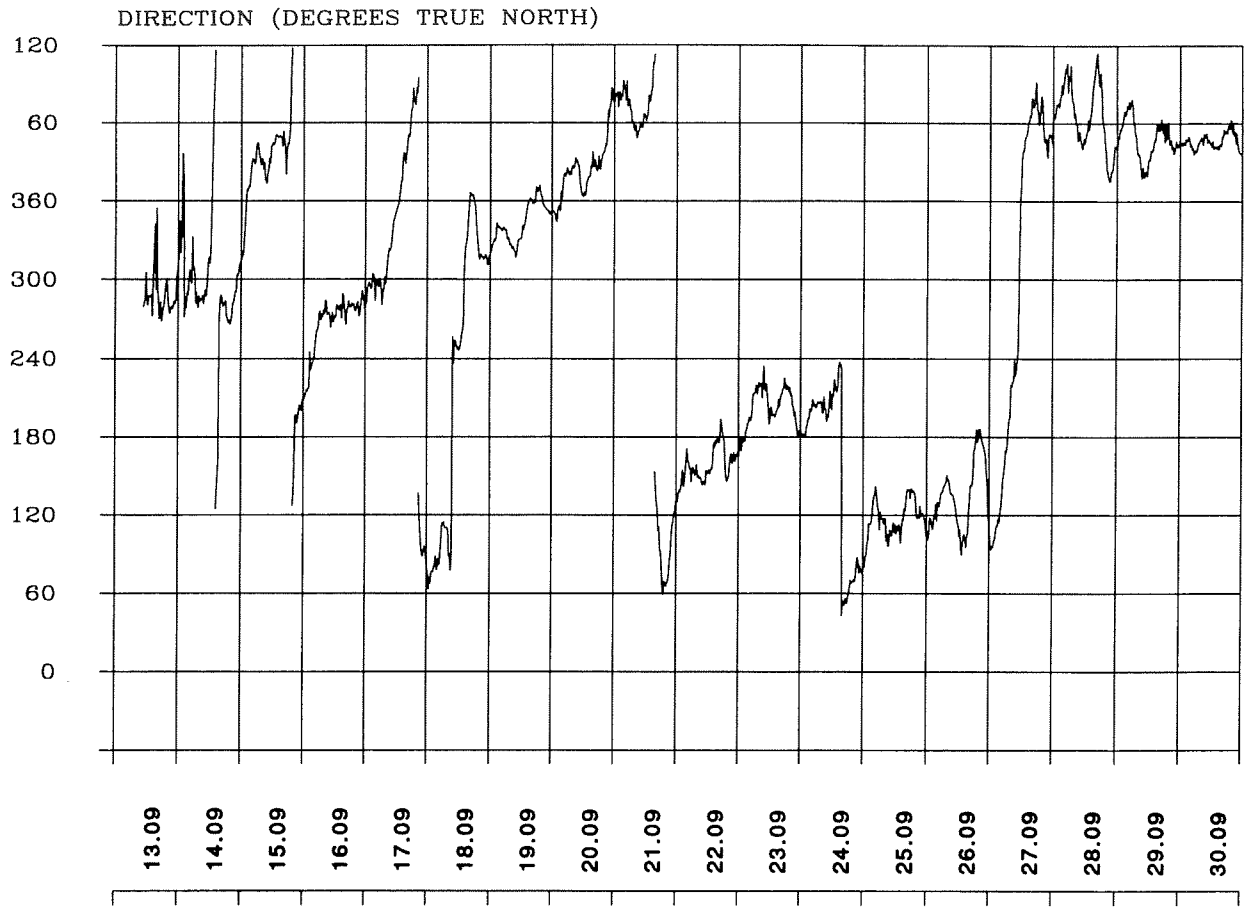
Time interval : 20.00 minutes. Instrument no. : 10800

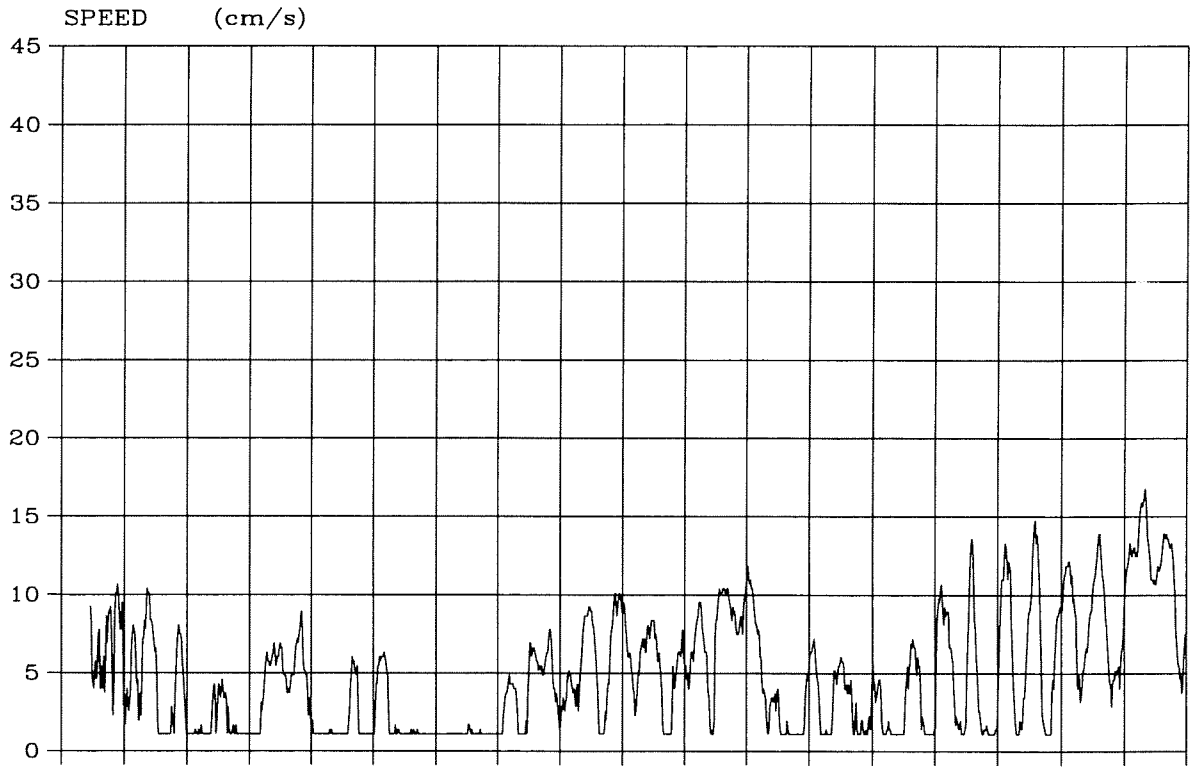
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-6

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

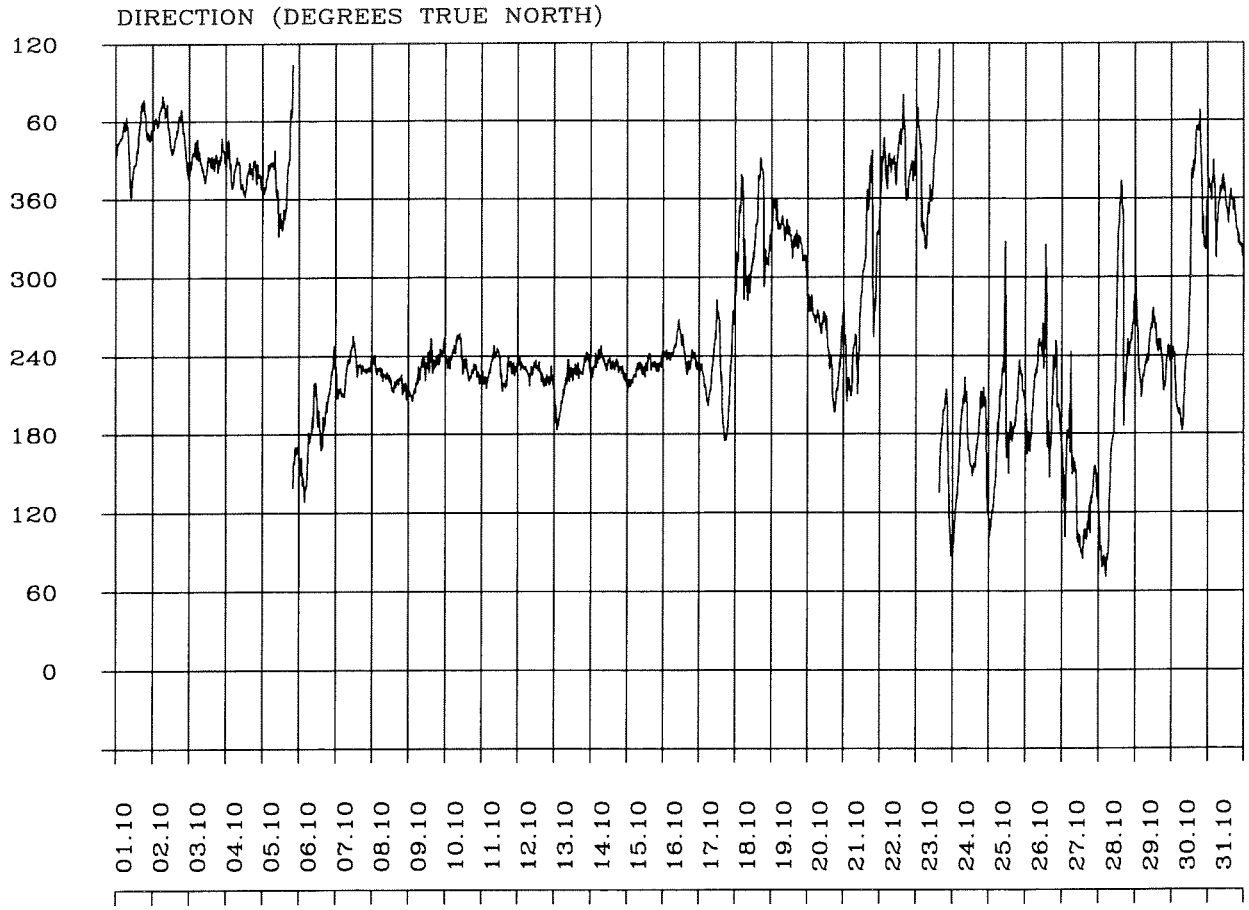
Instrument depth : 268.0 m Bottom depth : 278.0 m

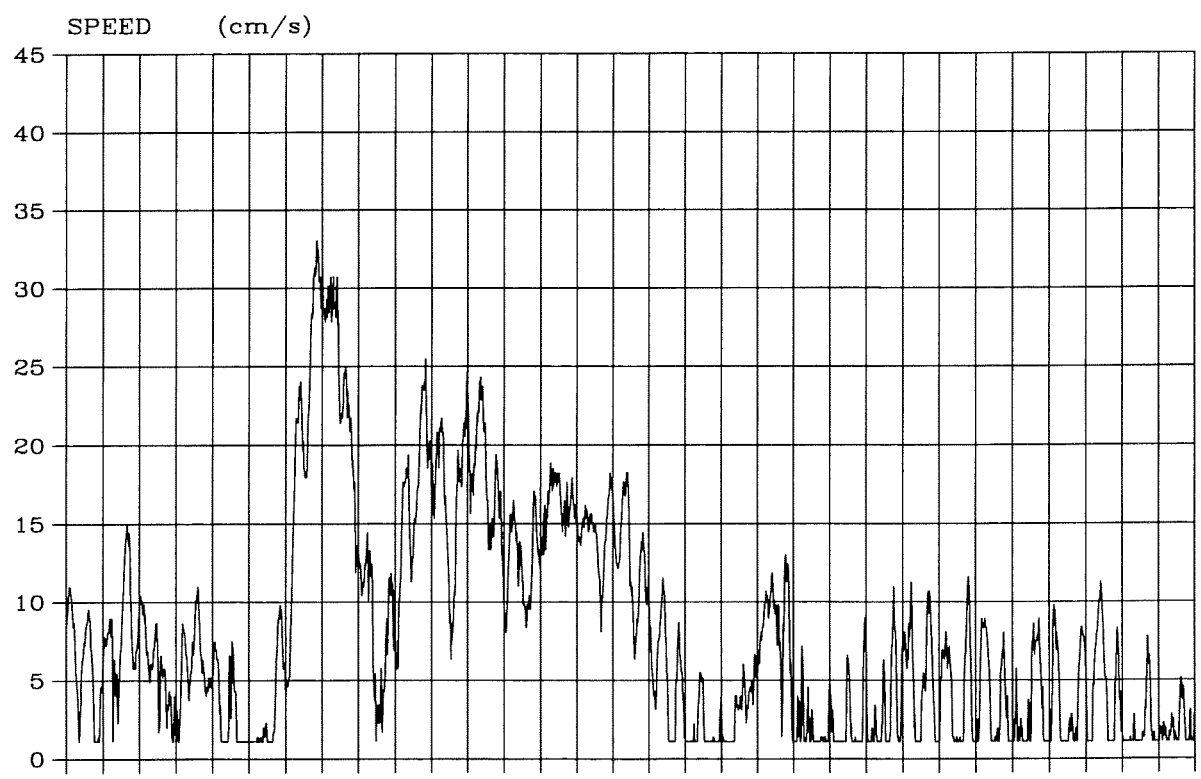
Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-7 Speed and direction of current.





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

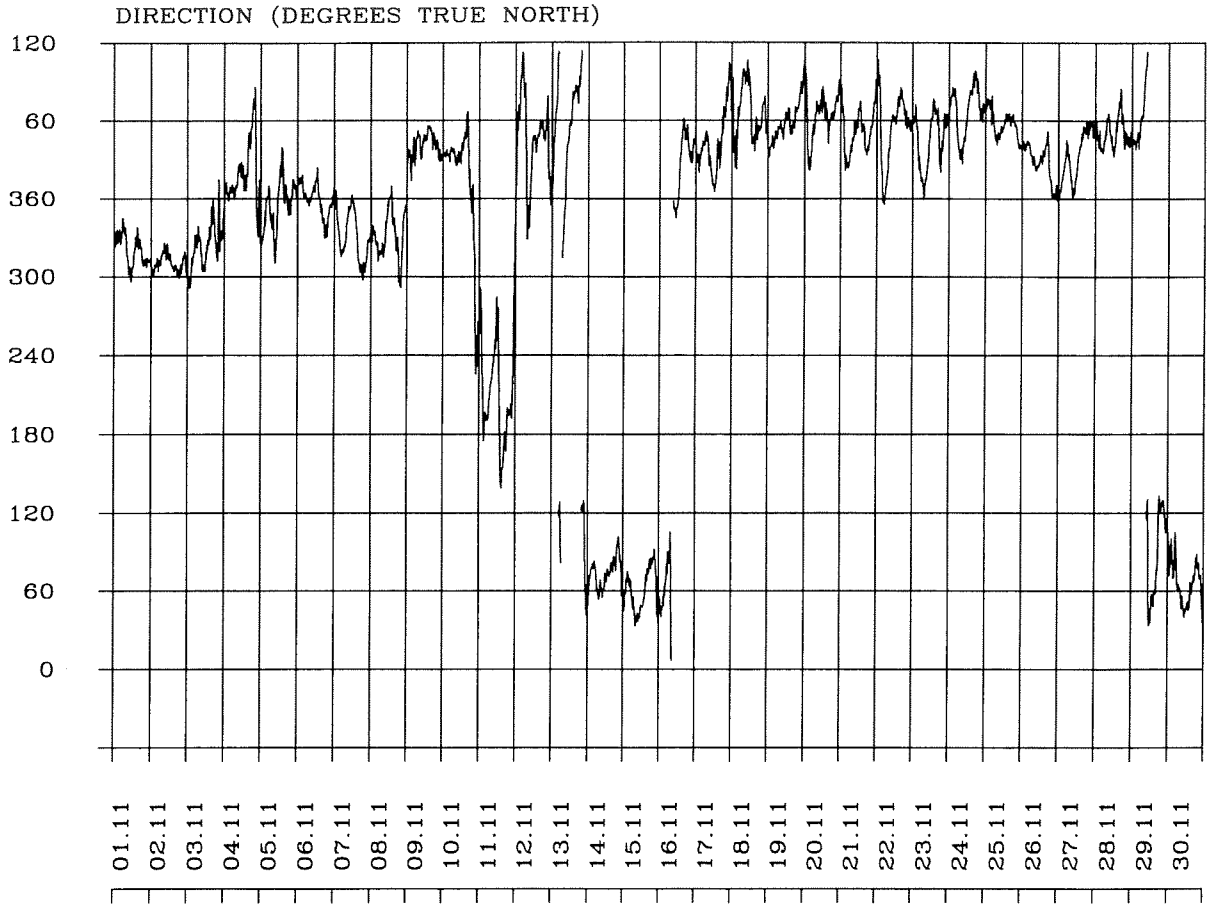
Time interval : 20.00 minutes. Instrument no. : 10800

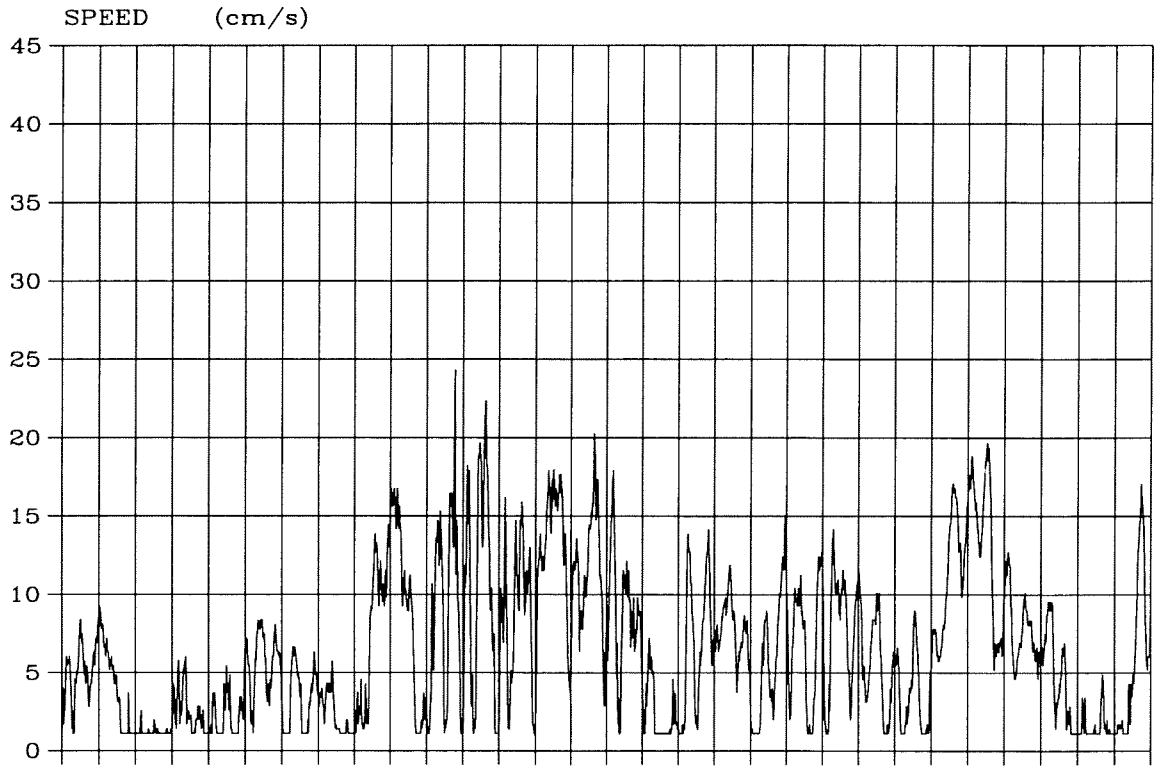
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-7

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58′ E 34° 59.46′

Instrument depth : 268.0 m Bottom depth : 278.0 m

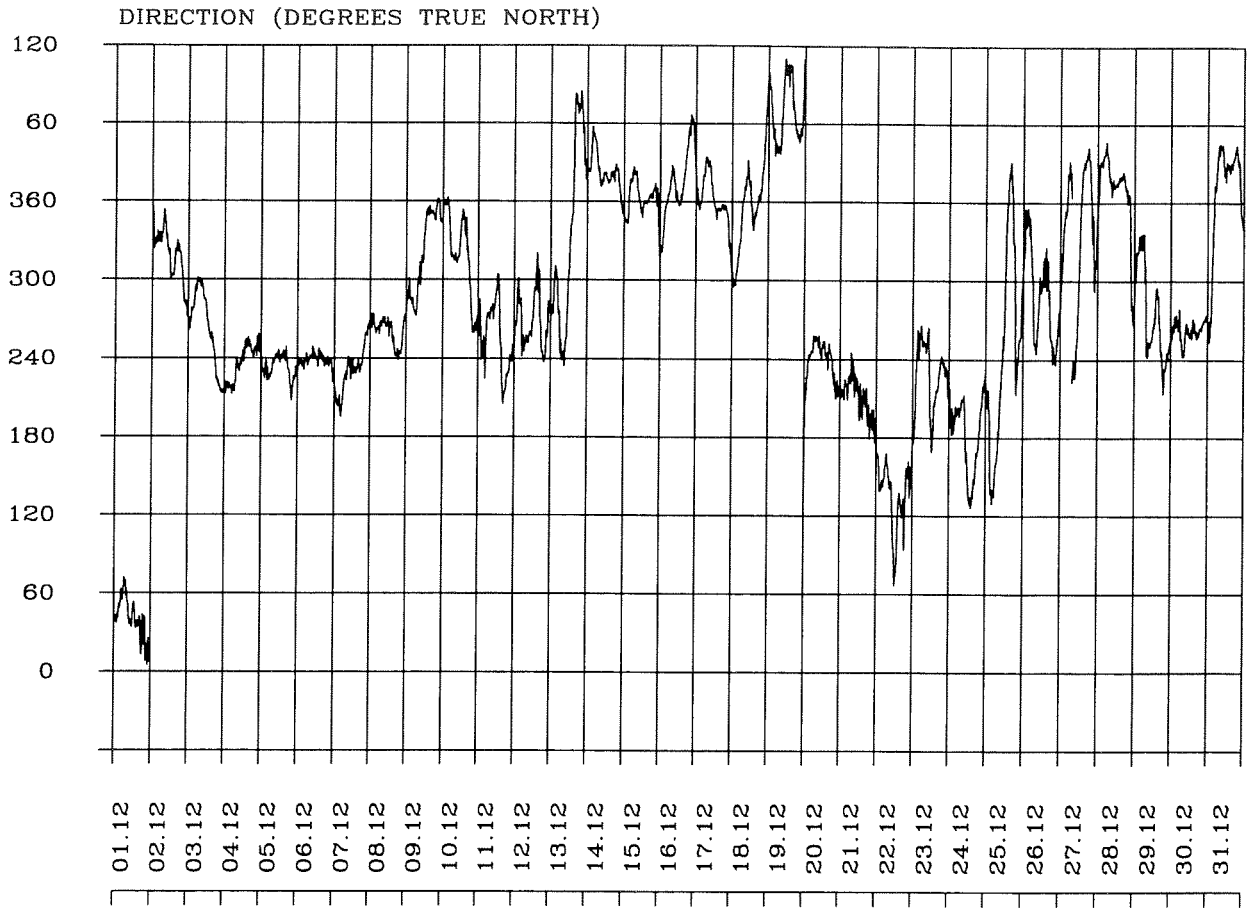
Time interval : 20.00 minutes. Instrument no. : 10800

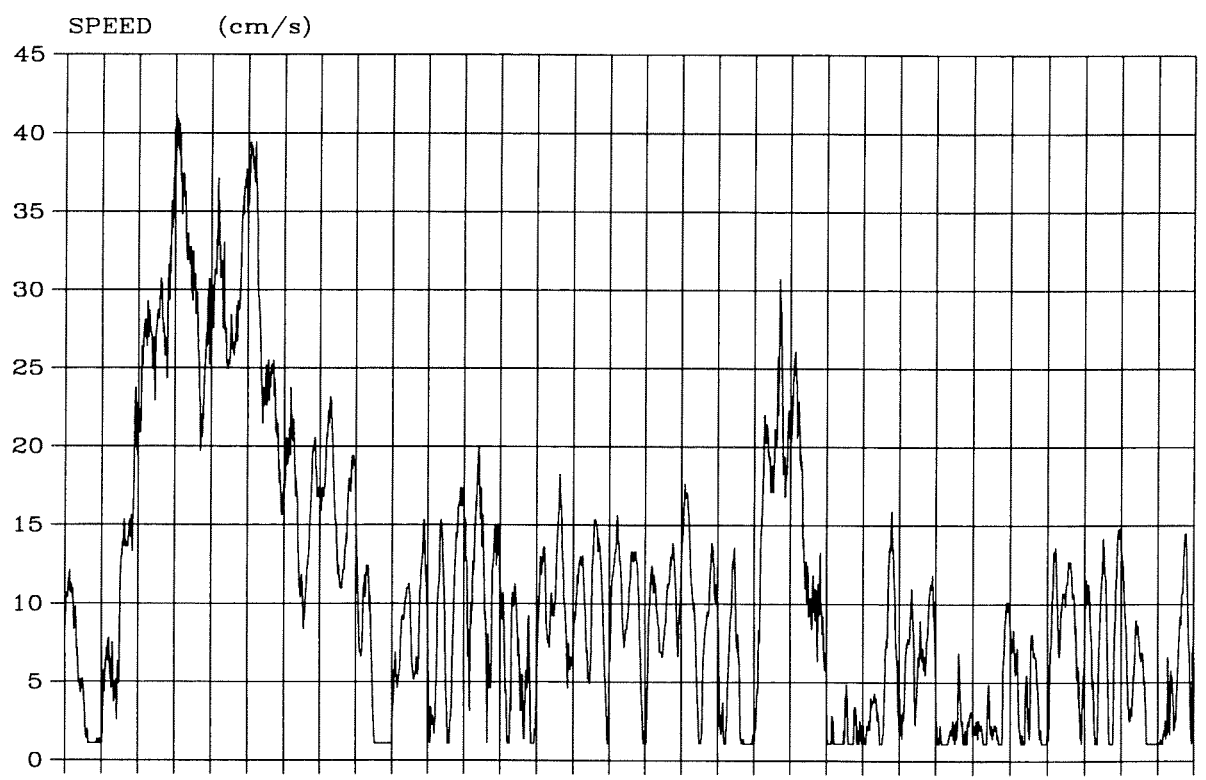
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-7

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

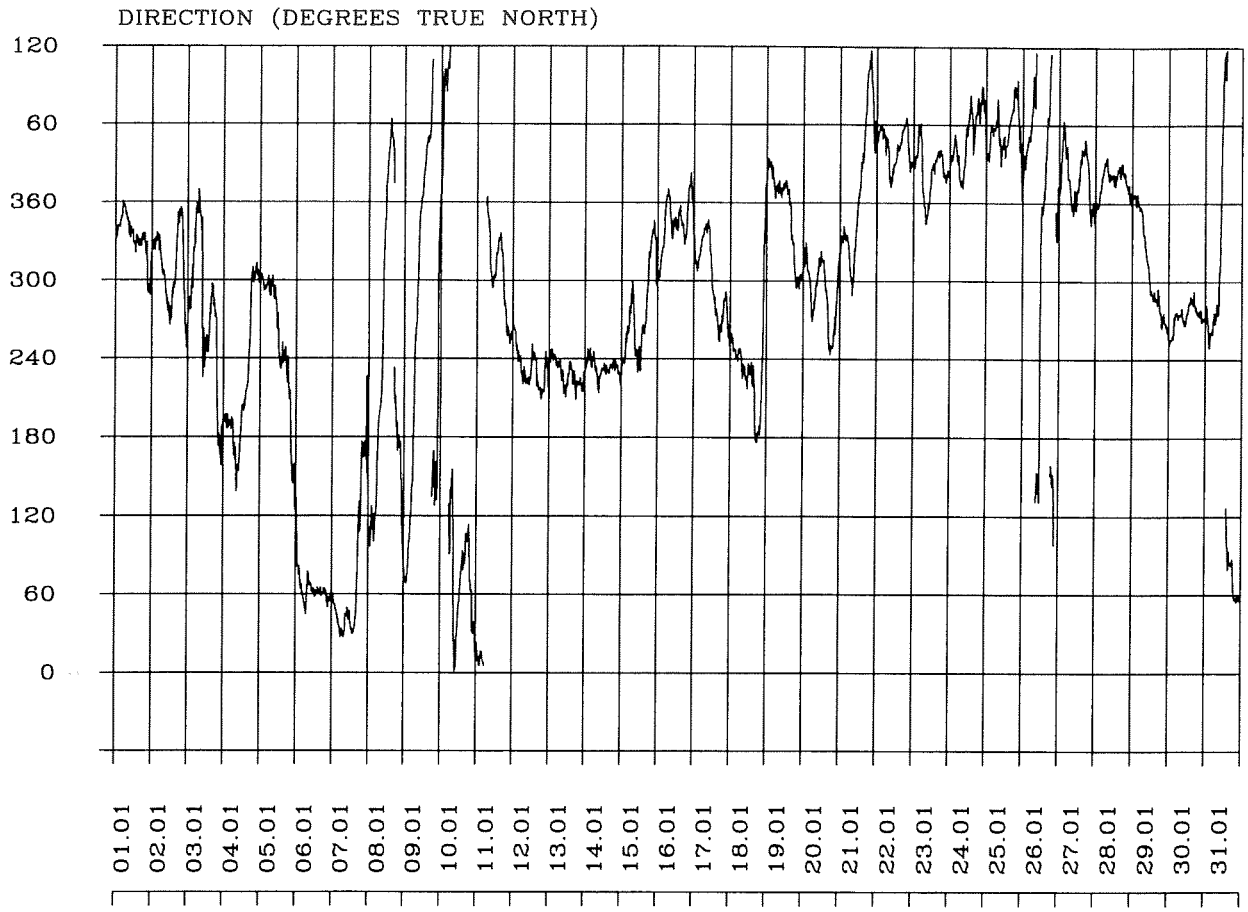
Time interval : 20.00 minutes. Instrument no. : 10800

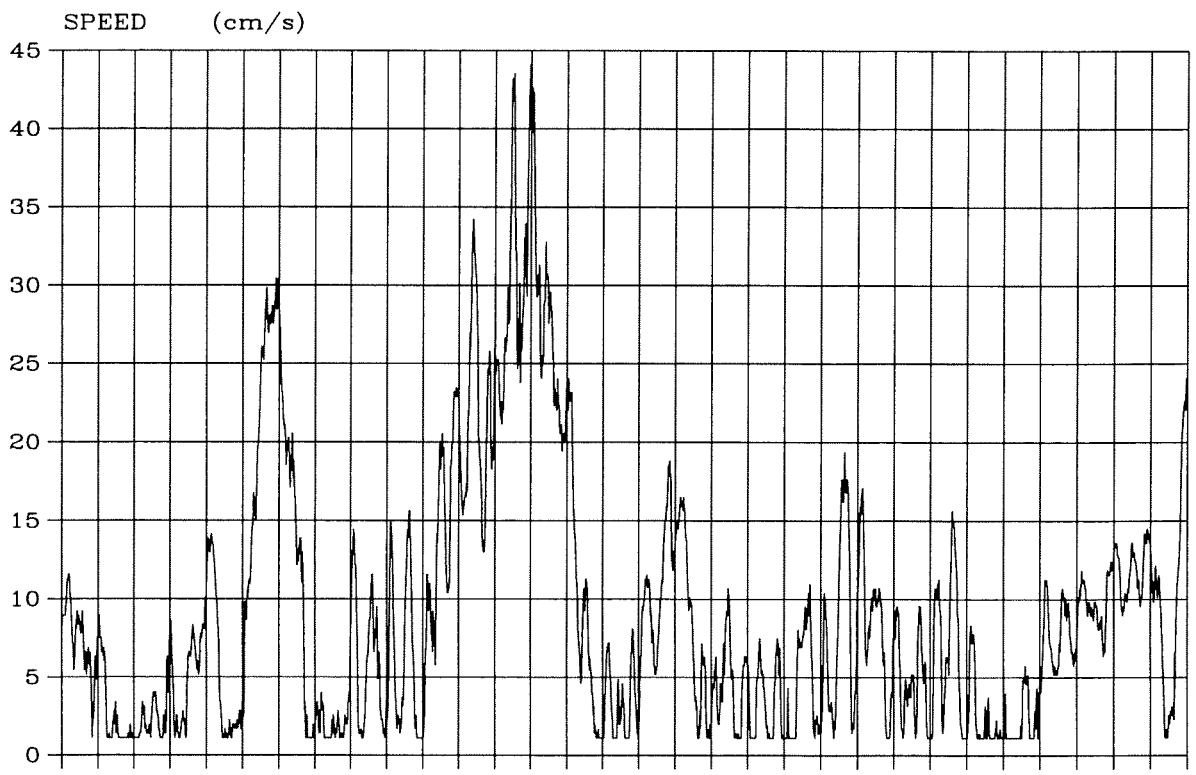
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-7

Continues.....





Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

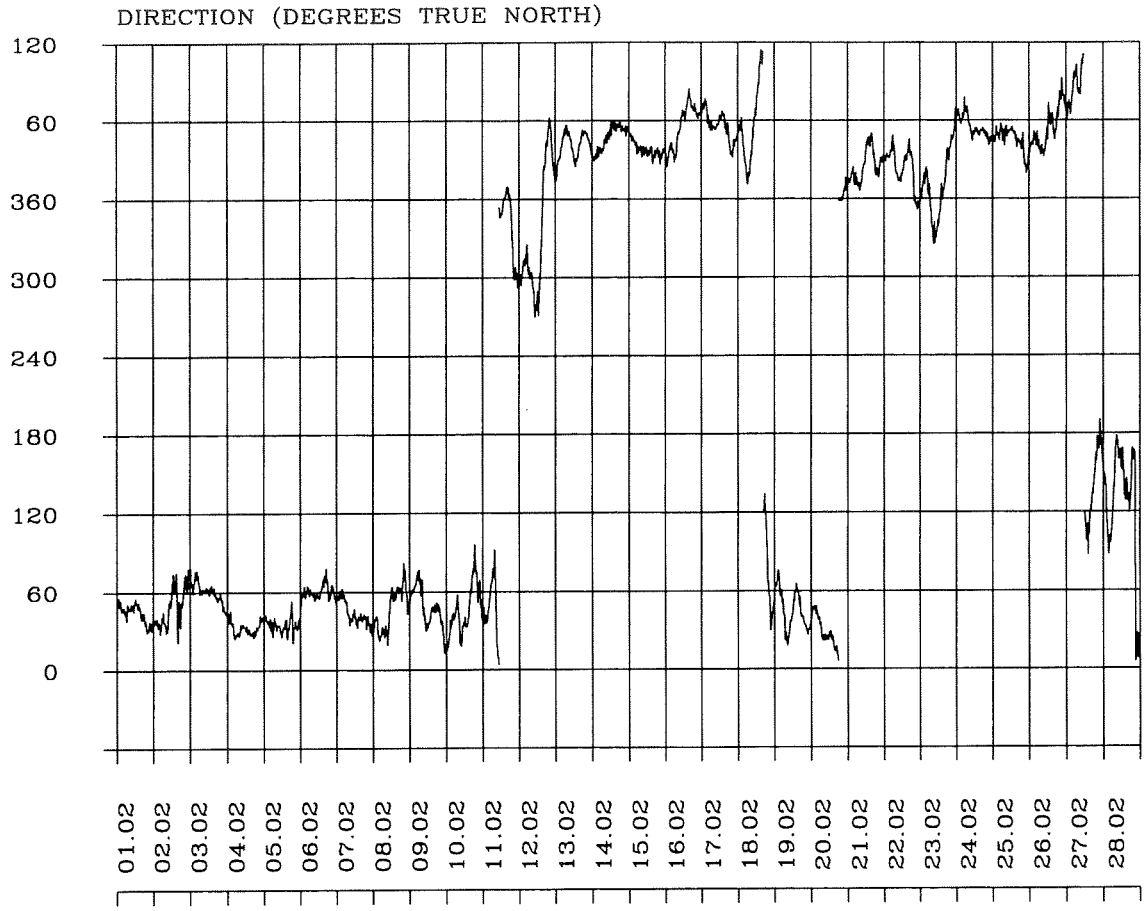
Time interval : 20.00 minutes. Instrument no. : 10800

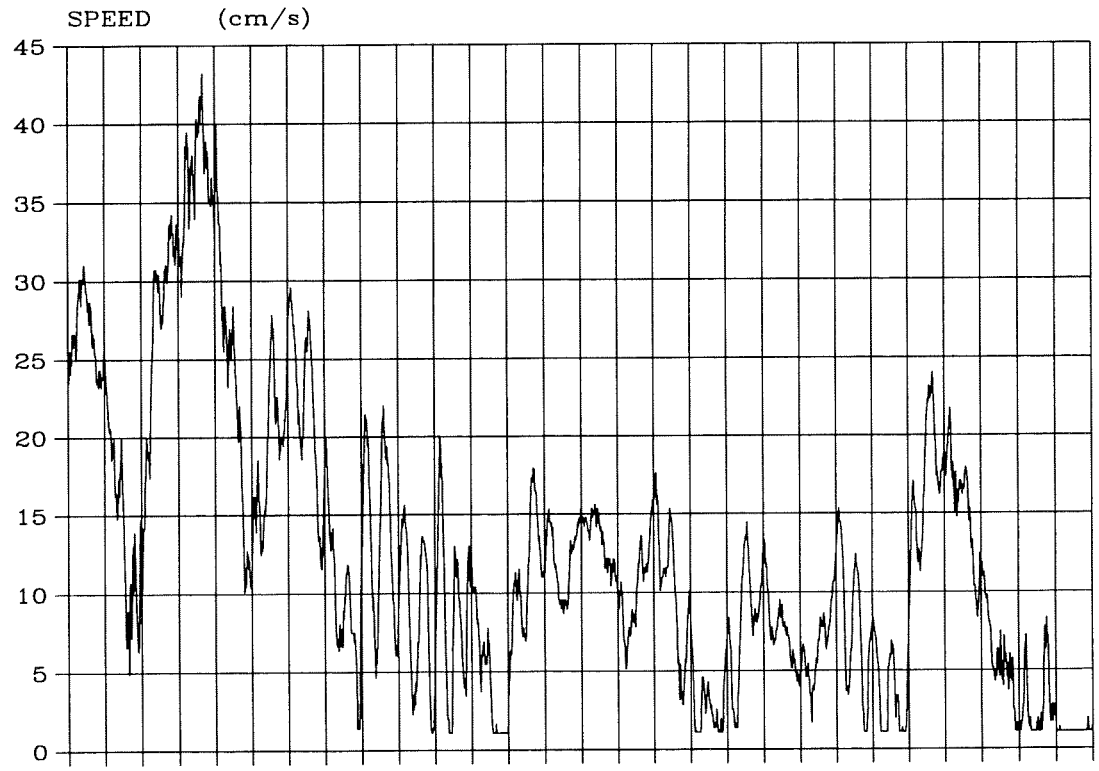
Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

Fig. 2-4-7

Continues.....





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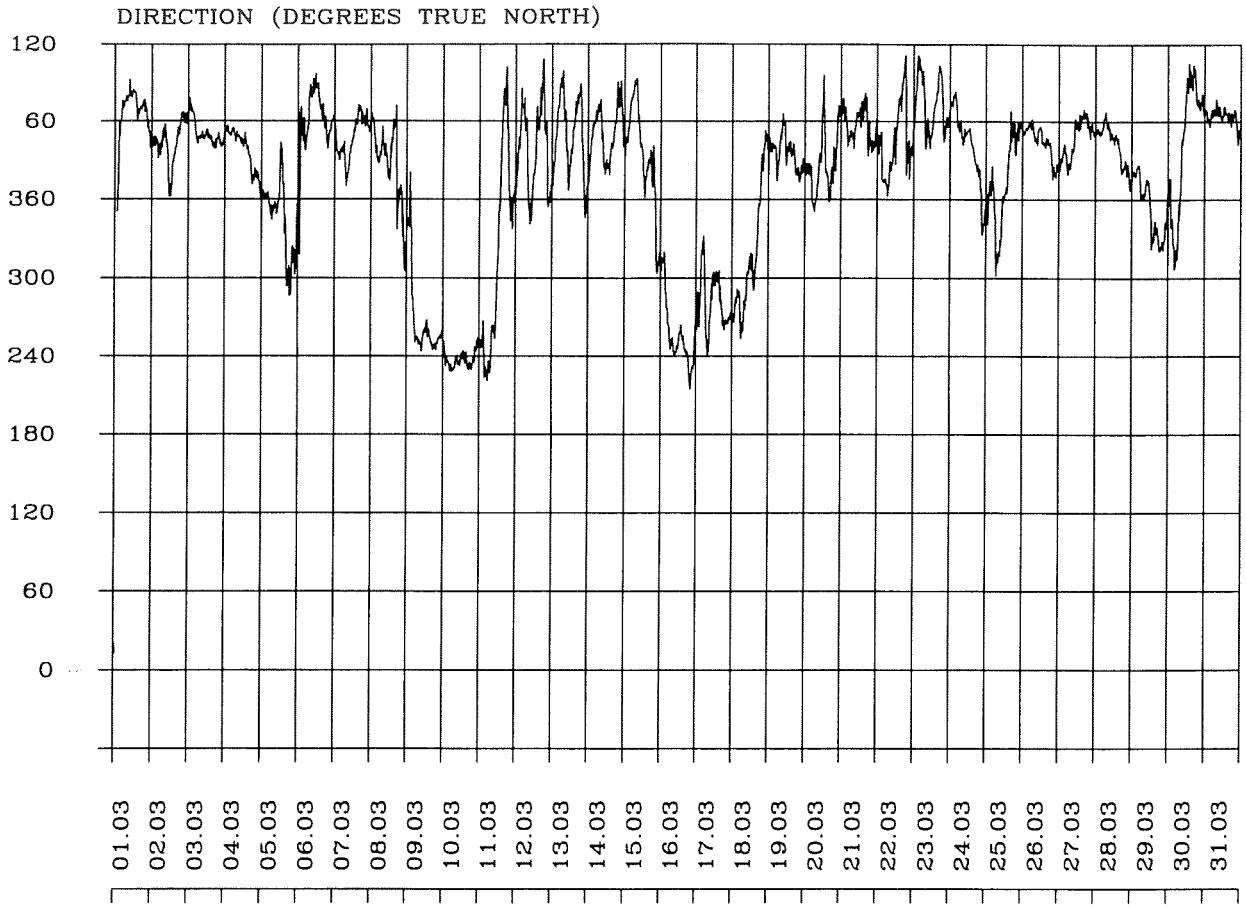
IMR

Fig. 2-4-7

Continues.....



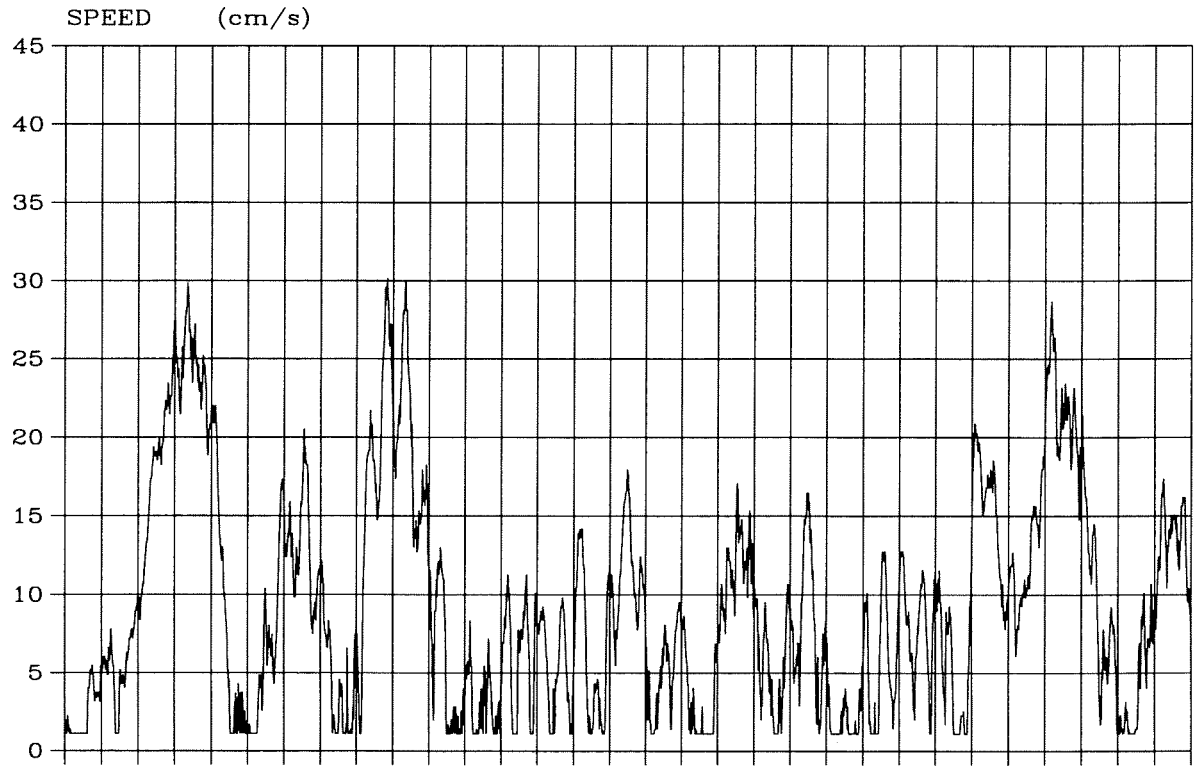


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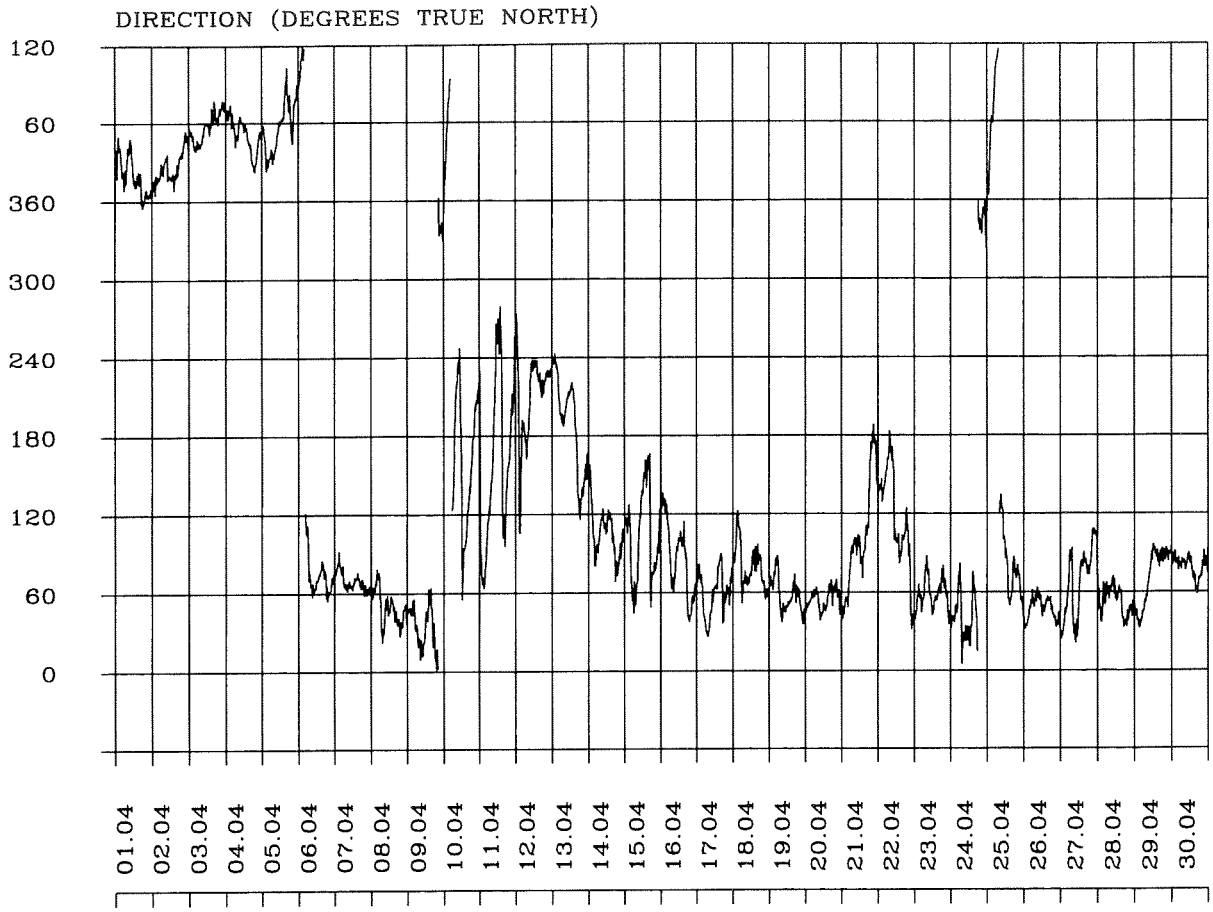
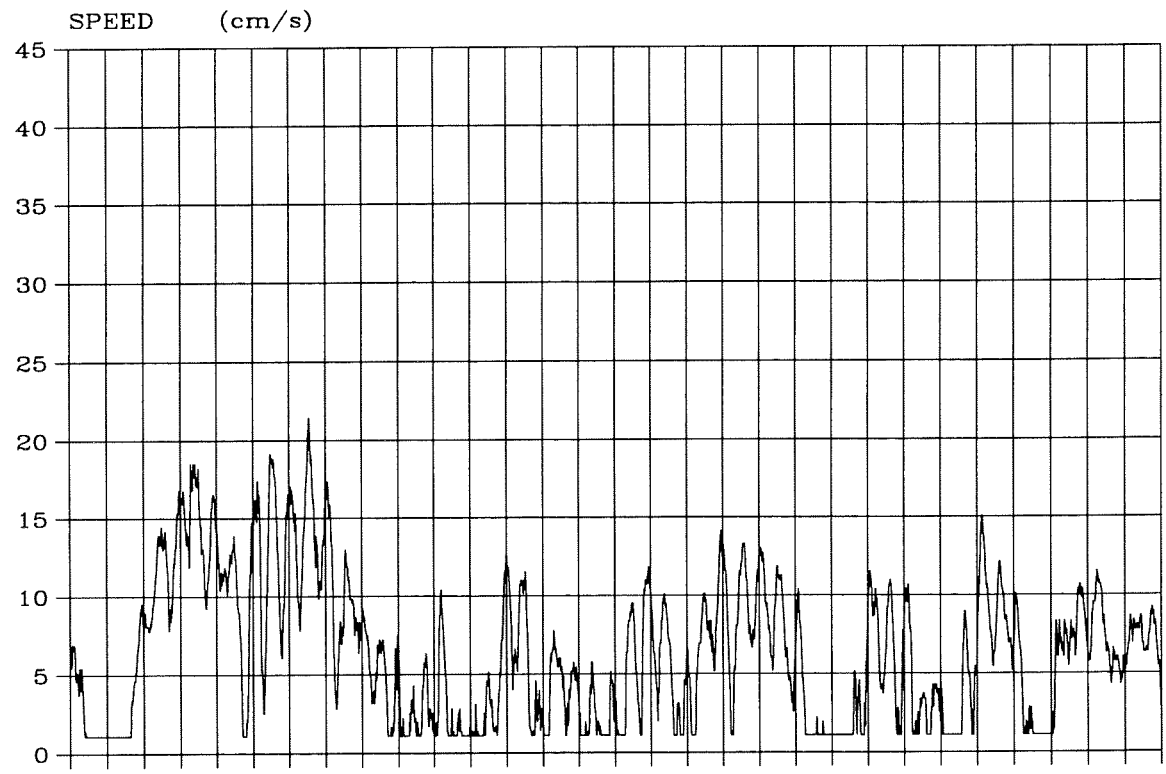
Fig. 2-4-7

Continues.....





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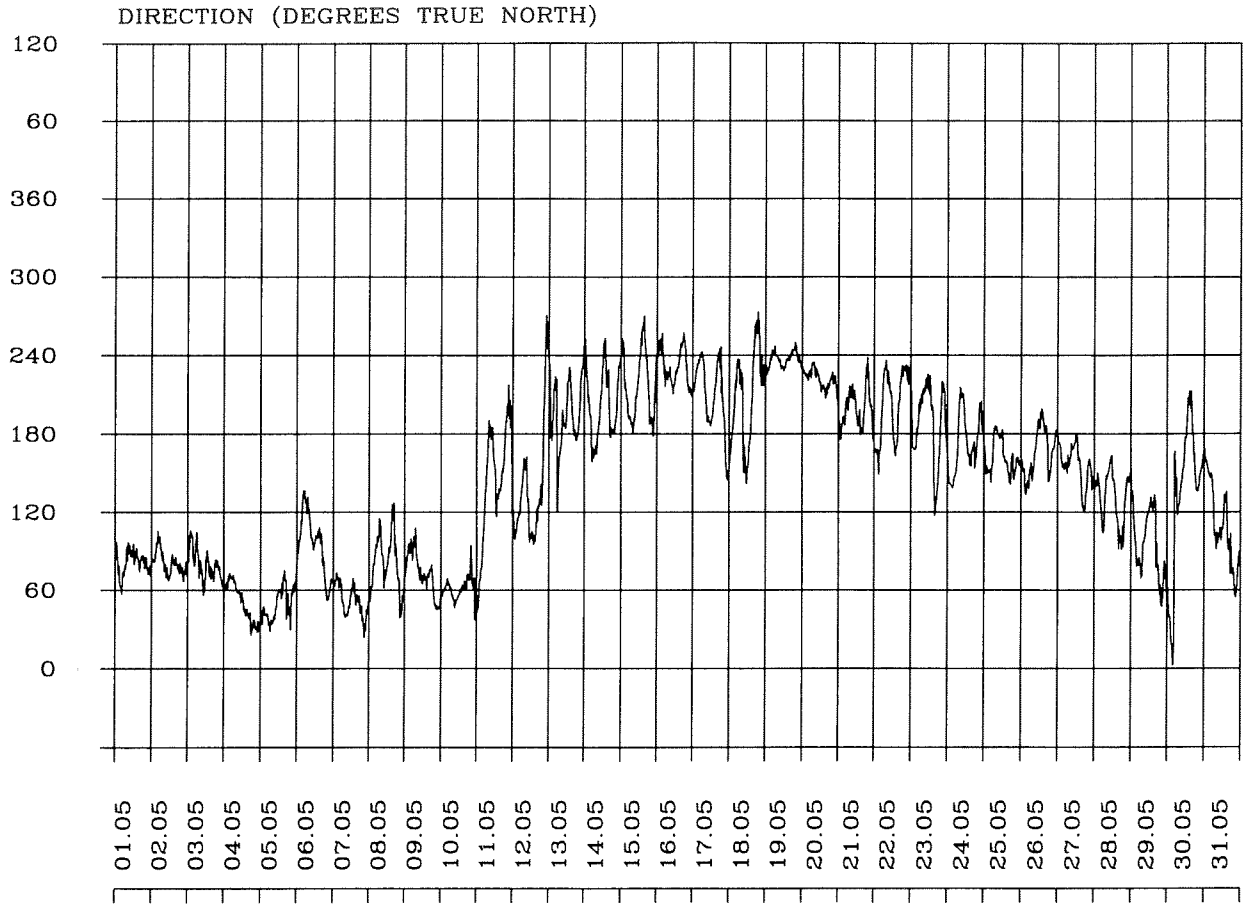
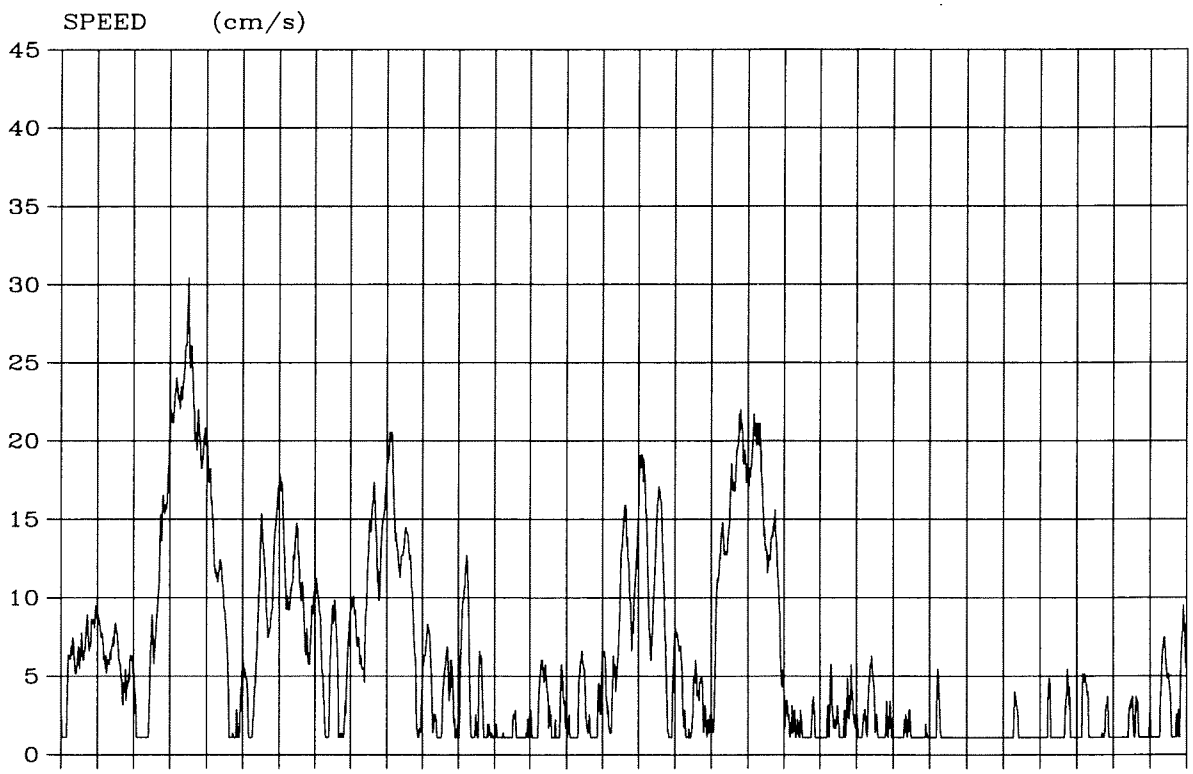
IMR

Fig. 2-4-7

Continues.....





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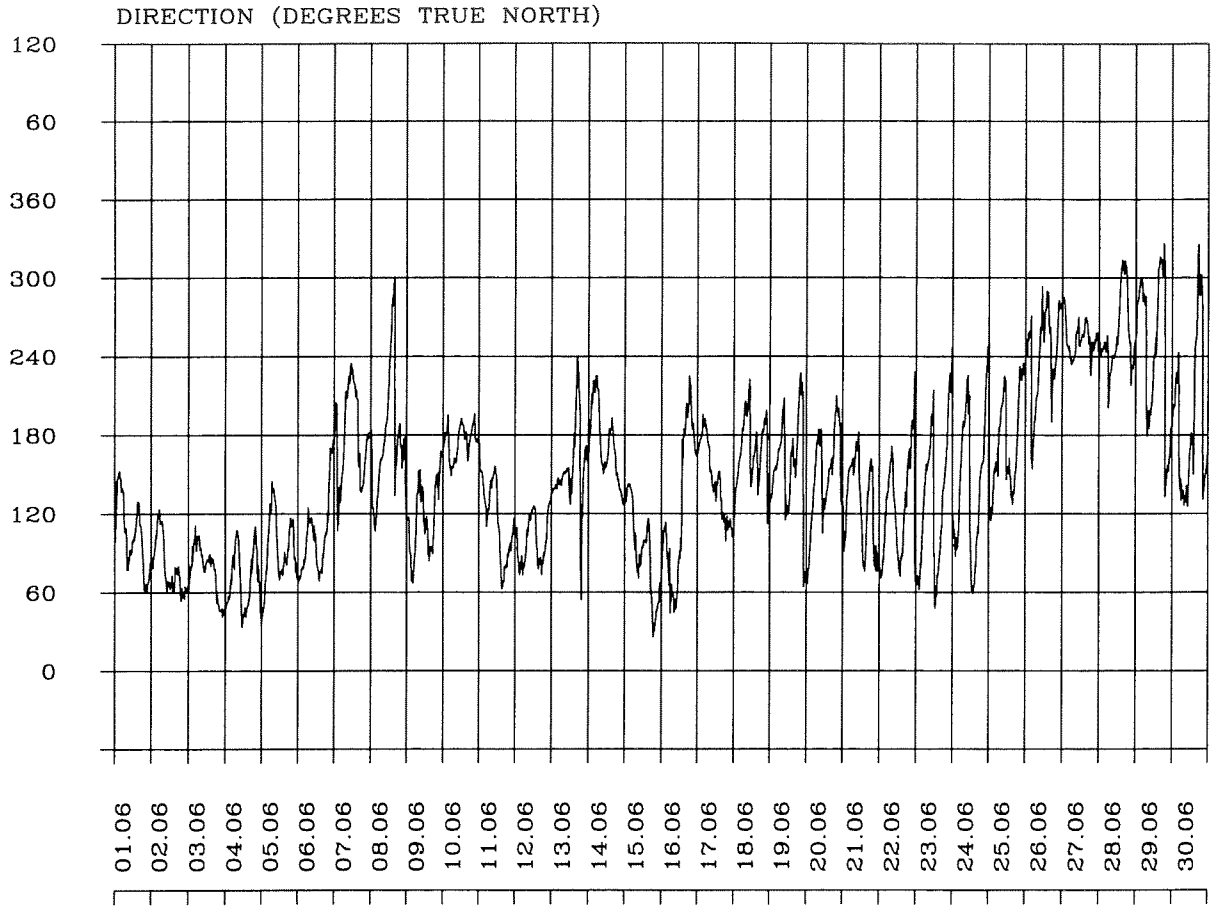
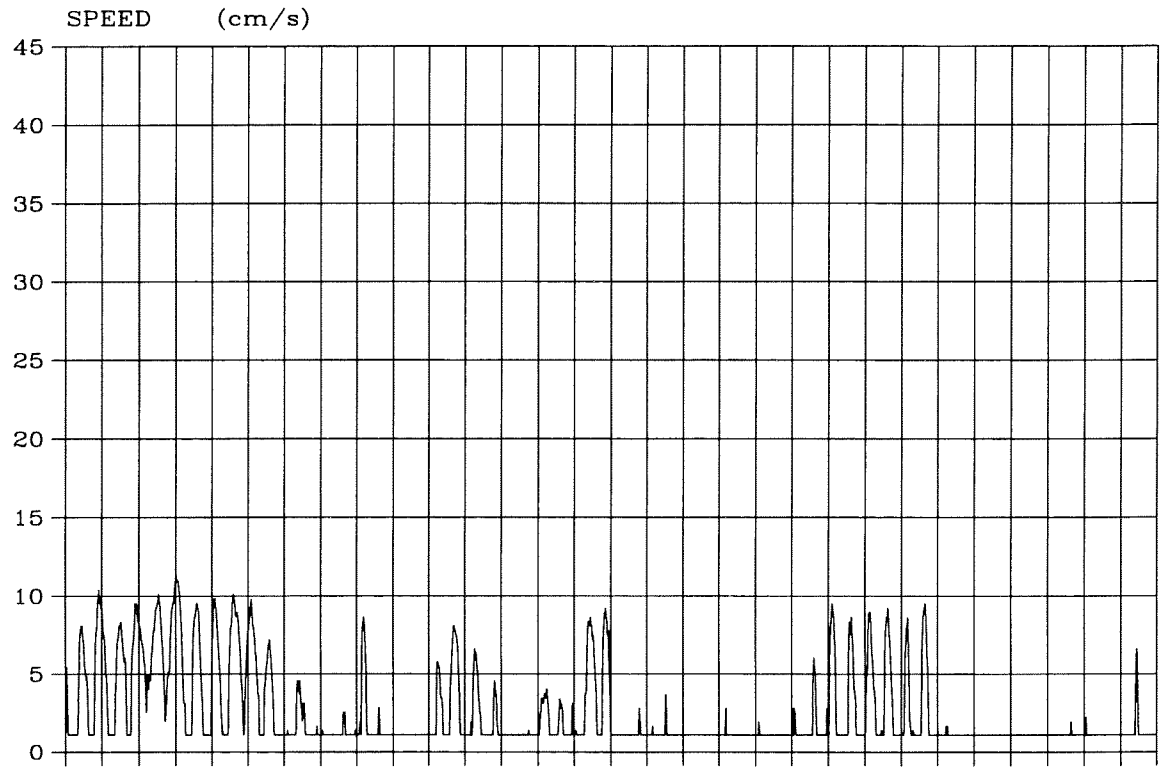
IMR

Fig. 2-4-7

Continues.....





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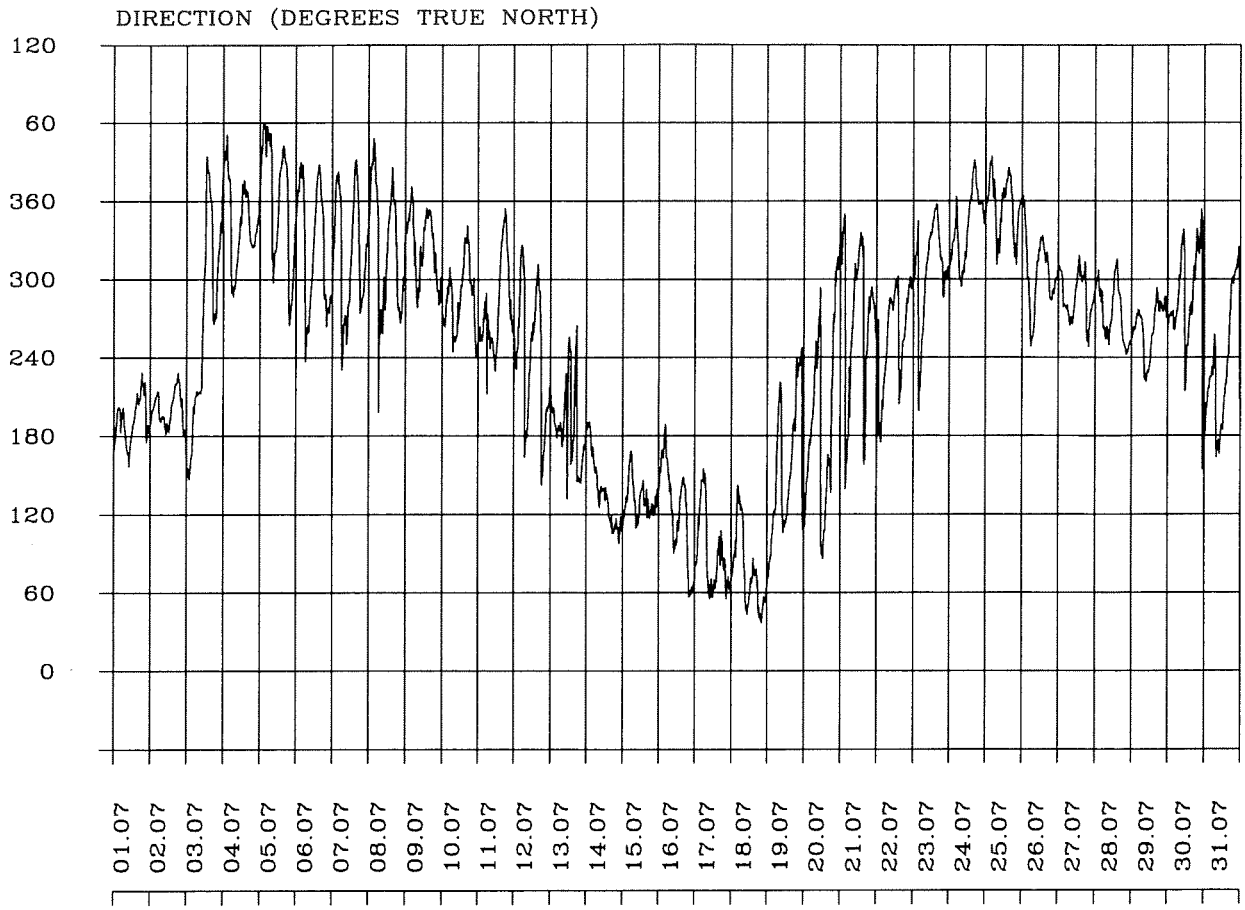
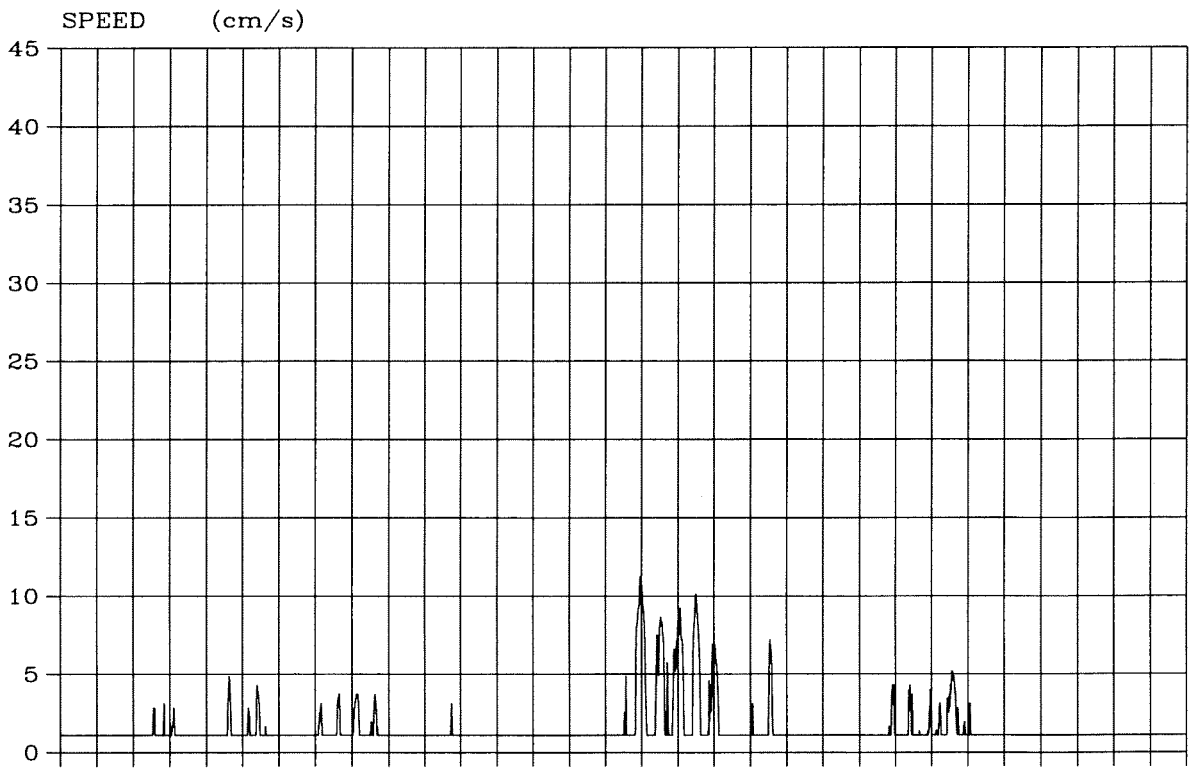
IMR

Fig. 2-4-7

Continues.....





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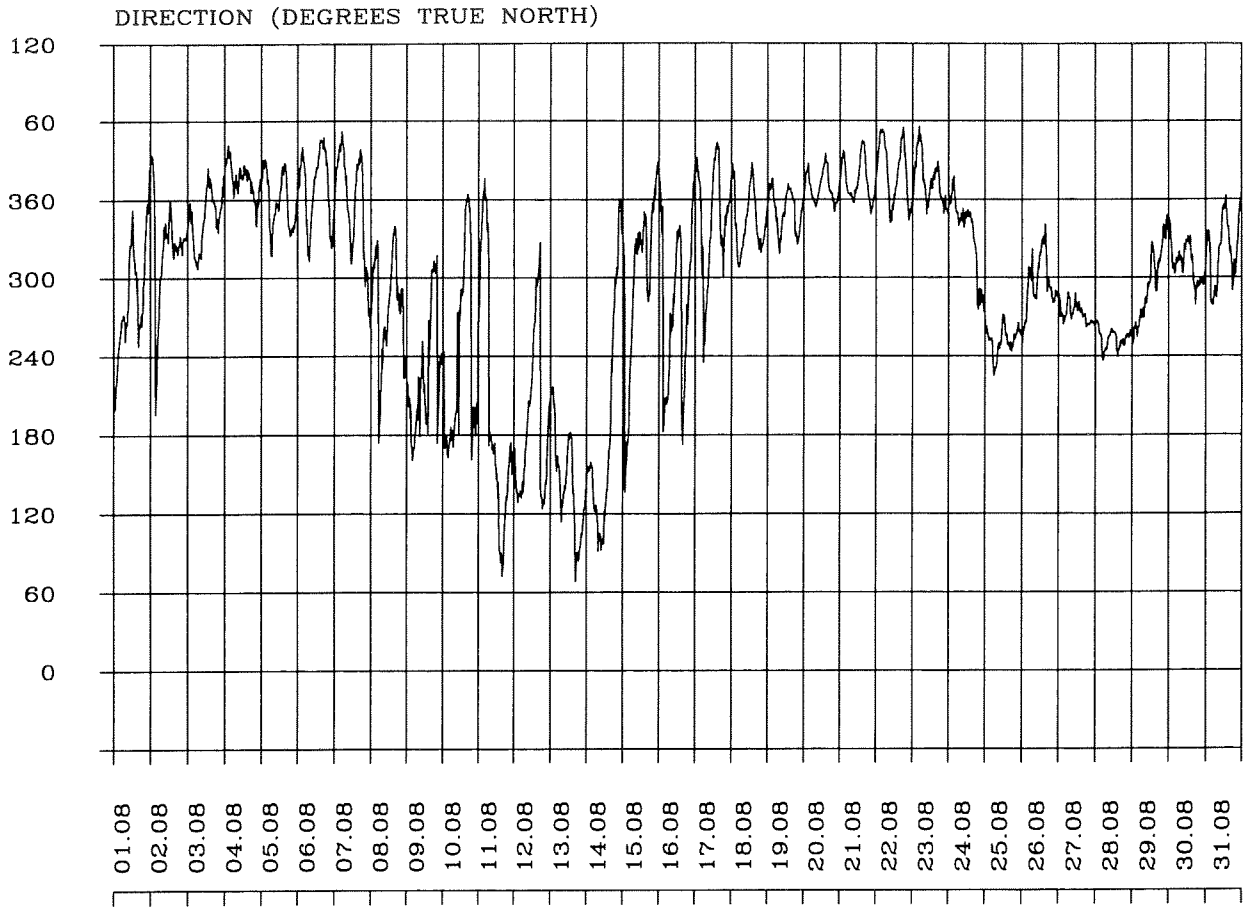
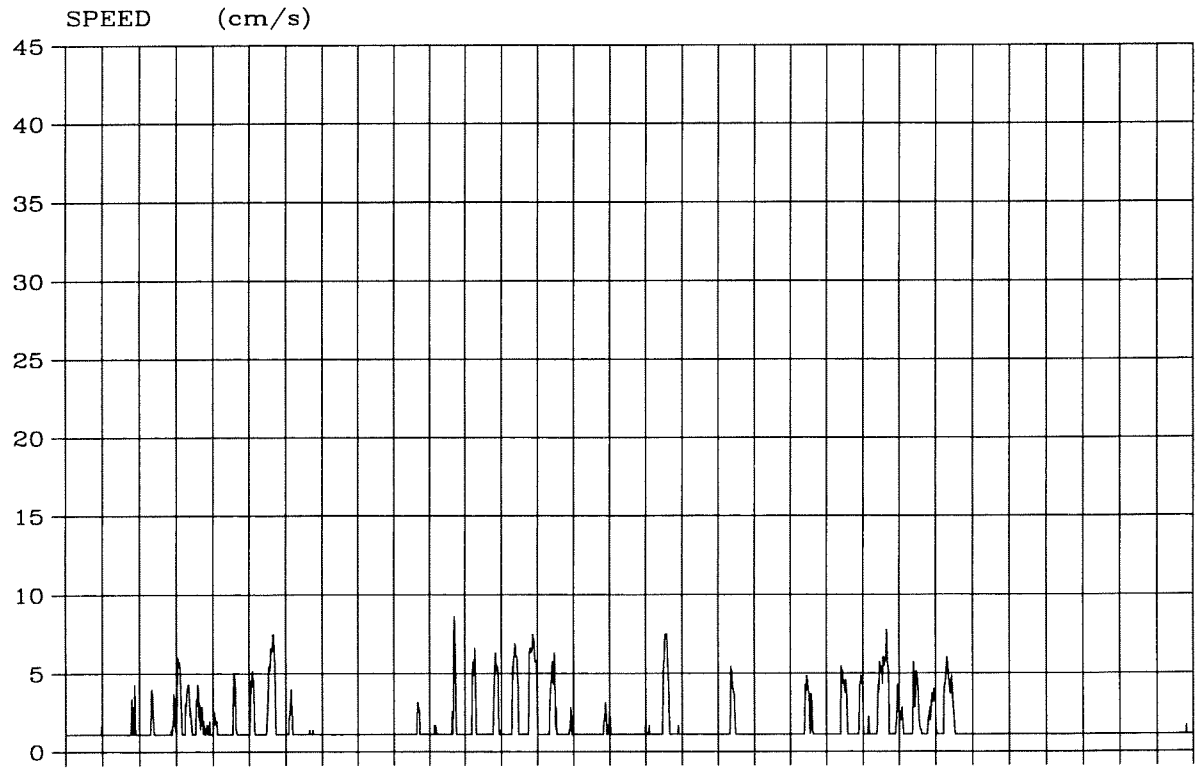
IMR

Fig. 2-4-7

Continues.....





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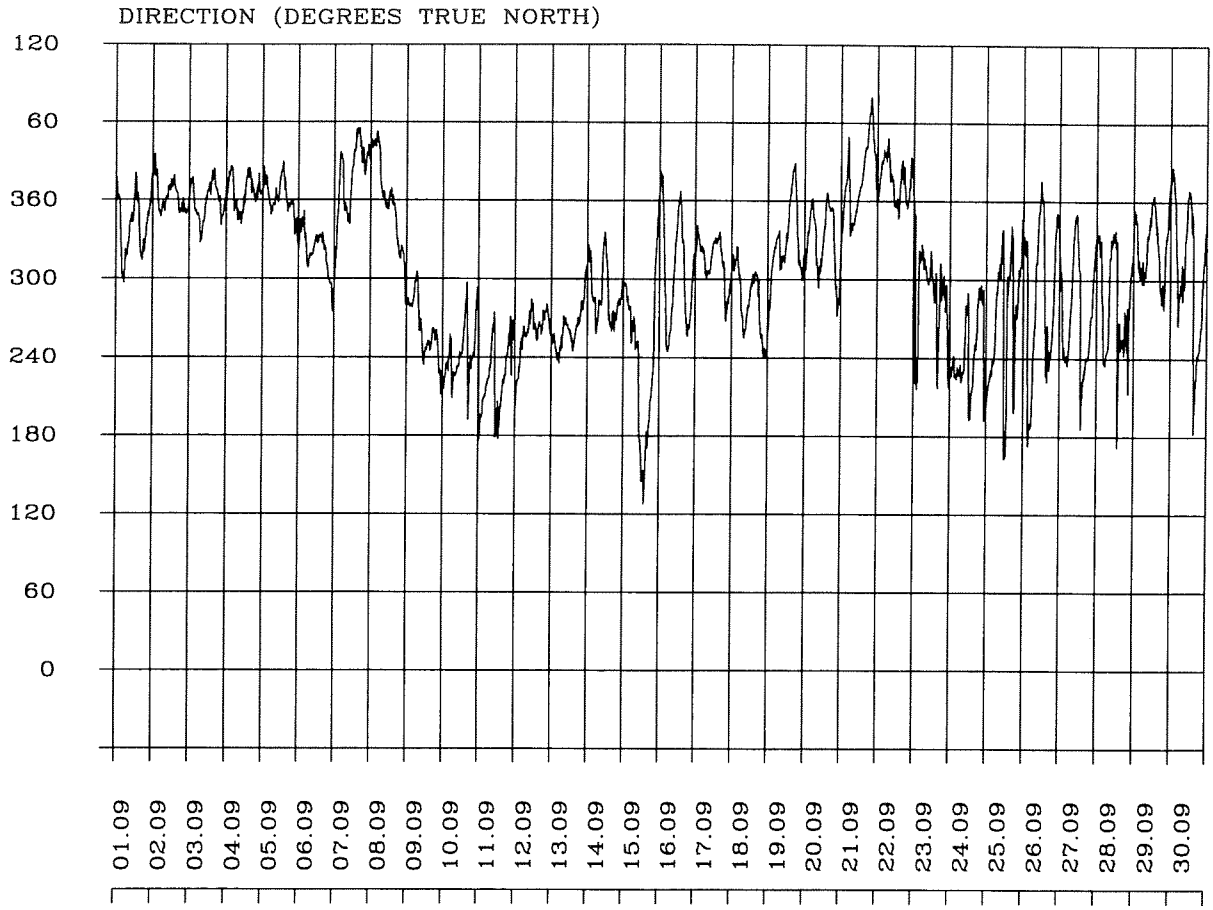
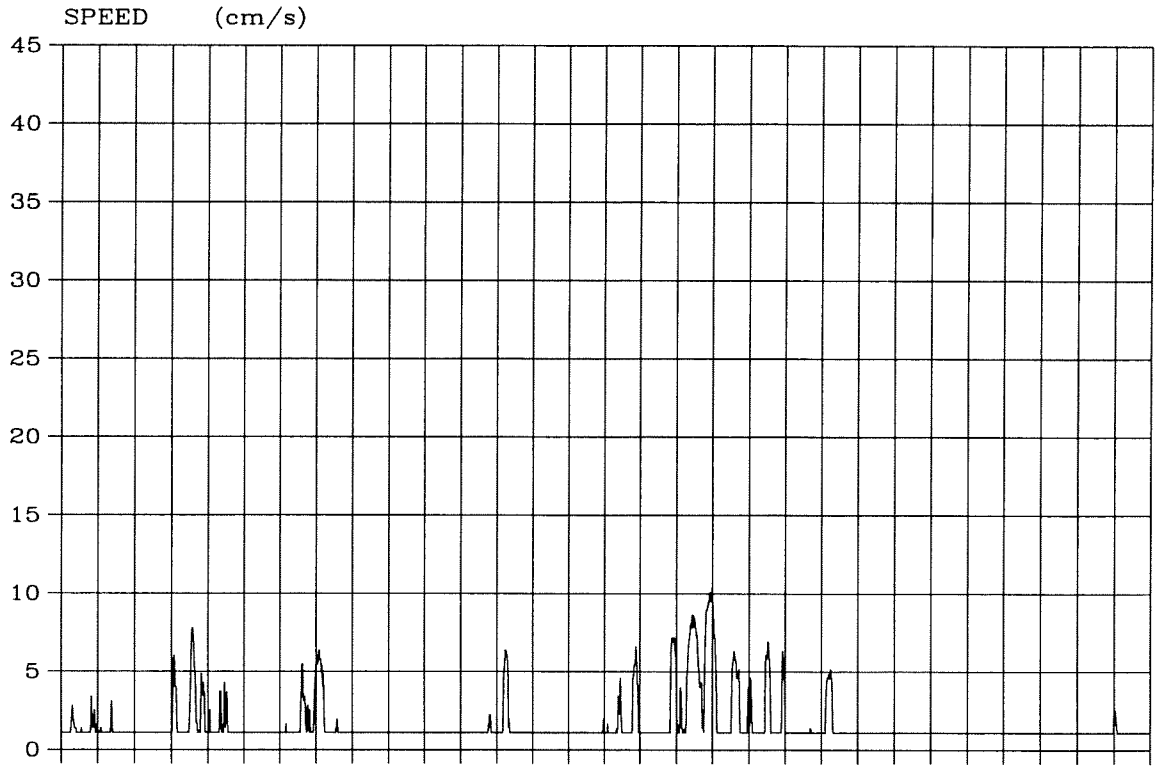
IMR

Fig. 2-4-7

Continues.....





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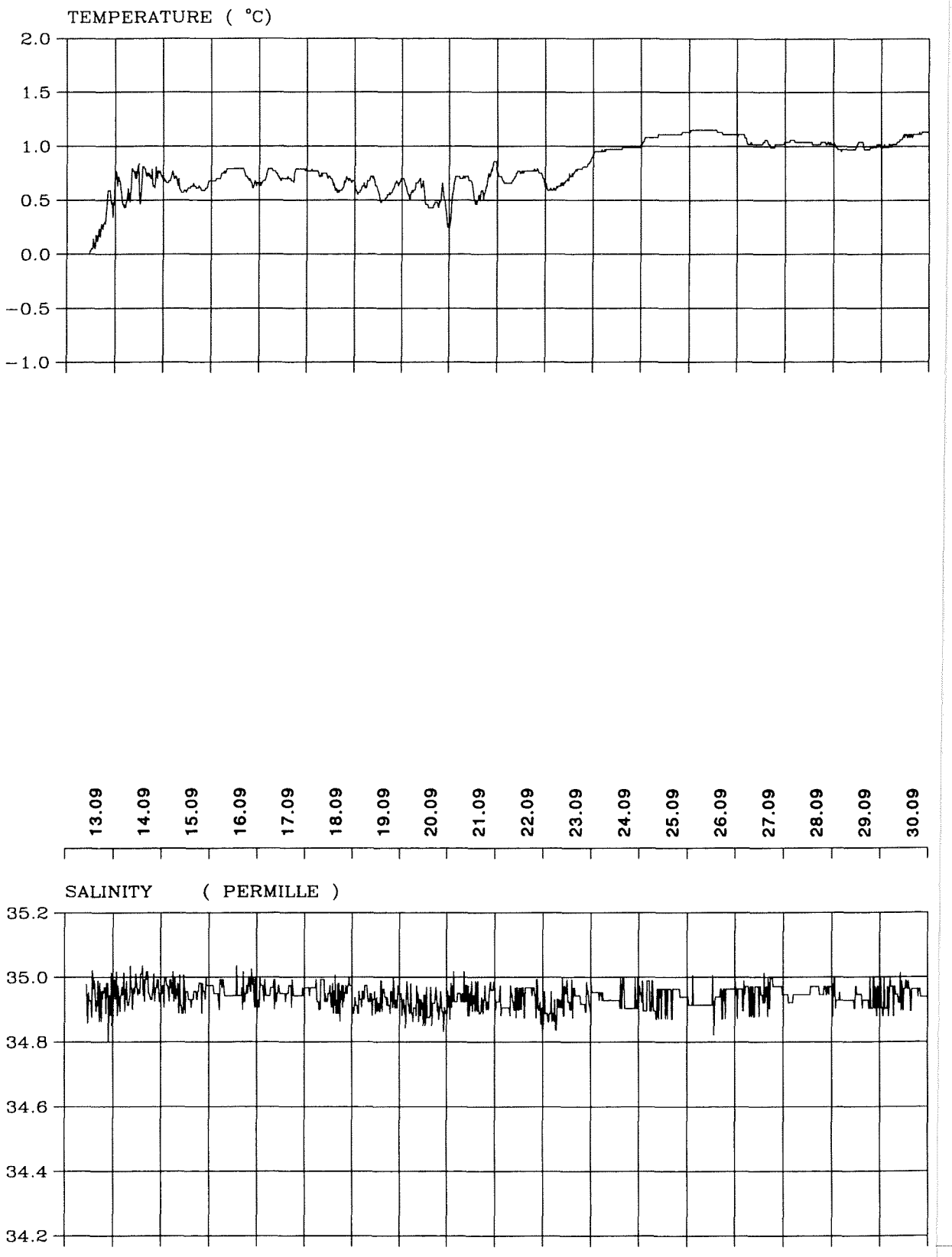
IMR

Fig. 2-4-7

Continues.....



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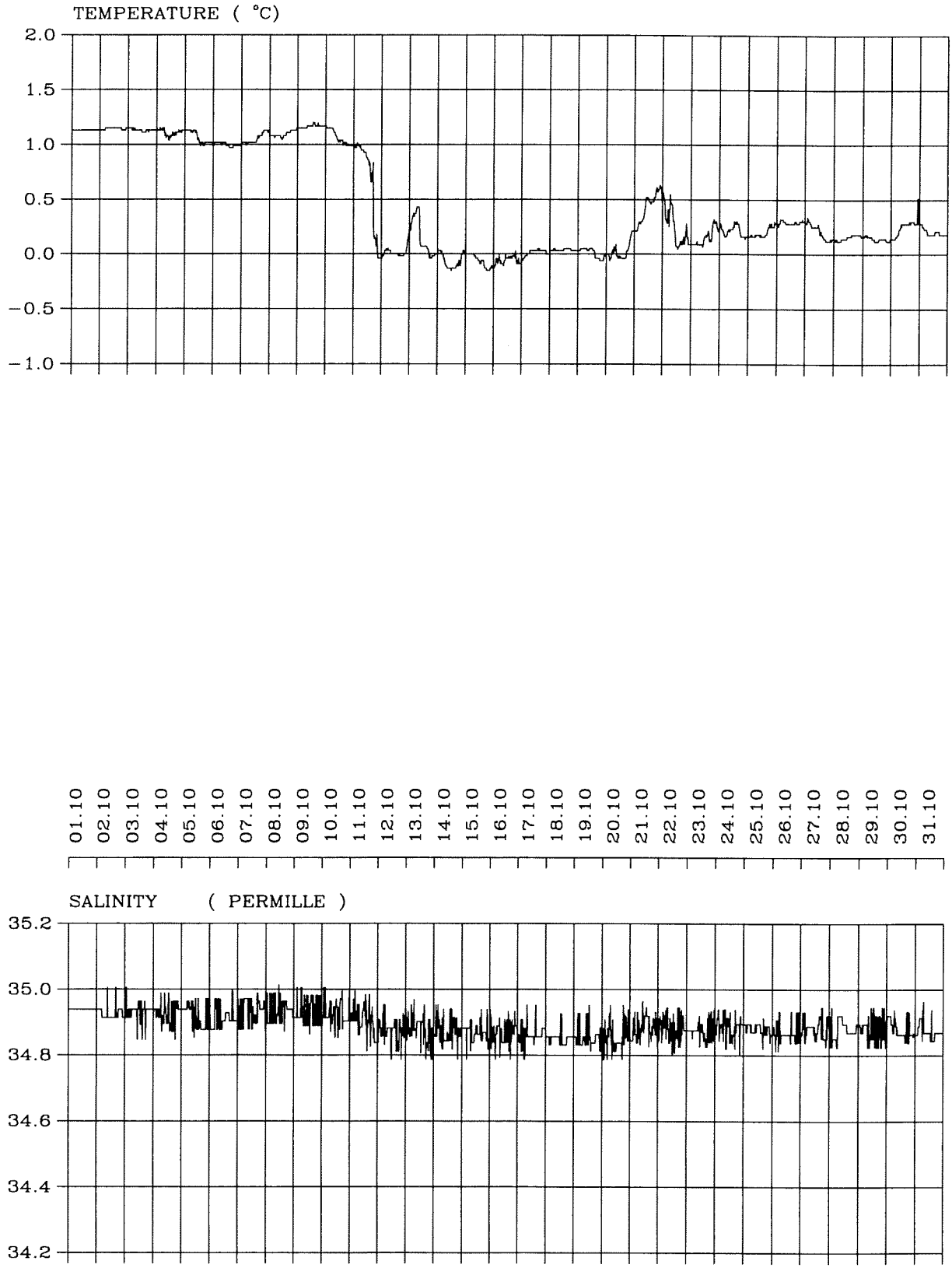
IMR

Fig. 2-4-8 Temperature and salinity.



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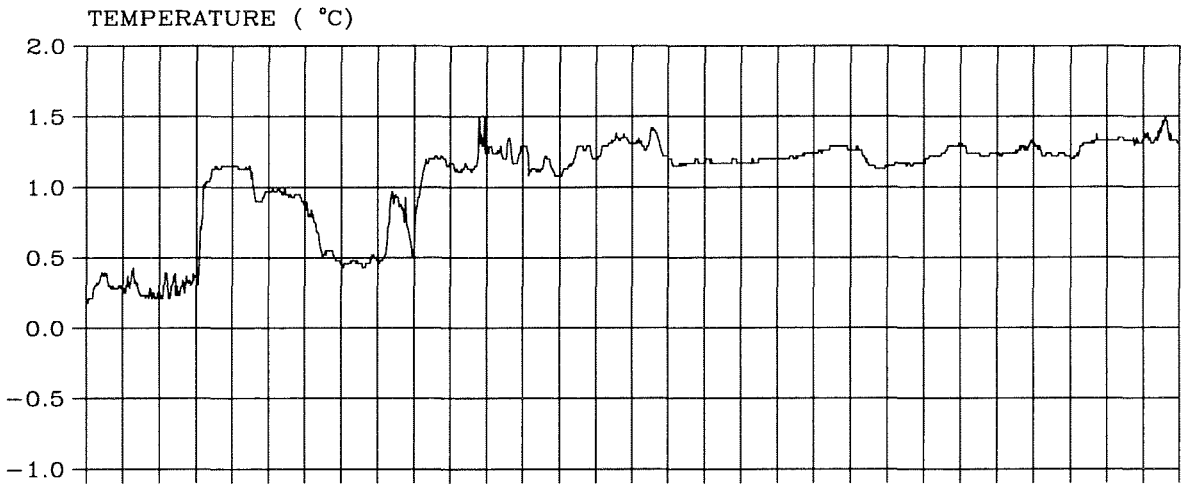
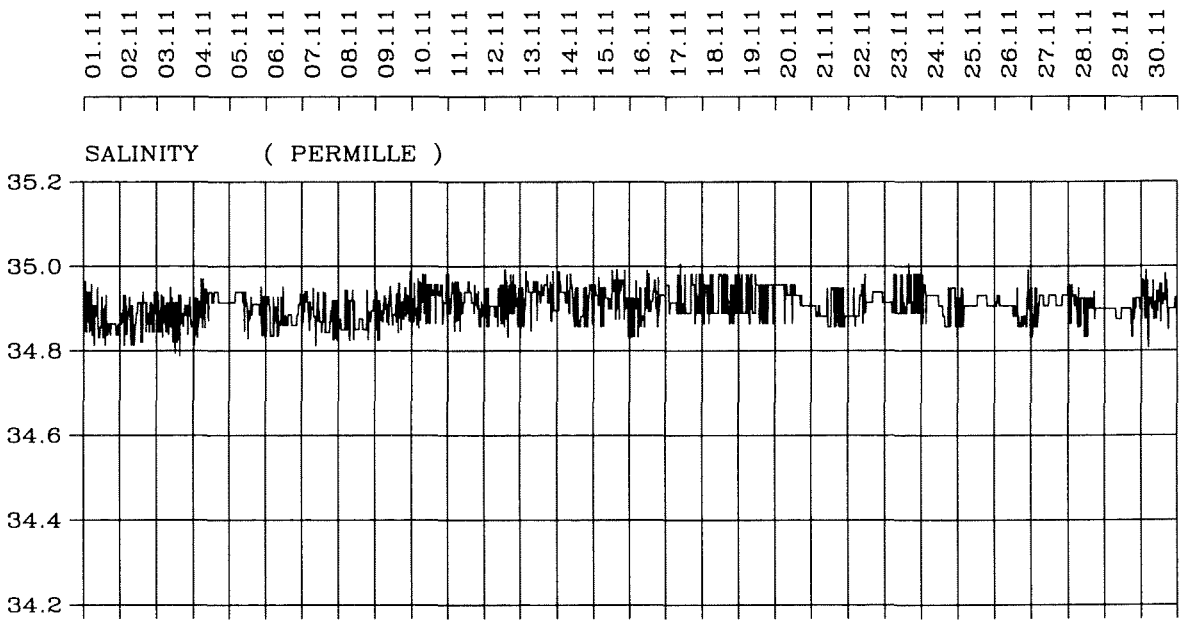
IMR

Fig. 2-4-8

Continues.....





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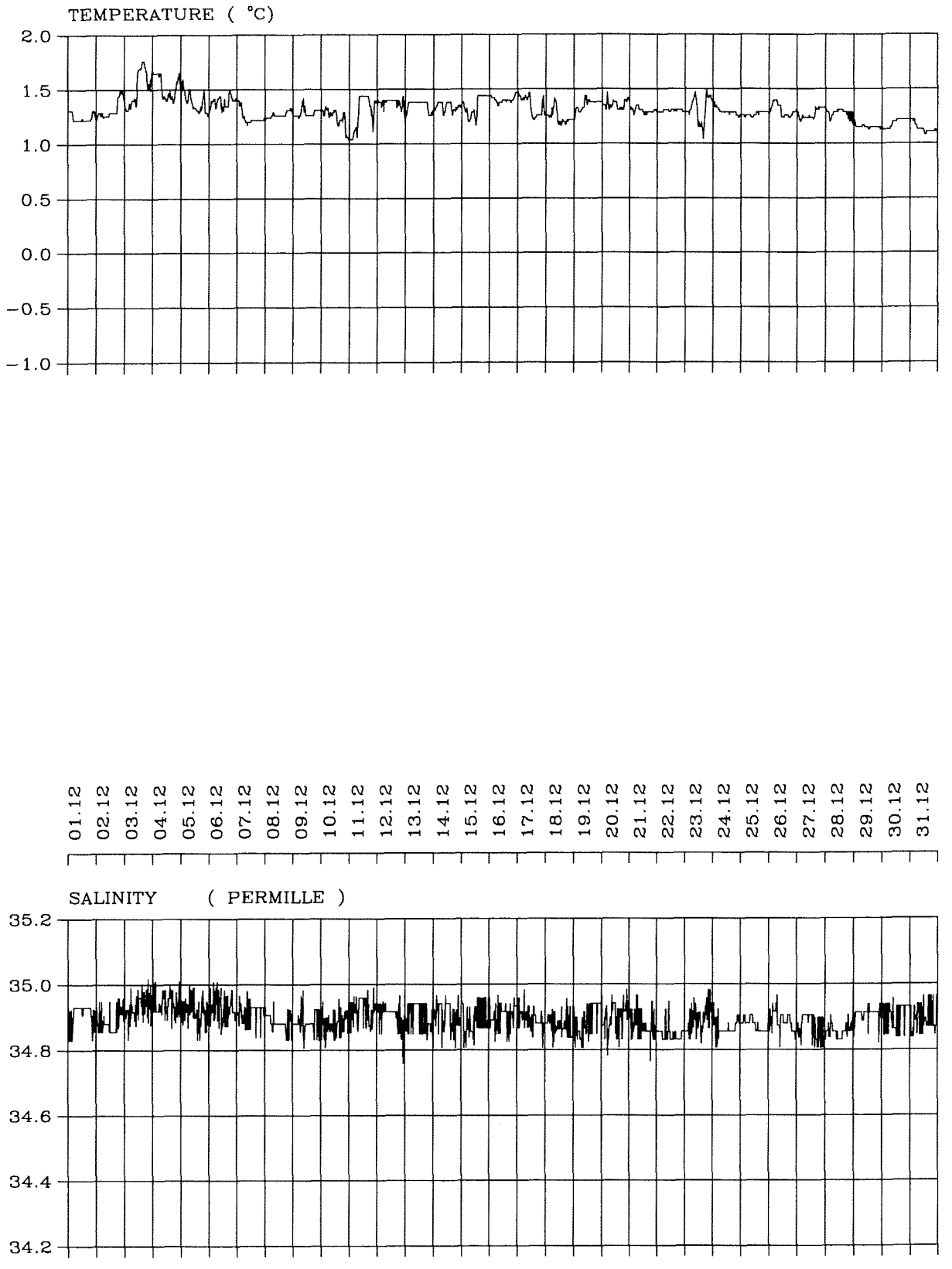
IMR

Fig. 2-4-8

Continues.....



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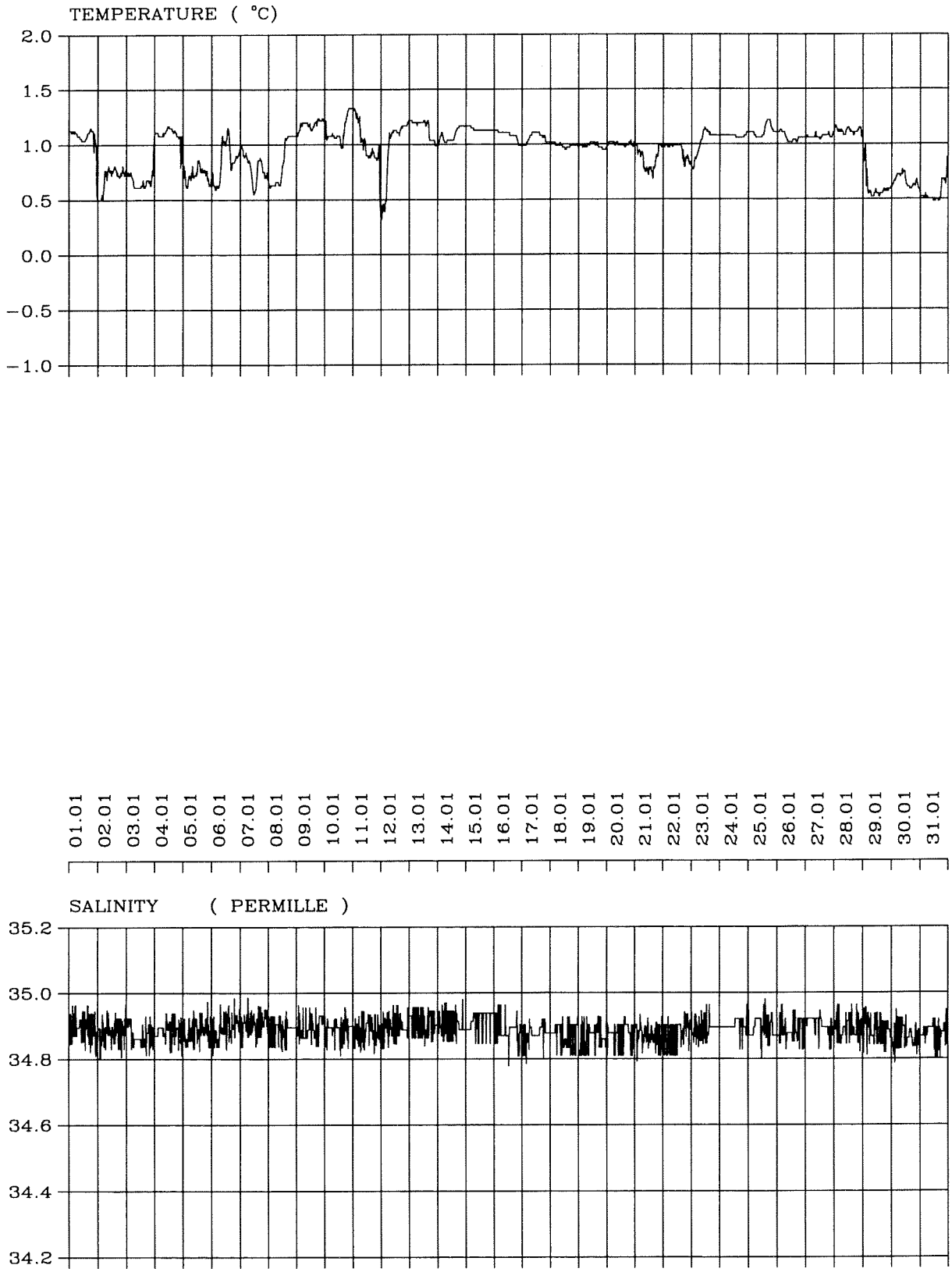
IMR

Fig. 2-4-8

Continues.....



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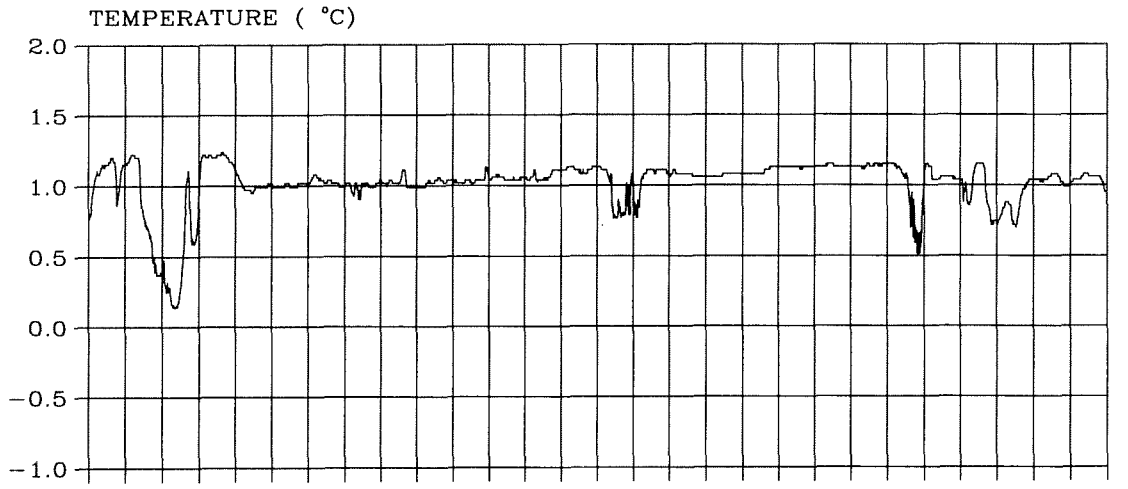
IMR

Fig. 2-4-8

Continues.....



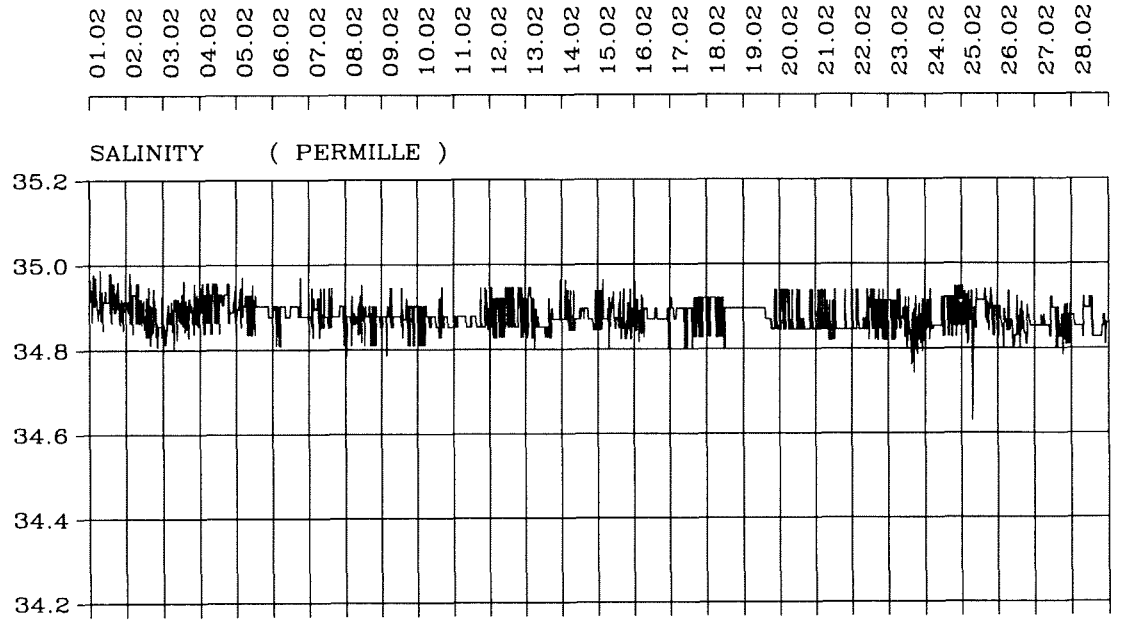


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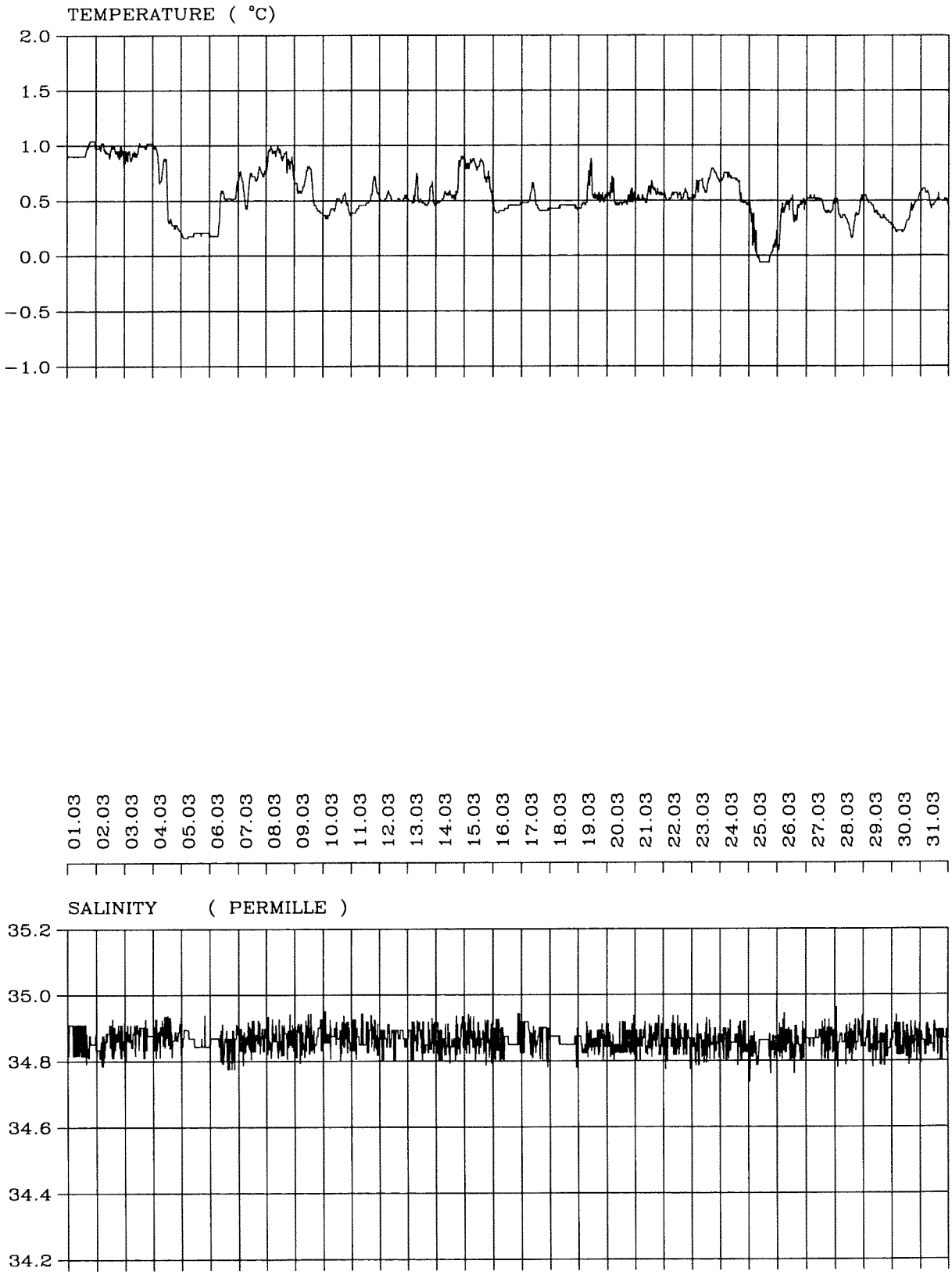
Fig. 2-4-8

Continues.....



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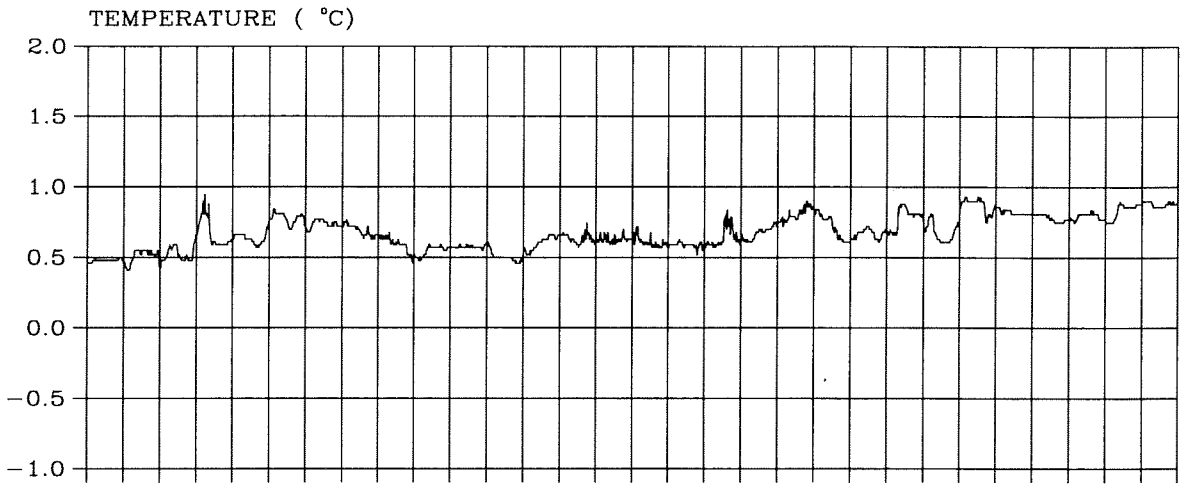
IMR

Fig. 2-4-8

Continues.....



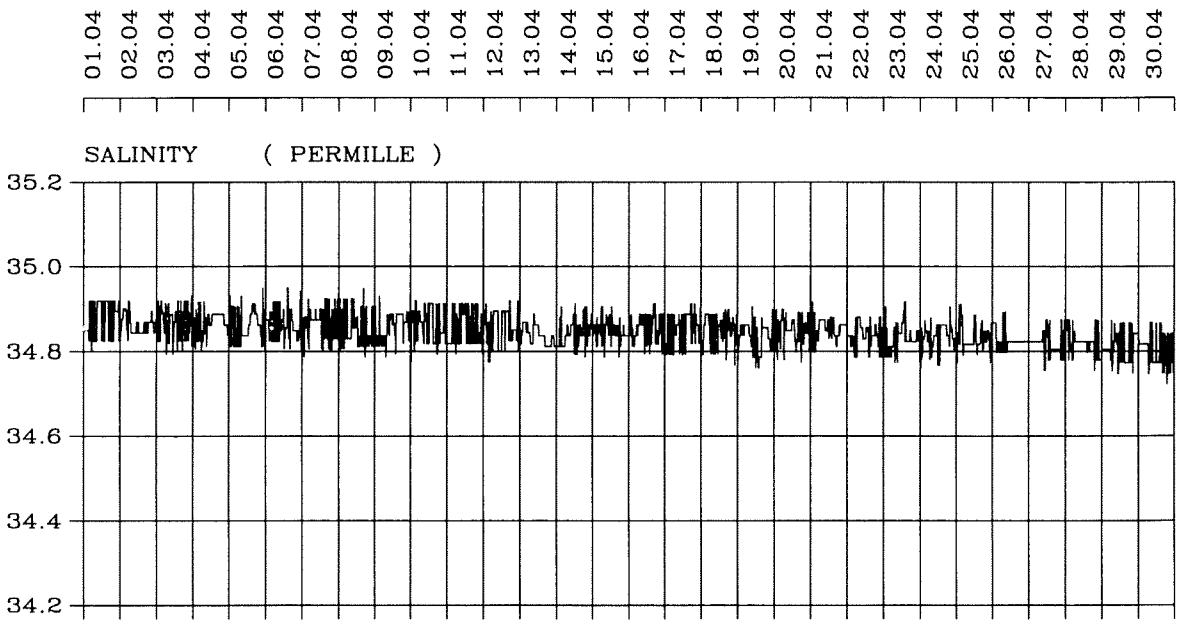


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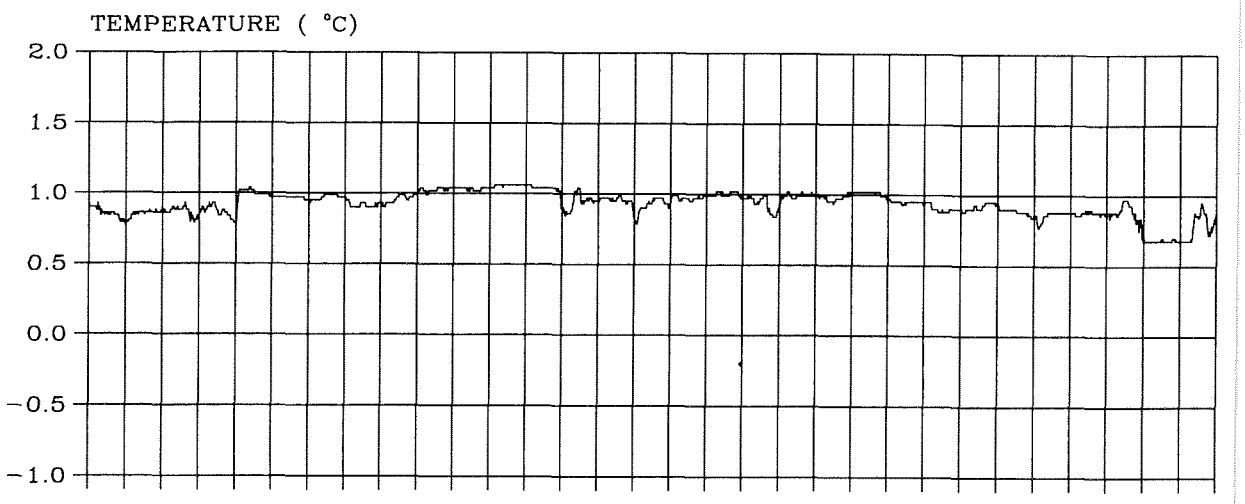
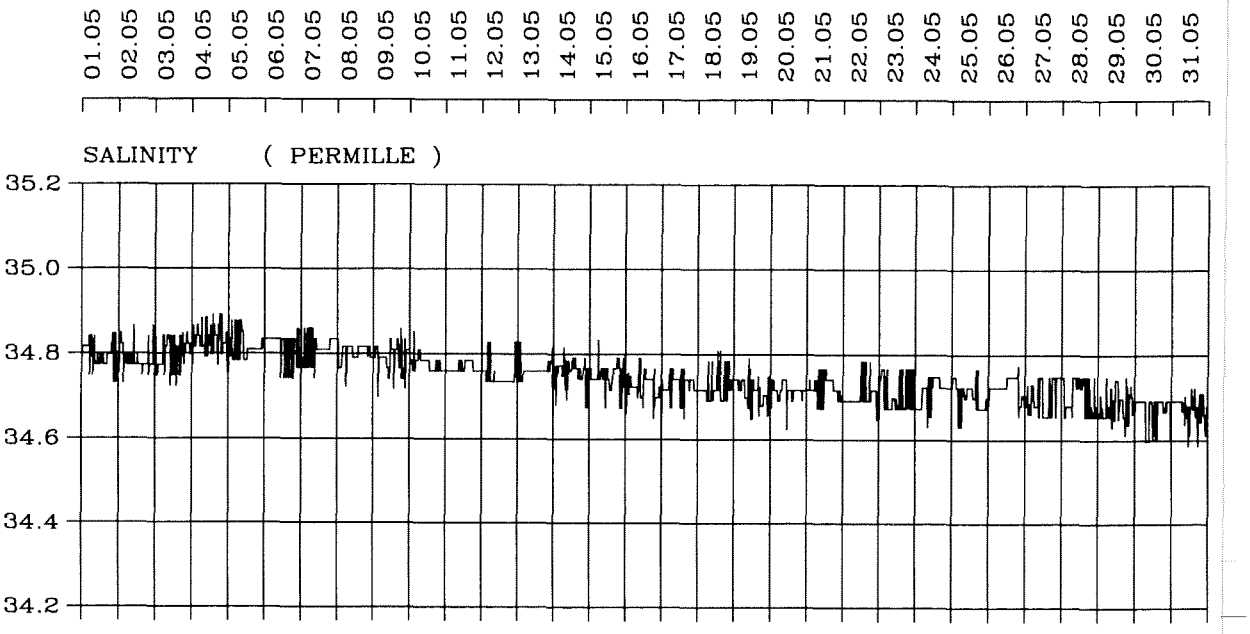
Fig. 2-4-8

Continues.....





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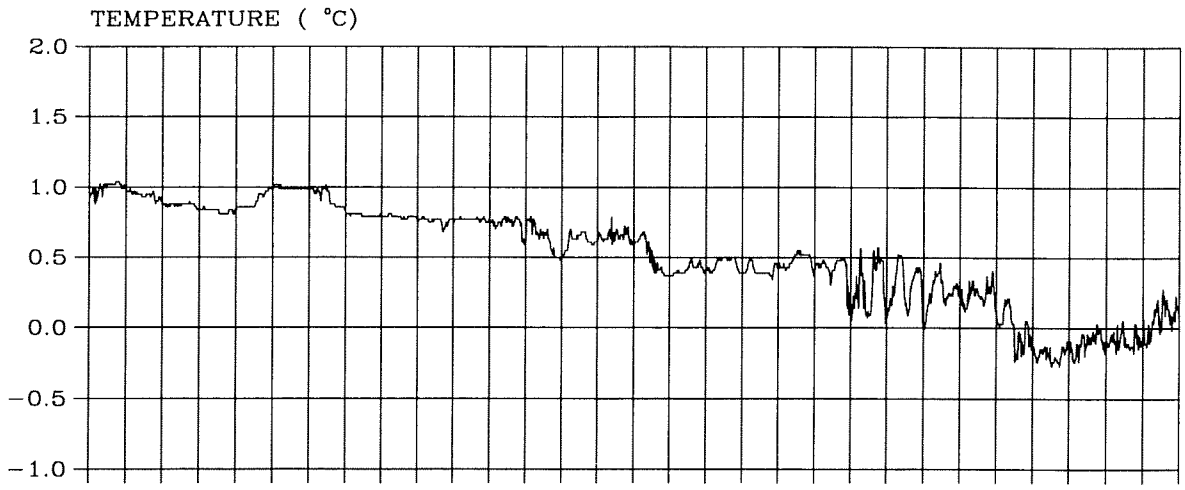
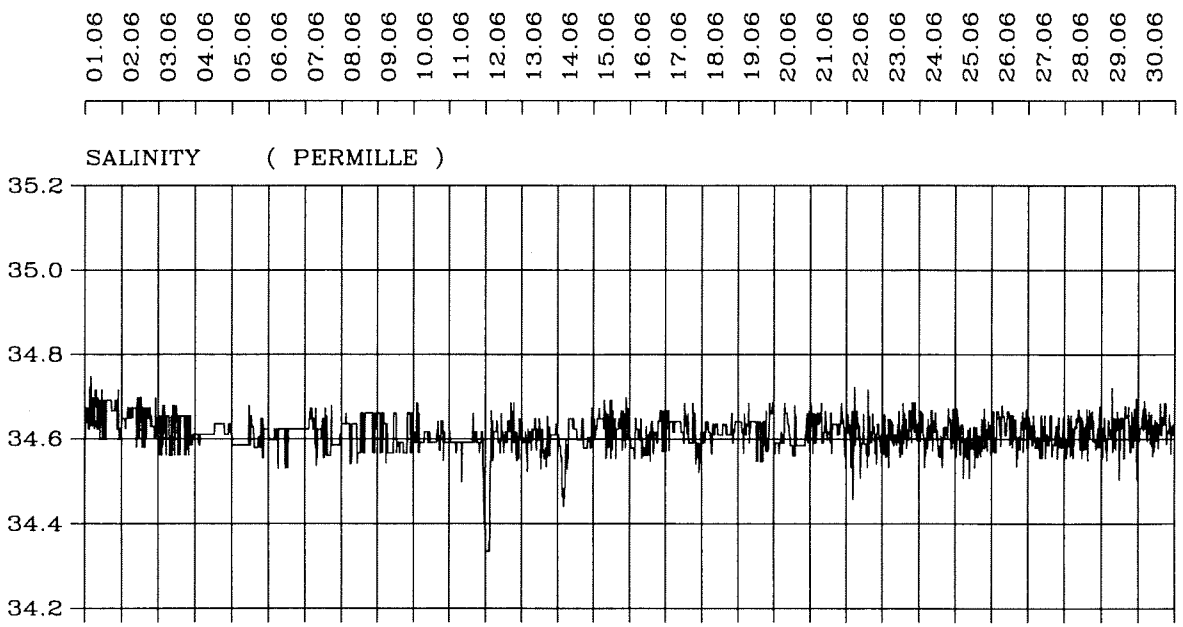
IMR

Fig. 2–4–8

Continues.....





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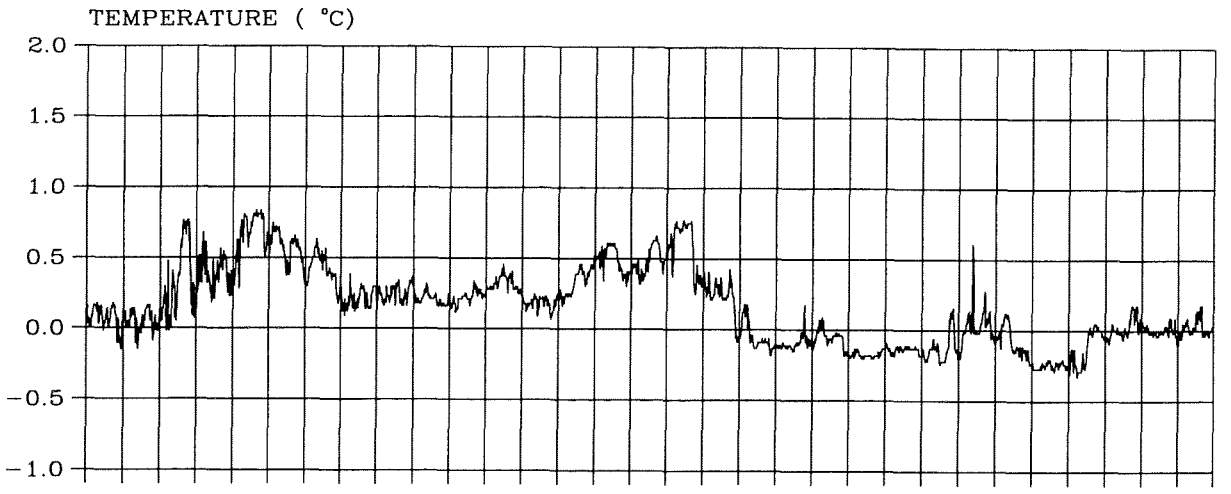
IMR

Fig. 2–4–8

Continues.....



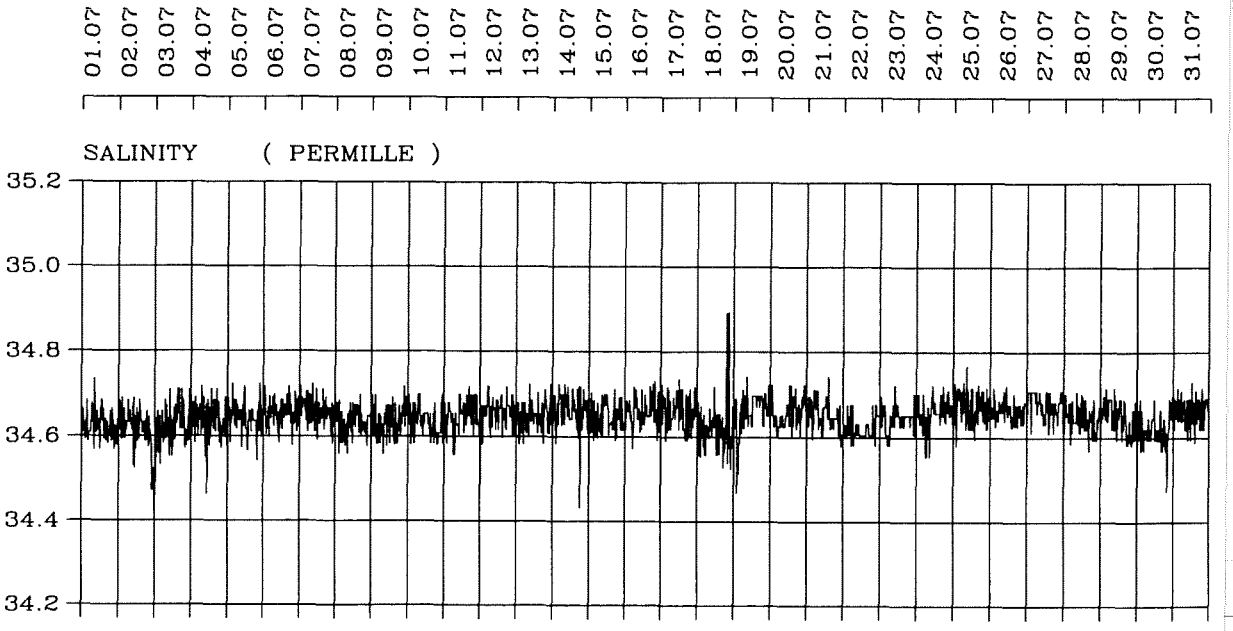


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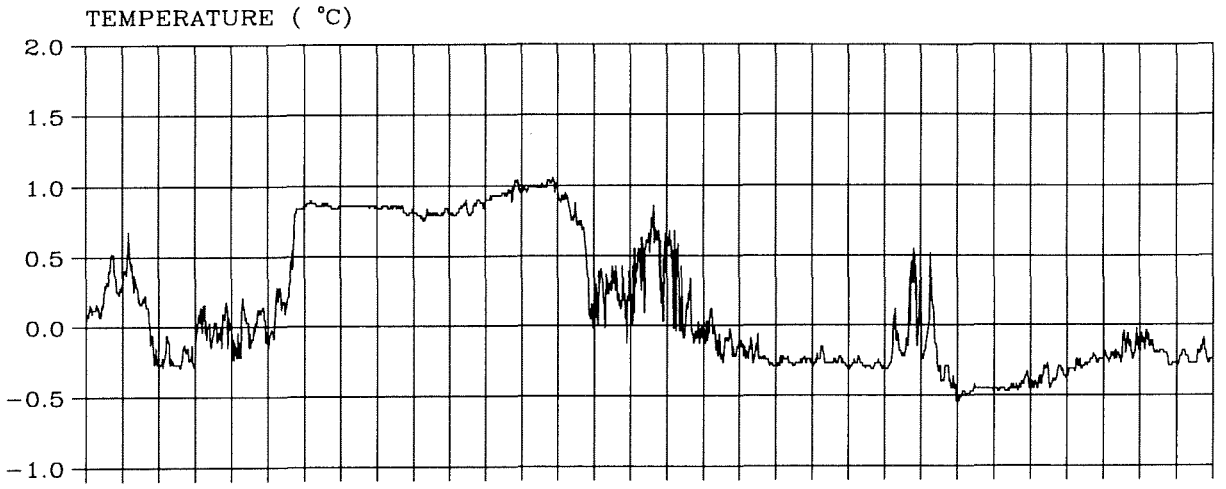
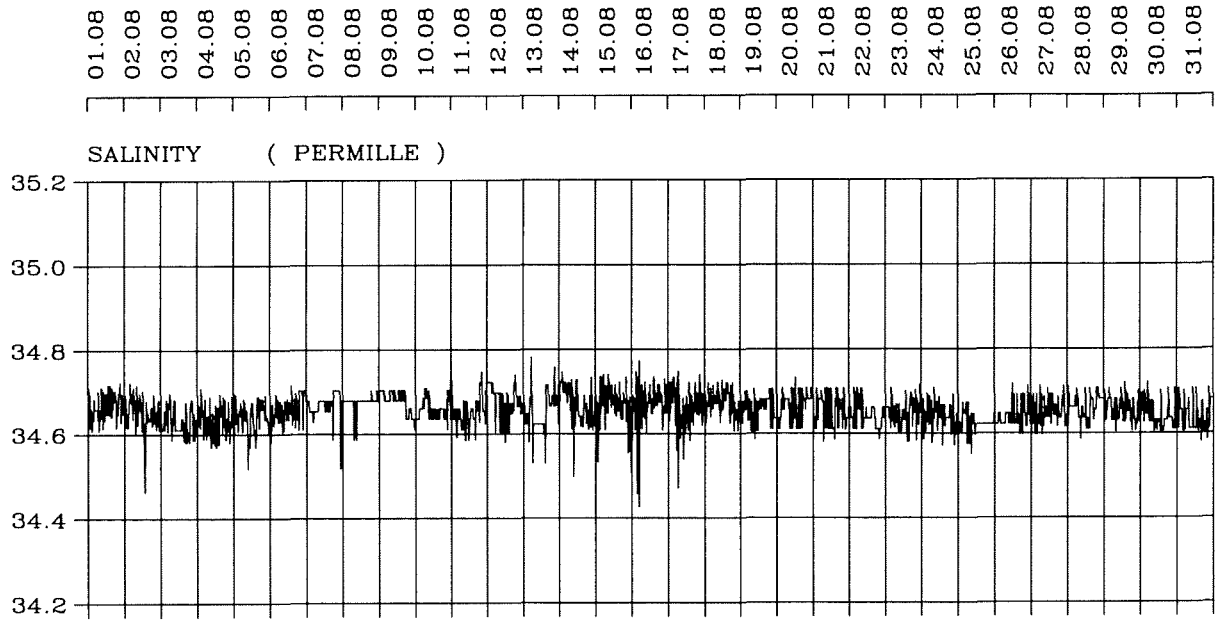
Fig. 2-4-8

Continues.....





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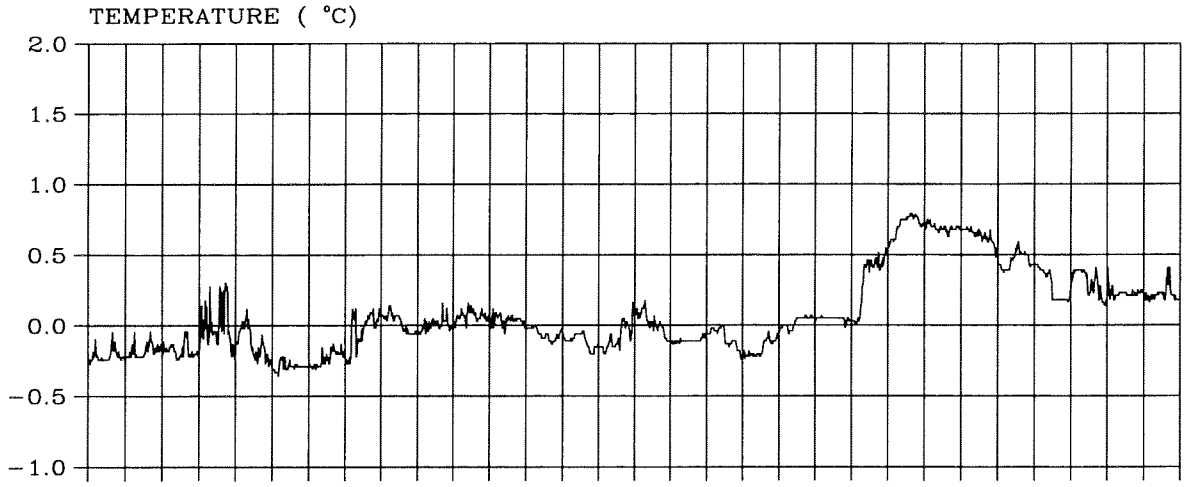
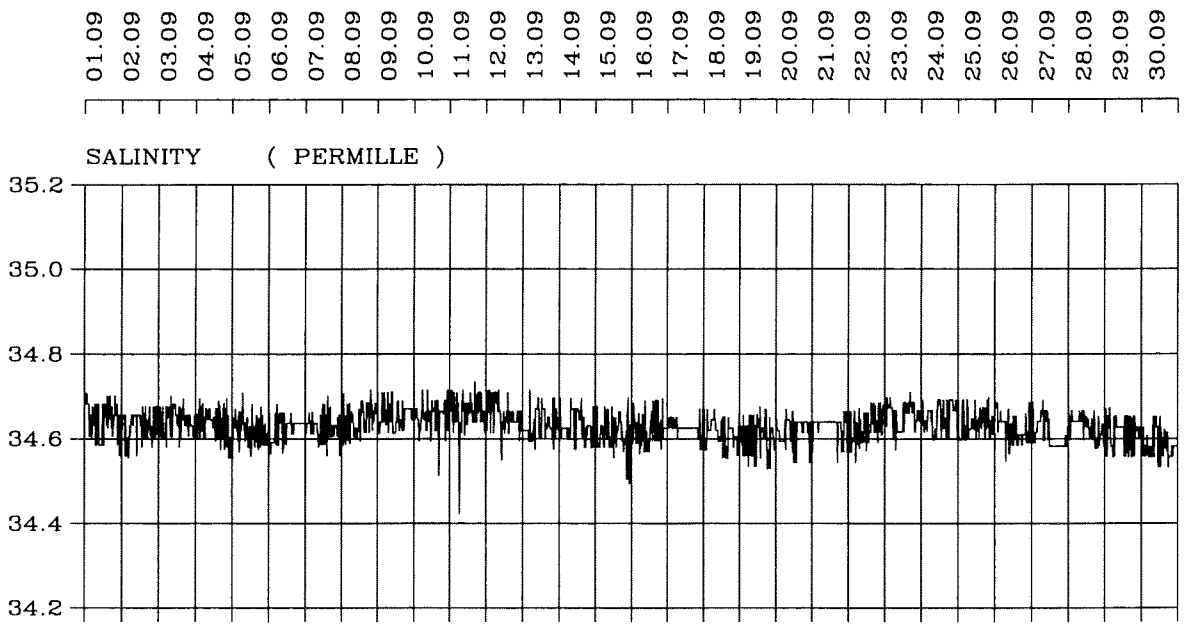
IMR

Fig. 2-4-8

Continues.....





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Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 – 1993 01.10 H. 0000

IMR

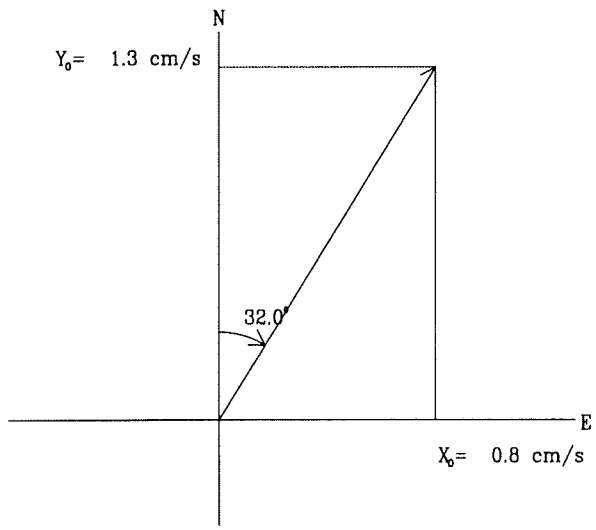
Fig. 2–4–8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S		Major	Minor			
Symbol	Period houres	Frequense °/hour	X_j cm/s	g_{xj} °	Y_j cm/s	g_{yj} °	axis A_j cm/s	axis B_j cm/s	θ_j °	g_j °	BETA. °
SA	******	0.0	2.9	95.8	2.4	51.7	3.5	-1.4	53.2	79.4	1.0
SSA	******	0.1	1.4	351.0	1.7	304.3	2.0	-0.9	38.9	323.6	141.2
MSM	763.49	0.5	2.3	287.2	1.3	291.3	2.6	0.1	59.2	288.2	113.5
MM	661.31	0.5	1.5	11.2	0.8	359.2	1.6	-0.1	242.8	188.7	166.8
MF	327.86	1.1	1.7	214.1	1.1	222.9	2.0	0.1	236.9	36.7	17.8
M2	12.42	29.0	1.6	41.2	0.9	348.5	1.7	-0.7	66.9	31.6	75.9

MEAN CURRENT



Southern Great Bank, Barents Sea
Position : N 76° 25.58′ E 34° 59.46′
Instrument depth : 268.0 m Bottom depth : 278.0 m
Time interval : 20.00 minutes. Instrument no. : 10800
Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-9 Harmonic analysis of current.

A discription of the model and its definitions :

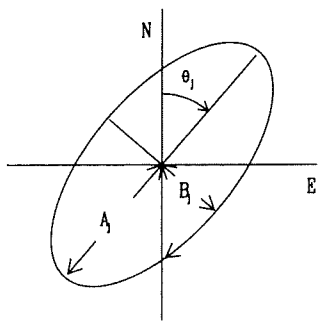
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

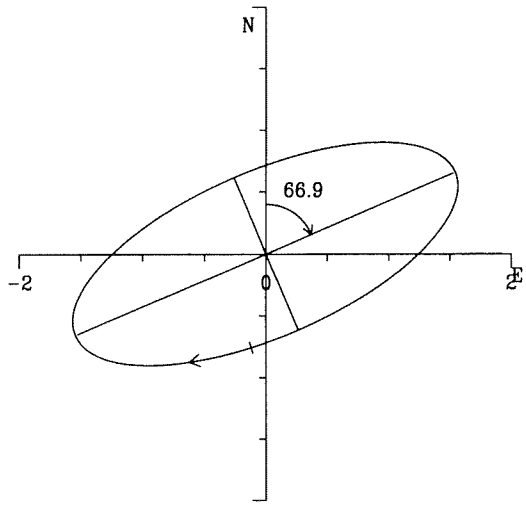
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

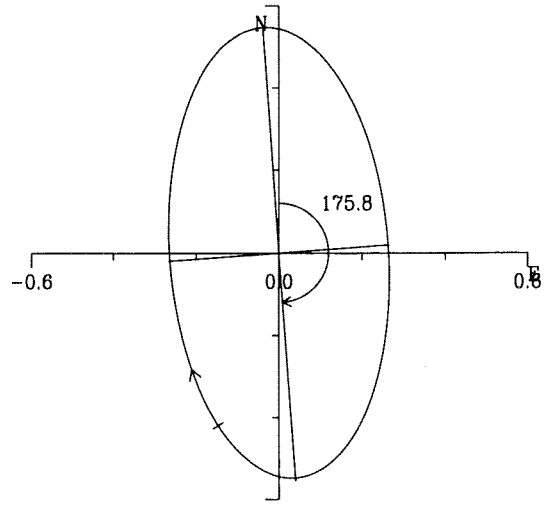
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1993 23.03 H. 1700 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-10 M2 and K1 ellipse.

MEAN VALUES

Speed	6.22 cm/s
NS-component	1.26 cm/s
EW-component	0.76 cm/s
Velocity	1.48 cm/s
in direction	31 °

MAXIMUM

Velocity	44.11 cm/s
in direction	229 °
Temperature	1.76 °C
Salinity	35.036

MINIMUM

Velocity	0.00 cm/s
in direction	32 °
Temperature	-0.54 °C
Salinity	34.334

Southern Great Bank, Barents Sea

Position : N 76° 25.58´ E 34° 59.46´

Instrument depth : 268.0 m Bottom depth : 278.0 m

Time interval : 20.00 minutes. Instrument no. : 10800

Observation period: 1992 13.09 H. 1050 - 1993 01.10 H. 0000

IMR

Fig. 2-4-11

Overall mean values.
Overall maximum values.
Overall minimum values.

Appendix C

AANDERAA RCM CURRENT DATA

Mooring: 3

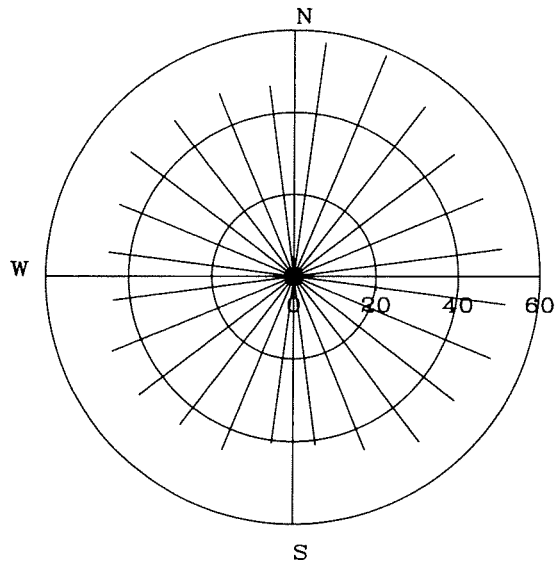
Position: N 76°34.5′ E 35°30.3′

Instrument depths: 20 and 95 m

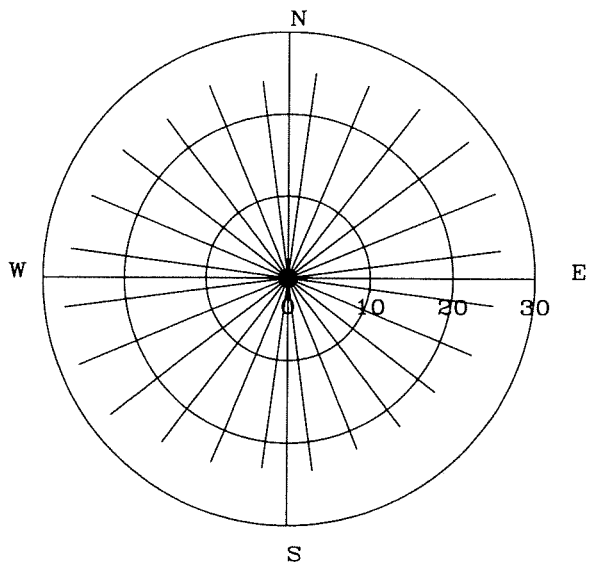
Mooring: 3

Depth: 20 m

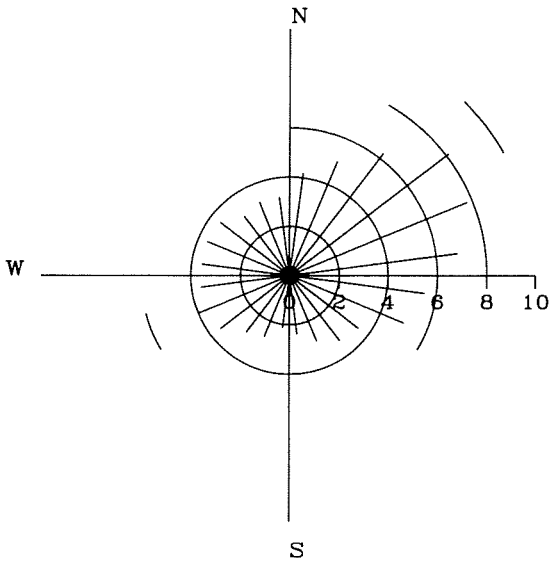
CURRENT VELOCITY DISTRIBUTION



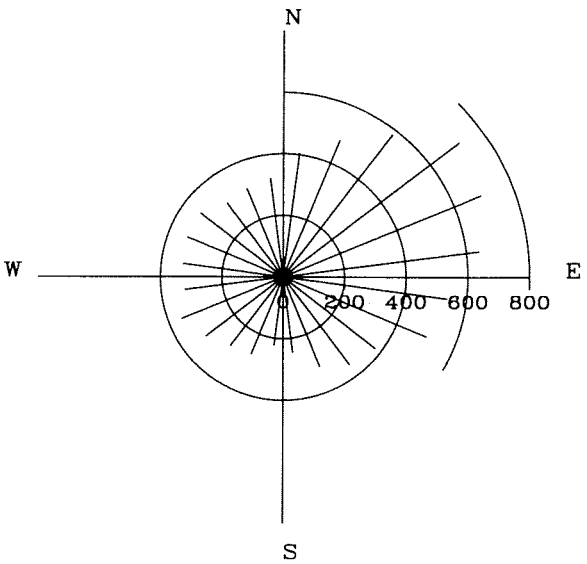
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 20.0 m Bottom depth : 220.0 m

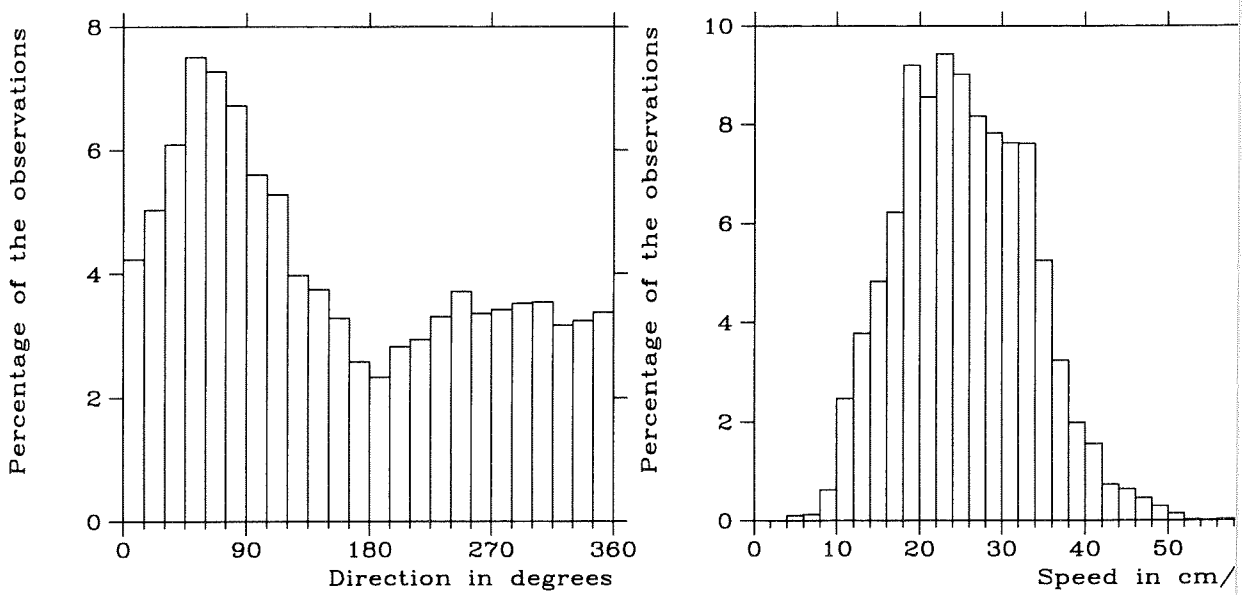
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

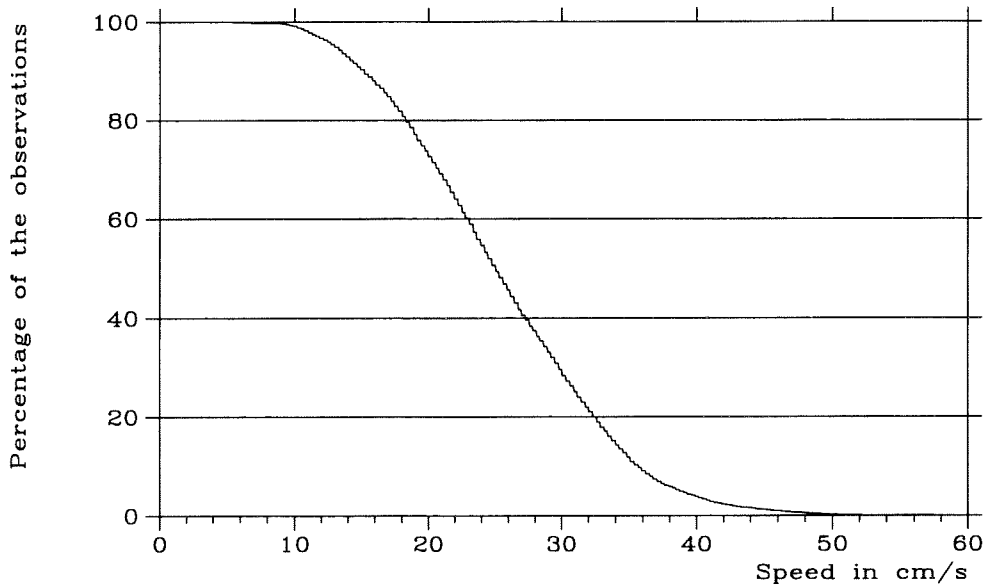
IMR

Fig. 3-1-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 20.0 m Bottom depth : 220.0 m

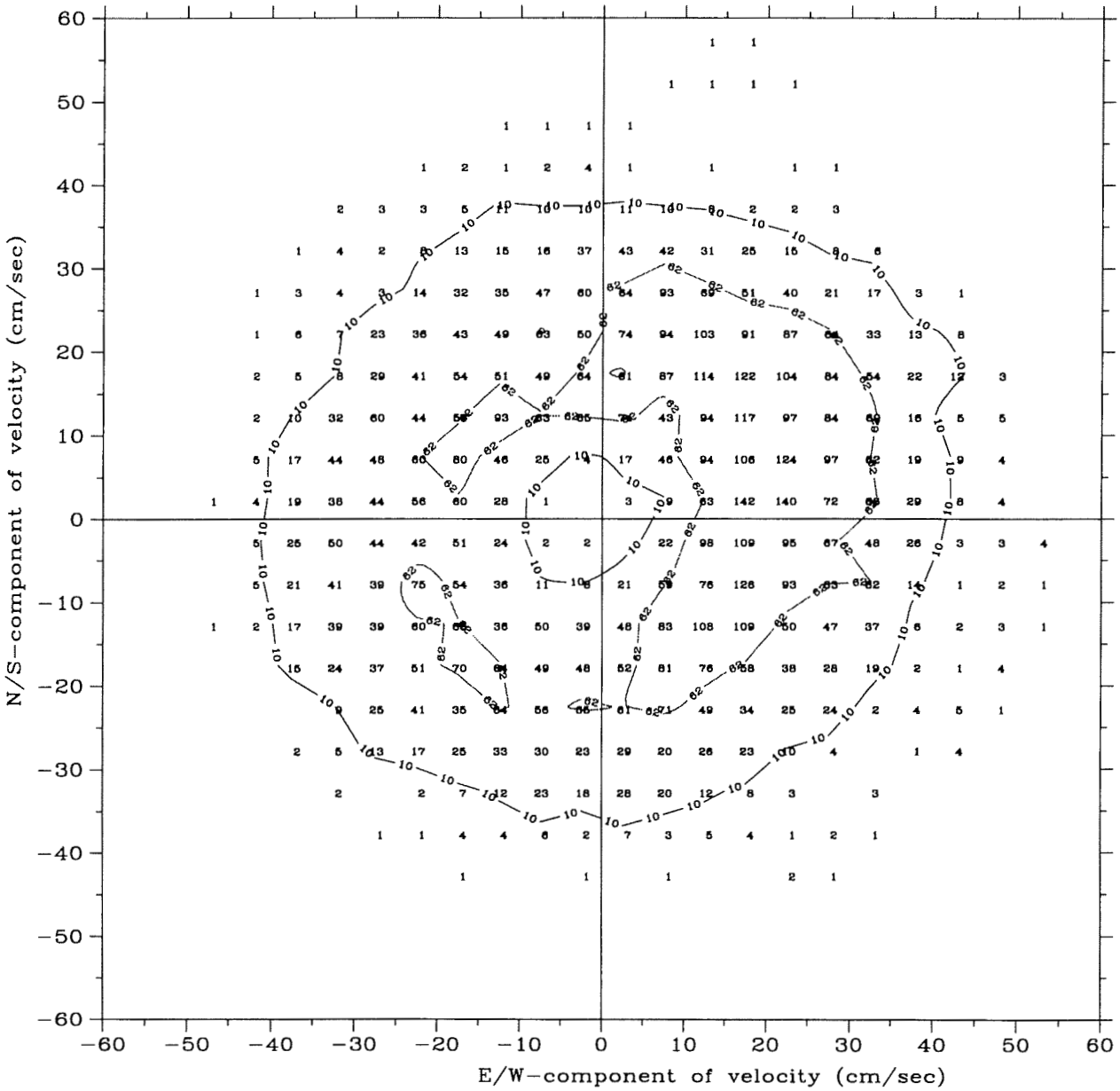
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-1-2 Histogram of speed and direction. Current speed distribution.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations : 9571

Isoline for 50% and 96%

Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 20.0 m Bottom depth : 220.0 m

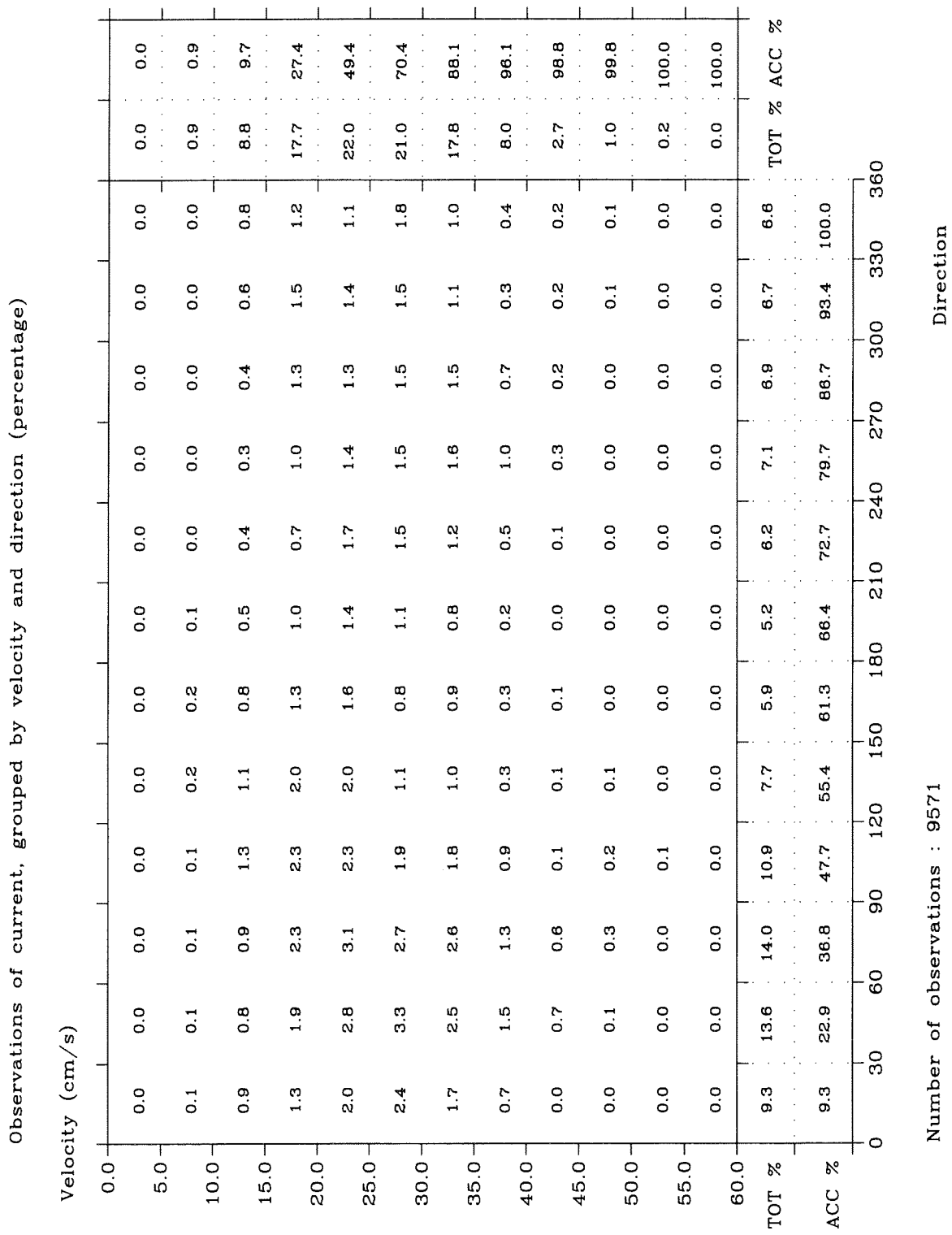
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-1-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 20.0 m Bottom depth : 220.0 m

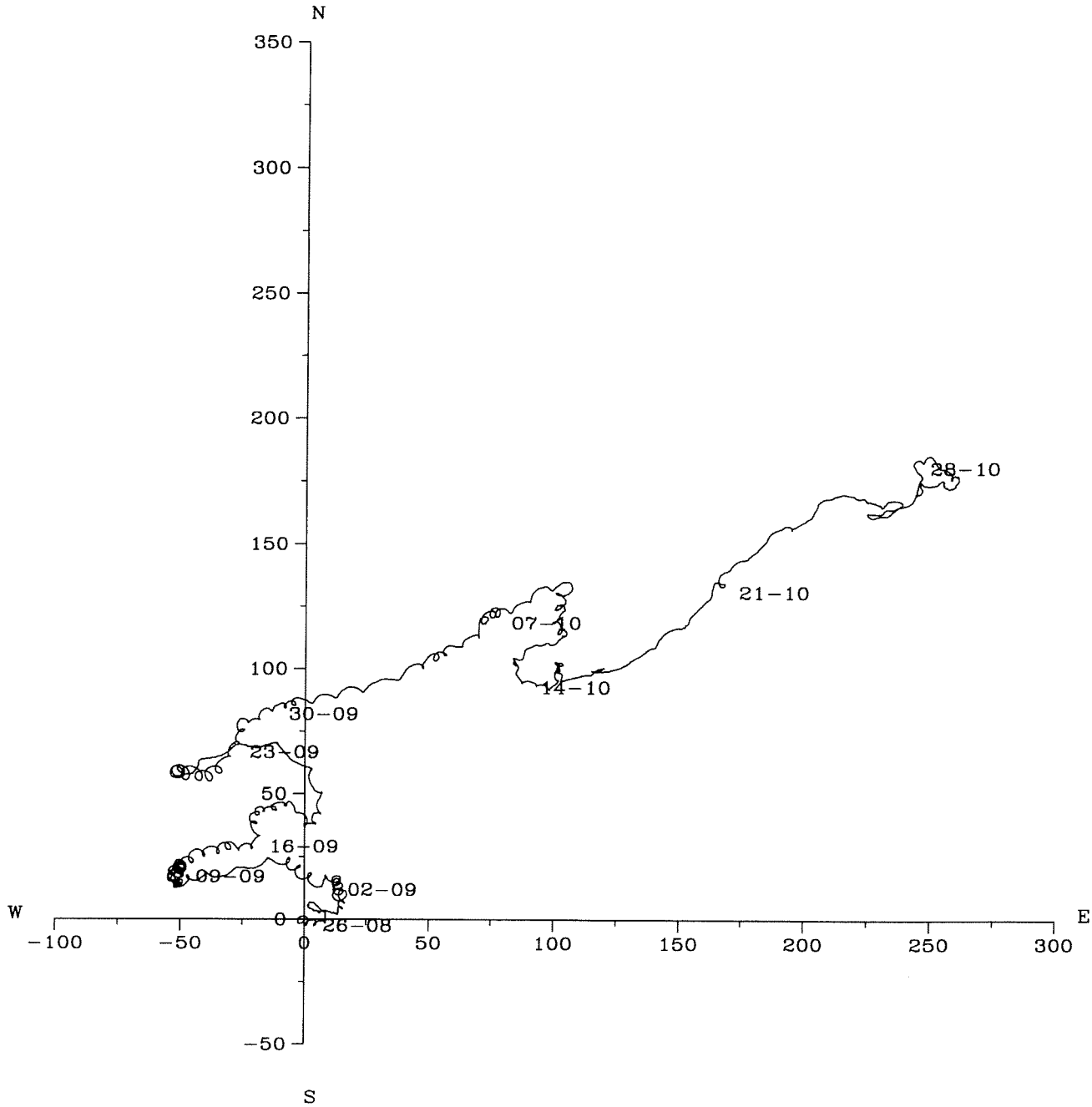
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-1-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



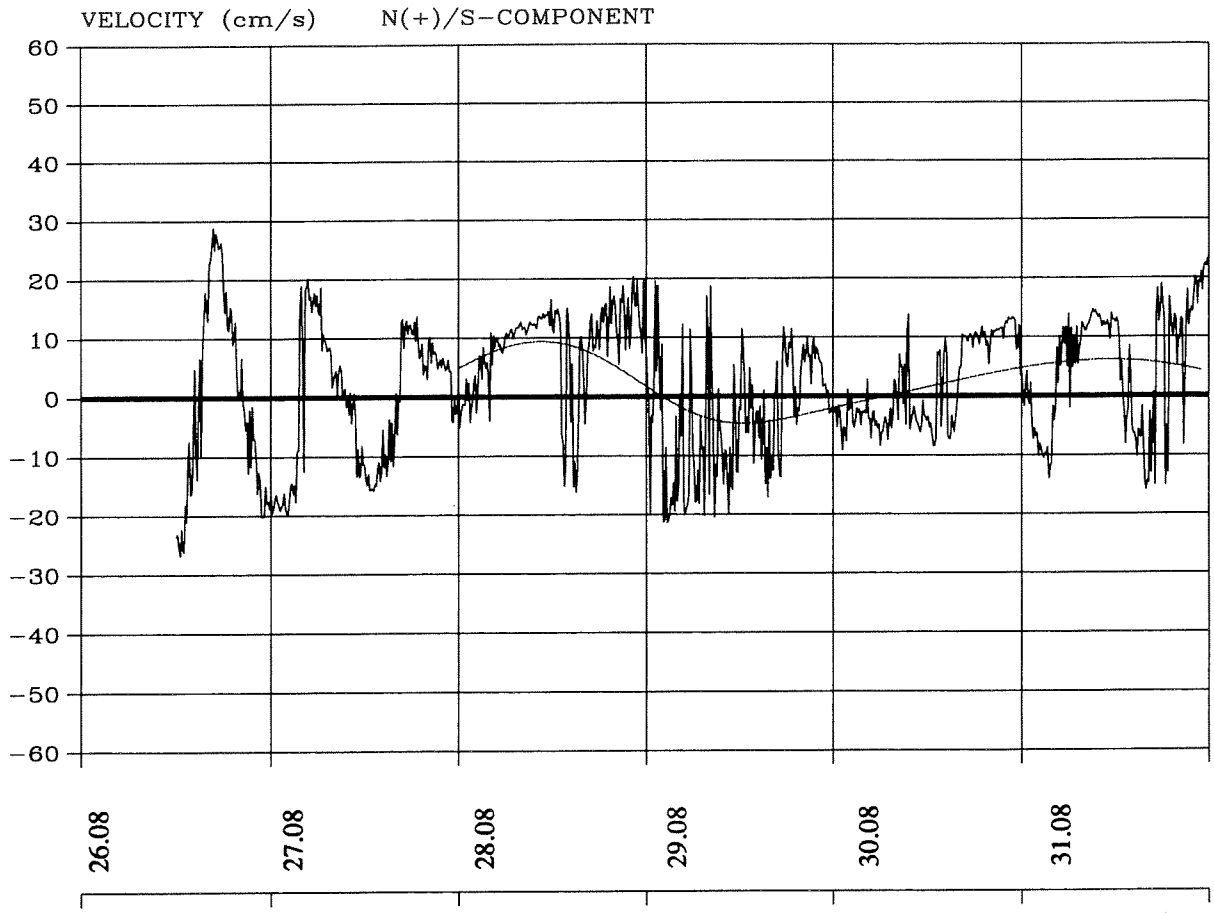
Units in km

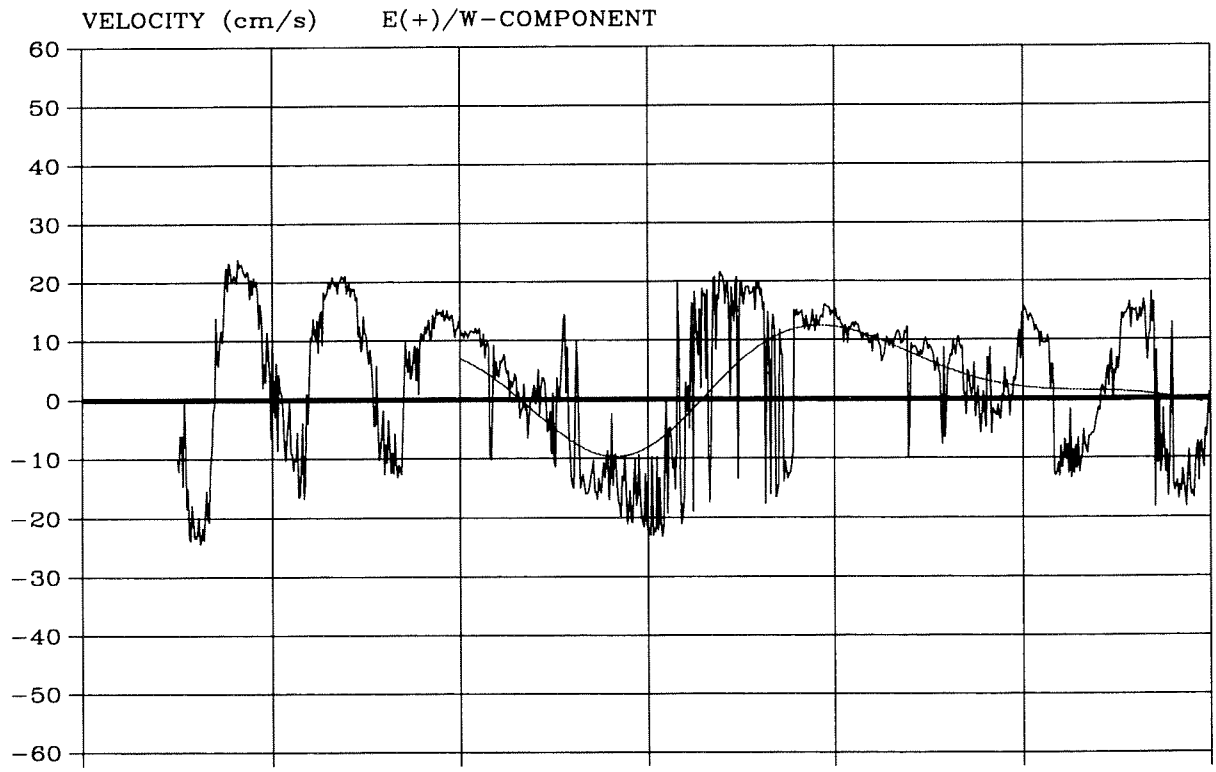
Number of observations : 9571

East of Hopen Island, Barents Sea
Position : N 76° 34.50′ E 35° 30.35′
Instrument depth : 20.0 m Bottom depth : 220.0 m
Time interval : 10.00 minutes. Instrument no. : 5839
Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3−1−5 Progressive vector diagram.





East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

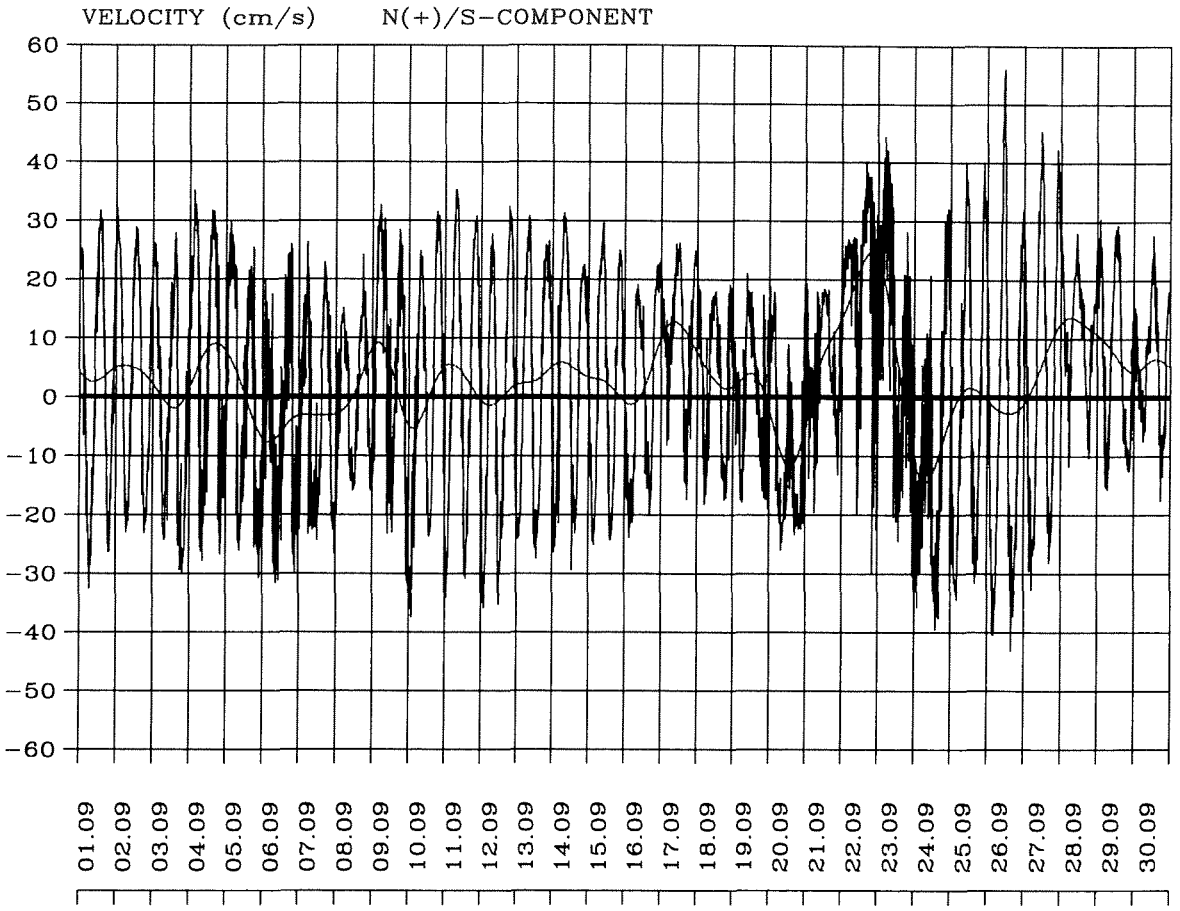
Instrument depth : 20.0 m Bottom depth : 220.0 m

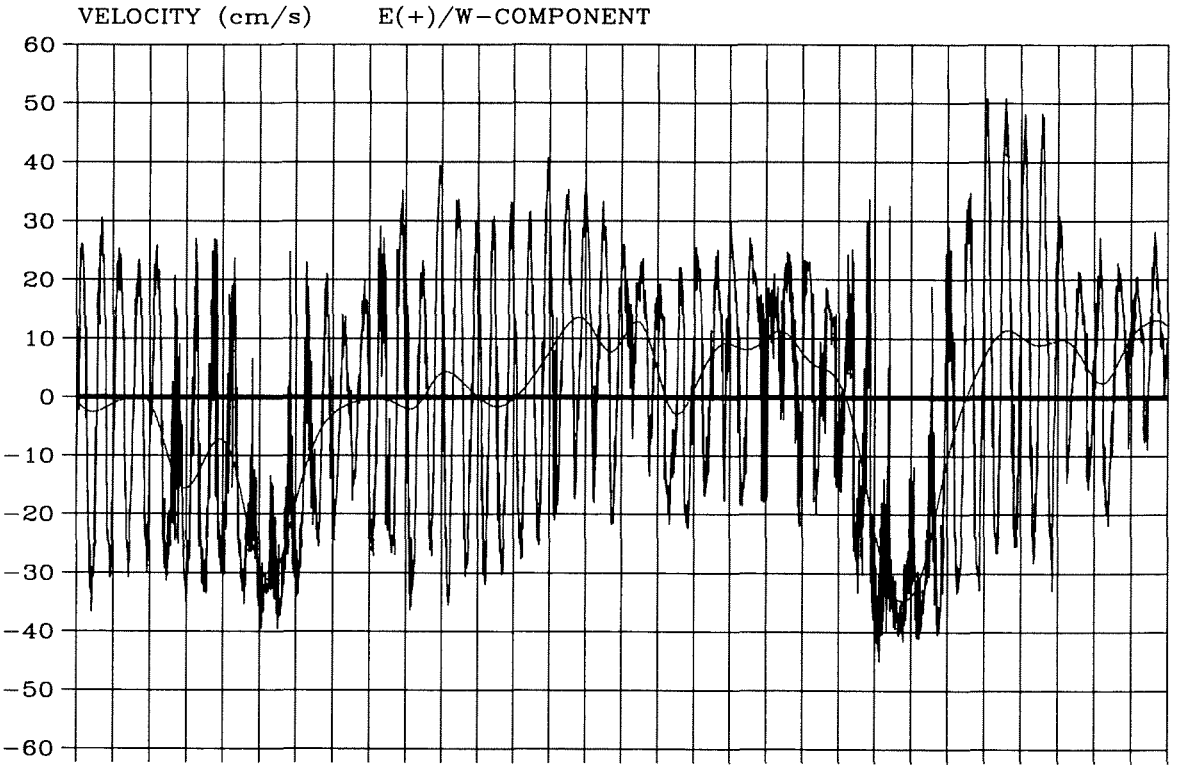
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-1-6 Current velocity distribution.





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 20.0 m Bottom depth : 220.0 m

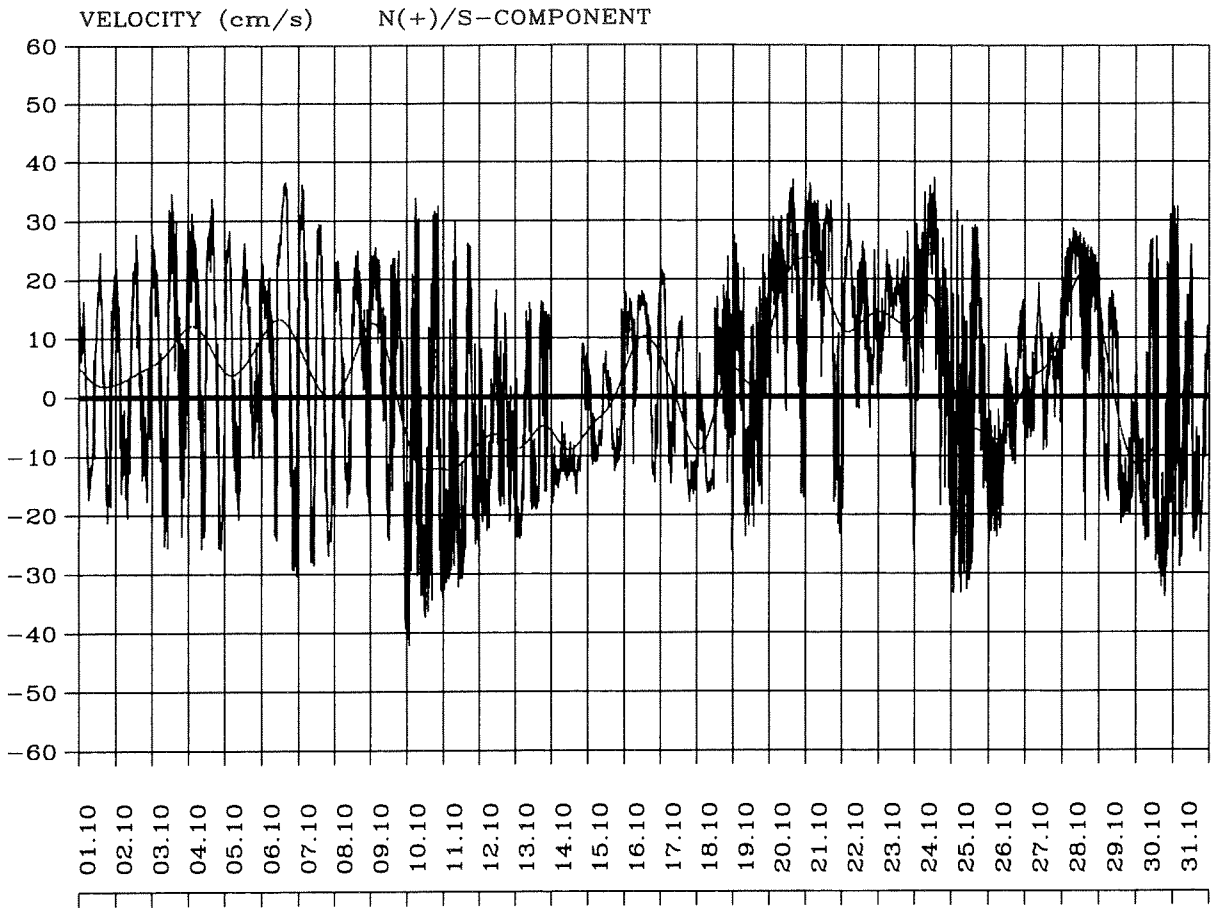
Time interval : 10.00 minutes. Instrument no. : 5839

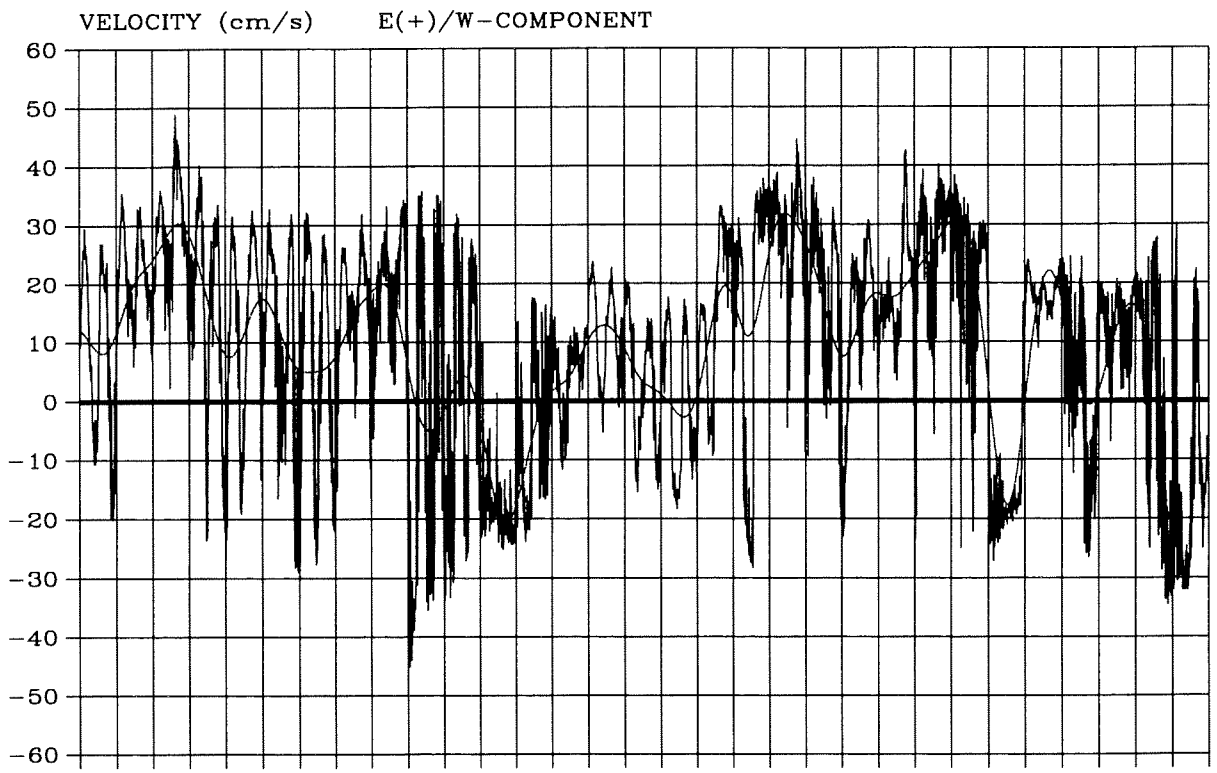
Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-1-6

Continues.....





East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 20.0 m Bottom depth : 220.0 m

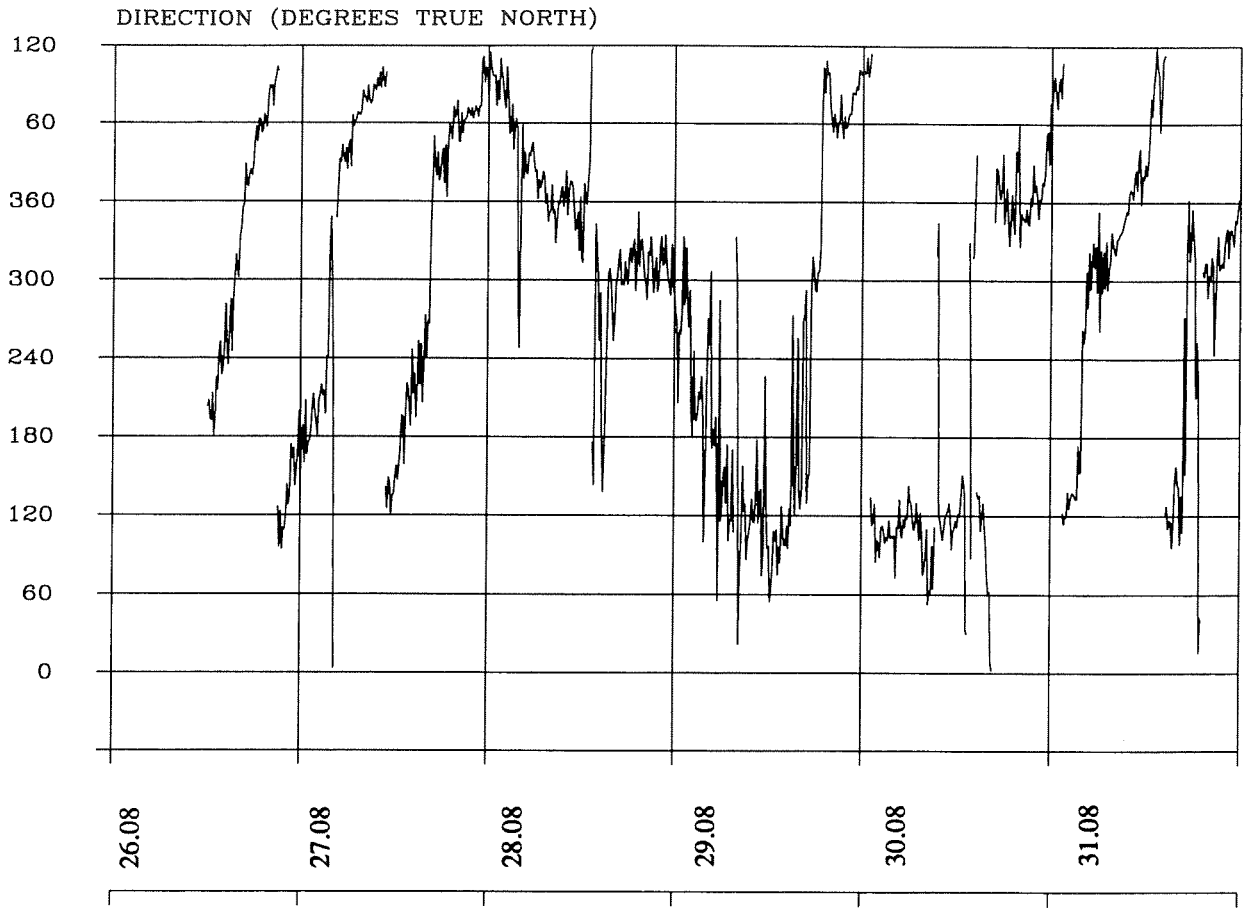
Time interval : 10.00 minutes. Instrument no. : 5839

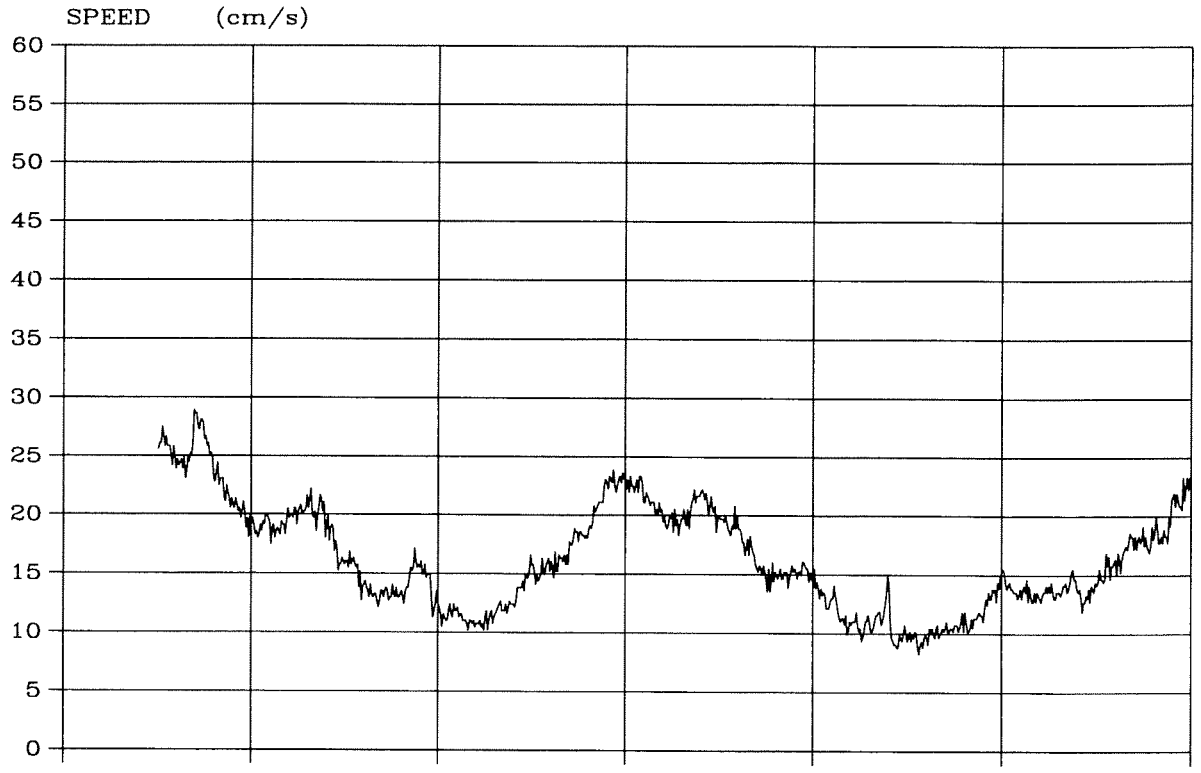
Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-1-6

Continues.....





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

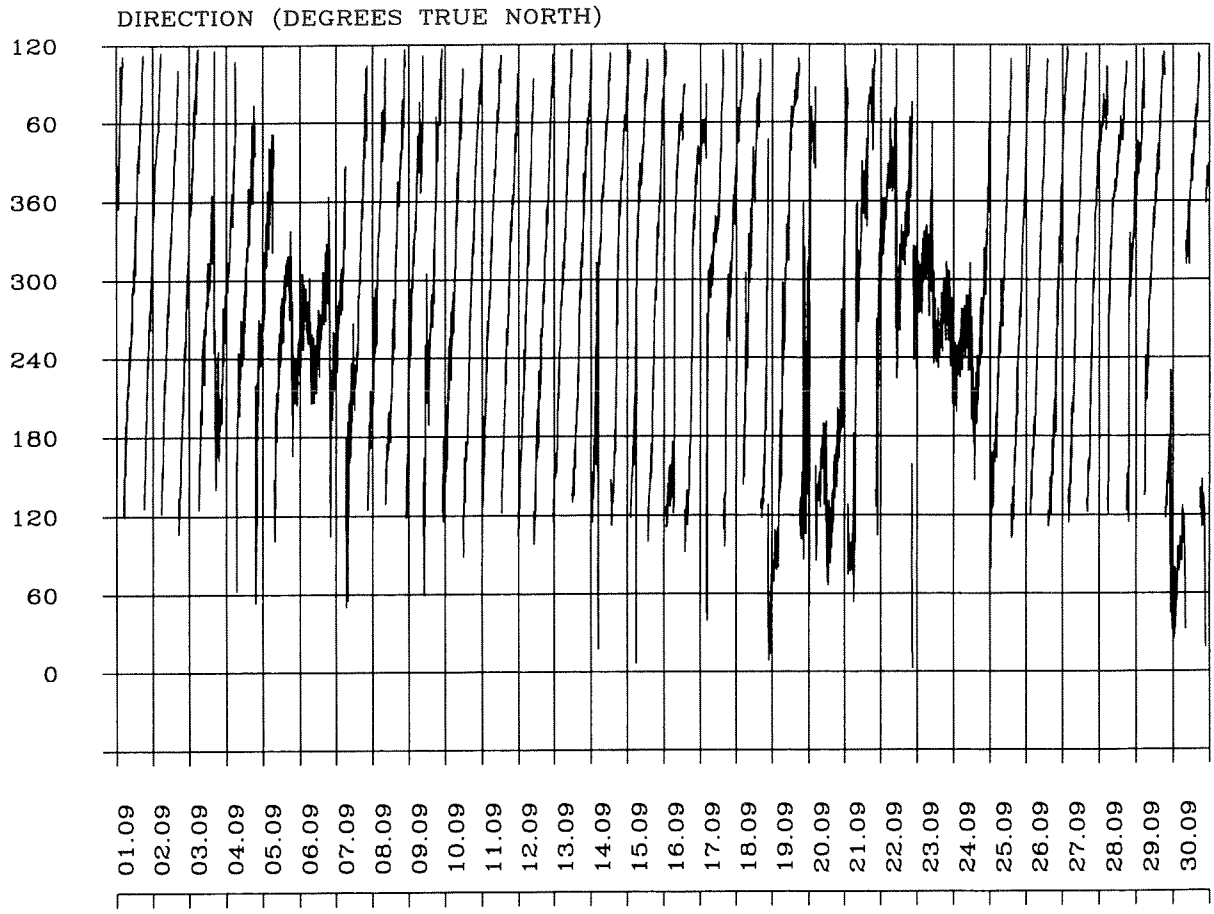
Instrument depth : 20.0 m Bottom depth : 220.0 m

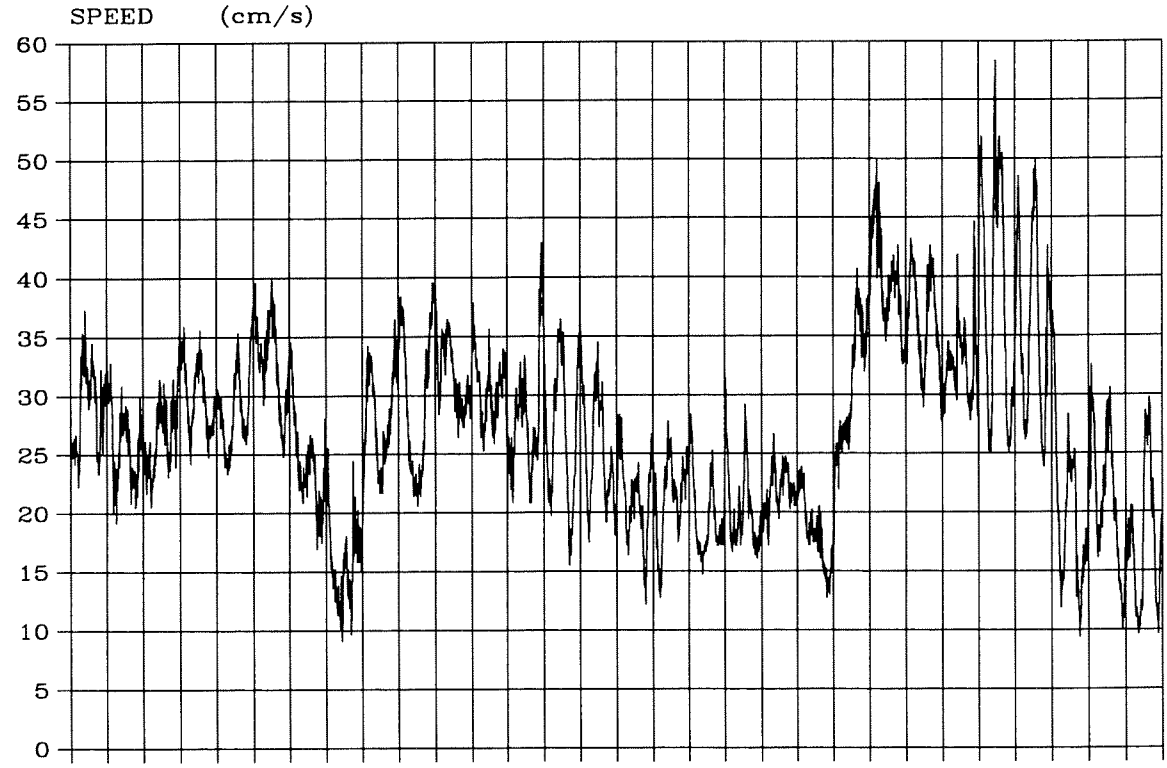
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-1-7 Speed and direction of current.





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 20.0 m Bottom depth : 220.0 m

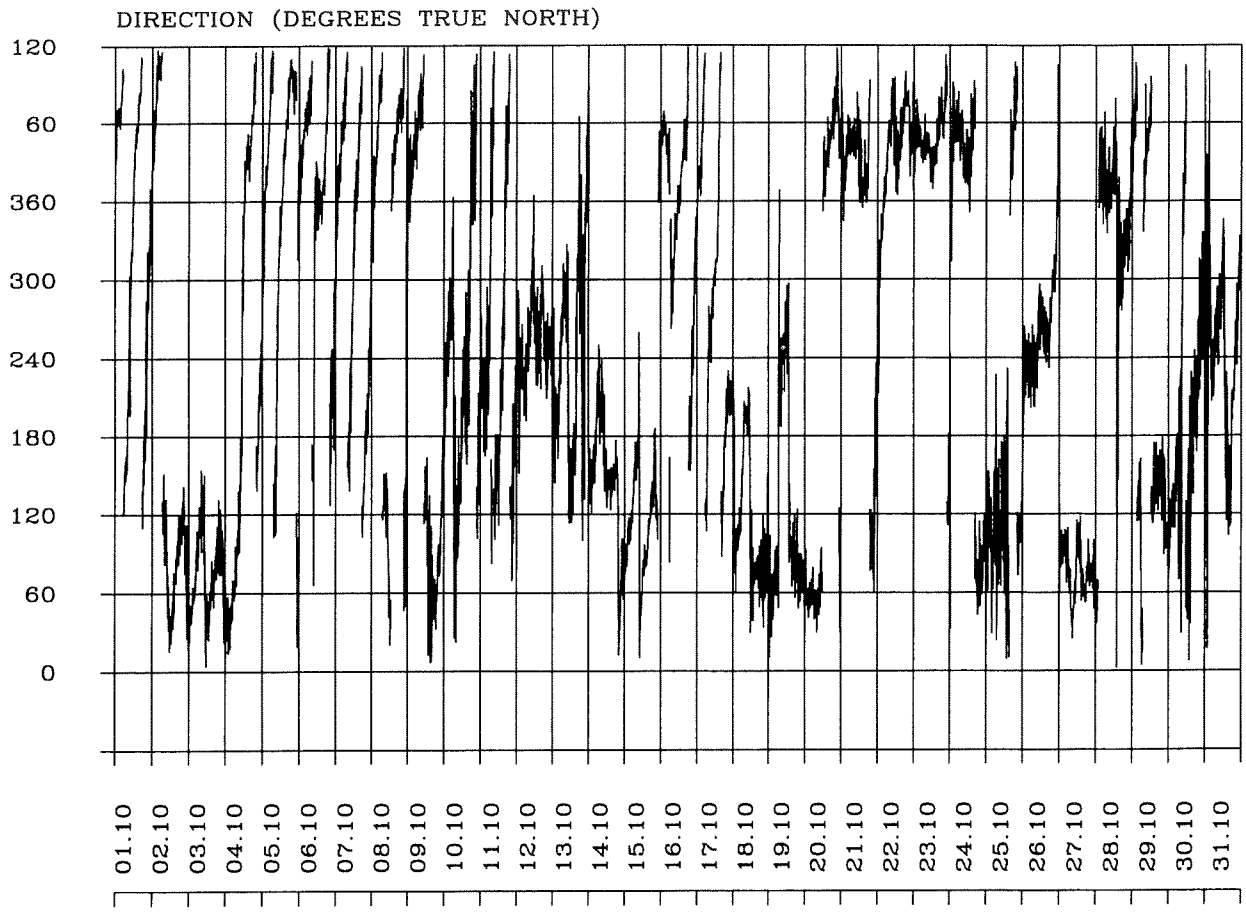
Time interval : 10.00 minutes. Instrument no. : 5839

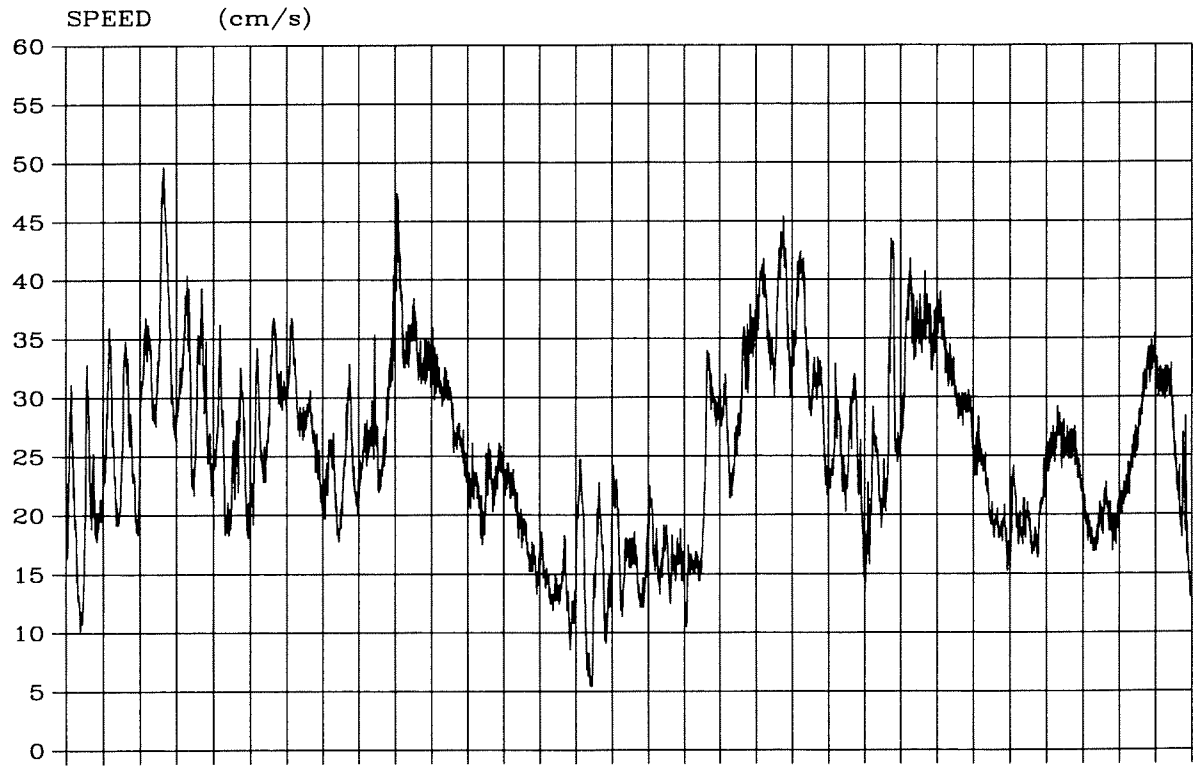
Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3–1–7

Continues.....





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 20.0 m Bottom depth : 220.0 m

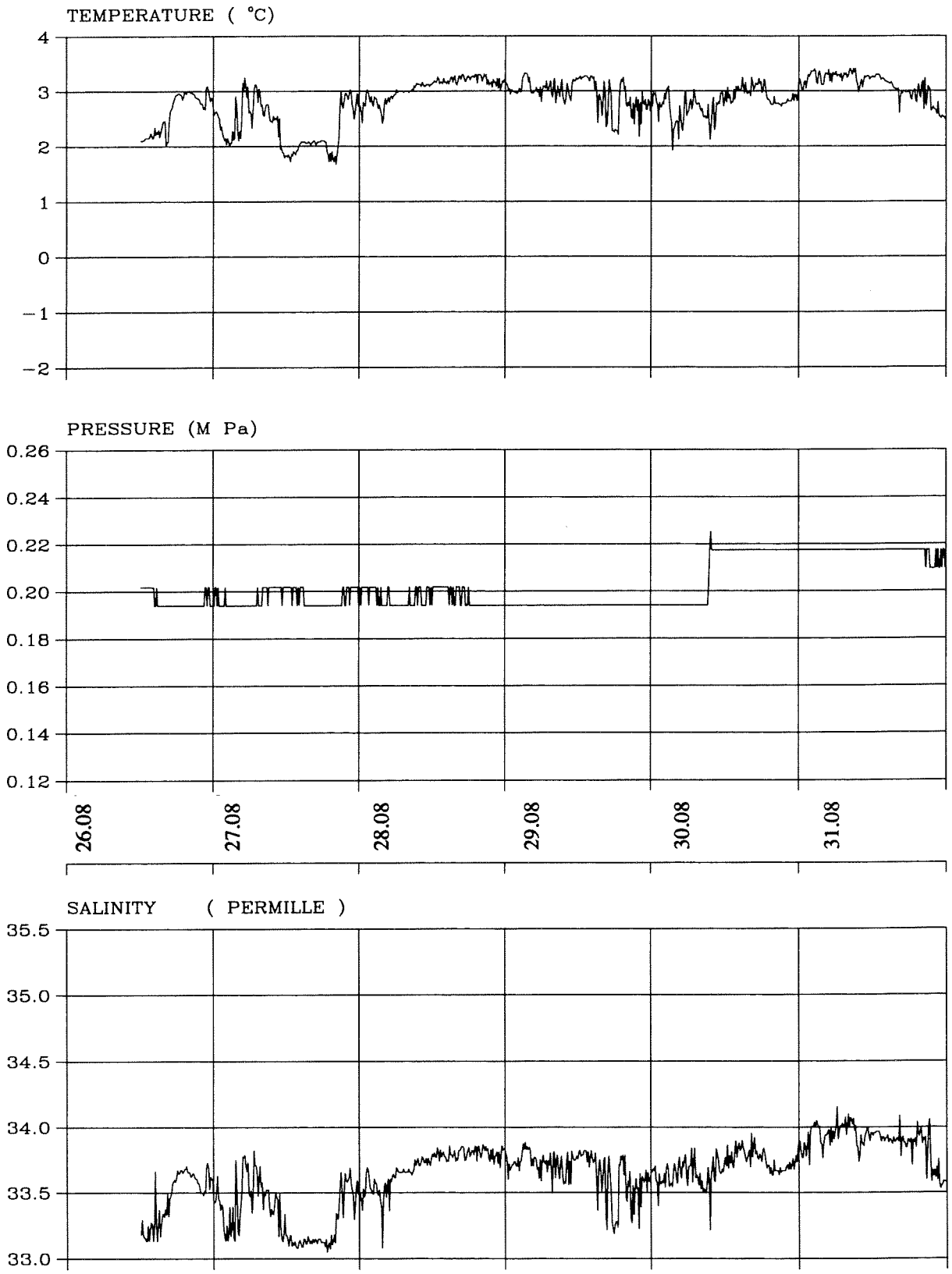
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-1-7

Continues.....



East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

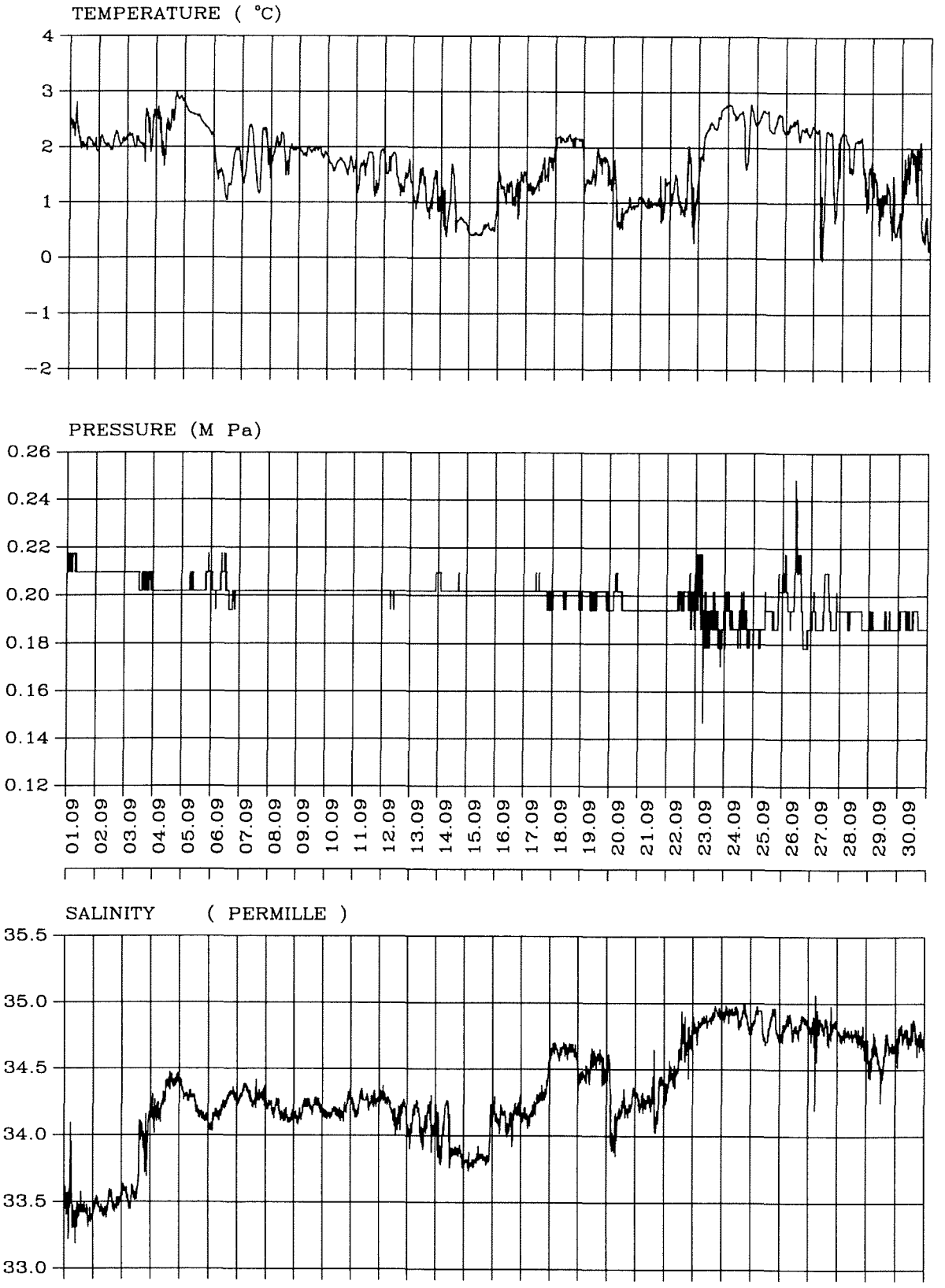
Instrument depth : 20.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-1-8 Temperature, pressure and salinity.



East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 20.0 m Bottom depth : 220.0 m

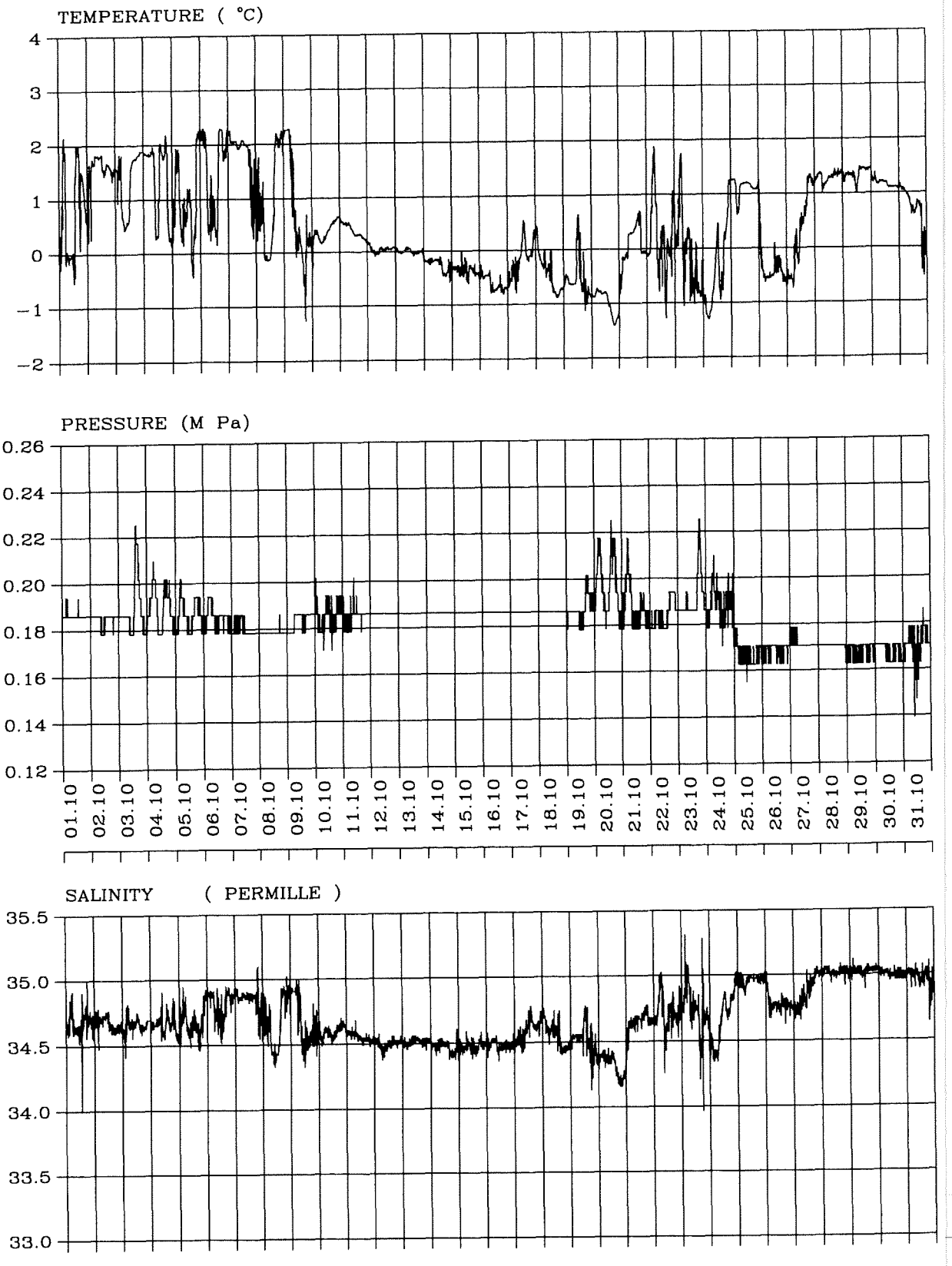
Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3–1–8

Continues.....



East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 20.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

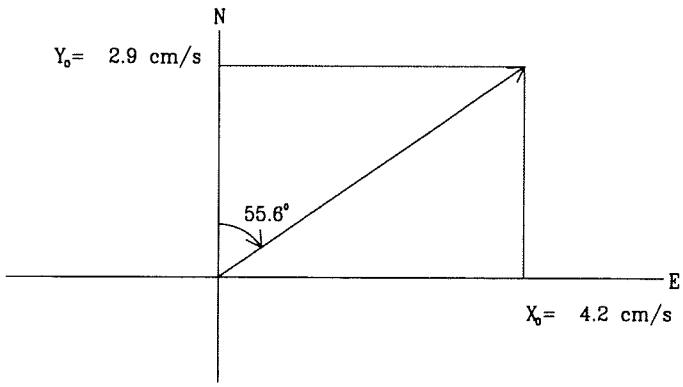
Fig. 3-1-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
Symbol	Period houres	Frequense °/hour	E/W		N/S		Major axis	Minor axis	θ_i	g_i	BETA.
			X_i cm/s	g_{xi} °	Y_i cm/s	g_{yi} °	A_i cm/s	B_i cm/s	°	°	°
MM	661.31	0.5	1.8	147.9	3.0	188.4	3.4	1.0	26.6	179.6	143.6
MSF	354.37	1.0	1.6	347.8	2.8	71.0	2.8	1.6	185.5	248.0	168.2
2Q1	28.01	12.9	1.5	103.0	0.8	116.7	1.6	0.2	62.2	106.0	88.9
O1	25.82	13.9	0.6	153.5	1.8	121.9	1.9	-0.3	15.1	124.2	35.3
NO1	24.83	14.5	1.5	122.6	0.6	226.7	4.7	1.8	276.5	300.1	180.0
K1	23.93	15.0	1.4	225.8	0.8	99.2	1.6	-0.6	112.9	235.5	72.3
OO1	22.31	16.1	0.8	283.9	0.8	28.1	1.2	0.9	317.4	63.7	14.8
EPS2	13.13	27.4	2.3	248.0	2.0	134.2	2.3	-1.5	124.9	271.9	139.4
MU2	12.87	28.0	0.5	333.0	0.9	321.9	1.0	-0.1	27.9	324.4	156.1
N2	12.66	28.4	2.9	22.9	2.7	298.8	3.0	-2.6	64.4	0.2	148.1
M2	12.42	29.0	11.2	106.0	11.3	21.3	11.7	-10.6	224.1	242.8	174.7
L2	12.19	29.5	7.2	255.2	7.7	154.4	6.5	-5.3	145.6	305.3	21.6
S2	12.00	30.0	2.0	131.9	1.1	60.2	2.0	-1.1	75.8	124.4	154.3
ETA2	11.75	30.6	2.6	265.2	1.3	210.1	2.3	-0.8	71.6	258.2	83.7

MEAN CURRENT



East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 20.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-1-9 Harmonic analysis of current.

A discription of the model and its definitions :

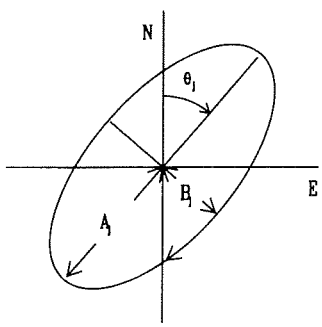
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

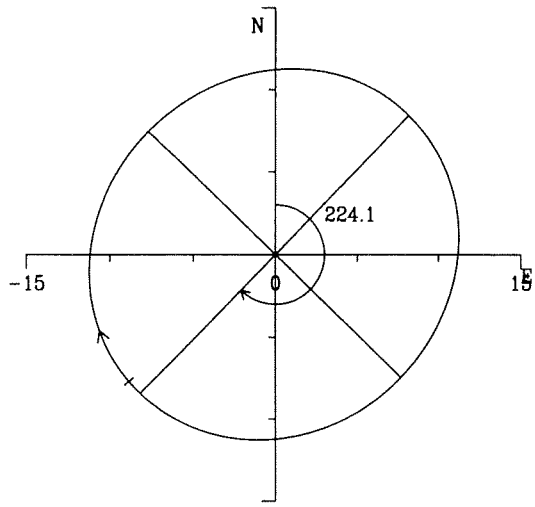
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

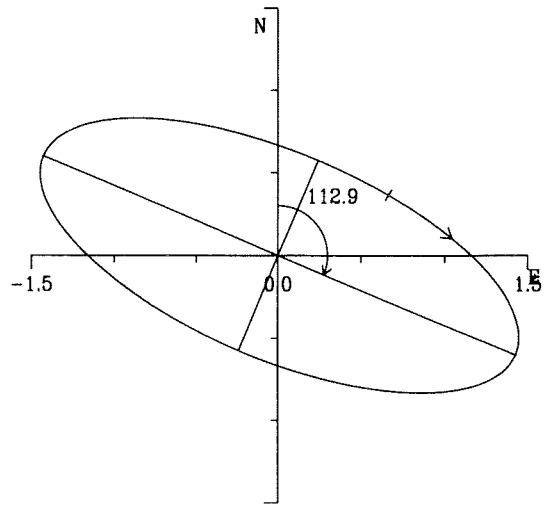
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1982 28.09 H. 1700 , marked with a line on the ellipse.

M2-ellipse



K1-ellipse



East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 20.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-1-10 M2 and k1 ellipse.

MEAN VALUES

Speed	25.46 cm/s
NS-component	2.96 cm/s
EW-component	4.25 cm/s
Velocity	5.18 cm/s
in direction	55 °

MAXIMUM

Velocity	58.34 cm/s
in direction	17 °
Temperature	3.41 °C
Salinity	35.314

MINIMUM

Velocity	0.00 cm/s
in direction	247 °
Temperature	-1.40 °C
Salinity	33.048

East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 20.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5839

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

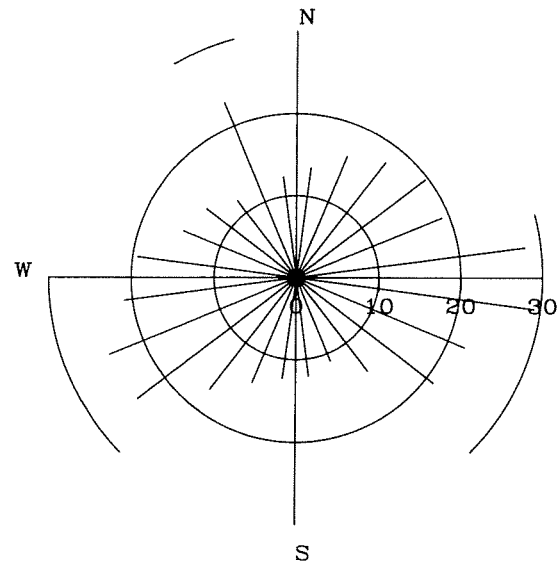
Fig. 3-1-11

Overall mean values.
Overall maximum values.
Overall minimum values.

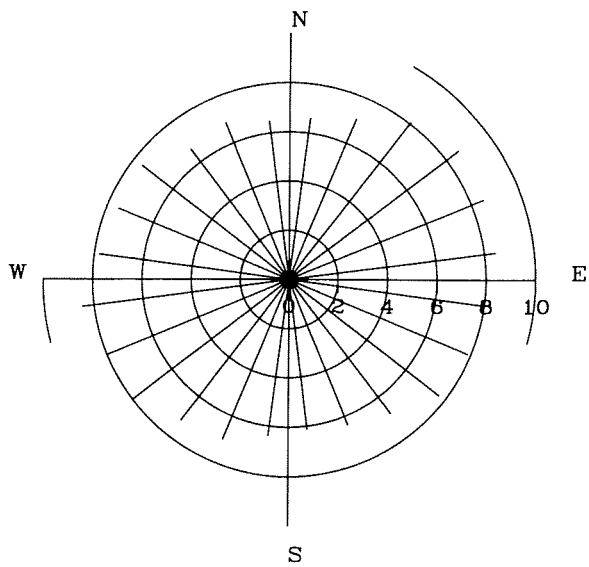
Mooring: *3*

Depth: *95 m*

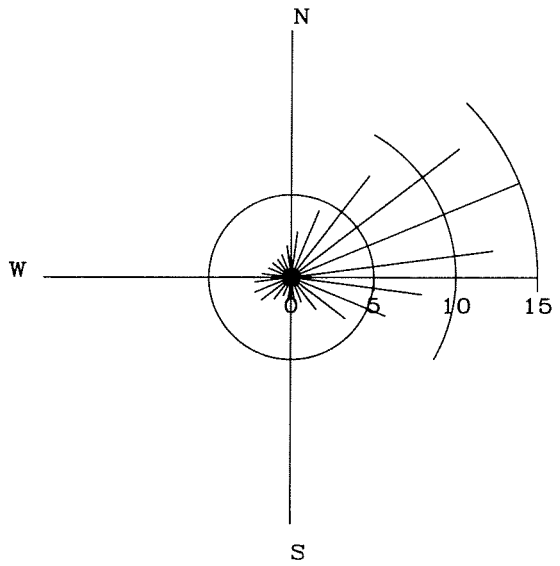
CURRENT VELOCITY DISTRIBUTION



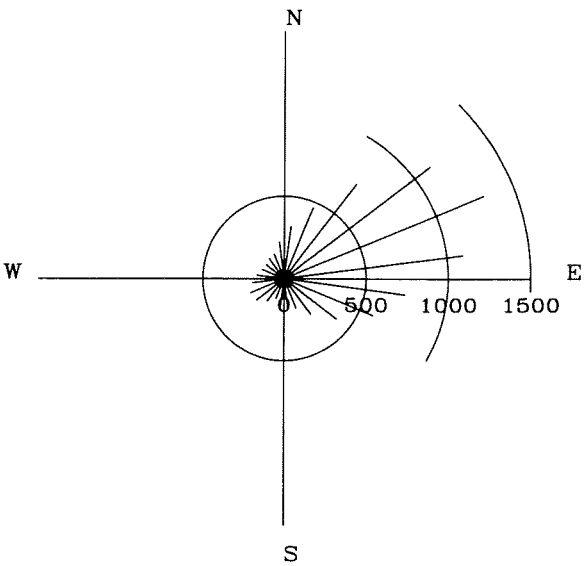
Maximum velocity (cm/s)



Mean velocity (cm/s)



Relative flux in %



Number measured

Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

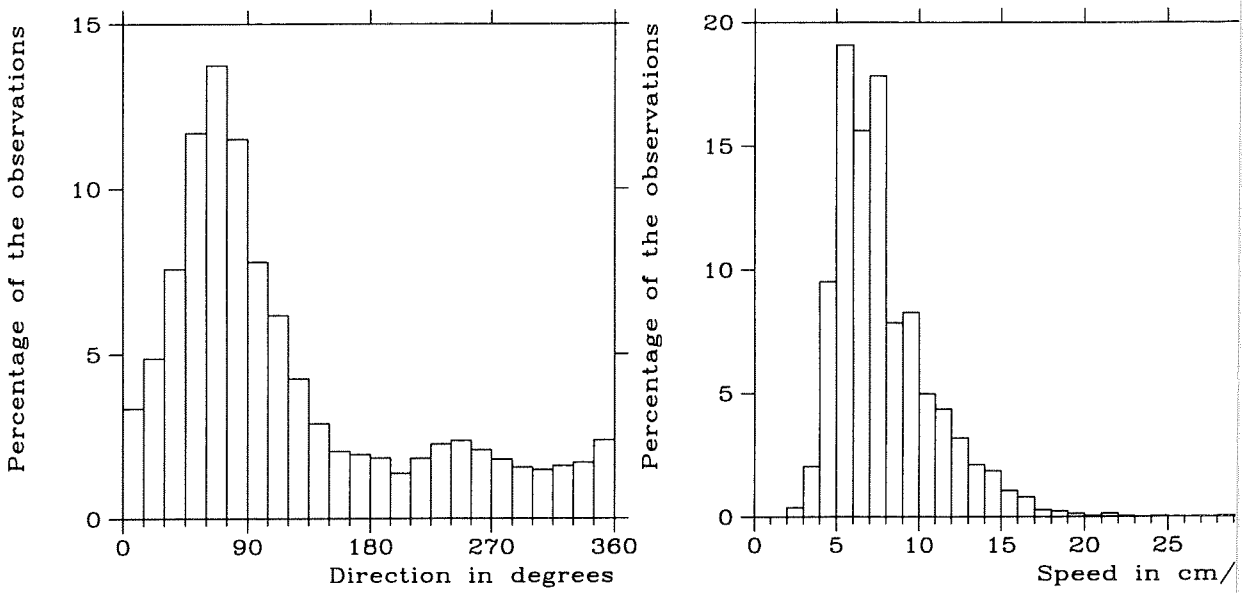
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

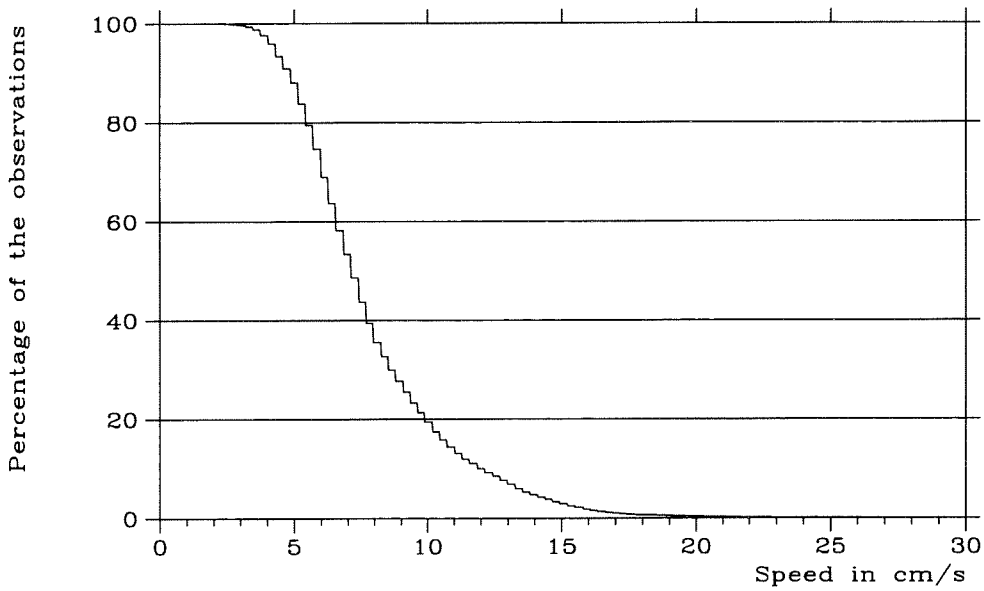
IMR

Fig. 3-2-1 Current velocity distribution.

HISTOGRAM



CURRENT SPEED DISTRIBUTION



Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 95.0 m Bottom depth : 220.0 m

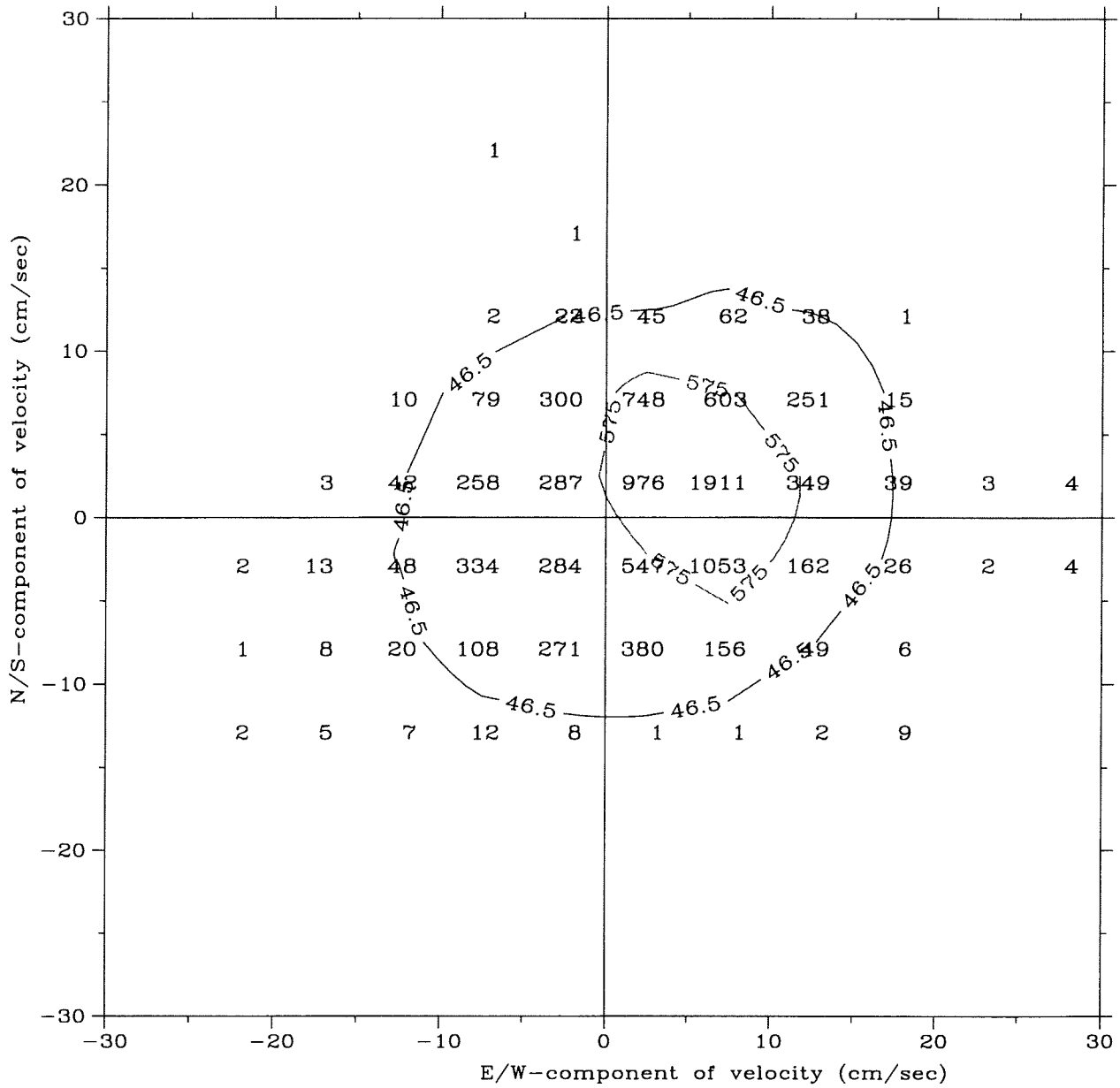
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-2-2 Histogram of speed and direction.

VELOCITY DISTRIBUTION DIAGRAM



Number of observations : 9571

Isoline for 50% and 96%

Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

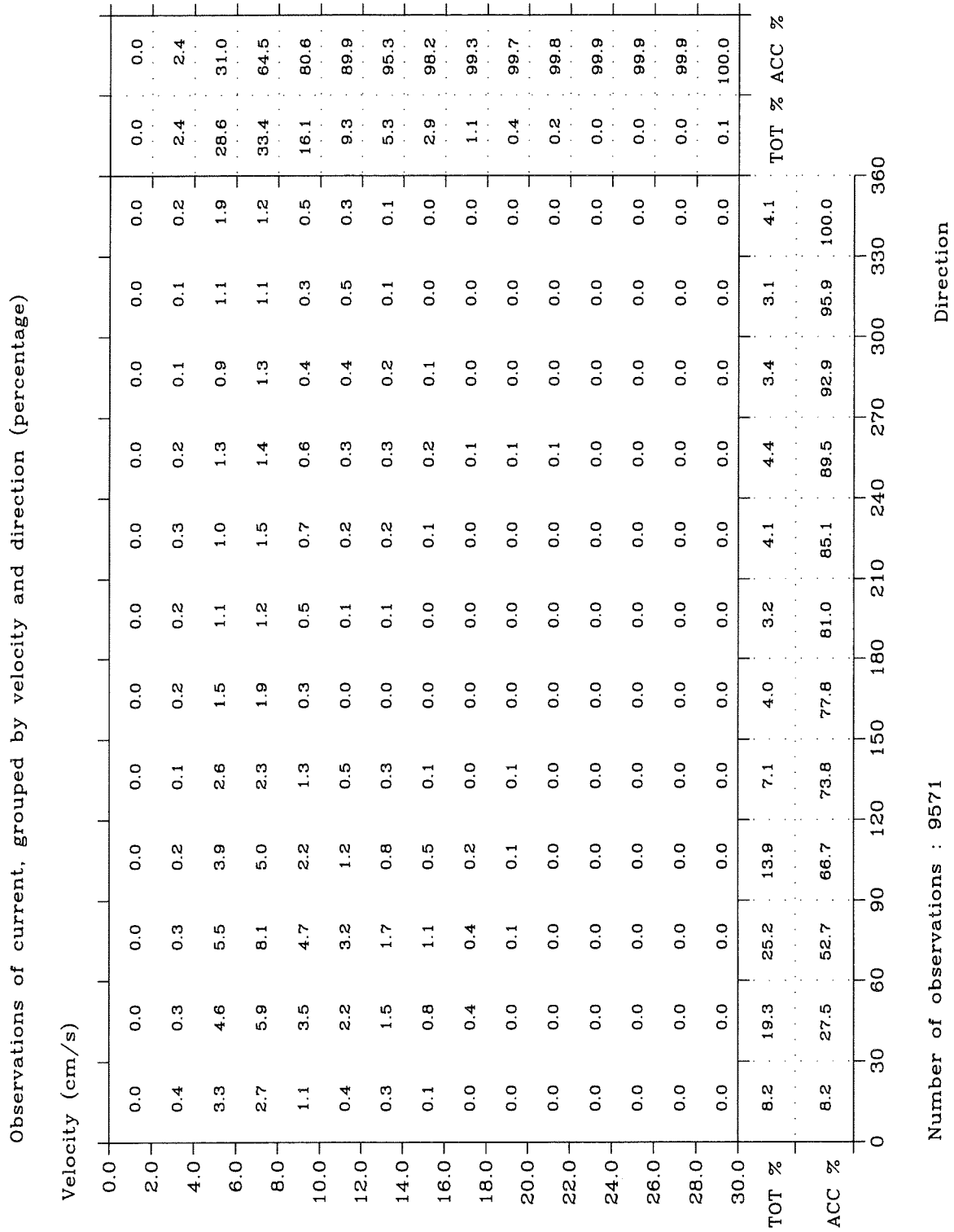
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-2-3 Velocity distribution diagram.

DIRECTION DISTRIBUTION OF CURRENT VELOCITY



Number of observations : 9571

East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

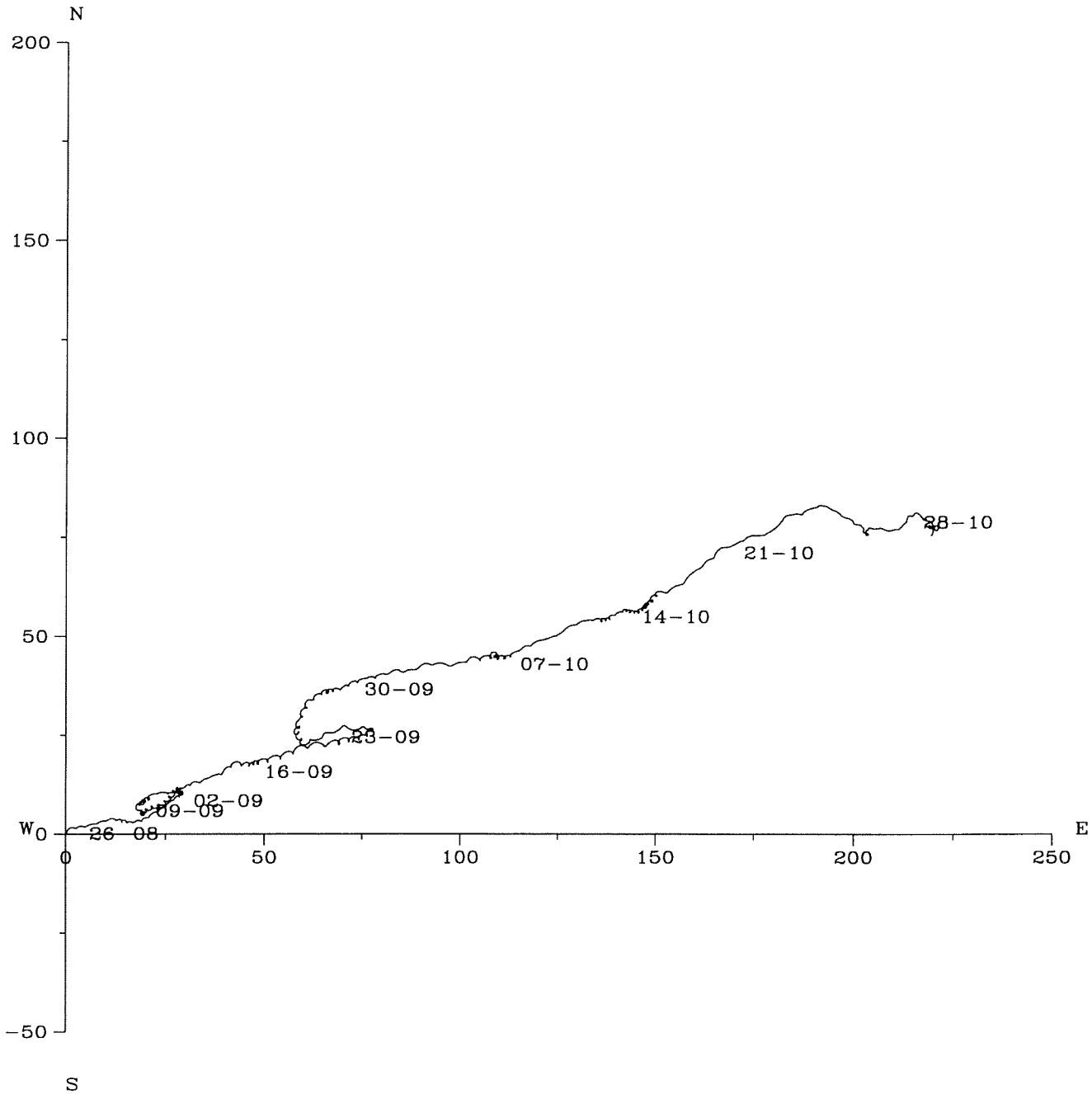
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-2-4 Velocity distribution table.

PROGRESSIVE VECTOR DIAGRAM



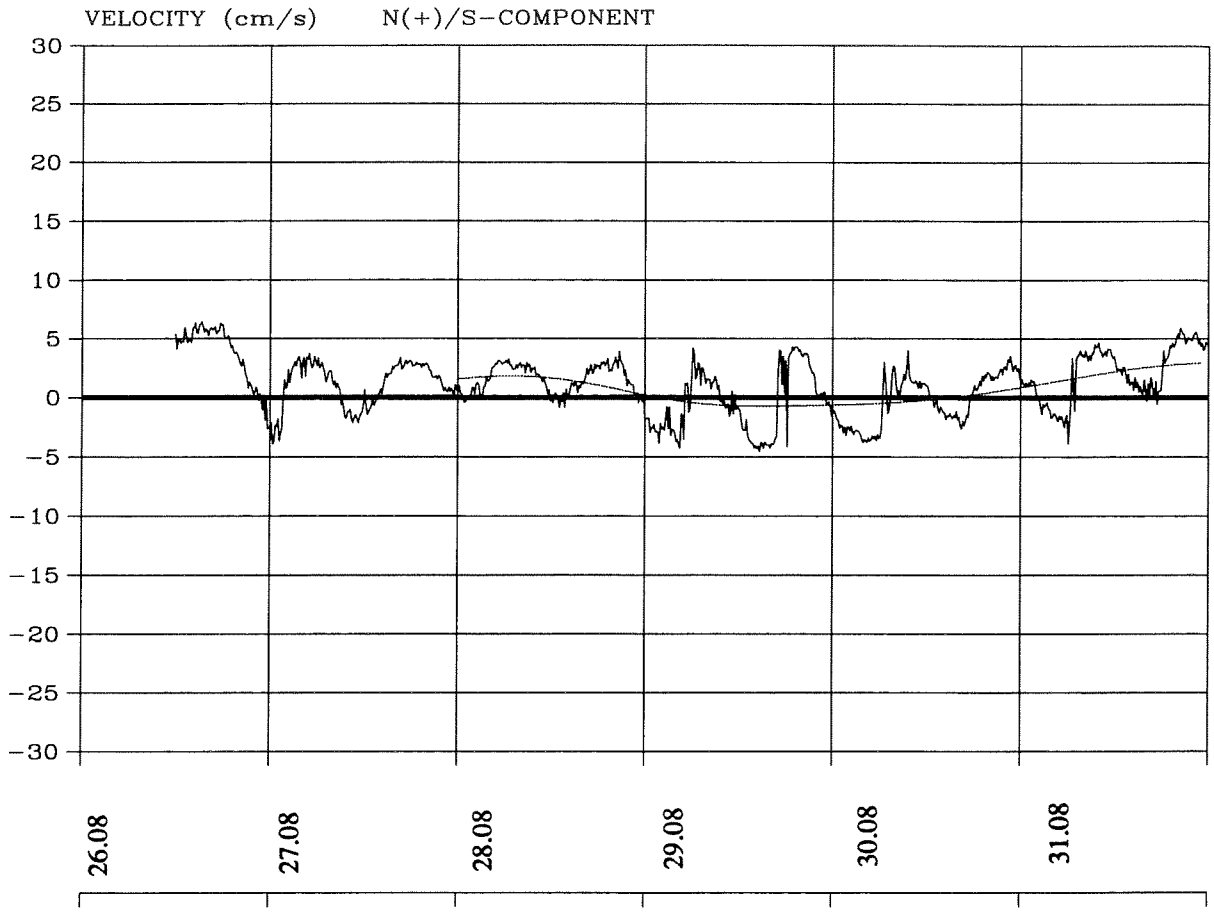
Units in km

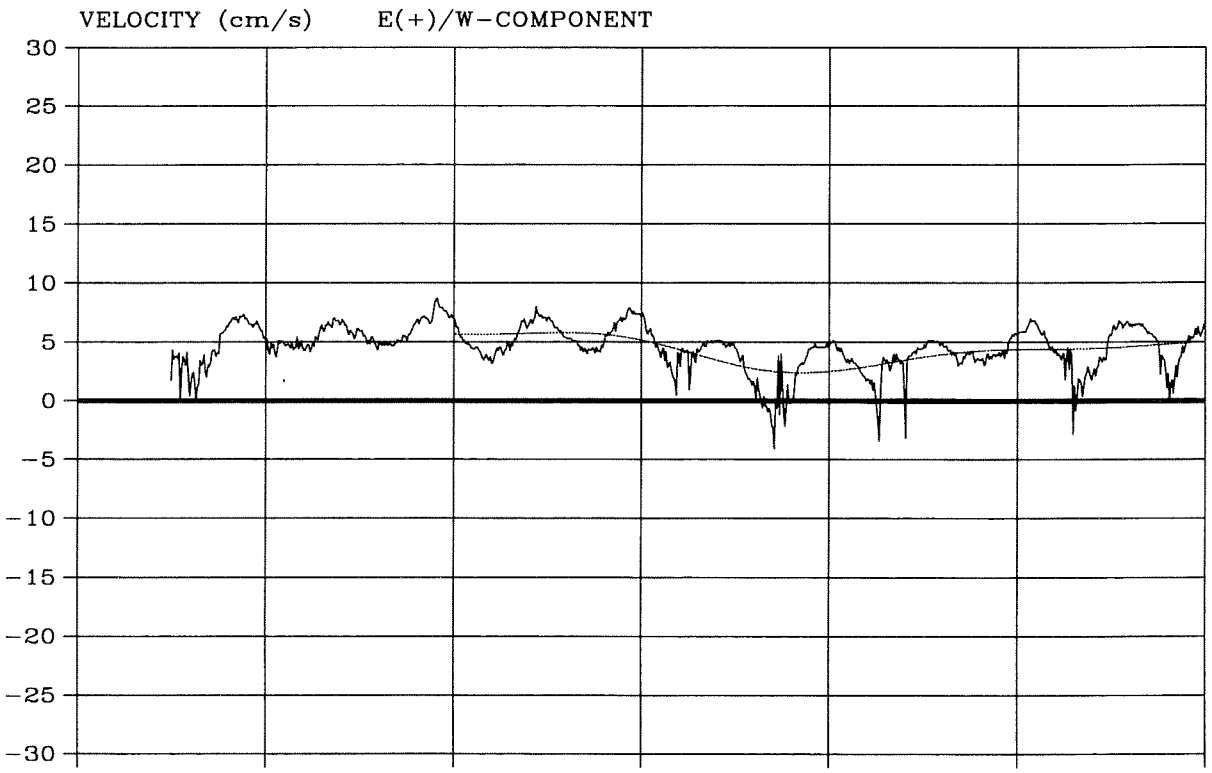
Number of observations : 9571

East of Hopen Island, Barents Sea
Position : N 76° 34.50′ E 35° 30.35′
Instrument depth : 95.0 m Bottom depth : 220.0 m
Time interval : 10.00 minutes. Instrument no. : 5853
Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-2-5 Progressive vector diagram.





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

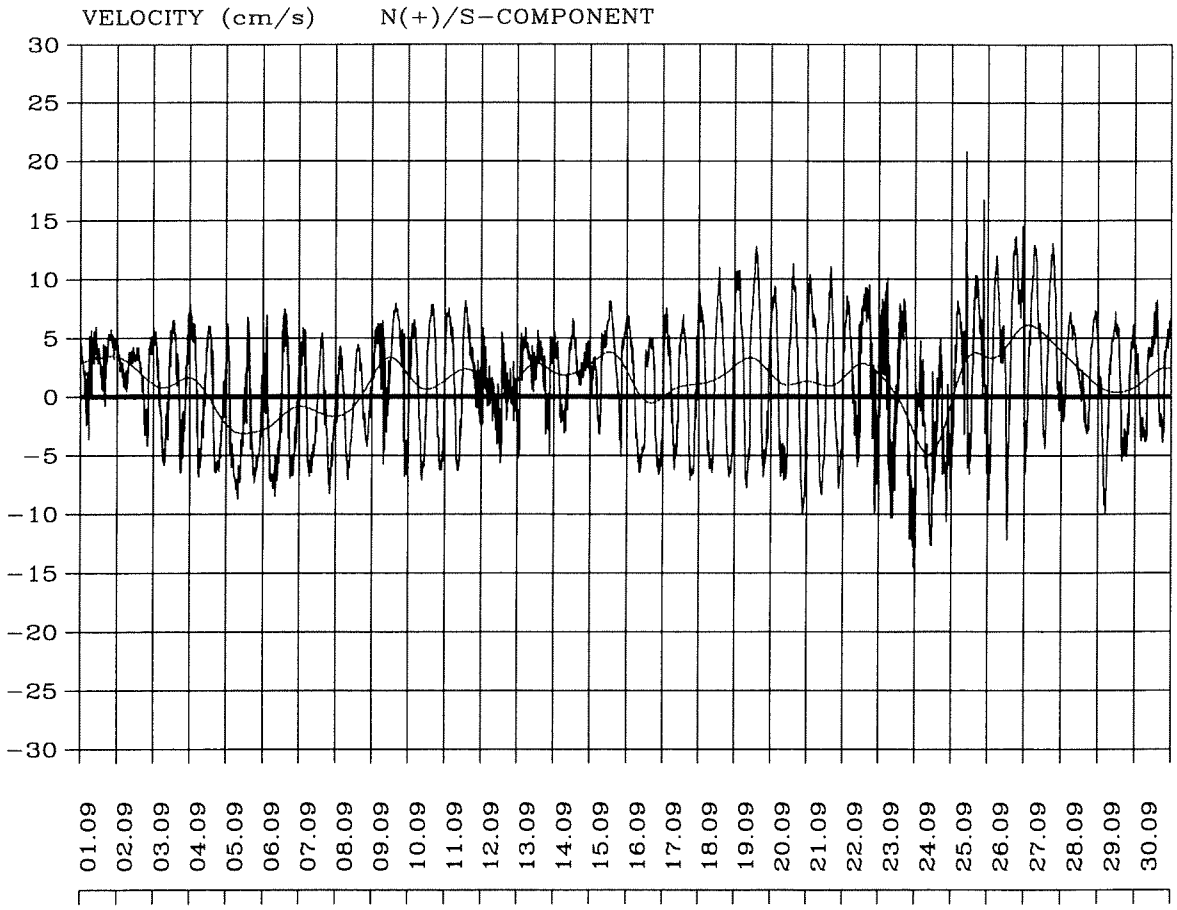
Instrument depth : 95.0 m Bottom depth : 220.0 m

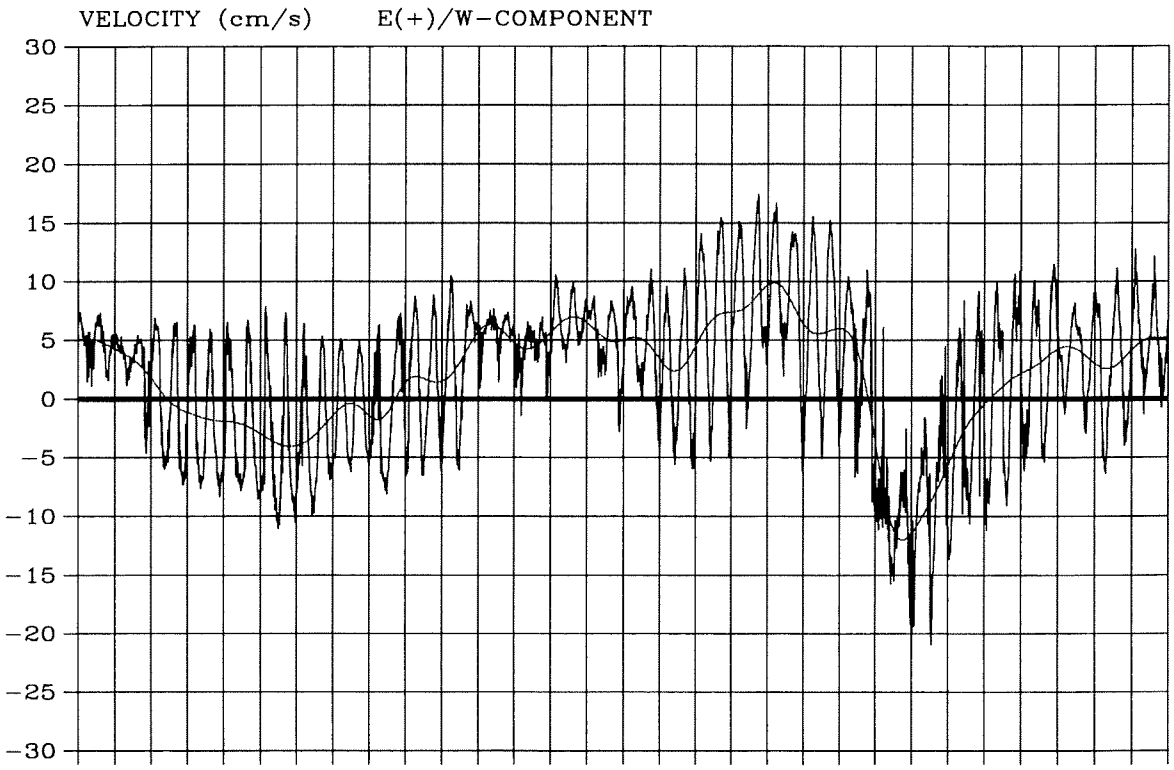
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-2-6 Current velocity distribution.





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

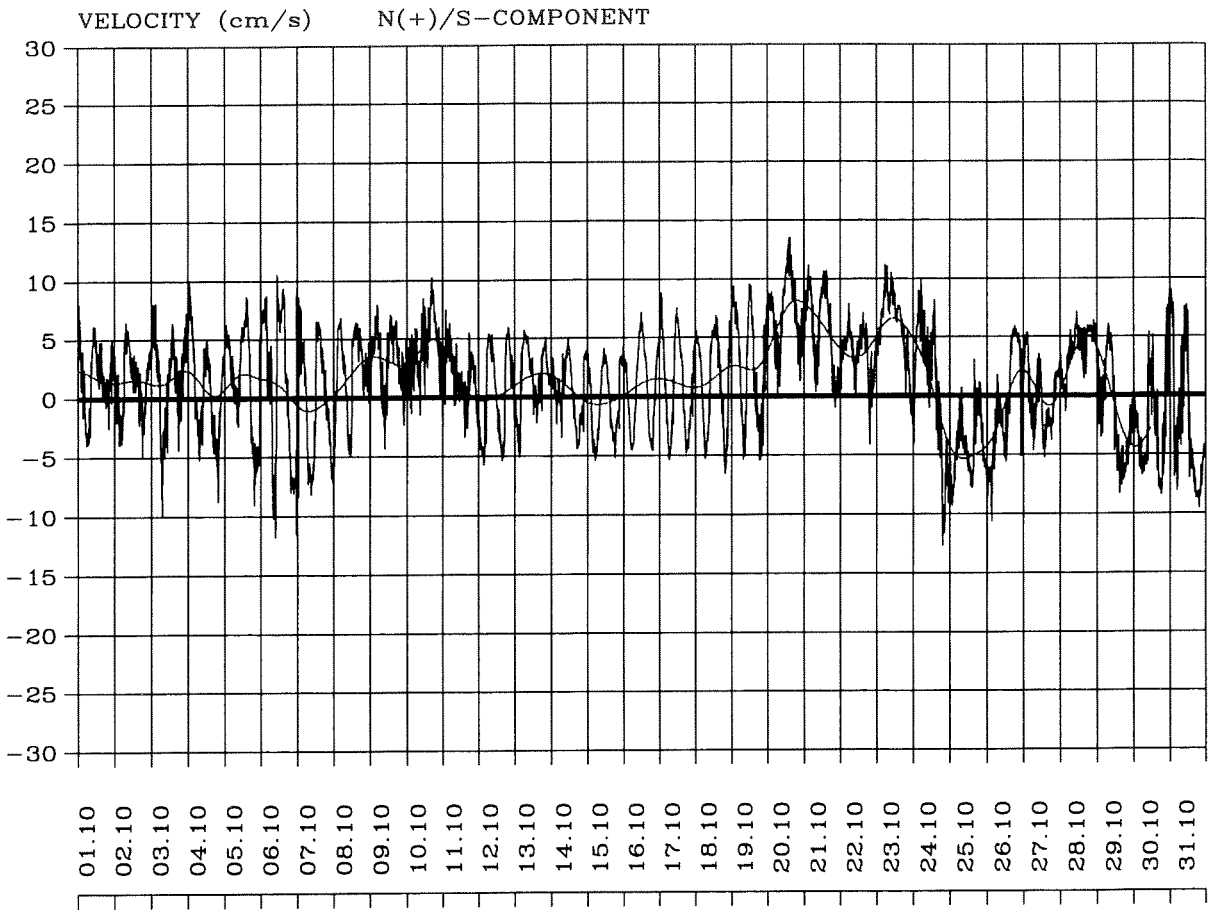
Time interval : 10.00 minutes. Instrument no. : 5853

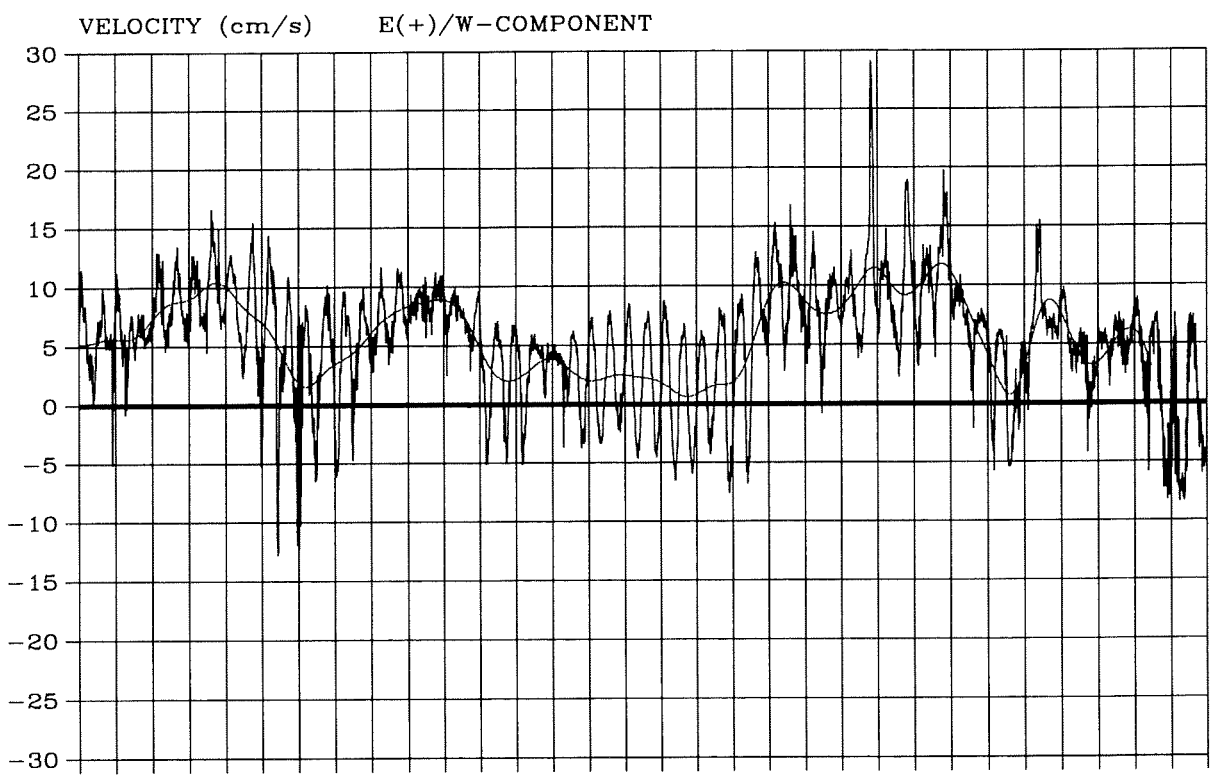
Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-2-6

Continues.....





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

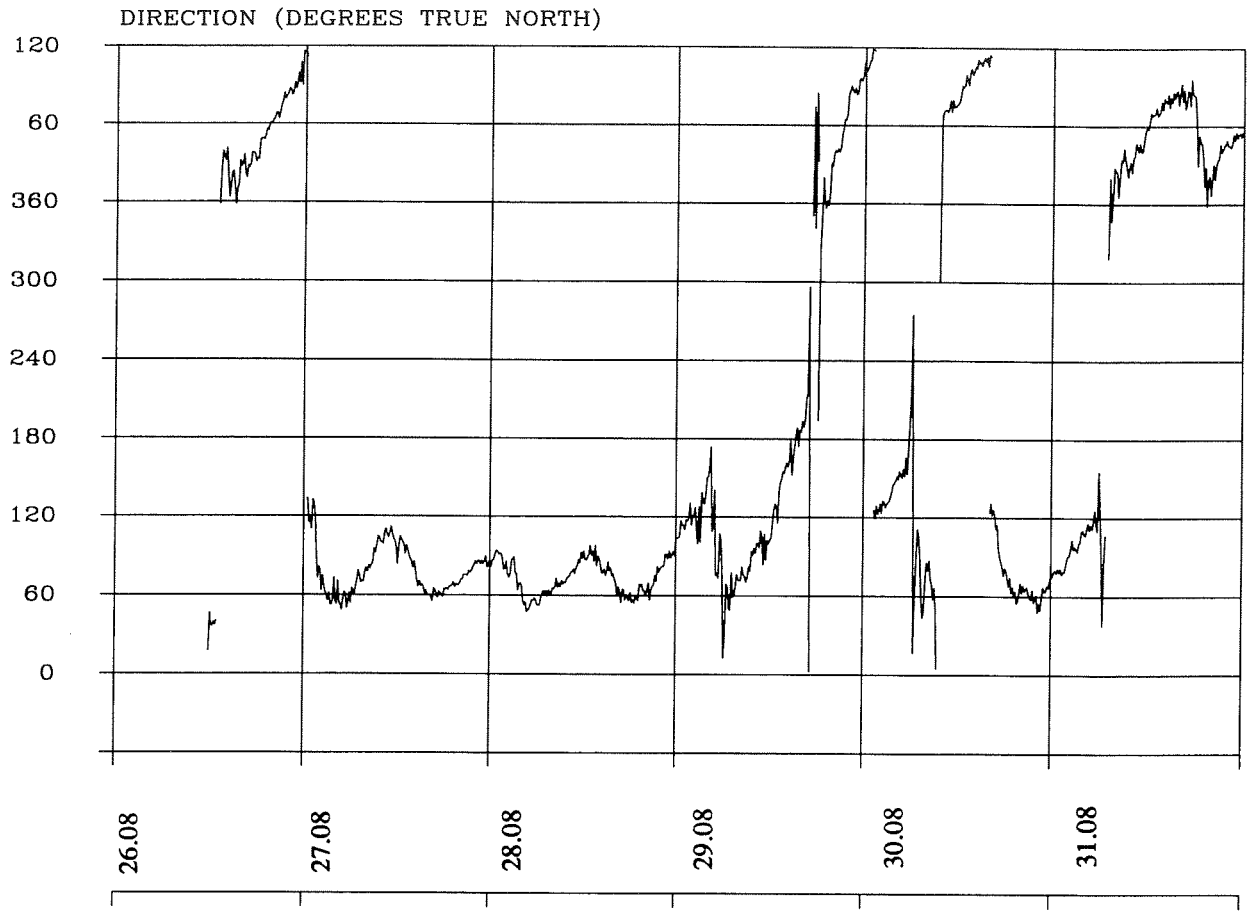
Time interval : 10.00 minutes. Instrument no. : 5853

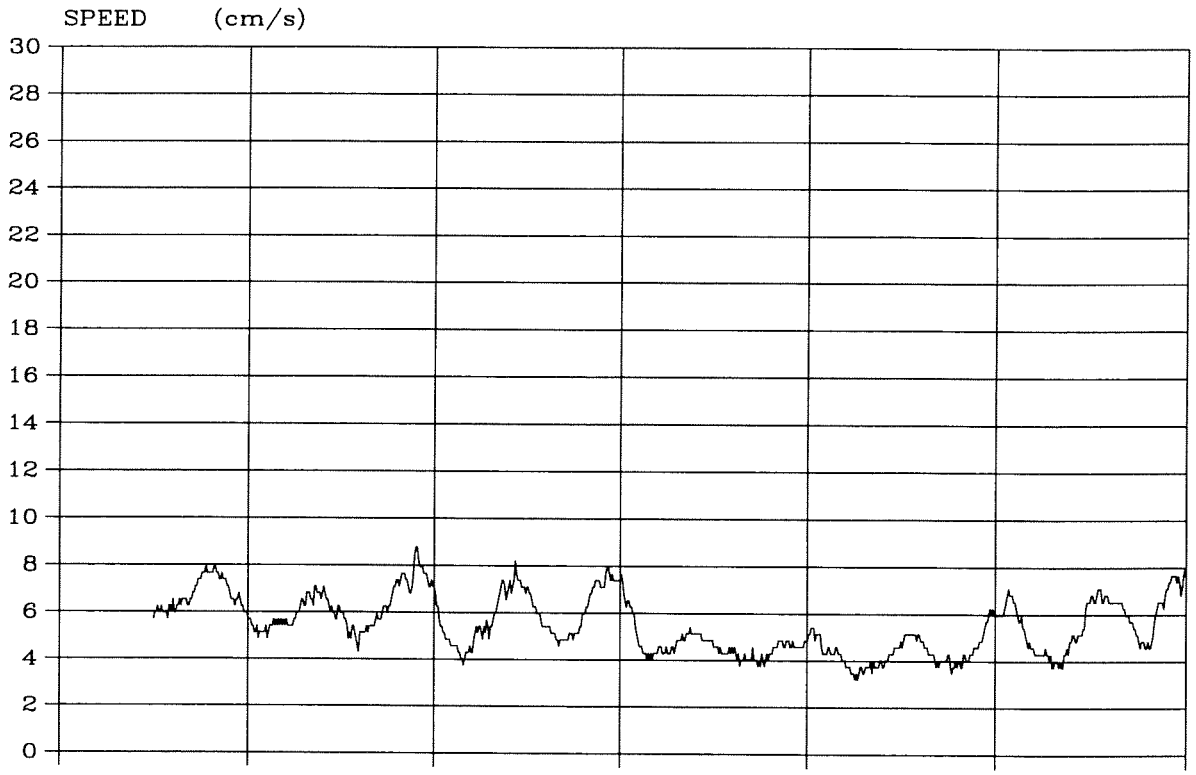
Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-2-6

Continues.....





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

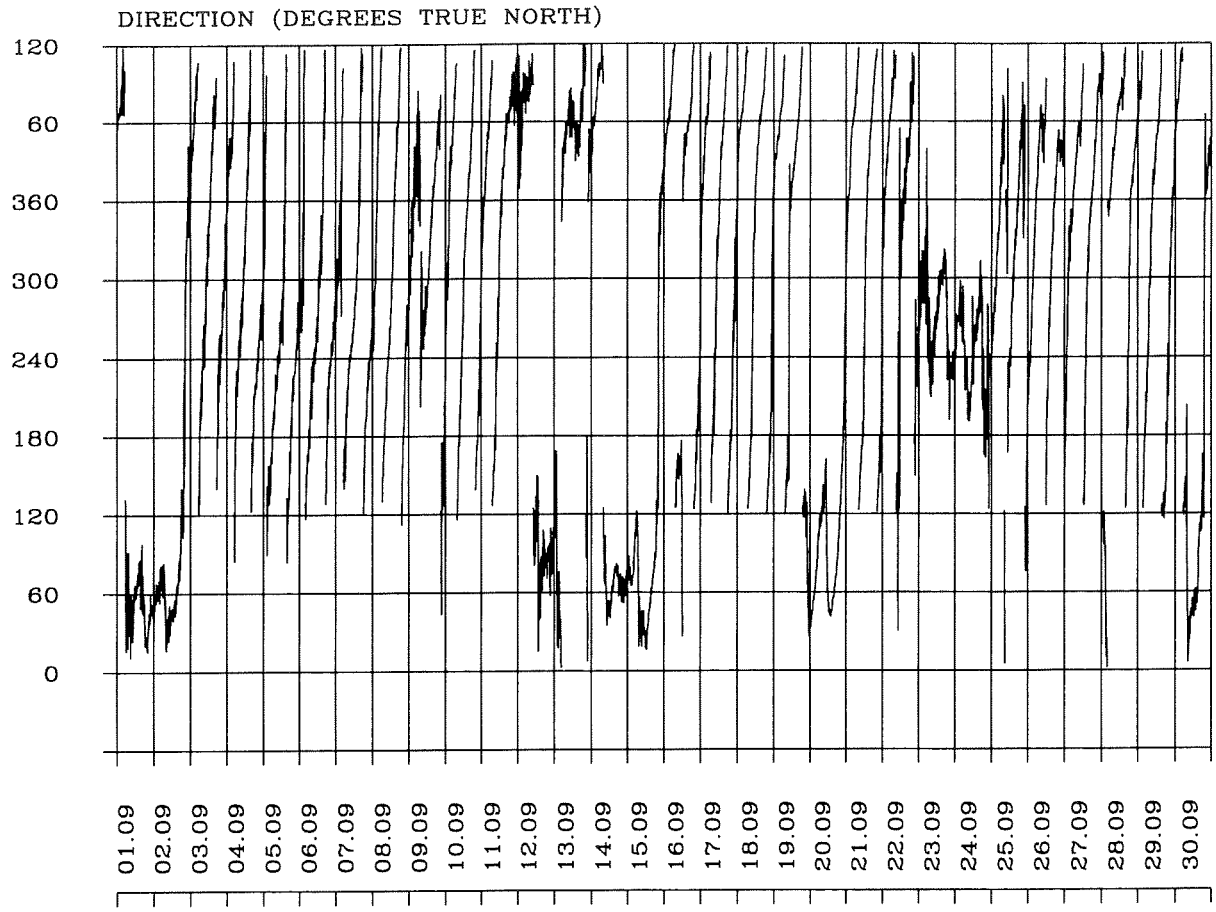
Instrument depth : 95.0 m Bottom depth : 220.0 m

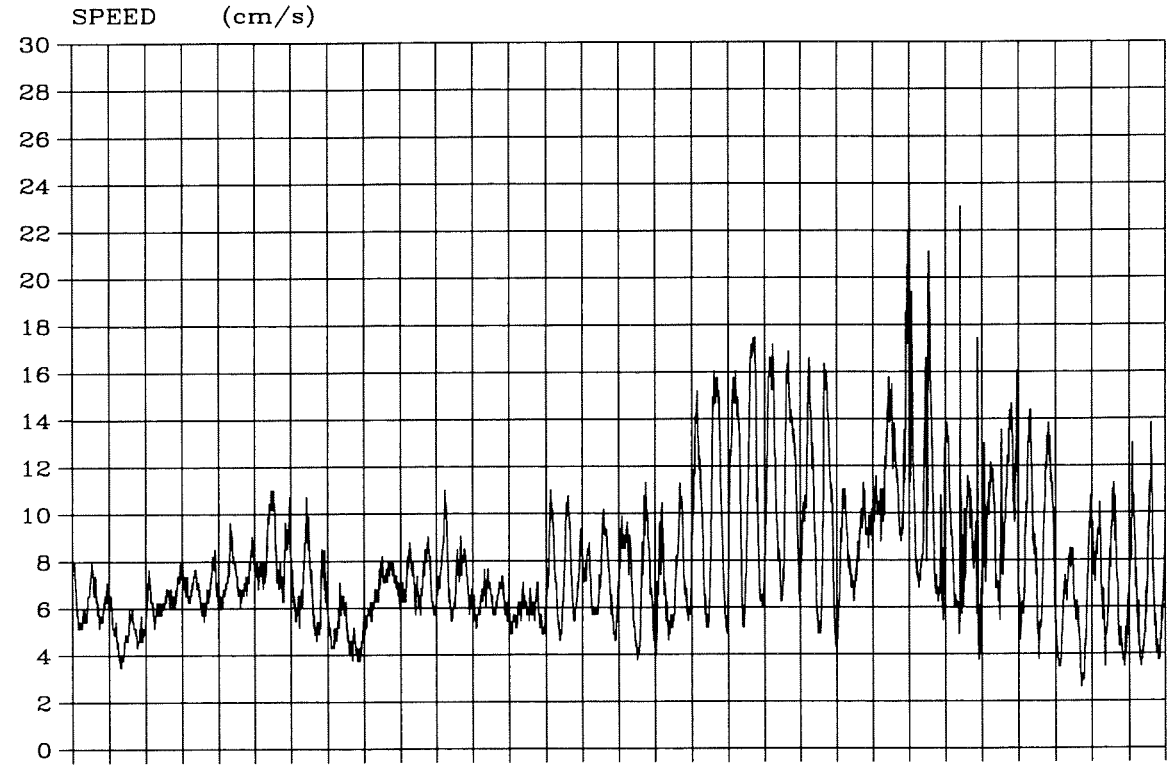
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-2-7 Speed and direction of current.





East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

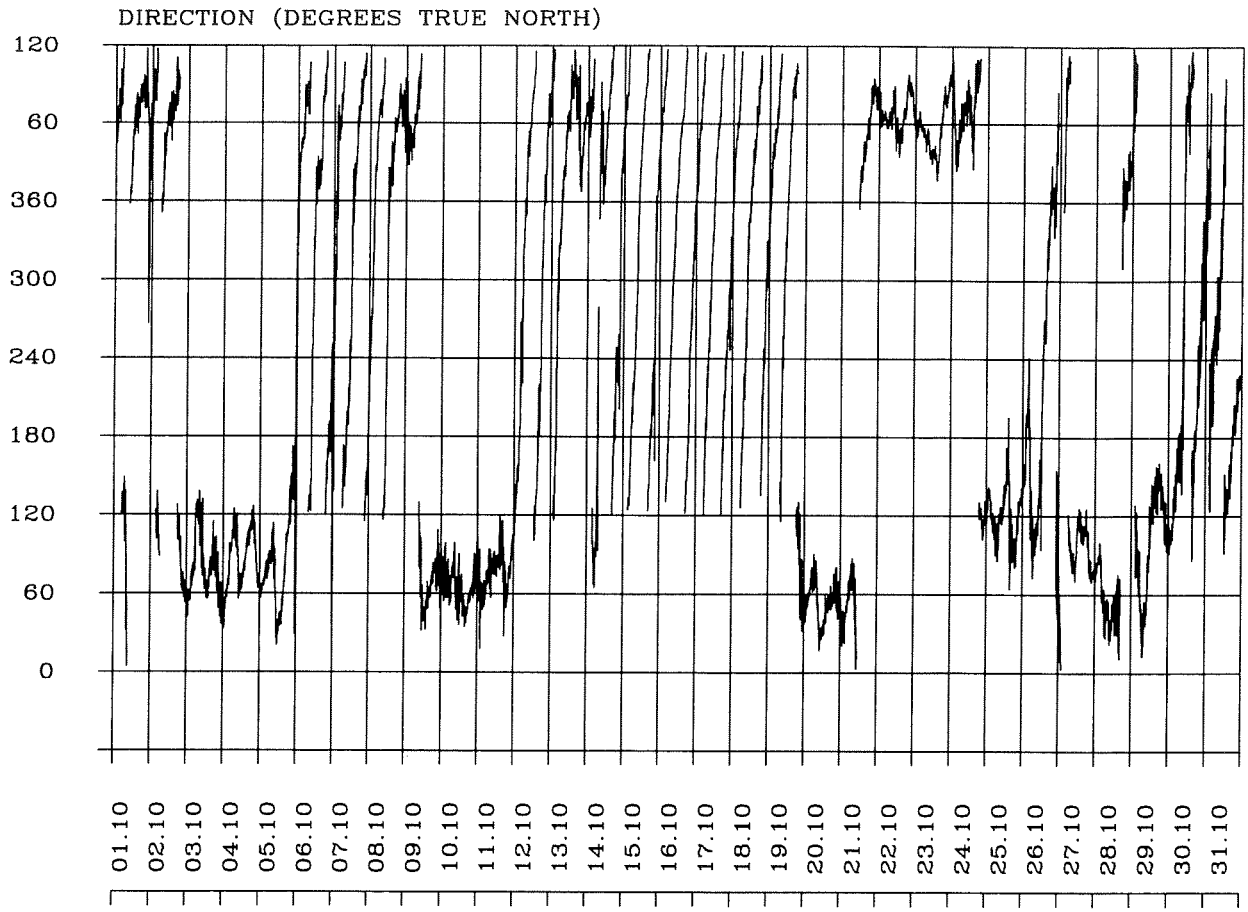
Time interval : 10.00 minutes. Instrument no. : 5853

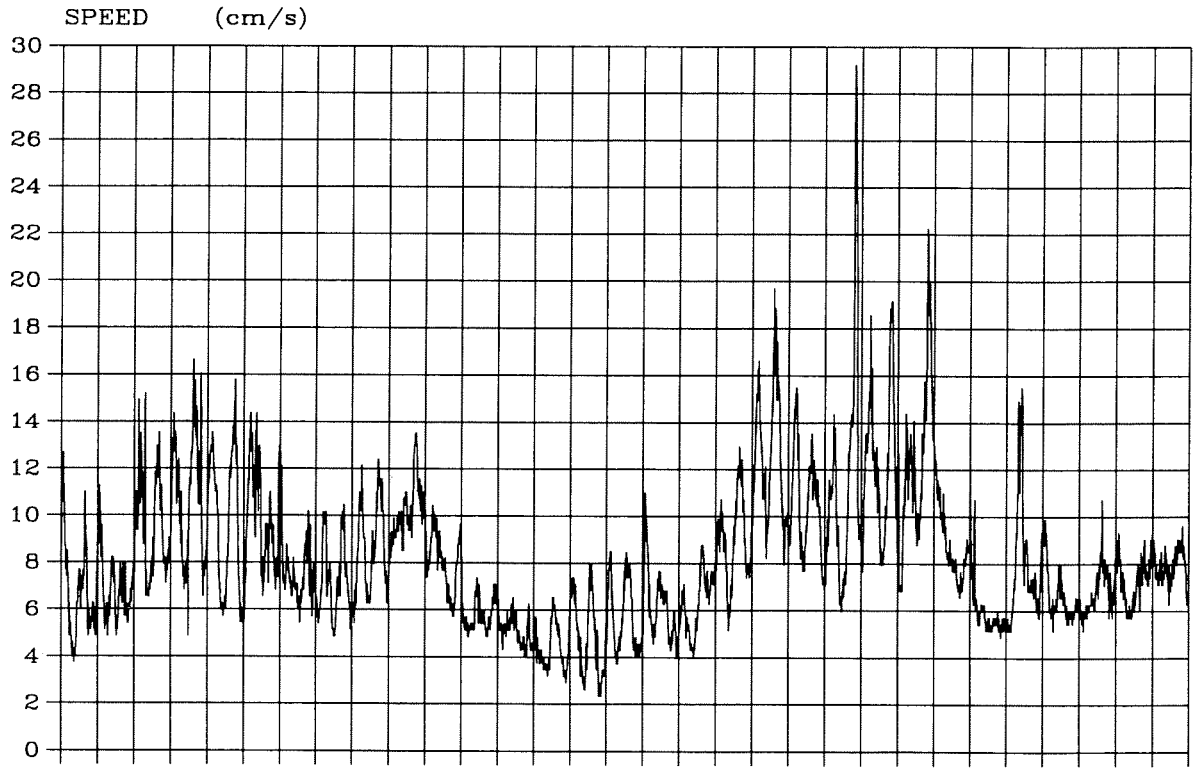
Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-2-7

Continues.....





East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 95.0 m Bottom depth : 220.0 m

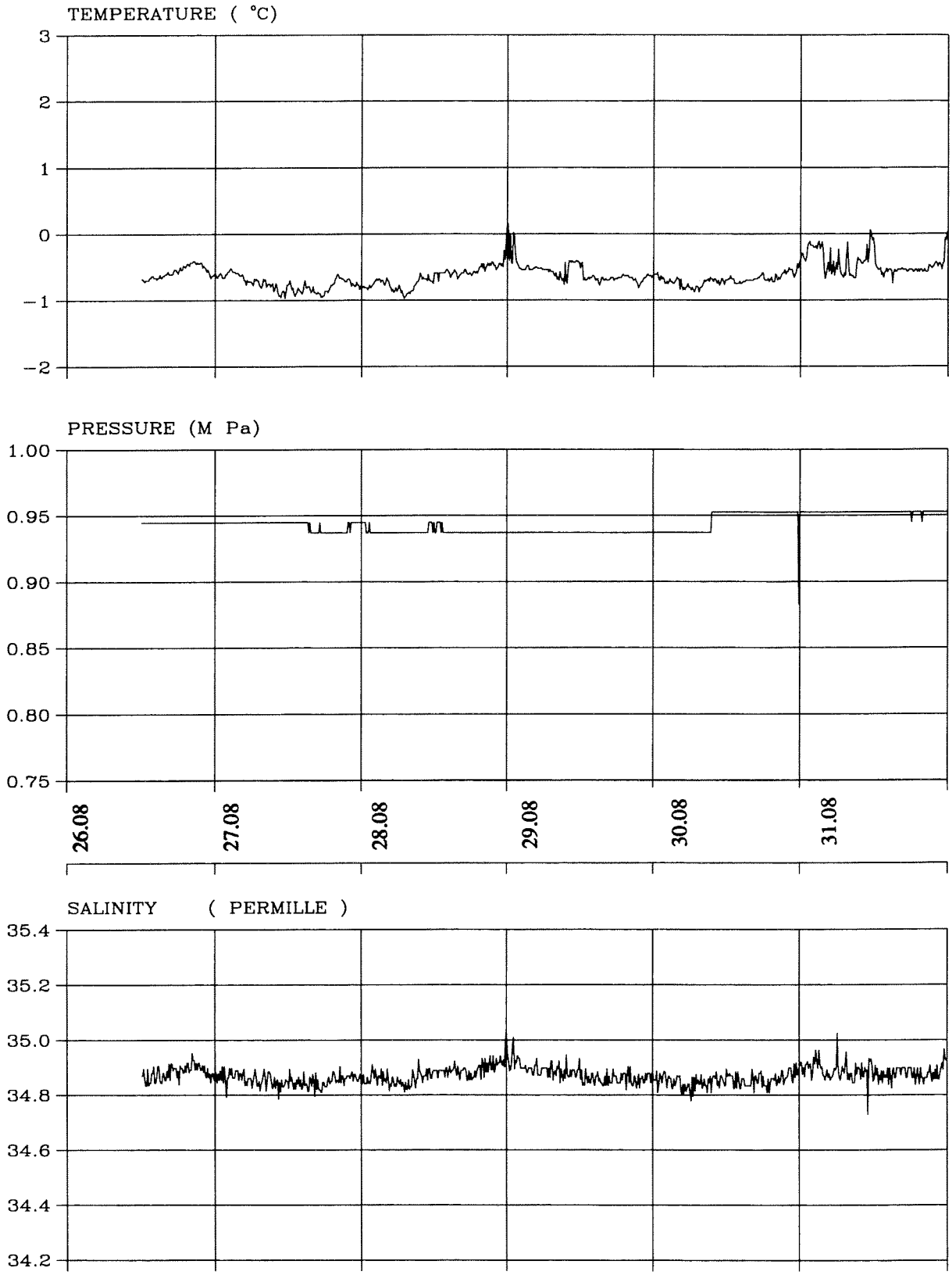
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-2-7

Continues.....



East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

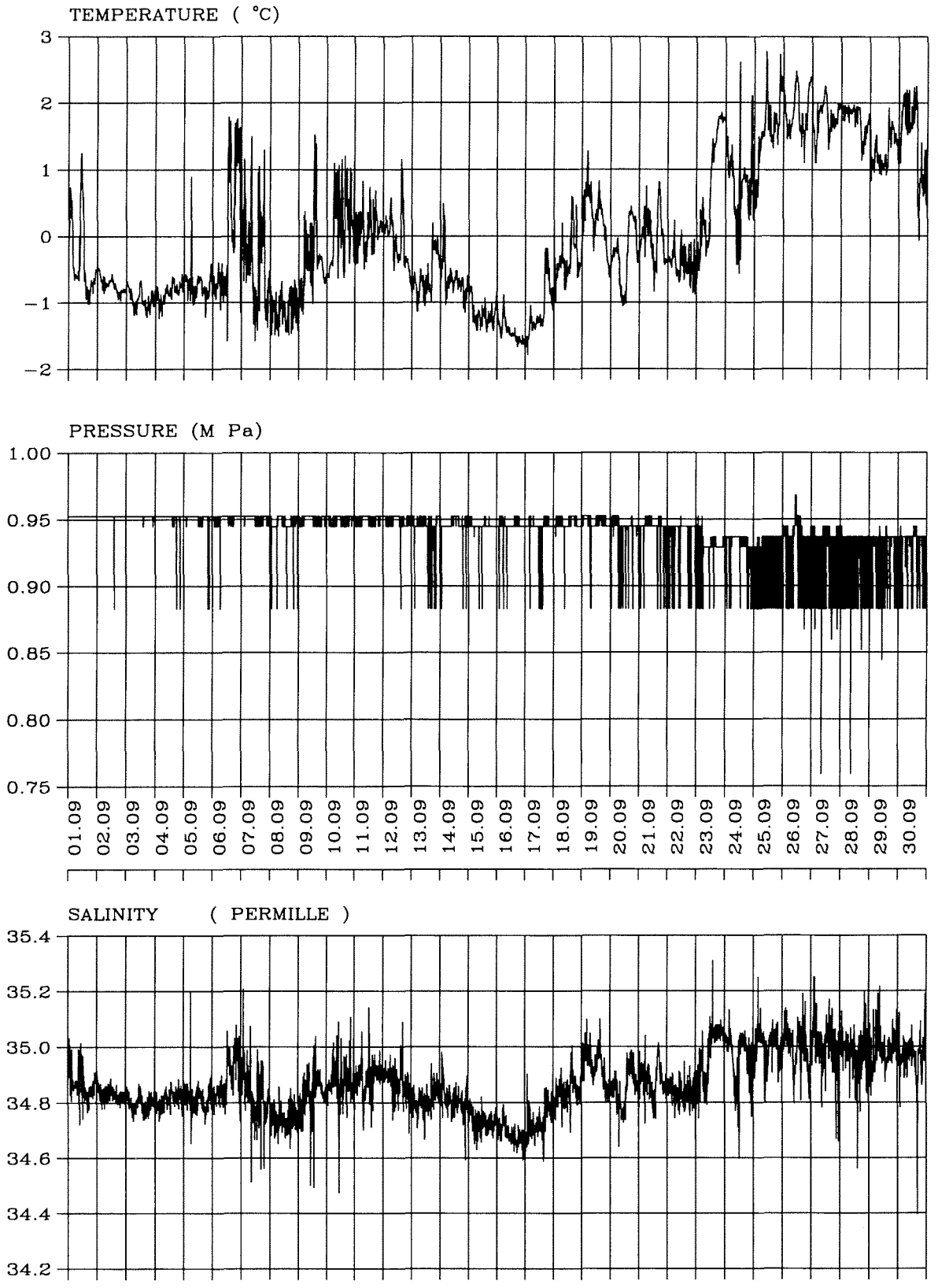
Instrument depth : 95.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

Fig. 3-2-8 Temperature, pressure and salinity.



East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

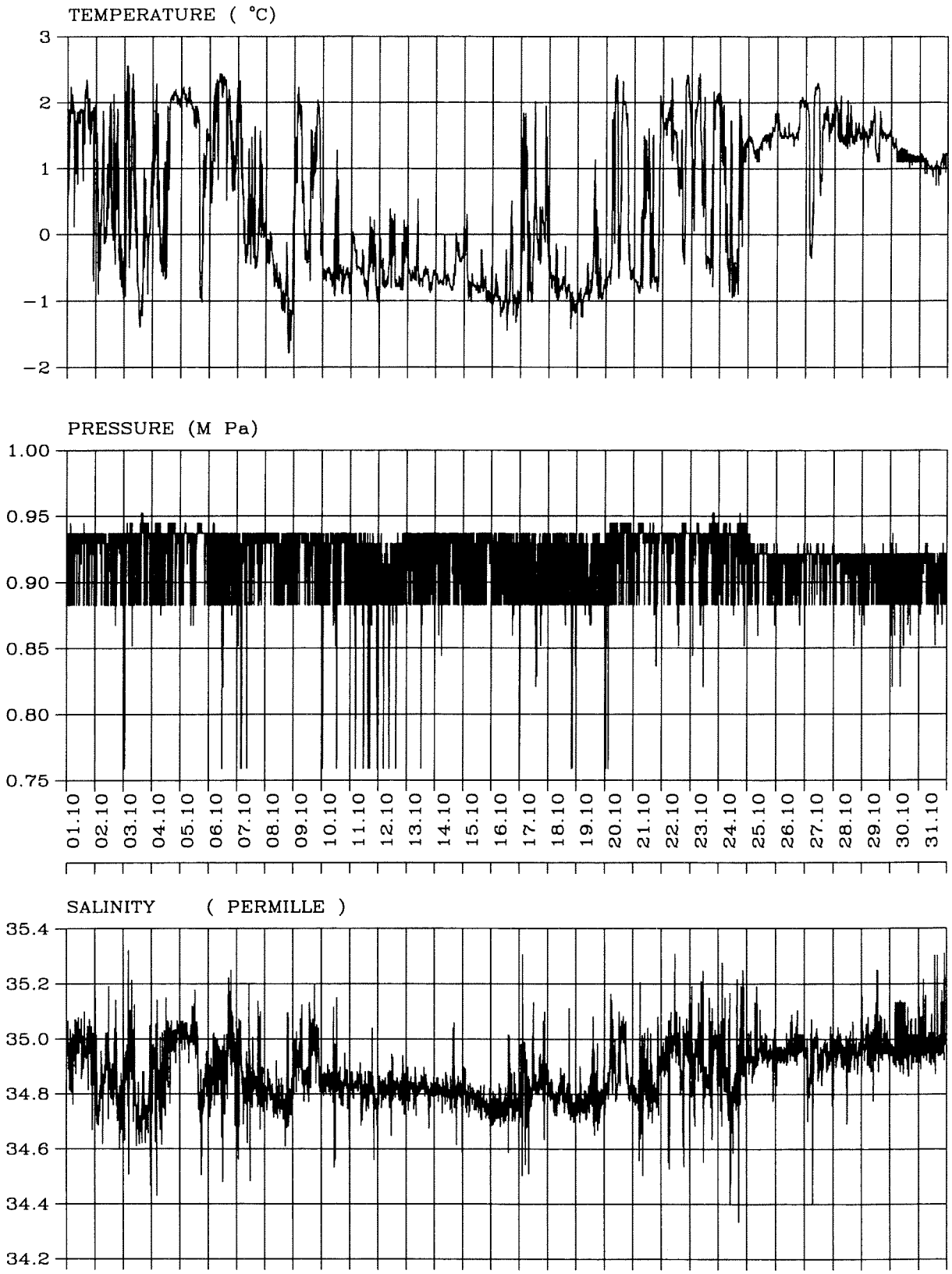
Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-2-8

Continues.....



East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 – 1982 31.10 H. 2300

IMR

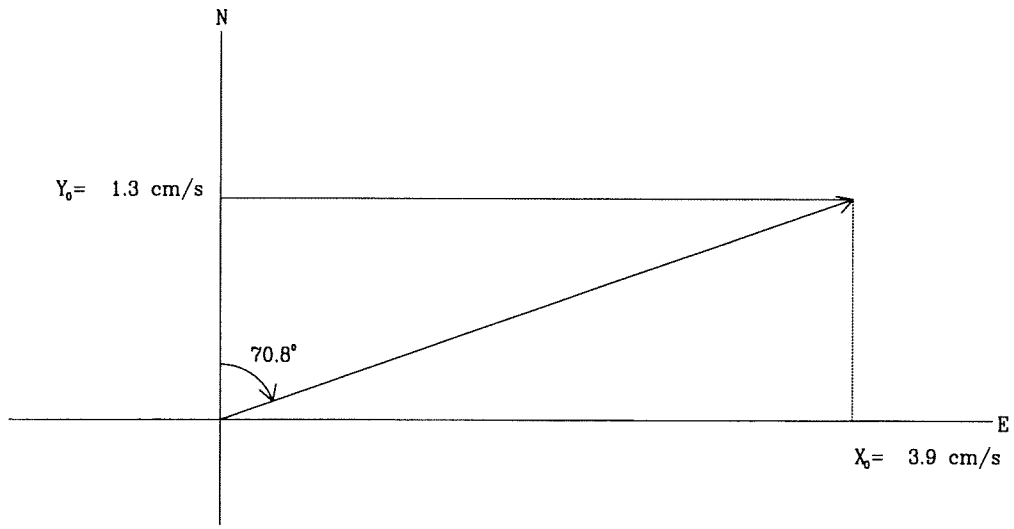
Fig. 3-2-8

Continues.....

HARMONIC ANALYSIS OF CURRENTS

CONSTITUENTS			DECOMPOSED CURRENT				TIDAL CURRENT ELLIPSE				
			E/W		N/S						
Symbol	Period houres	Frequense °/hour	X_i cm/s	g_{xi} °	Y_i cm/s	g_{yi} °	Major axis A_i cm/s	Minor axis B_i cm/s	θ_i °	g_i °	BETA. °
MM	661.31	0.5	0.7	82.6	0.8	113.6	1.0	0.3	37.6	101.8	65.9
M2	12.42	29.0	3.6	82.3	3.4	358.2	3.7	-3.3	240.0	235.2	167.1
S2	12.00	30.0	2.2	151.3	2.1	63.7	2.2	-2.0	70.3	132.7	162.6

MEAN CURRENT



East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-2-9 Harmonic analysis of current.

A discription of the model and its definitions :

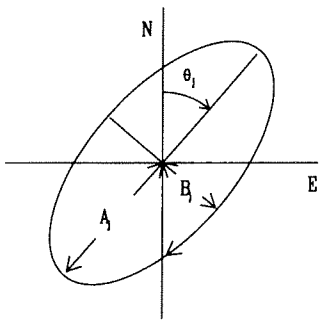
Current-vector decomposed in E/W (real) - and N/S (imaginary) - direction :

$$Z(t)=X_0+\sum_{j=1}^{M}(X_j\cos(\sigma_j t+(V_0+u)_j-g_{xj})+i(Y_0+\sum_{j=1}^{M}Y_j\cos(\sigma_j t+(V_0+u)_j-g_{yj}))$$

g_{xj} , g_{yj} : Greenwich-phase for E/W- and N/S-components of each constituent.

With ellipseparameters :

$$Z(t)=\sum_{j=1}^{M}\exp(i(90^\circ-\theta_j))(A_j\cos(\sigma_j t+(V_0+u)_j-g_j)+iB_j\sin(\sigma_j t+(V_0+u)_j-g_j))$$



g_j : Greenwich phase of the current-vector for each constituent.

Rotationdirection : anticlockwise when $B_j > 0$, clockwise when $B_j < 0$

BETA : The angle between t=0 and major halv axis in the ellipse.

Common for both modles :

σ_j : Frequence in degrees/hour.

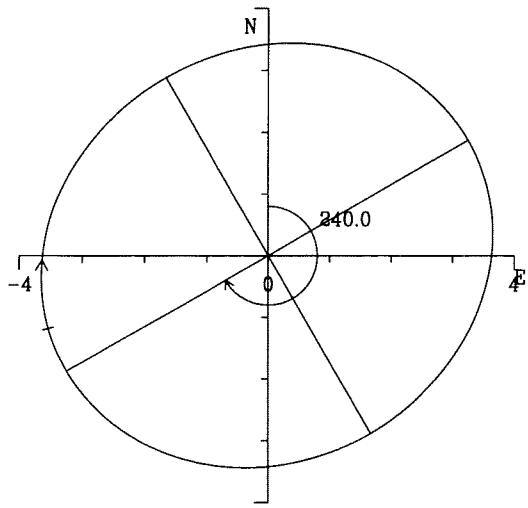
$(V_0+u)_j$: Astronomic argument relative to Greenwich-meridian.

During the calculation of Z(t) will V_0+u be put into the formulas at the time t=0.

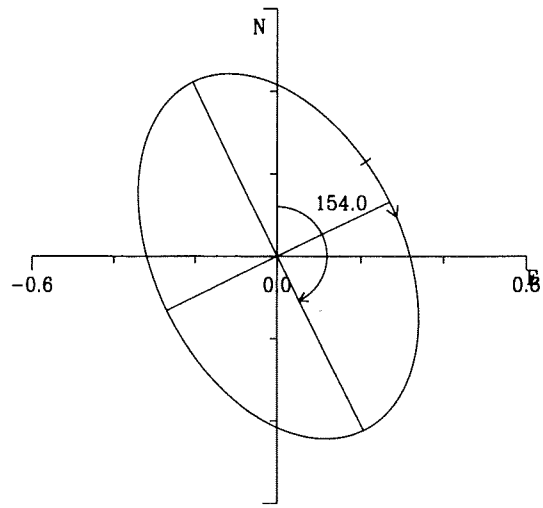
The time t is in houres; the same timezone as the analysed data.

t=0 in the midle of the measurement series : 1982 28.09 H. 1700 , marked with a line on the ellipse.

M2−ellipse



K1−ellipse



East of Hopen Island, Barents Sea

Position : N 76° 34.50′ E 35° 30.35′

Instrument depth : 95.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 − 1982 31.10 H. 2300

IMR

Fig. 3-2-10 M2 and K1 ellipse.

MEAN VALUES

Speed	7.86 cm/s
NS-component	1.31 cm/s
EW-component	3.82 cm/s
Velocity	4.03 cm/s
in direction	71 °

MAXIMUM

Velocity	29.22 cm/s
in direction	98 °
Temperature	2.78 °C
Salinity	35.323

MINIMUM

Velocity	0.00 cm/s
in direction	181 °
Temperature	-1.79 °C
Salinity	34.334

East of Hopen Island, Barents Sea

Position : N 76° 34.50´ E 35° 30.35´

Instrument depth : 95.0 m Bottom depth : 220.0 m

Time interval : 10.00 minutes. Instrument no. : 5853

Observation period: 1982 26.08 H. 1200 - 1982 31.10 H. 2300

IMR

Fig. 3-2-11

Overall mean values.
Overall maximum values.
Overall minimum values.