80025
80025nav

U.S.G.S.
INTEGRATED NAVIGATION SYSTEM
AND
NORTHSTAR LORAN-C NAVIGATION LOG

SHIP Gyre 80 Texas A&M

CRUISE NO. Gyre 80-9 + 9A

DATE 80 Sep 19 - 80 Oct 14

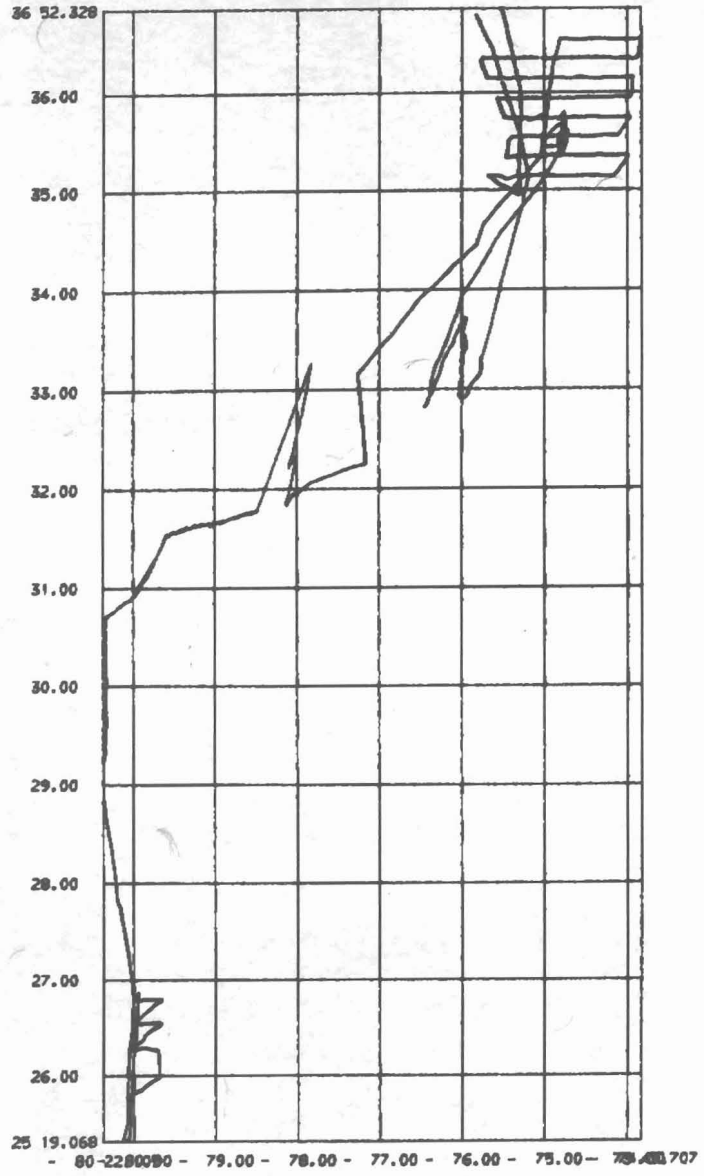
CHIEF SCIENTIST Pete Popenoe - S. Atl

(80-9 19 to 25 Sept
80-9a 26 Sept to 14 Oct)

100766

OP CODE ERR

- ☐ GRID
- ☐ TRACK
- ☐ INTERP
- ☐ DELETE
- ☐ LATLON
- ☐ TIME
- ☐ EXCHNG
- ☐ WINDOW
- ☐ FIRSTW
- ☐ NEWFW
- ☐ SENSOR
- ☐ MERGE
- ☐ HELP
- ☐ SVPLOT
- ☐ EXIT



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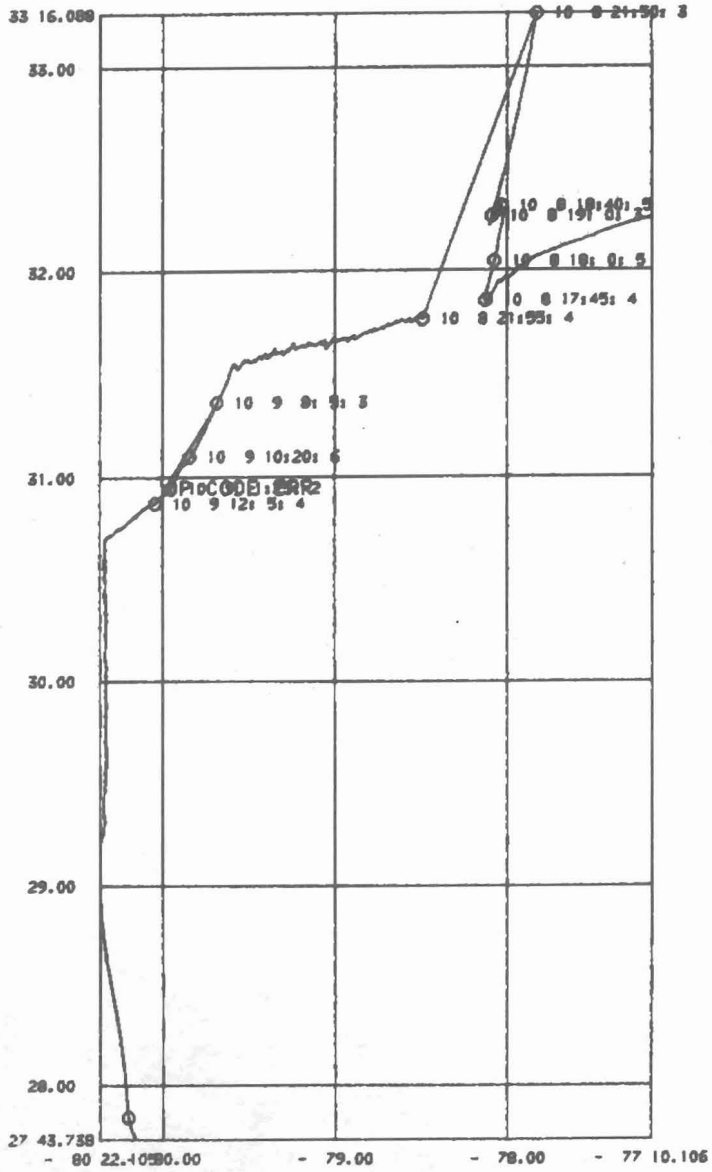
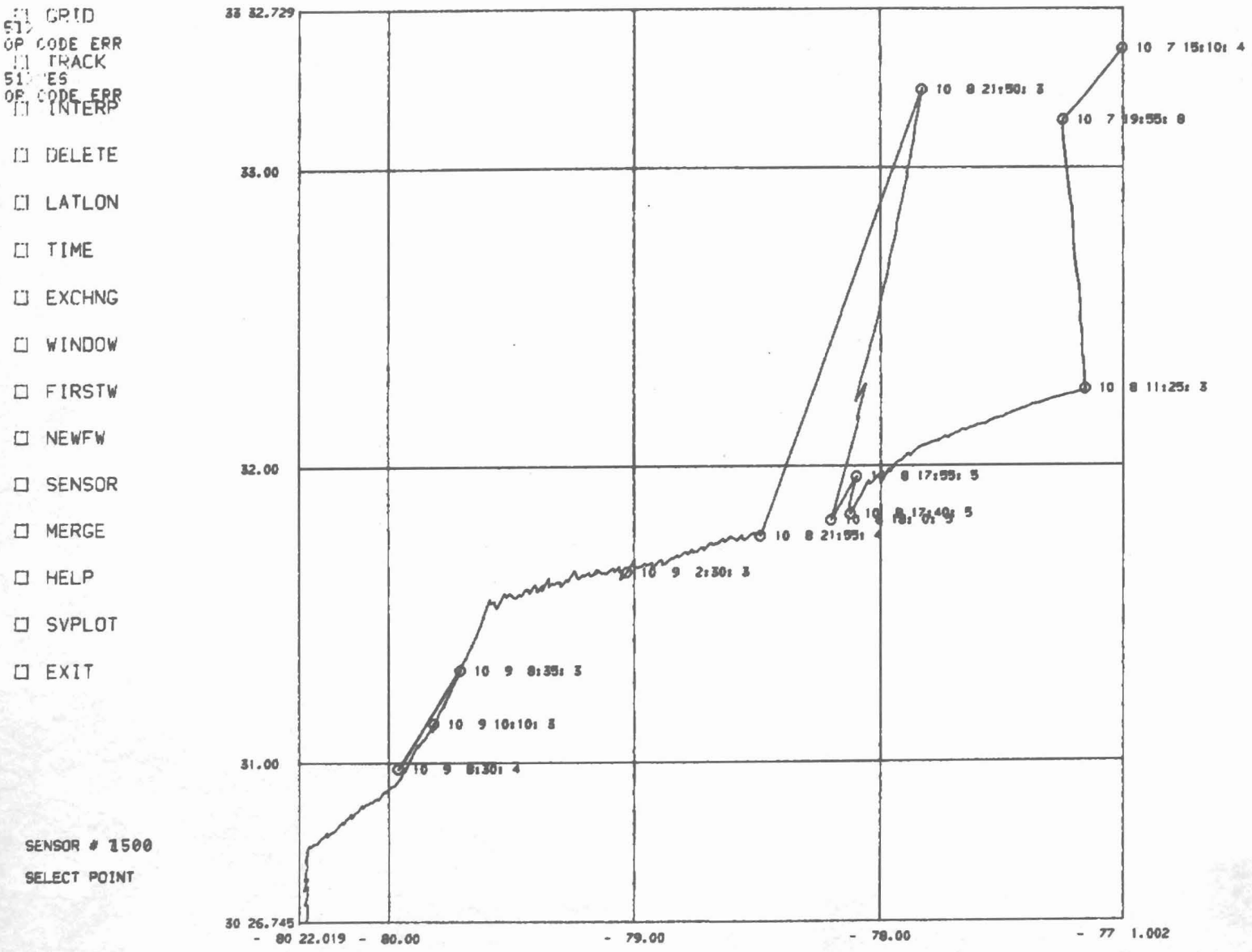
- [ ] LATLON
- [ ] TIME
- [ ] EXCHNG
- [ ] WINDOW
- [ ] FIRSTW
- [ ] NEWFW
- [ ] SENSOR
- [ ] MERGE
- [ ] HELP
- [ ] SVPLOT
- [ ] EXIT

51) NO

SENSOR # 1500

SELECT POINT




GRID
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DELETE
LATLON
TIME
EXCHNG
WINDOW
FIRSTW
NEWFW
SENSOR
MERGE
HELP
SVPLOT
EXIT
SENSOR # 1500
SELECT POINT
33 32.729
33.00
32.00
31.00
30 26.745
- 80 22.019
- 80.00
- 79.00
- 78.00
- 77 1.002
10 7 15:10: 4
10 8 21:50: 3
10 7 19:55: 8
10 8 11:25: 3
8 17:55: 5
10 9 2:30: 3
10 8 21:55: 4
10 9 8:35: 3
10 9 10:10: 3
10 9 8:30: 4

☐ GRID

☐ TRACK

☐ INTERP

☐ DELETE

☐ LATLON

☐ TIME

☐ EXCHNG

☐ WINDOW

☐ FIRSTW

☐ NEWFW

☐ SENSOR

☐ MERGE

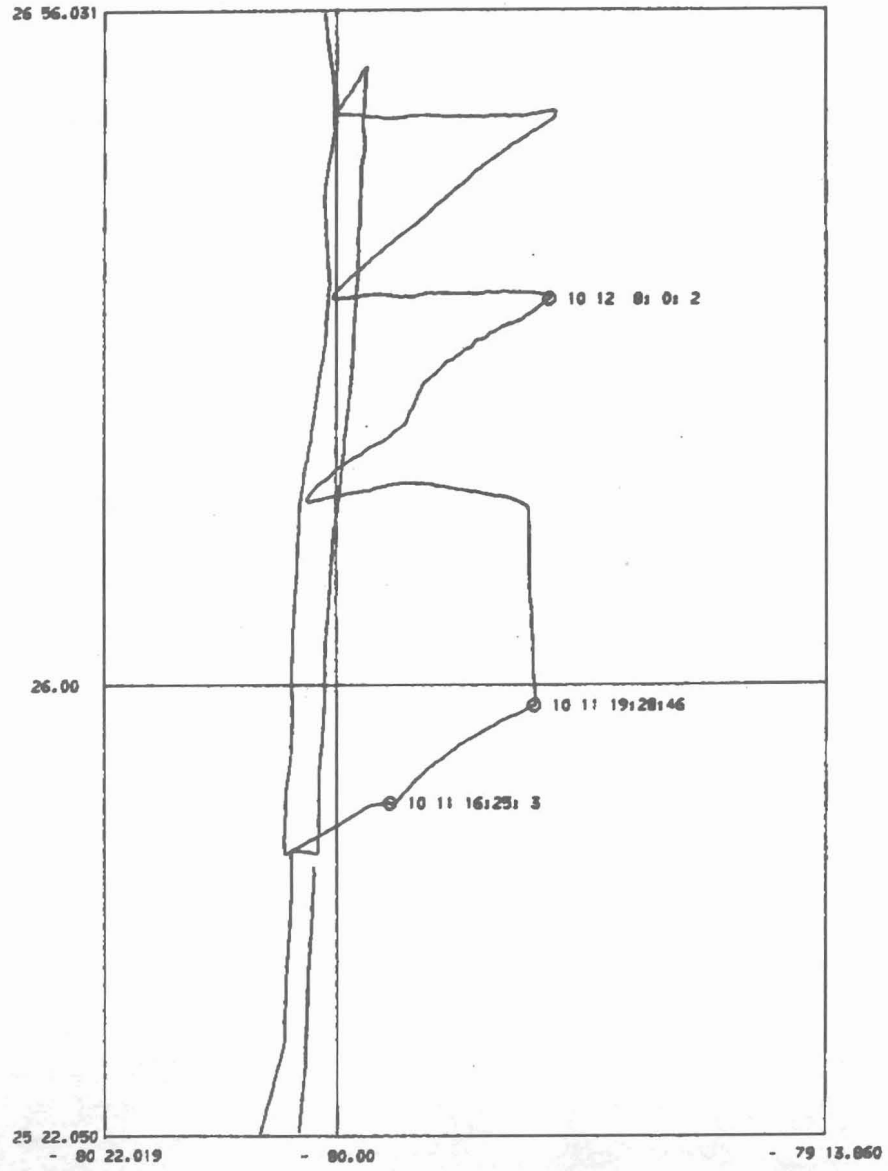
☐ HELP

☐ SVPLOT

☐ EXIT

SENSOR # 1500

SELECT POINT



```
FMGR 010
:RU,NAVED,,,1807

 PROGRAM NAVED  -  VERSION MAY 1980
                     12/15/80  2144

HELP
LOAD
RESTRT
? LOAD

 ENTER CONTINUOUS INPUT FILENAME: MTA11

      -----  TSD HEADER INFORMATION  -----
 CREATION PROGRAM: NS1TS      DATE: 1980/12/ 9   15:39:10.065
 DEFINITION FILE: NSDEF        CARTRIDGE:  200
 NUMBER OF DATA CHANNELS:  21   DATA BLOCK SIZE:   432   LOGICAL RECORD:    48
 USER LABEL:
 R/V GYRE 80-9 9A  NSTAR-TSD  18 SEPT '80/22:03 - 14 OCT '80/03:10


 ENTER THE TSD CHANNEL NUMBERS TO BE STRIPPED FROM THE INPUT TAPE.
 MAXIMUM NUMBER OF CHANNELS THAT CAN BE STRIPPED ARE  8.
 THESE ARE 'CONTINUOUS' POSITIONS AND SHOULD NOT INCLUDE
 DISCRETE 'UPDATE' POSITIONS.  'SYSTEM' POSITION MUST BE FIRST.
1500

 ENTER START AND END DATES TO FIND
 YEAR,MONTH,DAY,HR,MIN,SEC,FSEC,YEAR,MON,...


 ENTER TIME GAP IN 'MINUTES':
```

☐ GRID

☐ TRACK

☐ INTERP

☐ DELETE

☐ LATLON

☐ TIME

☐ EXCHNG

☐ WINDOW

☐ FIRSTW

☐ NEWFW

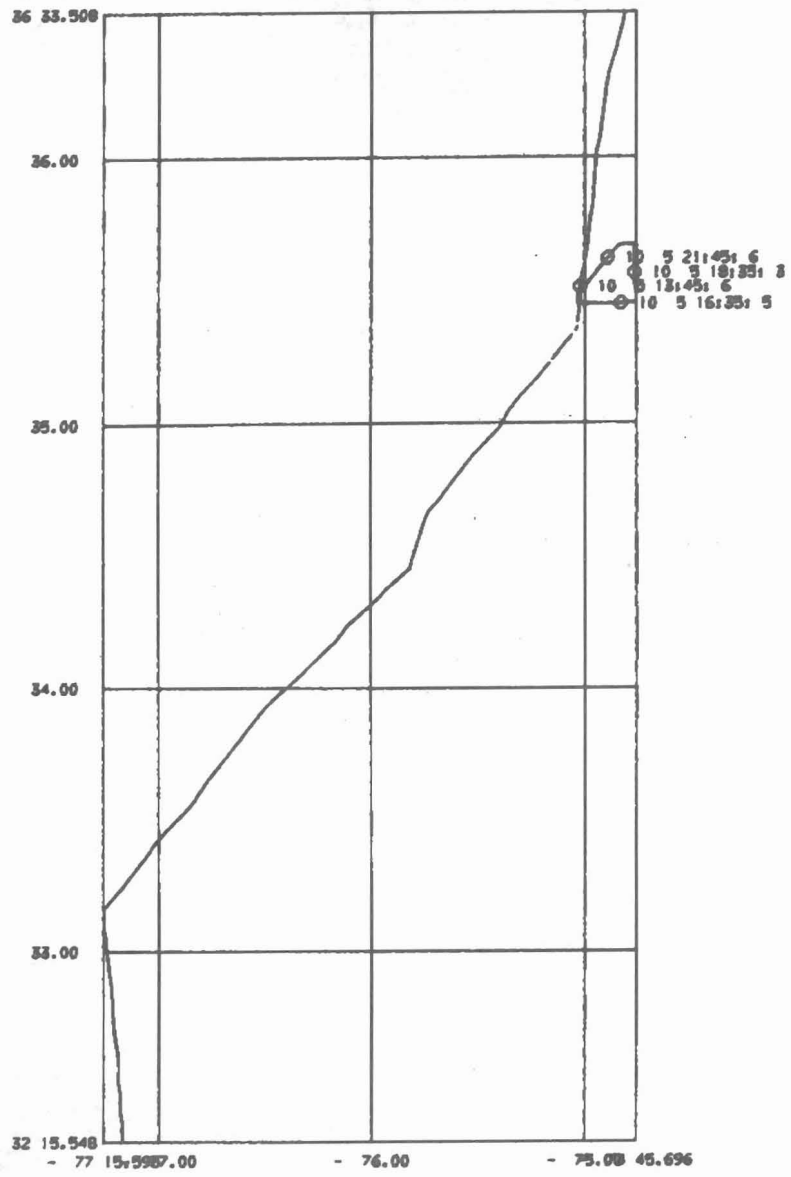
☐ SENSOR

☐ MERGE

☐ HELP

☐ SVPLOT

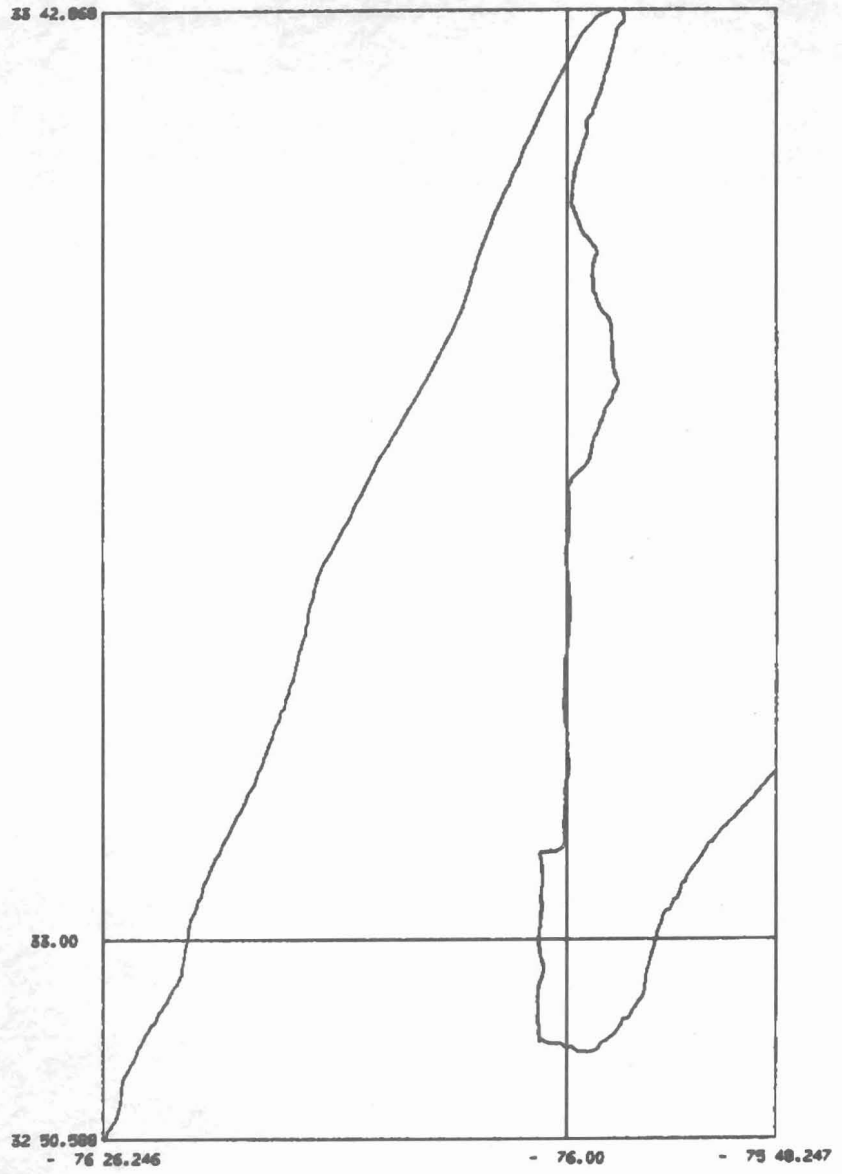
☐ EXIT



SENSOR # 1500

SELECT POINT

- [ ] GRID
- [ ] TRACK
- [ ] INTERP
- [ ] DELETE
- [ ] LATLON
- [ ] TIME
- [ ] EXCHNG
- [ ] WINDOW
- [ ] FIRSTW
- [ ] NEWFW
- [ ] SENSOR
- [ ] MERGE
- [ ] HELP
- [ ] SVPLOT
- [ ] EXIT



- [ ] GRID
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- [ ] EXCHNG
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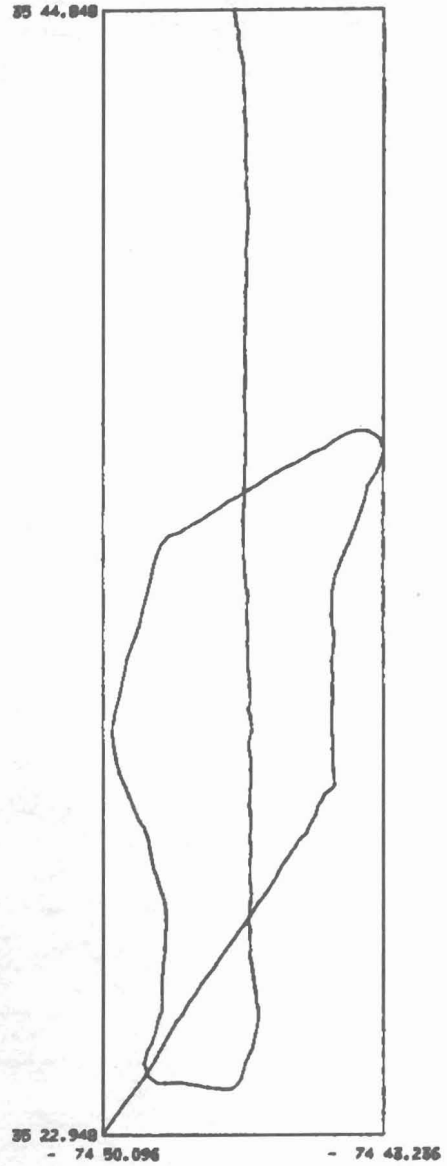

Using Northstar 6000
receiving N. Star cassette
5 min printout from Silent 700
Using JMR-4 Sealand Surveyor
receiving Sat. Fix update cassette
printout from (another) Silent 700

NAVIGATION ~ By Dodd 12-4
Wood-Needell 8-12
IRWIN 4-8

GMT +4 Z				LINE #	SHIPS			NAVIGATION								
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
19	09	80	0200	1									
19	09	80	0250										
JD263			0250										
			0300		184	1.3		35	43.8	74	46.3		
			0335										
			0400		215	1.5		35	42.6	74	46.5		
			0430		175	2.1		35	41.7	74	46.5		
			0455										
			0500		177	1.9		35	40.6	74	46.4		
			0530		183	2.3		35	39.6	74	46.5		
			0600		186	2.4		35	38.4	76	46.6		
			0630		187	2.3		35	37.3	76	46.8		
			0610					35	37.9	74	46.6		
			0700		192	2.1		35	36.2	74	47.1		
			0715										
			0800		187	2.2		35	33.7	74	47.5		
			0840										
19	09	80	1600										
19	09	80	2050										
			2255	1 (Restart)				35	44.6	74	46.8		
			2300					35	44.5		46.8		
			2315					35	44.2		46.8		
			2330		177	1.7		35	43.8		46.7		
			2345		180	1.9		35	43.3		46.7		
20	09	80	0000		181	1.8		35	42.8	74	46.7		
JD264			0015		181	1.9		35	42.4	74	46.6		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 1
			Depart Little Creek, Va 1045 (Local) 9/18/80	
			Arrive at lease block area N. of Hatteras 2200 local	
			263 day 0200 Z began deploying fish	
			0233 Z fish in water	
NS1	X		@ 0250Z	
			TAPE STARTED IN NORTHSTAR - NS1	
0250			TAPE ENTERED INTO SEALAND SURVEYOR - SF1	
			RECORDERS TURNED ON / NO DATA BEING COLLECTED	
			HEADING 233 / STARBOARD LORAN POOR	
			STARBOARD LORAN IMPROVED	
0400			Fish going down, now 442 m deep	
0430			Fish 700m depth	
0455			Change heading to 215	
0500			Transmitter on side-scan system down	
0530			Transmitting again 0535 - Out again	
0600			Equipment still down	
0630			Equip. still down	
			Sat. fix - right on! - Equip down	
			Equip still down	
			Bringing Fish up - to bench check	
			0840 - SHIP WILL BE HELD ON SITE. NO NAV WATCH TILL FISH IS DEPLOYED AGAIN.	
			Equip. still down.	
			Decision made to lower the fish and try again	
			Streaming Gear	
NS1		X	EOF @ 2355Z	
NS2	X		START NS 2 @ 0000Z	

GMT 74					SHIPS		NAVIGATION						
DAY	MO	YR	TIME Z	LINE #	COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	LATITUDE N ± MINUTES	LONGITUDE W ± DEGREES	LONGITUDE W ± MINUTES	TYPE	QUAL.
20	09	80	0030	1	181	1.8		35	41.9	74	46.6		
JD	264		0045		181	1.8		35	41.4	74	46.6		
			0100		182	1.5		35	40.9	74	46.5		
			0115		181	1.8		35	40.5	74	46.6		
			0130		186	2.2			39.9		46.6		
			0145		183	2.1			39.3		46.6		
			0157				0140		39.5		46.5		
			0200		181	2.2			38.8		46.6		
			0215		183	2.2			38.2		46.6		
			0230		185	1.9			37.7		46.6		
			0245		178	2.1			37.2		46.6		
			0300		179	2.1			36.6		46.6		
			0315				0256		36.7		46.6		
			0315						36.1		46.6		
			0330		181	2.0			35.6		46.6		
			0339				0322		35.8		46.5		
			0345		181	1.9			35.1		46.6		
			0400		180	2.1			34.6		46.6		
			0415		180	2.1		35	34.0	74	46.6		
20	09	80	0430		179	2.0			33.4		46.5		
			0445		181	2.1			32.9		46.6		
			0500		188	1.8			32.4		46.5		
			0508				0508		32.0		46.5		
			0530		180	2.0			31.4		46.5		
			0550				0518		31.5		46.3		
			0600		189	1.7		35	30.6	74	46.5		
			0615		177	1.8			30.1		46.5		
			0630		184	1.6		35	29.7		46.5		
			0645		174	1.9			29.2		46.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
			Fish towed 630 meters deep
			Satellite fix elev: 35
			Fish down 541 meters
			Fish down 726 meters
			Fish down 603 meters
			Satellite fix elev. 36
			Fish down 588 meters
			Satellite fix elev. 28
			Fish down 595 meters
4	1	5	fish down 500 m
			Sat fix elev 30
			Sat fix elev 45
			0600 - Hourly Check
			fish depth = 812 m
			Fish depth = 754 m

GMT +4				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
20	09	80	0700	1	183	1.8		35	28.8	74	46.5		
ID264			0715		186	1.7			28.3		46.5		
			0730		179	1.6			27.8		46.5		
			0745						27.4		46.5		
			0800		180	2.2		35	26.8	74	46.5		
			0830		173	1.8		35	25.9	74	46.4		
			0842				0824	35	26.0	74	46.3		
			0900		198	1.5		35	25.0	74	46.4		
			0930		186	2.1		35	24.0	74	46.7		
			1000		279	2.0		35	23.9	74	47.8		
			1024										
			1030	2	024	2.5		35	24.1	74	49.0		
			1031				1010	35	23.9	74	48.0		
			1100		012	2.4		35	25.4	74	48.7		
			1112				1054	35	25.2	74	48.6		
			1130		004	2.9		35	26.8	74	48.5		
			1200		343	3.2			28.3		48.9		
			1208						28.8		49.0		
			1230		339	2.6			29.6		49.5		
			1237						29.9		49.6		
			1241		340	2.9			30.1		49.7		
			1245		345	2.9			30.3		49.8		
			1254		353	3.2			30.8		49.9		
			1257				1240	35	30.1	74	49.7		
			1300		007	2.6			31.0		49.9		
			1307		019	2.4			31.4		49.7		
			1313						31.6		49.6		
			1315		012	2.5			31.6		49.7		
			1330		013	2.8			32.3		49.5		
			1342				1324		32.0		49.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS2			fish depth 800 m
			fish depth 957 m
			SAT Elev 29
			c/c 190° → G. Stream Setting course off Line
			END LINE (1) c/c 270
			c/c 000°
			Start Line 2
			SAT Elev 39
			SAT Elev 60 NVG
			A/C Turning HEADING TO 340° – Getting into SHALLOW water
			Shallowing Steadily – currents forcing ship in shore
			A/C Turning heading to 6000' to get into deeper water – said turning ship to compass reading 340°
			Fish or manual control < 100 m water
			A/C new heading – change to 015°
			Satellite fix elev. 15'
			Letting out fish – in order to return to automatic
			Fish on automatic winch
			SAT elev. 27

GMT +4				LINE #	SHIPS			NAVIGATION									
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
20	09	80	1345	2	020	2.9		35	32.9	74	49.2		
JD264			1400		014	2.7			33.6		49.0		
			1415		015	2.1			34.3		48.8		
			1422		036	2.6			34.6		48.5		
			1430		067	2.8			34.7		48.1		
			1445		059	2.7			35.1		47.5		
			1500		062	2.7			35.4		46.8		
			1514				1452		35.6		46.2		
			1515		059	2.3			35.8		46.1		
			1530		063	2.4			36.0		45.4		
			1530				1510		35.6		45.7		
			1545		061	2.8			36.3		44.6		
			1557		060	2.8			36.6		44.1		
			1600		069	2.8			36.7		43.9		
			1607						.		.		
			1609						.		.		
			1611						.		.		
			1613						.		.		
			1615		178	3.0		35	36.3	74	43.2		
			1620	3					.		.		
			1625		206	2.7			35.8		43.4		
			1630		219	3.1			35.6		43.6		
			1635						.		.		
			1645		204	2.3			35.0		43.8		
			1655				1640		35.2		43.4		
			1700		202	2.3			35.3		44.1		
			1715		201	1.9		36	34.0	74	44.3		
			1730		189	2.0			33.5		44.5		
			1740				1712	35	34.1	74	44.2		
			1745						33.1		44.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS2			water sounding
			A/C 040° taking line to deeper water — across line #1.
			A/C 060 "
			SAT ELEV. 37°
			SAT ELEV 32°
			C/C TO 090° END LINE 2 TURNING TO APPROACH LINE # 3
			C/C TO 120°
			C/C TO 140
			1609 — C/C TO 170°
			CC to 180°
			CC to 200°
			CC to 220 Start line 3
			CC to 210
			Sat. fix ∠=310°
			fish depth 164 fm
			1740 — SAT. FIX ELEV. = 42°

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ±DEGREES	± MINUTES	LONGITUDE W ±DEGREES	± MINUTES	TYPE	QUAL.
20	09	80	1815	003	189	1.8		-35	32.2	74	44.5		
JD264			1830		182	1.7		35	31.8	74	44.4		
			1845		182	2.9		35	31.3	74	44.5		
			1900		182	1.7			30.8		44.3		
			1915		178	1.7			30.4		44.4		
			1918				1900		30.8		44.4		
			1930	3	177	1.5			30.0		44.4		
			1933										
			1945					35	29.6	74	44.7		
			2000	(4)	200	1.7		35	29.3	74	44.9		
			2030		214	1.8		35	28.5	74	45.5		
			2040				2020	35	28.7	74	45.1		
			2100		209	1.9		35	27.7	74	46.1		
			2115		212	1.9			27.3		46.5		
			2115				2106		16.1		46.4		
			2130		215	2.0			26.9		46.9		
			2200		216	2.0		35	26.0	74	47.5		
			2208				2208	35	25.8	74	47.7		
			2230		215	2.1		35	25.2	74	48.2		
							2248	35	24.6	74	48.5		
			2300		209	1.9		35	24.3	74	48.9		
			2355										
21	09	80	0000										
JD265													
			2355										
22	09	80	0000										
JD266													
22	09	80	0017		039	2.2	0	32	30.1	76	96.8		
22	09	85	0044		028	1.8			50.7		26.1		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS2			Fish down 1372m
			Sat < 27
			change course to 216°
			begin course change
			Start Line 4
			SAT Elev 28
			SAT - bad fix Elev 39.
			SAT Elev 41
			SAT Elev 62 (FAIR)
			— Side Scan Down — END LINE 4
NS2	X		@ 2355
NS3	X		@ 0000 Transit to Southern Area
NS3		X	@ 2355
NS4	X		@ 0000
			START DEPLOYING GEAR
0045			BEGIN LINE #5 COMPARING TWO LORAN RELAYS 9960 SERIES VS. 7890 SERIES

9960
7980

GMT DAY	MO	YR	TIME +4 Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
22	09	80	0100	5	026	2.1		32	51.1	76	25.8		
ID266			0115		025	2.0			51.5		25.5		
			0120		020	2.0			51.7		25.5		
			0125				0108		51.3		25.4		
			0130		018	2.0			52.1		25.3		
			0132		017	2.4			52.1		25.2		
			0145		005	2.8			52.7		25.2		
			0148		004	2.9			.		.		
			0156		016	3.5			53.3		25.1		
			0200		031	3.0			53.6		25.0		
			0215		021	3.7			54.3		24.5		
			0230		032	2.9			55.0		24.1		
			0235		026	3.2			55.3		24.0		
			0245		031	2.7			55.7		23.7		
			0257						.		.		
			0300		028	3.1			56.3		23.2		
			0310						.		.		
			0313				0252		56.4		22.8		
			0315		028	2.9			56.9		22.8		
			0325				0310		56.5		22.5		
			0328						.		.		
			0330		035	3.0			57.6		22.4		
			0345		020	3.5			58.2		21.9		
			0400		007	3.3			59.0		21.7		
			0408						.		.		
			0415		011	2.5			59.6		21.6		
			0430		021	2.4		33	00.5	76	21.5		
			0445		011	4.0			01.1		21.2		
			0500		020	2.8			01.8		20.8		
			0515		023	3.0			02.6		20.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 6
NS4			LOWERING FISH	
			" "	
			" "	
			BRIDGE ASKED TO INCREASE SPEED BY 4 KN	
			SAT elev. 19° ADJUSTING LORAN C TO 9960 CHAIN	
			SPEED INCREASE	
TIME 0248			A/C 350°	
156			A/C 000°	
TIME 0230			FISH DOWN 1561 m	
0235			SLOWING TO 2.9-3.0 KN.	
0257			A/C 355°	
0310			A/C 350°	
0313			SAT elev. 49°	
0325			SAT elev. 46°	
0328			A/C 345	
0345			A/C 335°	
			0400 - HOURLY CHECK	
			0408 - C/H TO 340°	
0415			Featureless bottom	
			0430	
			0445	
			0500 - HOURLY CHECK - ON LINE 5 HEADING - 005°	

GMT +4				LINE #	SHIPS			NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
22	09	80	0530	5				33	03.3	76	20.1		
JD266			0545						04.0		19.7		
			0600						04.7		19.2		
			0615						05.5		18.7		
			0630						06.2		18.3		
			0638						~~07.0~~		~~17.8~~		
			0645						07.0		17.8		
			0700						07.8		17.4		
			0715						08.7		17.0		
			0730						09.6		16.6		
			0745		3333				10.5		16.2		
			0800		223.7			33	11.4	76	15.7		
			0807						.		.		
			0830		010 4.3			33	13.3	76	15.1		
			0850				0832	33	13.1	76	14.8		
			0855				0708	33	08.1	76	14.7		
			0900		011 3.9			33	15.2	76	14.6		
			0925						.		.		
			0930		020 4.0			33	17.0	76	13.9		
			0934				0916	33	15.6	76	13.7		
			1000		030 4.0			33	18.7	76	12.8		
			1030		027 4.3			33	20.5	76	11.6		
			1033				1018	33	19.6	76	12.0		
			1100		038 3.9			33	22.3	76	10.5		
			1130		030 3.5			33	24.0	76	09.3		
			1135				1102	33	22.1	76	10.4		
			1145		030 3.6				24.8		08.7		
			1200		031 3.6				25.6		08.2		
			1215		031 3.6				26.3		07.6		
			1230		027 3.7				27.2		07.1		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 7
0530			1015 M of cable out - fish 300 m off bottom	
			Just passed slump scar of Emily - Carpenter slump	
			Change course 10° to W	
0645				
0700			Edge of channel on 3.5 kHz	
0745				
			C/C to follow feature (Looney Tunes)	
			Sat Elev 35°	
			SAT Elev 20°	
			C/C Right 20°, to get back on LINE	
			Sat Elev 5°	
			Sat Elev 30°	
			Sat Elev 75°	

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
22	09	80	1245	50	029	3.7		33	27.9	76	06.5		
ID266			1250						.		.		
			1300		025	3.6		33	28.9	76	06.0		
			1303				1250	33	28.0	76	06.2		
			1307		026	3.7			29.3		05.8		
			1315		015	3.6			29.8		05.6		
			1320		017	3.7			30.7		05.3		
			1340		018	4.0			31.4		05.1		
			1345		024	3.8			31.6		04.9		
			1400		023	4.0			32.6		04.5		
			1404		019	4.0			32.8		04.3		
			1415		023	4.4			33.6		04.0		
			1430						34.5		03.4		
			1445		022	4.3			35.4		02.9		
			1457				1440		34.9		02.8		
			1500		023	4.3			36.4		02.4		
			1515		027	4.2			37.4		01.8		
			1522				1502		36.3		02.1		
			1530		025	4.3			38.4		01.3		
			1545		028	4.3			39.4		00.7		
			1600		027	4.4			40.3	76	00.3		
			1615		0				41.3	75	59.4		
			1630		041	4.2			42.2		58.7		
			1645		064	3.3			42.8		57.8		
			1700		100	2.2			42.9		57.0		
			1715		176	1.4			42.5		56.8		
			1728	62	10	1.6		33	42.45	75	56.95		
			1730		222	1.5			42.2		57.0		
			1745		187	1.7			41.9		57.2		
			1800		196	1.3			41.5		57.4		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NSF			
			A/C 030°
			SAT elev. 11°
TIME 1307			A/C 020°
TIME 1340			A/C 030°
TIME 1404			A/C 040°
			SAT elev. 58
TIME 1522			SAT elev. 45
1545			change paper on fish flyer 4.5/3.5 kHz recorder
1615			Start fish climbing for turn to due South End line 5
1615			" " " " " " " " " " " "
			Still in turn
1645			" " "
1700			Still in turn
			1728 – START LINE 6
			1458 m of cable out

GMT +4				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
22	09	80	1815	6	194	1.4		33	41.1	75	57.4		
ID 266			1830		196	1.3			40.8		57.6		
			1845		199	1.4			40.4		57.5		
			1900		200	1.2			40.1		57.8		
			1915		204	1.2			39.8		57.9		
			1930		200	1.3			39.5		58.0		
			1945		195	1.3			39.15		58.1		
			2000		197	1.4		33	38.9	75	58.2		
			2030		190	1.3		33	38.3	75	58.5		
			2040				2028	33	37.9	75	58.6		
			2100		190	1.4		33	37.7	75	58.9		
			2120										
			2130		197	1.4		33	37.0	75	58.9		
			2200		210	1.1		33	36.3	75	59.2		
			2230		209	1.4		33	35.6	75	59.5		
			2237				2214	33	35.7	75	59.2		
			2300		196	1.5		33	34.8	75	59.7		
			2319				2300	33	34.5	75	59.3		
			2330		187	1.7		33	34.0	75	59.8		
			2336										
			2355										
23	09	80	0000		158	2.0		33	33.1	75	59.4		
ID 267			0015		160	2.0			32.7		59.2		
			0030		144	1.4			32.3		59.0		
			0045		141	1.5			32.1		58.7		
			0057										
			0100		148	1.9			31.7		58.4		
			0103				0046		31.6		58.5		
			0115		198	1.3			31.4		58.5		
			0130		206	1.4			31.1		58.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS4			1458 m of cable out
1900			1458 m of cable out
			SAT Elev 33 (Faire) —
			C/C 190°
			C/C 200°
			Sat Elev 33° C/C 205°
			Sat Elev 76° change Ant# to -17.8 (from -12.8)
			C/C 185
NS4	X		@ 2355
NS5	X		@ 0000
0015			Slow speed — trim too fast through water
0057			A/C to 200°
0103			SAT elev. 13° not a good fix — rated "06".

GMT				LINE #	SHIPS			NAVIGATION							
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
23	09	80	0145	6	193	1.3		-33	30.7	75	58.6		
DD	267		0200		186	1.0			30.4		58.6		
			0203				0144		30.4		58.3		
			0215		173	1.4			30.0		58.6		
			0230		179	1.1			29.8		58.6		
			0236				0216		29.7		58.4		
			0245		161	1.1			29.4		58.3		
			0300		154	1.1			29.3		58.2		
			0315		150	1.2			28.9		58.0		
			0317						.		.		
			0330		143	1.5			28.6		57.7		
			0331						.		.		
			0345		160	1.2			28.3		57.6		
			0347				0330		28.1		57.5		
			0400		173	1.0			28.0		57.5		
			0415		183	1.3			27.8		57.5		
			0430		183	0.6			27.5		57.5		
							0430		27.6		57.2		
			0445		188	1.0			27.2		57.5		
			0500		180	1.2			26.9		57.5		
			0515		167	1.7			26.6		57.5		
			0530		180	0.7			26.2		57.4		
			0545		163	1.6			25.9		57.3		
			0600		191	0.9			25.6		57.2		
			0615		193	1.2			25.3		57.3		
			0630		206	.8			25.0		57.5		
			0645		197	1.0			24.9		57.6		
			0700		201	1.2			24.6		57.7		
			0715		196	1.2			24.3		58.0		
			0730		198	0.9			24.1		58.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 10
NSS				
			SAT elev 18°	
0236			SAT elev. 20	
0317			A/C 1900	
0331			A/C 205	
			SAT elev. 20°	
0430			SAT elev 20	
			0700 - Hourly Check	

GMT +4				LINE #	SHIPS		NAVIGATION							
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
23	09	80	0745	6				33	23.8	75	58.1		
JD 267							0742	33	23.6	75	57.9		
			0800		214	0.8		33	23.6	75	58.2		
			0830		198	1.3		33	23.1	75	58.5		
			0900		184	1.2		33	22.5	75	58.7		
			0920						.		.		
			0930		218	1.1		33	22.0	75	58.9		
							0928	33	21.6	75	59.3		
			1000		229	1.2		33	21.6	75	59.4		
			1010						.		.		
			1030		212	1.0		33	21.0	75	59.8		
							1012	33	21.0	75	59.4		
			1040					33	20.9	76	00.0		
			1100		180	1.2		33	20.4	75	59.9		
			1130		184	1.2		33	19.7	75	59.9		
			1200		180	1.2			19.0	75	59.9		
			1215		187	1.3			18.6	76	00.0		
			1217				1200		18.6	75	59.7		
			1230		190	1.3			18.3	76	00.0		
			1245		191	1.3			18.0	76	00.1		
			1300		175	1.5			17.6	76	00.0		
			1315		178	1.5			17.3	76	00.1		
			1330		175	1.6			16.9	76	00.0		
			1345		175	1.9			16.6	76	00.0		
			1350				1332		16.4	75	59.8		
			1400		176	1.6			16.2	75	59.9		
			1415		175	1.5		33	15.8	75	59.9		
			1430		173	1.7			15.4	75	59.9		
			1432				1414		15.5		59.7		
			1500		175	1.3			14.7	75	59.9		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NSS			
			SAT Elev 14°
			c/c 225
			c/c 230°
			Sat 71°
			c/c 225
			SAT Elev 25°
			c/c 180°
1217			SAT elev. 30°
			A/c 5° ~~EAST~~
1350			SAT elev. 35°
			SAT elev. 19°

GMT DAY	MO	YR	TIME	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
23	09	80	1515	6	183 1.4			33°	14.1	75	59.9		
JD 267			1530		182 1.5			33	13.9	76	00.0		
			1541				1518	33°	13.8	75	59.7		
			1545		182 1.5				13.5	76	00.0		
			1600		181 1.5				13.2	76	00.0		
			1615		184 1.7				12.8		00.1		
			1630		182 1.7				12.4		00.1		
			1645		182 1.7				12.1		00.1		
			1700		180 1.6				11.6		00.1		
			1715		180 1.8				11.2		00.2		
			1730		173 2.2				10.9		00.2		
			1745		178 1.6				10.4		00.1		
			1800		174 1.8				10.1		00.1		
			1815		171 1.8				09.7		00.0		
			1830		179 1.5				09.3		00.0		
			1845		175 1.7				08.9		00.0		
							1810		09.3		59.5		
			1900		177 1.3				08.6		00.0		
			1915		180 1.0				08.3		00.0		
			1930		179 1.7				07.9		59.9		
			1945		201 1.1				07.6		00.0		
			2000		195 1.1				07.4		00.0		
							1942	33	07.2	75	59.8		
			2030		179 1.2			33	06.8	76	00.0		
			2100		184 1.1			33	06.1	76	00.1		
			2130		180 1.2			33	05.5	76	00.2		
			2200		179 1.4			33	05.0	76	00.2		
			2225	C/C			220°						
			2230	C/C			230°	33	04.4	76	00.2		
					SKT		2208	33	04.4	76	00.1		(31)

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 12
NS5				
1541			SAT elev. 23:- RATED AS "OK" FIX	
			Sat elev 60 Rated as OK Fix	
			Sat Elev 13°	

GMT +4				LINE #	SHIPS		NAVIGATION							
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
23	09	80	2300	6	270	1.3		33	04.1	76	00.8		
JD 267			2326		C/C	215			.		.		
			2330					33	04.1	76	01.5		
			2332		C/C	200			.		.		
			2345		C/C	210			.		.		
24	09	80	0000		186	1.0			03.4		01.4		
JD 268			0014				2354	33	03.2	76	01.2		
			0015		174	1.2			03.2		01.4		
			0017						.		.		
			0030		183	1.0			02.9		01.4		
			0045						02.6		01.4		
			0056				0038		02.4	76	01.1		
			0100		181	1.0			02.4		01.4		
			0115		181	1.0			02.1		01.4		
			0130		177	1.0		33	01.8		01.4		
			0145		181	1.0		33	01.5		01.4		
			0200		182	1.0		33	01.3		01.5		
			0215		181	1.1		33	01.1		01.5		
			0230		181	1.2		33	00.8		01.5		
			0245		183	1.0		33	00.5		01.5		
			0246				0222	33	00.5		01.5		
			0300		181	0.9		33	00.3		01.6		
			0315		181	0.9		33	00.1		01.6		
			0319						.		.		
			0330		179	1.1		32	59.7	76	01.6		
			0338				0314	32	59.6		01.4		
			0345		181	1.3		32	59.4		01.5		
			0400		167	1.2			59.1		01.5		
			0415		167	1.4			58.8		01.4		
			0430		241	0.4			58.6		01.3		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS5			
NS5	X		2355Z (End 7980 Tape #1 ALSO)
NS6	X		0000Z
			SAT elev. 33
017			A/C 215°
0030			
			SAT elev. 12°
0246			SAT elev 75°
0319			A/C 210°
0338			SAT elev. 1656°

GMT +4				LINE	SHIPS			NAVIGATION									
DAY	MO	YR	TIME Z	#	COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
24	04	80	0445	6	192	1.3		32	58.3	76	01.4		
JD268			0500		189	1.5			58.1		01.4		
			0515		197	1.1			57.9		01.6		
			0530		181	1.9			57.7		01.6		
			0543				0522	32	57.3	76	01.4		
			0545						57.3		01.6		
			0600		179	1.1			57.0		01.6		
			0615		179	1.1			56.7		01.6		
			0630		191	1.1			56.5		01.6		
			0645		181	.8			56.1		01.6		
			0700		171	0.3			56.0		01.6		
			0715		176	1.2			55.7		01.6		
			0728	6	170	2.3			55.15		61.5		
			0745		120	3.3		32	55.1	76	01.2		
			0800		096	3.2			54.8		00.0		
			0830	(7)	063	3.2		32	55.1	75	58.1		
				SAT			0840	32	55.0	75	57.2	(49°)	
			0900		057	2.2		32	56.2	75	56.9		
			0930		026	2.8		32	57.1	75	55.9		
				SAT			0924	32	56.3	75	55.7		10°
			1000		018	2.5		32	58.5	75	55.5		
			1030		016	2.6		32	59.8	75	55.1		
				SAT			1026	32	59.2	75	54.9	22°	
			1100		019	2.9		33	01.2	75	54.6		
							1110	33	00.8	75	53.8	76°	
			1130		036	2.4		33	02.1	75	53.7		
			1200		033	2.4		33	03.4	75	52.8		
			1215		039	2.3		33	03.7	75	52.6		
			1230		036	2.4		33	04.3	75	52.2		
			1245		041	1.9		33	04.7		51.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 14
NS6			fish out 2400 m –	
0515			fish out 2369 m	
			f.	
			0543 – SAT. FIX ELEVATION – 64°	
			End of line 6, Begin turn for line 7	
			Start Line #7	
			C/C's SAT (FAIR – POOR)	
			(Bridge reading 318°)	
			Fish out 4715	

GMT DAY	MO	YR	+4Z TIME	LINE #	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
24	09	80	1300	7	041	2.3		33	05.2	75	51.2		
JD268			1315		045	2.1		33	05.5	75	50.7		
			1330		046	2.2		33	05.9	75	50.3		
			1345		047	2.1			06.3		49.8		
			1400		043	2.1		33	06.7	75	49.4		
			1415		047	1.9			07.1		48.9		
			1430		035	2.1			07.5		48.4		
			1438						07.7		48.3		
			1445		043	2.0			07.8		48.1		
			1500		044	1.9			08.2		47.7		
			1515		034	2.1			08.6		47.3		
			1530		038	2.0			09.1		47.0		
			1531				1510	33	07.9	75	47.2		
			1600						10.1		46.5		
25	09	80	0000										
JD269			1740										
			1700		ARRIVE		NORFOLK, VA			5 PM	LOCAL		
26	09	80	2000		DEPART		NORFOLK, VA			4 PM	LOCAL		
JD270													
27	09	80	0000										
JD271			00										
			0020										
			0115	1	161	34.0		36	49.1	75	30.1		
			0130	1	164	4.0			48.2		29.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS6			
1415			Fish out 4676 m
1438			START BRINGING UP FISH AT 15m/minute
1445			END OF LINE 7
1510			SAT elev. 64°
NS6	X		2355 Z
NS7	X		0000 Z
		X	1740 Z END 80-9
			START 80-9a
NS8	X		0000 Z
SF2	X		00
0020			Bridge begin to change heading to 167°
0044			10° to Left to get on Line
0110			10° back right to 167°
0115			BEGIN LINE # 1

GMT					LINE	SHIPS			NAVIGATION												
DAY	MO	YR	+4 Z TIME		#	COURSE	SPD		FIX TIME	LATITUDE N ± DEGREES	±	MINUTES		LONGITUDE W ± DEGREES	±	MINUTES		TYPE		QUAL.	
27	09	80	0145		1	170	4.0			36		47.2		75		29.5		N	S		
DD	271		0200			170	5.0					46.1				29.1					
			0215			168	5.1					44.8				28.8					
			0230			168	5.0					43.6				28.4					
			0245			165	5.0					42.4				27.9					
			0250						0228			43.6				28.2					
			0300			169	5.1					41.2				27.6					
			0315			172	5.0					39.9				27.3					
			0330			172	5.2					38.6				27.0					
			0345			170	5.2					37.4				26.7					
			0400			169	5.1					36.1				26.4					
			0415			167	5.1					34.8				26.1					
			0430			170	5.1					33.5				25.8					
			0445			173	4.7					32.2				25.5					
			0500			166	5.2					31.0				25.2					
			0515			168	5.2					29.7				24.9					
			0530			171	5.1					28.4				24.5					
			0545			170	5.1					27.2				24.2					
			0600			165	5.2					25.9				23.8					
			0615			170	5.1					24.7				23.4					
			0630			169	5.2					23.4				23.1					
			0645			169	5.1					22.2				22.8					
			0650			———			0620		36	24.2			75	23.2		S	F		
			0700			169	4.9					20.9				22.5		N	S		
			0715			170	5.0					19.7				22.2					
			0730			164	5.2					18.5				21.9					
			0745			172	5.0					17.2				21.6					
			0800			171	5.1					16.0				21.3					
					SAT				0758		36	16.07		75		21.35				30	
			0830			170	5.2				36	13.5		75		20.6					

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS 8			Increase ship speed to 5 knots.
TIME 0250			SAT elev. 51°
			0400 - Hourly Check - Gnorw - Yaw da Gama Returns!
			—
			—
			—
			0500 - Hourly Check - Continue on line 1 - Ah, to be navigating again.
			—
			—
			—
			0600 - Hourly Check - continue line 1
			—
			—
			—
			0650 - SAT. fix elevation - 33°
			0700 - Hourly Check
			—
			—
			—
			0800 - Hourly Check - On line 1 - all equipment fine.

GMT				LINE	SHIPS			NAVIGATION								
DAY	MO	YR	TIME Z +4	#	COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
27	09	80	0900	1	169	5.1		36	10.9	75	20.0		
JD 271			0930		167	5.1		36	08.5	75	19.2		
			1000		168	5.3		36	05.9	75	18.5		
			SAT				0946	36	07.0	75	18.7		30
			1030		171	5.2		36	03.4	75	17.9		
			SAT				1028	36	03.5	75	18.0		61
			1100		170	5.1		36	00.8	75	17.4		
			1109						.		.		
			1130		181	5.5		35	58.1	75	17.4		
			1200		181	5.1			55.5	75	17.4		
			1215		174				54.3		17.3		
			1230		175	4.9			53.0		17.2		
			1234				1216		54.1		17.2		
			1245		17548				51.8		17.1		
			1248				1234		52.6		16.9		
			1300		173	4.8			50.6		16.9		
			1315		175	5.0			49.3		16.7		
			1330		182	5.0			48.1		16.7		
			1345		182	5.0			46.8		16.8		
			1400		185	5.0			45.5		16.8		
			1415		180	4.9			44.3		16.9		
			1430		183	5.1			43.0		16.9		
			1439				1416		44.1		16.9		
			1445		182	5.1			41.7		17.0		
			1500		184	5.2			40.4		17.1		
			1515		187	5.3			39.1		17.2		
			1530		181	5.2			37.8		17.3		
			1545		182	5.1			36.5		17.4		
			1600		184	5.3			35.2		17.5		
			1615		185	5.2			33.8		17.6		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 17
NS8			Read out from 7980 using incorrect	
			TD solution — corrected @ 0900Z	
			9960 TAPE OK	
			C/C 181°	
			A/C 3° PORT.	
			SAT elev. 16°	
			SAT elev. 15°	
			1305 - 3° STARBOARD.	
			A/C 3° RIGHT	1325 A/C 3° RIGHT.
				A/C 3° LEFT.
			SAT elev 57	

GMT +4				LINE	SHIPS			NAVIGATION											
DAY	MO	YR	TIME Z	#	COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.						
27	09	80	1630	001	185	5.2		35	32.5	75	17.6	NS							
SP=	271		1645		183	5.1			31.2		17.8								
			1700		182	5.2			29.9		17.9								
			1705		———		1618	35	33.6	75	17.6	SF							
			1715		182	5.0			28.6		18.0	NS							
			1730		184	5.1			27.3		18.0								
			1745		183	4.9			26.1		18.1								
			1800		180	4.9			24.8		18.1								
			1815		178	4.9			23.6		18.1								
			1830		181	5.0			22.3		18.1								
			1845		183	5.0			21.1		18.1								
			1900		181	4.9			19.8		18.1								
			1915		179	5.0			18.6		18.1								
			1930		178	5.1			17.3		18.0								
			1945		183	5.1			16.0		18.1								
			2000		181	5.1			14.7		18.1								
							1954	35	15.15	75	18.02			28°					
			2030		190	5.0		35	12.2	75	18.6								
			2100		189	5.1		35	09.7	75	19.1								
			2130					35	07.5	75	18.3								
			2200		180	3.9		35	05.4	75	18.1								
			2230		178	3.6		35	03.5	75	17.9								
							2224	35	03.84	75	18.28			62°					
			2300		177	4.0		35	01.6	75	17.8								
			2330		182	3.8		34	59.6	75	17.9								
			2355						.		.								
28	09	80	0000		183	4.3		34	57.5	75	17.9								
JD	272		0015	(2)	268	3.6		34	57.8		19.2								
			0030		295	4.3		34	57.8		20.4								
			0032				0012	34	57.8		19.1								

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS8			1630 -
			—
			1700 - HOURLY CHECK. - BRIDGE CALLED - WANT TO GO 1 MI INSIDE DIAMOND SHOALS LIGHT. THIS PUTS US RIGHT OF THE LINE.
			1705 - SAT. FIX ELEVATION = 29°
			—
			—
			—
			1800 - HOURLY CHECK.
			—
			—
			—
			1900 - HOURLY CHECK.
			—
			—
			—
			2000 - HOURLY CHECK - 5 MILES FROM DIAMOND SHOALS LIGHT.
			mcl speed 2245 ~
NS8		X	
NS9	X		END LINE #1 begin turn to c/c 270°
			START LINE #2 m/c 240°
			^k 270
			SAT elev. 16°

7.081 24.811
18.960 33.780

GMT DAY	GMT MO	GMT YR	GMT TIME	LINE #	SHIPS COURSE	SHIPS SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES (N)	LONGITUDE ± DEGREES	LONGITUDE MINUTES (W)	TYPE	QUAL.
28	09	80	0045	002	301	4.6			34 58.4		75 21.6		
-0	272		0100		304	4.7			34 58.9		22.8		
			0115		305	4.8			34 59.6		24.0		
			0130		308	4.8			35 00.3		25.2		
			0140				0122		34 59.8		24.4		
			0145		309	4.9			35 01.0		26.4		
			0200		291	5.3			35 01.5		27.8		
			0204				0146		35 01.1		26.5		
			0215		295	4.4			35 02.0		29.1		
			0230		300	5.2			35 02.6		30.4		
			0245		303	4.9			35 03.2		31.6		
			0300		307	4.9			35 03.9		32.9		
			0315		305	4.8			04.6		34.2		
			0327				0306		35 04.1		33.3		
			0330		311	4.6			05.3		35.3		
			0345		313	4.5			06.1		36.3		
			0356				0334		35 05.4		75 35.6		
			0400		312	4.7			35 06.8		75 37.4		
			0415		310	4.5			07.6		38.5		
			0430		310	4.8			08.3		39.6		
			0441		313	4.5			35 08.89		75 40.46		
			0445	—	TURNING				09.1		40.7		
			0456	003	117	3.6			35 08.78		75 40.88		
			0500		099	4.1			08.8		40.6		
			0515		092	4.7			08.7		39.3		
			0530		094	4.5			08.7		37.9		
			0545		092	4.6			08.6		36.4		
			0600		090	4.4			08.6		35.0		
			0615		094	4.6			08.6		33.6		
			0630		095	4.6			08.5		32.2		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS 9			
0140			SAT elev. 48
			1
0327			SAT elev. 23
0356			SAT elev. 64
			0441 - c/c TO 090° - END LINE 2.
			—
			0456 - BEGIN LINE 3
			0500 - ALL IS WELL ON LINE 3
			—
			—
			—
			0600 -

GMT				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
28	09	80	0635	003	094	4.6		35	08.5	75	31.7	N S	
JULIAN DAY -272			0645		124	4.5			08.1		30.9		
			0700		117	4.7			07.6		29.7		
			0715		115	4.5			07.1		28.4		
			0730		118	4.9			06.6		27.2		
			0735		———		0710	35	07.3	75	28.6	S F	
			0745		073	4.5			06.9		25.8	N S	
			0800		074	4.7		35	07.2	75	24.5		
			0830		068	4.8		35	08.0	75	21.8		
			0900		087	4.4		35	08.6	75	19.2		
			0930		090	5.0		35	08.6	75	16.3		
							0940	35	08.68	75	14.98		24°
			1000		092	5.0		35	08.8	75	13.2		
			1030		092	5.1		35	08.8	75	10.1		
			1100		085	4.9		35	08.9	75	07.0		
							1044	35	08.39	75	08.85		10°
			1130		084	5.0		35	09.1	75	04.0		
			1152		———		1126	35	09.0	75	04.4		
			1200		096	4.9		35	09.0	75	01.1		
			1215		095	4.8		35	08.9	75	00.0		
			1230		094	4.9		35	08.8	75	58.1		
			1245		096	5.0		35	08.8		56.5		
			1300		094	4.9			08.7		55.0		
			1315		095	5.0			08.7		53.5		
			1330		095	4.9			08.6		52.0		
			1335				1310		08.6		53.9		
			1345		093	5.1			08.5		50.4		
			1400		096	5.1			08.4		48.8		
			1406				1344		08.7		50.7		
			1415		092	5.1			08.4		47.3		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 20
NS9			0635 - TURN RIGHT TO 114° TO AVOID DIAMOND SHOALS.	
			0700 - STILL ON TURN TO AVOID DIAMOND SHOALS.	
			0730 - TURN LEFT TO 075 TO GET BACK ON LINE 3	
			0735 - SAT. FIX ELEVATION 11°	
			0800 - CONTINUE HEADING BACK TO LINE 3.	
			SAT FIX elev: 38	
1335			SAT elev. 37°	
1406			SAT FIX elev. 18°	

GMT					LINE	SHIPS			NAVIGATION									
DAY	MO	YR	TIME +4 Z		#	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	MINUTES		LONGITUDE ± DEGREES	MINUTES		TYPE	QUAL.
28	09	80	1430		003	092	5.3		35	08	.4	74	45	.6		
29	09	80	1445			091	5.1			08	.4		44	.0		
			1500			089	5.2			08	.4		42	.4		
			1513					1458		08	.2		42	.4		
			1515			087	5.6			08	.4		40	.7		
			1530			087	5.5			08	.5		39	.1		
			1545			085	5.2			08	.6		37	.4		
			1556					1528		08	.4		39	.1		
			1600			088	5.2			08	.7		35	.8		
			1615			087	5.1			08	.7		34	.2		
			1630			088	5.1			08	.8		32	.7		
			1645			089	5.0			08	.8		31	.1		
			1700			087	4.6			08	.8		29	.6		
			1715			089	5.0			08	.8		28	.0		
			1730			093	4.8			08	.8		26	.5		
			1745			092	5.2			08	.8		25	.0		
			1800			092	4.9			08	.8		23	.4		
			1815			094	4.9			08	.7		21	.9		
			1830			093	4.8			08	.6		20	.4		
			1845			093	4.8			08	.6		18	.9		
			1900			093	4.9			08	.6		17	.4		
			1915			094	4.8			08	.4		15	.9		
			1930			095	4.8			08	.4		14	.4		
			1945			093	4.6			08	.3		13	.0		
			2000			093	4.8		35	08	.3	74	11	.5		
			2013		C/C		034				.			.		
			2015		3A				35	08	.3	74	10	.0		
			2030			042	5.0		35	09	.2	74	09	.0		
			2100			039	5.2		35	11	.2	74	06	.9		
			2130			032	5.2		35	13	.4	74	05	.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 21
NS9				
1513			SAT FIX 22°	
1556			SAT FIX 63°	
			1600	
			1615 - SEISMICS EQUIPMENT OFF FOR REPAIRS.	
			—	
			—	
			1700 - CONTINUE ON LINE 3 - SEISMICS STILL BEING CHECKED OUT.	
			—	
			—	
			—	
			1800 - ON LINE 3 - SEISMICS EQUIPMENT HAS BEEN WORKING FOR A WHILE.	
			—	
			—	
			—	
			1900 - CONTINUE LINE 3	
			—	
			—	
			—	
			2000 -	
			End Line 3	
			Start Line 3A	

21. 21.526
40.953
49.234

GMT DAY	MO	YR	TIME +4 Z	LINE #	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
28	09	80	2200	3A	035	5.3		35	15.6	74	03.2		
JD 272							2136	35	13.75	74	04.37		28°
			2230		037	4.8		35	17.7	74	01.4		
			2300		026	4.8		35	19.8	73	59.9		
							2242	35	18.44	74	00.30		10°
			2317						.		.		
			2325	(4)					.		.		
			2330		265	3.0		35	21.4	73	59.6		
							2324	35	21.08	73	58.53		36°
			2355						.		.		
29	09	80	0000		265	5.0		35	21.3	74	02.0		
JD 273			0004						.		.		
			0015		267	4.4		35	21.2	74	03.4		
			0030		267	4.6			21.2		04.8		
			0045		269	4.6		35	21.2	74	06.0		
			0100		269	4.1			21.1		07.5		
			0115		274	3.3			21.2		08.5		
			0130		274	3.3			21.2		09.6		
			0145		276	3.1			21.2		10.5		
			0200		273	2.7			21.3		11.5		
			0215		274	2.8			21.3		12.3		
			0230		274	2.8			21.4		13.2		
			0233				0200		21.1		11.1		
			0245		273	2.7			21.4		14.0		
			0300		264	2.6			21.4		14.9		
			0304				0244		21.3		13.8		
			0315		208	1.9			21.4		15.5		
			0330		269	2.0			21.4		16.1		
			0345		277	2.1			21.4		16.8		
			0400				0346		21.4		16.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS9			
			End Line 3A c/c to 270°
			Start Line 4
NS9		X	
NS10	X		
			Slow to 4.5 knots.
			Slow to 4 knots
			slow to 6.3 through water
0233			SAT elev. 70°
			SAT elev. 62°
			SAT elev 7°

X/4

GMT DAY	MO	YR	TIME +4 Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
29	09	80	0400	004	275	2.0		35	21.4	74	17.4	N S	
JD 273			0415		274	1.9			21.4		18.0		
			0430		278	2.0			21.5		18.7		
			0445		280	2.1			21.5		19.3		
			0500		279	2.0			21.7		19.9		
			0504		---		0430	35	21.3	74	18.5	S F	
			0515		261	1.8			21.7		20.6		
			0530		260	1.8			21.6		21.1		
			0545		266	2.0			21.5		21.7		
			0600		261	1.8			21.5		22.3		
			0615		258	1.8			21.4		22.8		
			0630		256	1.9			21.3		23.4		
			0645		272	2.1			21.3		24.0		
			0700		268	2.1			21.3		25.0		
			0715		264	2.2			21.2		25.6		
			0730		278	2.5			21.2		26.1		
			0745		279	2.3			21.2		26.8		
			0800		258	2.5			21.2		27.5		
			0815		266	4.0			21.2		28.6		
			0830		266	3.1			21.1		29.4		
			SAT				0806	35	21.24	74	27.80		43°
			0900		278	3.1		35	21.2	74	31.6		
			0930		274	3.1		35	21.3	74	33.5		
			1000		268	2.7		35	21.4	74	35.3		
			SAT				0952	35	21.29	74	34.69		26°
			1030		268	2.7		35	21.3	74	37.0		
			1100		273	2.8		35	21.3	74	38.7		
			1130		272	2.7		35	21.2	74	40.3		
			1200		278	2.8			01.3		42.0		
			1215		275	2.7			21.4		42.9		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS10			0400 - OM LINE 4
			—
			—
			—
			0500 -
			0505 - SAT FIX ELEVATION - 18°
			—
			—
			—
			0600 - CONTINUE LINE 4
			—
			—
			—
			0700 - TRICKY CURRENTS AMPLIFY ANY COURSE CORRECTIONS WE MAKE.
			—
			—
			—
			0800 - SEEM TO BE SPEEDING UP - CUT ENGINE SPEED BY 25 RPM.

GMT				LINE	SHIPS			NAVIGATION									
DAY	MO	YR	TIME	#	COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
29	09	80	1221	004	—	—	1204	35	21.3	74	42.1		
JD	273		1230		272	2.8			21.4		43.7		
			1239				1224		21.6		43.5		
			1245		272	2.6			21.9		44.6		
			1300		289	1.9			21.6		45.1		
			1315		276	1.7			21.6		45.6		
			1330		267	2.1			21.6		46.2		
			1345		261	2.3			21.5		46.9		
			1400		262	1.8			21.5		47.5		
			1415		258	1.7			21.4		48.0		
			1430		266	1.7			21.4		48.6		
			1445		257	1.8			21.3		49.1		
			1500		259	1.7			21.2		49.7		
			1501				1440		21.2		48.8		
			1515		266	1.8			21.1		50.2		
			1530		278	2.0			21.2		50.8		
			1545		275	1.8			21.3		51.4		
			1600		274	2.1			21.3		52.0		
			1615		279	2.1			21.3		52.7		
			1630		272	1.9			21.4		53.3		
			1645		274	2.1			21.4		53.9		
			1658		—	—	1628		21.4		53.25	F	
			1700		275	2.0			21.5		54.6	N	S
			1715		270	1.9			21.5		55.2		
			1730		256	1.7			21.5		55.8		
			1745		271	1.9			21.5		56.4		
			1800		263	2.0			21.5		57.0		
			1815		261	2.1			21.4		57.7		
			1830		263	2.1			21.4		58.3		
			1845		266	2.2			21.3		59.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 24
N540			SAT elev. 9°	
TIME 1239			SAT elev 10°	
			SAT elev. 58°	
			1600 - GNORW - YAW DA GAMA ON THE JOB.	
			—	
			—	
			—	
			1658 - SAT. FIX ELEVATION - 20°	
			1700 - ONE HOUR DOWN - 3 TO GO.	
			—	
			—	
			—	
			1800 - HALFWAY - NO TURNING BACK.	
			—	
			—	
			—	

GMT				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
29	09	80	1900	004	259	2.2		35	21.3	74	59.7	N	S	
JD	273		1915		256	2.9			21.1	75	00.5			
			1930		255	3.2			20.9	75	01.4			
			2000		272	3.3		35	20.9	75	03.5			
			2030		270	3.5		35	20.9	75	05.5			
							2004	35	20.8	75	03.6		39°	
			2100		268	5.6		35	20.9	75	07.7			
			2115		268	3.8			20.8		08.8			
			2130		265	3.6		35	20.8	75	09.9			
			2200		265	3.7		35	20.6	75	12.2			
			2230		270	3.7		35	20.6	75	14.4			
							2152	35	20.7	75	11.5		30°	
			2300		273	4.0		35	20.5	75	16.7			
			2330		272	4.0		35	20.6	75	19.2			
30	09	80	0000		269	3.8		35	20.6	75	21.6			
JD	274		0015		265	4.0			20.5		22.8			
			0030		261	4.0			20.4		24.1			
			0038				0022		20.4		23.3			
			0043		267	4.2			20.3		25.2			
			0045		266	4.4			20.3		25.3			
			0100		265	4.9			20.2		26.7			
			0106	4A					20.1		27.3			
			0110				0052		20.0		25.9			
			0115		355	3.3			20.5		27.5			
			0130		005	3.6			21.5		27.4			
			0145		006	4.4			22.6		27.2			
			0200		002	4.1			23.7		27.0			
			0215		014	4.1			24.7		26.8			
			0216		—	—	0200		23.5		27.2			
			0230		009	4.1			25.7		26.6			

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS10			1900
NS10		X	@ 2355 Z
NS11	X		@ 0000 Z
0038			SAT elev 11°
			increase speed through water by .5kn
			END LINE #4 START LINE 4A (START TURN TO 008°)
			SAT elev. 31°
			SAT FIX 24°

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
30	09	80	0245	4A	005	3.8		35	26.7	75	26.4	N	S
JD	274		0300		007	4.1			27.7		26.3		
			0301				0236		26.0		26.2		
			0315		007	4.1			28.7		26.1		
			0330		010	4.0			29.8		26.0		
			0345		009	4.3			30.7		25.8		
			0347		009	4.3			30.9		25.7		
			0400		042	3.7			31.4		25.0		
			0415		046	3.8			32.1		24.2		
			0425		—		0342	35	30.6	75	25.5	S	F
			0428	905	042	3.7		35	32.75	75	23.45	N	S
			0430		057	3.1			32.8		23.4		
			0445		091	3.7			32.8		22.3		
			0500		094	3.8			32.7		21.1		
			0515		091	4.2			32.7		19.9		
			0530		088	4.0			32.7		18.7		
			0545		083	3.8			32.8		17.5		
			0600		083	3.5			32.9		16.0		
			0605		—		0530	35	32.7	75	18.7	S	F
			0615		086	4.0			33.0		15.2	N	S
			0630		087	4.1			33.0		13.6		
			0645		082	4.3			33.1		12.7		
			0700		088	4.0			33.2		11.5		
			0715		091	4.0			33.2		10.2		
			0730		089	4.3			33.1		08.8		
			0745		089	4.2			33.1		07.6		
			0800		095	4.8		35	33.1	75	06.2		
			0830		100	4.5		35	32.9	75	03.4		
			0900		095	4.1		35	32.8	75	00.7		
			0930		089	4.1		35	32.7	74	58.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 26
N511				
			SAT elev 35°	
			A/C 047°	
			0400 - OVER-THE-TOP WATCH ON THE JOD.	
			0425 - SAT. FIX ELEVATION - 46°	
			0428 - END LINE 4A TURN TO 090° START LINE 5	
			—	
			—	
			0500 -	
			—	
			—	
			—	
			0600 - TWO O'CLOCK LOCAL AND ALL'S WELL.	
			0605 - SAT. FIX ELEVATION: 66	
			—	
			—	
			—	
			0700 - CONTINUE LINE 5	
			—	
			—	
			—	
			0800 -	

GMT DAY	MO	YR	TIME +4 Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
30	09	80	SAT	5			0902	35	32.8	75	00.4	64°	
JD	27	4	1000		088	4.4		35	32.8	74	55.5		
							0948	35	32.8	74	56.4	35°	
			1030		075	4.2		35	33.1	74	52.8		
			1100		077	4.2		35	33.4	74	50.2		
			1130		087	4.5		35	33.6	74	47.6		
			1200		082	4.6			33.9		44.7		
			1215		100	4.3			33.7		43.4		
			1230		093	4.3			33.6		42.0		
			1245		096	4.6			33.5		40.6		
			1256		—	—	1240		33.5		40.9		
			1300		096	4.3			33.3		39.1		
			1315		099	4.8			33.1		37.7		
			1330		089	5.1			33.1		36.1		
			1345		094	4.8			33.1		34.6		
			1400		096	4.7			33.0		33.1		
			1412		—	—	1352		33.1		33.8		
			1415		098	4.7			32.9		31.5		
			1430		097	4.7			32.8		30.1		
			1444				1424		32.7		30.6		
			1445		088	5.3			32.8		28.5		
			1500		090	5.0			32.8		26.9		
			1515		094	5.2			32.9		25.4		
			1530		081	4.7			33.0		23.9		
			1545		081	5.3			33.1		22.3		
			1559				1538		33.0		22.7		
			1600		085	5.2			33.3		20.8		
			1615		081	5.1			33.4		19.2		
			1630		082	5.1			33.5		17.6		
			1645		092	5.2			33.6		16.1		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 27
NS11			Weather – overcast/Rain Seas – Rough	
			A/C 15° Right to get onto line	
			RULED SPARKER	
			SAT elev. 24°	
			SAT elev. 26°	
			SAT elev 35°	
			SAT elev 45	
			1600 – SEAS CONTINUE ROUGH – WEATHER STILL OVERCAST.	

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
30	09	80	1700	005	087	7.8		35	33.7	74	14.5		
SD	27	4	1715		088	5.0			33.7		13.0		
			1730		092	4.9			33.7		11.4		
			1745		089	5.2			33.6		09.8		
			1749		———		1724	35	33.6	74	11.9	SF	
			1800		095	5.2			33.5		08.2	NS	
			1810	05A	095	5.2		35	33.4	74	07.3		
			1815		058	5.3			33.6		06.7		
			1830		034	6.6			35.0		05.5		
			1845		035	6.7			36.3		04.4		
			1900		035	6.6			37.7		03.2		
			1915		033	6.3			39.0		02.1		
			1930		032	6.1			40.4		01.0		
			1945		032	6.3			41.7		00.1		
			2000		034	6.3		35	43.0	73	59.1		
			2020		C/C								
			2026	6									
			2030		266	2.2		35	44.8	73	58.3		
			2045		276	2.3		35	44.7	73	59.0		
			2100		264	5.1			44.7	74	00.0		
			2115		268	4.6			44.7		01.5		
			SAT				2058	35	44.6	73	59.7		64°
			2130					35	44.7	74	03.0		
			2200		276	4.9			44.8	74	05.9		
			SAT				2144	35	44.5	74	04.3		38°
			2230		259	4.3		35	44.8	74	08.7		
			2300		271	4.6		35	44.7	74	11.4		
			2330		269	4.5		35	44.7	74	14.2		
							2330	35	44.6	74	14.1		27°
01	10	80	0000		275	4.5			44.7		17.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS11			1700 - ONLY SMALL AIRGUN AND ONE STREAMER STILL OUT.
			—
			—
			—
			1749 - SAT. FIX ELEVATION - 70°
			1800 - CONTINUE LINE 5
			1810 - C/C TO 035° END LINE 5 START 5A. NOT 025° BECAUSE THAT WOULD PUT US BROADSIDE TO SEAS.
			—
			—
			—
			End line 5A C/C 270°
			Start line 6
			S/C @ 4.5 knots
			Overcast / Rain / Seas - Rough
NS11	X		23552
NS12X			00002

GMT				LINE #	SHIPS			NAVIGATION											
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES		LONGITUDE ± DEGREES	LONGITUDE MINUTES		TYPE	QUAL.				
01	10	80	0015	0006	270	4.3			35	44.7		74	18.4	N	S				
JD	275		0030		268	4.2				44.8			19.7						
			0045		276	4.4				44.9			21.1						
			0100		275	4.3				44.9			22.5						
			0115		279	4.6				45.0			23.9						
			0127				0108			44.9			23.1						
			0130		269	4.7				45.1			25.3						
			0145		265	4.4				45.1			26.8						
			0150				0128			45.0			25.1						
			0200		264	5.2				45.0			28.3						
			0215		272	4.5				44.9			29.7						
			0230		269	4.4				44.9			31.1						
			0245		266	4.7				44.9			32.5						
			0300		266	4.9				44.8			34.1						
			0313				0252			44.8			33.3						
			0315		273	4.8				44.8			55.6						
			0330		266	4.3				44.7			37.0						
			0330				0314			44.7			35.4						
			0345		268	4.7				44.7			38.5						
			0400		268	4.5				44.6			40.0						
			0415		265	5.2				44.5			41.6						
			0430		266	5.3				44.5			43.2						
			0445		268	5.5				44.4			44.8						
			0500		267	5.3				44.4			46.5						
			0505				0438		35	44.4		74	44.1						
			0515		265	5.4				44.3			48.1						
			0530		269	5.2				44.2			49.8						
			0545		270	4.9				44.3			51.4						
			0600		273	5.0				44.3			52.9						
			0615		269	5.0				44.3			54.4						

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 29
NS12				
			SAT elev. 10	
			SAT elev. 75°	
			SAT elev 83°	
			0400 -	
			—	
			—	
			—	
			0500 -	
			0505 - SAT. FIX ELEVATION - 53°	
			—	
			—	
			—	
			0600	
			—	

GMT				LINE #	SHIPS			NAVIGATION										
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
01	10	86	0630	006	258	5.1		35	44.2	-74	56.0	N	S	
JD= 295			0645		269	5.1			44.2		57.6			
			0700		273	4.9			44.3		59.1			
			0710		———		0624	35	44.3	74	55.4	S	F	
			0715		272	4.8			44.3		00.6	N	S	
			0730		269	4.9			44.3		02.2			
			0745		269	4.7			44.2		03.7			
			0800		272	4.7			44.2		05.1			
			0 SAT				0812	35	44.2	75	06.2		55°	
			0830					35	44.2	75	08.0			
			0900		266	4.5		35	44.1	75	11.3			
			0915				HOVE TO		.		.			
			1400						46.0		01.6			
			1415		237	4.2			45.6		02.9			
			1430		236	5.0			45.		04.1			
			1440						44.5		05.0			
			1445		259	4.5			44.4		05.4			
			1500		264	4.6			44.3		06.8			
			1512				1450		44.3		05.7			
			1515		264	4.7			44.2		08.2			
			1530		272	4.1			44.2		09.6			
			1545		274	4.0			44.2		10.9			
			1600		272	4.0			44.2		12.1			
			1615		272	3.9			44.3		13.3			
			1630		269	3.8			44.2		14.5			
			1645		272	3.7			44.3		15.6			
			1700		269	3.7			44.2		16.8			
			1702		———		1634	35	44.2	75	14.8			
			1715		270	3.7			44.2		18.0			
			1730		272	3.8			44.3		19.2			

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS12			0630 -
			—
			0700 — CONTINUE LINE 6 - SEAS CONTINUE ROUGH - PRESSURE AT 1000 MILLIBARS & DROPPING.
			0710 - SAT FIX ELEVATION - 21°
			—
			—
			—
			0800 - Problem w/ Streamer - to present No data Loran in & out STA Y Problem Blink
0905			LINE 6 Discontinued ↳ 0810Z to 0845Z
			Circling General Area
			RETURNING TO LINE #6 (240°).
			CONTINUE LINE #6 (270°)
			SAT elev 77°
			1600 - SEAS ARE A LITTLE CALMER TODAY. FANTAIL STILL AWASH MOST OF THE TIME.
			—
			—
			—
			1700 -
			1702 - SAT. FIX ELEVATION - 46°
			1730

GMT				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE		QUAL.	
01	10	80	1745	006	274	3.7		35	44.3	75	20.4	N	S		
JD275			1800		273	3.9			44.4		21.6				
			1815		273	4.0			44.4		22.8				
			1830		267	4.1			44.4		24.1				
			1844		———		1822	35	44.3	75	23.4	S	F		
			1845		272	3.8			44.4		25.3	N	S		
			1900		276	4.0			44.4		26.5				
			1915		275	3.9			44.5		27.7				
			1928	006 A	270	3.8		35	44.49	75	28.3				
			1930		281	3.3			44.5		28.9				
			1945		340	3.7			45.2		29.3				
			2000		339	4.2		35	46.1	75	29.7				
			2030		338	4.3		35	48.0	75	30.6				
					SAT		2012	35	46.8	75	29.9			51	°
			2100		341	4.0			50.0		31.5	N	S		
			2115		341	4.0			50.9		31.9				
					SAT		2058	35	50.3	75	32.3			14	°
			2130		341	4.0		35	51.9	75	32.3				
			2200		340	4.0		35	53.8	75	33.1				
					SAT		2158	35	53.6	75	33.0			23	°
			2230					35	55.7	75	34.0				
			2243						.		.				
			2249	007					.		.				
			2300		090	4.2		35	56.5	75	33.1				
			2330		093	4.2		35	56.5	75	30.4				
021080			2355 0000		092	4.2			56.5		27.8				
JD276			0015		089	4.0			56.5		26.5				
			0030		089	4.3			56.4		25.2				
			0040				0022		56.4		25.8				
			0045		089	4.4			56.5		23.9				

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS12			1745
			1800 - RAINING OUTSIDE. BORING INSIDE.
			—
			—
			1844 - SAT. FIX ELEVATION - 25°
			—
			1900
			1928 - c/c TO 338° END LINE 6 - START LINE 6A
			—
			—
			2000 Weather improving - Still Rough / Running
			End Line 6A c/c 090
			Start LINE 7
2355		X	NS-12
0000	X		NS-13
			SAT elev. 21°

GMT				LINE #	SHIPS		NAVIGATION							
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
02	08	00	0100	007	087	4.3		35	56.5	75	22.5		
JD 276			0115		088	4.4			56.5		21.3		
			0130		089	4.5			56.6		20.0		
			0145		094	4.3			56.5		18.8		
			0200		085	4.0			56.5		17.5		
			0215		088	4.2			56.6		16.2		
			0230		089	4.0			56.6		14.9		
			0245		083	4.0			56.7		13.7		
			0258				0206		56.5		16.9		
			0300		093	4.4			56.7		12.3		
			0315		088	4.2			56.8		11.0		
			0330		089	4.4			56.8		09.7		
			0345		089	4.5			56.8		08.4		
			0400		090	4.5			56.8		06.9		
			0415		090	4.5			56.8		05.6		
			0417		———		0346	35	56.8	75	08.3	S	F
			0430		093	4.5			56.7		04.2	N	S
			0445		094	4.4			56.8		02.9		
			0500		087	4.6			56.7		01.5		
			0515		090	4.5			56.7		00.1		
			0530		092	4.8			56.7	74	58.6		
			0545		095	4.8			56.7		57.2		
			0600		095	4.7			56.6		55.7		
			0615		093	4.5			56.6		54.3		
			0630		087	4.5			56.6		52.8		
			0631		———		0532	35	56.7	74	58.4	S	F
			0645		089	4.6			56.7		51.4	N	S
			0700		085	4.7			56.8		49.9		
			0715		088	4.5			56.8		48.6		
			0730		093	4.7			56.8		47.2		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS13			
			slight course adjust to go S of lighted tower
			SAT elev. 34°
			0400 - ON THE JOB AGAIN - GNORW - YAW VIA GAMMA - NAVIGATOR EXTRAORDINAIRE
			—
			0417 - SAT. FIX ELEVATION - 20°
			—
			—
			—
			0500 - SURPRISING CALM SEAS - CONSIDERING THE 15 KT WIND FROM NNE.
			—
			—
			—
			0600 - CONTINUE LINE 7.
			—
			—
			0631 - SAT. FIX ELEV. - 52°
			0700 -
			—
			—

GMT DAY	MO	YR	TIME +4 Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
02	10	80	0745	007	093	4.7		35	56.8	74	45.7	N S	
JD 276					SAT		0724	35	56.8	74	47.6		24°
			0800		091	4.9		35	56.8	74	44.2		
			0830		089	4.7		35	56.7	74	41.2		
			0900		090	4.9		35	56.8	74	38.2		
			0930		088	4.6		35	56.9	74	35.3		
					SAT		0910	35	56.9	74	37.4		46°
			1000		087	4.7		35	57.0	74	32.2		
							0956	35	57.0	74	32.5		50°
			1030		093	4.8		35	57.1	74	29.2		
			1100		089	5.0		35	57.1	74	26.2		
			1130		092	5.1		35	57.1	74	23.1		
			1200		092	4.8			57.1	74	20.0		
			1200		—	—	1142		57.0	74	21.9		
			1215		093	5.1			57.1	74	18.5		
			1228		—	—	1212		57.1	74	18.8		
			1230		092	5.0			57.1	74	17.0		
			1245		088	4.6			57.2	74	15.6		
			1300		088	4.7		35	57.3	74	14.1		
			1315		091	4.8			57.3	74	12.6		
			1330		089	4.8			57.3	74	11.0		
			1345		087	5.0			57.3	74	09.5		
			1400		087	5.4		35	57.4	74	07.9		
			1411		—	—	1354		57.2	74	08.3		
			1415		093	5.9			57.3	74	06.1		
			1430		089	5.9			57.3	74	04.3		
			1445		088	6.0			57.3	74	02.5		
			1500		089	6.1		35	57.4	74	00.6		
			1515		088	5.2			57.4	73	58.8		
			1523	07A	088	5.0			57.4	73	58.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NSIJ			0745 - CONTINUE LINE 7 - WIND NNE 15 KT. SEAS FAIRLY CALM.
			SAT elev. 20°
			SAT elev. 15°
			SAT elev. 55°
			END LINE #7 BEGIN LINE 7A

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
02	10	80	1530	07A		5.1		35	57.9	73	57.6	N S	
JD 276			1545		021	5.0		35	59.0		56.8		
			1600		015	4.9		36	00.2		56.5		
			1601				1542	35	58.8	73	56.8	S F	
			1615		013	4.9		36	01.4	73	56.1	N S	
			1630		001	4.2			02.5		56.0		
			1645		359	4.3			03.9		56.1		
			1700		001	4.4			04.6		56.1		
			1715		001	4.4			05.7		56.1		
			1730		001	4.4			06.8		56.1		
			1745		003	4.5			07.9		56.0		
			1747				1728	36	06.5	73	56.0	S F	
			1800		357	4.3			09.0		56.0	N S	
			1804	008	000	4.2		36	09.36	73	56.00		
			1815		276	3.8			09.6		56.7		
			1830		265	3.8			09.5		57.9		
			1845		264	3.7			09.5		59.0		
			1900		269	3.7			09.4	74	00.2		
			1915		268	3.9			09.4		01.4		
			1930		269	3.9			09.3		02.6		
			1945		272	4.5			09.3		03.8		
			1951										
			1956										
			2000		272	4.5			09.3		05.1		
			2100		271	4.1			09.3		10.2		
			2115		271	4.1			09.3		11.5		
					SAT		2108	36	09.2	74	10.7		48°
			2130		268	4.2		36	09.3	74	12.9		
			2200		269	4.2		36	09.2	74	15.4		
							2154	36	09.1	74	14.8		52°

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 34
NS13			1530	
			1600 - SEAS QUITE TODAY - SOME LARGE SWELLS. NO WIND TO SPEAK OF.	
			1601 - SAT. FIX ELEVATION - 21°	
			—	
			—	
			—	
			1700 -	
			—	
			—	
			—	
			1747 - SAT. FIX ELEVATION - 56°	
			1800 - SAME AS BEFORE ONLY MORE OF IT.	
			1804 - C/C TO 270° END LINE 07A - START LINE 8	
			—	
			—	
			—	
			1900	
			—	
			1930 - BORIS WINS AGAIN AT CHESS	
			—	
			1951 - LOSE NANTUCKET STATION.	
			1956 - NANTUCKET BACK UP.	
			2000 —	

GMT DAY	MO	YR	TIME +4 Z	LINE #	SHIPS COURSE	SPD	FIX TIME	NAVIGATION LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
02	10	80	2230	8	268	4.2		36	09.2	74	18.0	NS	
JD	276		2300		269	4.2		36	09.1	74	20.5		
			2330		271	4.2		36	09.1	74	23.1		
			2355										
			2357				2340	36	09.0	74	24.0		
									.		.		
03	10	80	0000		270	4.4		36	09.1		25.8		
	JD	277	0015		273	4.4			09.1		27.2		
			0030		274	4.6			09.1		28.6		
			0045		274	4.4			09.2		30.0		
			0100		276	4.5			09.3		31.4		
			0115		278	4.6			09.5		32.8		
			0117				0058		09.4		32.6		
			0130		272	4.5			09.5		34.2		
			0137				0116		10.0		33.3		
			0145		266	4.4			09.5		35.6		
			0200		261	4.5			09.3		37.0		
			0215		261	4.4			09.2		38.4		
			0230		260	4.2			09.0		39.7		
			0245		269	4.3			09.0		41.0		
			0300		266	5.1			08.9		43.6		
			0303				0244		08.9		40.8		
			0315		277	4.7			09.0		44.1		
			0324				0302		08.9		42.8		
			0330		283	4.8			09.2		45.6		
			0345		280	4.5			09.4		47.0		
			0400		281	4.3			09.6		48.3		
			0415		272	4.6			09.6		49.7		
			0430		265	4.3			09.5		51.1		
			0445		267	4.3			09.4		52.5		
			0500		267	4.6			09.4		53.9		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS13			
NS13	X		@ 2355
NS14	X		@ 00002
			A/C 5° LEFT TO AVOID LONG LINES.
			SAT elev. 49°
			SAT elev. 15°
			A/C 5° LEFT TO AVOID LINES
			SAT elev. 24°
			SAT elev. 73°
			0400 - 10-12 KT WIND FROM SW - SEAS CALM EXCEPT FOR SWELLS
			—
			—
			—
			0500 - WE WERE ABOUT 0.3 nm N OF LINE AT 0400. SLOWLY GETTING BACK - NOW 0.1 N

GMT DAY	MO	YR	TIME Z +4	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
03	10	08	0050	008	———		0440	36	09.4	74	52.1	SF	
JD = 277			0515		269	4.5			09.3		55.3	NS	
			0530		273	4.7			09.4		56.7		
			0545		273	4.8			09.4		58.2		
			0600		267	4.7			09.4	74	59.6		
			0615		263	4.4			09.3	75	01.1		
			0630		272	4.6			09.3		02.5		
			0645		268	4.5			09.2		03.9		
			0700		269	4.6			09.2		05.3		
			0702		———		0626	36	09.3	75	02.2		
			0715		266	4.4			09.2		06.7		
			0730		270	4.5			09.2		08.1		
			0745		270	4.7			09.2		09.5		
			0800		270	4.6			09.2		11.0		
			0830		269	4.6		36	09.2	75	13.9		
							0822	36	09.1	75	13.1		74°
			0900		272	4.7		36	09.2	75	16.8		
							0906	36	09.1	75	17.4		19°
			0930		268	4.6		36	09.1	75	19.7		
			1000		266	4.5		36	09.0	75	22.6		
							1008	36	08.9	75	23.1		15°
			1030		264	4.7		36	08.9	75	25.4		
			1100		275	4.7		36	08.9	75	28.3		
							1052	36	08.8	75	27.6		58°
			1130		274	4.4		36	09.0	75	31.2		
			1200		274	4.6		36	09.1	75	34.0		
			1215		274	4.7		36	09.2		35.4		
			1230		273	4.6		36	09.3		36.9		
			1245		271	4.5			09.3		38.3		
			1300		273	4.7			09.3		39.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 36
NS14			0504 - SAT. FIX ELEVATION - 64°	
			—	
			—	
			—	
			0600 - WIND STEADY AT 12 KTS - SW - HEADING 260° COURSE 267°	
			—	
			—	
			—	
			0700 - HEADING = COURSE WIND - 18 KTS.	
			0702 - SAT. FIX ELEVATION - 17°	
			—	
			—	
			0800 - NICE MOON TONIGHT. WIND BACK TO 11-12 KT. OUT OF WSW HEADING = COURSE	

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
03	10	80	1306	0008			1252	36	09.0	75	39.2	S	F
JD = 277			1315		274	4.6		36	09.4	75	41.2	N	S
			1321	08A					09.4	75	41.7		
			1330		342	4.6			10.0		42.1		
			1345		344	4.3			11.0		42.5		
			1400		343	4.4			12.0		42.9		
			1415		342	4.2			13.1		43.3		
			1430		343	4.2			14.1		43.7		
			1445		342	4.2			15.1		44.2	N	S
			1448				1432		14.1		43.8	S	F
			1500		341	4.3			16.1		44.6	N	S
			1515		339	4.4			17.1		45.1		
			1520				1458		15.9		44.4	S	F
			1530		338	4.4			18.1		45.6	N	S
			1545		341	4.3			19.2		46.1		
			1600	0099	343	4.3		36	20.26	75	46.58		
			1615		087	4.2			20.4		45.5		
			1630		005	1.3			21.5		45.4		
			1645		088	4.4			21.7		44.2		
			1700		089	4.3			21.7		42.8		
			1715		093	4.4			21.7		41.5		
			1730		092	4.4			21.7		40.1		
			1745		091	4.5			21.6		38.8		
			1800		091	4.5			21.6		37.3		
			1815		088	4.5			21.6		35.9		
			1830		089	4.6			21.6		34.5		
			1845		092	4.5			21.6		33.1		
			1900		090	4.4			21.6		31.7		
			1915		089	4.4			21.6		30.3		
			1930		092	4.5			21.7		28.9		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
N514			SAT elev. 33°
			C/C TO 342°
			SAT elev. 26°
			SAT elev 81°
			1600 - C/C TO 090° END LINE 8A START LINE 9
			1615 - MADE TURN TOO SOON. C/C TO 000° TO GET TO LINE.
			1630 - START TURNING BACK TO 090°
			1700 - WIND < 3 KTS. SEAS CALM
			1800 - WIND 10 KTS OUT OF SE. HEADING = 085° COURSE = 091°
			1900 - WIND 18 KT. SE HEADING = COURSE.

GMT DAY	MO	YR	TIME +4 Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
03	10	80	1945	009	094	4.5		36	21.6	75	27.6	NS	
JD 277			2000		092	4.3			21.6		26.2		
			2015		096	4.4			21.6		24.8		
			2030		093	4.3			21.5		23.5		
			2045		089	4.5			21.5		21.6		
			2058		—		2020	36	21.5	75	24.3	SF	
			2100		088	4.4			21.5		20.7	NS	
			2115		087	4.3			21.6		19.3		
			2121		—		2104	36	21.5	75	20.3		
			2200		092	4.4			21.7		15.3		
			2215		089	4.5			21.7		13.9		
			2230		087	4.4			21.8		12.5		
			2245						21.8		11.1		
			2300						21.8		09.7		
			2315						21.8		08.3		
			2330		097	4.7			21.7		06.8		
			2345		093	4.8			21.6		05.4		
04	10	80	0000		093	4.7			21.6		03.9		
JD 278			0010						.		.		
			0019						.		.		
			0030		099	5.4			21.4		00.7		
			0045		093	5.3			21.2		59.0		
							2352		21.7		04.6		
			0100		088	5.2			21.2		57.4		
			0115		086	4.7			21.3		55.9		
			0130		087	4.7			21.3		54.4		
			0145		092	4.9			21.4		52.9		
			0200		088	4.3			21.4		51.5		
			0215		090	4.7			21.4		50.1		
			0230		086	4.5			21.5		48.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS14			1945
			2000 - WIND 25 KT SE. HEADING - 100° COURSE - 095°
			—
			—
			—
			2058 - SAT FIX ELEV - 69°
			2100 — WIND STILL AT 25 KT. SE. HEADING - 95° COURSE - 88°
			—
			2121 - SAT. FIX ELEVATION - 20°
NS14	X		@ 0000 END TAPE NS #14
NS15	X		@ 0010 START TAPE NS #15 (IMPROPER INITIALIZING OF TAPE)
			RESET PROPER TIME ETC.
			SAT elev. 13°

GMT +4				LINE #	SHIPS			NAVIGATION										
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES		LONGITUDE ± DEGREES	LONGITUDE MINUTES		TYPE		QUAL.
04	10	80	0242	009			0216	36	21.4		74	58.0		N	S	
JD	278		0245		087	4.7			21.6			47.3				
			0300		086	4.6			21.6			45.8				
			0315		091	4.8			21.6			44.3				
			0330		093	4.8			21.6			42.8				
			0345		087	4.6			21.6			41.3				
			0400		080	4.5			21.6			39.8				
			0415		085	4.9			21.8			38.4				
			0417		———		0348	36	21.7		74	39.3		S	F	
			0418		———		0404	36	22.1		74	39.5		S	F	
			0430		092	5.0			21.8			36.9		N	S	
			0445		094	4.9			21.8			35.3				
			0450		———		———	———	———	———	———	———	———	———	———	→
			0500		088	4.9			21.8			33.8				
			0515		090	5.0			21.8			32.2				
			0530		092	5.0			21.8			30.6				
			0545		094	4.8			21.8			29.1				
			0600		091	4.8			21.8			27.6				
			0602		———		0534	36	21.8		74	30.1		S	F	
			0615		086	4.5			21.8			26.1		N	S	
			0630		088	4.6			21.9			24.6				
			0645		089	4.6			21.8			23.2				
			0700		088	4.7			21.9			21.7				
			0715		089	4.6			21.9			20.2				
			0730		096	4.8			21.8			18.7				
			0745		097	5.0			21.7			17.2				
			0800		091	4.7		36	21.7		74	15.7				
					SAT		0732	36	21.7		74	18.4				34°
			0830		093	4.6		36	21.6		74	12.8				
			0900		092	4.7		36	21.5		74	09.9				

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NSIS			SAT elev. 49°.
			C/A 5° TO LEFT FOR CRAB POTS.
			0400 – NO WIND (MUST HAVE BEEN SHIELDED FROM THE WIND). HEADING – 072 COURSE – 082.
			—
			0417 – SAT. FIX ELEVATION – 26° APPROX. 1.5 nm OFF
			0418 – SAT. FIX ELEVATION – 23° APPROX. 0.5 nm OFF
			0430 – STILL EVADING LOBSTER AND CRAB POT BUOYS.
			—
			0450 – PAST THE MAZE OF BUOYS. HEADING BACK ON COURSE.
			0500 – WIND – 10 KTS WNW HEADING 80° COURSE 87°
			—
			—
			—
			0600 – NO WIND AGAIN ??!! HEADING – 084 COURSE – 091
			0602 – SAT. FIX ELEVATION = 41°
			—
			—
			—
			0700 – WIND BACK UP TO 10 KT.
			—
			—
			—
			0800 –

GMT +4				LINE	SHIPS			NAVIGATION										
DAY	MO	YR	TIME Z	#	COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
04	10	80	0930	9	093	4.5		36	21.5	74	07.0		
JD	278						0920	36	21.4	74	07.8	33°	
			1000		093	4.8		36	21.4	74	04.1		
			1030		090	4.5		36	21.4	74	01.2		
			1100		092	4.6		36	21.4	73	58.4		
			1130		088	4.3		36	21.2	73	55.6		
			1159				1142		21.0		54.4		
			1200		086	4.3			21.3		52.9		
			1203	09A					21.3		52.6		
			1215		018	3.3			21.9		52.3		
			1230		017	3.1			22.7		52.0		
			1245		014	3.2			23.5		51.8		
			1300		013	3.5			24.3		51.5		
			1310						24.9		51.4		
			1315		235	2.9			24.8		51.7		
			1320						24.8		51.6		
			1330		009	3.6			25.4		51.3		
			1345		010	3.5			26.3		51.2		
			1400		010	3.0			27.2		51.1		
			1415		009	3.3			28.1		51.0		
			1430		008	3.3			28.9		50.8		
			1445		013	3.4			29.7		50.6		
			1445				1410		27.6		50.8		
			1500		013	3.4			30.6		50.4		
			1515		012	3.7			31.5		50.2		
			1530		012	3.9			32.4		49.9		
			1540	010					.		.		
			1545		283	3.9			33.2		50.1		
			1547				1516		31.4		50.1		
			1600		273	4.8			33.2		51.6		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NSIS			
			SAT elev. 9°
			END LINE 9 BEGIN LINE 9A C/C 010°
			360° TURN TO AVOID SHIP TRAFFIC.
			END 360° TURN ON LINE.
			SAT elev. 52°
			END LINE 9A START LINE 10 C/C 270°
			STILL TURNING TO 270
			SAT elev. 8°
			1600 - WIND UP TO 15 KT. SW. HEADING = COURSE

GMT +4				LINE #	SHIPS			NAVIGATION												
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
04	10	80	1615	016	271	4.6		36	33.3	73	53.0	N	J	
JD-278			1617		—		1546	36	33.0	73	50.5	S	F	
			1630		269	4.5			33.3		54.4	N	S	
			1631		—		1602	36	33.6	73	52.0	S	F	
			1645		270	4.5			33.3		55.9			
			1700		275	4.4			33.4		57.3			
			1715		275	4.5			33.4		58.7			
			1730		266	4.5		36	33.4	74	00.1			
			1745		268	4.4			33.3		01.6			
			1800		268	4.3			33.3		02.9			
			1815		266	4.3			33.2		04.3			
			1830		268	4.1			33.2		05.6			
			1845		273	4.3			33.2		06.9			
			1900		272	4.1			33.2		08.2			
			1915		273	4.2			33.2		09.5			
			1930		276	4.0			33.2		10.8			
			1945		272	4.0			33.3		12.1			
			2000		277	4.3			33.4		13.4			
			2030		269	4.2		36	33.5	74	16.1			
			SAT				1930	36	33.2	74	10.7			33°
			2100		272	4.3			33.6		18.8			
			2130		267	4.7		36	33.5	74	21.6			
			SAT				2116	36	33.5	74	20.2			36°
			2200		268	4.6		36	33.4	74	25.4			
			SAT				2200	36	33.3	74	24.3			90°
			2230		267	4.7		36	33.2	74	27.4			
			2300		263	4.8		36	33.1	74	30.4			
			2330		272	5.2		36	32.9	74	33.5			
05	10	80	0000		272	5.4			33.0		36.8			
JD	279		0001				2350		33.0		35.7			

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 41
NS15			1615 -	
			1617 - SAT. FIX ELEVATION - 21°	
			1631 - SAT. FIX ELEVATION - 23°	
			1700 - WIND 13-15 KT SW SEAS AREN'T BAD BUT WE'RE ROLLING PRETTY MUCH.	
			1800 - WIND 12-13 KT. SW HEADING = COURSE.	
			1900 - WIND 15 KT SW HEADING: 265° COURSE: 272°	
			2000 - WIND 10 KT SW	
			2100	
NS15	X		3552	
NS16	X		00002	
			SAT elev 14°	

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
05	10	80	0001 5	010	272	5.4		36	33.1	74	38.5		
JD279			0030						33.2		40.1		
			0045						33.4		41.7		
			0050				0028		33.3		39.8		
			0100		277	4.9			33.4		43.2		
			0115		275	4.8			33.5		44.7		
			0130						33.6		46.2		
			0144				0124		33.4		45.6		
			0145		269	5.1			33.5		47.8		
			0153	011					33.5		48.6		
			0200		192	5.5			33.0		48.9		
			0215		189	6.0			31.5		49.2		
			0230		195	5.6			30.1		50.0		
			0235				0214		31.6		49.2		
			0245		195	5.8			28.7		50.0		
			0300		192	5.6			27.3		50.5		
			0314				0300		27.4		50.2		
			0315		196	5.5			25.9		50.9		
			0330		195	5.5			24.6		51.4		
			0332				0312		26.2		50.8		
			0345		196	5.7			23.3		51.9		
			0400		195	5.8			21.9		52.3		
			0415		196	5.7			20.5		52.9		
			0430		191	5.5			19.2		53.3		
			0445		190	5.6			17.8		53.7		
			0500		189	5.4			16.4		54.0		
			0515		188	5.6			15.0		54.2		
			0530		187	5.4			13.6		54.4		
			0545		187	5.5			12.3		54.5		
			0600		188	5.5			10.9		54.8		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 42
NS16				
			SAT elev. 32°	
			SAT elev. 21°	
			C/C 191° END LINE 10 BEGIN LINE 11	
			SAT elev 37°	
			SAT elev. 9°	
			SAT elev 54°	
			0400 - NO WIND TONIGHT	
			—	
			—	
			0500—	
			—	
			—	
			—	
			0600—	

GMT +4				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE		QUAL.	
05	10	80	0615	011	189	5.5		36	09.5	74	55.0	N	S		
JD 279			0630		187	5.5			08.2		55.2				
			0645		190	5.5			06.8		55.4				
			0700		186	5.4			05.4		55.7				
			0715		193	5.8			04.0		55.9				
			0730		191	5.4			02.7		56.3				
			0745		188	5.5			01.4		56.7				
			0759		187	5.5		36	00.5	74	56.8				
			0800	11A	186	5.4		36	00.0	74	56.9				
							0632	36	06.8	74	57.0			13°	
			0830		184	5.4		35	57.2	74	57.1				
			0900		185	5.1		35	54.5	74	57.4				
			0930		185	5.2		35	51.9	74	57.6				
			1000		184	5.0		35	49.3	74	57.9				
			1030		188	4.9		35	46.8	74	58.3				
							0914	35	53.3	74	57.3			27°	
							1018	35	47.8	74	58.2			16°	
			1100		185	4.9		35	44.4	74	58.7				
							1100	35	44.4	74	58.7			37°	
			1130		187	4.9		35	41.9	74	59.1				
			1200		189	5.1		35	39.5	74	59.5				
			1215		187	5.0		35	38.2	74	59.7				
			1230		186	5.1		35	37.0	74	59.9				
			1238				1218	35	37.9	74	59.6				
			1245		191	5.0		35	35.7	75	00.1				
			1300		188	5.1		35	34.4	75	00.4				
			1315		191	5.0			33.2		00.7				
			1330		191	5.1			31.9		01.0				
			1345		190	5.1			30.6		01.3				
			1346				1322		32.5		00.9				

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 43
NS16			0615	
			—	
			—	
			0700 - NO WIND TONIGHT	
			—	
			—	
			—	
			0759 - C/C TO 188° END LINE 11 START 11 R	
			0800 - C/	
			1200 WINDS TO 10KTS, BEAUTIFUL, SUNNY DAY.	
			SAT clear 20°	

GMT +4				LINE #	SHIPS			NAVIGATION									
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
05	10	80	1400	11A	190	5.1		35	29.4	75	01.6	N	S
JD 279			1415		191	5.2			28.1	75	01.9		
			1425		189	5.2			27.2	75	02.0		
			1430	11B					27.0	75	01.8		
			1445		096	5.0			26.9	75	00.4		
			1458				1402		29.0	75	01.5	S	F
			1500		089	5.1		35	26.8	74	58.8	N	S
			1514				1454		29.3	74	00.7	S	F
			1515		093	5.0		35	26.8	74	57.3	N	S
			1525		094	5.0			26.8	74	56.3		
			1530		089	4.1			26.8		55.9		
			1534				1508		26.6		57.2	S	F
			1545		090	4.4			26.8		54.6	N	S
			1600		092	4.3			26.8		53.2		
			1615		092	4.6			26.8		51.8		
			1630		086	4.8			26.9		50.4		
			1645		088	5.0			27.0		48.9		
			1700		085	5.0			27.1		47.3		
			1713	11C	085	5.0		35	27.26	74	45.90		
			1715		070	4.8			27.3		45.8		
			1730		358	5.1			28.6		45.7		
			1745		357	5.0			29.9		45.8		
			1750		———		1640	35	26.9	74	49.6	S	F
			1800		356	5.0			31.1		45.9	N	S
			1815		358	4.5			32.3		46.0		
			1830		359	4.4			33.4		46.1		
			1845		359	4.3			34.5		46.1		
			1900		358	4.3			35.6		46.1		
			1915		359	4.2			36.7		46.2		
			1930		003	4.2			37.7		46.1		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 45
NS-16				
			END LINE 11A BEGIN LINE 11B C/C 090°	
			SAT elev 39°	
			SAT elev. 8°	
			slow speed by .5 kn thru water	
			SAT elev. 56°	
			1600 - WIND UP TO 20 KTS FROM NE. FORECAST CALLS FOR MORE.	
			1700 - WIND STILL 20 KTS FROM NE.	
			1713 - C/C TO 000° END LINE 11B START LINE 11C	
			1750 - SAT. FIX ELEVATION - 70°	
			1800 - WIND THE SAME HEADING = 000 COURSE = 356	
			1900 - WIND UP TO 22 KTS NE.	

GMT +4				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
05	10	80	1945	11C	005	4.2		35	38.7	74	46.0	N S	
ID 279			2000		005	3.8			39.7		45.9		
			2006	11D	005	3.8		35	40.0	74	45.9		
			2010		275	4.1			.		.		
			2030		265	4.4		35	40.1	74	47.9		
			2057	11E					.		.		
			2100		246	3.9		35	39.9	74	50.6		
			2115		220	5.1			38.9		51.5		
			2130		222	4.9		35	38.0	74	52.5		
			2200		221	4.9		35	36.1	74	54.6		
							2112	35	39.0	74	51.2		27°
			2230		217	4.9		35	34.2	74	56.5		
			2300		217	4.9		35	32.3	74	58.5		
							2258	35	32.3	74	58.3		36°
			2330		219	4.8		35	30.3	75	00.3		
			2347	11F			c/c		.		.		
			2355						.		.		
06	10	80	0000		185	3.9			28.3		01.5		
JD 280			0015		183	4.0			27.3		01.6		
			0030		184	3.9			26.3		01.6		
			0045		182	4.2			25.2		01.6		
			0100		189	4.4			24.1		01.8		
			0115		191	4.1			23.0		02.0		
			0130		192	4.2			21.9		02.3		
			0135		—	—	0106		23.6		02.0		
			0140	116					21.1		02.4		
			0145		218	4.3			20.7		02.6		
			0200		218	4.2			19.8		03.6		
			0215		225	4.8			18.9		04.5		
			0230		218	4.8			18.0		05.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 46
NS-16			1945-	
			2000- WIND UP TO 22 KT.	
			2006 - C/C TO 270° END LINE 11C START 11D.	
			SOL 11D	
			C/C 220 EOL 11D / SOL 11E C/C 189°	
			C/C EOL 11E / SOL 11F	
NS16	X		@ 23552	
NS17	X		@ 00002	
			SAT elev. 69°	
			C/C TO 220° END 11F BEGIN LINE 11G	
			WINDS 25 knots	

GMT +4				LINE #	SHIPS			NAVIGATION									
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
06	10	80	0240	116			0222	35	18.4	75	04.9	NS	
JD	280		0245		217	4.9			17.1		06.5		
			0300		219	4.7			16.1		07.4		
			0315		221	4.7			15.2		08.3		
			0316				0252		16.5		06.8		
			0330		219	4.7			14.3		09.2		
			0335										
			0345		220	4.9			13.3		10.2		
			0400		223	4.8			12.4		11.1		
			0415		219	5.0			11.1		12.4		
			0430		223	5.0			10.4		13.0		
			0445		224	4.9			09.6		14.0		
			0500		223	4.8			08.7		15.1		
			0515		224	5.0			07.8		16.1		
			0530		224	5.0			06.9		17.1		
			0545		229	4.9			06.0		18.2		
			0556				0410	35	11.7	75	11.6	SF	
			0557				0540	35	06.2	75	17.8	SF	
			0600		222	5.0			05.1		19.2	NS	
			0615		217	5.1			04.1		20.1		
			0618										
			0630		229	5.3			03.1		21.2		
			0645		209	4.4			02.1		21.9		
			0700		219	4.2			01.1		22.4		
			0715		210	4.4			00.2		23.1		
			0730		210	4.2		34	59.2	75	23.7		
							0740	34	58.6	75	23.9		42°
			0800		226	4.1		34	57.7	75	25.4		
			0830		226	4.0		34	56.3	75	27.2		
			0900		224	4.2		34	54.8	75	28.9		
			0930		221	4.2		34	53.3	75	30.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS17			SAT elev. 610°
			SAT elev 16°
			0335 - LORAN OUT DUE TO STORM
			0400 - SOME RAIN TONIGHT - LORAN ON AND OFF
			0415 - LORANS SEEM TO BE O.K. NOW.
			—
			—
			0500
			—
			—
			—
			0556 - SAT. FIX ELEVATION - 17°
			0557 - SAT. FIX ELEVATION - 35°
			0600
			—
			0618 - TURNING RIGHT TO AVOID TRAFFIC.
			—
			—
			0700 - WIND 30 KTS (GUSTS TO 35) FROM NORTH.
			0715 - END OF CAPE MAY - CAPE HATTERAS CHART # 12200
			0730 - START OF CAPE HATTERAS - CHARLESTON CHART # 11520

GMT +4				LINE #	SHIPS			NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
06	10	80		116			0926	34	53.3	75	30.5	26	
JD	280		1000		217	4.2		34	51.7	75	32.4		
			1030		220	4.3		34	50.0	75	34.0		
			1100		217	4.5		34	48.3	75	35.7		
			1130		218	4.3		34	46.6	75	37.4		
			1200		215	4.6			44.8		39.0		
			1215		214	4.7			43.8		39.9		
			1215				1200		44.7		38.9		
			1230		217	4.5			42.9		40.7		
			1245		220	4.4			42.1		41.6		
			1255				1238		42.7		41.2		
			1300		225	4.3			41.3		42.5		
			1315		225	4.4			40.5		43.5		
			1320		225	4.4			40.3		43.8		
			1330		300	4.6			39.5		44.1		
			1332				1254		41.5		42.2		
			1345		203	4.4			38.5		44.7		
			1400		199	4.3			37.5		45.2		
			1415						36.5		45.6		
			1430		192	4.3			35.5		46.0		
			1439				1420		36.0		45.5		
			1445		199	4.3			34.4		46.4		
			1500		199	4.2			33.4		46.8		
			1508				1440		34.5		46.0		
			1515		198	4.3			32.4		47.2		
			1530		193	4.3			31.4		47.6		
			1545		199	4.1			30.4		48.0		
			1600		197	4.0			29.4		48.4		
			1615		194	4.0			28.5		48.7		
			1630		196	3.9			27.5		49.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 48
NS17				
			20 KNOT WINDS	
			SAT elev 11°	
			SAT elev. 6°	
			C/C 199° END 11G BEGIN LINE 11H	
			SAT elev. 49°	
			SAT elev 61°	
			SUNSHINE!	
			SAT elev 17°	

GMT +4				LINE #	SHIPS			NAVIGATION											
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES		LONGITUDE W ± DEGREES	± MINUTES		TYPE	QUAL.
06	10	80	1633	III	195	4.0			34	27.3		75	49.1	N	S	
JD = 280			1645		219	3.6				26.8			49.6			
			1700		230	3.5				26.2			50.4			
			1701		———		1546		34	30.3		75	47.8	S	I	
			1702		———		1608		34	28.7		75	47.3	S	I	
			1715		228	3.7				25.6			51.2	N	S	
			1730		227	3.7				25.0			52.0			
			1745		227	3.4				24.4			52.9			
			1800		229	3.4				23.8			53.7			
			1815		234	3.2				23.3			54.5			
			1818		———		1732		34	24.7		75	52.0	S	I	
			1830		231	3.3				22.8			55.3			
			1845		219	3.4				22.2			56.0			
			1900		219	3.3				21.6			56.7			
			1915		223	3.3				21.0			57.4			
			1930		223	3.1				20.4			58.0			
			1945		226	3.0				19.9			58.7			
			2000		229	3.0			34	19.4		75	59.4			
							1936		34	20.1		75	58.2			38°
			2030		228	3.0			34	18.3		76	00.8			
			2100		229	3.0			34	17.3		76	02.2			
			2130		230	3.0			34	16.3		76	03.6			
							2122		34	16.5		76	03.1			30°
			2200		226	2.8			34	15.3		76	04.9			
			2230		228	2.7			34	14.5		76	06.2			
			2300		220	3.0			34	13.5		76	07.3			
			2330		215	3.1			34	12.3		76	08.5			
			2355													
07	10	80	0000		218	3.2			34	11.0		76	09.6			
			0005				2208		34	15.1		76	05.5			

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS17			1633 - c/c TO 227° END LINE 11G - START LINE 11I
			1700 - WIND 5-15 KT FROM NW
			1701 - SAT. FIX ELEVATION 26°
			1702 - " " " 18°
			—
			—
			—
			1800 - WIND THE SAME. HEADING = 233 COURSE = 230 SPEED THRU WATER - 5.2 KT.
			—
			1818 - SAT. FIX ELEVATION - 43°
			—
			—
			—
			1900 - WIND 15-20 KTS. SMALL CHANGES IN HEADING PRODUCE LARGE CHANGES IN COURSE.
NS17K			END NS17
NS18K			START NS18
			SAT elev 80° (FIX DATE = 06/10/80!)

GMT				LINE #	SHIPS		NAVIGATION							
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
07	10	80	0015	11 I	221	3.5		34	10.3	76	10.3	N	
JD	28		0030		237	3.5			09.8		11.1		
			0045		226	3.6			09.2		11.9		
			0100		230	3.6			08.5		12.8		
			0115		225	3.8			07.9		13.6		
			0130		229	3.9			07.2		14.5		
			0145		223	4.2			06.5		15.4		
			0200		228	4.1		34	05.8	76	16.3		
			0201				0134		06.9		14.7	S	F
			0210				0152		06.0		15.3	S	F
			0215		230	4.2			05.0		17.2	N	S
			0230		224	4.4			04.2		18.2		
			0245		225	4.6			03.4		19.2		
			0300		233	4.6		34	02.6	76	20.2		
			0315		232	4.4			01.9		21.2		
			0317				0304		02.5		20.4	S	F
			0330		229	4.4			01.1		22.2	N	S
			0343				0320	34	01.6		21.3	S	F
			0345		230	4.6		34	00.4		23.3	N	S
			0400		234	4.5		33	59.4		24.4		
			0415		228	4.6			58.6		25.7		
			0430		231	4.6			58.2		26.4		
			0445		229	4.5			57.4		25.5		
			0450	11 J	228	4.3		33	57.3	76	27.86		
			0500		223	4.7			56.6		28.5		
			0515		227	4.7			55.8		29.6		
			0530		222	4.7			54.9		30.6		
			0545		219	4.6			54.0		31.5		
			0600		222	4.6			53.0		32.3		
			0615		214	4.8			52.2		33.2		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS18			
			SAT elev. 25°
			SAT elev. 57°
			SAT elev 9°
			SAT elev 42°
			0400 - NO WIND. HEADING - 238° COURSE - 228°
			—
			—
			—
			0450 - c/c TO 220° END LINE 11I - START LINE 11J
			0500 - WIND UP TO 10 KTS. FROM NORTH.
			—
			—
			—
			0600 - WIND AT 5 KTS.
			—

GMT DAY	MO	YR	TIME	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
07	10	80	0630	112J	220	4.7		33	51.3	76	34.1	NS	
JUL	AM	DAY 281	0645		222	4.4			50.3		35.0		
			0700		220	4.3			49.4		35.8		
			0715		217	4.7			48.5		36.6		
			0726		———		0652	33	49.9	76	35.3	SF	
			0730		218	4.5			47.7		37.4	NS	
			0745		220	4.6			46.8		38.3		
			0800		221	4.0			46.0		39.0		
			0815		218	4.3			45.2		39.8		
			0830		216	4.1			44.4		40.6		
			0900		215	4.1			43.2		42.2		
							0938	33	44.0	76	41.1		67°
			0930		214	4.1			41.3		43.7		
							0922	33	41.7	76	43.1		32°
			1000		212	4.7		33	39.7	76	45.2		
			1030		212	4.7		33	38.2	76	46.7		
			1100		212	4.7		33	36.6	76	48.0		
							1110	33	36.1	76	48.5		31°
			1130		212	3.8		33	35.0	76	49.3		
			1200		222	3.7			33.5		50.7		
			1208				1148		34.0		50.2		
			1215		223	3.8			32.8		51.5		
			1230		224	3.6			32.0		52.3		
			1245		227	3.8			31.4		53.1		
			1300		224	3.8		33	30.7	76	53.9		
			1315		228	3.7			30.1		54.7		
			1330		228	3.6			29.5		55.5		
			1345		224	4.0			28.8		56.4		
			1350				1332		29.4		55.7		
			1400		223	3.9			28.1		57.2		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 51
NS 18			0630 -	
			—	
			0700 - WIND - 8 KTS N. HEADING = COURSE.	
			—	
			0726 - SAT. FIX ELEVATION - 15°	
			0730 - PICKING UP CLEVELAND ON THE RADIO.	
			—	
			0800 - NO WIND. HEADING = COURSE.	
			SAT elev 10°	
			SAT elev 71°	

GMT				LINE #	SHIPS			NAVIGATION									
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
07	10	80	1415	115	223	4.2		33	27.4	76	58.0	N	S
08	28	81	1430		228	3.7			26.7		58.8		
			1445		222	3.8			25.9		59.7		
			1500		226	4.1			25.2	77	00.5		
			1510				1456		27.0		59.7	S	F
			1515		212	4.2			24.4		01.2	N	S
			1530		215	4.0			23.5		01.9		
			1539				1516		24.3		01.3	S	F
			1545		212	4.2			22.7		02.6	N	S
			1600		216	4.0			21.9		03.3		
			1615		222	3.9			21.2		04.1		
			1630		221	4.0			20.4		04.9		
			1645		211	5.0			19.6		05.6		
			1700		218	4.0			18.8		06.4		
			1715		218	4.0			18.0		07.1		
			1730		218	3.7			17.2		07.9		
			1745		220	3.7			16.4		08.6		
			1747		———		1640	33	19.9	77	05.0	S	F
			1800		217	3.8			15.7		09.3	N	S
			1815		218	3.9			14.9		10.1		
			1830		226	3.9			14.1		10.9		
			1845		223	3.7			13.3		11.7		
			1900		223	4.1			12.6		12.5		
			1915		222	4.2			11.8		13.4		
			1930		220	4.7			11.0		14.2		
			1945		222	4.3			10.3		15.0		
			1955		222	4.2		33	09.80	77	15.58		
			2000	(11K)	178	4.1		33	09.5	77	15.6		
			2030		182	4.1		33	07.5	77	15.6		
			2100		178	4.2		33	05.6	77	15.4		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS18			
			SAT elev 7°
			SAT elev 47°
			1600 -
			—
			—
			—
			1700 - WIND < 3 KTS HEADING - 215° COURSE - 220°
			—
			—
			—
			1747 - SAT. FIX ELEV. - 69° OFF IN LONG. - PROBABLY
			1800 - NO WIND. HEADING = COURSE.
			—
			—
			—
			1900 - WIND < 5 KT. NNE
			—
			—
			—
			1955 - c/e TO 175° END LINE 11 J START LINE 11 K.

GMT +4				LINE #	SHIPS			NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
07	10	80	2130	11K	170	3.4		33	03.8	77	15.2		
JD 281							2120	33	04.5	77	15.1	29	°
			2200		177	3.8		33	01.9	77	14.9		
			2230		178	4.6		33	00.1	77	14.7		
			2300		174	3.0		32	58.4	77	14.5		
							2306	32	58.2	77	14.1	31	°
			2330		172	3.6		32	56.6	77	14.2		
			2355						.		.		
08	10	80	0000					32	54.9	77	14.0		
JD 282			0015		172	3.5			54.0		13.8		
			0030		174	3.6			53.0		13.6		
			0045		174	3.6			52.1		13.4		
			0059				0036		52.7		13.4	S	F
			0100		170	2.6			51.2		13.3	N	S
			0115		178	3.9			50.2		13.2		
			0130		180	4.2			49.3		13.2		
			0145		178	3.1			48.4		13.1		
			0200		177	3.8			47.4		13.1		
			0215		177	4.2			46.4		13.0		
			0230		179	4.1			45.3		13.0		
			0242				0222		44.6		12.9	S	F
			0245		179	3.5			44.3		12.9	N	S
			0300		176	3.7			43.1		12.8		
			0315		174	4.5			42.0		12.7		
			0330		174	3.5			40.8		12.6		
			0345		171	4.0			39.6		12.4		
			0400		175	5.1			38.6		12.2		
			0415		167	4.1			37.7		12.0		
			0430		171	3.9			36.8		11.8		
			0441				0422	32	37.1	77	11.8	S	F

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS18			
			@
NS18	X		@ 23557
NS19	X		@ 00007
			SAT elev. 38°
			SAT elev 29°
			0400 — No WIND. 9960 LORAN JUMPING AROUND. SEND 7980 COURSE AND SPEED TO BRIDGE. STILL PLOTTING 9960 POSITIONS = SAT. AGREES.
			—
			—
			0441 — SAT. FIX ELEVATION - 12°

GMT +4				LINE #	SHIPS			NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
08	10	80	0445	11K	173	3.8		32	35.7	77	11.6	NS	
JD282			0500		180	3.7			34.7		11.6		
			0512										
			0515		177	3.3			34.0		11.6		
			0530		171	3.0			33.3		11.4		
			0545		182	3.2			32.5		11.4		
			0600		183	3.2			31.5		11.4		
			0615		184	3.2			30.8		11.5		
			0630		180	3.3			29.9		11.5		
			0645		170	3.0			29.3		11.4		
			0700		175	3.0			28.5		11.3		
			0715		175	3.1			27.8		11.1		
			0716				0542	32	32.3	77	11.3		
			0730		170	3.2			27.2		11.0		
			0745		178	3.2			26.2		11.0		
			0800		179	3.2		32	25.4	77	11.0		
							0748	32	25.7	77	11.0		50°
			0830		183	3.5		32	23.9	77	10.9		
			0900		184	3.0		32	22.2	77	10.9		
			0930		176	2.7		32	20.9	77	10.6		
			1000		177	2.7		32	19.5	77	10.4		
			1030		179	2.9		32	18.2	77	10.4		
			1100		179	2.8		32	16.8	77	10.3		
			1130		179	2.5		32	15.3	77	10.2		
08	10	80	2355	TRANSIT									
09	10	80	0000	"	"								
10	10	80	0000	"	"								

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS19			0445 - SEEM TO BE FEELING A LARGE EFFECT FROM GULF STR. KEEP TURNING RIGHT. STILL LEFT OF LINE.
			0500 - CRAZY CURRENTS. HEADING WAS 10° > COURSE NOW ONLY 5° GREATER. NO WIND:
			0512 - CAROLINA BEACH STATION ON 'BLINK'. (AND OFF AGAIN) 'BLINK' IS BLINKING
			—
			—
			—
			0600 - CURRENT PRETTY STEADY NOW. STEER 185° TO TRAVEL 175°
			—
			—
			—
			0700 - NO WIND HEADING - 190 COURSE - 173
			—
			0716 - SAT. FIX ELEVATION - 31°
			—
			—
			EOL #K. TRANSIT TO CAPE CANAVERAL
NS19		✓	2355 - END TAPE #NS19 STILL IN TRANSIT TO C.C.
NS20	✓		0000 - START TAPE 20 ONLY MAKING 6 KTS. AGAINST GULF STREAM.
NS21	✓		0000 SWITCH TO 7980 W, Z rate for Lat/Long X station Low SNR

GMT +4				LINE #	SHIPS		NAVIGATION							
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
10	10	80	0900	—	157	9.6		27	46.2	80	11.0		
ID	284		0930	WRI	174	4.7		27	43.3	80	09.7		
			1000		174	3.0		27	41.7	80	09.4		
							0948	27	42.8	80	10.1		17°
			1030		173	4.2		27	39.6	80	09.0		
							1032	27	39.7	80	08.9		69°
			1100		172	5.3		27	37.0	80	08.5		
			1130		171	5.2		27	34.5	80	08.0		
			1200		168	4.6			32.1		07.5		
			1209				1156		33.1		08.1		
			1215		169	4.9			31.0		07.2		
			1230		171	4.7			29.9		07.0		
			1245		170	4.7			28.7		06.8		
			1300		169	4.8			27.5		06.5		
			1314				1252		28.9		07.3		
			1315		172	4.6			26.3		06.3		
			1330		171	4.7			25.0		06.0		
			1345		172	4.4			23.9		05.8		
			1400		171	4.7			22.7		05.5		
			1409				1336		25.2		06.2		
			1415		170	4.6			21.6		05.3		
			1430		169	4.3			20.4		05.0		
			1445		173	4.5			19.3		04.8		
			1500		172	4.9			18.1		04.6		
			1509				1436		20.5		05.2		
			1515		170	5.5			16.8		04.3		
			1530		170	4.9			15.6		04.0		
			1545		175	5.0			14.4		03.9		
			1600		176	4.9			13.1		03.7		
			1615		175	5.1			11.8		03.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
N521			Approaching Survey Area for Water Resources.
			Using WX 7980 radar
			SAT elev. 9°
			VERY GRAY, RAINING WINDS 0-10 KN.
			SAT elev. 7°
			WEATHER CLEARING
			SAT elev 78°
			1600 - WIND 15-20 KTS. FROM NE. HEADING = COURSE.

GMT +4				LINE #	SHIPS			NAVIGATION								
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
10	10	80	1630	WR1	176	5.0		27	10.5	80	03.4	NS	
JULIAN			1645		174	5.1			09.2		03.2		
DAY			1700		172	6.2			07.9		03.1		
=284			1715		175	5.1			06.7		02.9		
			1730		171	5.0			05.5		02.8		
			1745		168	4.7			04.4		02.5		
			1800		168	5.1			03.1		02.2		
			1805		———		1736	27	05.6	80	03.1	SF	
			1815		171	4.7			01.9		01.9	NS	
			1830		169	4.5			00.7		01.6		
			1845		176	4.6		26	59.6	80	01.4		
			1900		175	4.7			58.4		01.3		
			1915		176	4.7			57.3		01.2		
			1930		179	4.7			56.1		61.2		
			1945		174	4.8			54.9		01.0		
			2000		173	4.5		26	53.9	80	00.9		
			2030		171	4.7		26	51.6	80	00.6		
			2100		177	4.3		26	49.3	80	00.3		
							1950	26	55.1	80	01.4		47°
			2130		179	4.2		26	47.1	80	00.2		
							2138	26	47.5	80	00.5		20°
			2200		191	4.5		26	44.9	80	00.4		
			2230		189	5.3		26	42.5	80	00.9		
			2300		177	4.2		26	40.0	80	01.2		
			2330		178	4.1		26	37.9	80	01.0		
			2355						.		.		
11	10	80	0000		178	2.9		26	36.1	80	00.9		
ID285			0015		177	3.1			35.3		00.9		
			0030		178	2.5			34.7		00.8		
			0045		173	2.7			34.0		00.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 56
N521			1630	
			—	
			1700 - WIND 10-16 KTS NE RAINY TODAY. SEAS CALM.	
			—	
			—	
			—	
			1800 - WIND VARIABLE TO 10 KTS. NE TO E HEADING - 165° COURSE - 168°	
			1805 - SAT. FIX ELEVATION - 37°	
			—	
			—	
			—	
			1900 - WIND ~5 KTS. OUT OF EAST. HEADING = COURSE.	
			—	
			—	
			—	
			2000 - WIND 10-15 KTS E. HEADING - 170° COURSE - 175°	
			(Switched Set #2 to (X) Z) - Primary Set on WZ	
			↳ SNR still low but indicates best Geometry	
			d/c 187 @ 2135	
N521		X	@2355 Z	
N522	X		@0000 Z	

GMT DAY	MO	YR	TIME	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	LATITUDE ± MINUTES	LONGITUDE ± DEGREES	LONGITUDE ± MINUTES	TYPE	QUAL.
11	10	80	0100	WR1	176	2.3		26	33.4	80	00.6		
JD	285		0112				0046		34.6		00.9		
			0115		188	2.3			32.9		00.7		
			0130						32.3		00.8		
			0145		183	2.7			31.6		00.8		
			0200		183	2.3		26	31.0	80	00.9		
			0215		186	2.3			30.3		00.9		
			0220				0156		31.8		01.3		
			0230		186	2.7			29.6		01.0		
			0245		182	3.2			28.9		01.0		
			0255				0232		29.7		01.1		
			0300		187	2.7			28.2		01.1		
			0315		188	3.4			27.5		01.2		
			0330		195	2.8			26.6		01.4		
			0345		194	2.8			25.9		01.5		
			0346				0308		28.3		01.5		
			0400		186	3.2			25.1		01.7		
			0415		190	2.9			24.2		01.8		
			0430		189	3.4			23.5		01.9		
			0445		184	3.8			22.6		02.0		
			0500		192	2.8			21.8		02.2		
			0515		188	3.1			20.8		02.3		
			0530		192	3.1			20.2		02.4		
			0545		195	2.4			19.4		02.6		
			0600		192	3.4			18.6		02.8		
			0615		190	3.5			17.7		03.0		
			0630		191	3.2			16.8		03.1		
			0645		187	3.5			16.1		03.3		
			0700		184	3.6			15.2		03.4		
			0715		183	3.4			14.3		03.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS 22			
			SAT FIX ELEVATION 45°
			SAT FIX ELEVATION 36°
			SAT FIX ELEVATION 22°
			SAT FIX ELEVATION 9°
			0400 - WIND APPROX 5 KTS. NE HEADING = COURSE. SEAS CALM. GETTING INTO POOR LORAN CROSSINGS.
			—
			—
			—
			0500 -
			—
			—
			—
			0600 - WIND DYING OUT. < 5 KT.
			—
			—
			0700 -
			—

GMT				LINE #	SHIPS			NAVIGATION									
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
11	10	80	0730	WR1	184	3.3		26	13.3	80	03.5	NS	
Julian			0732		———		0712	26	14.8	80	03.8	SF	
DAY	285		0745		181	4.0			12.5		03.6	NS	
			0800		187	3.2			11.6		03.7		
			0830		181	3.7			09.7		03.7		
			0900		186	3.6			07.9		03.9		
							0858	26	08.3	80	04.1		42°
			0930		183	3.7			06.0		04.0		
			1000		180	4.6			03.9		04.1		
							0942	26	05.5	80	04.3		48°
			1030		183	4.2			01.9		04.2		
			1100		181	4.3		25	59.8		04.2		
			1130		182	3.9			57.7		04.2		
			1200		182	4.3			55.6		04.3		
			1215		184	4.2			54.5		04.3		
			1230		185	4.1			53.6		04.5		
			1245		187	3.9			52.6		04.6		
			1246				1230		54.0		04.7		
			1300		192	3.7			51.6		04.7		
			1315		182	4.2			50.6		04.8		
			1330		180	4.6			49.5		04.8		
			1345						48.4		04.9		
			1400		182	4.6			47.3		05.0		
			1405				1346		48.8		05.1		
			1415		177	4.5			46.2		05.0		
			1417	WR2	171	4.1			46.1		04.9		
			1430		052	4.5			46.4		04.1		
			1432				1414		46.4		04.1		
			1445		065	4.7			46.9		03.0		
			1450			4			47.1		02.6		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 58
NS22			0720 -	
			0732 - SAT. FIX ELEVATION - 21°	
			—	
			0800 - NO WIND. LORAN JUMPING AROUND A BIT. (BAD AREA)	
			X LOW SNR (BELOW 200) ↕	
			SAT elev 27°	
			Slight course change to avoid dredging lines regaining course	
			SAT FIX elevation 31°	
			C/C 060° END LINE WR1 BEGIN LINE WR2	
			SAT FIX elevation 25°	
			C/A — GULF STREAM PUSHING NORTH	

GMT				LINE #	SHIPS		NAVIGATION								
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
11	10	80	1500	WR 2	067	4.8		25	47.4	80	01.8	N S	
JD 285			1515		062	5.1		25	48.1	80	00.6		
			1530		058	5.0			48.7	79	59.4		
			1545		060	5.0			49.3	79	58.1		
			1554				1534	25	49.3	79	59.3	S F	
			1600		062	5.0			50.0		56.9	N S	
			1615		084	4.3			50.1		55.7		
			1628										SD
			1630		050	3.5			50.1		54.7		
			1645		042	5.6			51.1		53.6		
			1700		049	5.2			52.1		52.5		
			1715		048	5.4			53.0		51.4		
			1730		053	5.2			53.7		50.2		
			1745		061	5.0			54.5		49.1		
			1800		065	4.6			55.2		48.0		
			1815		060	4.6			55.9		46.9		
			1830		062	4.6			56.4		45.8		
			1845		059	4.6			56.9		44.7		
			1900		065	4.4			57.4		43.5		
			1915		066	4.2			57.8		42.4		
			1920				1902	25	57.8	79	43.5	S F	
			1928	WR 3	069	4.5		25	58.27	79	43.30	N S	
			1930		058	4.5			58.4		41.3		
			1945		356	7.0		26	00.0	79	41.4		
			2000		359	7.0			01.8		41.5		
			2030		359	6.8			05.3		41.6		
			2100		000	6.9			08.8		41.8		
							2048	26	07.8	79	42.1		50°
			2130						12.4		41.8		
			2147	WR 4					14.5		41.9		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
N522			
			1600 - TURNING RIGHT TO AVOID BARGE.
			—
			1628 - STARTING TO TURN BACK TO THE LINE.
			—
			—
			1700 - WIND 15-20 KTS. NNE. HEADING 063 COURSE 048
			1715 - BACK TO THE LINE. TURN RIGHT 15° TO 060°
			—
			—
			1800
			—
			—
			—
			1900 - WIND STEADY AT 20 KTS NE. HEADING - 095° COURSE - 063°
			—
			1920 - SAT. FIX ELEV - 18°
			1928 - C/C TO 000° END LINE WR2 START LINE WR3
			—
			—
			2000 -
			C/C 270° EOL WR3 SOL WR4

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
11	10	80	2200	WR4	296	6.1		26	15.2	79	43.1		
JD285							2134	26	13.4	79	42.3	42°	
			2230		285	5.4			15.8		45.9		
			2300		277	4.6			16.2		48.7		
			2330		280	5.0			16.6		51.4		
12	10	80	0000		273	4.3		26	16.7	79	53.9		
11	10	80					2340		17.5	79	52.5		
12	10	80	0015		269	4.3			16.6	79	55.0		
JD286			0030		260	4.0			16.4	79	56.2		
			0045		254	4.4			16.1	79	57.4		
			0100		263	4.5		26	15.9	79	58.6		
			0115		260	4.3			15.8	79	59.8		
			0122				0108		16.2	79	57.4		
			0130		265	4.3			15.5	80	01.0		
			0145		248	4.2			15.3		02.1		
			0151	WR5	253	4.3			15.2		02.6		
			0200		032	5.8		26	15.8		02.5		
			0215		048	6.1			16.9		01.3		
			0230		052	6.0			17.9	80	00.0		
			0245		058	5.7			18.7	79	58.6		
			0300		064	5.7			19.5		57.3		
			0315		057	6.0			20.1		55.8		
			0300		061	6.1			21.1		54.4		
			0333										
			0345		036	4.0			22.0		53.3		
			0400		029	3.4			22.8		52.9		
			0415		025	3.7			23.7		52.4		
			0420										
			0430		031	5.3			24.8		51.9		
			0445		049	3.9			25.6		51.0		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS22			
N22	X		@ 2315
N23	X		@ 0000 Z
			SAT elevation 11°
			SAT elevation 13°
			C/C 052° END LINE WR 4 START LINE WR 5 (DID NOT COMPLETE WR 4 / SHIP TRAFFIC)
			A/C 4 ADJUST SPEED FOR SHIP TRAFFIC.
			" " "
			0400 -
			—
			0420 - STARTING TO COME BACK TO ORIGINAL COURSE AND SPEED.
			—
			0445 - RIGHT IN THE STREAM. HEADING - 110° COURSE - 056°

GMT +4				LINE #	SHIPS			NAVIGATION											
DAY	MO	YR	TIME Z		COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE		QUAL.					
12	10	80	0050	WR5	040	4.0		26	26.2	79	50.2	N	S						
JD 286			0515		046	3.8			26.8		49.4								
			0517		—		0402	26	23.8	79	53.4	S	F						
			0530		061	3.6			27.2		48.5	N	S						
			0545		058	3.7			27.8		47.7								
			0600		058	3.3			28.5		46.9								
			0615		069	3.2			28.6		46.0								
			0630		060	3.3			29.1		45.2								
			0645		046	3.3			29.6		44.4								
			0700		056	3.3			29.8		43.5								
			0715		071	3.4			30.1		42.6								
			0730		061	3.6			30.6		41.7								
			0745		057	3.9			31.3		40.9								
			0800	WR6	052	4.0			31.8		39.9								
							0808	26	32.9	79	40.0			79°					
			0830		285	4.0			32.4		41.5								
			0900		272	3.5			32.4		43.3								
							0852	26	33.0	79	43.2			19°					
			0930		275	3.4			32.4		45.3								
			1000		273	3.3			32.3		47.1								
							0954	26	32.8	79	47.2			10°					
			1030		284	3.5			32.3		48.9								
							1038	26	33.0	79	49.8			48°					
			1100		267	3.2			32.3		50.7								
			1130		254	3.0			32.2		52.5								
			1200		279	4.0		26	32.1	79	54.6								
			1215		274	3.9			32.3		55.8								
			1230		266	3.4			32.3		56.8								
			1245		262	3.7			32.2		57.8								
			1300		264	3.6		26	32.0	79	58.9								

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 61
NS23			0500 – WIND < 5 KT. GETTING OUT OF STREAM. COURSE FLUCTUATING.	
			0515 – N'STAR COURSE FLUCTUATING WIDELY. 45°-80°.	
			0517 – SAT. FIX ELEVATION – 38°	
			—	
			—	
			0600 – NO WIND. HEADING – 115° COURSE – 055° (OVER LAST HOUR VARIES WIDELY)	
			—	
			—	
			—	
			0700 – STILL NO WIND.	
			—	
			—	
			—	
			c/c 240 SOL WR5 SOL WR6	

GMT				LINE	SHIPS		NAVIGATION							
DAY	MO	YR	TIME	#	COURSE	SPD	FIX TIME	LATITUDE N ± DEGREES	MINUTES	LONGITUDE W ± DEGREES	MINUTES	TYPE	QUAL.
12	10	80	1315	WR6	275	4.0		26	31.9	79	59.9		
JD	286		1318	WR7	266	4.0		26	32.0	80	00.2		
			1320				1302	26	32.6	79	59.4		
			1330		042	5.8			32.8		59.8		
			1345		051	5.8			33.8		58.6		
			1400		049	5.7		26	34.7	79	57.3		
			1415		048	5.7			35.6		56.1		
			1430		052	5.7			36.5		54.8		
			1445		052	5.5			37.4		53.6		
			1500		053	5.4		26	37.9	79	52.8		
			1507				1444		38.0		54.2		
			1515		045	5.8			39.1		51.2		
			1530		052	5.5			40.0		50.0		
			1545		052	5.5			41.0		48.8		
			1600		051	5.3			41.8		47.6		
			1615		045	5.4			42.7		46.5		
			1629		———		1552	26	42.0	79	48.8	S	F
			1630		055	5.0			43.4		45.3	N	S
			1645		055	5.2			44.2		44.2		
			1700		066	5.0			44.9		43.0		
			1715		056	5.1			45.6		41.8		
			1730		057	5.0			46.3		40.6		
			1743	WR8	058	4.9		26	46.9	79	39.5		
			1745		054	4.9			47.0		39.4		
			1756		———		1738	26	47.0	79	39.8	S	F
			1800		264	4.0			47.4		40.2	N	S
			1815		258	3.7			47.2		41.2		
			1830		263	3.8			47.1		42.2		
			1845		276	4.3			47.1		43.4		
			1900		267	4.1			47.1		44.6		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 62
NS 23				
			END LINE WR6 BEGIN LINE WR7	
			C/C 054° CHANGE COURSE SEAWARD OF ENDPOINT DUE TO SHIP TRAFFIC	
			SAT FIX ELEVATION 12°	
			SAT FIX ELEV. 78°	
			1600 - WIND < 2 KT. HEADING - 80° COURSE - 50°	
			—	
			1629 - SAT. FIX ELEVATION - 32°	
			—	
			1700 - WIND 5 KTS N. HEADING 080 COURSE 060	
			—	
			—	
			1743 - C/C TO 270° END LINE WR 7 START LINE WR 8	
			—	
			1756 - SAT. FIX ELEVATION - 21°	
			1800 - WIND 10 KTS. WNW	
			—	
			—	
			—	
			1900 - WIND 15 KTS. W HEADING - 235° COURSE - 270°	

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
12	10	80	1915	WR8	276	4.5		26	47.1	79	45.8	NS	
JD	286		1930		273	4.2			47.0		46.9		
			1945		267	4.0			47.1		48.1		
			2000		274	4.2			47.1		49.3		
							1958	26	47.7	79	49.6		66°
			2030		275	4.3			47.2		51.6		
			2100		264	4.1			47.0		53.9		
			2130						47.0		56.6		
			2200		275	4.5			47.3		59.2		
			2210	WR9									
							2146	26	48.2	79	58.4		13°
			2230		032	6.7			48.9		59.0		
			2256	WR10									
			2300						51.3		57.2		
			2330		184	3.2			50.0		57.3		
			2355						-				
13	10	80	0000		184	2.8			48.5		57.4		
	JD287		0015		186	3.2			47.7		57.5		
			0030		181	3.3			46.9		57.5		
			0038				0018		48.1		57.9		
			0045		177	3.0			46.1		57.5		
			0100		178	3.0		26	45.3	79	57.4		
			0115		179	3.8			44.5		57.4		
			0130		187	3.4			43.7		57.5		
			0145		187	3.4			42.9		57.7		
			0200		182	3.2		26	41.9	79	57.7		
			0215		183	2.9			41.2		57.7		
			0225				0204		42.4		58.1		
			0230		185	2.7			40.3		57.7		
			0245		182	3.0			39.6		57.8		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS23			1915
			—
			—
			c/c 050 EoL WR8 SoL WR9
			c/c 184 EoL WR9 SoL WR10
NS23	X		@ 2355Z
NS24	X		@ 0000Z
			SAT FIX ELEVATION 29°
			SAT FIX ELEVATION 35°

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
13	10	80	0300	WR10	181	3.3		26	38.8	79	57.8		
JD 287			0315		182	3.0			38.0		57.8		
			0330		186	2.8			37.2		57.9		
			0345		177	3.1			36.6		58.0		
			0400		180	3.0			35.8		57.9		
			0415		193	1.9			35.0		58.0		
			0430		183	2.7			34.2		57.9		
			0445		184	3.1			33.5		58.0		
			0500		191	2.4			32.7		58.1		
			0515		182	3.2			32.0		58.2		
			0519		—		0458	26	33.4	79	58.5	S	F
			0530		183	3.5			31.2		58.2		
			0545		185	3.0			30.4		58.3		
			0600		183	3.1			29.6		58.3		
			0615		185	3.0			28.8		58.4		
			0630		183	3.2			27.9		58.4		
			0645		185	3.1			27.0		58.5		
			0700		184	3.6			26.1		58.5		
			0715		185	3.6			25.2		58.6		
			0730		186	3.1			24.2		58.7		
			0735		—		0720	26	25.4	79	59.0	S	F
			0745		188	3.6			23.3		58.8	N	S
			0800		187	4.1			22.3		58.9		
			0830		186	4.0			20.3		59.2		
			0900		186	4.2			18.2		59.4		
							0906	26	18.2	79	59.8	30	
			0930		187	4.1			16.1		59.7		
			1000		188	4.2			13.9	80	00.0		
							0950	26	15.0	80	00.4	68	
			1030		188	4.2			11.8		00.3		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS 24			
			A/C 5° LEM FOR SHIP TRAFFIC
			0400 –
			–
			–
			0500 –
			–
			0519 - SAT. FIX ELEVATION - 62°
			–
			–
			0600
			–
			–
			–
			0700 - NO WIND. HEADING - 192 COURSE - 184°
			–
			–
			0735 - SAT. FIX ELEVATION - 30°

GMT +4 DAY	MO	YR	TIME Z	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE N ± DEGREES	± MINUTES	LONGITUDE W ± DEGREES	± MINUTES	TYPE	QUAL.
13	10	80	1100	WR10	184	4.1		26	09.6	80	00.5		
SD 28			1130		185	4.0			07.5		00.6		
			1200		184	4.4			05.3		00.8		
			1205				1138		07.2		00.9		
			1215		189	4.1		26	04.2	80	01.0		
			1220				1202		05.6		01.0		
			1235		181	4.4			03.1		01.0		
			1245		182	4.4			02.0		01.1		
			1300		181	4.4		26	00.9	80	01.1		
			1315		178	4.6		25	59.8	80	01.1		
			1330		180	4.5			58.7		01.1		
			1345		184	4.6			57.6		01.2		
			1400		186	4.4		25	56.4	80	01.3		
			1				1344		56.9		01.6		
			1415		185	4.6			55.3		01.4		
			1430		187	4.2			54.2		01.5		
			1445		188	4.1			53.0		01.7		
			1500		182	4.3		25	51.8	80	01.7		
			1515		181	4.4			50.7		01.7		
			1516				1502		52.3		02.0		
			1530		180	4.7			49.6		01.7		
			1545		181	4.3			48.5		01.8		
			1600		185	4.1			47.6		01.8		
			1602		———		1544	25	49.0	80	01.9	SF	
			1615		183	4.6			46.2		01.8	NS	
			1617	WR11	185	4.4		25	46.08	80	01.85		
			1630		279	5.3			46.2		03.0		
			1642	WR12B	272	5.2		25	46.25	80	04.14		
			1645		241	4.3			46.1		04.3		
			1700		180	5.4			44.8		04.3		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 65
NS24				
			SAT FIX ELEVATION 13°	
			SAT FIX ELEVATION 16°	
			SAT FIX ELEVATION 43°	
			1600 - NO WIND. HEADING = COURSE.	
			1602 - SAT. FIX ELEVATION - 20°	
			—	
			1617 - C/C TO 270° END LINE WR10 START LINE WR11	
			—	
			1642 - C/C TO 180° END LINE WR11 - START LINE WR1B	
			—	
			1700 - NO WIND. COURSE = HEADING.	

GMT				LINE	SHIPS			NAVIGATION									
DAY	MO	YR	TIME	#	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
13	10	80	1715	WR1B	179	5.0		25	43.6	80	04.3	N	S
JD 287			1730		183	5.0			42.3		04.3		
			1745		183	5.1			41.1		04.4		
			1800		182	5.4			39.8		04.5		
			1815		184	5.1			38.5		04.6		
			1830		185	5.1			37.2		04.7		
			1845		184	4.6			36.0		04.8		
			1900		182	4.2			34.5		04.9		
			1915		185	4.2			33.8		04.9		
			1930		183	4.1			32.7		05.0		
			1937		—		1910	25	34.7	80	05.1	S	F
			1945		182	4.4			31.5		05.0	W	S
			2000		180	4.8			30.3		05.0		
			2030		196	4.9			28.0		05.6		
			2100		196	4.9			25.6		06.3		
							2056	25	26.3	80	06.6	37°	
			2130		195	5.0			23.2		07.1		
			2200		195	5.4			20.6		07.8		
							2144	25	22.4	80	07.4	57°	
			2215	WR12					19.2		08.1		
			2230		084	5.8			19.2		06.8		
			2255	WR13					19.6		04.2		
			2300		012	6.0			19.8		03.9		
			2330		001	7.3			22.8		03.6		
							2332	25	23.5	80	03.9	12°	
14	10	80	0000		006	5.7			25.5		03.3		
JD 288			0015		006	5.8			27.0		03.2		
			0030		003	6.0			28.5		03.1		
			0045		004	5.9			30.1		03.0		
			0100		003	6.1			31.7		02.9		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
NS24			1715
			—
			—
			1800 –
			—
			—
			—
			1900
			—
			—
			1937 - SAT. FIX ELEV. = 25°
			—
			2000 –
			C/C090 E.L WR1 SOL WR12
			C/C 004 EOL WR12 SOL WR13

GMT				LINE	SHIPS		NAVIGATION					
DAY	MO	YR	TIME	#	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
14	10	80	0115	WR14	001	6.4		25	33.3	80	02.9		
			0117				0054		31.6		03.0		
			0130		000	6.2			34.9		02.8		
			0135				0118		34.2		03.1		
			0145		003	6.5			36.5		02.7		
			0200		005	5.8			38.0		02.6		
			0215		002	6.3			39.5		02.5		
			0230		003	5.7			40.9		02.4		
			0245		359	7.4			42.5		02.3		
			0256				0240		42.4		02.6		
			0300		005	5.1			43.9		02.2		
			0309		001	5.3			44.1		02.2		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 66
N524				
			SAT FIX ELEVATION 67°	
			SAT FIX ELEVATION 20°	
			SAT FIX ELEVATION 14°	
			END LINE WR14 END SURVEY !!	