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

SHIP R/V GYRE

CRUISE NO. 82-G-12

DATE Oct. 4, 1982 - 17 OCT 82

CHIEF SCIENTIST MAHLON BALL

CYRG
82035
82-12
101526

GMT				LINE #	SHIPS			NAVIGATION							
DAY	MO	YR	TIME		COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
04	10	82	1654					25	46.2	180	08.8	2	
JD	277		1705						.		.		
05	10	82	0819						.		.		
JD	278		1124					24	28.7	82	20.9		
			1330					24	40.2	82	38.7		
			1722				1710	24	54.2	82	43.5		
			1728						.		.		
			1735						.		.		
			1910				1858	24	59.7	82	47.0		
			1914						.		.		
			1950				1938	25	01.7	82	48.6		
			1952						.		.		
06	10	82	0110				0058	25	14.8	82	59.1		
JD	279		0130				0118	25	15.6	82	59.4		
			0430						.		.		
									.		.		
							1042	26	00.0	83	13.9		
			1100						.		.		
							1228	26	07.2	83	15.6		
							1306	26	09.4	83	16.2		
			1425					26	13.2	83	20.4		
							1452	26	14.4	83	22.0		
			1540	1	309	4.8		26	16.7	83	24.9		
			1600		309	4.8		26	17.7	83	26.3		
									.		.		
			1650					26	20.1	83	29.7		
			1700		308	4.7		26	20.6	83	30.4		
			1806		313	4.8		26	23.6	83	34.3		
			1900		311	4.6		26	26.6	83	38.2		
			1921						.		.		

TAPE #	START	END	COMMENTS AND OBSERVATIONS PAGE 1
			USING SLAVES W & Z
1	✓		FIRST DATA ON TAPE – PRIM = 3 GRIM = 3 SAT. AVERAGED POS. FOR MIAMI DOCK
			LV DOCK. – HEAD OUT OF HARBOR (1300 local)
			CHANGE CORA FROM 1.11 TO 0.91 CHANGE CORB FROM 1.715 TO 1.05
			SWITCH LORAN PAIR WY
			Deploying Stream for Test
			SAT. #480 MISS 1422/720/1594 RMS = 1.3 31° UPDATE
			CHANGE – CORA = .506 CORB = –.526 BOTH OPPOSITE SIGN OF NEW CORA/B FROM SAT.
			THAT CHANGE SEEMED TOO MUCH – TRY CORA +.250 CORB = –.250 – BETTER.
			SAT # 480 MISS 917/508/1049 RMS = 1.8 34° UPDT.
			WELL. CHANGE CORA TO .506 & CORB TO –.506 AGAIN.
			SAT # 130 MISS 564/258/621 RMS = 1.7 59° UPDATE.
			CHANGE CORA TO .756 CORB TO –.776 GRAPH METHOD CALLS FOR CORA = .821 CORB = –.560
			SAT # 200 MISS 245/–213/325 RMS = 2.1 18° NO UPDATE.
			SAT # 140 MISS 308/–266/408 RMS = 1.5 45° UPDATE.
			START UP SILENT 700 FOR SEPARATE NORTHSTAR SYSTEM – FIRST TAPE WRITE – TAPE 1
			E.S.T. Retard local Clocks 1 hr ⇒ +5 TEXAS Time!
			SAT 190 285/–64/292 4.0 RMS 27° (7 int) UPDT
			CORA .808 CORB –.428 (NEW)
			SAT 190 –223/–158/273 RMS 3.1 28° (7 int) NO UPDT
			SAT 140 36/–228/231 1.2 RMS 36° (7 int) MSGCHG NO UPDT
			START LINE UP / TEST SHOTS for LINE 1
			SAT 140 199/–216/294 6.3 RMS 27° NO UPDT
			START LINE 1 – SHOTS EVERY 50 METERS.
			HOURLY CHECK.
			Start S.P. 191 shot points every 25 m
			HOURLY CHECK.
			HOURLY CHECK.
			HOURLY CHECK.
*			PROGRAM DROPS HYP. LORAN FOR 2 min – SPEED FROM P-R ≈ 2.5 KT – BACK 1923

GMT DAY	MO	YR	TIME +5	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
06	10	82	2000	1	314	4.6		26	29.5	83	42.1		
JD	279		2100					26	32.4	83	45.9		
			2200		310	4.4		26	35.2	83	49.7		
							2234	26	36.8	83	51.8		
			2300		310	4.3		26	38.0	83	53.3		
07	10	82	0000	2				26	40.7	83	57.0		
JD	280		0100					26	44.2	83	59.3		
			0200		331	3.8		26	47.6	84	01.8		
			0300		327	3.9		26	50.7	84	04.0		
			0400		324	3.9		26	53.9	84	06.6		
			0500		328	4.2		26	57.3	84	09.0		
			0600		330	4.3		27	00.8	84	11.8		
			0652						.		.		
			0654	END									
			0659	2					.		.		
			0700					27	04.4	84	14.6		
			0701	3					.		.		
			0800		065	3.6		27	07.5	84	13.1		
			0807						.		.		
			0900					27	10.2	84	10.6		
			1000					27	13.9	84	09.0		
			1100					27	17.6	84	07.2		
			1200					27	21.2	84	05.4		
			1254	3				27	24.4	84	03.6		
			1255						.		.		
									.		.		
									.		.		
			1400		091	2.0		27	25.2	84	01.4		
			1524		075	9.7		27	25.4	83	57.4		
			1700		077	9.7		27	29.3	83	40.5		
			1800		078	9.9		27	31.5	83	29.8		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 2
1			HOURLY CHECK.	
			HOURLY CHECK.	
			SAT 190 351/-221/415 6.2 Rms 27° (Tint) NO UPDT	
			EOL 1 / SOL 2 DOGLEG TURN	
			✓	
			✓	
			✓	
			HOURLY CHECK.	
			HOURLY CHECK.	
			TRIED TO TAKE A SATELLITE - CRASH ON PRIMOUT - LAB FIRING GUN MANUALLY.	
			0654 - END LINE 2 - START TURN FOR LINE 3.	
			COMPUTER UP AT 0659	
			HOURLY CHECK - IN COURSE CORRECT.	
*			FIRST SHOT - #4612	
			HOURLY CHECK.	
			ASK BRIDGE TO INCREASE SPEED BY ½ KT.	
			EOL 3 SP 6250	
1		✓	EOF Tape 1 1255	
2		✓	SOT Tape 2 1255	
			Still hauling gear	
*			Steaming in; steam to Tampa to drop off Tech	
			HOURLY CHECK.	
			HOURLY CHECK.	

GMT DAY	MO	YR	TIME (+5)	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
07	10	82	1815	—	—	—	1800	27	31.5	83	29.8		
JD	280		1900		086	10.0		27	32.8	83	18.6		
			1959						.		.		
			2006		062	10.0	-	27	37.8	83	08.6		
			2100		065	10.2		27	42.2	82	58.8		
08	10	82	0400						.		.		
JD	281			—	158	9.8		26	49.0	82	36.2		
			0458						.		.		
			0500		154	8.8		26	40.0	82	32.0		
			0600		082	2.6		26	40.4	82	29.0		
			0636						.		.		
			0658						.		.		
			0700		089	2.5		26	40.8	82	26.6		
			0800		221	4.4		26	37.8	82	27.9		
			0848	4	240	4.6		26	35.5	82	31.0		
			0900					26	35.1	82	31.9		
			1000					26	33.5	82	36.8		
			1100		247	4.7		26	31.9	82	41.7		
			1200					26	30.1	82	46.6		
			1300		252	4.6		26	28.4	82	51.7		
			1340						.		.		
			1348		249	4.6		26	27.1	82	55.4		
			1400		248	4.5		26	26.7	82	56.4		
			1415		247	4.5		26	26.3	82	57.5		
			1500		250	4.7		26	25.0	83	01.2		
			1600		247	4.2		26	23.4	83	05.9		
			1700		249	4.6		26	21.7	83	10.2		
			1725						.		.		
			1735						.		.		
			1800		250	4.6		26	20.2	83	15.1		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 3
2			SAT 130 MISS 167/-193/256 RMS=6.6 21° UPDATE.	
			HOURLY CHECK.	
			CPU DUMBO ON SAT. PRINTOUT	
			PROG. BACK UP PRIM = 3.	
			HOURLY CHECK.	
			SLOW TO DEPLOY STREAMER - TURN INTO WIND (TOWED SHORE) 090°	
			HOURLY CHECK.	
			HOURLY CHECK.	
			ASK BRIDGE TO INC. SPEED TO 3½ KTS. - CABLE BUNCHING UP.	
			STREAMER MOSTLY OUT - TURN TO PORT AND HEAD FOR THE LINE.	
			HOURLY CHECK	
			HOURLY CHECK.	
			START OF LINE 4 - SHOT POINT 1	
			✓	
			Change magneto meter ~~from~~ 074547 ~~to~~ 074545	
			Maggie up and running; we're recording	
			✓	
			Maggie numbers better, Jack tuned it up.	
			✓	
			✓	
			HOURLY CHECK.	
*			PROGRAM DROPS ALL LORAN FOR TWO MINUTES - MANUAL MODE TILL 1727	
			RHO-RHO FINALLY CALMS DOWN - HYUP.	
			HOURLY CHECK.	

GMT DAY	MO	YR	TIME +5	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
08	10	82	1900	4				26	19.0	83	19.5		
JD	28	1	1906						.		.		
			1914						.		.		
			2000		248	4.3		26	17.0	83	24.4		
			2007						.		.		
			2100					26	15.4	83	28.8		
			2200		251	4.0		26	13.8	83	33.1		
			2300					26	12.2	83	37.5		
09	10	82	0000		249	4.5		26	10.7	83	42.1		
JD	282		0100					26	09.1	83	46.4		
			0200		249	4.5		26	07.4	83	50.8		
			0240		253	4.3		26	06.5	83	54.0		
			0300		254	4.3		26	06.0	83	55.5		
			0400		245	4.1		26	04.4	83	59.8		
			0500		247	4.7		26	02.6	84	04.2		
			0600		250	4.6		26	01.1	84	08.9		
			0645						.		.		
			0700		249	4.4		25	59.4	84	13.5		
			0800		245	4.7		25	57.7	84	18.2		
			0823						.		.		
			0900					25	56.1	84	23.0		
			1000					25	54.3	84	27.6		
			1100		247	4.6		25	52.6	84	32.2		
			1200					25	51.0	84	36.7		
			1300		241	4.1		25	49.3	84	41.0		
			1330						.		.		
			1400		248	3.2		25	47.7	84	44.5		
			1500		257	2.5		25	46.8	84	47.6		
			1511		256	2.7		25	46.7	84	48.1		
			1600		245	3.3		25	45.7	84	51.3		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 4
2			PROGRAM SENDS CORA INTO ORBIT - VEL. IS WARP 10 - SWITCH PRIM TO 4	
			REINITIALIZED LORAN - CORA BACK TO .808 - HYUP THEN SWITCH PRIM BACK TO 3.	
			HYUP AGAIN - RHO-RHO FINALLY SETTLED DOWN.	
			HOURLY CHECK.	
			PROGRAM DROPS IHP, LORAN FOR 2 MIN. - SPEED JUMPS A BIT - OK AT 2009.	
			D'off/V off jumping around a bit.	
			HOURLY CHECK. - SNR ON SLAVE A (W STATION) - VARIES FROM 800→120 AT RCVR. AFFECTING VEL & TRACK	
			HOURLY CHECK.	
			SNR'S ON SLAVE A STAYING LOW - IHUP IN CASE IT SWITCHES TO RHO-RHO.	
			HOURLY CHECK.	
			HOURLY CHECK	
			LOSE ONE STATION (A) BECAUSE OF SNR - BACK AT 0825	
			SNR's Bouncy	
			HL* and RL* for a couple of minutes, back up with no trouble	
			B Jump +/	
			getting into E.S. counter current; slowing us	
			Request bridge to crank it some.	

GMT DAY	MO	YR	TIME +5	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
09	10	82	1700	4	252	3.2		25	44.2	84	54.8		
			1723						.		.		
			1729						.		.		
			1739						.		.		
			1800		244	2.6		25	43.2	84	57.9		
			1900		246	2.6		25	42.4	85	00.5		
			2000		247	2.7		25	41.4	85	03.2		
			2100		246	3.0		25	40.3	85	06.1		
			2200		245	3.3		25	39.1	85	09.2		
			2300	4				25	37.8	85	12.6		
10	10	82	0033	5				25	37.2	85	14.8		
JD	283								.		.		
			0100		343	2.4		25	38.0	85	15.5		
			0200		340	2.0		25	40.0	85	16.3		
			0300		335	1.8		25	41.8	85	17.1		
			0400		323	1.6		25	43.5	85	17.8		
			0417					25	44.0	85	18.0		
			0430					25	44.3	85	18.2		
			0500		329	1.7		25	45.2	85	18.5		
			0600		350	1.7		25	46.8	85	19.3		
			0611						.		.		
			0631						.		.		
			0631						.		.		
			0700		334	1.8		25	48.4	85	19.9		
			0800		347	1.8		25	50.1	85	20.6		
			0900					25	51.7	85	21.4		
			1000					25	53.3	85	22.1		
			1100					25	54.9	85	22.9		
			1200					25	56.4	85	23.5		
			1300		337	1.6		25	57.9	85	24.2		

TAPE #	START	END	COMMENTS AND OBSERVATIONS — PAGE 5
2			HOURLY CHECK MORE LINE 4. 3 KT CURRENT HEADED ≈ 140°
			PROGRAM DROPS ALL LORAN - PRIM = 0 FOR 2 MIN - NO PROBLEM BACK AT 1725
			ASK BRIDGE TO DROP SPEED - THROUGH - WATTEN BY 1/2 KT.
			PROGRAM DROPS HYP. LORAN - R-R VELS. HIGH SWITCH PRIM TO 4 TILL 1741
			HOURLY CHECK.
			HOURLY CHECK.
			HOURLY CHECK.
			HOURLY CHECK.
			HOURLY CHECK.
			EOL 4 SP 1567
			SOL 5 (AIR GUN STARTED FIRING @ SP 6)
			✓
			✓
			✓
			✓
			RL back, was messed up; HYHP
			W-station Grangeville coming in weak again SNR ~10
			HOURLY CHECK. 10° CRAB ANGLE. 3 KT CURRENT HEADED ≈ 150°
			HOURLY CHECK.
			PROGRAM DROPS HYP. LORAN - R-R VEL. A LITTLE HIGH - PRIM = 4 TILL 0614.
2		✓	EOF ON TAPE
3	✓		FIRST DATA ON TAPE - WROTE AT 0633.
			HOURLY CHECK.
			HOURLY CHECK.

GMT DAY	MO	YR	TIME (+5)	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
10	10	82	1315	5	336	1.6		25	58.3	85	24.3		
JD	283		1400	BREAK	116	4.7		25	57.8	85	20.9		
							1456	25	54.9	85	16.9		
			1500		126	5.1		25	54.7	85	16.6		
			1522		128	5.1		25	53.5	85	14.9		
									.		.		
			1528		124	5.2		25	53.2	85	14.5		
			1700		343	6.3		26	02.4	85	17.3		
			1716				1704	26	02.8	85	17.5		
			1800		342	6.2		26	08.4	85	19.3		
			1900						.		.		
			1904				1852	26	13.2	85	21.4		
			2000		333	7.5		26	20.2	85	25.2		
			2100		332	8.2		26	27.4	85	29.0		
11	10	82	0000		331	8.7		26	49.8	85	42.8		
JD	284						0026	26	53.1	85	44.9		
			0100		330	9.1		26	57.6	85	47.7		
			0200		335	9.3		27	05.8	85	52.4		
					334	9.2	0212	27	07.4	85	53.3		
			0300		335	9.7		27	14.3	85	56.8		
			0400		336	6.5		27	23.1	85	01.4		
			0500		336	2.9		27	25.6	85	02.6		
			0600		332	2.8		27	27.9	86	04.4		
			0631						.		.		
			0700		320	4.6		27	30.2	86	06.7		
			0800	COURTHOUSE	149	4.3		27	33.1	86	05.9		
			0830	5	160	4.2		27	31.0	86	05.4		
			0900					27	29.1	86	04.6		
			1000		157	4.1		27	25.1	86	02.1		
			1100					27	21.3	86	01.1		

TAPE #	START	END	COMMENTS AND OBSERVATIONS
3			End Line 5 S.P. 1687 slow down ship, haul gear
			Still hauling gear
			SAT 140 Miss 315/-322/451 3.9R 19° no update
			MSG CHG
			c/c to point 4 10 mi N of end of line
			Plan A - Go to end of line and run it towards
			Gear in; steam to end of line
			HOURLY CHECK.
			SAT #480 Miss 129/-358/381 RMS=6.0 33° UPDATE BUT LEAVE CORR/COORD.
			HOURLY CHECK.
			BAD POSITION & VELOCITY - IN WATER SOUND NAV-PROG DROPPED IMP-1057
			SAT #480 Miss -791/273/838 RMS=29.7 32° ★!+#★ PROGRAM SCREWED IT UP.
			HOURLY CHECK.
			" "
			SAT 140 40/-177/182 6.2 Rms 20° NO UPDT
			SAT 140 300/-257/395 3.2R 46° UPDT, leave CORR/CORR
			Slow to deploy gear 9½ mi from end of line
			HOURLY CHECK.
			HOURLY CHECK.
			STREAMER OUT - GUN OUT - SPEED UP TO 4 KTS. - START CIRCLING TO LINE.
			HOURLY CHECK - STILL CIRCLING TO BEGIN LINE.
			HOURLY CHECK - " " " " "
			START LINE 5 - CONTINUED

GMT				LINE	SHIPS			NAVIGATION								
DAY	MO	YR	TIME +5	#	COURSE	SPD	FIX TIME	LATITUDE ± DEGREES	LATITUDE MINUTES	LONGITUDE ± DEGREES	LONGITUDE MINUTES	TYPE	QUAL.
11	10	82	1200	5				27	17.5	85	59.4		
JD 284			1300		156	4.3		27	13.6	85	57.7		
			1400		158	4.5		27	09.4	85	55.8		
			1500		159	4.5		27	05.3	85	54.0		
			1600		157	4.5		27	01.1	85	52.1		
			1655						.		.		
			1700		158	4.4		26	56.8	85	50.2		
			1739						.		.		
Line 5 ends on TAPE			1800		157	4.2		26	52.8	85	48.4		
			1900		158	4.2		26	49.0	85	46.7		
			2000		159	4.2		26	45.2	85	44.9		
			2100		157	4.4		26	41.1	85	43.1		
			2145						.		.		
			2200		161	4.7		26	36.9	85	41.2		
			2213		160	4.9		26	35.9	85	40.8		
			2300					26	32.4	85	39.3		
12 10 82			0000		159	5.4		26	27.5	85	37.1		
JD 285			0100		158	6.3		26	22.0	85	34.6		
			0200		158	5.6		26	16.5	85	32.1		
			0300		164	5.6		26	11.3	85	30.1		
			0400		155	5.8		26	06.0	85	27.9		
			0500		155	5.4		26	00.9	85	25.5		
			0539	5	158	5.5		25	57.6	85	24.0		
			0600		215	2.7		25	56.2	85	24.0		
			0700		211	0.7		25	55.9	85	24.5		
			0723						.		.		
			0730				0718	25	55.8	85	24.7		
			0743						.		.		
			0756						.		.		
			0800		337	6.7		25	57.2	85	25.4		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 7
3				
			ASK BRIDGE TO SLOW BY ½ KNOT. DFS II CAN'T HANDLE SHOTS MORE FREQ. THAN 10 SEC.	
			HOURLY CHECK. - HAPPY COLUMBUS DAY.	
			PROGRAM DROPS A LORAN SLANT - SPEED SHOT ON RHO-RHO - PRINT TILL 1742Z.	
			HOURLY CHECK.	
			HOURLY CHECK.	
			HOURLY CHECK.	
			c/s decrease. speed ½ knot 4.6 -> 4.2	
			Ask bridge to slow down.	
			Speed increasing due to current	
			Still in strong current, about 3.8 ; Grangeville station tollering from 200 - 800 SNR	
			HOURLY CHECK.	
			END LINE 5 - START TURN TO RIGHT TO HEAD INTO CURRENT TO DRIVE IN GRAV. SP # 7430	
			HOURLY CHECK - STILL PULLING IN STREAMER. - GYRO VELS. OKAY	
			HOURLY CHECK.	
			TRY PLUGGING VEL. CORR. FROM GRAV. COUNTER - GVEL = 1 (0 KNOTS)	
			SAT. #130 MISS 159/-296/337 RMS=3.2 61° UPDATE.	
			ALL GRAV IN - HEAD FOR NEXT LINE.	
			TAKE OUT ΔV CORRECTIONS - WAIT TILL GYRO SETTLES DOWN.	
			HOURLY CHECK.	

27° 27' 86° 15.7'

GMT DAY	MO	YR	TIME +5	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES ± MINUTES	LONGITUDE ± DEGREES ± MINUTES	TYPE	QUAL.
12	10	82	0900	—	338	7.1		24 03.4	85 28.4		
JO	285							.	.		
					339	7.0	1308	26 30.0	85 39.4		
					335	8.4	1434	26 40.2	85 44.2		
			1544		334	9.3		26 49.6	85 49.2		
					336	9.5	1618	26 54.5	85 51.6		
			1634		337	9.4		26 56.9	85 52.7		
								.	.		
			1700		324	9.4		27 00.2	85 55.2		
			1800					27 08.0	86 01.2		
			1820				1808	27 09.1	86 02.0		
			1900					27 15.9	86 07.2		
			2000		328	9.7		27 23.7	86 13.2		
			2044					.	.		
			2100		147	2.1		27 29.1	86 17.5		
			2200		118	3.2		27 27.2	86 14.4		
								.	.		
13	10	82	0022	6				27 30.4	86 05.2		
JD	286		0100		049	4.4		27 32.3	86 02.8		
			0122		057	4.7		27 33.3	86 00.8		
			0200		070	4.5		27 34.3	85 58.3		
			0300		067	4.6		27 35.9	85 53.6		
			0303		066	4.7		27 36.0	85 53.3		
			0310		065	4.4		27 36.2	85 52.8		
			0324		058	2.6		27 36.5	85 52.2		
SOLO ON TAPE			0400		067	4.0		27 37.5	85 49.8		
			0500		069	4.1		27 39.0	85 45.7		
			0600		064	3.8		27 40.7	85 41.7		
			0700		066	3.8		27 42.3	85 37.7		
			0800		068	3.9		27 43.9	85 33.7		

TAPE #	START	END	COMMENTS AND OBSERVATIONS — PAGE 8
3			HOURLY CHECK.
			SAT 140 (MSG CHG) miss 370/-411/553 3.1 R 55° no update
			SAT 200 miss 368/-417/556 7.0 R 43°
			UPDT to print suggested CORAIS
			SAT 480 miss 123/142/188 7.4R 14° UPDT
			C/C bearing 328°, different lineup to 6 because we are out of current, come up on line 6, 10 min back
			HOURLY CHECK.
			HOURLY CHECK.
			SAT #480 miss 232/-166/286 RMS = 2.2 70° UPDATE.
			HOURLY CHECK.
			HOURLY CHECK.
			ARR. AT DEPLOYMENT POINT - TURN INTO SEA & SLOW TO 2 KTS. TAKE WATER.
			HOURLY CHECK.
			HOURLY CHECK.
			SOL 6 SP #1 6
*			Off line, ship being pushed by wind
			Will try to get back on line; watch for streamer chafing
*			STOP firing SP 0890; gun tangled in streamer
			C/S slow ship to 2½ kt.
			start firing SP 0891, ask bridge to resume speed
3	✓		EOF @ 0457
4	✓		SOT @ 0457
			HOURLY CHECK.
			HOURLY CHECK.
			HOURLY CHECK

GMT DAY	MO	YR	TIME +5	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
13	10	82	0900	6	062	4.0		27	45.5	85	29.7		
JD 286			1000					27	47.2	85	25.6		
			1100					27	48.8	85	21.5		
			1200					27	50.5	85	17.3		
			1300		073	4.2		27	52.2	85	13.4		
			1342		062	3.9		27	53.3	85	10.2		
			1352		066	4.0		27	53.6	85	09.6		
			1400		065	4.0		27	53.8	85	09.1		
			1500					27	55.3	85	05.3		
			1600		064	3.8		27	56.8	85	01.5		
			1700		063	4.0		27	58.4	84	57.5		
			1800		069	4.0		28	00.0	84	53.5		
			1900		064	4.3		28	01.8	84	49.2		
			2000		064	4.5		28	03.5	84	44.8		
			2100					28	05.3	84	40.2		
			2200		065	4.6		28	07.1	84	35.5		
			2300		068	4.7		28	09.1	84	30.7		
14	10	82	0000		067	4.8		28	10.9	84	25.7		
JD 287			0100		065	4.9		28	12.9	84	20.7		
			0200		066	4.8		28	14.8	84	15.9		
			0300		066	4.7		28	16.8	84	10.9		
			0400		072	4.7		28	18.7	84	06.1		
			0500		064	4.8		28	20.6	84	00.9		
			0600		068	4.5		28	22.5	83	56.2		
			0627										
			0700		065	3.1		28	24.1	83	52.0		
			0725										
			0800		068	4.1		28	25.6	83	48.2		
			0900					28	27.2	83	43.9		
			1000					28	29.0	83	39.3		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 9
4				
			A jump + 3	
			Chop 7¼ mi from end of line end at 10 fathom	
			C/C in computer: to waypoint at 10 fm contour contour	
			last shotpoint n1803	
			HOURLY CHECK.	
			HOURLY CHECK.	
			HOURLY CHECK.	
			HOURLY CHECK.	
			HOURLY CHECK.	
			HOURLY CHECK	
*			AIRGUN DOWN - STOP SHOTPOINTS AT #9378.	
			HOURLY CHECK. - STILL WORKING ON AIRGUN.	
			AIRGUN BACK IN - S.P. #9379 (DOWN FOR 3.23 mi - MISSED APPROX 239 SHOTS)	
			HOURLY CHECK	
			RAIN	
*			HYPERBOLIC OUT SP stopped @ 135 Restart 135 Some over lap w/DFS5	

GMT DAY	MO	YR	TIME +5	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	MINUTES	LONGITUDE ± DEGREES	MINUTES	TYPE	QUAL.
14	10	82	1026	6				28	.	83	.		
JD	287		1034						.		.		
			1100					28	30.9	83	34.5		
			1200					28	32.7	83	29.6		
			1300		066	4.6		28	34.6	83	24.7		
			1336	6	068	4.5		28	35.8	83	21.6		
			1356	7	320	4.4		28	36.9	83	21.5		
			1400		328	4.3		28	37.2	83	21.7		
			1500		321	4.5		28	40.4	83	25.0		
			1600		319	4.7		28	43.9	83	28.3		
			1700		323	4.6		28	47.5	83	31.7		
			1800		320	4.6		28	51.0	83	35.1		
			1842						.		.		
			1845						.		.		
			1900		322	4.8		28	54.6	83	38.5		
			2000		319	4.8		28	58.4	83	41.9		
			2100					29	02.1	83	45.4		
			2200		322	4.8		29	05.9	83	49.0		
			2300					29	09.6	83	52.5		
15	10	82	0000		318	4.9		29	13.4	83	56.2		
JD	288		0100		320	5.1		29	17.3	83	59.8		
			0200		324	5.3		29	21.1	84	03.6		
			0300					29	25.2	84	07.3		
			0309		318	4.9		29	25.7	84	07.9		
			0400		321	4.8		29	29.0	84	10.9		
			0500		317	4.5		29	32.6	84	14.4		
			0541						.		.		
			0546	7				29	35.3	84	17.2		
			0600		267	4.9		29	35.4	84	18.4		
			0640	8				29	35.1	84	21.5		

TAPE #	START	END	COMMENTS AND OBSERVATIONS	PAGE 10
4			Loran out ← rain Prim 4	
			Prim > 3	
			Prim 4	
			C/C to 320°, End line 6, STOP firing sequence; SP 1419 Jack firing by time	
*			Start line 7, start firing SP 007, tail still	
			✓, Tail behind us now off set	
			✓	
			✓	
			HOURLY CHECK.	
			HOURLY CHECK	
			PROG. DROPPED A SLAVE - RHO RHO VEL RUNS AWAY - SWITCH PRIM TO 4.	
			SWITCH PRIM BACK TO 3. HYUP FIRST,	
			HOURLY CHECK.	
			HOURLY CHECK.	
			✓	
			✓ Current with us 030°, ½ kt	
			✓	
			C/C; cut off 3.5 mi from line 7 to avoid towers; S.P. 4707	
			✓	
			C/C TO START TURN ONTO NEXT LINE - CONTINUE SHOTS FOR .4 mi.	
			STOP SHOT POINTS ON LINE 7 - LAST SHOT #5640	
			HOURLY CHECK - ABOUT HALF WAY THROUGH TURN.	
			START LINE 8 - SP #1 - 3½ MILES DOWN LINE.	

GMT DAY	MO	YR	TIME	LINE #	SHIPS COURSE	SPD	NAVIGATION FIX TIME	LATITUDE ± DEGREES	± MINUTES	LONGITUDE ± DEGREES	± MINUTES	TYPE	QUAL.
15	10	82	0644	8									
JD	288		0700		246	4.5		29	34.5	84	23.6		
			0800		241	4.7		29	32.4	84	28.2		
			0900					29	30.4	84	32.9		
			1000					29	28.7	84	37.6		
			1100		244	4.4		29	26.8	84	42.2		
			1200					29	25.0	84	46.6		
			1300					29	23.3	84	50.5		
			1400		246	3.7		29	21.5	84	54.8		
			1500		244	3.7		29	19.9	84	58.7		
			1546	8	246	3.9		29	18.7	85	01.6		
			1548	9	262	3.8		29	18.7	85	01.8		
			1554	9	283	3.8		29	18.8	85	02.2		
			1600		284	3.9		29	18.8	85	02.6		
			1700		277	3.7		29	19.6	85	06.9		
			1800		279	4.1		29	20.2	85	11.5		
			1900		272	4.1		29	21.0	85	16.2		
			1933										
			2000		278	4.6		29	21.8	85	21.0		
			2100		281	4.4		29	22.7	85	26.2		
			2206		285	4.9		29	23.4	85	31.3		
			2238	~	Approx time								
			2245	10	322	4.8		29	24.3	85	35.3		
			2300					29	25.3	85	36.1		
			2320										
			2340										
16	10	82	0000					29	29.0	85	39.4		
JD	289		0100					29	32.5	85	42.6		