

**BAJA, MEXICO  
HIGH RESOLUTION SINGLE CHANNEL SEISMIC SURVEY  
07 JULY - 16 JULY 1998**

Cruise participant: David A. Mucciarone and Jochen Halfar from Stanford University

The following is a technical summary for the Baja, Mexico cruise using a 25 foot outboard boat with twin 70 hp motors supplied by CICIMAR in La Paz, Mexico. This trip was not without its problems see cruise outline for details. The cruise began late afternoon 1540 on 7/10/98 and ended late 2100 on 7/14/98. The Baja Mexico single channel high resolution survey was a graduate student project obtained by Jochen Halfar (advisor Dr. Jame Ingle, Dept GE&S) at Stanford University. The cruise involved single channel seismic using a Applied Engineering CSP1000 power supply and SIG sparker source.

Seismic acquisition was digital using the Elics Delph2x acquisition system, SIG-100 and SIG-200 sparker sources, and 3m Benthos streamer. Seismic data was collected in Elics compressed format and not translated into SEG-Y format using Elics Delph2x software. All data was stored on 2.3 GB Exabyte tapes. Navigation was GPS acquired manually every 10 minutes. Energy source was the Applied Engineering CSP1000 power supply at 500J to 1000J.

Seismic acquisition:

<u>Parameters</u>	<u>Settings</u>
Shooting Interval =	1000 - 1500 ms
Sampling Frequency =	4000 - 5000 Hz
Recording Length =	256 - 1408 ms
Source distance from ship =	20 m
Source depth =	surface m
Streamer layback =	24 m
Source energy =	500 - 1000 J
High pass cut =	600 Hz
Low pass cut =	1200 Hz

**Seismic File Statistics for single channel lines using CSP1000, SIG-100 and SIG-200 sparker source:**

<u>Line name</u>	<u>Rec. Len.</u>	<u>Time.</u>	<u>Rep. Rate</u>	<u>Samp Freq.</u>	<u>Energy</u>	<u>SP</u>	<u>Size</u>	<u>Seg.</u>	<u>Date</u>
BAJA9801	256	1:26	1000	5000	500	4725	5.12	S/EOL	7/10/98
BAJA9802	256	1:05	1000	5000	500	3675	3.98	S/EOL	7/11/98
BAJA9803	256	0:52	1000	5000	500	3100	1.77	S/EOL	7/11/98
BAJA9804	256	1:20	1000	4000	500	4273	3.06	S/EOL	7/11/98
BAJA9805	256	0:39	1000	5000	600	2175	1.52	S/EOL	7/11/98
BAJA9806	768	0:54	1500	5000	1000	2075	4.11	S/EOL	7/11/98
BAJA9807	1408	0:10	1500	5000	1000	400	1.43	S/EOL	7/11/98
BAJA9808	1408	0:41	1500	5000	1000	1650	5.91	S/EOL	7/11/98
BAJA9809	1408	0:52	1500	5000	1000	2025	7.25	S/EOL	7/11/98
BAJA9810	1408	1:49	1500	5000	1000	4170	14.94	S/EOL	7/11/98
BAJA9811	1408	0:25	1500	5000	1000	900	3.23	S/EOL	7/11/98
BAJA9812	256	0:20	1000	5000	600	1125	7.88	S/EOL	7/12/98
BAJA9813	256	0:22	1000	5000	600	1200	8.40	S/EOL	7/12/98
BAJA9814	256	0:16	1000	5000	600	975	0.68	S/EOL	7/12/98
BAJA9815	256	1:06	1000	5000	600	3575	2.51	S/EOL	7/12/98
BAJA9816	256	0:08	1000	5000	600	525	0.37	S/EOL	7/12/98
BAJA9817	256	1:04	1000	5000	600	3475	2.43	S/EOL	7/12/98
BAJA9818	1408	2:11	1500	5000	600	5185	18.55	S/EOL	7/12/98
BAJA9819	1408	0:21	1500	5000	600	750	2.69	S/EOL	7/12/98
BAJA9820	1408	1:27	1500	5000	600	3475	12.44	S/EOL	7/12/98
BAJA9821	256	0:31	1000	5000	600	1600	1.12	S/EOL	7/12/98
BAJA9822	256	0:29	1000	5000	600	1565	1.10	S/EOL	7/13/98

**Seismic File Statistics for single channel lines using CSP1000, SIG-100 and SIG-200 sparker source:**  
(continued)

Line name	Rec. Len.	Time.	Rep. Rate	Samp Freq.	Energy	SP	Size	Seg.	Date
BAJA9823	256	0:18	1000	5000	600	960	0.67	S/EOL	7/13/98
BAJA9824	256	0:16	1000	5000	600	850	0.59	S/EOL	7/13/98
BAJA9825	256	0:31	1000	5000	600	1725	1.21	S/EOL	7/13/98
BAJA9826	256	1:05	1000	5000	600	3550	2.49	S/EOL	7/13/98
BAJA9827	256	0:44	1000	5000	600	2375	1.66	S/EOL	7/13/98
BAJA9828	256	1:33	1000	5000	600	5100	3.57	S/EOL	7/13/98
BAJA9829	1408	0:32	1500	5000	1000	1250	4.48	S/EOL	7/13/98
BAJA9830	1408	0:42	1500	5000	1000	1625	5.82	S/EOL	7/13/98
BAJA9831	1408	2:11	1500	5000	1000	5100	18.27	S/EOL	7/13/98
BAJA9832	1408	0:34	1500	5000	1000	1330	4.77	S/EOL	7/14/98
BAJA9833	1408	0:54	1500	5000	1000	2075	7.43	S/EOL	7/14/98
BAJA9834	1408	0:48	1500	5000	1000	1875	6.71	S/EOL	7/14/98
BAJA9835	768	1:12	1000	5000	600	3950	7.82	S/EOL	7/14/98
BAJA9836	1408	0:28	1500	5000	1000	1075	3.85	S/EOL	7/14/98
BAJA9837	832	0:51	1000	5000	600	2775	5.95	S/EOL	7/14/98
BAJA9838	832	1:55	1000	5000	600	6300	13.40	S/EOL	7/14/98

**Total Seismic Statistics:**

**Shots: 94,533**

**Time: 33 hrs. 2 min.**

**Cruise duration: 5 days**

**Elics formatted data collected: 199.18 MB**

**SEGY formatted data translated: N/A GB**

**Lines collected: BAJA9801 - BAJA9838 (38 lines)**

**Baja, Mexico Trip Outline 07 July to 16 July 1998**

- 07 July 1998
- 1) Departed SFO at 0940 on Alaska Flt: 290. Arrive in Los Carbos at 1330.
  - 2) Met Jochen at the airport and began out trip to La Paz via car and arrived at 1800.
  - 3) Met folks at CICIMAR.
  - 4) Shopped for food and supplies.
  - 5) Stayed in Hotel in La Paz.
- 08 July 1998
- 1) Met at CICIMAR at 0800 to pick up gear and bring to boat at marina
  - 2) Set up equipment and stow gear and provisions
  - 3) Depart dock at 1530
  - 4) Problems triggering the CSP1000 with Elics
  - 5) Problem with energy select switch on CSP1000, only goes to 300J.
  - 6) Problem with water leaking into cabin. Water covering electronics.
  - 7) Problem with computer - failure due to water.
  - 8) Return to dock at 1730.
  - 9) Call ORE to discuss problems with CSP1000.
  - 10) Brought Elics to CICIMAR to diagnos and repair.
  - 11) Stayed in Hotel in La Paz.
- 09 July 1998
- 1) Work at CICIMAR repairing Elics computer system.
  - 2) Broken switch on CSP1000 - repaired using spare. Capacitors came loose in case causing the damage. Secured capacitors.
  - 3) Reset power select from protected 300J to full range on CSP1000
  - 4) Work on Elics computer system - purchased new hard drive, video card, and borrowed a motherboard from CICIMAR. Reloaded software, configured system, and ran tests. System appeared repaired.
  - 5) Made repairs to boat using silicon to seal up leaks in cabin.
  - 6) Stayed in Hotel in La Paz.

- 10 July 1998
- 1) Bring gear from CICIMAR to boat at marina.
  - 2) Setup gear on boat again and run tests.
  - 3) Problem with trigger on Elics AU32 board, no TTL output to control CSP1000. Borrowed analog pulse/sweep generator from CICIMAR to output TTL to CSP1000, Elics computer setup as slave.
  - 4) **Depart dock at 1540 to begin survey.**
  - 5) Deployed gear at 1808, began survey with BAJA9801 at 600J and SIG-100.
  - 6) Problems with high signal to noise ratio.
  - 7) Recovered gear at 1934. End with BAJA9801.
  - 8) Camp on Isla Espirita Santo on Bahia San Gabriel on SW side of Isla.
- 11 July 1998
- 1) Pack up camp and load gear in boat. Refuel generator.
  - 2) Deploy gear at 0725 and begin with line BAJA9802.
  - 3) Signal to noise ratio cleaned up by BAJA9803. Had to change from SIG-100 to SIG-200 sparker source and increased energy to source from 600J to 1000J on line BAJA9805 through line BAJA9811.
  - 4) Problems with 5KW generator near end of BAJA9810. Possibly overheating.
  - 5) Pull gear at 2000 and end with BAJA9811.
  - 6) Lines BAJA9801 - BAJA9811 shot in the channel between Isla Espirita Santo and La Paz peninsula.
  - 7) Camp on Isla Espirita Santo on Bahia de San Gabriel on SW side of Isla.
- 12 July 1998
- 1) Pack up camp and load gear in boat. Refuel generator.
  - 2) Deploy gear at 0805, begin with line BAJA9812 at 0833. Using 600J and SIG-100
  - 3) Problems with the 5KW generator. Generator slightly tilted in boat causing false low oil level signal, adjusted generator and added some oil to compensate.
  - 4) Rough seas, more leaks in boat to seal on the run. Strong winds all night.
  - 5) Pull gear at 1050 and end with BAJA9815. Lines shot in Baja San Gabriel.
  - 6) Backed up Elics formatted data to tape. Lines BAJA9801 - 15 on Index 1, Tape 1.
  - 7) Redeploy gear at 1322 and begin again with BAJA9816.
  - 8) Had to end line BAJA9818 early because of rough seas. Water coming over bow and entering the cabin.
  - 9) BAJA9816, 17, 21 shot in Bahia de Estero Balandra.
  - 10) Pull gear at 2000 and end with BAJA9821.
  - 11) Camp on La Paz peninsula in Bahia de Estero Balandra.
- 13 July 1998
- 1) Pack up camp and load gear in boat. Refuel boat and generator. Attempt radio coms with CICIMAR for more fuel.
  - 2) Deploy gear at 0815, begin with line BAJA9822 at 0828. Using 600J and SIG-100
  - 3) Shot lines BAJA9822 - 24 in and outside Bahia de Estero Balandra.
  - 4) Pull gear at 0948, end with BAJA9824. Head for La Paz for more fuel.
  - 5) Redeploy gear at 1100 and begin again with BAJA9825. Heading toward Baja San Gabriel for fuel rendezvous at 1340.
  - 6) Pulled gear at 1330, end of BAJA9827. Line BAJA9826 was a duplicate of line BAJA9802.
  - 6) Resupply and refuel from 1340 to 1415.
  - 7) Redeploy gear at 1444 and begin again with BAJA9828. Near Isla Ballena.
  - 8) On lines BAJA9830 - 31 switched to 1000J and SIG-200.
  - 9) Pull gear at 1953 and end with BAJA9831. Head for Isla Partida.
  - 10) Back up Elics formatted data to tape. Lines BAJA9816 - 31 on Index 2, Tape 1.
  - 11) Camp on Isla Partida in northern bahia of Caleta el Embudo. Windy all night.
- 14 July 1998
- 1) Pack up camp and load gear in boat. Refuel boat and generator. Depart at 0805.
  - 2) Very strong winds, head for east side of Isla Partida. Following very close to coast (cliff edge) and hit a rock with the boat. Bent the propeller on port engine. Went to

Colita Partida to make assessment and repairs. Repairs not possible to propeller, now only using starboard engine.

3) Deploy gear at 0830, begin with line BAJA9832 at 0034. Using 1000J and SIG-200

4) Pull gear at 1453 at end of line BAJA9836. Begin heading south.

5) Redeploy gear at 1600, begin again with BAJA9837. Using 600J and SIG-100.

6) Pull gear again at 1659, end with BAJA9837. Continue heading south.

7) Redeploy gear at 1800, begin with BAJA9838 which is a duplicate of BAJA9801.

8) **Pulled gear at 2202, end of BAJA9838. End of Baja survey.**

9) Back up Elics formatted data to tape. Lines BAJA9832 - 38 on Index 3, Tape 1.

Make archive tape of BAJA9801 - BAJA9838 on Index 1, Tape 1A.

10) Head for La Paz. Slow going because of rough seas and now dark. Navigation difficult, change course to Cantamar Marina. Arrived at 2100. Picked up by CICIMAR at the marina. Leave boat at marina. Will move boat to La Paz in the morning.

11) Stayed in Hotel San Bernadino in La Paz.

15 July 1998

1) At 0740, travel to Cantamar Marina to off load electronic gear.

2) Boat relocated to dock in La Paz. Off load remaining gear and supplies.

3) Clean and pack up ORE equipment (CSP1000) for delivery to freight forwarder at La Paz airport.

4) Clean up electronic gear, etc. Break down computer and return motherboard to CICIMAR. Also return pulse generator. Pack up all gear for return as excess baggage.

5) Stayed in Hotel San Bernadino in La Paz.

16 July 1998

1) Load gear in CICIMAR truck and travel to Los Carbos airport. Depart at 0830.

2) Clear equipment through Mexico customs.

3) Depart Los Carbos at 1420 on Alaska Flt. 291. Arrive in SFO at 1720.

4) End of trip.