

**KEY WEST CRUISE REPORT  
HIGH RESOLUTION MULTICHANNEL AND SINGLE  
CHANNEL SEISMIC SURVEY CRUISE ON THE R/V LONE STAR  
08 JULY 1994 TO 14 JULY 1994**

by

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University of Miami cruise associate: Robert N. Ginsburg.

The following is a technical summary of the Florida Keys cruise aboard the R/V *Lone Star*. The Florida Keys single and multichannel high resolution survey was a joint effort between Rice University and University of Miami, RSMAS.

Seismic acquisition was digital using the Elics digital acquisition system, D24. Seismic data collected in compressed Elics format and translated into SEG-Y format on site, both formats stored on 2.3 GB Exabyte tapes. Navigation was GPS acquired every 5 seconds and input directly to the Elics system through the RS232 serial port. Energy source was the SSI S-15 water gun in conjunction with an ITI 10 hydrophone single channel 6.1 m streamer and ITI 24 hydrophone 24 channel 72 meter streamer. Air pressure supplied by Deutz/Bauer 35 scfm or Ingersol/Rand 15 scfm compressors were used to supply the S-15. The compressor used was dependent on the shooting rate. Details of the seismic taken on this cruise are appended to the back of this technical report. Additional information on this cruise is available from the University of Miami.

Seismic acquisition:

	<u>S-15 (sc)</u>	<u>S-15 (mc)</u>
Shooting Interval =	2000 - 3000 ms	2000 ms
Sampling Frequency =	2000 Hz	2000 HZ
Recording Length =	1500 ms	800 ms
Energy =	2000 psi	2000 psi
High Pass Filter Digital =	160 Hz	160 Hz
Low Pass Filter Digital =	800 Hz	800 Hz
Signal Amplification =	72 db	72 db
Source distance from ship =	7.5 m	7.5 m
Source depth =	0.5 m	0.5 m
Distance to 1st phone from ship =	12.5 m	12.5 m
Distance from source to cable =	7.9 m	0.0 m
Distance from source to 1st phone =	5.0 m	27.8 m (40 ms)

**Seismic File Statistics for multichannel lines using S-15 with 24 channel 72 m streamer or single channel lines using S-15 with single channel 10 phone 6.1 m streamer:**

<u>Line name</u>	<u>Dist. nm</u>	<u>Shots</u>	<u>Time</u>	<u>Size MB</u>	<u>SI sec.</u>	<u>Rate kts</u>	<u>Coordinates</u>	<u>Source</u>
FLAKEY1	1.1	273	0:14	0.43	3.0	5	25°28.77'N 79°59.55'W 25°28.82'N 80°00.73'W	S-15
FLAKEY1B	4.7	1,742	0:58	2.71	2.0	5	25°28.83'N 80°00.81'W 25°28.61'N 80°05.51'W	S-15
FLAKEY2	11.7	4,690	2:37	7.30	2.0	5	25°28.43'N 80°05.72'W 25°17.28'N 80°08.61'W	S-15
FLAKEY3	8.7	3,335	1:51	5.19	2.0	5	25°17.24'N 80°08.56'W 25°17.28'N 79°59.89'W	S-15
FLAKEY4	7.3	4,865	2:00	119.80	1.5	5	25°18.45'N 80°15.82'W 25°17.22'N 80°08.61'W	S-15

Line name	Dist. nm	Shots	Time	Size MB	SI sec.	Rate kts	Coordinates	Source
FLAKEY5	46.6	11,775	4:08	18.30	2.0	5	25°18.40'N 80°08.56'W 24°56.73'N 80°21.06'W	S-15
FLAKEY6	12.4	6,622	2:46	127.50	1.5	4	24°59.68'N 80°21.52'W 24°53.18'N 80°31.57'W	S-15
FLAKEY6B	14.3	8,656	3:37	166.70	1.5	4	24°53.18'N 80°31.57'W 24°45.17'N 80°43.44'W	S-15
FLAKEY7	6.6	3,900	1:37	75.10	1.5	3	24°49.55'N 80°46.60'W 24°43.98'N 80°43.12'W	S-15
FLAKEY7B	5.0	2,490	1:23	2.70	2.0	4	24°43.90'N 80°43.03'W 24°39.98'N 80°40.01'W	S-15
FLAKEY8	TEST LINE PROBLEMS WITH 24 CHANNEL ITI STREAMER							
FLAKEY9	17.7	6,041	3:20	6.55	2.0	5	24°36.54'N 80°03.39'W 24°31.51'N 80°20.38'W	S-15
FLAKEY9B	5.6	1,760	0:59	2.03	2.0	5	24°31.50'N 80°20.47'W 24°29.89'N 80°25.84'W	S-15
FLAKEY10	TEST LINE PROBLEMS WITH 24 CHANNEL ITI STREAMER							
FLAKEY11	10.5	4,403	2:27	4.77	2.0	5	24°21.94'N 80°42.80'W 24°32.38'N 80°43.99'W	S-15

### S-15 gun statistics:

S-15 Total Shots Recorded = 106,533  
S-15 Total Miles Recorded = 171.54 nm  
S-15 Total Hours Recorded = 32.75

### CRUISE OUTLINE: 08 July to 14 July 1994

- 08 July 1994
- 1) Meet with R. Ginsburg to discuss cruise track lines and logistics.
  - 2) Calculate storage space for seismic data.
  - 3) Pick up ITI 24 channel streamer at RSMAS and deliver do R/V Lone Star at Port of Miami dock.
  - 4) Shop for provisions for R/V Lone Star.
  - 5) John Anderson and Tony Rodriguez arrive at MIA from IAH.
  - 6) Seal up hydrophones on both single and multi channel ITI streamers.
- 09 July 1994
- 1) Meet at R/V Lone Star at 0700 prepare for departure, stow and secure equipment.
  - 2) Assemble S-15 to float array and prepare hose bundle.
  - 3) Prepare ITI 24 channel streamer, hard wire to Elics D24.
  - 4) Depart dock at 1015.
  - 5) Overboard ITI 24 channel streamer at 1430 with S-15 water gun. Go signal to noise ratio except channels 3 and 14. Sounding in 3 m of water, difficult to separate direct for bottom return.
  - 6) Overboard single channel ITI streamer, no penetration, signal washed out from hard bottom.
  - 7) Recover all gear at 1700, rough sea state approximately 4 to 5 feet.
  - 8) Seal hydrophones on both single and multi channel ITI streamers.
  - 9) Break down piston coring rig and stow below deck.
  - 10) Return to Key Biscanne Bay at 1800, seas rough not able to shoot outside reef.
- 10 July 1994
- 1) Depart dock at 0655 for survey area.
  - 2) Test single channel arrangement on 24 channel ITI streamer (sum 24 phones).

- 3) Deploy S-15 and 24 channel ITI in single channel mode. Signal to noise ratio to high because of channels 3 and 14.
- 4) Recover 24 channel steamer and deploy single channel ITI streamer.
- 5) Begin survey at 1121 with line FLAKEY1.
- 6) Finish shooting at 1710 with FLAKEY3.
- 7) Process, print out, Translate to SEG-Y lines FLAKEY1, 1B, 2, and 3.
- 8) Make anchor at 2045.
- 9) Lost multi channel acquisition with D24, need to seat Delph DAC boards. Test system, solder wire to channel 6. Finish at 2207.

11 July 1994

- 1) Pull anchor at 0810.
- 2) Deploy multi channel streamer and S-15, channels 3,14, 24 noisy. Begin shooting at 0903 with FLAKEY4.
- 3) Finish shooting at 1725 with line FLAKEY6.
- 4) Process, print out, Translate to SEG-Y lines FLAKEY4, 5, and 6. and obtain navigation data on lines FLAKEY1 through FLAKEY6.
- 5) Tie up an Molasses Reef at 1830. Depart at 1955 to make anchor at 2010. Need to make repairs to port engine.
- 6) Back up all lines on Exabyte tape in Elics format. SEG-Y data already done during translation.

12 July 1994

- 1) Pull anchor at 0020, needed to make repairs to port engine, water in heads.
- 2) Deploy S-15 and ITI 24 channel streamer at 0100.
- 3) Begin shooting with FLAKEY6B at 0105.
- 4) Having problems with 24 channel ITI streamer, signal to noise ratio very poor, make a number of attempts to fix problem, same symptoms as Bahamas cruise.
- 5) Anchor at Long Key to wait for clearance to shoot in sanctuary.
- 6) Process, print out, Translate to SEG-Y lines FLAKEY6B, 7, and 7B. and obtain navigation data on lines FLAKEY6B through FLAKEY7B.
- 7) Denied permission to shoot in sanctuary because of sea turtles.
- 8) Deploy single channel ITI streamer and S-15 and continue survey with line FLAKEY9.

13 July 1994

- 1) Continue shooting single channel seismic, FLAKEY9B.
- 2) Pull single channel streamer at 0750 for multi channel dip line, phones all sealed again in 24 channel ITI streamer, begin with FLAKEY10. Data quality very poor, high signal to noise ratio. Pulled 24 channel ITI streamer and deployed single channel ITI streamer and begin shooting FLAKEY11.
- 3) Pull all gear at 1225, and line FLAKEY11 at 1219. Head for Key West.
- 4) Process, print out, Translate to SEG-Y lines FLAKEY9, 9B, and 11. and obtain navigation data on lines FLAKEY9 through FLAKEY11.
- 5) Break down S-15 to service and clean. Stow all gear.
- 6) Calculate all gun statistics.
- 7) Pull shuttles in GI-50 for Jim Hedger at SSI.
- 8) Remove Elics D24 DAC boards and set up computer for single channel seismic.
- 9) Train John and Tony on Elics Delph2x software and tape backup utility.
- 10) Pack up gear for early morning departure.

14 July 1994

- 1) Depart boat for airport in Key West at 0815.
- 2) AA flight 3650 depart at 1010 for MIA.
- 3) AA flight 2130 depart at 1410 arrive at 1544 at IAH.