NATIONAL INSTITUTE OF OCEANOGRAPHY
WORMLEY, GODALMING, SURREY

NEUTRALLY BUOYANT FLOATS

Serial Nos. 161 - 180

April - September 1964

TABLES AND DIAGRAMS

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and
J. C. SWALLOW

N. I. O. INTERNAL REPORT No. D. 10
February 1972

NATIONAL INSTITUTE OF OCEANOGRAPHY
WORMLEY, GODALMING, SURREY

N E U T R A L L Y B U O Y A N T F L O A T S
S E R I A L Nos. 161 - 180
A P R I L 1964 - S E P T E M B E R 1964

Tables of times and positions.
Diagrams showing trajectories
and components of displacement.

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and
J. C. S W A L L O W

N.I.O. INTERNAL REPORT No. D10
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C O N T E N T S

Introduction

This report contains the rest of the float trajectories observed by the R.R.S. 'Discovery' in the Indian Ocean in 1964, continuing from the previous report in this series (Ref.1.). The same methods of observation were continued. The first four measurements (Nos. 161 - 164) were made during a hydrographic section on 67½E in April. Nos. 165 - 170 were made south of the equator during a repeat of the same section in June. The rest were observed near the western boundary of the Indian Ocean during July and August. Some of these (Nos. 173 - 180) are mentioned in Ref.2. The only departures from the usual method of operation were those caused by the strength of the Somali current; at station 5548 (Nos. 177 and 178) the anchored buoy broke adrift and could not be used for relative navigation. At station 5571 (Nos. 179 and 180) no attempt was made to anchor a buoy. Instead, radar fixes on the coast approx. 20 miles away were used.

LIST OF FLOATS

Serial No	Original Designation	Date and time laid
161	Y	1725/30.IV.64
162	19	1744/30.IV.64
163	9	1057/4.V.64
164	10	1123/4.V.64
165	8	0859/23.VI.64
166	27	0929/23.VI.64
167	14	0820/26.VI.64
168	24	0845/26.VI.64
169	2	1136/28.VI.64
170	10	1236/28.VI.64
171	3	1114/20.VII.64
172	12	1054/26.VII.64
173	7	1513/10.VIII.64
174	1	1517/10.VIII.64
175	6	1643/13.VIII.64
176	23	1643/13.VIII.64
177	5	1730/15.VIII.64
178	25	1730/15.VIII.64
179	11	0648/31.VIII.64
180	30	0830/31.VIII.64

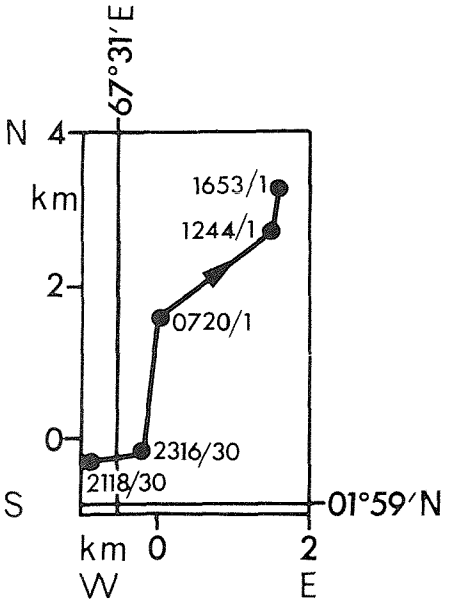
REFERENCES

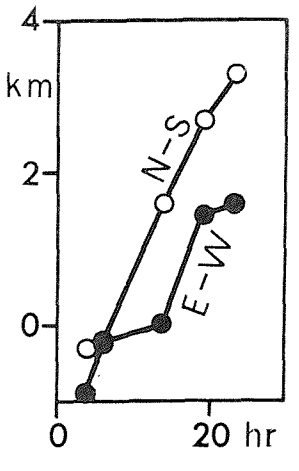
1. Caston, G.F. and J.C. Swallow 1972 Neutrally buoyant floats, serial Nos. 140 - 160. March - April 1964. Tables and Diagrams. N.I.O. Internal Report No. D9 (unpublished report).

2. Swallow, J.C. and J.G. Bruce 1966. Current measurements off the Somali Coast during the southwest monsoon of 1964. Deep-Sea Research, Vol. 13, pp. 861-888.

FLOAT DESIGNATION : Y

Date and time laid : 1725/30.IV.64.





SERIAL No: 161

FLOAT DESIGNATION: Y (Station 5363) Date and time laid: 1725/30.IV.64

Position laid: 1° 59'·45N
67° 31'·3E

Displacement origin: 1° 59'·45N
67° 31'·3E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1080	±180	±60

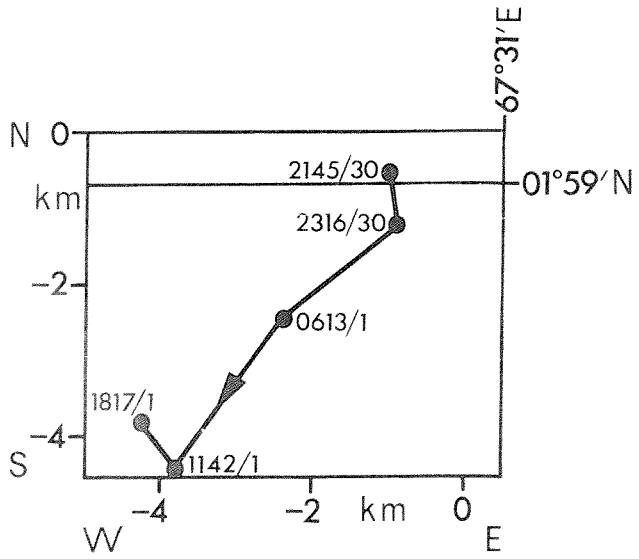
Fix No.	Date	Time GMT +4½	Fix Position Lat.N.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	30.IV	2118	1°59'·3	67°30'·8	3·9	-0·9	-0·3	1·0	082
2	30.IV	2316	1°59'·4	67°31'·2	5·85	-0·2	-0·2	6·2	004
3	1.V	0720	2°00'·4	67°31'·3	13·9	0·0	+1·6	9·8	053
4	1.V	1244	2°01'·0	67°32'·1	19·3	+1·5	+2·7	4·0	016
5	1.V	1653	2°01'·3	67°32'·2	23·45	+1·6	+3·3		

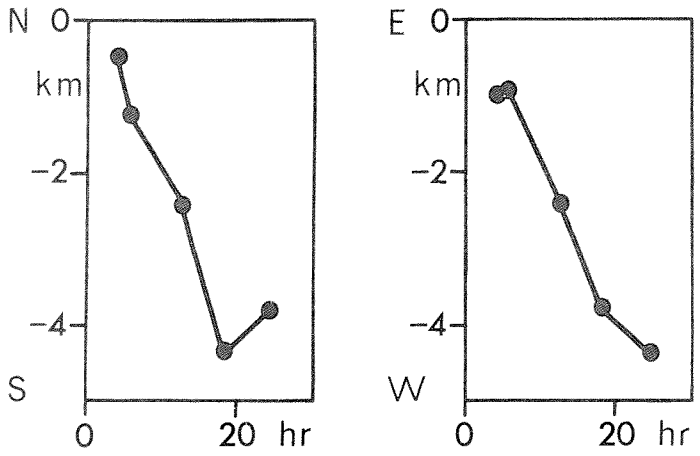
Mean speed along trajectory = 7·1 cm/sec

Mean velocity, fixes 1 - 5, = 6·4 cm/sec, 036°T

FLOAT DESIGNATION : 19

Date and time laid : 1744/30.IV.64.





SERIAL No: 162

FLOAT DESIGNATION: 19 (Station 5363) Date and time laid: 1744/30.IV.64

Position laid: 1° 59'·4N
67° 30'·8E

Displacement origin: 1° 59'·4N
67° 30'·8E

Navigation based on: Radar on anchored buoy.

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	2000	1650	±430	±120

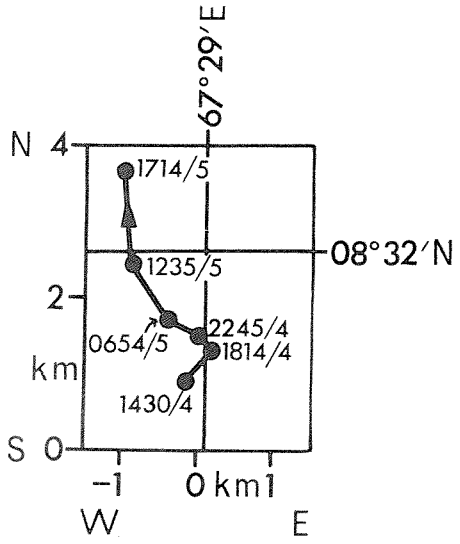
Fix No.	Date	Time GMT +4½	Fix Position Lat.N.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	30.IV	2145	1°59'·1	67°30'·2	4·0	-1·05	-0·5	14·8	173
2	30.IV	2316	1°58'·7	67°30'·2	5·55	-0·95	-1·25	7·6	231
3	1.V	0613	1°58'·1	67°29'·4	12·5	-2·4	-2·45	12·1	216
4	1.V	1142	1°57'·0	67°28'·65	17·95	-3·8	-4·4	3·4	319
5	1.V	1817	1°57'·3	67°28'·4	24·55	-4·3	-3·8		

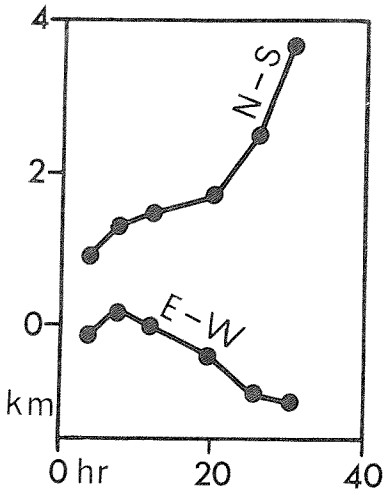
Mean speed along trajectory = 8·0 cm/sec

Mean velocity, fixes 1 - 5, = 6·4 cm/sec, 225°T

FLOAT DESIGNATION : 9

Date and time laid : 1057/4.V.64.





FLOAT DESIGNATION: 9 (Station 5371) Date and time laid: 1057/4.V.64

Position laid: 8° 30'·5N
67° 28'·9E

Displacement origin: 8° 30'·5N
67° 28'·9E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	2000	1720	±260	±60

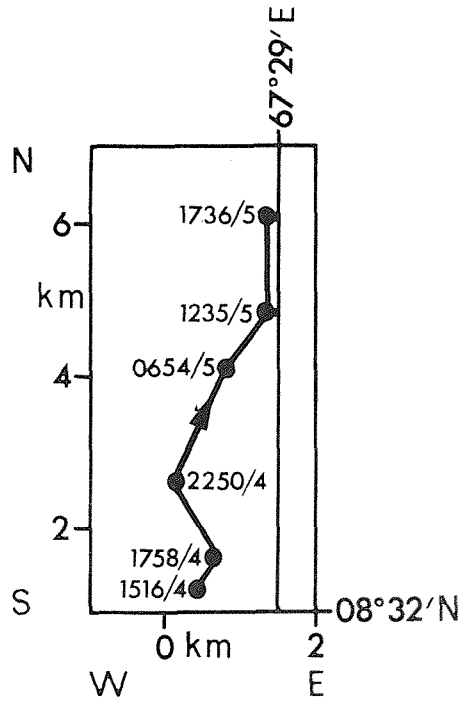
Fix No.	Date	Time GMT +4½	Fix Position Lat.N.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	4.V	1430	8°31'·05	67°28'·85	3·55	-0·15	+0·9	3·7	046
2	4.V	1814	8°31'·3	67°29'·1	7·3	+0·2	+1·3	2·5	311
3	4.V	2245	8°31'·4	67°28'·9	11·8	0·0	+1·5	1·4	290
4	5.V	0654	8°31'·5	67°28'·7	19·95	-0·4	+1·7	4·4	327
5	5.V	1235	8°31'·9	67°28'·4	25·65	-0·9	+2·45	7·8	355
6	5.V	1714	8°32'·6	67°28'·35	30·3	-1·0	+3·7		

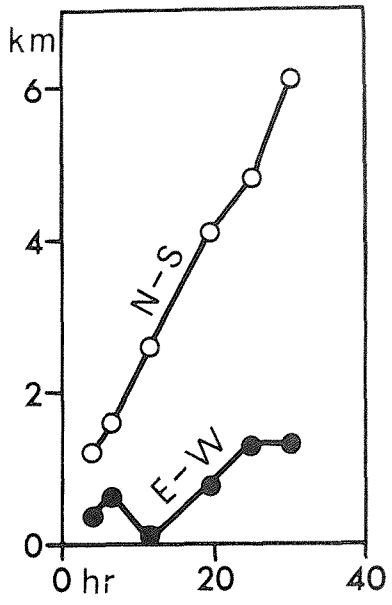
Mean speed along trajectory = 3·6 cm/sec

Mean velocity, fixes 1 - 6, = 3·1 cm/sec, 343°T

FLOAT DESIGNATION : 10

Date and time laid : 1123/4.V.64.





FLOAT DESIGNATION: 10 (Station 5371) Date and time laid: 1123/4.V.64

Position laid: 8° 31'·5N
67° 28'·2E

Displacement origin: 8° 31'·5N
67° 28'·2E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1100	±220	±50

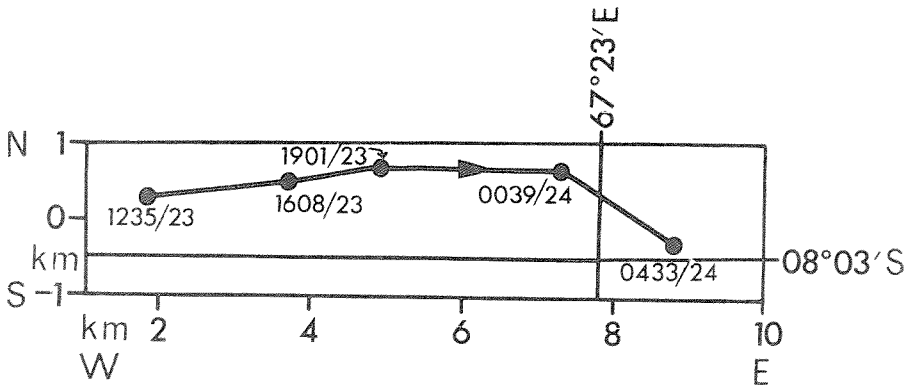
Fix No.	Date	Time GMT +4½	Fix Position Lat.N.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	4.V	1516	8°32'·15	67°28'·4	3·9	+0·4	+1·2		
								6·2	037
2	4.V	1758	8°32'·4	67°28'·6	6·6	+0·7	+1·6		
								6·9	326
3	4.V	2250	8°32'·9	67°28'·2	11·45	+0·1	+2·6		
								5·9	025
4	5.V	0654	8°33'·75	67°28'·6	19·5	+0·8	+4·1		
								4·4	037
5	5.V	1235	8°34'·1	67°28'·9	25·2	+1·35	+4·8		
								7·2	360
6	5.V	1736	8°34'·9	67°28'·9	30·2	+1·35	+6·1		

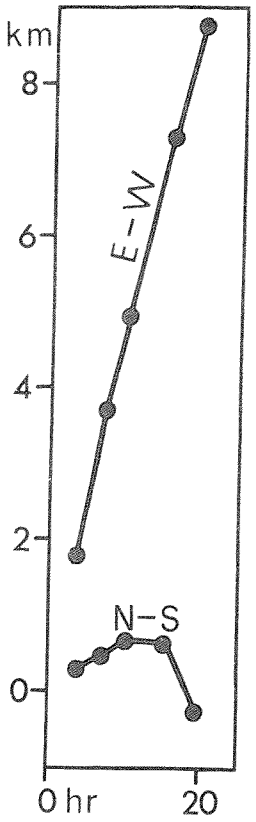
Mean speed along trajectory = 6·0 cm/sec

Mean velocity, fixes 1 - 6, = 5·4 cm/sec, 011°T

FLOAT DESIGNATION : 8

Date and time laid : 0859/23.VI.64.





FLOAT DESIGNATION: 8 (Station 5464) Date and time laid: 0859/23.VI.64

Position laid: 8° 02'·75S
67° 18'·7E

Displacement origin: 8° 02'·75S
67° 18'·7E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·5 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	350	830	±210	±60

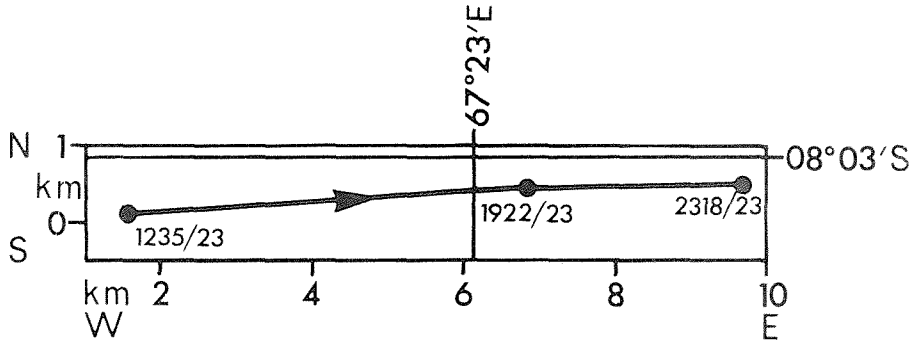
Fix No.	Date	Time GMT +4½	Fix Position Lat.S.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	23.VI	1235	8°02'·6	67°19'·7	3·6	+1·8	+0·3		
								14·9	083
2	23.VI	1608	8°02'·45	67°20'·7	7·15	+3·7	+0·5		
								12·5	083
3	23.VI	1901	8°02'·35	67°21'·4	10·05	+4·95	+0·7		
								11·9	092
4	24.VI	0039	8°02'·4	67°22'·7	15·65	+7·3	+0·65		
								12·8	120
5	24.VI	0433	8°02'·9	67°23'·6	19·55	+8·8	-0·3		

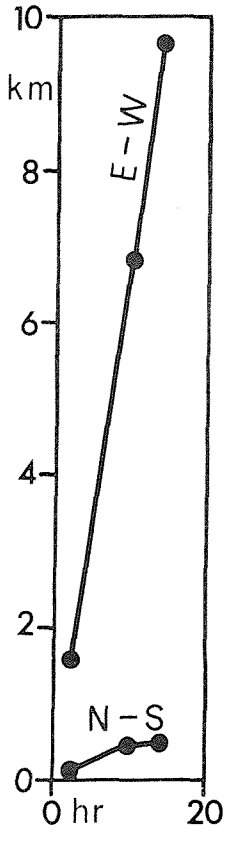
Mean speed along trajectory = 12·9 cm/sec

Mean velocity, fixes 1 - 5, = 12·5 cm/sec, 095°T

FLOAT DESIGNATION : 27

Date and time laid : 0929/23.VI.64.





SERIAL No: 166

FLOAT DESIGNATION: 27 (Station 5464) Date and time laid: 0929/23.VI.64

Position laid: 8° 03'·5S
67° 19'·6E

Displacement origin: 8° 03'·5S
67° 19'·6E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·5 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1180	±400	±150

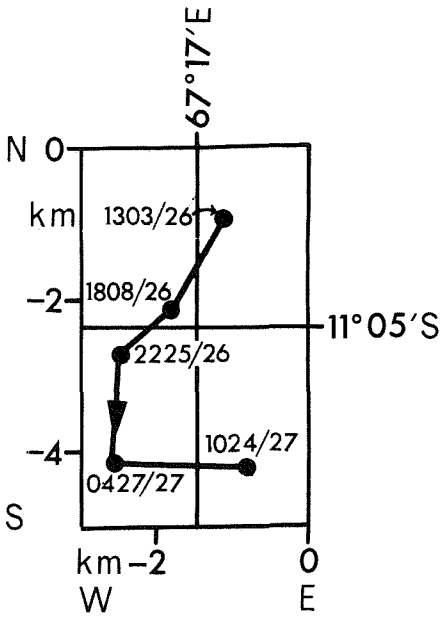
Fix No.	Date	Time GMT +4½	Fix Position Lat.S.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	23.VI	1235	8°03'·4	67°20'·4	3·1	+1·55	+0·1	22·1	087
2	23.VI	1922	8°03'·2	67°23'·4	9·9	+6·8	+0·45	21·1	089
3	23.VI	2318	8°03'·2	67°25'·0	13·8	+9·7	+0·5		

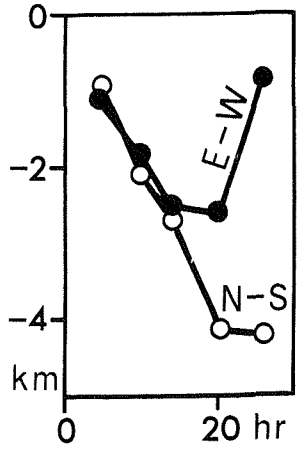
Mean speed along trajectory = 21·7 cm/sec

Mean velocity, fixes 1 - 3, = 21·7 cm/sec, 088°T

FLOAT DESIGNATION : 14

Date and time laid : 0820/26.VI.64.





SERIAL No: 167

FLOAT DESIGNATION: 14 (Station 5471) Date and time laid: 0820/26.VI.64

Position laid: 11° 03'·7S
67° 17'·85E

Displacement origin: 11° 03'·7S
67° 17'·85E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative) Fix 5 ± 0·5 km.

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1110	±250	±60

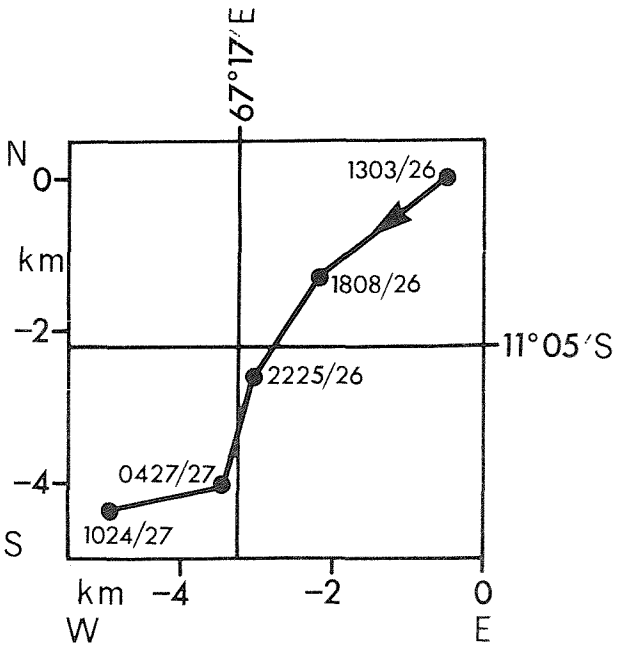
Fix No.	Date	Time GMT +4½	Fix Position Lat.S.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	26.VI	1303	11°04'·2	67°17'·2	4·7	-1·1	-0·9	7·6	211
2	26.VI	1808	11°04'·8	67°16'·8	9·8	-1·8	-2·1	6·5	227
3	26.VI	2225	11°05'·2	67°16'·4	14·1	-2·5	-2·7	6·4	183
4	27.VI	0427	11°06'·0	67°16'·4	20·1	-2·6	-4·15	8·4	091
5	27.VI	1024	11°06'·0	67°17'·4	26·05	-0·8	-4·2		

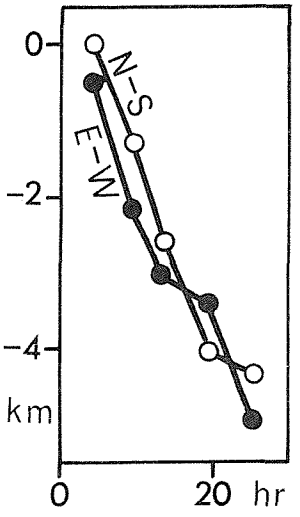
Mean speed along trajectory = 7·3 cm/sec

Mean velocity, fixes 1 - 5, = 4·3 cm/sec, 175°T

FLOAT DESIGNATION : 24

Date and time laid : 0845/26.VI.64.





FLOAT DESIGNATION: 24 (Station 5471) Date and time laid: 0845/26.VI.64

Position laid: 11° 03'·75S, 67° 18'·85E Displacement origin: 11° 03'·75S, 67° 18'·85E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative), Fix 5 ± 0·5 km.

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	2000	1910	±280	±70

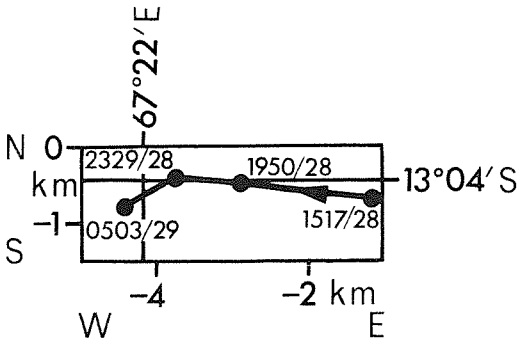
Fix No.	Date	Time GMT +4½	Fix Position Lat.S.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	26.VI	1303	11°03'·75	67°18'·5	4·3	-0·5	0·0	12·0	231
2	26.VI	1808	11°04'·5	67°17'·6	9·4	-2·2	-1·3	9·7	214
3	26.VI	2225	11°05'·2	67°17'·1	13·65	-3·05	-2·6	6·9	195
4	27.VI	0427	11°06'·0	67°16'·9	19·7	-3·45	-4·05	7·5	259
5	27.VI	1024	11°06'·15	67°16'·0	25·65	-5·0	-4·35		

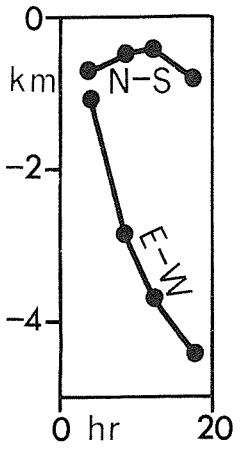
Mean speed along trajectory = 8·8 cm/sec

Mean velocity, fixes 1 - 5, = 8·3 cm/sec, 226°T

FLOAT DESIGNATION : 2

Date and time laid : 1136/28.VI.64.





SERIAL No: 169

FLOAT DESIGNATION: 2 (Station 5475) Date and time laid: 1136/28.VI.64

Position laid: 13° 03'·8S
67° 24'·4E

Displacement origin: 13° 03'·8S
67° 24'·4E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	2000	1760	±370	±110

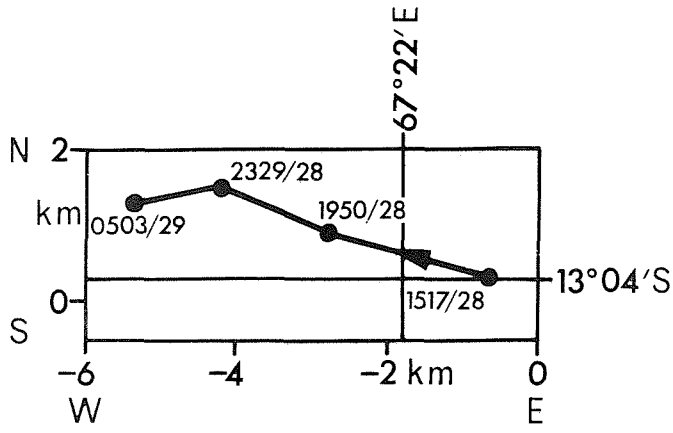
Fix No.	Date	Time GMT +4½	Fix Position Lat.S.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	28.VI	1517	13°04'·2	67°23'·7	3·7	-1·1	-0·7		
								11·0	278
2	28.VI	1950	13°04'·0	67°22'·7	8·25	-2·9	-0·5		
								6·9	273
3	28.VI	2329	13°04'·0	67°22'·3	11·9	-3·7	-0·4		
								4·0	245
4	29.VI	0503	13°04'·2	67°21'·8	17·45	-4·45	-0·8		

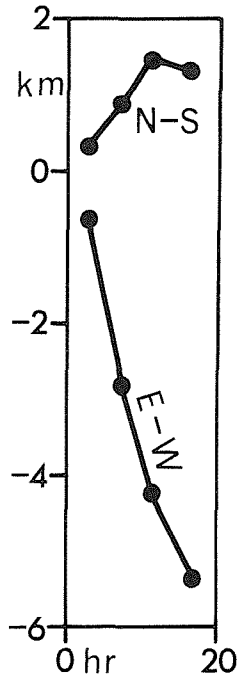
Mean speed along trajectory = 7·1 cm/sec

Mean velocity, fixes 1 - 4 = 6·9 cm/sec, 269°T

FLOAT DESIGNATION : 10

Date and time laid : 1236/28.VI.64.





SERIAL No: 170

FLOAT DESIGNATION: 10 (Station 5475) Date and time laid: 1236/28.VI.64

Position laid: 13° 04'·2S Displacement origin: 13° 04'·2S

67° 23'·0E 67° 23'·0E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1210	±180	±55

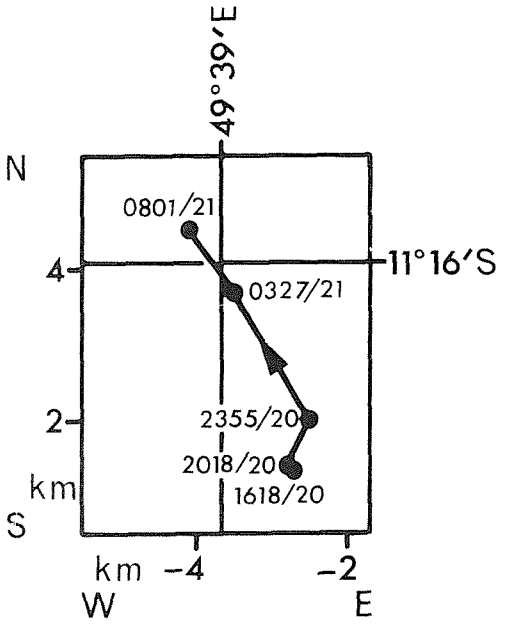
Fix No.	Date	Time GMT +4½	Fix Position Lat.S.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	28.VI	1517	13°04'·0	67°22'·7	2·7	-0·6	+0·3		
								14·1	285
2	28.VI	1950	13°03'·7	67°21'·45	7·25	-2·8	+0·9		
								11·4	295
3	28.VI	2329	13°03'·3	67°20'·65	10·9	-4·2	+1·5		
								6·5	261
4	29.VI	0503	13°03'·45	67°19'·9	16·45	-5·4	+1·3		

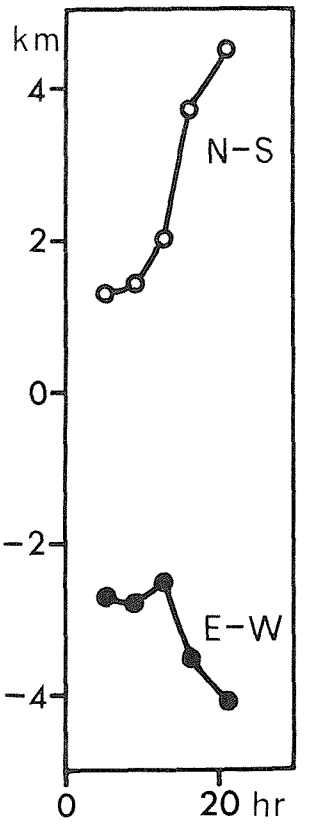
Mean speed along trajectory = 10·3 cm/sec

Mean velocity, fixes 1 - 4, = 10·1 cm/sec, 282°T

FLOAT DESIGNATION : 3

Date and time laid : 1114/20.VII.64.





SERIAL No: 171

FLOAT DESIGNATION: 3 (Station 5507) Date and time laid: 1114/20.VII.64

Position laid: 11° 18'·2S Displacement origin: 11° 18'·2S

49° 41'·1E 49° 41'·1E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1270	±400	±110

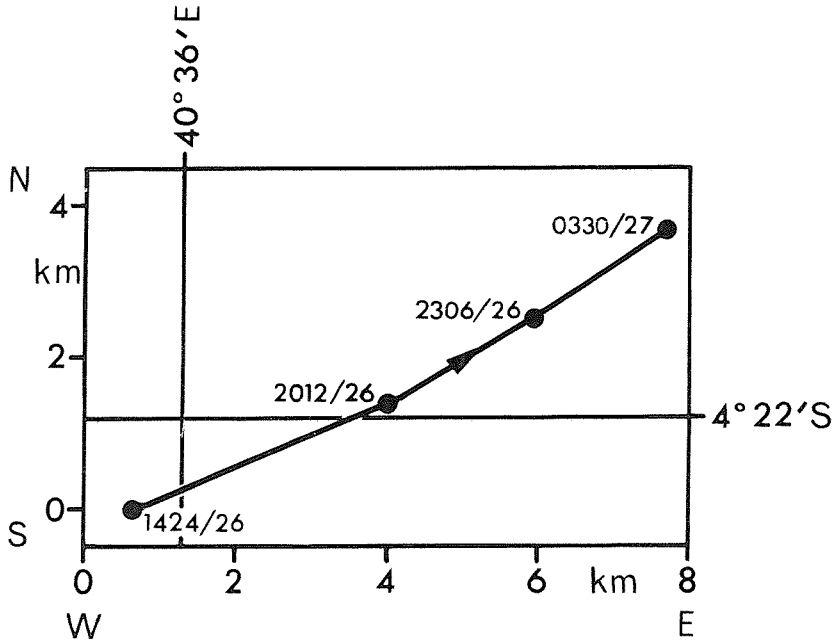
Fix No.	Date	Time GMT +3½	Fix Position Lat.S.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	1618	20.VII	11°17'·5	49°39'·6	5·05	-2·7	+1·3		
								1·4	318
2	2018	20.VII	11°17'·4	49°39'·5	9·05	-2·8	+1·4		
								4·6	025
3	2355	20.VII	11°17'·1	49°39'·7	12·7	-2·5	+2·0		
								15·7	330
4	0327	21·VII	11°16'·2	49°39'·1	16·2	-3·5	+3·7		
								6·7	326
5	0801	21.VII	11°15'·7	49°38'·8	20·8	-4·1	+4·5		

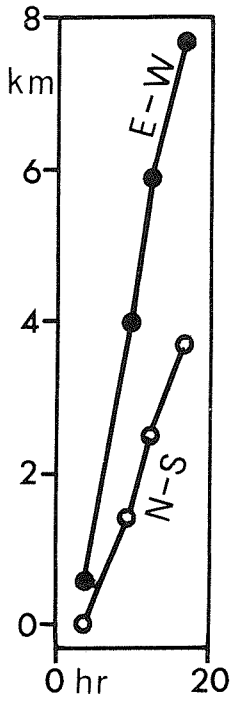
Mean speed along trajectory = 6·9 cm/sec

Mean velocity, fixes 1 - 5, = 6·4 cm/sec, 336°T

FLOAT DESIGNATION : 12

Date and time laid : 1054/26.VII.64.





SERIAL No: 172

FLOAT DESIGNATION: 12 (Station 5519) Date and time laid 1054/26.VII.64

Position laid: 4° 22'·7S 40° 35'·3E Displacement origin: 4° 22'·7S 40° 35'·3E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·2 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1200	1400	±390	±140

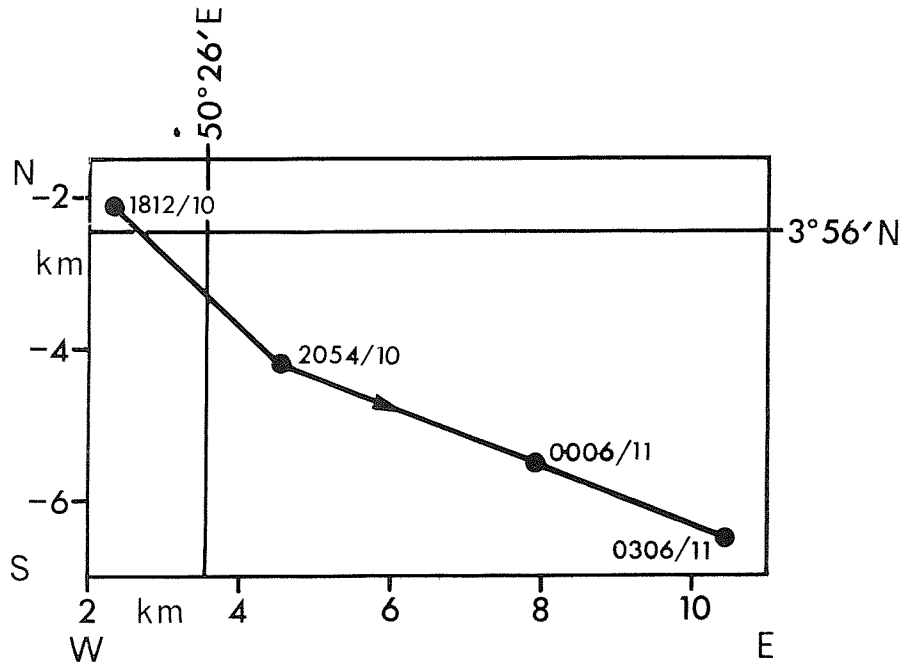
Fix No.	Date	Time GMT +3	Fix Position Lat.S.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	26.VII	1424	4°22'·7	40°35'·6	3·5	+0·6	0·0		
2	26.VII	2012	4°21'·9	40°37'·4	9·3	+4·0	+1·4	17·7	067
3	26.VII	2306	4°21'·3	40°38'·5	12·2	+5·9	+2·5	21·1	061
4	27.VII	0330	4°20'·6	40°39'·4	16·6	+7·7	+3·7	13·9	055

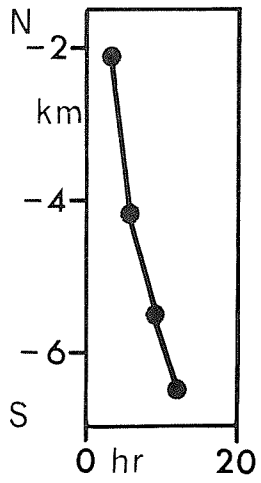
Mean speed along trajectory = 17·2 cm/sec

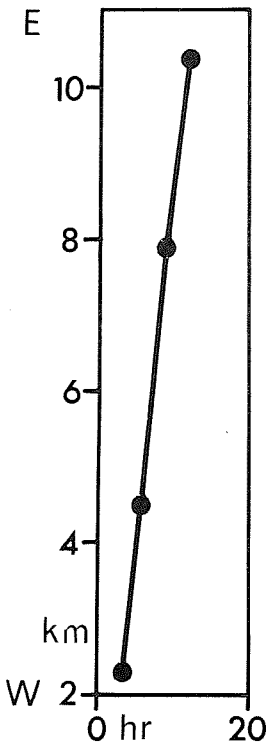
Mean velocity, fixes 1 - 4, = 17·0 cm/sec, 062°T

FLOAT DESIGNATION : 7

Date and time laid : 1513/10.VIII.64.







SERIAL No: 173

FLOAT DESIGNATION: 7 (Station 5538) Date and time laid: 1513/10.VIII.64

Position laid: 3° 57'·3N
50° 24'·05E

Displacement origin: 3° 57'·3N
50° 24'·05E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·5 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	*	1220	±400	±120

Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	10.VIII	1812	3°56'·2	50°25'·3	3·0	+2·3	-2·1		
								31·9	133
2	10.VIII	2054	3°55'·0	50°26'·5	5·7	+4·5	-4·2		
								31·3	110
3	11.VIII	0006	3°54'·3	50°28'·3	8·9	+7·9	-5·5		
								25·0	111
4	11.VIII	0306	3°53'·8	50°29'·7	11·9	+10·4	-6·5		

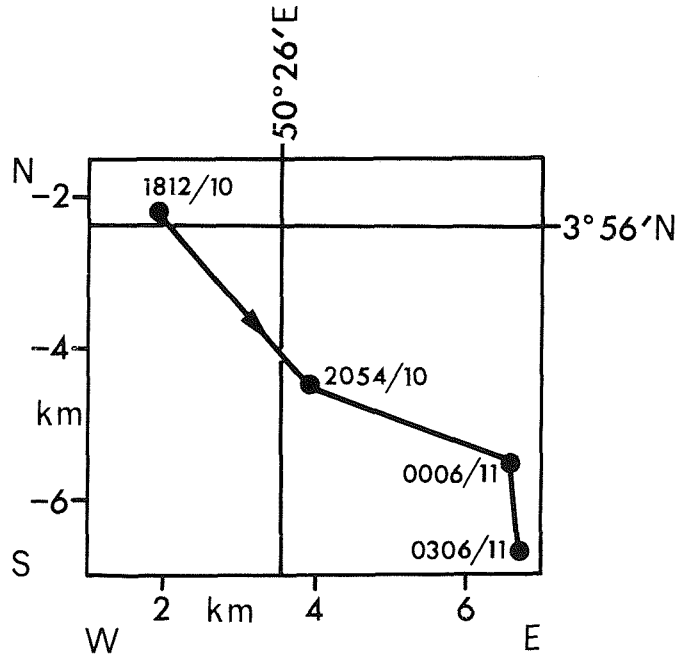
Mean speed along trajectory = 29·4 cm/sec

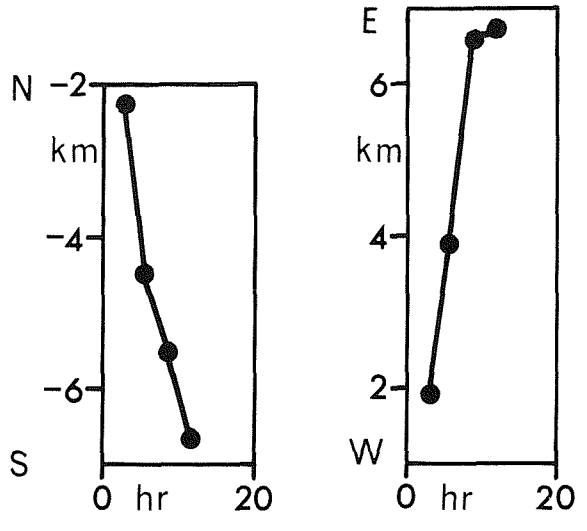
Mean velocity, fixes 1 - 4, = 28·7 cm/sec, 118°T

* intended for 2000m, but some load left off by mistake

FLOAT DESIGNATION : 1

Date and time laid : 1517/10.VIII.64.





SERIAL No: 174

FLOAT DESIGNATION: 1 (Station 5538) Date and time laid. 1517/10.VIII.64

Position laid: 3° 57'·3N
50° 24'·1E

Displacement origin: 3° 57'·3N
50° 24'·1E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·5 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1130	±490	±170

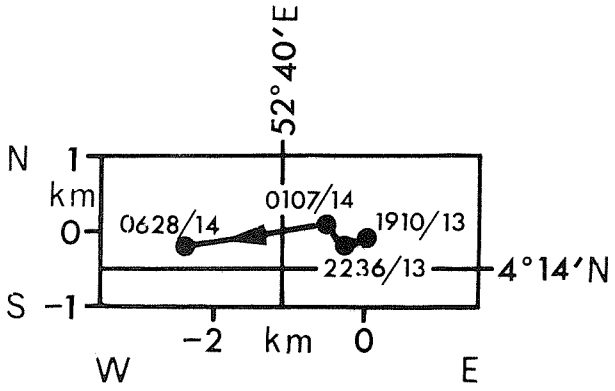
Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	Velocities between fixes °T
1	10.VIII	1812	3°56'·1	50°25'·1	2·9	+1·9	-2·2		
								30·9	140
2	10.VIII	2054	3°54'·8	50°26'·2	5·6	+3·9	-4·5		
								25·2	108
3	11.VIII	0006	3°54'·3	50°27'·7	8·8	+6·6	-5·5		
								22·2	120
4	11.VIII	0306	3°53'·7	50°28·8	11·8	+6·7	-6·7		

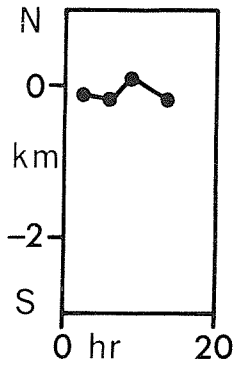
Mean speed along trajectory = 25·9 cm/sec

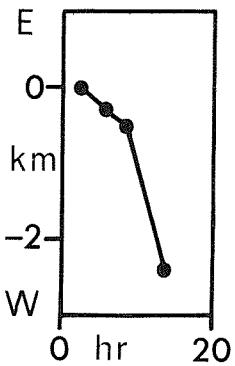
Mean velocity, fixes 1 - 4, = 25·3 cm/sec, 123°T

FLOAT DESIGNATION : 6

Date and time laid : 1643/13.VIII.64.







FLOAT DESIGNATION: 6 (Station 5544) Date and time laid 1643/13.VIII.64

Position laid: 4° 14'·3N
52° 40'·6E

Displacement origin: 4° 14'·3N
52° 40'·6E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	2000	1950	±430	±140

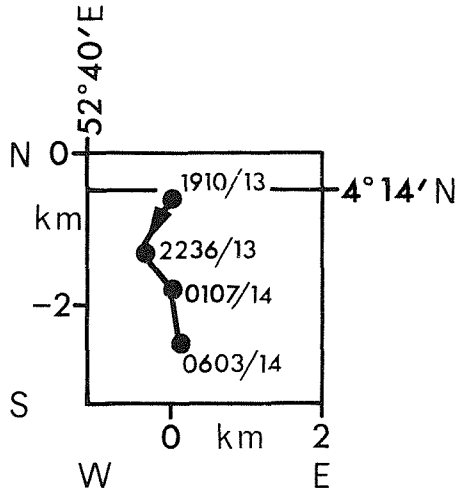
Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	13.VIII	1910	4°14'·2	52°40'·6	2·45	0·0	-0·1	3·2	250
2	13.VIII	2236	4°14'·2	52°40'·4	5·9	-0·3	-0·2	4·4	335
3	14.VIII	0107	4°14'·4	52°40'·3	8·4	-0·5	+0·1	10·4	261
4	14.VIII	0628	4°14'·2	52°39'·3	13·75	-2·4	-0·2		

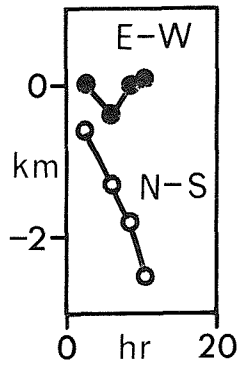
Mean speed along trajectory = 6·9 cm/sec

Mean velocity, fixes 1 - 4, = 5·9 cm/sec, 269°T

FLOAT DESIGNATION : 23

Date and time laid : 1643/13.VIII.64.





FLOAT DESIGNATION: 23 (Station 5544) Date and time laid 1643/13.VIII.64

Position laid: 4° 14'·3N 52° 40'·6E Displacement origin: 4° 14'·3N 52° 40'·6E

Navigation based on: Radar on anchored buoy

Estimated accuracy of positions: ± 0·3 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1040	±180	±55

Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Long.W.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	13.VIII	1910	4°13'·9	52°40'·6	2·45	0·0	-0·6		
								6·4	208
2	13.VIII	2236	4°13'·6	52°40'·4	5·9	-0·4	-1·3		
								6·7	137
3	14.VIII	0107	4°13'·3	52°40'·6	8·4	0·0	-1·8		
								4·5	172
4	14.VIII	0603	4°12'·9	52°40'·7	13·35	+0·1	-2·5		

Mean speed along trajectory = 5·6 cm/sec

Mean velocity, fixes 1 - 4, = 4·8 cm/sec, 175°T

SERIAL No: 177

FLOAT DESIGNATION: 5 (Station 5548)

Date and time laid: 1730/15.VIII.64

Position laid: 6° 34'·2N
50° 58'·2E

Displacement origin: 6° 34'·2N
50° 58'·2E

Navigation based on: celestial fixes

Estimated accuracy of positions: ± 2 km

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	2000	-	-	-

Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y
1	16.VIII	0511	6°33'·9	50°57'·4	11·7	-1·4	-0·6

Velocity from laid position to fix 1 = 4(±6) cm/sec, 246(±55)°T

SERIAL No: 178

FLOAT DESIGNATION: 25 (Station 5548)

Date and time laid: 1730/15.VIII.64

Position laid: 6° 34'·2N
50° 58'·2E

Displacement origin: 6° 34'·2N
50° 58'·2E

Navigation based on: celestial fixes

Estimated accuracy of positions: ± 2 km

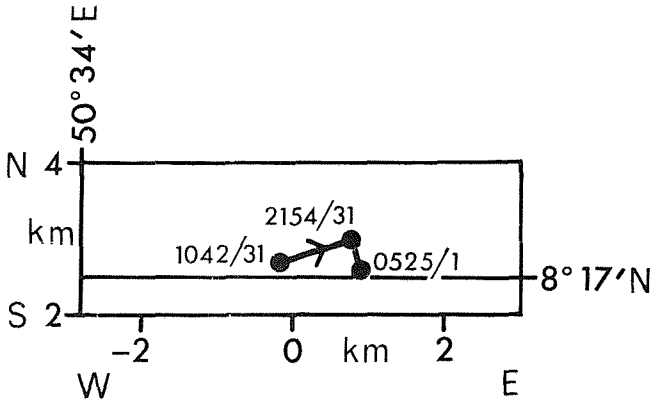
Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	-	-	-

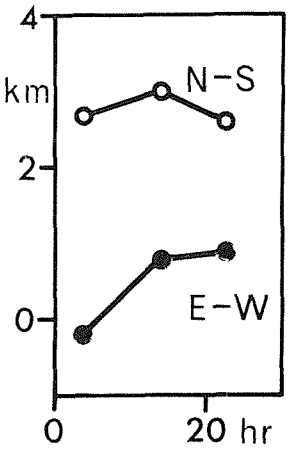
Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y
1	16.VIII	0511	6°34'·3	50°57'·1	11·7	-2·0	+0·1

Velocity from laid position to fix 1 = 5(±6) cm/sec, 273(±45)°T

FLOAT DESIGNATION : 11

Date and time laid : 0648/31.VIII.64.





SERIAL No: 179

FLOAT DESIGNATION: 11 (Station 5571) Date and time laid 0648/31.VIII.64

Position laid: 8° 15'·7N 50° 35'·5E Displacement origin: 8° 15'·7N 50° 35'·5E

Navigation based on: Radar on coast

Estimated accuracy of positions: ± 0·7 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1090	±410	±150

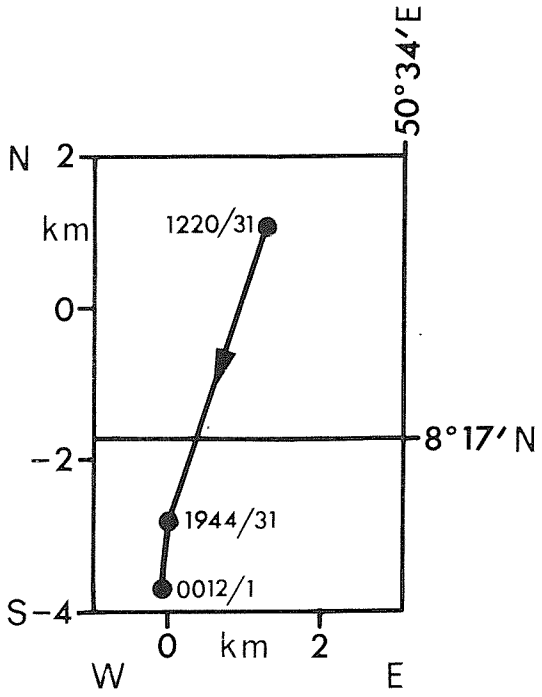
Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Fix Position Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	Displacement(km) +N-S y	Velocities between fixes cm/sec	°T
1	31.VIII	1042	8°17'·2	50°35'·4	3·9	-0·2	+2·7		
								2·5	073
2	31.VIII	2154	8°17'·3	50°35'·9	14·1	+0·8	+3·0		
								1·5	161
3	1.IX	0525	8°17'·1	50°36'·0	22·6	+0·9	+2·6		

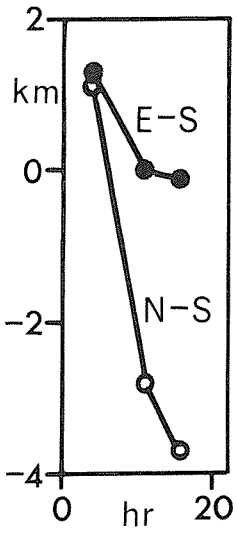
Mean speed along trajectory = 2·1 cm/sec

Mean velocity, fixes 1 - 3, = 1·5 cm/sec, 095°T

FLOAT DESIGNATION : 30

Date and time laid : 0830/31.VIII.64.





FLOAT DESIGNATION: 30(Station 5571) Date and time laid 0830/31.VIII.64

Position laid: 8° 18'·0N
50° 32'·3E

Displacement origin: 8° 18'·0N
50° 32'·3E

Navigation based on: Radar on coast

Estimated accuracy of positions: ± 0·7 km (relative)

Depth(m):	Nominal	Observed	S.D.	S.D.(mean)
	1000	1050 *	±440	±160
		1006 /	±20	

Fix No.	Date	Time GMT +3	Fix Position Lat.N.	Long.E.	Hours Since Laid (t)	Displacement(km) +E-W x	+N-S y	Velocities between fixes cm/sec	°T
1	31.VIII	1220	8°18'·6	50°33'·0	3·85	+1·3	+1·1	15·8	200
2	31.VIII	1944	8°16'·4	50°32'·3	11·2	0·0	-2·8	5·0	188
3	1.IX	0012	8°15'·9	50°32'·2	15·7	-0·1	-3·7		

Mean speed along trajectory = 11·7 cm/sec

Mean velocity, fixes 1 - 3, = 11·7 cm/sec 197°T

* by triangulation

/ from bottom reflections