1991

CRUISE REPORT FOR STUDENT CRUISE XV **91L580**

Chronological Narrative

20 Aug.
Transit from Austin to the Marine Science Institute at Port Aransas. Mobilization and student orientation. Students (9) bunk aboard. Behrens, Griffiths & Wiederspahn arrive from Austin, Billish & Roberts arrive from Galveston. Students: Laura Brock, Louisa Eclarinal, Eugene Holmes, Randy Remington, Wayne Ritcheson, Lisa Sparlin, Sheryl Stouffer, Michelle Town, Jennifer Winlker. Mounted streamer reel and set up the lab.

21 Aug.
Continue mobilization. Load small corer & supplies. Compressor arrives from Houston mid-afternoon. Reload truck with heat probe, large corer, and deck mountings for return to Galveston.
1630 Departed for Aransas Pass to refuel and headed to sea from there.
1811 Pass MSI boat basin - cruise begins
1835-1900 Slow for gun deployment and tests shots - all is well
1900-

22 Aug. seas 1 - 3 ft., only 3 of 9 students sea sick
-0651 transit to study area & deployed streamer
0656 deployed air gun
0705 begin line 1
0920 note occasional severe strumming of all channels, mostly <20 Hz
1035 begin line 2
1156 change gun delay from 43 to 45 ms; measured bubble with GEN only: 85 ms. Air pressure = 2150 psi; gun depth - 4 meters.
1150 begin line 3
1307 end line 3; retrieve seismic gear
1340 stop for **core 1**; results extremely poor, rerigged for second try within same sedimentary objective
1539 hit for **core 2**; results excellent
1615-1810 transit to site of core 3
1811-1842 **core 3** taken successfully
1904-2055 transit to next seismic line
2055-2131 deployed seismic gear
2131 begin line 4
2236 compressor begins continuous blow-off
2344 found wiring problem and repaired; resume seismic line
2344-

23 Aug. weather excellent, 1 - 2 ft seas; one student still sick
-1528 shot seismic lines 4 - 9
1528-1614 retrieved seismic gear & drifted to check current - >1kt to NE (064°)
1614-1751 transit to coring site
1755-1842 took **core 4** - excellent

1907-1928 deployed seismic gear; at Ken Griffiths' suggestion, we attempted to break up streamer strumming by cross wrapping 1/4" soft line on the leader at three random places. From subsequent records, this appears quite effective.
1928-

24 Aug. weather excellent, 1 - 2 ft seas; one student still sick
-1740 shot seismic lines 9 - 13
1740-1750 retrieved seismic gear

navigation calibrations:
GPS vs. Northstar 6000 LORANC: GPS > N6LC lat: 0.37' long: 0.17'
lab LORANC vs. N. 6000 LORANC: labLC > N6LC lat: 0.48' long: 0.31'

1753-

25 Aug. weather excellent, 1 - 2 ft seas; one student recovering
-1219 stopped taking seismic data so that we could take advantage of the calm weather, run faster (at 8 kt) and still get excellent 3.5 kHz data needed to define channel system on the Rio Grande fan.
1219-1309 station for **core 5** start down - 1224, trigger - 1239
1309-1415 transit to next station
1415-1520 station for **core 6** start down - 1420, trigger - 1436
1520-2145 continue 3.5 kHz survey of Rio Grande fan channels
2145-2640 return to beginning of a line to deploy seismic gear to add to 3.5kHz
2202 complete turn with seismic gear deployed beginning line 14

26 Aug. weather stormy, seas 2-4 ft & choppy; all students functional; 3.5 kHz data deteriorating periodically - making yesterday's decision wise.
0453 end line 14; begin line 15
0750 lost autopilot during generator switch & engine room maintenance - resulting in tight circle endangering streamer
1415 end line 15; begin line 16
1524-1451 LORANC out due to storms, SNR < 100
1519-1551 interrupt line with 360° circle while shutting down compressor for maintenance & fuel line valve work
1551 restart shooting with shot 6309
1556 reset LORANC time which was disturbed during storm outage
1825 discovered LORANC 5 min printer was labelling time 5 minutes late -
1830 reset time for 5 min. printer
1835 change 1 min LORANC time
2254 change from line 16 to line 17

27 Aug. weather stormy, seas 3 - 5 ft, choppy and confused; students OK; 3.5 kHz worthless (making earlier decision even wiser); seismics unaffected by weather; much resecuring required
0016 change from line 17 to line 18

0200 change from line 18 to line 19
0600 change from line 19 to line 20
1055 end line 20, compressor check
1116:40 begin line 21
1116-

28 Aug. storms subside, seas 2 - 4 ft; 3.5 kHz varies from poor to good depending on direction of line
-1720 shot lines 21 - 30
1734 seismic gear retrieved
1734-1848 begin faster 3.5 kHz lines and transit to coring station
1848-2000 station for **core 7**, start down - 1854 triggered - 1944
2000-2250 3.5 kHz lines
2258-2314 deployed seismic gear
2314-

29 Aug. seas very slightly choppy - 1-3.'
-0824 shot lines 31-34
0824-0845 retrieved seismic gear
0845-0912 transit to coring station
0912-1000 station for **core 8**, start down - ~0915 triggered - 0934.5
1000-1240 transit (almost toward Port Aransas) to coring station
1243-1305 station for **core 9**, start down - 1243 triggered - 1253
1310-1430 continued 3.5 kHz survey line (almost toward Port Aransas)
ETA - midnight
1430 adjusted course (~6°) directly for Port Aransas

30 Aug. following seas, almost calm
0012 entered MSI boat basin
0020 secured at MSI dock in Port Aransas

Summary and Discussion

This cruise was supported chiefly by the student cruise fund of the Institute for Geophysics; but two industry grants also provided funds for two days of the ship time, salaries for the support personnel, and some support for data processing and reporting. Two primary objectives (as outlined in the industry grants) were "delineation of salt canopy sutures between coalesced salt structures", and "delineation and characterization of the downslope termination and upslope origin of at least one channel system on the slope of the Rio Grande Delta." These objectives were less than fully achieved, due to the shortness of the cruise (industry funding was somewhat less than that sought), to the considerable complexity of both salt and channel geometries and to the accomplishment of an additional objective.

The first two days of the cruise were used to gather additional data (3 cores and 99 n.mi. of 3.5 kHz - including 65 n.mi. of air gun reflection profiles) on the East Breaks Slide debris flow complex. Study of this complex was actually part of the first industry - supported project; and much field data had been acquired on

previous cruises. Analyses of the earlier data showed three areas of limited coverage, so seismic lines were shot and cores were taken in these three areas.

Overall, the scientific gear operated remarkably well. In the barely three weeks since the July cruises, repairs were made to the EPC flat-bed recorders , and all three were available for this cruise. The new MacIICi fulfilled its role as back-up to two older Macs doing the navigation data logging. A seven hour loss of GPS data resulted from a loose RS232 connection and inattention to it. There were numerous smaller GPS gaps due to somewhat flakey performance of the Trimble unit. A prototype mapping program provided trackline maps directly from logger files. The G.I. gun apparently is not only bubble-free, but also trouble and maintenance free. In contrast to multiple failures last year, the compressor provided continuous service, although there were some problems with fuel lines and oil leakage, the latter making the deck, at times, hazardous as well as a mess. The winch and its power pack provided by Archie Roberts served well for both the streamer on this cruise and the magnetometer on the previous cruise in July.

The addition of three pieces of simple rope-wrap fairing seemingly significantly reduces a long-standing problem of noise from leader strumming. One streamer channel (inboard) had severe 60 Hz noise throughout. It might be usable, but probably not. This appears to be a problem in the leader or sections themselves. It was not in the deck cable. There appears to be normal resistance through the section wires, so this is perplexing. Might be a deck cable leader connection contact.

On at least one tape, the Masscomp somehow has scrambled the shot order. The problem seems to be regular and repetitious, which means it can be fixed. We had excessive trouble changing tapes on many occasions (although the majority were trouble free) due to (?) the poor condition of the drive. One Masscomp A/D needs adjustment at the factory.

LORANC interference from MACs (a rather severe problem on the first LONGHORN cruise in 1990) was non-existent. We think this results from putting an RFI filter between the poser connections in a plug strip.

At one point, the streamer was endangered while the autopilot was off (dropping out during a power switch). It remained off while the mate continued engine room checks and the bridge was unattended. This should not be the practice when towing equipment that could be run over by a wandering autopilot.

The new mattresses (arriving at a dramatically '11th hour') added a level of delightfulness to the cruise. Even when my 'nights' consisted of only an hour or two between stations, every minute on the mattress was marvelous. An ideal cruise would have <u>everything</u> working <u>all</u> the time. If one were strongly motivated to find shortcomings, this cruise could be considered a near disaster.

Respectfully submitted,

E. William Behrens

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Chief Scientist