

UNIVERSITY OF TEXAS INSTITUTE FOR
GEOPHYSICS (UTIG)

R/V FRED H. MOORE — CRUISE 25

BAHAMAS SITE SURVEYS
FOR OCEAN DRILLING PROJECT
LEG 1

APRIL 7, 1984

GALVESTON, TEXAS

EMBARKING SCIENTIFIC PARTY

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LEE GOVE, WOODS HOLE OCEANOGRAPHIC
INSTITUTION

NOONL Depart the dock.

1300L Galveston sea buoy. Turn SE for the
Straits of Florida. Strong headwinds
(~20 kts), 8' seas. Speed 7-8 knots.

Checking data logger, sat nav, LORAN C.
3.5 KHZ on and working well. Doppler
sonar on, in bottom lock, and working
well.

APRIL 8, 1984

0600L Winds moderating. Approximately 120
miles from Galveston.

BAHAMAS SITE SURVEYS

FHM-25

APRIL 8, 1984

1230L Wind shifting to southerly. Increase to full speed. 117°
10.0 kts.

APRIL 9, 1984

0800L WIND 15-20 kts. from the northwest 111°
(astern). Sunny, seas ~ 6'. Will test 10 kts.

400 cu. in.
both air/gun^{water} either later this morning or
this afternoon. ETA Ft. Lauderdale

between noon and 1800 L, Wednesday,
11 April.

1200L Compressors started for 400 cu. in water
gun test. Will also test WHOI sonobuoy
system by throwing an ANSSQ-57A into
the water while firing the 400.

1245L SLOWING DOWN TO DEPLOY GUN. 3 kts.

1315L GUN IN THE WATER. FIRING @ 12 SEC. 5 kts.
REP. RATE.

BAHAMAS SITE SURVEYS

FHM - 25

APRIL 9, 1984

- 1325L Gun Towing well @ increased speed. 6.6 kts.
 Sonobuoy deployed to test WHOI system.
 1420L Test complete. Slowing down to retrieve gun. 3 kts.
 1425L Gun aboard. Resuming course and speed. 118°
 10.0 kts.

APRIL 10, 1984

- NOON Entering the Florida Straits. Weather beautiful 110°
 — winds out of the northeast, seas calm. 11.0 kts.
 Expect to be in Ft. Lauderdale tomorrow
 afternoon sometime. Will switch to EST
 at midnight.

April 11, 1984

- 0830L In the axis of the Gulf Stream east of 030°
 the Keys. Weather excellent. Expect arrival in 14.0 kts.
 Ft. Lauderdale 1500-1600 hrs. this afternoon
 1445L At the sea buoy, Ft. Lauderdale.
 1515L Docked @ pier 22. Sheridan, Goldstein,
 Andrews, Ladd, Mullins aboard. Stout (agent
 for Eller and Co.) on the dock with everything
 that we requested. Talked with Picard
 in Austin and Roberts in Galveston.
 1645L Leave the dock for Little Bahama Bank.
 Expected arrival @ streamer deployment point
 approximately 0800L tomorrow.

BAHAMAS SITE SURVEYS

FHM - 25

April 12, 1984

1200Z ~ 5 nm from streamer deployment point. North of Walkers Cay. Data logger and 3.5 KHz in operation. Will begin deploying streamer @ 1300Z. This is the Little Bahama Bank grid. 114° 5.0 kts

1550Z 27° 24' 78° 24' Streamer deployed at 1545Z; 1045 L. Turn 340° to ~~080°~~, back to starting point of grid.

1620Z DT#1 reads 18' @ 5 KTS But SINKS when stopped. Will remove all lead from outboard stretch. DT#5 reads 0'. Will recalibrate #5 and perhaps add weight around sections 20 and 21. Heading SE (towards starting point), dead slow on one engine. 112° 3.6 kts.

1650Z Begin retrieving streamer. Removed leads from section 1. No leads removed from outboard stretch.

1840Z Streamer redeployed. 40 lbs. weight added to outboard end of leader. Two inboard stretch birds replaced with Kamikazes.

1930Z Ship turned downwind to retrieve streamer - 212°

1959Z Begin turn / transit back to starting point of grid (~ 2.5 nm) 2.8 kts

2005Z dead slow stbd engine

2015Z 1.4 nm from starting point.

← [1410
4.0 kts

2025Z All stop (~ .5 nm from starting point)

2028Z Dead slow stbd engine 2.5 kts 135°

2048Z Streamer deployed again c/s 5 KTS

2100Z Inboard 5 channels still to light - will retrieve and add leads to 20-24 and more weight to leader

2112Z Streamer in add weight

2143Z Streamer redeployed c/s to 5.0 kts.

359°

2152Z c/s; dead slow stbd engine - deploy additional 10 m of leader (brings total to 45 m leader out)

BANANAS SITE SURVEYS

12 April 1984

FM 25-01

Time(Z)		
2201Z	Steamer redeployed, C/S resume 5.0 kts	291°
2213Z	Steamer declared OK, towed at ~10-15'	
2215Z	C/S dead slow std engine. We are ~1 nm, ESE of starting point traveling WNW. Compressor's started. Will deploy 160 cu in gun for first two lines	
2300Z	deploying guns Ladd/Andrews on watch	
2350Z	high pressure water pump for 160 cu in. water gun was not filled with oil by manufacturer - pump now out of commission. will deploy 400 cu in gun momentarily.	
0020	13 April 84 maneuvering for start of line LBB-01	
0044Z	1st SHOT LBB-01 @ 00:15 Z	
0050	shot 179 fix shot trigger Sheridan/Goldstein on watch	
0105	Maneuvering on beginning point line LBB-01	
0115	" " " "	
0130	" " " "	
0145	Maggie on line, but problems w/ recorder Changing to second recorder.	
0200	on line 2500' - 400 cu in water gun (LBB-01)	
0215	on line (LBB-01)	
0230	on line (LBB-01), Trigger problems on gun	
0242	Gun pulled, not firing	
0246	Demuxr Stopped while gun is down	
0302	Pressurize gun to put it back in	
0308	Gun in the water	
0310	Gun fired	

APRIL 13, 1984

(Time)(Z)

FM 25-01

COURSE

BAHAMAS SITE SURVEYS

SPEED

0330 ALL IS WELL ON LINE LBB-01

0341 END LINE 1 - TURN STB 3°/MIN

0400 MANEUVER TO LINE 2 @ 5°/min

0415 11 @ 9°/min } 3°/min too slow

0430 11 @ 8°/min

0437 ON LINE - STREAMER STRAIGHT LBB-02 Gun misfired

0451 COMPRESSOR PROBLEM. GUN BEING SHUT DOWN

FOR SEVERAL MINUTES TO BUILD UP PRESSURE.

107°

AUSTIN/BADACHHAFF COMING ON WATCH.

4.9 kts.

0455 BACK ON LINE. COMPRESSOR PRESSURE
BACK UP.

0518 Bring set 037° - c/c 115° STILL LINE LBB-02

0533 Bring set 077°; 1.1 kts; c/c 125°

0535 GUN FIRING INTERMITTENT. OSCAR IS CHECKING

120°

4.7 kts.

0547 Over correct for set 077° 1.1 kts; c/c 120°

0605 GUN FIRING STILL INTERMITTENT. WILL PULL

① THE END OF THIS LINE. APPROXIMATELY
25 MINUTES.

0627Z END LBB-02. PULLING GUN FOR MAINTENANCE

111°

4.7 kts

0630 TURNING 06°/min PORT MAINTAINING 5.0 KTS.

0633 GUN IN FOR REPAIR - AIR LEAK

0645 GUN BACK IN WATER

0647 GUN FIRING

0652 CHANGING TO 3°/MINUTE.

FM 25-01

APRIL 13, 1984

BAHAMAS SITE SURVEYS

COURSE

SPEED

0700Z BEGIN LBB-03 DMUXR RECORDING

5.0 KTS.

0705 S/C 286° SLIGHTLY NORTH OF THE LINE. ONLY ONE ENGINE. 3.6 KTS

0710 NOT TRIGGERING RECORDERS — BLAST PHONE NOT OPERATING PROPERLY. GOING TO TWO ENGINES 4.0 KTS.

0715 BLAST PHONE BACK. MOVING @ 5.0 KTS.

0735 CHANGE TO 4 SEC. SWEEP ON SEISMIC MONITOR

0906 END LINE LBB-03 (PT. #6) — TURN TO STARBOARD 6°/min

0942 SONOBUOY #3 LAUNCHED
LINE LBB-04 BEGUN1120 ENDED SONOBUOY #3 DIGITIZATION
ANALOG RECORD CONTINUES

1230 GUN - DOWN

1300 GUN - DOWN - SNR GOOD

1310 GUN - UP AND SHOOTING

1315 ON COURSE - STREAMER NOISY - WHITE CAPS - CENTER SECTION SHAKING

1330 ON LINE LBB-05 - GUN HAS GITTER - PULSE AT DIFFERENT ZERO.

1344 MAGGIE OUT - MATE TRIPPED ON CABLE

1345 MAGGIE FIXED

1355 GUN MISSING SHOTS - WILL PULL AT END LBB-05

1400 ON LINE

1415 ON LINE

1420 END LINE LBB-05

1425 BEGIN TURN 6°/MIN TO STBD

1430 IN TURN - STREAMER LET OUT TEN MORE METERS

1440 INCREASE TURN 9°/MIN

1450 DECREASE TURN 6°/MIN SOLENOID PROBLEM WITH GUN

1455
1500 IN TURN DECREASE 4°/min.

1510 ON COURSE 111°T, GUN IN WATER

1515 LINE LBB-06 BEGIN

1530 NO TRIGGER

FHM-25

BAHAMAS SITE SURVEYS

APRIL 13, 1984

- 1520Z Sonobuoy #4 deployed
 1530Z No TR REGGZ to BUOY EDC, DEMUX EDC
 1545Z BEING SET NORTH 8F LINE STEER 130° TO MAKE 111°T
 1600 " "
 1615Z BACK CLOSE TO LINE STEER 120° TO MAKE 111°T
 1630Z ON LINE - STEER 130 TO MAKE 111°T
 1641Z GUN STOPPED, SLOW TO HAUL IT IN FOR REPAIR - 3.3 KTS
 1650Z GUN ON DECK
 1700Z SLOW AHEAD ON 111°T (LINE LBB-06 END AT 1641Z) (REPAIR GUN)
 1725 OSCAR SUSPECTS PROBLEM w/ WATER GUN SOLENOID
 1742 GUN PRESSURIZED - GOING BACK IN WATER
 1748 GUN FIRING
 1810 AUSTIN RELIEVING SHERIDAN ON WATCH. TURNING TURNING
 To LBB-07. 4.5 KTS.
 1830Z BAD TRACES (12, 14, 15) A RESULT OF THE
 DFS. WIEDERSPAHN/GILFILLAN WORKING ON THE
 PROBLEM
 1837Z BEGIN LBB-07 COURSE = 200°T ~~LOW~~
 SPEED = 4.9 KTS. CRUISING IN THE TROUGH. DATA
 QUALITY IMPROVES.
 2001Z GUN NOT FIRING. SLOWING DOWN TO 202°
 SLOW ON ONE ENGINE. WIEDERSPAHN/GILFILLAN 4.6 KTS.
 WORKING ON DFS.
 2040 END LBB-02; Start turn; ~9°/min to Port
 2047 Engine Shut-off Port Engine For ~5 min.
 2050 Port Engine Back-on
 2127 - Pressurizing Gun
 2128 - Gun Going In w/ New Tail Piece - Testing
 2133 - GUN - VIN TEMPORARILY

FM 25-01

(Tune - Z)

APRIL 13, 1984 / 14 APR

(LBB) BANANAS SITE SURVEYS

COURSE/SPEED

2134 - GUN BACK IN

2135 - GUN FIRING TURNING TO LBB-08

2320 - PULL GUN IN. STOP SHOOTING

~~(LBB)~~ 0013 - Start shooting (April 14, 1984) Begin LBB-09

0105 TURNING INTO LINE LBB-09

0110 ON LINE LBB-09

0130 END LINE LBB-09,

0135 BEGIN TURN TO STBD 9°/MIN

0230 STILL TURNING TO LBB-10

0240 ON LBB-10 - 200°T -

0300 ON LBB-10 200°T

0318 FLATTED EPC FOR MONITOR OF DFS IV NEEDED NEW BELT

0315 ON LBB-10 200°T

0330 ON LBB-10 200°T

0345 " "

0400 " "

0415 " "

0430 END LBB-10; BEGIN TURN 9°/MIN STBD

0500 IN TURN TO BEGINNING LINE LBB-11, CUMDOWN 0437, CORRECTOR

0507 GUN BEING FIRED MANUALLY, Austin/Badachape on 293°T
WATCH. 4.3 Kts.0510 ~~BEING~~ RECORDING FOR ~~DATA~~ LBB-11. NEW COURSE
WILL BE 020°T. BACK ON TWO ENGINES.
TURNING @ 29°/MINUTE.

0520 S/C 020° (035° on the gyro) LBB-11.

5.6 Kts.

0540 SB#5 in the water. Good Buoy!

033°

5.1 Kts.

0700 END LBB-011. BEGIN LBB-012 @ 355°T
MAGGIE STRIP CHART PAPER ON RED

5.5 Kts.

0715 CHANGING PAPER ON MAGGIE.

0735Z END LBB-12, BEGIN LBB-13. TURNING
TO PORT @ 9°/MIN. NEW COURSE 110°T

5.5 Kts.

0803 S/C 100°T. LBB-13

BAHAMAS SITE SURVEYS

TIME(Z)

FHM 25-01

COURSE

APRIL 14/15 1984

SPEED

0830	LBB-13	SB#5	IN THE WATER.	110° 4.8 kts.
0835	SB#6	A DND (HIT STREAMER?)	LEE	110° 4.7 kts.
	GOVE	WILL THROW	ANOTHER	
0845	SB#7	IN THE WATER.	HIT MAGGIE	107° 4.8
	NOT	THROW	ANOTHER RIGHT NOW.	
1122	SB#8	overside and past streamer	looks O.K.	285° 5.4
	Ptly	CLOUDY	Sea - 3-5' showing easily	
1300	ON LINE	LBB-15	- EVERYTHING OK	
1310	END	LBB-15	BEGIN TURN 9°/MIN @ 026°T	
1330	TURNING	TO LINE	LBB-16	
1408	ON LINE	LBB-16	@ 110°T	
1410	INTERLUDE	LBB-16	TO MEET HELICOPTER	
1415	HALL	GEAR	MAGGIE IN, HAULING IN STREAMER	
1430	"	"	"	
1500	"	"	"	
1509	HEAD	FOR	RENDEZVOUS @ 10 KTS @ 250°T	250°T 10.0 kts
1530	"	"	"	
1545	"	"	"	
1600	"	"	"	
1630	"	"	"	
1645	"	"	"	
1815Z	ESTIMATED	ETA	@ MATANILLA SHOAL IS 1945Z.	259° 9.9 kts.
	WILL	RENDEZVOUS	WITH HELICOPTER THERE.	"
1915Z	LOWERING	LORAN C	ANTENNA TO PREPARE FOR HELICOPTER	
	ARRIVAL.			
0010Z	Tail	float	over side - redeploy streamer at 270°Z, 7829°	
	will	begin	acquisition with 400 cuin gun approx 46 mins.	
0100Z	STREAMING	GEAR.		
0115Z	START	TURN	9°/MIN STBD.	
0120	STREAMER	IN &	CONNECTED.	MAGGIE STAYING
0132	GUN	GOING	IN WATER	OUT TO LAUNCH BUOYS.
0135	Commence	Firing!!	ON LBB-17	
0155	MAKING	6.0 KTS	MAY HAVE TO GO TO ONE ENGINE, STREAMER	
0200	ON	COURSE.		STRAIGHT
0201	LAUNCHED	SOUND BLOOM	- SNAGGED. 0213 launched SB10	
0230	ON	COURSE.	SB GOOD	CHANGE 3.5 to 200-600 fms
				scale

FM 25-01

4/15/84

TIME(Z)

BAHAMAS SITE SURVEYS

COURSE/
SPEED

0244 - GUN STOPPED FIRING

0255 - GUN FIRING AGAIN

0310 - LORAN SNR LOWER, THUNDER STORM, LIGHTNING

0315 - (FRONT MAY HAVE PULLED US OFF LINE TO WEST
(OR LORAN MAY HAVE JUMPED A LANE?))

0330 SONOBUOY LAUNCHED, SAT. DR PLOTS TO WEST OF LINE?

0430 ON TRACK LBB-17, CHANGE BELT ON EPC MONITOR.

0437 Change Belt on monitor

0445 OK!

0540 END LBB-17. TURNING TO PORT @ 30°/MIN. NEW
COURSE = 200°. GUN BEING HAULED FOR MAINTENANCE. 4.7 KTS.
DMUXR SHUT DOWN. EPSON PRINTER (DATA LOGGER) PAPER
BEING CHANGED

0548 GUN ABOARD.

TURNING
4.9 KTS.

0600Z GUN GOING BACK IN THE WATER. FIRING AGAIN

TURNING

0615 BEGIN LBB-18

0618 NO; GUN DOWN AGAIN!!

0628 MAJOR GUN PROBLEM - START SLOW (30°/min) TURN TO PORT

0720 GUN PRESSURIZED GOING BACK IN WATER

0726 GUN READY - STOP TURN - HEAD 255°

0729 CONTINUE TURN @ 90°/MIN TO PORT. WILL

TURNING
5.2 KTS.STEADY UP ON 200°, DROP THE GUN IN, AND
BEGIN LBB-18.

0741 GUN GOING IN

200°
4.9 KTS.

0745 START LINE LBB-18

0815 SONOBUOY #12 DEPLOYED

0817

0832 MAGNETOMETER BEING DEPLOYED

0849 WORKING ON MAGGIE CONNECTOR

0900Z MAGGIE BACK IN THE WATER AND FUNCTIONING

1006Z terminate A/D OF SONOB #12

FM 25-01

April 15, 1984

- 1130 - Out of cnt - ~~mag~~ magnetometer strip-chart recorder
- 1136 Change to 0-400 fm scale on 3.5 kHz PDR
- 1147 Change 3.5 kHz PDR to 0.5 sec. sweep
- 1240 Begin LBB-20; change 3.5 PDR to 1 sec. sweep (0-400 fm)
- 1300 ON LBB-20 020°T, 5.3 KTS LORAN SNR GOOD.
- 1333 GYRO ALARM. GO ON MAGNETIC COURSE
- 1335 SHUT DOWN DFS, GUN'S RECORDERS, ON 10 Hz, NB 60 Hz
- 1340 SHUT OFF RECORDERS
- 1350 TURN RECORDERS BACK ON
- 1354 clocks were resynced to SAT clock,
unlocked at 1354
- 1358 LORANC + SATNAV tracking again
- 1415 LORANC NAV JUMPING $\pm 0.30'$, NEEDS RECALIBRATION?
- 1424 LORANC Locked ON stars 14, 61
- 1500 BACK ON COURSE, THINGS OK
- 1530 "
- 1615 END LBB-20 BEGIN c/c TO 110°T at 9°/min
- 1625 GUN HAS AIR LEAK, HALL IT IN
- 1627 WILL PUT IN 160 cu in. WATER GUN. DEPLOY 160 cu in gun
- 1643 GUN IN WATER, READY TO FIRE
- 1645 GUN SHOOTING LBB-21, @ 110°T
- 1705 PDR OFF TO CHANGE PAPER
- 1715 PDR BACK ON
- 1720 BRINGING IN GUN (160 cu in.) END LBB-21
- 1750 STARTING TURN TO STARBOARD @ 9°/min TO NEW 5.0 KTS.
COURSE OF 305°T - THE LINE TO FLORIDA STRAITS
NEW LINE WILL BE LBB-22.
- 1806 160 cu in. WATER GUN GOING IN
- 1810 GUN IN THE WATER AND FIRING 305°T
- 1815 BEGIN LBB-22 5.0 KTS.
- 1914 GUN COMING IN!!!

FM 25-01

BAHAMAS SIDE SURVEY

APRIL 15, 1984

1917 (160) GUN GOING BACK IN WATER - FIRING BUT NO TRIGGER 304°
 1922 (160) GUN IN TO CHANGE BLAST PHONE - DEAD 5.2 Kts.

SLOW ON ONE ENGINE

2013 GUN GOING BACK IN (160 min)

2018 GUN IN + FIRING. INTERMITTENT TRIGGER -
 LAB ELECTRICAL PROBLEM.

2029 GOING TOO FAST. WILL GO DEAD SLOW ON
 STBD ENGINE. 308°
 6.1 Kts.

2038 GUN COMING BACK OUT

2128 GUN GOING OVER THE SIDE

April 16, 1984

0045 ON LINE LBB-27

0050 GUN OFF ENGINE TO FIX WATER HOUSE

0057 GUN FIRING AGAIN (160 min)

0135 C/C 9°/MIN STBD TO AVOID TRAFFIC

0141 ALL CLEAR - RETURN TO COURSE

0145 CHANGE BELT ON EPC MONITOR FOR DFS IV

0152 EPC MONITOR BACK ON

0230 GUN BAD, NO SIGNAL? GUN DOWN, HALTED IN FOR REPAIR

0400 STILL FIXING 160 GUN GUN

Dead slow/one

0502 Austin, Badachhup on watch. Still waiting on 160
 min. gun.

0506 Gun still out. Turning to starboard to try
 and close data gap on this line when gun goes
 back in. 6°/MIN.

0555 Increase to 9°/MIN.

0520 Increase to ~5.0 Kts. Still turning.

0536 Turn completed. On reciprocal course.

0600 STARTING TURN BACK TO ORIGINAL LINE. 5.3 Kts.
 STBD @ 9°/MIN.

FHM-25

April 16, 1984

BAAAMAS SITE SURVEYS

0620 GUN IN WATER + FIRING.

0630 RECORDING AGAIN BUT GUN FIRE WEAK AND INTERMITTENT. WILL PUT 400 BACK IN THE WATER ON 45' TOW BRIDLE WITH LAST HIGH PRESSURE FITTING. 304°
~5.0 Kts.

0712 GUN JUST NOT TRIGGERING. DEAD SLOW STARBOARD ENGINE WHILE WE WAIT FOR 400 TO GO IN. STOPPED RECORDING @ 0645. ~304°

0730 400 cu in gun going in the water 334°
2.6 Kts.

0740 400 in the water. Dead slow on 2 engines. Turning to port @ 9°/MIN.

0747 Gun firing. Still turning.

0807 Sonobuoy #14 channel 14 with water and xmitting

0803 Sonobuoy #14 swapped

0817 Sonobuoy #15 channel 7 overboard and xmitting 299° 5.0 Kts

0825 Filter settings wrong on the DFS. Hi-Cuts changed from 31 to 124 Hz.

~~0823~~ 1023 Sonobuoy #16 channel 16 swapped 10:16 ⇒ Begin FS-01

1023 Sonobuoy 17 channel 8 overboard xmitting

1120Z Some missed triggers - also some misfires
400 in³ has air leak - compressors working hard

1137Z Gun 160 in³ gun swapped in -

1140 Reduce speed to retrieve 400 in³

1300 ON LINE ~~LOCK IN~~ 160 cu in gun misfiring, poor amplitude
FS-1 rough seas cse 123° T

1355 GUN OUT FOR REPAIR (160)

1400 STILL DOWN!

1441 400 in³ WATER GUN GOING IN

FM 25-01 APRIL 16, 1984

TIME(Z)

BAHAMAS SITE SURVEY

COURSE
SPEED

1448	GUN FIRING (400 in ³)	
1515	ON LINE FS-1 ~195°T, ALL WEL	5.0 Kts.
1645	" " "	
1757	Unnecessary mark on magnetometer + monitor trace	
1842	Power failure on the lab somewhere. DUKR hung up — had to be rebooted.	
1936	400 in ³ GUN DOWN!! HIGH PRESSURE HOSE UNSCREWED	
1940	DOWN TO ONE ENGINE	
1957	Pressurizing Gun	
2005	GOING OFF (GUN) BACK TO TWO ENGINES	5.0 Kts.
2008	160 GUN FIRING. CONTINUING FS-1	160 5.0 Kts.

4/17/84

APRIL 17, 1984

0421	— Changing Belt on Monitor Trace	
0427	— New Belt ON	
0500Z	Austin / Badachhapa on Watch. Trying to improve monitor record. Now recording on channel 23.	179° 6.7 Kts.
0520	LORAN C lat/lon's erratic — also course and speed. However, signal strengths appear good.	
0610	Dead slow — two engines. Trying to sink streamer to minimize noise.	198° ~3.0 Kts.
0724	Change filter setting from $\text{hipass} = 50 \text{ Hz}$ to $\text{hipass} = 40 \text{ Hz}$ in an attempt to optimize signal on seismic monitor.	
0740	Altering course 10° starboard → traffic	2.5 Kts.
0754	Coming back to original course.	181°(gyro) 2.8 Kts.
1300	ON LINE FS-1 3 KTS OVER GROUND, 5+ KTS THROUGH WATER, GULF STREAM EFFECT, 160 IN GUN USED	

FM 2501 17 APR 84

TIME(Z)

BATHYAS SITE SURVEYS

1330 ON LINE FS-1 160 CU IN, 195° 3 KTS
 1340 60 HZ NOISE ON MONITOR, NOT ON TAPES, MAYBE IN POST-TAPE FILE
 1400 ALL'S WELL?
 1415 Maggie shut down
 1424 MAGGIE HAULED IN ON DECK
 1430 SHUT DOWN GUNWADFS ID, HALL GEAR
 1522 HYDROPHONE IN, HEAD FOR FT. LAUDERDALE
 1530 HEAD IN @ 10. KTS AND 273°
 1900Z DOCK IN FT. LAUDERDALE FOR GUN REPAIRS

18 April 1984

1900Z 400 cu. in. and 160 cu. in. gun ready to go. Leave Ft. Lauderdale for line FS-1
 Continuation. 093°
 10. kts

2200Z At the point of streamer deployment (see next page for additional details).

18 April 1984 FM 025-01

017

Bahamas Site Surveys

1830 SAT and lab clocks on-synched; Sat clock was tracking East for at least 1 hour previous
Data logger started

2030 ? Loran C Southeast (7980) Master down

2100 Loran C back; SNR's good.

2120 Streamer in water & towing at ~20 ft

2335 Maggie in water deploying ~~guns~~ guns

2340 guns in water & shooting on line FS-01
(160)

19 April 1984

0100 ON LINE FS-1 240° 2.6 KTS 160 cu in gun! 195° T desired

0145 COURSE MADE GOOD ~195° T, BELT SLIP ON MONITOR ^{course} ~~ED~~ ^{CP/BELT}

0300 ON COURSE, ALL WELL!

0415 " "

0500 AUSTIN, BARACHHAPE ON WATCH. STILL ON 191°
LINE FS-1. ALL OPS NORMAL. 160 cu in gun 3.0 kts
working well.

0524 Turning starboard to avoid traffic 200°
2.5 kts.

0530 Turning an additional 20° to starboard to
avoid traffic.

0556 Turning back to original course (~193° T) 3.4 kts.

0602 160 cu in. gun not firing. Oscar awakened.
Slowing to dead slow - port engine pulling gun out

0610 Have to replace solenoid. 15-20 minute delay 1.8 kts.

0630 Gun back on line and firing. Bad solenoid. Coming to 193° T
Coming to original course and speed. LORAN C 2.8 kts
giving unreliable positions. Using SAT NAV DR's +
bridge LORAN, at least temporarily

B A H A M A S S T E S U R V E Y S

FILM 25

April 19, 1984

Using lab LORAN C again. Slaves S1 and S4
0700Z are giving reliable results.

Problem with the gun. Dead slow on the
0916 port engine. have been using 160 cu inch gun.
0942 problem getting 400 cu inch gun to seal
160 brought on board

0955 putting 400 cu inch gun into water

1000 400 cu inch firing getting ready to go in the water.

1222 putting 400¹⁶⁰ cu inch gun in water

1223 400¹⁶⁰ is firing but no time breaks in lab
— Problem with signal reaching the lab.

1230 400 ~~back~~ in water + firing. Proceeding
on FS-1.

1320 ON LINE FS-2, 180°T @ ~3.0 KTS ALL WELL!

1348

1515 BELT ON EPC MONITOR SLIPAGE, OFF COURSE TO EAST STEER 195°

1545 TRAFFIC - STEER 190° to make 180°T

1700Z Austin/Badachhage on watch, relieving Sheridan 180°T
Goldstein, Butler. FS-2. 4.0 Kts.

1725Z End FS-2. c/c 090°T @ deadslow/2. c/c
Begin FS-3.

1735Z s/c 090° Will switch guns again @ next
line change to FS-4. ~6.5 kts.

1750 c/c 090°T. End FS-3. Begin FS-4. Down
to one engine dead slow, port side. Switching
the 400 for the 160. c/c

1752 160 in the water and firing. Now recording turning
it rather than the 400. 1 engine

1757 400 out of the water.

Bahamas Site Surveys FHM 25-01

April 19, 1984

1816	Maggie off and being shortened to throw Sondebuoy. Streamer off to starboard	~000°T 6.5 kts.
1825	SR # 18 going in the water. Maggie in	
1840	Maggie back out and operational Sondebuoy a dud.	
2015	c/c ~120° (gyro) to make ~090°T. End FS-4. Begin FS-5. Starboard engine only. 400 gun going in for the lbo.	c/c c/s
2018	400 in the water and firing, port engine only	c/c c/s
2022	lbo out of the water. Dead slow/2 engines. New belts on both EPC monitors.	c/c c/s.
2035	c/c 180°T End FS-5. Begin FS-6.	~5.2 kts
2042	s/c 180° (gyro). Will try to maintain water speed of 6.0 kts.	
2140z	Sondebuoy 19 over side	
2251z	Sondebuoy 19 abandoned Ship noise	
2335z	Sondebuoy 20 over side	
0115z	Deflect from line for Traffic!	
0245z	ENP FS-6 c/c 5°/m to port	
0300z	ON LINE FS-7 100°T @ 6 kts	
0335z	LAUNCH SB 21	
0315z	ON LINE FS-7 @ 000°T at 2 kts	
0341z	SB 21 snagged in TAIL FLOAT	
0343z	HAUL MAGGIE IN, TO LAUNCH SB 22	
0348z	LAUNCH SB 22	
0500z	Austin/Badachape on watch. Still on FS-8	000° 17.9 kts.
0530z	c/c 090°T. End FS-8. Begin FS-9.	
0545z	s/c (120° gyro)	~5.0 kts.

Bahamas Site Surveys

FHM 25-01

April 20, 1984

0600Z End FS-9 Begin FS-10 $\frac{1}{2}$ c 180° Bring water
speed up to 6.0 Kts.

0606Z $\frac{1}{2}$ c 180° This is FS-10.

0736Z SB#23 in the water.

$\sim 180^\circ$ T
 ~ 3.0 Kts

0900Z SB#23 flush

0908Z SB#24 OVERBOARD

0918Z SB#24 hit by TAIL FLOAT

0925 SB 25 OVERBOARD

1045 END OF LINE FS-10 BEGIN FS-11 $\frac{1}{2}$ c 090°T

1045 END OF SB 25

1115 End FS-11 Begin FS-12 000°T

1230 400 cu inch gun goes down

1243 160 cu inch gun firing - Then down again

1309 160 Gun in + firing. Traffic causes $\frac{1}{2}$ c to STBD 050°

1325 $\frac{1}{2}$ c to 335° to get back on track

1400 END LINE FS-12, BEGIN TURN 9°/MIN to PORT

1500 ON LINE FS-13 STEER 155° TO MAKE 135° @ 9 KTS

1545 END LINE FS-13 TURN 9°/MIN to PORT TO MAKE 270°

STARTING LINE FS-14.

1553 Steady up on FS-14. Will steer 255° (gyro) to
try to make 270° good. $\frac{1}{2}$ c

5.5 Kts
 $\frac{1}{2}$ c

1700 Austin, Badachape on watch. FS-14. $\frac{1}{2}$ c 255° (gyro)
Reducing speed to dead slow on 2 engines. 5.5 kts

FHM-25-01

Bahamas Site Surveys

April 20, 1984

2030Z C/C 180° End FS-14. Begin FS-15. Pulling in 400 gun. Dead slow starboard. Turning @ 90°/min.

2035 Pulling 160 gun out. Dead slow port. 400 firing but not recording because DFS is down for maintenance.

2042 Maintenance on DFS complete. Recording C/C 170° ~1.0 kt.
Increasing speed to 6.0 kts through the water.

2055 EPC seismic monitor not tripping - putting 180°
2150 new belt on. C/C 090° Begin FS-16. End FS-15 ~3.0 kts.

2300 400 am gun miss firing.

2352 Sonobuoy 26 overboard
21 APRIL '84

0100 400 am GUN MISS FIRING ON LINE FS-16 090° @ 5 kts

0143 END LINE FS-16, C/C to 180° @ 5.6 kts.

0145 HULL 400 am GUN FOR REPAIR

0225 GUN IN + FIRING, BEGIN FS-17

0230 C/C to 270° @ 9°/min

0245 TRAFFIC; STEER 295° FOR ANVIL (TUG-IN-TOW)

0300 MAKE 360° LOOP TO RETURN TO LINE FS-17

0330 TRY TO PASS ASTERN OF TUG TO NORTH OF LINE

0409 PASS STERN OF TUG HEAD 180° TO RETURN TO LINE FS-17

0430 BACK TO LINE FS-17 C/C 270° @ 9°/min.

0500 Austin, Badachhappe on watch.

231° (gyro)
to make
270° head.

0615Z Coming starboard 10° to avoid traffic.

249° (gyro)

~5 kts.

0618 Coming back 140° - traffic avoided.
Changing paper in 3.5 KHz EPC.

235° (gyro)

~5.5 kts

0622 3.5 KHz EPC back up.

Additional 5° to starboard

~5.5 kts.

FHM 25-01
Bahamas Site Surveys
April 21, 1984

0715Z End FS-17. Turning @ 9°/MIN To 180° (gyro).
400 gun being pulled for maintenance. Not recording ~5.0kts.
data. All stop - port engine.

0720Z Gun out of the water. Resume speed - port engine.

0722Z S/c 180° (gyro). Dead slow - one engine. 1.9kts.

0745Z Gun still out - solenoid being rebuilt. Proceeding ~0.6kts.
Very slowly down the line.

0800Z Gun in the water and firing. Begin recording.
Start FS-18. Speed up to 5.0kts. Still 180° on the gyro.

0851Z S/c 120° (gyro) to make ~090°T FS-19. ~4.5kts.

1017Z Sonobuoy 27 overboard

END LINE FS-19

1234

1306 BEGIN LINE FS-21 END FS-20, on 270°T

1345 SB#28 DDD

1350 SB#29 LAUNCHED GOOD

1350 DATA LOGGER WAS OFF, NO TAPE DRIVE READY, FIXED

1415 C/C 250° STEER TO MAKE 275°T

1420 GUN MIS-FIRED

1445 STEER 240° TO MAKE 270°

1536 SHUT OFF SB#29

1536 Sonob 29 guided

1543 GUN STOPPED FIRING, PULL FOR REPAIR

~~1543~~ 1606 SPEED UP TO 6KTS. TO PASS TANKER

1607 SLOW TO LAUNCH GUN

1630 GUN ~~LAUNCHED~~ LAUNCHED, SPEED UP AGAIN, GUN FIRING ONLINE

1700Z Pulling in Maggie — nearing end of FS-21
and the Straits of Florida grid.

1710Z Turning downwind to retrieve Streamer 400 in³
gun being pulled. ~4.0kts.

1748Z Streamer being retrieved - belts changed on 3.5 EPC, Sonobuoy
EPC and Single channel monitor.

1755Z Streamer aboard - heading for Exuma Sound 10.0kts.

FHM 25-01

Bahamas Site Surveys

April 21, 1984

1800Z Badachhape on 3.5kHz watch. Steaming to Exuma Sound. 048°
11.5 kts.
1930 Schlepper on 3.5kHz Northwest Prov. Channel 050°
in transit to Exuma 11.2 kts
0300 3.5 KHz shut down, in transit to Exuma Sound 082
11.3 kts

→ April 22, 1984

1600Z Still steaming for Exuma Sound grid. ETA ~180°
approx. 0030Z on April 23. 9.4 kts.

0027Z. 23 April
still float over the side

0156 Streamer deployed

0210 160 cu in in water then out for inspection!

0214 PUT 400 cu in in water!

0216 Slow ahead while 400 gun fired

0226 BEGIN SHOOTING LINE ES-1 400 cu in ~~gun~~

0230 CIRCLE TO STBD TO GET ON 060° T GS-1

0255Z S/c 230°. Still maneuvering to occupy the beginning of ES-1 ~5.0 kts.

0256Z will pull 400 cu in gun to check it out

0318Z 400 gun back in the water and firing.
Still maneuvering to occupy ES-1 start. Dead slow/ ~5.0 kts.
2 engines.

0322Z Begin turn to STBD

0330Z BEGIN 9°/min turn to right (STBD) to begin ES-1 ~4.4 kts.
Dead slow on one engine to minimize radius of turn

0355Z s/c 055° (gyro) to make 050° T good. Still on one engine. Approaching start of ES-1 ~4.0 kts.

0400Z Begin recording, ES-1. ~055°/065° (gyro) to finish lining up on original track.

0405Z Dead slow - 2 engines. Back to 055° ~5.0 kts.

0442Z Encl ES-1 Begin ES-2. Start 9°/MIN. ~5.0 kts.
turn to 100° T (105° T gyro)

0500Z Austin, Badachhape on for Sheridan, ~100° T
Goldstein, Burler. ES-2 ~5.0 kts.

FHM-25-01

Bahamas Site Surveys

April 23, 1984

0535Z End ES-2. Begin ES-3. c/c 137° (gyro) to make 137° T. ~5.0 kts.

0538Z s/c 137°. ES-3.

0617Z LORAN C going bad. Will navigate using sat. fixes and dr's and radar fixes from the bridge. ~5.1 kts 131°

0717Z LORAN C BACK ON LINE - SLAVES S1/S4 (14-161-) 143°
THIS IS STILL ES-3. ~5.0 kts

0745Z c/c 230° (gyro). End ES-3. Turning to begin ES-4. ~5.0 kts

0820 c/c 313° (gyro) to make 318° T. Begin ES-4. ~5.0 kts.

0832 Maggie off - pulling it in to launch sonobuoy ~6.0 kts.
We were s/c 313° (gyro) @ 0830Z ES-4

0840 SB#30 in the water - good signal.

0841 c/c 323° (gyro) to compensate for sat. fix information ~5.9 kts.

0935 radar & cruise ship at 4 nmi, 200° relative
own heading 322 - screw noise seen on sonobuoy

1315 GUN OFF HAIL GUN IN FOR REPAIR - END ES-5

1341 GUN FIRING, START ES-6, TURN 9°/min to 230° T

1400 ON LINE @ 230° T

1500 STEER 225° TO MAKE 230° T

1521 STEER 220° TO MAKE 230° T

1615 ALL'S WELL, LEE COVE COST TAPE DRIVE FOR SB

1640 LORAN OFF TRACK - USE SAT. DR.

1700Z Austin, Badachhape on watch ES-6.

1710Z LORAN C intermittent - using sat dr's and fixes

1745Z End ES-6. c/c 320° T - enroute to ES-7. 400 gun out for repair. Dend slow / one engine

FHM 25-01

Bahamas Site Surveys

April 23, 1984

1810 400 out. Begin recording ES-7. Gun back in and firing. Back up to dead slow - two engines. ~5.0 kts

1845 400 not firing. Dead slow / one engine. Stop recording

1853 400 gun out. 160 gun in. Begin recording - continuing line ES-7. Still dead slow / 1 050°T

1855 Initial gain increased 6db with 160 gun in. (42db) Back to original course and speed. 050°T ~5.0 kts.

1855 FRIG-B Lab time shorted from 1836 to 1842 whilst connecting bad cable to recorder

1918 400 going back in the water. Dead slow - starboard engine. 050°T

1922 400 firing again. Initial gain reduced to 36db. Back to dead slow / 2 engines 050°T

1924 SB# 32 in the water - good signal.

2048 End SB# 32. Good buoy! ~050°T 054° (gyro) ~5.3 kts

2108 GUN down - 400 cu. in.

2110 GUN up - 400 cu. in.

2157 slow to change guns

2208 160 in water + firing Still ES-7.

April 24, 1984

2222 400 back in water + firing

0047 STEADY UPON ES-8 230°T @ 5 kts

0057 Problem with the 400 gun. Putting in the 160. Deadslow on one engine. 215° (gyro) ~5.0 kts.

FHM 25-01

Bahamas Site Surveys

April 24, 1984

- 0100 160 cu in gun in + firing. However, almost immediately down. Dead slow / one engine. Will repair 400 gun and put it back in the water. 200° ~4.0kts.
- 0112 1400 cu in in + firing. Recording again - continuation of ES-8. Back to dead slow - 2 engines. We are north of the line but converging on it. 160 out of the water. C/c 2150 ~5.0kts.
- 0124 Still being set north of the line by NW set. Altering course to 205° ~5.0kts.
- 0212 LORAN FIX (CORRECTED) WAY OFF SDR! (satellite DR)
- 0227 Sonobuoy 33 overside
- 0250 SDR & LORAN CORRECTED FIXES WAY OFF?
- 0321 SAT FIX SAME SHOWED CORRECTED LORAN WAS RIGHT!
- 0340 END ES-8, C/c to 315° TO BEGIN NEW ES9
- 0422 END ES-9, C/c to 330°T at 9°/min FOR NEW LARGEST (ES-10)
- 0434 LORAN WAY OFF AGAIN, NOT TRACKING
- 0445 GUN OUT, NOT FIRING! ON ES-10 (400)
- 0503Z Gun in the water and firing. Resuming ES-10 ~Dead slow - 2 engines. 2300T ~5.0kts.
- 0517Z SB# 34 over the side - good signal. Austin, Badachhape, Gore on watch. 235° 5.2kts.
- 0647Z Having trouble with cartridge ribbon on the Epson data logger printer.
- 0700Z End ES-10 / SB#34. Turn to starboard on one engine (starboard) @ 5°/min. to line up on ES-11. Stop recording ~4.0kts. ~3.9kts.
- 0715Z Turning slightly slower, @ 30°/min. Still on one engine.
- 0745Z s/c 0500T. Increasing speed to dead slow on two engines. BEGIN ES-11. LORAN C BAD.
- 0800Z on line ES-11 LORAN C BACK. Getting good radar fixes ~5.5kts.
- 1330Z ON ES-11 NEAR TURN GOOD DATA.
- 1335Z END ES-11, BEGIN TURN TO 230°T @ 90°/min. END SONOBUOY #35

FM 2801

BAHAMAS SITE SURVEYS

APRIL 24, 1984

1410Z COMPLETE TURN TO ES-12 STEADY ON 230°T

1500Z ALL WELL ON ES-12, LORAN TRACK GOOD

1550Z ALL WELL ON ES-12, "

1620Z "

1650Z ALL WELL ON ES-12,

1700Z Austin, Badachhane, Gore on watch, relieving
 Sheridan, Goldstein, Butler. 229°
 4.7kts

1715Z SB#36 in the water, good signal.

1930Z End ES-12. Begin ES-13. C/C 140°T @ 90°/MIN.
 Dead slow / 2 engines (~5.0kts). End SB#36.

1940Z S/C 140°T. ES-13. ~5.0kts.

1945Z Alter course back to 140°T. Proceeding along ES-13. ~5.6kts.

2115Z pull gun for maintenance

2210 Sonobuoy #37 over side

APRIL 25 1984

0000Z Sonobuoy 37 ~~etc~~ completed

0100Z BEGIN LINE ES-15 @ 140°T

0130Z SB#38 launched

0138Z SAT. FIX RIGHT ON!

0310Z END ES-15, C/C @ 5°/min to Port

0317Z OSCAR WILL LOOK AT GUN DURING TURN!

0310Z END SB#38

0350 GUN IN AND FIRING!

0355 START DFS IV TO RECORD ES-16, STILL IN TURN!

0410 STEADY-UP ON ES-16 @ 320°T

0430 HOSE LEAK ON GUN, WILL TRY TO LAST UNTIL TURN

0505Z ES-16 Austin/Badachhane on watch.

Gun (400 in³) in the water but leaking — then

stops firing. Dead slow / 1 engine. Start

90°/MIN turn to reoccupy line.

320°
4.8kts.

FHM 25-01

correction factor for
 Exam Sound Loran C
 navigation 2.2 nm to the
 NW (100°)

322

028

⇒ 2.2 nm

322°

Bahamas Site Surveys

April 25, 1984

0510z Gun (400 cu.in) in the water and firing. Back to dead slow on two engines. Still turning to reoccupy line ES-16.

0547z S/C 320°T. Continuing ES-16.

~5.6 kts.

0600z Belt on EPC bad. Replacing it.
(seismic monitor)

0610z EPC seismic monitor up and running again.

0620z End ES-16. Turn @ 30°/min To 140°T to begin ES-17. Not recording digital data during the turn.

~5.6 kts.

0640z Still turning. 400 cu.in gun not firing. Will pull it and examine. Dead slow/starboard engine.

~4.0 kts.

0645z S/C 050°T Extending radius of the turn.

~4.0 kts.

0652z Gun back in the water/high pressure fitting loose. Dead slow/2.

0655z Continue to 140°T. Gun firing.

~5.0 kts.

0711z Increasing turn to 90°/min.

0716z S/C 145° Begin recording ES-17.

145°

~5.0 kts.

0731z LORAN C gone completely. All SNR's down near zero.
↳ Electrical storm nearby.

0745z SB#39 in the water - good signal.

0850z End SB#39. Preparing to throw another

0900z SB#40 in the water.

1015z End SB#40. End ES-17.

1052z Begin ES-18. 1149z End ES-18

1300 ON ES-18 @ 230°T @ 5 KTS, All well.

1330 END ES-19, BEGIN C/C @ 3°/min to port

1420 ON LINE ES-20 @ 050°T

1500 " " " @ 6.0 KTS, All well

FM 2501

BAITAMASS CTS SURVEYS

APRIL ~~25~~ 1984

1520 ON LINE ES-20 @ 6KTS @ 050°T

1545 END LINE ES-20, BEGIN TURN @ 90°/min to 017°T

1550 STEADY ON LINE ES-21 @ 017°T

1538 SAT, FIX IN GOOD AGREEMENT WITH CORR. LORAN.

1630 ADJUST COURSE, STEER 010° TO MAKE 017°T

1700Z Austin, Badachhape on watch. ES-21 ~ 5.0 kts.

1800Z C/c 060° (gyro) to make 050°T. End ES-21, ~ 5.5 kts
begin ES-22.1913Z 400 cur.in. gun down. Dead slow/one engine. 0600
Oscar is checking. Gun coming out for a look. ~ 4.0 kts.1925Z Loose high pressure fitting the problem — fixed — gun
going back over the side.

1926Z Dead slow/both engines.

1928Z Gun firing. Resume recording ES-22. Resume speed. 5.5 kts

2130Z Maggie down — pulled. 060° (gyro)

2100Z End ES-22. End Exuma Sound survey.
Begin pulling gear. Maggie secured @ 2134Z.2230Z All gear secured. Heading for
Ft. Lauderdale.

FMZSO1 GUN HISTORY

12 April 2215Z WATER PUMP FOR 160 mm gun burned out

13 April 0044Z 400 mm LBB-01

0242Z pull 400

0300Z redeploy 400

0451 = Compressor Problem SDG (Shut down gun)

⁵
0195Z BOL (back on line)

0627Z pull 400 end LBB-02

0647Z BOL LBB-3

1230Z SDG

1310 BOL LBB-4

1641 SDG

1748 BOL LBB-07

2021 SDG

2127 BOL LBB-08

2320 SDG

14 APR 0105 BOL LBB-09

1410 SDG - Transit to meet helicopter Matanilla Shoal

15 APR 0135 BOL LBB-17

0244 SDG

0255 BOL

0548 pull 400

0741 BOL LBB-18

1335 SDG, LAB

➡ 1635 Deploy 160 BOL LBB-21

1720 SDG LBB-21

1810 Redeploy 160 LBB-22

1914 SDG

1917 BOL no trigger

15 APR	1922	SDG Δ blast phone
	2013	BOL
	2038	SDG
	0045	BOL LBB 22
	0230	SDG
	0620	BOL weak fire
✓	0645	SD 160 curin
✓	0730	deploy 400 on 45' bridle
	1120	SD 400 curin gun
	1137	BOL 160 curin FS-01
	1305	SDG (160)
	1441	BOL 400 curin
	1936	SDG 400
	2008	BOL 400 FS-01
16 APR	:	Sometime 4 2008-1300 400 snapped out
17 APR	1300	BOL 160 curin FS-01
	1900	Tied up Ft. Everglades
18 APR	2340	160 BOL FS-01
19 APR	0602	SDG
	0630	BOL
	0942?	SD 160
	1223	400 BOL FS-01
	1750	SD 400
	1752	BOL 160
	2018	SD 160 BOL 400 FS-5

4/25/84

Data Gaps / Exuma Sound

@ CUT

April 23

ES 01 START 0400Z 23 APR

84,04,23,00,00
84,04,23,03,59

- ✓ 0745 - 0820 (ES-3/ES-4)
- ✓ 1019 - 1027 (ES-4/ES-5)
- ✓ 1313 - 1341 (ES-5/ES-6)
- ✓ 1747 - 1810 (ES-6/ES-7)
- 1845 - 1853 (ES-7)
- ✓ 2337 - 0000 (ES-7/ES-8)

April 24

- ✓ 0000 - 0047 (ES-7/ES-8).
- ✓ 0442 - 0503 (ES-10).
- ✓ 0700 - 0745 (ES-10/ES-11).
- ~~✓ 1838 - 1853 (ES-11/ES-12)~~
- ✓ 2115 - 2204 (ES-13/ES-14)

April 25

- ✓ 0015 - 0029 (ES-14/ES-15)
- ✓ 0310 - 0355 (ES-15/ES-16)
- ✓ 0620 - 0716 (ES-16/ES-17)
- ✓ 1014 - 1052 (ES-17/ES-18)
- ✓ 1149 - 1216 (ES-18/ES-19)
- ✓ 1913 - 1928 (ES-22)

FM25-02 TRANSIT FT. LAUDERDALE TO GALVESTON AFTER BAHAMA SITE SURVEY

DATE: 30-JAN-85
START TIME 4/27/84 15: 0.0
END TIME 5/ 1/84 13:15.0
LATITUDE MAX-MIN 29.3237 24.3243
LONGITUDE MAX-MIN -80.0180 -94.6478
DEPTH MAX FATHOMS 1815.
DEPTH MAX METERS 3403.
MAG THEORATICAL MAX-MIN 0. 0. 0.
MAG RESIDUAL MAX-MIN 0. 0. 0.
TOTAL POINTS READ= 1133.
TOTAL BATHYMETRY POINTS= 1086.
TOTAL MAGNETICS POINTS= 0.

29
28
27
26
25
24