#87023 Seg 1
#87025 Seg 1
#87026 Seg 1

ACADIANA 87-2
June 14-26, 1987 Legs 1, 2, 3
Chandeleur Islands
J. Kindinger

NAVIGATION & GEOPHYSICS SUMMARY

87-1, 2, 3
ACAD 101574
#87023

8702Sei

ACADIANA 87-I CHANDELEUR ISLANDS AREA SEISMIC CRUISE Leg 1

Vessel: R/V Acadiana, Louisiana Universities Marine Consortium

Personnel:

John R. Suter, Louisiana Geological Survey
Ron Boyd, Dalhousie University
Jack Kindinger, United States Geological Survey
Ken Parolski, United States Geological Survey
C. L. Black, LUMCON
Wayne Simoneaux, LUMCON

Area of Operation:

Chandeleur Islands, Mississippi Barriers, onshore and offshore

Approximate Lat/Long:	30 00 N	30 30 N
	89 15 W	88 00 W
	29 00 N	29 00 N
	89 15 W	88 00 W

High Resolution Seismic Systems in use:

ORE Geopulse (Boomer)
Benthos 10 element hydrophone
EPC 3200 Recorder, ORE 5210 Receiver
ORE 5420A Power supply
ORE 3.5 kHz Subbottom Profiler with ORE 140 Transceiver
Northstar 6000 LORAN with Texas Instruments Silent 700
EPC Delay box

Date: Sunday June 14, 1987 -

6/13 R/V Acadiana arrived from LUMCON in Cocodrie at approximately 1400 6/13. Ken Parolski of USGS arrived Biloxi late afternoon 6/13.

6/14 J. Suter, R. Boyd, J. Kindinger arrive in Biloxi. Steve Anderson of the LGS who was scheduled to come to Biloxi to assist in the mobilization of the vessel could not make it due to high water and heavy rain between Mandeville and Biloxi. Very poor weather with heavy rains delayed the outfitting and mobilization of the vessel to next day. Matters stand as follows: the TI Silent 700 navigation recording terminal is very old and doesn't seem to be functioning to KP's liking. Apparently all of the others are in use at this time. Don't know why new equipment can't be purchased for this operation since it is a multi-million dollar project. Additionally, the cassette tapes for recording the nav data are not of sufficient quality,

so some oversight appears to have occurred there. KP indicates that the beast is recording but is unsure if it is recordng the right stuff. He feels that computer tapes should either be purchased in Biloxi tomorrow or shipped in from Woods Hole. If worst comes to worst we can always rely upon the hard-copy coming off the recorder, or even keep the LORAN-C TD's manually. Activities at the boat were abandoned around 2030.

6/15 Arrive at vessel @ 0800. Recommence outfitting and supplying. Discussed tracklines, equipment, cruise plan etc. JK's rental car dropped off at Gulfport airport. Given relatively calm weather conditions, decided to possibly lengthen Leg I of the cruise to four days rather than the previously planned three and a half. Consequently we will probably be returning to the Broadwater Beach Marina on Friday, June 19, assuming the weather offshore is good enough for such operation. No computer tapes are available in Biloxi, but are being sent in from USGS. However, we have agreed to give it a go since the weather appears to be OK.

Departed Broadwater Marina at 1230.

Cleared Ship Island @ 1330.

Cleared north end Chandeleurs @ 1430.

Seas 2-4 ft. with chop, winds 10-15 knots S-SW

Change course 220 deg. begin running to MRGO canal. Seas are too big to gain better, make that any, data, @ 1630. Pieces of equipment are starting to fall down all over the boat. TV came down from perch with a loud noise. EPC annotator broke. It's rough.

Seas are still too rough.

1700 Change course to 320°, head to Gulfport Channel. We will try to work behind the islands until weather changes for the better.

New waypoint 30 07 N
88 56 W

Next waypoint 30 05 N
88 58 W

2119 Ran west to area in between Cat Island and the Chandeleurs. Seas are a little better, so we will begin deployment of the gear and see what comes up. Our intention is to run a southerly strike line down Chandeleur Sound to hopefully more protected waters near the Delta, and subsequently go up the MRGO channel.

2140 Gear deployed and tuning beginning. Deployed ORE Boomer @ 105 J, ORE 3.5kHz, Benthos 10-element hydrophone.

2300 SOL 1 30 04.14 N
88 56.43 W

Course about 180°

Actually relatively rough north side of Chandeleur Sound

2345 Difficulties are developing with the ORE Boomer system. KP is tired and not feeling well, so we'll make one more attempt to get it working properly and then continue running Line 1 with the 3.5 kHz device alone. This will show the distributary positions, which is about all we seem to be able to get in this area anyway.

2355 30 01.21
88 57.32

Next waypoint 29 44.80 N
89 03.80 W

Tuesday, June 16, 1987

0010 Pulled in the Boomer and hydrophone, We'll try again tomorrow. Winds blowing at least 15-20 knots. It's very lucky that we are behind rather than out in front of the Chandeleurs.

0030 Shift change. John off, Ron on.

	Course	Speed	Tape Count	Paper Roll
0300	195	5		01
0330	210	4.4	01/1239	01

	Course	Speed	Tape Count	Paper Roll
0403	188	5.0	01/1342	01

Computer suffered low battery power k@ 0403 and lost all entries prior to previous save operation @ 0030. Seas 2-3 ft. OK but ;not subsiding.

	Course	Speed	Tape Count	Paper Roll
0434	190	4.0	01/1435	01

One line 1, about 0:30 to go to next waypoint. Data still only 3.5 kHz.

	Course	Speed	Tape Count	Paper Roll
0511	187	4.0	01/1435	01

At next waypoint we will change course to waypoint located on MRGO channel. Seas 3′, wind about 10 kn SW. Overran waypoint by a few minutes but this position was not critical. Check made on Loran-C and seismic time clock. They are synchronized but 2 min, 30 sec ahead of actual time.

	Course	Speed	Tape Count	Paper Roll
0536	211	4.9	01/1594	01

Current Position 29 38.88
89 06.02

0540 End of tape 1, switch to tape 2.

	Course	Speed	Tape Count	Paper Roll
0600	217	4.6	02/0104	01

Data OK, seas now 2′, perhaps in lee of Delta, wind still about 10 kn.

Current position 29 37.74
89 07.48

	Course	Speed	Tape count	Paper Roll
0630	215	4.7	02/0298	01

Conditions as before.

	Course	Speed	Tape Count	Paper Roll
0702	234	4.2	02/0473	01

As before. About 25 min to next waypoint, coordinates to waypoint 29 26
89 09.4

0709 Boomer back in tow, experimentation beginning

0727 Course 228 | Speed 4.3 | Tape Count 02/0596 | Paper Roll 01

Current position 29 34.41
89 10.91

Crossing MRGO channel, easily visible in 3.5 records. Still testing boomer. Heading to next waypoint, same bearing.

0742 Paper change to Roll 2

0800 Current position 29 30.98
89 14.60

Seas 1-2', winds seemingly not as strong. About and hour and a half to next waypoint.

0830 Course 224 | Speed 3.9 | Tape Count 02/0874 | Paper Roll 02

Position: 29 29.49 N
89 16.06 W

Boomer running @ 175 J, low filtered @ 300 Hz. Not showing much.

0900 Position: 29 27.76
89 17.68

About 30 min to next waypoint

0910 Position for waypoint 6: 29 22.3
89 13.3

0935 EOL 1

Position: 29 25.94
89 19.44

Course 121 | Speed | Tape Count 1101 | Paper Roll 02

0940 SOL 2

1000 Position: 29 25.18
89 18.18

Course 120 | Speed 5.1 | Tape Count 02/1192 | Paper Roll 02

Currently running in between Baptist collette and Breton islands. Data quality fair, penetration low.

NOTE: ORE 3.5 down at 2-3 ft.

1030 Position: 29 24.26
89 16.50

Course	Speed	Tape Count	Paper Roll
121	3.5	02/1287	02

1100 Position: 29 23.12
89 14.57

Course	Speed	Tape Count	Paper Roll
122	4.4	02/1382	02

Next waypoint: 29 20.25
89 07.30

1120 Position: 29 22.30
89 13.30

Course change to waypoint seven

Course	Speed	Tape Count	Paper Roll
102	4.9	02/1440	02

1130 Maneuvering to avoid fleet of Vietnamese shrimpers who will not answer radio hails

1200 Position: 29 21.52
89 10.13

Veering slightly to the north to avoid shallowing water near the Delta

Course	Speed	Tape Count	Paper Roll
	4.9	02/1550	02

1215 Tape Change to #3

1230 Position: 29 21.03
89 07.88

Course	Speed	Tape Count	Paper Roll
104	4.0	03/130	02

Next Waypoint: 29 16.60
89 03.00

Seas very calm, about 1'. Not much wind, but there is light rain falling.

1235 Course change to 135° to next waypoint. Still on line 2.

Position: 29 20.78
89 07.24

1300 Position: 29 19.46
89 05.97

Course	Speed	Tape Count	Paper Roll
134	3.5	03/343	02

Still in Main Pass area

1330 Position 29 17.97
89 04.41

Course	Speed	Tape Count	Paper Roll
139	5.1	03/500	03*

* Seismic paper roll 03 begin @ 1328. Seas are 1' and relatively calm, wind west @ 5-10. Data quality ok but not much penetration.

1355 Position: 29 16.58
89 03.07

Course	Speed	Tape count	Paper Roll
098	5.0	03	03

In rig field at WP 08 heading out to Pass a Loutre to check weather offshore but still looks rough with wind out of the west @ 10-15kn.

1430 Position: 29 15.57N
88 59.75W

Course	Speed	Tape count	Paper roll
104	5.7	03/0770	03

All ok as before

1457 Position: 29 14.93N
88 57.4W

Course	Speed	Tape count	Paper roll
115	5.3	03/0876	03

EOL 2 at WP 09 off North Pass of Pass a Loutre, turning to new course 178 to look at slumps off DMB.

1530 Position: 29 12.48N
88 57.44W

Course	Speed	Tape count	Paper roll
181	5.3	03/1004	03

On way to WP 10 off Pass a Loutre data is still ok but little detail, no obvious channels but a few features which could be slumps. EPC belt change .

1547 Slight change of course to 155 to avoid shallow water then on to WP 10 as before.

1554 Coming back to course 180 in deeper water off channel bouy.

1600 Position: 29 10.29N
88 57.07W

Course	Speed	Tape count	Paper roll
181	5.0	03/1110	03

On track to WP 10 just crossed the main distributary channel off Pass a Loutre seen clearly on seismic. Seas were calm off the delta but now we are getting seas from around the corner of about 2'from the SSE, wind 10kn fom SSE.

1630 Position: 29 08.13N
88 57.47W

EOL 3 at WP 10 now turning to the SE for short tie line to wp 11. Course prior to turn 170, new

Course	Speed	Tape Count	Paper Roll
116	4.6	03/1215	03

1652 Being hit by strong current setting to the NE, we are well off course

1657 Position: 29 06.99N
88 55.9W

Course	Speed	Tape count	Paper roll
186	4.3	03/1289	03

EOL 4 at WP 11 now on course to WP 12 000.

1730 Position: 29 09.54N
88 55.63W

Course	Speed	Tape count	Paper roll
007	4.8	03/1398	03

On track to WP12 with following seas and good data collection compared to the SE course. Varying boomer power up to 300j, but penetration still poor.

1800 Position: 29 12.10N
88 55.50W

Course	Speed	Tape count	Paper roll
356	5.8	03/1484	03

On track to WP 12 with 30 min to go. All ok.

1820 Boomer power to 280 J

1835 EOL 5

Position: 29 15.70
88 55.18

Course	Speed	Tape Count	Paper Roll
36	5.8	03/1580	03

1836 SOL 6

1900 Course	Speed	Tape Count	Paper roll
35	5.0	04/132	03

Seas relatively calm. On present course we have a bit of side seas, but since they're only about 1-2', things are OK. Data quality is improving quite a bit, suddenly.

1919 Change to roll 04

1925 EOL 6

Position: 29 18.39
88 51.98

Course	Speed	Tape Count	Paper Roll
129	5.5	0/300	04

1940 Good data coming off boomer now, apparently showing dip section of one lower delta, and channels related to a younger one overlying.

Course is fairly bumpy. We will have to see if conditions deteriorate any further, in which case we will have to run for shallower, more sheltered waters.

1956 Switch displays on EPC 3200 to 1/4 sec each channel or an effective display of 1/2 sec. Water depth currently about 60m.

2055 Position: 29 13.97
88 46.65

Course	Speed	Tape count	Paper Roll
128	4.2	04/746	04

Seas are somewhat higher out here. We are taking side seas every so often with quite a bit of a roll, maybe about 3 ft. Data is still OK for the boomer, so as long as that holds out we will keep trying this course. If it gets much worse we'll have to try another heading.

2140 Position: 29 11.81
88 43.84

Course	Speed	Tape count	Paper roll
128	4.7	04/0915	04

Seas continue to build. Wind blowing fairly hard, with whitecaps visible in search light beam, flags standing straight out from the masts. Data quality is falling off; 3.5 is effectively gone, boomer is quite noisy. Ken feels that we can't expect any good records until it flattens out a bit.

2222 Position: 29 09.44
88 40.79

Course	Speed	Tape Count	Paper roll
128	4.9	04/1004	04

Conditions are the same. 3.5 is now being shut down, boomer pretty noisy but has interesting information in upper sediments. About an hour to go on this line.

2252 Position: 29 07.75
88 38.74

Course	Speed	Tape Count	Paper Roll
127	5.9	04/1190	04

Running Boomer only on Channel A @ 1/4 sec sweep. High angle clinoforms are showing up on Boomer record. Shelf phase leading to shelf margin delta action.

2315 Next waypoint: 29 12.00
88 16.50

Noisy data on boomer, but shows a very nice multi-tiered deltaic system, with high angle clinoforms dipping below the shelf margin.

Current water depth about 160 m.

Course	Speed	Tape Count	Paper roll
125	5.8	04/1260	04

2320 EOL 7

Position: 29 06.25
88 36.90

Course	Speed	Tape Count	Paper Roll
68	5	04/1275	04

2321 SOL 8

Dip line had exceptionally nice deltaic sequences. Strike course (68^{o}) is a much happier one with less rocking and rolling.

2400 Position: 29 07.15
88 33.25

Course	Speed	Tape Count	paper Roll
68	5.0	04/1400	04

This course may be smoother, but the data is not very impressive right now, fairly noisy and not showing much.

Wednesday, June 17, 1987

0032 Position: 29 08.02N
88 30.35W

Course	Speed	Tape count	Paper roll
072	4.8	04/1500	04

Continuing to way point 15 with following sea and relatively good data collection.

0100 Position: 29 08.8N
88 27.86W

Course	Speed	Tape	Paper
058	5.2	04/1570?	04

On course to WP 15 all ok, noisy streamer.

0155 Mag tape recording of nav data ends. Paper copy now all that's available

0111 End of Seismic tape 04 @ 0111 and begin Tape 05

0200 Position: 29 10.25N
88 22.66W.

Course	Speed	Tape	Paper
072	5.4	05/0336	04

Still on long tie line to WP 15 about 1hr to go. Played with filters - it seems as if frequencies < 400 introduce boat noise while those above 4000 give the data a fuzzy, busy appearance

0311 Position: 29 12.09N
88 16.34W

Course	Speed	Tape	Paper
071	4.5	05/0720	04

EOL 8 at WP 15 @ 0311. Changed course to 324 on long line into St. Bernard delta. Also dropped speed to 2 - 3kn but record seems to be noisy as a result. Side seas are present but seems to be ok to work so far.

0400 Position: 29 14.84N
88 18.37W

Course	Speed	Tape	Paper
329	4.9	05/0905	04

On track to WP 16 on line 09. Just crossing shelf break with good delta foresets right at surface.

0510 Position: 29 19.12N
88 21.40W

Course	Speed	Tape	Paper
334	4.6	05/1152	04

Great data of stacked deltas with bi-directional apparent dip. Continuing to WP 16 3hrs to go. Seas 2-3'and wind 5-10kn both from SSW.

0600 Position: 29 22.2N
88 23.61W

Course	Speed	Tape	Paper
325	4.4	05/1307	04

Continuing to WP 16 with good clinofoorms prograding onto a high relief erosional surface.

0605 Changed paper from roll 04 to roll 05.

0631 Position: 29 24.21N
88 24.9W

Course	Speed	Tape	Paper
326	4.9	05/1406	05

Continuing to WP 16 but data is less spectacular. Change of watch is imminent and 3.5Khz is turned back on at 0630. New navigation tapes discovered and installed in Silent 700.

0700 Position: 29 26.10N
88 26.32W

Depth 28.5fm

Course	Speed	Tape	Paper
324	4.6	05/1493	05

0730 Course	Speed	Tape Count	Paper roll
324	4.8	05/1575	05

Position: 29 28.21
88 27.77

Data quality is pretty fair on boomer, 3.5 kHz is still not showing much. There appears to be some channeling visible in the upper portion of the boomer record.

0735 Switch to data tape 6

0800 Position: 29 30.08
88 29.08

Course	Speed	Tape count	Paper roll
322	5.0	06/170	05

Next waypoint 29 34N, 88 35W

0812 Course change to 300

Course	Speed	Tape Count	Paper roll
300	5.0	06/246	05

Coming up on St. Bernard delta

0830

Course	Speed	Tape Count	Paper Roll
300	4.8	06/360	05

Position: 29 31.88
88 31.42

3.5 kHz relatively pitiful, ORE Boomer is giving reasonable results, about 100 msec of penetration.

0900 Position: 29 32.94N
88 33.32W

Course	Speed	Tape Count	Paper roll
302	4.8	06/500	05

Clinoforms of St. Bernard delta clearly visible on the boomer record.

0920 Course change to 293
Record quality is deteriorating.
Position: 29 35N
88 34.96W

1000 Position: 29 35.29N
88 38.11W

Course	Speed	Tape Count	Paper
293	3.8	06/785	05

Water depth: 10 fm

1035 Position: 29 36.53N
88 40,73W

Course	Speed	Tape Count	Paper roll
292	4.8	06/923	05

Considerable channeling visible in upper sediments on boomer record. 3.5 still not showing much.

1100 Position: 29 37.32N
88 42.72W

Next waypoint: 29 46.7N
88 50.70W

1111 Course change to 310

Position: 29 37.66N
88 43.50W

Course	Speed	Tape Count	Paper roll
310	4.8	06/1260	05

Data quality still fair, channeling and seaward dipping clinoforms apparent in boomer record, little or nothing visible in 3.5 kHz record.

1120 Pull in boomer to clean off seaweed

1127 Clean up complete.

1200 Position: 29 40.40N
88 46.48W

Course	Speed	Tape Count	Paper roll
310	4.6	06/1219	05

Currently heading on towards the Chandeleur Islands.

1214 3.5 kHz down for rewiring of trigger

1220 Sweep rate on boomer record changed to 1/4 sec

1230 Position: 29 42.31N
88 48.71W

Course	Speed	Tape Count	Paper roll
309	4.8	06/1360	05

All systems functioning

1300 Shift change

1302 Position: 29 43.83N
88 50.66W

Course	Speed	Tape	Paper
316	4.8	06/1416	05

Nearing end of this line close in to Chandeleur Islands.

1327 Position: 29 45.15N
88 52.22W

Course	Speed	Tape	Paper
313	4.2	06/1490	05

EOL 9 at WP 19. Ended in 10' water depth off Chandeleurs. Now on course parallel to beach about 0.3miles offshore. Boomer power reduced to 105J from 280J, off at 1327 back on at 1334. Data quality is good showing channelling in the subsurface.

1345 Course was taking us too far offshore so we doglegged to port on course 340 to start the next line again in 10' depth.

1351 Position: 26 46.89N
88 51.04W.

Course	Speed	Tape	Paper
340	4.5	06/1560	05

Eol 10 at WP 20, turning to new course 124 on way to WP 21 heading offshore, Good channel action on 3.5Khz.

1405 Tape change from 6 to 7.

1451 Position: 29 44.01N
88 46.59W

Course	Speed	Tape	Paper
?	5.4	07/0315	05

EOL 11 at WP 21. 39ft depth, turning from line running offshore to one running 216 parallel to beach. Silent 700 not logging, swith to monitoring in this log every 5 min.

1502 Position: 29 43.47N
88 47.15W.

1507 Position: 29 43.27N
88 47.46W

Big tidal inlet.

1508 Silent 700 back up, return to auto nav recording.

1517 Paper roll change from roll 05 to roll 06.

1530 Position: 29 42N
88 48.54W.

Course	Speed	Tape	Paper
218	4.0	07/0527	06

Depth 34'. Data shows eroded delta surface with variable sed thickness above it, occasionally cut by a tidal inlet above and showing distributaries below. On line 12 to WP 22.

1545 EPC belt change.

1600 Position: 29 40.49N
88 50.14W.

Course	Speed	Tape	Paper
225	4.1	07/0665	06

Depth 33', data continues good with penetration at least to the multiple. Seas 1-2', wind 5-10kn from South. On line 12 to WP 22.

1535 - 1624 Silent 700 shut down again.

1640 Position: 29 38N
88 52.10W.

Course	Speed	Tape	Paper
230	4.1	07/0837	06

EOL 12 @ WP 22. New course is 345 on short tie line to pick up an old line inshore then start a long dip line to the SE. Silent 700 again has problems so return to manual fixing from bridge Loran C. Depth 32'.

1647 Position: 29 38.95N
88 52.29W.

1651 Position: 29 39.28N
88 52.34W.

1653 Silent 700 back up again

1703 Position: 29 40.10N
88 52.63W.

Course	Speed	Tape	Paper
336	4.4	07/0933	06

EOL 13 at WP 23. New course 130, depth 29', now heading into 2-3'seas with 10kn winds out of the south. On course to WP 24 On line 14.

1800 Position: 29 37.02N
88 48.95W.

Course	Speed	Tape	Paper
125	4.9	07/1138	06

Depth 42', On line 14 to WP 24. Seaward dipping clinoforms on seismic, all ok. Watch change.

1830 Position: 29 35.13N
88 46.72W

Course	Speed	Tape Count	Paper Roll
130	4.9	07/1245	06

Seas pretty calm, 1-2'. Boat rolls quite a bit with seas coming in at 45 to bow. Data quality fair with little or no penetration on boomer, but good resolution in upper 10 msec. Seaward dipping clinoforms apparent.

Change watches.

1900 Position: 29 33.37N
88 44.75W

Course	Speed	Tape Count	Paper Roll
130	4.9	07/1334	06

Seas as before. Data as before.

1935 Position: 29 31.47
88 42.48

Course	Speed	Tape Count	Paper Roll
130	5.3	07/1435	06

Evasive action on the part of a shrimp boat resulted in a narrow miss of our tows. Data quality still fair. Winds not as strong as earlier in the day-no whitecaps.

1943 Shut off boomer to increase power to 280J.

2230 Position: 29 20.45N
88 30.40W

Course	Speed	Tape Count	Paper Roll
136	6.0	08/660	07

Boomer data is showing a very well developed channel sequence, some having clinoformal fill. Seas are getting a little bigger and we're rolling a fair bit on this particular course. In about an hour and a half we will change to a west-southwest course and be taking head seas. Everyone will be thrilled.

2256 Discovered that the auto-event marker was keyed to channel B on the recorder, which has been turned off since 2055. Rewire to channel A.

2300 Position: 29 18.55N
88 28.44W

Course	Speed	Tape Count	Paper Roll
136	4.8	08/785	07

Great data showing an "incised valley" system cutting into an underlying delta system with oblique switching to sigmoidal clinoforms. Some of the best action yet.

2315 Incised valley reaches about 50 msec in vertical dimensions.

2330 Position: 29 16.78N
88 26.74W

Course	Speed	Tape count	Paper roll
136	4.8	08/908	07

We now can see multiple sets of drainage systems cut into each other, obviously graded to different sea levels because there is a wide variation in vertical dimensions, ranging from over 50 msec to about 10 msecs. Good stuff.

2400 Position: 29 14.67N
88 24.87W

Course	Speed	Tape Count	Paper Roll
136	4.8	08/1029	07

Appears to be some form of large slump at toe of excellent shelf margin delta. We will continue this course somewhat beyond waypoint 25 to we record all the appropriate action before turning.

2007 Very good data coming off both boomer and 3.5 records, showing well developed clinoforms downlapping onto an irregular surface.

Position: 29 29.45N
88 39.97W

Course	Speed	Tape Count	Paper Roll
131	5.2	07/1531	06

2030 Tape change from 07 to 08.

Position: 29 28.16
88 38.46

2055 3.5 kHz shut down on recorder, still going on tape. Boomer sweep now 1/4 sec for entire roll.

2100 Position: 29 26.38
88 36.48

Course	Speed	Tape Count	Paper Roll
130	4.7	08/186	06

Very good data shown on boomer record. Three separate units visible. Upper presumably is prodelta of St. Bernard, underlying units both showing sigmoidal landward dipping clinoforms with occasional well developed channels. Very interesting to speculate about the nature of the downlap surfaces of the respective clinoformal units. Some are quite irregular as opposed to being flat-lying and truncated as one would expect of a transgressive surface. One idea is that such a surface has not experienced shoreface erosion, but is in fact analogous to a bay/marsh surface, similar to progradation of Atchafalaya delta over Atchafalaya Bay. Time will tell.

2110 3.5 kHz switched off to prevent crosstalk to boomer record. Boomer shows excellent channel in second sequence at about 2106.

2128 Course change to 136°. Paper change to roll 07.

2200 Position: 29 22.46N
88 32.28W

Course	Speed	Tape Count	Paper Roll
136	4.9	08/528	07

Data showing thinning of uppermost unit. Underlying unit has a well defined channel sequence prominently displayed.

Thursday, June 18, 1987

0010 EOL 14

Position: 29 14.15
88 24.37

Course	Speed	Tape Count	Paper roll
247	4.8	08/1068	07

0012 SOL 15

0030 Position: 29 13.73N
88 26.12W

Course	Speed	Tape	Paper
251	4.7	08/1132	07

On line 15 to WP 26. Large salt dome on slope, possible gas seeps on top.

0100 Position: 29 12.92N
88 28.74W

Course	Speed	Tape	Paper
247	4.8	08/1230	07

On line to WP 26

0116 Position: 29 12.53N
88 29.92W.

Course	Speed	Tape	Paper
247	4.8	08/1282	07

EOL 15 at WP 26. New course 313 back onto shelf edge.

0156 Position: 29 14.54N
88 32.26W

Course	Speed	Tape	Paper
313	4.4	08/1408	07

EOL 16 at WP 27. New course 056 parallel to shelf break hoping to see gullies feeding lowstand fans and wedges. Line shows spectacular shelf margin deltas, onlap, lowstand wedges and some erosion on the shelf.

0300 Position: 29 17.12
88 27.4W

Course	Speed	Tape	Paper
050	4.7	08/1588	07

On line 17 to WP 28. Good channnels visible on this strike line as hoped.

0303 Change tape from 08 to 09.

0400 Position: 29 19.55N
88 22.78W.

Course	Speed	Tape	Paper
055	3.2	09/0371	07

Great shelf edge data, some gas charged strata. Decided to extend line 17 past original WP28 to WP 29 approx 1nm further on same course.

0425 Position: 29 20.38N
88 21.07W

Course	Speed	Tape	Paper
055	5.0	09/0493	07

EOL 17 at WP 29 whose co-ordinates are above. Turning now to new course 319 onto shelf on short tie line before turning SW for new line parallel to shelf break.

0502 Position: 29 22.8N
88 22.88W

Course	Speed	Tape	Paper
320	5.2	09/0667	07

EOL 18 at WP30. Great channel on line 18. On this new course of 233 the ship is encountering head seas of 2-3, 10kn winds from SSW.

0600 Position: 29 20.60N
88 26.91W

Course	Speed	Tape	Paper
231	4.6	09/0897	07

All systems ok still moving into headsea. On line 19, data remains high quality, many deltas and channels.

0700 Position: 29 18.20N
88 30.94W

Course	Speed	Tape	Paper
232	3.9	09/1124	07

All ok, data and sea state as before.

0730 Position: 29 17.04N
88 32.97W

Course	Speed	Tape Count	Paper Roll
233	3.7	09/1225	07

All OK, data and sea state as before. Bridge is very, very cold.

0800 Waypoint 32: 29 13.8N
88 32.30W

0803 Position: 29 15.69N
88 35.39W

EOL 19
SOL 20

Line 19 ended at western terminus of large incised channel system.

Course	Speed	Tape Count	Paper roll
120	4.4	09/1341	07

0840 Position: 29 14.06N
88 32.81W,

Course	Speed	Tape Count	Paper Roll
120	4.7	09/1443	07

Data shows a thin upper unit of parallel reflectors overlying a thick unit of sigmoidal clinoformal reflectors.

0848 EOL 20

Position: 29 13.69N
88 32.10 W

Course	Speed	Tape Count	Paper Roll
350	4.7	09/1440	07

Waypoint 32 was plotted incorrectly, so we have swung about to get to waypoint 33, which is also waypoint 27, and then on to the northwest.

0900 Course change to 310

Position: 29 14.48N
88 32.32W,

Course	Speed	Tape Count	Paper roll
310	4.7	09/1500	07

Headed northwest towards waypoint 34, coordinates: 29 20.6N, 88 39.8W

0940 Position: 29 16.61N
88 35.03W

Course	Speed	Tape Count	Paper Roll
310	4.8	10/0005	07

Data continues to show prograding sequence with channels cutting into it.

1000 Boomer shut down to allow sideband communications

1002 Boomer back on.

1040 Position: 29 20.10N
88 39.30W

Course	Speed	Tape Count	Paper Roll
315	4.9	10/402	07

Data showing a wedge of probably fine-grained sediments overlying the channelized facies.

1050 EOL 21
Position: 29 20.61N
88 39.85W

Course	Speed	Tape Count	Paper Roll
43	4.7	10/0445	07

Now running with tail seas ,course more pleasant.

1130 Position: 29 23.26N
88 36.38W

Course	Speed	Tape Count	Paper Roll
40	6.0	10/648	07

Data shows upper unit of parallel reflectors overlying channelized facies some 25 msec in thickness, cutting down into probable underlying deltaics.

1158 Change course at waypoint 35

Course	Speed	Tape Count	Paper Roll
39	5.8	10/0767	07

Boomer data as before, 3.5 kHz back on. Ken is experimenting with the other EPC 3200 recorder upon which we will try to split trace the 3.5 and the single element hydrophone.

Coordinates of waypoint 36: 29 30.5N, 88 28.6W

1210 3.5 kHz turned off again due to too much cross talk with boomer.

1245 Position: 29 28.10N
88 31.13W

Course	Speed	Tape Count	Paper Roll
39	5.2	10/0957	07

Underlying channeled unit is a series of westward dipping clinoforms. There appear to be two very similar Pleistocene units in the data, each about 40 msec thick.

1300 Position: 29 28.91N
88 30.32W

Course	Speed	Tape	Paper
037	5.0	10/1001	07

Seas are calmest to date as we run this strike line parallel to the St. Bernard delta. Good clinoforms and channels present. Dr Parolski suffering cabin fever but continues to experiment with different hydrophone - EPC combinations.

1325 Position: 29 30.5N
88 28.59W.

Course	Speed	Tape	Paper
045	4.5	10/1098	07

At WP 36 on line 22, slight dogleg to port with new course 023 to WP 37 at end of line 22 approx 1.6hrs away.

1430 Position: 29 35.22N
88 25.81W

Course	Speed	Tape	Paper
026	5.0	10/1307	07

1430 continued

On way to WP 37 at end of line 22 (called route 9 point 1 in the Northstar route program.) Still playing with single element hydrophone but data is poor, 3.5Khz to be switched on EPC 2 for next line.

1500 Position: 29 37.41N
88 24.48W.

Course	Speed	Tape	Paper
033	5.2	10/1401	07

EOL 22 at WP 37, SOL 23 towards WP 38 about 1.5 hrs away. Seas now 1' with winds < 5kn both fom SW. 3.5Khz now running, boomer data remains good.

1525 3.5Khz restarted again.

1600 Position: 29 39.38N
88 29.06W.

Course	Speed	Tape	Paper
299	4.6	10/1571	07

On line 23 to WP 38. All systems ok, weather good but thunderstorms are close by.

1610 End of tape 10, start tape 11.

1659 Position: 29 41.39N
88 34W

Course	Speed	Tape	Paper
289	5.4	11/0325	07

At end of line 23 at WP 38. Data quality dropped off around 1624 so we are running back down line 23 to WP 38A co-ords 29 40N, 88 31W. Then try to run parallel to delta outside the bad data area.

1752 Position: 29 40N
88 30.99W.

Course	Speed	Tape	Paper
118	4.4	11/0615	07

At WP 38A after running back down line 23. Turning now to new course 198 to reach WP 39A along line 24 parallel to St. Bernard delta. Seas have built to 3' near a big thunderstorm.

1832 Haul in boomer to clean sled and retape tow ropes.

1850 Boomer operational again

1855 Position: 29 36.81N
88 32.40W

Course	Speed	Tape Count	Paper Roll
198	4.4	11/0875	07

Data quality good on boomer, fair on 3.5, some crosstalk still taking place.

1933 Position: 29 34.44N, 88 33.57W

Course	Speed	Tape Count	Paper Roll
196	4.0	11/1023	07

Data quality fair for both tools. Seas picking up due to thunderstorm activity. We are all watching for waterspouts. Right now winds are about 15 knots and seas are about 2-3 ft.

1950 Reach waypoint 39

Position: 29 34.20N
88 35.20W

Much playing around with LORAN to try to figure out how to run programmed route. It may be correct now but only time will tell.

2055 Position: 29 30.41N
88 37.68W

Course	Speed	Tape Count	Paper Roll
228	3.8	11/1289	07

3.5 kHz switched off. Boomer data showing some southwest dipping clinoforms, and a lot of gas in upper sediments.

2140 Position: 29 28.50N
88 40.37W

Course	Speed	Tape Count	Paper Roll
228	3.8	11/1289	08

Data quality only fair-about 15 msec of penetration with gaseous sediments beneath.

2230 Position: 29 26.74N
88 42.99W

Course	Speed	Tape Count	Paper Roll
228	4.1	12/0003	08

Data is still fair at best.

2240 Change power on Boomer to 175J. Doesn't affect penetration, but record seems somewhat better in the upper sediments. The current sea state is contributing a great deal of noise to the record.

Still on Line 24, coming up on waypoint 40

2305 Position: 29 25.38N
88 44.95W

Course	Speed	Tape Count	Paper Roll
216	4.1	12/0270	08

Course change, headed for Waypoint 41, coordinates 29 18.40N, 88 51.8W..

2340 Position: 29 23.58N
88 46.84W

Course	Speed	Tape Count	Paper
216	4.7	12/0454	08

Data as before. Seas calming down.

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0002

Course	Speed	Tape Count	Paper Roll
216	4.0	12/0570	08

0047 Changed the first paper roll on the 3.5Khz recorder. This recorder is now called EPC 2 and roll 2 began at 0049.

0119 Position: 29 18.40N
88 51.79W.

Course	Speed	Tape	Paper
220	3.9	12/0906	1/8, 2/2

EOL 24 at WP 41. Now on line 25 to WP 42, course 311. Seas calmed 1', wind 10kn in lee of Balize delta.

0155 Position: 29 20.41N
88 54.21W

Silent 700 down. Back up 0157. Good shallow water clinoforms seen on both systems (= Balize or St. Bernard deltas).

0220 Position: 29 21.79N
88 55.81W.

Course	Speed	Tape	Paper
310	4.4	12/1128	1/8, 2/2

Some very interesting shallow penetration data with clinoforms, ?mud diapirs, and much shallow gas. EOL 25 at WP 42. Course to new WP 43 is 037.

0308 Position: 29 24.86N
88 52.76W.

Course	Speed	Tape	Paper
040	5.8	12/1290	1/8, 2/2

Expanded 3.5Khz scale to 0.125 sec and getting good but shallow penetration data.

0413 Position: 29 29.16N
88 48.57W.

Course	Speed	Tape	Paper
023	5.1	12/1482	1/8,2/2

At WP 43 on line 26, changing belt on EPC 2. all systems ok, data good but limited penetration.

0457 Tape change from 12 to 13.

0523 Position: 29 32.82N
88 42.2W.

Course	Speed	Tape	Paper
051	5.5	13/0204	1/8, 2/2

WP 44 on line 26. New course 035. We are in the ridge field and there is good erosional scour but neither system is showing good internal structure.

0635 Position: 29 38.18N
88 37.17W

Course	Speed	Tape Count	Paper Roll
36	5.3	13/0500	1/8, 2/2

0635 continued
Neither system is showing good penetration or resolution, both showing good relief on "ridges."

0710 Position: 29 40.81N
88 34.65W

Course	Speed	Tape Count	Paper Roll
37	6.4	13/0705	1/8, 2/2

Both sets of data showing eastward dipping clinoforms in upper sediments, about 10 msec thick. We seem to have cleared most of the ridges.

0720 Course change to 13°. We'll run at this course for about 15 minutes, then haul in the gear and run for Biloxi, where we should arrive about 1300.

0750 Position: 29 43.94N
88 33.06W

EOL 26, End of cruise Leg I

Tape Count	Paper Roll
13/0900	1/8,2/2

0805 All gear hauled in , running for Biloxi.

1300 Arrive Broadwater Beach Marina.

450 gallons of diesel taken on.

Crew changes taking place. KP, JK, and WS will remain, JS, RB, and LB will be relieved for Leg II.