

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

REPT. BK. NO. 90/12

CONTINUOUS SEISMIC PROFILING,
CRUISE REPORT GULF ST VINCENT AND
BACKSTAIRS PASSAGE
FEBRUARY - MARCH 1989

GEOLOGICAL SURVEY

by

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DECEMBER, 1989

DME 413/88

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Continuous Seismic Profiling, Cruise Report
Gulf St Vincent and Backstairs Passage
February-March 1989

ABSTRACT

Marine seismic profiling along 15 transects in Gulf St Vincent and Backstairs Passage was undertaken from 20 February to 6 March 1989. The survey collected 388 km of high-resolution, shallow-penetration acoustic (boomer) profiles that provide an insight into the attitude and extent of Quaternary, Tertiary and Permian strata beneath the sea floor. Survey data are listed and cruise tracks illustrated in this report, although interpretation of profiles is the subject of separate reports.

INTRODUCTION

A marine survey to collect high resolution, shallow penetration, continuous seismic profiles in Gulf St Vincent and Backstairs Passage was undertaken from 20 February to 6 March 1989. This was the first of 3 cruises planned to investigate the offshore geology adjacent to Kangaroo Island as part of the KINGSCOTE 1:250 000 geological map sheet revision. A subsidiary aim was to investigate potential sea floor sources of sand for beach replenishment within Gulf St Vincent. Fifteen seismic lines totalling 388 km were completed between North Haven and Kingscote (Figs. 1-3 and Table 1). Funding for the 1989 cruise

was provided by the Australian Research Council (\$17 300), by the Coastal Management Branch of the Department of Environment and Planning (\$5 000) and the Regional Geology Branch (\$12 700).

The survey vessel "Investigator" operated by the Department of Marine and Harbours was used for the duration of the survey. The absence of on-board accommodation necessitated a nightly shore-base with suitable wharf facilities (North Haven, O'Sullivans, American River). Personnel who participated in the cruise are listed in Table 2.

TABLE 1: Summary of Marine Seismic Survey Transects on SV Investigator

TRANSECT NO.	DATE (d/m/89)	TIME (CsumT) (Start, end)	POSITION FIXES (Start, end)	POWER JOULES USED	TIME BASE DISPLAY in sec	SCALE m/ GRIDLINE	NO. OF LINES	TOTAL DISTANCE (km) (nm)	LOCATION & COMMENTS
1	22/02	11:12:10 11:16	1 9	175	0.12	9.2	1	2.8 1.5	SW to NE: Across Wonga Shoal. 2 CMB buoys deployed: Core 1 only. Tidal correction for Outer Harbour. M & H Grid Positioning System used.
2	22/02	12:04:35 12:46:31	10 19	175	0.12	9.2	1	6.4 3.5	NE to SE: West side Wonga Shoal. CMB buoys deployed; Cores 2 & 3. Tidal correction for Outer Harbour. M & H Grid Positioning System used.
3	22/02	13:24:14 14:10:29	20 32	175	0.12	9.2	1	6.8 3.7	N to S: Offshore Grange/Henley Beach/Glenelg Area. 2 CMB buoys deployed; Cores 4 & 5. Tidal correction for Brighton (0 min. time & 0.95m ht correction) M & H Grid Positioning System used.
4	22/02	14:55:56 15:26	33 40	175	0.12	9.2	1	5.0 2.7	W to E: Henley Beach Area. Tidal correction for Brighton (0 min. time & 0.95m ht correction). M & H Grid Positioning System used.
5	23/02	10:39:45 11:51:07	41 33	175	0.15	11.6	1	8.5 4.6	N to S: Brighton/Seacliff to Hallett Cove Area. Tidal correction for Brighton (0 min. time & 0.95m ht correction). M & H Grid Positioning System used. No position fixes labelled 54-60.

TABLE 1: Summary of Marine Seismic Survey Transects on SV Investigator (cont)

TRANSECT NO.	DATE (d/m/89)	TIME (CSumT) (Start, end)	POSITION FIXES (Start, end)	POWER JOULES USED	TIME BASE DISPLAY in sec	SCALE m/ GRIDLINE	NO. OF LINES	TOTAL DISTANCE (km) (nm)	LOCATION & COMMENTS
6	23/02	12:08:17	61	175	0.15	11.6	10	22	Hallett Cove to Port Noarlunga. NW to SE & NE to SW diagonal to shore lines: 5 CMB buoys deployed; Cores 6,7,8,9. Tidal corrections for Port Noarlunga (10 min. time & 0.81m ht correction). M & H Grid Positioning System used.
		15:30	105				(A to J)	12	
7	24/02	10:56:58	1	280	0.15	11.6	1	70	Onkaparinga Head to Rapid Bay. NE to SW: No tidal corrections made. GPS positioning for #1-36, lost after #36 (dead reckoning based on course & speed).
		15:40	40					38	
8	27/02	08:42:45 15:51	41 129	280 & 175	0.15	11.6	7	60 32.5	Kangaroo Island Area. W to E across Eastern Cove (4.5 km); NE towards Kangaroo Head (4.5 km); W-NW towards Kingscote (19.2 km); NE offshore (3.8 km); NW to due NE of Marsden Pt (18.4 km); & due E along 35 30'S parallel (9.5 km). 280 Joules used for #41-106 & 175 Joules used for #107- 129; 105 Joule capacitor blown. No tidal corrections made. GPS positioning for #41-121, M & H Grid Systems for #122- 129.

TABLE 1: Summary of Marine Seismic Survey Transects on SV Investigator (cont)

TRANSECT NO.	DATE (d/m/89)	TIME (CsumT) (Start, end)	POSITION FIXES (Start, end)	POWER JOULES USED	TIME BASE DISPLAY in sec	SCALE m/ GRIDLINE	NO. OF LINES	TOTAL DISTANCE (km) (nm)	LOCATION & COMMENTS
9	01/03	08:39:39 11:05:35	130 156	350 (sparker)	0.2	15.4	2	24 13	Kangaroo Island to Mainland via Backstairs Passage. Cape Coutts SE to Cape St Albans (6 km); NE across Backstairs Passage via Yatala Shoals to offshore Porpoise Pt (18 km). Temporarily terminated work due to high winds & seas. Sparker used instead of Boomer. No tidal corrections made. GPS positioning.
10	01/03	12:38:30 16:23:30	157 203	175	0.2 (#157-158) 0.15 (#159-203)	15.4 11.6	3	39.3 21.2	Cape Jervis (Mainland) to Kangaroo Island to Rapid Bay (Mainland). Blowhole Pt SW to Cape Coutts (12.6 km); Cape Coutts NW to E of Penneshaw (6.5 km); NE to just SW of Rapid Bay (20.2 km). No tidal corrections made. GPS positioning for #157-184, M & H Grid System for #185-203.
11	02/03	08:35:30 12:45	204 254	175	0.15	11.6	3	43.5 23.5	Kangaroo Island Area. Ballast Head (American River) NW to Morrison Pt (6.0 km); N for 16.5 km; NW for 21 km. No tidal corrections. GPS positioning. High winds & seas terminated work.

TABLE 1: Summary of Marine Seismic Survey Transects on SV Investigator (cont)

TRANSECT NO.	DATE (d/m/89)	TIME (CsumT) (Start, end)	POSITION FIXES (Start, end)	POWER JOULES USED	TIME BASE DISPLAY in sec	SCALE m/ GRIDLINE	NO. OF LINES	TOTAL DISTANCE (km) (nm)	LOCATION & COMMENTS
12	03/03	08:44:15 11:35:40	255 290	175	0.15	11.6	3	28.1 15.2	Kangaroo Island & Mainland Areas Kangaroo Head to Cape Jervis (7.7 km); then Northward (1.6 & 18.8 km). No tidal corrections made. GPS positioning.
13	03/03	13:02:10 14:27:09	291 311	175	0.15	11.6	4	11.5 6.2	Kangaroo Island Area. Hog Bay near Penneshaw W-SW to Ballast Head Jetty (American River; 0.5,0.5,1.6 & 8.9 km). No tidal corrections made. GPS positioning.
14	04/03	11:15:10 14:42	312 354	175	0.15	11.6	5	31.7 17.1	Gulf St Vincent. SW to NE & SE to NW diagonals to shore: Carrickalinga Head to Sellicks Beach (9.4, 6.3, 5.4, 4.5 & 6.1 km). No tidal corrections made. GPS positioning.
15	06/03	09:18:15 12:11:36	355 399	175	0.15	11.6	11	28.0 15.1	Gulf St Vincent. SW to NE & SE to NW diagonals to shore: Aldinga-Sellicks Beach to Port Noarlunga (5.9,0.4,2.2, 1.9,2.4,2.6,2.5,2.3,2.9 & 2.5 km). Tidal corrections for Port Noarlunga (10 min. time & 0.81m ht correction). GPS buoys deployed; Cores 10,11,12 & 13.
TOTAL DISTANCE								388 km 210 nm	15 Transects

TABLE 2: Cruise and support participants.

PARTICIPANT	AFFILIATION	DATES
A P Belperio Co-Chief Scientist- Geologist	SA Dept Mines & Energy (Regional Geology)	20 Feb - 6 Mar 1989
M Benbow Geologist	SA Dept Mines & Energy (Regional Geology)	23 Feb - 6 Mar 1989
R B Flint Co-Chief Scientist- Geologist)	SA Dept Mines & Energy (Regional Geology)	24 Feb - 6 Mar 1989
R G Fuller Senior Systems Engineer	Control Dynamics Pty Ltd	20-21 Feb 1989
K Gaard Electronics Technician	SA Dept Mines & Energy (Geophysics)	20 Feb - 6 Mar 1989
N Harvey Geographer	SA Dept Environment & Planning (Assessments Branch)	23 Feb 1989
R L Rice Geologist	SA Dept Mines & Energy (Regional Geology) & University of Adelaide	20 Feb - 6 Mar 1989
G Sargent Observer-Geophysicist	Consultant	20 - 23 Feb 1989
P Sommerville Surveyor	SA Dept Marine & Harbours	20 Feb - 6 Mar 1989
SA Dept Environment & Planning Divers & Support Boat Personnel	SA Dept Environment & Planning Coastal Management Branch	20 - 23 Feb, 6 Mar 1989
H Vanderwater Master, S/V INVESTIGATOR	SA Dept Marine & Harbours	20 Feb - 6 Mar 1989
R Walker Electronics Technician	Flinders University (School of Earth Sciences)	22 Feb 1989

INSTRUMENTATION AND RECORDS

Continuous seismic profiling is an important field technique for obtaining subsurface information in petroleum exploration, marine geology and submarine foundation investigations. High frequency, single channel systems are used to provide high resolution, shallow penetration acoustic profiles of the sea floor. The acquisition system used comprised an ORE Geopulse "Boomer" (power supply, acoustic source, 50m hydrophone assembly, receiver) and EPC 1600 analogue recorder. The acoustic source and hydrophone array were towed at a speed of 5 knots (Fig. 4). Ship track and water depth were logged continuously using GPS and trisponder navigation systems with event marks entered manually on to the graphic records.

Optimum resolution and clarity of seismic records were obtained at water depths of 20 to 40 metres where penetration of up to 40 metres into the subsurface was achieved. An example is illustrated in Figure 5. Poor quality records were obtained in water depths of less than 10 metres. Power output, boomer/hydrophone configuration, and recording parameters varied between transects. These are summarised below. Interpretation of profiles and illustration of selected records will be the subject of separate reports. Because of their great length the seismic records are not reproduced in this report but are held in archival storage within the Department as Plan Numbers 90-15 to 90-25.

DETAILED TRANSECT INFORMATION

The transect information that follows includes position fix and time, location (lat/long, AMG coordinates, Marine and Harbours local grid coordinates), measured and tide-corrected depths, ship speed and general comments. General information pertinent to the survey includes:

- Survey duration 20 February to 6 March 1989 on the 11m Marine and Harbours Survey Vessel INVESTIGATOR.
- General Location: Eastern Gulf St Vincent, Nepean Bay and Backstairs Passage, Zones 53 and 54.
- GEOPULSE Boomer with catamaran, 50m hydrophone streamer, power supply and receiver owned by Flinders University.
- 43 dB filter used in place of receiver midway through cruise. Two portable petrol-driven generators provided power.
- EPC 1600 Recorders used (old and rental).
- Aft boom used to extend boomer & hydrophone cables off port & starboard sides, respectively.
- Average ship towing speed: 10-11 km/hr (5-6 knots)
- Positioning: M & H Del Norte Trisponder Units 540 or 542, using M & H Local Grid System or Trimble GPS Navigation System.
- Fixes taken every 3-5 minutes (when applicable), start & end of line, & course changes.
- Transponder/Receiver located on main mast of vessel; no correction for distance to Boomer performed.
- Time: Central Summer Time (Australia) used for both position fixes and tidal corrections.
- Depth: M & G Echotrac - Precision Echo Sounder DF3200 (ODOM Hydrographic Systems), calibrated for velocity of sound in water and 0.8m draught boat draught correction.

- Low Water Datum (LWD): tidal Corrections made for Transects 1-6 & 15 based on Outer Harbour tide record, with local corrections for Brighton & Port Noarlunga.
- AHD: Australian Height Datum: LWD(m) + 1.66m.
- Velocity of Sound in Water = 1540 m/sec based on M & H measurements during cruise.

List of Abbreviations Used

CC	Course Change
OC	On Course
EOD	End of Day
EOL	End of Line
SOL	Start of Line
TVG	Time Variable Gain of Boomer Receiver
kts	Knots (nautical mile/hr = 1.85 km/hr)
M & H	South Australian Dept of Marine and Harbours
CMB	Coastal Management Branch of SA DEP
SA DEP	South Australian Dept of Environment & Planning
SADME	South Australian Dept of Mines & Energy
AHD	Australian Height Datum (m)
CSumT	Central Summer Time (Australia)
LWD	Low Water Datum (m) (Tidal Correction)
MN	Magnetic North (Ship Compass Heading)

TRANSECT NO.: 01, SW to NE DATE: 22 FEB 1989

East side Wonga Shoal [-1.5 nm (2.8km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 542, M & H Local Grid System

IGNITRON @ 175 Joules, 2pps, Boomer, Old EPC 1600 Recorder

Boomer/Hydrophone Streamer Configuration: Both on Port Sides streaming ~6-8m to ~30m behind,

Hydrophone on outside ~3-4m off side of vessel.

Gridline spacing: 9.2m/gridline; Display in Sec = 0.12

WEATHER: Slightly cloudy, mild breeze, flat sea.

FIX NO.	TIME (CSumT)	LATITUDE (S) (deg min.min) (GPS)		LONGITUDE (E) (deg min.min) (GPS)		AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
1	11:12:10	34	50.89	138	26.64	266297.6	6140804.3	8.2	7.3	9.0	NA	9.7	Departed North Haven Marina at 08:30. Adjusted arrays & equipment. SOL 1. Buoy 13 deployed not cored due to calcrete.
2	11:16	34	50.57	138	26.78	266506.3	6141395.5	7.6	6.8	8.4	NA	9.7	
3	11:20	34	50.24	138	26.93	266714.4	6142008.2	6.6	5.8	7.5	NA	9.7	
4	11:22	34	50.02	138	27.03	266861.5	6142419.0	NA			NA		Slowed down.
5	11:24	34	49.94	138	27.07	266908.2	6142583.6	5.0	4.2	5.9	1.2	7.9	
6	11:25:26	34	49.84	138	27.11	266975.0	6142754.9	6.0	5.2	6.9	1.0	8.3	Core 1 taken 11:27 - TVG turned ON.
7	11:29	34	49.60	138	27.23	267133.6	6143218.3	7.1	6.4	8.0	0.5	7.6	
8	11:32	34	49.39	138	27.32	267266.2	6143604.1	7.7	7.0	8.7	0.1	7.9	
9	11:32:59	34	49.34	138	27.34	267294.3	6143700.3	8.0	7.3	9.0	0.0	8.3	EOL 1.

TRANSECT NO.: 02, NW to SE DATE: 22 FEB 1989

West side of Wonga Shoal [~3.5 nm (6.4 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 542, M & H Local Grid System

IGNITRON @ 175 Joules, 2pps, Boomer, Old EPC 1600 Recorder

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~2-3m off side), Both ~8m behind.

Gridline spacing: 9.2m/gridline; Display in Sec = 0.12

WEATHER: Sunny, mild breeze, flat seas.

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
10	12:04:35	34 49.44	138 24.78	263369.2	6143403.3	14.0	13.5	15.1	5.9		SOL 2. TVG is OFF.
11	12:08	34 49.69	138 24.85	263509.5	6142952.9	13.8	13.3	15.0	5.9	6.8	
12	12:13	34 50.03	138 24.94	263668.3	6142318.7	12.1	11.6	13.3	5.2	7.6	
13	12:18	34 50.40	138 25.03	263828.1	6141641.4	12.7	12.2	13.9	4.6	10.1	Core 2 taken
14	12:23	34 50.83	138 25.14	264018.9	6140847.7	12.1	11.6	13.3	3.8	9.4	
15	12:28	34 51.26	138 25.26	264209.3	6140066.3	12.1	11.6	13.3	2.9	9.0	
16	12:33	34 51.69	138 25.36	264562.3	6139286.0	11.8	11.3	13.0	2.1	9.7	
17	12:38	34 52.11	138 25.47	264582.4	6138506.4	11.5	11.1	12.7	1.3	9.4	
18	12:43	34 52.53	138 25.58	264770.1	6137728.0	11.0	10.6	12.2	0.5	9.4	
19	12:46:31	34 52.82	138 25.66	264903.0	6137204.1	9.7	9.3	10.9	0.0	9.7	EOL 2. Core 3 taken

TRANSECT NO.: 03, N to S DATE: 22 FEB 1989

Grange/Henley Beach/Glenelg Area {~3.7 nm (6.8 km)}

POSITIONING SYSTEM: M & H Trisponders, Unit 542, M & H Local Grid System

IGNITRON @ 175 Joules, 2pps, Boomer, Old EPC Recorder

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~2-3m off side), Both ~8m behind.

Gridline spacing: 9.2m/gridline; Display in Sec = 0.12

WEATHER: Sunny, mild breeze, flat seas.

FIX NO.	TIME (CSumT)	LATITUDE (S)		LONGITUDE (E)		AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
20	13:24:14	34	54.74	138	24.63	263418.1	6133607.4	17.8	17.4	19.0	6.8	9.0	SOL 3.
21	13:26	34	54.86	138	24.69	263515.4	6133378.6	17.6	17.2	18.8	6.5	9.0	
22	13:30:15	34	55.16	138	24.85	263781.0	6132833.6	17.4	17.0	18.6	5.9	9.0	Interference on trace.
23	13:35	34	55.54	138	25.05	264105.9	6132151.2	15.8	15.4	17.0	5.1	9.0	
24	13:39:09	34	55.84	138	25.22	264374.1	6131600.0	16.0	15.5	17.2	4.5	NA	Core 4 taken
25	13:40	34	55.90	138	25.26	264433.2	6131475.1	16.3	15.8	17.5	4.4	9.0	Labelled #26 on echo sounder trace.
26	13:45	34	56.27	138	25.46	264755.3	6130802.0	14.9	14.4	16.1	3.6	8.6	Recorder misfiring.
27	13:50	34	56.64	138	25.66	265077.0	6130141.1	15.4	14.9	16.6	2.9	8.6	
28	13:55	34	56.99	138	25.85	265388.2	6129492.3	14.4	13.9	15.6	2.2	8.3	
29	14:00	34	57.35	138	26.05	265702.0	6128840.5	16.0	15.5	17.1	1.5	8.6	Not marked on trace.
30	14:05	34	57.70	138	26.24	266013.1	6128191.7	15.6	15.1	16.7	0.7	8.6	
31	14:05:49	34	57.75	138	26.27	266063.7	6128100.5	15.5	15.0	16.6	0.6	NA	Core 5 taken
32	14:10:29	34	58.07	138	26.44	266339.9	6127524.8	16.9	16.3	18.0	0.0	8.6	EOL 3. Recorder misfiring.

TRANSECT NO.: 04, W to E DATE: 22 FEB 1989

Henley Beach Area [-2.7 nm (5.0 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 542, M & H Local Grid System

IGNITRON @ 175 Joules, 2pps, Boomer, Old EPC 1600 Recorder

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~2-3m off side), Both ~8m behind.

Gridline spacing: 9.2m/gridline; Display in Sec = 0.12

WEATHER: Sunny, mild sea breeze, flat to slight seas

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
33	14:55:56	34 55.63	138 25.64	265001.1	6132004.7	15.7	14.8	16.5	5.0	10.4	SOL 4. Tugboat to west.
34	15:00	34 55.64	138 26.10	265704.8	6131995.0	14.6	13.7	15.4	4.3	9.7	
35	15:05	34 55.65	138 26.65	266537.7	6131997.9	12.4	11.5	13.1	3.5	9.7	Recorder misfiring.
36	15:10	34 55.66	138 27.20	267375.8	6131997.6	10.6	9.6	11.3	2.6	9.7	
37	15:15	34 55.68	138 27.74	268203.7	6131997.1	9.3	8.3	9.9	1.8	9.7	Recorder misfiring & stopping.
38	15:20	34 55.69	138 28.29	269044.2	6131999.9	8.6	7.5	9.2	1.0	9.7	Troubleshooting recorder; sprayed optical coupling.
39	15:25	34 55.70	138 28.84	269872.2	6131993.0	6.5	5.4	7.1	0.1	9.4	
40	15:26	34 55.70	138 28.92	269993.9	6132002.3	6.4	5.3	6.9	0.0	11.5	EOL 4. Recorder misfiring. EOD: pulled in & secured equipment. Moored at North Haven Marina. Recorder removed for repair.

Brighton/Seacliff to Hallett Cove [~4.6 nm (8.5 km)]

IGNITRON @ 175 Joules, 2pps, Boomer, Old & Rental EPC 1600 Recorder

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),
Hydrophone on Starboard Side (~3m off side), Both ~15m behind.
Floatation collars added to both Boomer & Hydrophone cables.

WEATHER: Sunny, mild sea breeze, flat to slight seas

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
41	10:39:45	35 0.95	138 28.10	268987.0	6122267.0	14.3	13.2	14.8	8.6	10.8	SOL 5. Gain adjustment.
42	10:45	35 1.45	138 28.01	268885.7	6121324.0	15.1	14.0	15.7	7.6	10.4	Adjusted Recorder settings.
43	10:50	35 1.93	138 27.93	268786.4	6120442.7	16.4	15.4	17.0	6.7	10.4	As above.
44	10:55	35 2.40	138 27.85	268687.1	6119561.4	18.1	17.1	18.8	5.8	10.4	TVG slightly above bottom. Bottom Sensitivity ON.
45	11:00	35 2.88	138 27.77	268590.3	6118680.1	19.1	18.1	19.8	4.9		
46	11:05	35 3.35	138 27.69	268490.8	6117804.9	20.4	19.5	21.1	4.0	10.4	
47	11:10	35 3.83	138 27.61	268391.8	6116914.4	21.0	20.1	21.8	3.1	10.1	Recorder misfiring.
48	11:15	35 4.30	138 27.54	268302.5	6116042.5	21.6	20.8	22.4	2.2	9.7	
49	11:18:08	35 4.60	138 27.49	268235.4	6115495.0	21.3	20.5	22.1	1.7	9.4	Old Recorder misfiring; Receiver problems. Rental Recorder used for rest of day. Phoned Flinders Univ.
50	11:40:45	35 4.54	138 27.49	268245.2	6115606.3	21.1	20.4	22.1	1.8	10.4	Back OC, overlap of #48 & 49 at 1800m mark.
51	11:45	35 4.93	138 27.42	268157.6	6114867.1	20.9	20.3	21.9	1.1	10.8	Poor quality record; recorder stopping.
52	11:50	35 5.40	138 27.35	268065.4	6114010.6	21.4	20.8	22.4	0.2	10.1	
53	11:51:07	35 5.50	138 27.34	268049.9	6113822.1	21.5	20.9	22.6	0.0	10.4	EOL 5. Troubleshooting Receiver. CMB delivered bouys No fixes labeled 54-60.

DATE: 23 FEB 1989

POSITIONING SYSTEM: M & H Trisponders, Unit 542, M & H Local Grid System

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~15m behind.

Gridline spacing: 11.6m/gridline; Display in Sec = 0.15

WEATHER: Sunny, mild sea breeze, flat to slight seas

FIX NO.	TIME (CSumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
61	12:08:17	35 5.51	138 28.62	267999.8	6113799.2	21.5	21.1	22.7	1.9	9.7	SOL 6A, NW to SW.
62	12:19:18	35 5.96	138 28.40	269695.3	6113003.7	9.3	8.9	10.6	0.0	9.7	EOL 6A.
63	12:27:12	35 5.96	138 28.41	269697.8	6113003.7	10.0	9.6	11.3	2.4	9.7	SOL 6B, NE to SW. Core 6 taken
64	12:34	35 6.08	138 27.72	268665.2	6112752.4	19.3	19.0	20.6	1.3	9.0	
65	12:40	35 6.18	138 27.13	267766.1	6112535.2	21.8	21.5	23.1	0.4	9.4	
66	12:42:33	35 6.23	138 26.89	267403.2	6112454.9	22.2	22.5	24.1	0.0	9.4	EOL 6B.
67	12:48:35	35 6.23	138 26.89	267400.7	6112451.8	22.1	21.8	23.4	2.0	10.1	SOL 6C, NW to SE.
68	12:53	35 6.50	138 27.26	267975.7	6111967.0	20.9	20.6	22.3	1.2	9.7	
69	12:57	35 6.74	138 27.59	268491.0	6111533.0	15.8	15.5	17.2	0.5	10.1	
70	13:00:17	35 6.93	138 27.85	268897.5	6111194.9	9.1	8.8	10.5	0.0	9.7	EOL 6C.
71	13:03	35 6.94	138 27.85	268903.2	6111167.3	9.2	8.9	10.6	2.0	8.6	SOL 6D, NE to SW. Minor CC to avoid sailboat.
72	13:06:42	35 6.99	138 27.58	268495.4	6111064.4	12.9	12.6	14.3	1.6	9.0	Core 7 taken. EOL 6D Proceeded along remainder of line w/o fixes.
73	13:32:50	35 7.22	138 26.56	266951.6	6110602.4	22.2	21.9	23.5	2.3	9.4	SOL 6E, NW to SE.
74	13:37	35 7.43	138 26.93	267518.4	6110234.6	19.5	19.2	20.8	1.6	9.4	
75	13:42	35 7.67	138 27.36	268195.8	6109798.7	13.5	13.2	14.8	0.8	9.4	Recorder misfiring.
76	13:47:12	35 7.93	138 27.82	268896.4	6109347.9	5.7	5.3	7.0	0.0	9.0	EOL 6E. Troubleshooting Recorder.

FIX NO.	TIME (CSumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 6A to 6J continued.											
77	13:51:43	35 7.93	138 27.82	268898.8	6109351.0	5.8	5.4	7.1	2.2	7.9	SOL 6F, NE to SW. Troubleshooting.
78	13:56	35 8.01	138 27.42	268297.7	6109184.6	10.6	10.2	11.9	1.6	8.3	
79	13:59:10	35 8.07	138 27.13	267860.1	6109059.3	15.5	15.1	16.8	1.2	8.3	Core 8 taken
80	14:03	35 8.14	138 27.78	267326.9	6108909.9	18.7	18.3	20.0	0.6	8.6	
81	14:07:10	35 8.22	138 26.40	266753.5	6108750.3	21.1	20.7	22.3	0.0	8.6	EOL 6F. Recorder misfiring.
82	14:14:30	35 8.22	138 26.40	266753.2	6108759.5	21.1	20.7	22.3	2.3	9.4	SOL 6G, NW to SE.
83	14:20	35 8.47	138 26.87	267489.2	6108309.7	16.9	16.4	18.1	1.4	9.4	
84	14:24	35 8.64	138 27.22	268021.5	6107999.6	12.4	11.9	13.6	0.8	9.0	
85	14:29	35 8.86	138 27.64	268664.7	6107609.0	8.8	8.3	9.9	0.0	9.0	EOL 6G, Noarlunga Reef ahead.
86	14:32:50	35 8.88	138 27.65	268690.6	6107585.0	9.0	8.4	10.1	2.5	8.6	SOL 6H, NE to SW. Come slowly OC.
87	14:35	35 8.93	138 27.50	268455.1	6107483.4	10.1	9.5	11.2	2.2	8.6	
88	14:39	35 9.02	138 27.15	267927.9	6107300.3	16.2	15.6	17.3	1.6	8.3	
89	14:43	35 9.12	138 26.80	267408.9	6107095.8	19.2	18.6	20.2	1.1	8.3	
90	14:47	35 9.23	138 26.45	266884.8	6106894.2	19.2	18.5	20.2	0.5	8.3	
91	14:50:50	35 9.32	138 26.13	266403.5	6106703.0	21.1	20.4	22.1	0.0	8.3	EOL 6H.
92	14:56:25	35 9.32	138 26.12	266380.5	6106711.6	21.0	20.3	21.9	NA	9.4	SOL 6I, NW to SE. Pre-mature SOL.
93	15:00	35 9.47	138 26.44	266883.8	6106440.9	19.9	19.1	20.8	1.8	9.0	
94	15:04	35 9.63	138 26.80	267430.5	6106158.9	19.1	18.3	20.0	1.2	9.0	
95	15:08	35 9.79	138 27.15	267969.4	6105879.8	15.3	14.5	16.1	0.6	9.0	
96	15:12	35 9.95	138 27.49	268495.6	6105603.4	10.5	9.6	11.3	0.0	9.0	EOL 6I. CMB Core 9 taken.
97	15:14	35 10.10	138 27.34	268593.8	6105328.4	8.1	7.2	8.9	NA	9.0	SOL 6J, Heading 165 MN from #96.
98	15:15:36	35 10.22	138 27.58	268637.5	6105104.4	6.1	5.2	6.9	NA	9.0	CC to Heading 205 MN.
99	15:18	35 10.36	138 27.45	268454.6	6104828.4	6.7	5.8	7.5	NA	7.9	
100	15:21	35 10.51	138 27.25	268160.6	6104543.3	11.5	10.6	12.2	NA	7.9	
101	15:24	35 10.65	138 27.05	267858.5	6104279.7	13.2	12.2	13.9	NA	7.6	
102	15:25:30	35 10.72	138 26.95	267714.9	6104152.6	15.3	14.3	16.0	NA	7.6	CC to Heading 270 MN.
103	15:27	35 10.70	138 26.81	267501.4	6104187.2	17.5	16.5	18.2	NA	9.4	
104	15:28:30	35 10.66	138 26.69	267307.2	6104256.3	19.6	18.6	20.3	NA	9.0	
105	15:30	35 10.60	138 26.54	267079.5	6104349.1	19.7	18.7	20.4	NA	9.0	EOL 6J. EOD: pulled in & secured gear; repaired earth shield on hydrophone plug.

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
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Transect 13 continued.

310	14:25	35 45.45	137 48.21	753474.7	6039305.5	8.6			NA	9.9	CC at NW end of Ballast Head Jetty. CC to 310 MN. OC.
311	14:27:09	35 45.27	137 48.11	753330.9	6039639.7	7.6			NA	10.3	EOL 13. EOD: pulled in & secured gear. 15:00 Moored at American River.

TRANSECT NO.: 14 DATE: 4 MARCH 1989

5 Lines: Carrickalinga Head to Sellicks Beach (SW-NE & SE-NW diagonals to shore).
(9.4, 6.3, 5.4, 4.5 & 6.1 km) [17.1 nm (31.7 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 175 Joules, 2pps, Boomer, Rental EPC 1600 Recorder, 43 dB Filter

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~30m behind.

Gridline Spacing: 11.6m/gridline; Display in Sec = 0.15

WEATHER: Sunny in immediate area, <0.25m seas, E-SW winds (<7 kts), mild offshore breeze, humid.

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
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312	11:15:10	35 28.00	138 16.93	253372.9	6071800.4	6.4	NA		9.4	10.1	SOL 14, Heading 341 MN.
313	11:20	35 27.52	138 16.84	253217.6	6072675.1	9.6			8.5	11.0	Re-orient Power Supply perpendicular
314	11:25	35 27.03	138 16.72	253016.0	6073579.4	13.4			7.6	11.0	to length of boat.
315	11:30	35 26.53	138 16.61	252816.7	6074492.9	15.2			6.6	11.2	Misfiring stopped.
316	11:35	35 26.06	138 16.49	252615.8	6075369.5	18.7			5.7	10.7	11:37 Lost signal.

FIX NO.	TIME (CSumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 14 continued.											
317	11:39:40	35 25.60	138 16.39	252433.7	6076206.4	21.0			4.9	10.7	Stylus belt replaced. Loose lead from Power Supply to Receiver. CC back to fix #316 to reduce section. Winds increase.
318	11:49:50	35 26.04	138 16.49	252617.6	6075397.3	18.5			5.7	8.5	OC near #316.
319	11:55	35 25.55	138 16.38	252426.2	6076295.7	20.9			4.8	10.8	
320	12:00	35 25.07	138 16.26	252219.8	6077187.5	25.2			3.9	10.9	
321	12:05	35 24.59	138 16.16	252039.0	6078064.5	28.3			3.0	10.8	
322	12:10	35 24.10	138 16.05	251844.7	6078975.2	29.8			2.1	11.1	
323	12:15	35 23.60	138 15.94	251650.3	6079885.8	31.9			1.1	11.0	
324	12:21:07	35 23.00	138 15.80	251407.2	6081001.7	33.4			0.0	10.6	CC to 093 MN. OC - 6.9km. Seas 0.25-0.5m; winds increasing.
325	12:25	35 23.12	138 16.16	251968.8	6080789.0	33.2			6.3	9.4	
326	12:30	35 23.15	138 16.69	252760.4	6080749.2	32.6			5.5	9.6	
327	12:35	35 23.24	138 17.21	253564.8	6080614.0	32.2			4.7	9.8	
328	12:40	35 23.33	138 17.74	254364.4	6080466.3	31.2			3.5	9.8	
329	12:45	35 23.41	138 18.28	255181.2	6080334.4	30.3			3.0	10.1	
330	12:50	35 23.51	138 18.82	256016.5	6080172.1	29.0			2.2	10.2	
331	12:55:10	35 23.61	138 19.41	256904.6	6080017.3	24.1			1.3	10.7	Calmer seas, < 0.25m.
332	13:00	35 23.70	138 19.96	257741.7	6079876.4	18.1			0.4	10.6	
333	13:02:37	35 23.74	138 20.25	258193.2	6079802.3	11.5			0.0	10.5	CC to 011 MN; right at shore, just an arm's length away. OC.
334	13:05	35 23.53	138 20.34	258313.8	6080203.3	15.4			5.4	11.1	
335	13:10	35 23.05	138 20.55	258610.4	6081099.5	18.5			4.5	11.2	Lost & regained signal; BNC changed.
336	13:15	35 22.57	138 20.73	258854.1	6081994.2	25.4			3.6	11.0	
337	13:20	35 22.10	138 20.94	259146.2	6082874.8	25.4			2.6	11.3	
338	13:25	35 21.62	138 21.14	259425.7	6083758.2	25.5			1.7	11.0	
339	13:30	35 21.14	138 21.33	259692.3	6084653.5	26.8			0.8	11.0	
340	13:34:10	35 20.75	138 21.50	259935.4	6085390.9	27.3			0.0	10.4	CC to 100 MN. OC.
341	13:40	35 20.93	138 22.15	260918.9	6085084.0	24.5			4.5	10.6	

FIX NO.	TIME (CSumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 14 continued.											
342	13:45:01	35 21.07	138 22.71	261784.3	6084841.7	22.9			3.6	10.8	Humid, overcast, calm seas.
343	13:50	35 21.23	138 23.27	262642.8	6084574.6	20.8			2.8	10.9	Mirror sea conditions.
344	14:00	35 21.38	138 23.84	263511.3	6084310.7	18.4			1.8	10.9	
345	14:05	35 21.55	138 24.42	264387.7	6084031.4	14.8			0.9	10.8	
346	14:05:21	35 21.69	138 25.02	265308.4	6083790.3	7.3			0.0	10.6	CC to 338 MN. OC.
347	14:10	35 21.28	138 24.86	265043.9	6084535.9	15.1			6.1	10.9	
348	14:15	35 20.81	138 24.73	264834.1	6085412.3	18.6			5.2	10.9	
349	14:20	35 20.32	138 24.57	264558.2	6086299.4	19.6			4.2	11.1	Recorder overheating; cooled. BNC cable to Power Supply replaced.
350	14:25	35 19.84	138 24.42	264317.4	6087193.6	21.7			3.3	11.1	
351	14:30	35 19.36	138 24.28	264082.0	6088075.6	23.7			2.4	10.7	
352	14:35	35 18.88	138 24.19	263909.8	6088959.2	25.4			1.5	11.0	Trace deteriorating.
353	14:39:46	35 18.41	138 24.00	263599.3	6089808.3	26.1			0.6	11.1	Losing GPS.
354	14:42	35 18.10	138 23.90	263440.0	6090387.0	27.4			0.0	11.2	EOL 14 off Sellicks Beach. Pulled in & secured gear. Headed for North Haven Marina. 18:00 Moored at North Haven. 18:30 Unloaded. EOD.

DATE: 6 MARCH 1989

(5.9, 0.4, 2.2, 1.9, 2.4, 2.4, 2.6, 2.5, 2.3, 2.9, & 2.5 km) [~ 15.1 nm (~ 28.0 km)]

IGNITRON @ 175 Joules, 2pps, Boomer, Rental EPC 1600 Recorder, 43dB Filter

Hydrophone on Starboard Side (~3m off side), Both ~30m behind.

WEATHER: Sunny, mild breeze (< 7.0 kts), flat calm seas (ideal conditions).

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
355	9:18:15	35 18.14	138 23.88	263406.7	6090309.0	27.5	26.5	28.2	5.9	9.5	08:00 Departed from O'Sullivan Beach Boat Ramp. SOL 15. Sunny, mild breeze (< 7 kts), flat seas (like glass).
356	9:20	35 18.02	138 23.99	263572.8	6090529.2	27.2	26.2	27.9	5.7	9.7	
357	9:25	35 17.72	138 24.38	264151.9	6091102.6	25.7	24.8	26.4	4.9	9.6	
358	9:30	35 17.41	138 24.76	264712.7	6091700.1	24.6	23.7	25.4	4.0	9.9	Temporarily stopped Recorder to re-align paper.
359	9:35	35 17.10	138 25.16	265299.4	6092279.7	21.5	20.6	22.3	3.2	9.9	
360	9:40	35 16.78	138 25.54	265862.8	6092883.3	18.1	17.3	18.9	2.4	10.1	
361	9:45	35 16.43	138 25.93	266442.4	6093546.0	4.7	3.9	5.6	1.5	10.0	CC to 348 MN to avoid reef.
362	9:50	35 16.08	138 26.17	266784.5	6094202.4	3.3	2.5	4.2	0.9	9.8	Back OC 038 MN.
363	9:55:10	35 15.86	138 26.67	267532.0	6094638.0	8.4	7.7	9.3	0.0	9.2	CC to 328 MN. OC.
364	10:00	35 15.44	138 26.46	267185.8	6095409.2	20.2	19.5	21.1	+0.4	10.6	CMB delivered buoys.
365	10:02:17	35 15.24	138 26.34	266999.4	6095771.4	23.9	23.2	24.9	0.0	10.2	Loose BNC cable on Power Supply - temporarily lost signal. Stylus belt replaced.
366	10:10:15	35 15.25	138 26.30	266944.3	6095751.4	24.1	23.4	25.1	2.2	10.5	OC 052 MN.
367	10:15	35 15.03	138 26.78	267659.2	6096180.0	18.4	17.8	19.4	1.4	10.7	
368	10:20	35 14.78	138 27.29	268426.2	6096653.0	4.7	4.1	5.7	0.5	10.7	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 15 continued.											
369	10:22:40	35 14.65	138 27.56	268829.4	6096910.0	8.2	7.6	9.3	0.0	8.5	CC to 296 MN. OC.
370	10:25	35 14.54	138 27.34	268487.8	6097111.0	13.6	13.0	14.7	1.9	10.8	
371	10:28:06	35 14.35	138 27.04	268026.4	6097444.5	18.7	18.1	19.8	1.3	10.8	
372	10:30	35 14.25	138 26.86	267741.0	6097622.2	21.1	20.5	22.2	1.0	10.7	
373	10:32:25	35 14.12	138 26.62	267375.9	6097847.1	23.3	22.7	24.4	0.6	10.6	Core 10 taken
374	10:35:30	35 13.95	138 26.32	266912.7	6098150.0	25.4	24.9	26.5	0.0	9.9	CC to 062 MN. OC (2.36 km).
375	10:40	35 13.81	138 26.81	267652.0	6098424.7	21.4	20.9	22.5	1.5	11.1	
376	10:44:10	35 13.66	138 27.29	268367.8	6098729.9	15.3	14.8	16.5	0.8	11.3	Core 11 taken
377	10:48:10	35 13.51	138 27.78	269105.1	6099022.6	8.1	7.6	9.3	0.0	8.9	CC to 288 MN. OC (2.41km).
378	10:50	35 13.45	138 27.56	268767.4	6099131.7	11.4	10.9	12.6	2.1	10.8	
379	10:55	35 13.22	138 27.04	267965.1	6099533.6	19.0	18.5	20.2	0.2	10.2	
380	11:00	35 13.02	138 26.50	267144.1	6099873.3	23.3	22.8	24.5	0.3	10.4	Radio interference on record.
381	11:01:25	35 12.95	138 26.37	266941.0	6099997.6	24.3	23.8	25.5	0.0	8.7	CC to 055 MN. OC (2.62km).
382	11:05:03	35 12.79	138 26.74	267489.4	6100320.1	21.4	21.0	22.6	1.9	11.1	
383	11:10	35 12.55	138 27.26	268274.8	6100778.1	11.8	11.4	13.0	1.0	11.2	
384	11:15:25	35 12.31	138 27.86	269161.3	6101247.9	6.7	6.3	7.9	0.0	10.1	CC to 278 MN. OC (2.48km).
385	11:20	35 12.17	138 27.36	268406.0	6101487.6	11.8	11.4	13.1	1.6	10.6	
386	11:25	35 12.05	138 26.79	267537.6	6101693.5	18.4	18.0	19.7	0.8	10.7	
387	11:29:11	35 11.92	138 26.34	266841.0	6101913.0	21.2	20.8	22.5	0.0	9.3	CC to 048 MN. OC (2.3km).
388	11:30	35 11.86	138 26.40	266924.2	6102023.1	19.7	19.3	21.0	2.3	10.1	Core 12 taken
389	11:35	35 11.61	138 26.92	267701.4	6102511.8	18.2	17.8	19.5	1.3	11.0	
390	11:40	35 11.31	138 27.42	268449.0	6103070.6	11.2	10.8	12.5	0.4	11.2	
391	11:42:11	35 11.19	138 27.63	268769.4	6103310.1	7.2	6.8	8.5	0.0	8.7	CC to 291 MN. OC (2.93km).
392	11:45	35 11.06	138 27.34	268315.4	6103542.1	9.9	9.5	11.2	2.4	11.3	
393	11:50	35 10.81	138 26.81	267501.5	6103986.8	15.4	15.0	16.7	1.5	10.8	
394	11:55	35 10.58	138 26.28	266691.3	6104379.2	20.5	20.1	21.8	0.6	10.9	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 15 continued.											
395	11:58	35 10.44	138 25.97	266216.4	6104632.1	22.8	22.4	24.1	0.0	9.6	CC to 061 MN. OC (2.49km).
396	12:00	35 10.36	138 26.18	266523.8	6104788.1	21.4	21.0	22.7	2.1	11.0	Core 13 taken
397	12:05	35 10.18	138 26.75	267378.0	6105146.2	19.9	19.5	21.2	1.2	11.0	
398	12:10	35 10.01	138 27.33	268253.1	6105480.0	13.4	13.0	14.7	0.3	11.4	
399	12:11:36	35 9.95	138 27.51	268528.6	6105598.1	9.4	9.0	10.7	0.0	11.3	EOL 15. Pulled in & secured gear. Headed for O'Sullivan's Beach. 13:00 Unloaded & cleaned gear. 13:30 INVESTIGATOR departed for Port Adelaide. EOD. END OF CRUISE.

TRANSECT NO.: 07, NE to SW DATE: 24 FEB 1989

Central Gulf St Vincent to Rapid Bay [~38 nm (70 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 280 Joules, 1 & 2pps, Boomer, Old EPC 1600 Recorder, 43db Filter

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~15m behind.

Gridline spacing: 11.6m/gridline; Display in Sec = 0.15

WEATHER: Sunny, mild sea breeze, flat to slight seas (0.25m) changing to a cool change with squalls & hefty seas at 1700hrs.

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
1	10:56:58	35 9.18	138 17.32	253023.1	6106613.2	38.1	NA		NA	11.6	SOL 7. Adjusted Receiver & Recorder.
2	11:00	35 9.49	138 17.22	252874.2	6106035.5	38.0				11.6	
3	11:10	35 10.49	138 16.76	252231.2	6104170.6	36.7			65.2	11.6	11:13 High voltage error. 11:14 Power OFF.
4	11:20	35 11.47	138 16.29	251562.4	6102338.9	38.1			63.3	11.7	Echo Sounder fix only. Troubleshooting Old Recorder.
5	11:30	35 12.45	138 15.82	250903.9	6100510.4	38.8			61.3	11.5	As above.
6	11:33:30	35 12.78	138 15.65	250667.9	6099887.1	39.5			60.7	11.3	Recorder misfiring; loose
7	11:40	35 13.40	138 15.35	250239.5	6098721.8	39.7			59.5	11.6	boards part of problem.
8	11:50	35 14.38	138 14.88	249571.4	6096896.0	38.7			57.5	11.7	Troubleshooting Old Recorder; checked hydrophone signal on oscilloscope.
9	12:00	35 15.35	138 14.40	248903.1	6095088.6	39.8			55.5	11.5	Faulty Receiver: bottom signal missing.
10	12:10	35 16.31	138 13.94	248255.3	6093281.7	40.4			53.7	11.2	System OFF. Switched Receiver to 43dB filter.
11	12:20	35 17.24	138 13.43	247530.0	6091540.4	40.3			51.8	11.2	12:25 System ON, adjusted settings on Recorder. Echo Sounder fix only.
12	12:27	35 17.90	138 13.12	247083.9	6090315.8	40.6			50.5	11.2	
13	12:30	35 18.18	138 12.98	246896.6	6089783.2	40.6			49.9	11.2	Vast improvement using 43dB filter.
14	12:40	NA	138 12.53	NA	NA	40.5			48.1	11.3	12:42 Lost record.

FIX NO.	TIME (CsumT)	LATITUDE (S)		LONGITUDE (E)		AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 7 continued.													
15	12:50:20	35	20.08	138	12.06	245591.2	6086230.3	40.3			46.1	11.1	No "readable" trace. 12:55 Power OFF. Troubleshooting system.
16	13:00	35	20.97	138	11.64	245006.3	6084575.9	40.4			44.4	10.6	Echo Sounder fix only.
17	13:10	35	21.86	138	11.21	244396.9	6082902.3	39.9			42.6	11.4	As above; troubleshooting.
18	13:18:45	35	22.70	138	10.80	243817.4	6081337.4	36.1			40.9	11.5	As above; troubleshooting. Replaced Control Board on Recorder; temporarily regained trace.
19	13:20	35	22.82	138	10.74	243740.5	6081113.2	35.6			40.7	11.5	13:21 Lost trace. Cut Roll (Roll 4A: Fixes 1-19). Continue taking Echo Sounder fixes. Troubleshooting.
20	13:30	35	23.76	138	10.28	243093.8	6079345.8	32.6			38.8	11.2	Recorder overheating. Echo Sounder fix only. 13:36 Recorder ON.
21	13:38	35	24.51	138	9.92	242580.8	6077949.3	33.2			37.3	11.1	Trace OK. 13:36-13:39 Signal regained.
22	13:40	35	24.71	138	9.85	242492.7	6077585.9	33.7			36.9	11.0	Echo Sounder fix only. Ventilated (cooled) Recorder. Heading 193 MN.
23	13:42	35	24.89	138	9.76	242364.0	6077233.7	33.7			36.6	10.8	Trace regained. Recorder cooled & settings adjusted.
24	13:50	35	25.62	138	9.38	241827.6	6075867.2	32.5			35.1	10.9	
25	14:00	35	26.53	138	8.94	241207.7	6074165.2	33.9			32.3	10.9	14:00-14:08 Recorder ON/OFF. Trace finally regained.
26	14:10	35	27.45	138	8.50	240593.2	6072460.2	35.0			31.7	11.1	14:15 Radio interference on trace (4 min. call).
27	14:20	35	28.34	138	8.06	239980.7	6070782.9	34.4			29.7	10.6	
28	14:23:30	35	28.65	138	7.93	239795.8	6070200.8	33.9			29.1	10.5	CC from 193 MN to 118 MN.
29	14:25:15	35	28.78	138	8.01	239923.4	6069976.2	33.3			7.5	11.7	OC 118 MN.
30	14:30	35	29.06	138	8.51	240692.4	6069471.1	31.3			6.6	11.5	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 7 continued.											
31	14:40	35 29.68	138 9.51	242248.1	6068365.5	27.8			4.7	11.4	
32	14:50	35 30.33	138 10.57	243880.1	6067221.8	16.9			2.7	12.2	
33	14:53	35 30.54	138 10.89	244377.8	6066841.2	15.5			2.1	12.5	CC to 156 MN, towards jetty.
34	14:59:30	35 31.17	138 11.26	244968.0	6065689.1	9.0			1.1	11.6	OC 156 MN, in line with Rapid Bay Jetty.
35	15:01:30	35 31.19	138 11.50	245329.5	6065659.2	7.7			0.8	11.9	CC to 270 MN.
36	15:04	35 31.10	138 11.37	245133.2	6065823.3	8.9			1.1	10.4	OC 270 MN; poor record.
37	15:10	NA	NA	NA	NA	13.4			NA	10.7	Lost GPS positioning for day. Offshore of black cliffs.
38	15:20	NA	NA	NA	NA	19.1				10.7	
39	15:30	NA	NA	NA	NA	29.0			NA	10.7	
40	15:40	NA	NA	NA	NA	31.4			NA		EOL 7. EOD: pulled in & secured gear. Head for American River, Kangaroo Island.

TRANSECT NO.: 08

DATE: 27 FEB 1989

7 Lines: W-E Eastern Cove (4.5 km), NE towards Kangaroo Head (4.5 km), W-NW towards Bear Pt, Kingscote (19.2 km), NE (offshore; 3.8 km), NW to due E of Marsden Pt (~18.4 km), & E along 35 30' S (9.5 km).

6 Lines: Eastern Cove to Nepean Bay to NE of Marsden Pt.

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 280 & 175 Joules (105 Joule Capacitor blown), 2pps, Boomer, Rental EPC 1600 Recorder, 43dB Filter

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~15m behind.

Gridline spacing: 11.6m/gridline; Display in Sec = 0.15

WEATHER: Sunny, calm to mild sea breeze, flat seas

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
41	8:42:45	35 46.70	137 48.09	753230.4	6037005.3	7.8	NA		4.5	11.1	SOL 8: W to E from American River 4 sec Flashing Light on 079 MN.
42	8:46	35 46.65	137 48.49	753830.6	6037071.4	9.1			3.9	11.1	
43	8:50	35 46.63	137 48.98	754580.3	6037096.1	10.0			3.2	11.1	Water column trace noisy, adjusted hydrophone length. Gain = 6.70.
44	8:56	35 46.58	137 49.72	755695.4	6037150.4	10.4			2.1	11.1	
45	9:00	35 46.55	137 50.21	756438.0	6037184.4	10.0			1.3	11.1	
46	9:05	35 46.52	137 50.81	757341.6	6037226.0	7.3			0.4	10.8	
47	9:07:21	35 46.50	137 51.08	757752.0	6037248.0	6.6			0.0	10.7	CC towards Kangaroo Head.
48	9:09	35 46.38	137 51.21	757946.9	6037467.5	6.7			4.5	10.7	OC 029 MN. Adjusted hydrophone length.
49	9:15	35 45.91	137 51.63	758612.8	6038318.0	6.6			3.5	10.7	9:17 slowed down to 5 kts; trace improved.
50	9:20	35 45.54	137 51.98	759150.3	6038987.1	6.8			2.6	10.1	
51	9:25	35 45.17	137 52.31	759665.2	6039656.8	7.4			1.8	10.3	Power OFF, slowed down & retrieved Boomer, tied tow ropes & cable together to decrease cable strain. Redeployed; Power ON at 9:30.
52	9:30:30	35 45.01	137 52.43	759864.6	6039937.8	8.0			1.4	9.5	OC, slowly increased boat speed.
53	9:35	35 44.67	137 52.76	760383.1	6040555.0	8.8			0.6	10.7	Slight increase in NE breeze

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 8 continued.											
54	9:38:28	35 44.40	137 52.99	760734.3	6041038.2	9.7			0.0	9.2	CC to Kingscote.
55	9:40	35 44.34	137 52.83	760496.7	6041168.6	10.6			19.2	10.4	On Course, Heading 283 MN.
56	9:45	35 44.18	137 52.32	759741.3	6041480.7	11.1			18.3	9.8	
57	9:50	35 44.02	137 51.82	758988.5	6041798.9	11.9			17.5	10.1	
58	9:55	35 43.86	137 51.30	758225.6	6042114.2	14.2			16.7	10.4	
59	10:00	35 43.70	137 50.80	757470.3	6042435.4	14.3			15.9	9.7	
60	10:05	35 43.55	137 50.29	756714.5	6042741.1	14.2			15.0	9.6	Swells noted.
61	10:10	35 43.39	137 49.79	755974.0	6043052.4	13.8			14.2	9.6	
62	10:15	35 43.23	137 49.30	755231.0	6043370.0	13.3			13.4	9.6	Adjusted Threshold/Gain; side rolls of Boomer apparent on trace. Winds & seas from behind vessel.
63	10:20	35 43.07	137 48.80	754490.5	6043684.3	13.1			12.6	9.5	
64	10:25	35 42.92	137 48.31	753757.1	6043989.1	12.7			11.8	9.3	
65	10:30	35 42.76	137 47.84	753054.1	6044302.2	11.1			11.0	9.3	Adjusted hydrophone length.
66	10:35	35 42.62	137 47.36	752342.6	6044581.5	11.2			10.3	9.1	Recorder misfiring.
67	10:40	35 42.46	137 46.88	751626.9	6044891.8	10.9			9.5	9.4	
68	10:45	35 42.31	137 46.40	750908.6	6045199.0	10.3			8.7	9.4	
69	10:50	35 42.15	137 45.90	750162.4	6045503.8	9.5			7.9	9.5	
70	10:55:15	35 41.99	137 45.38	749394.3	6045833.9	9.4			7.1	9.5	
71	11:00	35 41.84	137 44.92	748697.9	6046121.8	9.2			6.3	9.7	
72	11:05	35 41.68	137 44.41	747944.3	6046435.8	9.1			5.5	9.7	
73	11:10	35 41.52	137 43.90	747185.9	6046756.2	9.2			4.7	9.7	Weeds on Boomer & float collars.
74	11:15	35 41.36	137 43.39	746415.0	6047086.0	10.0			3.9	10.0	
75	11:20	35 41.20	137 42.87	745646.3	6047403.4	9.1			3.0	9.9	Poor trace due to weeds.
76	11:22:30	35 41.12	137 42.62	745270.6	6047558.8	8.7			2.6	9.8	Boat stopped. Power OFF. Boomer retrieved & cleaned of weeds.
77	11:28:15	35 41.05	137 42.41	744964.7	6047687.5	8.5			2.3	9.7	Boomer deployed. Power ON. OC 283 MN.
78	11:30	35 41.00	137 42.24	744708.6	6047799.4	8.3			2.0	9.7	
79	11:35										No fix.
80	11:35:30	35 40.81	137 41.69	743880.8	6048167.6	7.8			1.1	9.9	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E) (N)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 8 continued.											
81	11:40	35 40.67	137 41.22	743181.1	6048439.7	7.6			0.3	10.1	
82	11:42:40	35 40.56	137 40.96	742799.6	6048659.9	7.2			0.0	9.7	CC to Heading 067 MN. Partly cloudy, mild breeze & seas.
83	11:45:45	35 40.62	137 40.94	742761.5	6048556.0	7.1			3.8	9.7	OC 067 MN (SW to NE).
84	11:50	35 40.52	137 41.40	743455.4	6048715.9	6.9			3.1	10.2	
85	11:55	35 40.40	137 41.94	744281.4	6048918.4	5.5			2.2	10.1	
86	12:00	35 40.28	137 42.47	745084.3	6049106.0	4.5			1.4	10.0	
87	12:05	35 40.17	137 42.99	745874.8	6049297.0	6.8			0.6	10.0	
88	12:08:44	35 40.08	137 43.38	746475.3	6049440.8	7.6			0.0	8.3	CC to 335 MN.
89	12:10	35 39.99	137 43.34	746414.8	6049618.2	7.4			8.7	9.8	OC 335 MN.
90	12:15	35 39.57	137 43.19	746214.7	6050391.8	7.7			7.9	9.3	Calmer seas (less chop).
91	12:20	35 39.16	137 43.03	745997.0	6051165.8	7.3			7.1	9.7	
92	12:25	35 38.75	137 42.87	745776.6	6051933.7	7.7			6.3	9.4	
93	12:30	35 38.33	137 42.72	745571.3	6052704.3	7.9			5.5	9.2	
94	12:35	35 37.92	137 42.57	745366.0	6053477.9	6.9			4.7	9.4	
95	12:40	35 37.50	137 42.42	745150.5	6054248.7	7.6			3.9	9.7	
96	12:45	35 37.08	137 42.26	744932.9	6055031.9	7.8			3.0	9.8	
97	12:50	35 36.66	137 42.10	744715.5	6055827.5	8.7			2.2	9.7	
98	12:55	35 36.23	137 41.94	744490.3	6056617.0	8.8			1.4	9.9	
99	13:00	35 35.80	137 41.78	744278.1	6057421.7	9.3			0.6	9.9	Continue on 335 MN past set EOL.
100	13:05	35 35.38	137 41.61	744032.8	6058214.9	10.7			0.3	10.0	Transect extended to 35 30'S, 137 39.3'E.
101	13:10	35 34.96	137 41.42	743774.7	6059002.2	11.6			9.7	10.1	
102	13:15	35 34.53	137 41.25	743534.4	6059795.2	14.8			8.9	9.9	
103	13:20	35 34.11	137 41.06	743271.3	6060588.9	17.8			8.1	10.0	
104	13:25	35 33.68	137 40.88	743020.7	6061379.1	20.3			7.2	10.0	
105	13:30	35 33.26	137 40.70	742770.1	6062172.4	21.5			6.4	10.0	Fuzzy trace; voltage stopped.

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 8 continued.											
106	13:32	35 33.09	137 40.62	742665.4	6062492.9	22.4			6.0	9.8	Boat stopped. Power OFF. Boomer retrieved & cleaned of weeds. Boomer deployed. Troubleshooting Power Supply: switched capacitor banks due to blown 105 Joule capacitor; only middle 175 Joule capacitor bank used. 13:51 Power ON, start at fix #105.
107	14:03:40	35 33.22	137 40.68	742749.1	6062234.6	22.0			6.3	9.7	OC 335 near #105.
108	14:05:06	35 33.12	137 40.66	742721.8	6062435.8	22.3			6.1	9.8	
109	14:10	35 32.70	137 40.47	742450.6	6063214.2	24.6			5.3	9.8	
110	14:15	35 32.29	137 40.29	742194.1	6063983.0	26.1			4.9	9.8	
111	14:20	35 31.87	137 40.10	741938.1	6064767.1	27.9			3.7	9.9	
112	14:25	35 31.44	137 39.92	741679.8	6065563.6	29.3			2.9	10.1	
113	14:30	35 31.01	137 39.73	741424.2	6066366.2	30.5			2.0	10.0	
114	14:35	35 30.58	137 39.55	741163.5	6067172.0	31.0			1.1	10.1	
115	14:40	35 30.15	137 39.36	740905.0	6067968.5	31.9			0.3	10.0	
116	14:41:52	35 29.99	137 39.31	740829.8	6068263.5	32.1			0.0	9.1	CC to 082 MN along 35 30'S parallel.
117	14:43:30	35 29.98	137 39.49	741105.2	6068283.8	31.9			12.2	10.3	Still on CC.
118	14:45	35 29.99	137 39.66	741356.6	6068252.4	32.0			12.0	10.3	OC 082 MN.
119	14:50	35 30.01	137 40.23	742230.2	6068197.9	32.0			11.1	10.4	
120	14:55	35 30.01	137 40.80	743084.4	6068168.6	31.4			10.2	10.2	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 8 continued.											
121	15:00	35 30.01	137 41.37	743954.0	6068151.1	31.1			9.4	10.5	15:02 Lost GPS, switched to M & H Trisponder grid sytem.
122	15:05					31.1				10.0	
123	15:10:30					31.0				10.0	
124	15:20:10					30.5				9.8	
125	15:29	35 30.08	137 44.58	748799.4	6067894.2	31.0			4.6	6.7	Trace deteriorating.
126	15:35	35 30.01	137 45.25	749810.0	6067989.4	31.4			3.6	5.4	
127	15:40	35 30.00	137 45.80	750648.1	6067981.4	31.2			2.7	5.2	
128	15:45	35 30.00	137 46.35	751474.9	6067964.3	31.3			1.9	-	Recorder misfiring, trace worsens.
129	15:51	35 29.99	137 48.99	755474.9	6067863.3	31.2			0.9		EOL 8. Lost signal; Power OFF. EOD. Pulled in & secured gear. 18:00 Docked at American River. Trisponder information: "X" had 25000 added to fix "Y" had 50000 added to fix.

TRANSECT NO.: 09

DATE: 1 MARCH 1989

2 Lines: Cape Coutts SE to Cape St Albans (~6 km), NE across Backstairs Passage via Yatala Shoals to offshore of Porpoise Pt (~18 km). [~13 nm (~24 km)].

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 350 Joules, 1 & 2pps, Sparker, Rental EPC 1600 Recorder, 43dB Filter.

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~15m behind.

Gridline spacing: 15.4m/gridline; Display in Sec = 0.20

WEATHER: Partly cloudy, N-NE winds 15-20kts, 1m seas (chop)

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
130	8:39:39	35 45.17	138 4.03	234812.7	6039490.2	55.0	NA		NA	7.5	SOL 9 at Antechamber Bay, OC 134 MN. 1 pps. Sparker used (350 Joules).
131	8:42:15	35 45.47	138 4.26	235168.4	6038945.5	55.9			NA	11.8	
132	8:45	35 45.59	138 4.41	235411.6	6038718.3	59.7			4.9	11.1	Adjusted settings, changed to 2 pps.
133	8:50	35 46.00	138 4.79	235999.4	6037977.0	46.9			4.0	11.2	
134	8:55	35 46.42	138 5.17	236590.2	6037217.2	36.0			NA	11.6	GPS temporarily lost, CC back to previous fix (#133).
135	9:09:30	35 46.49	138 5.24	236704.2	6037103.4	35.1			2.9	8.1	OC 134 MN. Seas behind vessel.
136	9:15	35 46.92	138 5.68	237396.0	6036325.0	24.4			1.8	11.7	
137	9:21	35 47.43	138 6.14	238112.4	6035393.0	29.0			0.6	11.9	
138	9:24:25	35 47.69	138 6.43	238568.4	6034928.3	25.0			0.1	8.6	CC to 035 MN, NE across Backstairs Passage via Yatala Shoal.
139	9:27	35 47.56	138 6.65	238892.8	6035178.5	28.6			17.9	9.1	OC 035 MN, heading directly into waves.
140	9:33:30	35 47.12	138 7.14	239599.7	6036010.6	48.2			16.8	9.4	Noisy record.
141	9:40	35 46.68	138 7.63	240313.9	6036855.3	51.6			15.7	9.8	
142	9:46	35 46.30	138 8.08	240978.9	6037581.1	38.3			14.7	9.9	
143	9:52	35 45.92	138 8.53	241639.1	6038300.7	53.8			13.8	10.2	
144	9:58	35 45.53	138 8.99	242311.5	6039039.0	39.6			12.8	9.6	
145	10:04	35 45.14	138 9.46	242998.9	6039783.9	33.1			11.7	10.8	
146	10:10	35 44.72	138 9.97	243735.4	6040576.3	37.4			10.7	10.6	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 9 continued.											
147	10:16	35 44.27	138 10.50	244515.3	6041434.8	13.8			9.5	12.4	Passed over Yatala Shoals. 10:17 Small generator stopped due to sea spray. Power OFF.
148	10:22	35 43.82	138 11.05	245315.7	6042287.6	25.1			8.3	11.6	Echo Sounder fix only.
149	10:28	35 43.68	138 11.59	246129.9	6042576.2	25.3			7.2	12.1	As above.
150	10:34	35 42.96	138 12.10	246856.1	6043920.2	26.5			6.1	12.9	As above.
151	10:37	35 42.77	138 12.34	247202.7	6044294.1	26.3			5.6	10.4	Generator ON (protected from spray). Sunny, 1-1.5m seas/swells (rough). Poor trace due to combination of rough seas & shallow water.
152	10:43	35 42.32	138 12.82	247910.4	6045150.1	25.9			4.5	10.7	
153	10:48:10	35 41.95	138 13.29	248602.6	6045848.3	27.0			3.5	11.2	
154	10:54	35 41.50	138 13.83	249383.8	6046693.9	25.9			2.3	11.7	
155	11:00	35 41.02	138 14.37	250176.0	6047604.6	24.2			1.1	12.7	
156	11:05:35	35 40.60	138 14.93	251009.0	6048408.3	23.3			0.0	12.9	EOL 9 due to high winds, rough seas & poor, noisy trace. Equipment pulled in & secured; sparker removed.

TRANSECT NO.: 10

DATE: 1 MARCH 1989

3 Lines: Blowhole Pt SW to Cape Coutts (12.6 km), NW to E of Penneshaw (6.5 km), then NE to just SW of Rapid Bay (near EOL 7; 20.2 km).
[~14.6 nm (~27.1 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 175 Joules, 2pps, Boomer, Rental & Old EPC 1600 Recorders , 43dB Filter.

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~30m behind.

Gridline spacing: 15.4m/gridline; Display in Sec = 0.20 for fixes 157-158.

11.6m/gridline; Display in Sec = 0.15 for fixes 159-203.

WEATHER: Sunny, W-NW winds at 7-12 kts, <.5m seas (calmed down considerably over the last hour).

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
157	12:38:30	35 39.58	138 9.11	242170.6	6050040.9	18.6	NA		11.6	9.9	SOL 10, Heading 209 MN.
158	12:45	35 40.07	138 8.66	241507.5	6049124.0	27.8			10.5	10.5	Adjusted Recorder settings.
159	12:50	35 40.45	138 8.32	241017.6	6048400.3	26.0			9.6	10.4	
160	12:55	35 40.84	138 7.96	240505.1	6047675.9	25.0			8.7	10.6	
161	13:00	35 41.22	138 7.61	239990.5	6046945.2	30.6			7.8	10.6	
162	13:05	35 41.63	138 7.23	239441.9	6046170.2	37.0			6.9	11.6	
163	13:10	35 42.05	138 6.85	238886.6	6045373.5	39.8			5.9	11.6	
164	13:15	35 42.46	138 6.46	238322.8	6044610.4	40.4			5.0	11.4	
165	13:20	35 42.87	138 6.08	237767.4	6043822.8	37.5			4.0	12.0	
166	13:25	35 43.30	138 5.68	237200.2	6043013.2	39.0			3.0	11.9	
167	13:30	35 43.73	138 5.30	236638.3	6042197.6	39.4			2.0	11.9	
168	13:35	35 44.17	138 4.90	236069.2	6041375.5	40.8			1.0	11.7	
169	13:40:17	35 44.61	138 4.47	235445.0	6040545.6	51.5			0.0	11.6	
170	13:45	35 45.01	138 4.13	234944.8	6039781.0	59.4			+1.0	11.2	
171	13:46	35 45.09	138 4.04	234823.6	6039629.3	56.7			+1.1	11.4	CC to 300 MN. OC.
172	13:50	35 44.89	138 3.64	234209.3	6039987.3	51.9			6.5	11.1	OC 294 MN.
173	13:55	35 44.62	138 3.13	233417.8	6040466.3	46.2			5.6	11.0	Recorder misfiring; ventilated.
174	14:00	35 44.33	138 2.56	232542.6	6040967.5	41.0			4.6	12.0	

FIX NO.	TIME (CSumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 10 continued.											
175	14:04	35 44.10	138 2.11	231848.8	6041369.2	41.2			3.8	12.1	CC to 280 MN, followed by slight CC to 294 MN at 14:07.
176	14:10	35 43.88	138 1.33	230665.0	6041752.8	29.2			2.6	12.6	
177	14:13:40	35 43.71	138 0.89	229989.5	6042046.9	26.3			1.9	8.4	Recorder overheating & misfiring; troubleshooting system. Slowed down.
178	14:17	35 43.60	138 0.62	229586.5	6042229.0	24.2			1.5	7.8	Sunny, mild breeze, calm seas.
179	14:20	35 43.51	138 0.39	229229.4	6042390.9	22.8			1.1	8.1	14:21 increased boat speed to 10km/hr; unlabeled mark line. 14:23 decreased speed slightly.
180	14:25	35 43.32	137 59.90	771213.6	6042726.0	22.2			0.6	7.1	Changed to Old Recorder after fix; Rental Recorder overheating & misfiring.
181	14:36:15	35 43.16	137 59.89	771210.1	6043022.2	23.2			24.9	10.2	CC to 020 MN. OC
182	14:40	35 42.84	138 0.11	228771.6	6043623.3	27.4			24.3	11.1	Old Recorder overheating.
183	14:45	35 42.49	138 0.32	229068.9	6044267.9	29.5			23.6	11.1	
184	14:50	35 42.04	138 0.61	229473.4	6045113.2	29.5			22.6	10.9	Poor trace after #183; changed to Rental Recorder. Lost GPS for day, changed to M & H Trisponders.
185	14:54:30	35 41.63	138 0.88	229859.8	6045893.1	32.9			21.7	11.2	Still no trace; troubleshooting.
186	15:00	35 41.13	138 1.19	230306.9	6046835.3	32.9			20.7	11.5	Regained trace; increased ventilation around recorder.
187	15:05	35 40.67	138 1.56	230831.8	6047702.7	33.0			19.7	11.5	Lost trace before fix; cooled recorder; troubleshooting. 15:08 Recorder OFF/ON temporarily.
188	15:10	35 40.21	138 1.78	231133.0	6048563.2	34.0			18.8	11.2	Poor trace; Echo Sounder fix only. 15:14 Recorder OFF, checking left panel for problems.
189	15:15	35 39.74	138 2.08	231562.2	6049436.9	34.5			17.8	12.2	Echo Sounder fix only.
190	15:18:40	35 39.39	138 2.29	231864.8	6050087.7	36.0			17.0	11.9	Recorder ON, fan set up nearby.

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 10 continued.											
191	15:25	35 38.80	138 2.67	232407.6	6051208.5	40.2			15.8	12.2	15:27 Lost trace. 15:28 Recorder OFF.
192	15:30	35 38.31	138 2.98	232846.1	6052119.4	46.3			14.8	12.6	Stylus replaced.
193	15:35	35 37.80	138 3.31	233315.7	6053089.7	59.8			13.7	12.6	Recorder ON; good trace.
194	15:40	35 37.29	138 3.64	233785.8	6054044.7	65.5			12.7	12.2	
195	15:45	35 36.78	138 3.96	234240.8	6055002.3	43.0			11.6	12.6	Minor CC to avoid crab boat.
196	15:50	35 36.26	138 4.29	234713.0	6055978.8	39.7			10.5	13.0	
197	15:55:20	35 35.68	138 4.67	235250.1	6057065.2	34.7			9.3	12.6	
198	16:00	35 35.15	138 5.00	235721.9	6058063.3	28.8			8.2	13.3	
199	16:05	35 34.60	138 5.35	236212.9	6059095.8	27.1			7.1	14.0	
200	16:10	35 34.06	138 5.69	236702.2	6060106.6	26.7			6.0	13.7	Echo Sounder fix only.
202	16:15:34	35 33.45	138 6.07	237238.2	6061248.3	28.3			4.7	14.8	Poor M & H Trisponder reception.
203	16:23:30					29.2			NA	NA	23250 from Snapper Pt Station; final Heading 020 MN. EOL 10. EOD: pulled in & secured gear. Sunny, calm seas & no wind.

TRANSECT NO.: 11 DATE: 2 MARCH 1989
 3 Lines: Ballast Head NW to Morrison Pt (6.0 km), N for 16.5 km, then NW for 21.0 km.
 [~23.5 nm (43.5 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 175 Joules, 2pps, Boomer, Rental EPC 1600 Recorder, 43dB Filter

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),
 Hydrophone on Starboard Side (~3m off side), Both ~30m behind.

Gridline Spacing: 11.6m/gridline; Display in Sec = 0.15

WEATHER: Sunny, SE mild wind (7-12 kts), 0.25-0.50m seas; winds & seas increased at end of day.

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
204	8:35:30	35 45.25	137 48.57	754030.4	6039656.7	12.2	NA		5.9	11.0	SOL 11, Heading 322 MN. Adjusted Recorder settings.
205	8:40	35 44.87	137 48.29	753633.5	6040371.3	12.1			5.1	11.0	
206	8:45	35 44.44	137 47.99	753196.9	6041195.1	12.1			4.1	10.9	
207	8:50	35 44.02	137 47.68	752759.1	6041981.8	10.9			3.2	11.0	
208	8:55	35 43.60	137 47.38	752329.0	6042774.4	11.7			2.3	10.8	
209	9:00	35 43.18	137 47.08	751896.0	6043557.8	11.2			1.4	10.7	
210	9:05	35 42.77	137 46.79	751475.3	6044334.7	14.6			0.6	10.4	
211	9:08:25	35 42.49	137 46.59	751193.3	6044860.9	10.8			0.0	10.4	CC to 358 MN.
212	9:10	35 42.33	137 46.60	751211.4	6045144.2	11.1			16.5	10.4	OC 358 MN.
213	9:15	35 41.87	137 46.69	751369.0	6046000.3	10.1			15.6	10.4	
214	9:20	35 41.40	137 46.75	751484.0	6046863.7	10.2			14.7	10.4	
215	9:25	35 40.93	137 46.81	751601.9	6047736.4	8.6			13.8	10.5	
216	9:30	35 40.46	137 46.87	751717.0	6048602.9	9.5			13.0	10.6	
217	9:35	35 39.99	137 46.94	751844.6	6049463.0	10.0			12.1	10.5	
218	9:40:10	35 39.50	137 47.00	751963.0	6050357.2	10.1			11.2	10.5	
219	9:45	35 39.06	137 47.06	752074.5	6051180.6	10.7			10.3	10.0	
220	9:50	35 38.60	137 47.12	752186.6	6052028.8	11.2			9.5	10.3	
221	9:55	35 38.13	137 47.18	752314.5	6052898.0	12.9			8.6	10.4	
222	10:00	35 37.66	137 47.24	752421.9	6053752.5	12.1			7.8	10.1	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 11 continued.											
223	10:05	35 37.20	137 47.30	752544.5	6054612.6	15.2			6.9	10.4	
224	10:10:10	35 36.71	137 47.37	752668.3	6055516.0	17.0			NA	10.3	
225	10:15	35 36.26	137 47.43	752787.1	6056330.0	17.7			5.1	10.4	
226	10:20	35 35.79	137 47.49	752894.9	6057196.7	19.2			4.3	10.4	Power Supply rotated perpendicular to length of boat; trace improved.
227	10:25	35 35.33	137 47.55	753019.9	6058050.6	19.9			3.4	10.4	
228	10:30	35 34.87	137 47.61	753134.7	6058901.8	20.9			2.5	10.2	
229	10:35	35 34.40	137 47.68	753254.8	6059758.9	21.6			1.7	10.4	10:37 Signal lost. Recorder OFF.
230	10:40	35 33.94	137 47.74	753377.2	6060606.7	23.1			0.8	12.7	Stylus belt replaced. Recorder ON. 10:41:30 Signal regained.
231	10:44:50	35 33.50	137 47.79	753478.6	6061427.4	23.9			0.0	9.5	CC to 314 MN. Power OFF; retrieved Boomer; cleaned off weeds; deployed. 10:49:15 Power ON.
232	10:50	35 33.35	137 47.62	753227.0	6061709.1	23.7			31.2	10.5	OC 314 MN. Adjusted threshold/gain settings.
233	10:55:10	35 32.91	137 47.24	752668.3	6062539.2	24.0			30.3	11.5	
234	11:00	35 32.53	137 46.85	752101.2	6063255.4	24.3			29.3	11.6	
235	11:05	35 32.13	137 46.48	751570.7	6064022.9	24.5			28.4	10.0	11:05-11:07:30 Recorder OFF, stylus belt replaced.
236	11:10	35 31.74	137 46.12	751046.8	6064756.3	26.9			27.5	10.2	
237	11:15	35 31.36	137 45.76	750522.1	6065468.1	27.7			26.6	10.8	
238	11:20	35 30.97	137 45.40	749988.3	6066214.0	28.6			25.7	10.9	Adjusted 43 dB filter gain & Recorder threshold/gain settings.
239	11:25	35 30.58	137 45.02	749436.3	6066948.1	30.6			24.8	10.7	
240	11:30	35 30.18	137 44.65	748904.7	6067690.8	30.9			23.9	10.7	
241	11:35	35 29.79	137 44.28	748360.3	6068427.6	31.3			23.0	11.0	
242	11:40	35 29.40	137 43.91	747818.3	6069167.5	31.2			22.0	10.9	
243	11:45	35 29.01	137 43.55	747291.3	6069903.8	32.3			21.1	10.9	
244	11:50	35 28.63	137 43.18	746748.5	6070621.9	32.4			20.2	10.8	
245	11:55	35 28.24	137 42.81	746216.4	6071364.5	32.6			19.3	11.0	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 11 continued.											
246	12:00:10	35 27.84	137 42.42	745644.1	6072114.2	32.1			18.4	11.1	
247	12:05	35 27.45	137 42.07	745129.2	6072846.9	32.0			17.5	11.0	Radio interference on trace; Recorder OFF during transmission. Stylus belt replaced.
248	12:16:15	35 26.57	137 41.22	743897.7	6074512.0	33.2			15.4	10.7	
249	12:20	35 26.28	137 40.95	743494.7	6074726.5	33.6			14.7	11.0	
250	12:25	35 25.88	137 40.56	742936.4	6075824.2	33.8			13.8	11.1	
251	12:30	35 25.48	137 40.19	742386.3	6076576.2	33.5			12.8	11.2	
252	12:35	35 25.08	137 39.82	741843.9	6077337.1	34.2			11.9	11.1	
253	12:40	35 24.68	137 39.43	741285.9	6078086.2	33.9			11.0	11.2	
254	12:45	35 24.28	137 39.05	741331.2	6078831.3	34.2			10.0	11.3	EOL 11. EOD: pulled in & secured gear. Headed for American River; weather change coming through (increased seas & southerly winds).

TRANSECT NO.: 12

DATE: 3 MARCH 1989

2 Lines: Kangaroo Head to Cape Jervis and northward (7.7, 1.6 & 18.8 km).

[15.2 nm (28.1 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 175 Joules, 2pps, Boomer, Rental EPC 1600 Recorder, 43dB Filter

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~30m behind.

Gridline Spacing: 11.6m/gridline; Display in Sec = 0.15

WEATHER: Sunny with high clouds, NE winds @ 7 kts, <0.5m seas

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
255	8:44:15	35 44.40	137 52.99	760744.3	6041034.9	9.3	NA		7.7	9.4	SOL 12, Heading 353 MN.
256	8:50	35 43.85	137 53.03	760827.0	6042050.4	11.8			6.7	10.5	
257	8:55	35 43.38	137 53.02	760845.2	6042925.9	13.3			5.8	10.6	
258	9:00	35 42.91	137 53.03	760883.1	6043788.5	15.5			4.9	10.2	
259	9:05:15	35 42.43	137 53.05	760934.7	6044687.8	13.6			4.0	10.2	
260	9:10	35 42.00	137 53.06	760970.8	6045485.7	14.0			3.2	9.9	
261	9:15	35 41.55	137 53.08	761027.7	6046310.7	15.1			2.4	9.8	
262	9:20	35 41.11	137 53.08	761056.9	6047130.4	13.6			1.6	9.8	
263	9:25	35 40.67	137 53.09	761090.4	6047928.3	14.1			0.8	9.5	
264	9:29:54	35 40.25	137 53.09	761120.7	6048704.8	16.4			0.0	9.3	CC to 063 MN. OC.
265	9:35	35 40.11	137 53.62	761920.9	6048949.6	17.1			18.8	10.4	
266	9:40	35 39.94	137 54.13	762704.6	6049235.0	17.6			17.9	9.9	
267	9:45	35 39.80	137 54.65	763497.4	6049482.9	16.9			17.1	9.5	
268	9:50	35 39.65	137 55.16	764277.6	6049731.2	17.9			16.3	9.7	
269	9:55	35 39.50	137 55.67	765048.0	6049985.9	19.4			15.4	9.2	
270	10:00	35 39.36	137 56.17	765807.9	6050225.5	21.1			14.6	9.4	Seas choppiier than at start.
271	10:05	35 39.22	137 56.65	766550.2	6050462.4	21.8			13.9	9.6	
272	10:10	35 39.08	137 57.14	767287.4	6050696.3	22.5			13.1	9.4	
273	10:15	35 38.94	137 57.62	768029.9	6050939.2	22.8			12.3	9.5	
274	10:20	35 38.79	137 58.11	768777.8	6051101.2	23.0			11.5	9.3	
275	10:25	35 38.66	137 58.60	769517.2	6051409.5	26.3			10.7	9.4	

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
Transect 12 continued.											
276	10:30	35 38.52	137 59.07	770234.2	6051637.6	30.8			10.0	8.9	Seas increasing; riding the trough. Haze to the S.
277	10:35	35 38.38	137 59.53	770941.9	6051884.5	31.9			9.2	9.0	
278	10:40	35 38.24	138 0.01	229349.8	6052149.4	32.2			8.5	9.2	
279	10:45:10	35 38.09	138 0.50	229095.0	6052410.0	31.8			7.7	9.2	
280	10:50	35 37.96	138 0.97	229784.3	6052684.0	33.3			6.9	9.2	
281	10:55	35 37.82	138 1.44	230499.0	6052952.5	37.2			6.2	9.0	
282	11:00	35 37.68	138 1.94	231243.2	6053246.4	36.3			5.4	9.7	
283	11:05	35 37.53	138 2.46	232015.1	6053541.2	40.1			4.6	10.0	
284	11:10:05	35 37.38	138 2.97	232784.2	6053845.0	45.1			3.7	9.7	
285	11:15	35 37.24	138 3.46	233516.2	6054129.2	60.5			2.9	9.6	
286	11:20	35 37.10	138 3.94	234231.0	6054400.4	62.8			2.2	8.9	
287	11:25	35 36.96	138 4.41	234928.0	6054680.3	46.4			1.4	9.1	
288	11:30	35 36.83	138 4.87	235620.1	6054953.9	27.4			0.7	8.8	
289	11:34:52	35 36.65	138 5.33	236297.4	6055304.0	11.1			0.0	10.1	Continue past designated EOL.
290	11:35:40	35 36.61	138 5.40	236408.5	6055381.3	7.5			+0.2	8.6	EOL 12 near Cape Jervis.

TRANSECT NO.: 13

DATE: 3 MARCH 1989

4 Lines: Hog Bay, Penneshaw W-SW to Ballast Head Jetty near American River (0.5, 0.5, 1.6, & 8.9 km).

[6.2 nm (11.5 km)]

POSITIONING SYSTEM: M & H Trisponders, Unit 540, GPS Tidal Corrections not performed.

IGNITRON @ 175 Joules, 2pps, Boomer, Rental EPC 1600 Recorder, 43dB Filter

Boomer/Hydrophone Streamer Configuration: Boomer on Port Side (~2m off side),

Hydrophone on Starboard Side (~3m off side), Both ~30m behind.

Gridline Spacing: 11.6m/gridline; Display in Sec = 0.15

WEATHER: Overcast, mild E winds, <0.25m seas

FIX NO.	TIME (CsumT)	LATITUDE (S) (deg min.min) (GPS)	LONGITUDE (E) (deg min.min) (GPS)	AMG (E)	AMG (N)	MEASURED DEPTH (m)	BELOW LWD (m)	BELOW AHD (m)	DISTANCE FROM END OF LINE (km)	SHIP SPEED (km/hr)	COMMENTS
291	13:02:10	35 43.20	137 56.74	766464.8	6043088.9	5.5	NA		NA	10.4	SOL 13; Heading 285 MN.
292	13:03:32	35 43.17	137 56.61	766265.8	6043162.8	5.1			NA	10.4	
293	13:04:00	35 43.12	137 56.56	766198.1	6043254.3	6.0			NA	9.9	CC passed Jetty; OC.
294	13:05:02	35 43.03	137 56.59	766235.7	6043419.7	11.9			NA	9.0	CC to 277 MN; OC.
295	13:10	35 42.94	137 56.01	765368.2	6043600.0	12.7			NA	10.9	
296	13:15	35 42.84	137 55.45	764536.9	6043819.2	11.1			NA	10.5	
297	13:18:43	35 42.77	137 55.01	763877.1	6043965.3	16.5			NA	10.5	CC to 240 MN; OC.
298	13:25	35 43.00	137 54.34	762856.7	6043576.0	15.7			NA	10.4	
299	13:30	35 43.21	137 53.82	762050.7	6043202.0	14.5			NA	10.4	Prepare to change paper.
300	13:35	35 43.42	137 53.29	761247.8	6042846.2	13.5			NA	10.4	Changed roll of paper.
301	13:40	35 43.63	137 52.77	760452.2	6042477.9	12.7			NA	10.5	
302	13:45	35 43.83	137 52.25	759659.5	6042121.7	12.7			NA	10.4	
303	13:50	35 44.04	137 51.74	758879.2	6041758.9	12.1			NA	10.3	
304	13:55	35 44.25	137 51.23	758099.2	6041402.2	13.7			NA	10.3	
305	14:00	35 44.45	137 50.72	757319.3	6041045.5	13.3			NA	10.2	
306	14:05	35 44.65	137 50.22	756542.5	6040707.1	13.7			NA	10.1	
307	14:10	35 44.86	137 49.72	755780.0	6040340.5	13.9			NA	10.1	Southerly wind, heading into choppier seas.
308	14:15	35 45.05	137 49.21	755008.4	6040001.8	14.4			NA	10.1	
309	14:20	35 45.26	137 48.71	754241.1	6039638.3	12.9			NA	10.1	

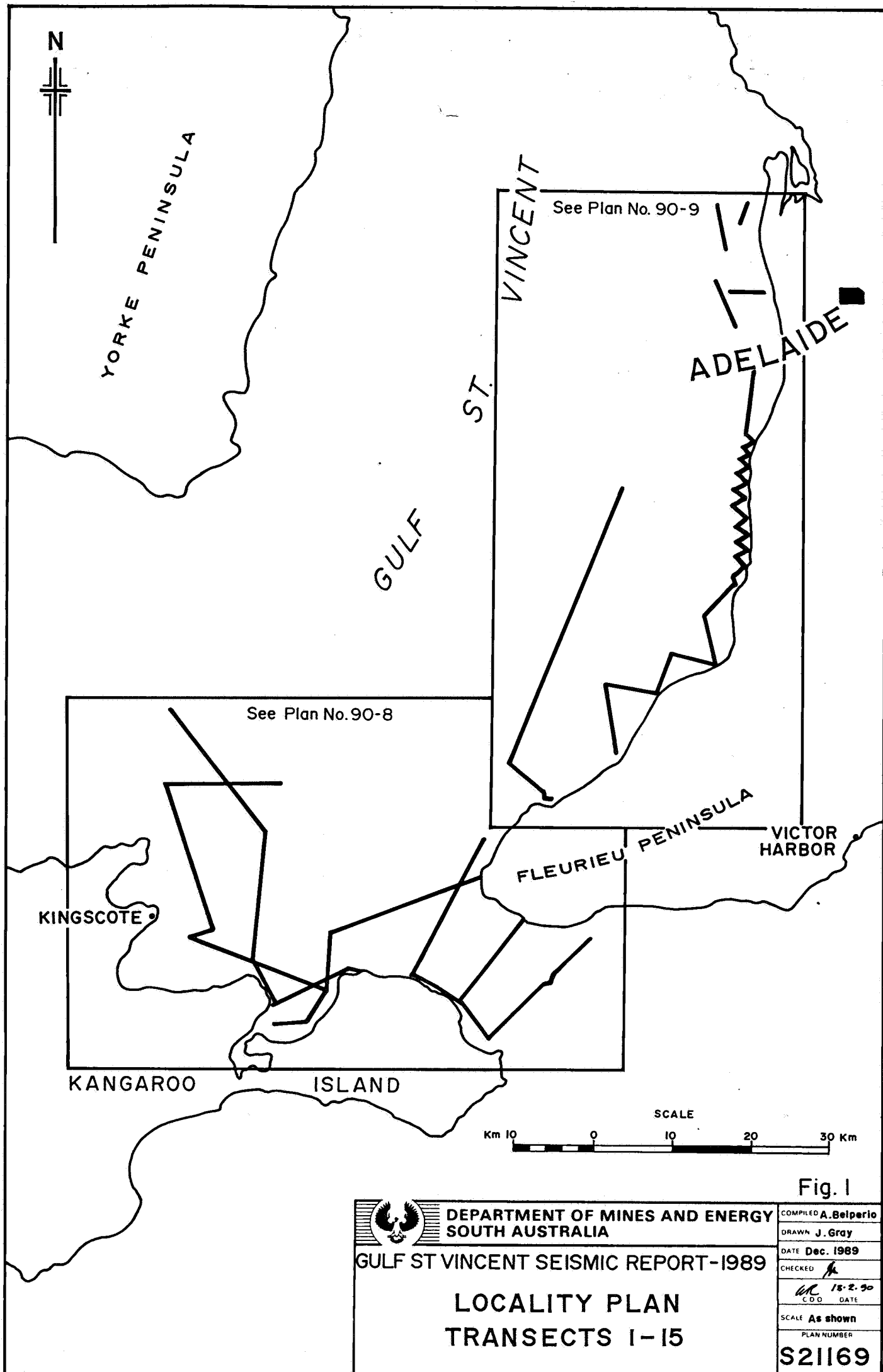


Fig. 1



DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

GULF ST VINCENT SEISMIC REPORT-1989

LOCALITY PLAN
TRANSECTS 1-15

COMPILED A. Belperio

DRAWN J. Gray

DATE Dec. 1989

CHECKED *h*

MR 18.2.90
C.O.D. DATE

SCALE As shown

PLAN NUMBER

S21169

GULF ST VINCENT SEISMIC REPORT-1989 BOOMER SYSTEM CONFIGURATION



DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

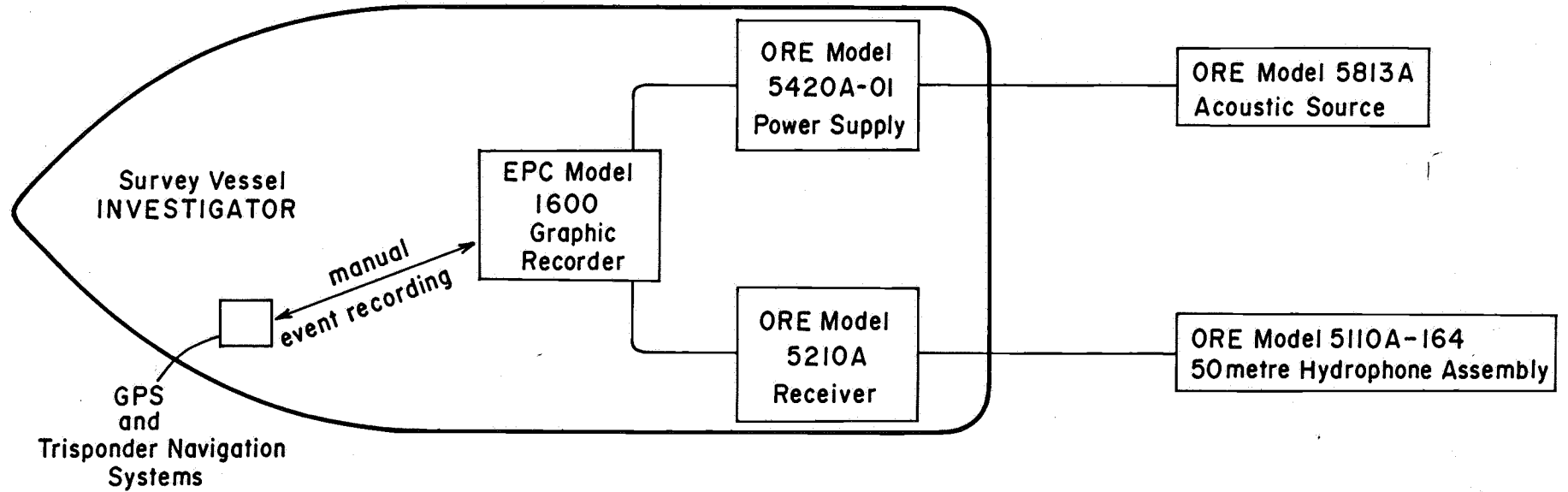
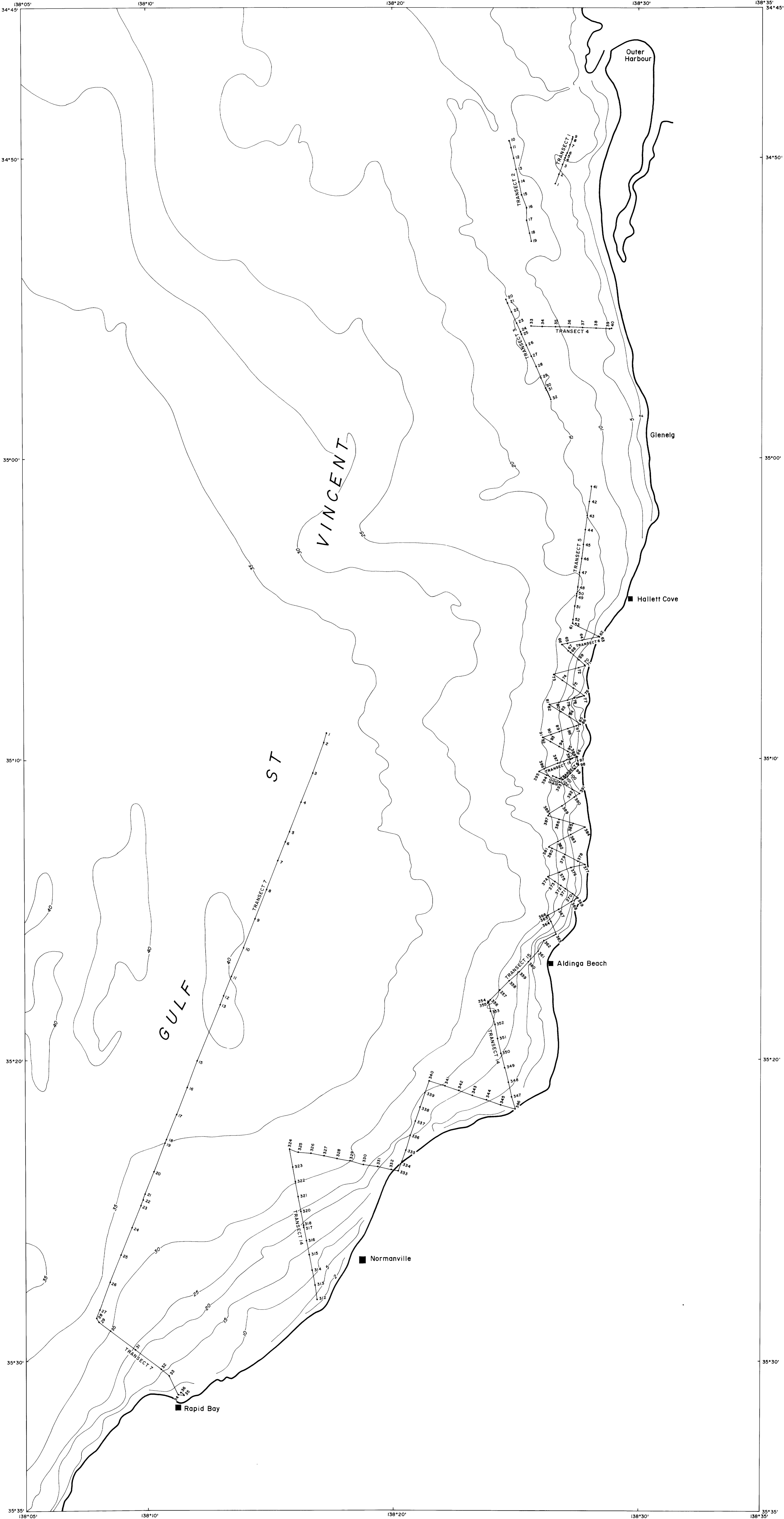


Fig. 4

COMPILED A. Belperio	SCALE C.D.O.	DATE 13. 2. 90
DRAWN J. Gray	PLAN NUMBER S21170	
DATE Dec. 1989		
CHECKED X		

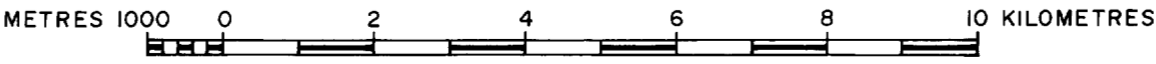


LEGEND

- 220 Seismic point and value
- 35 Bathymetric contour (metres)

For location of transects see Fig. 1 (S21169)

SCALE



DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

GULF ST VINCENT SEISMIC REPORT-1989

BATHYMETRY AND TRANSECTS
GULF ST VINCENT

Fig. 3

COMPILED	A. Belperio
DRAWN	J. Gray
DATE	Jan. 1990
CHECKED	X
C.D.O.	13. 2. 90
DATE	
SCALE	1:100 000
PLAN NUMBER	90-9

FIX NO.

61

62

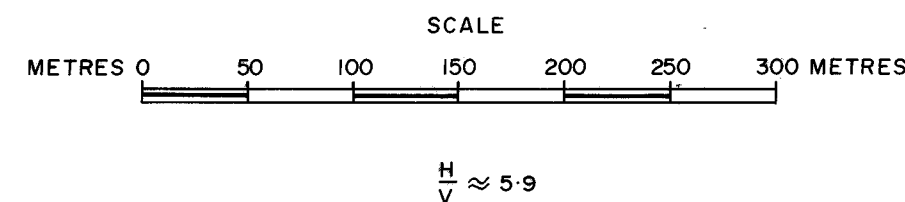
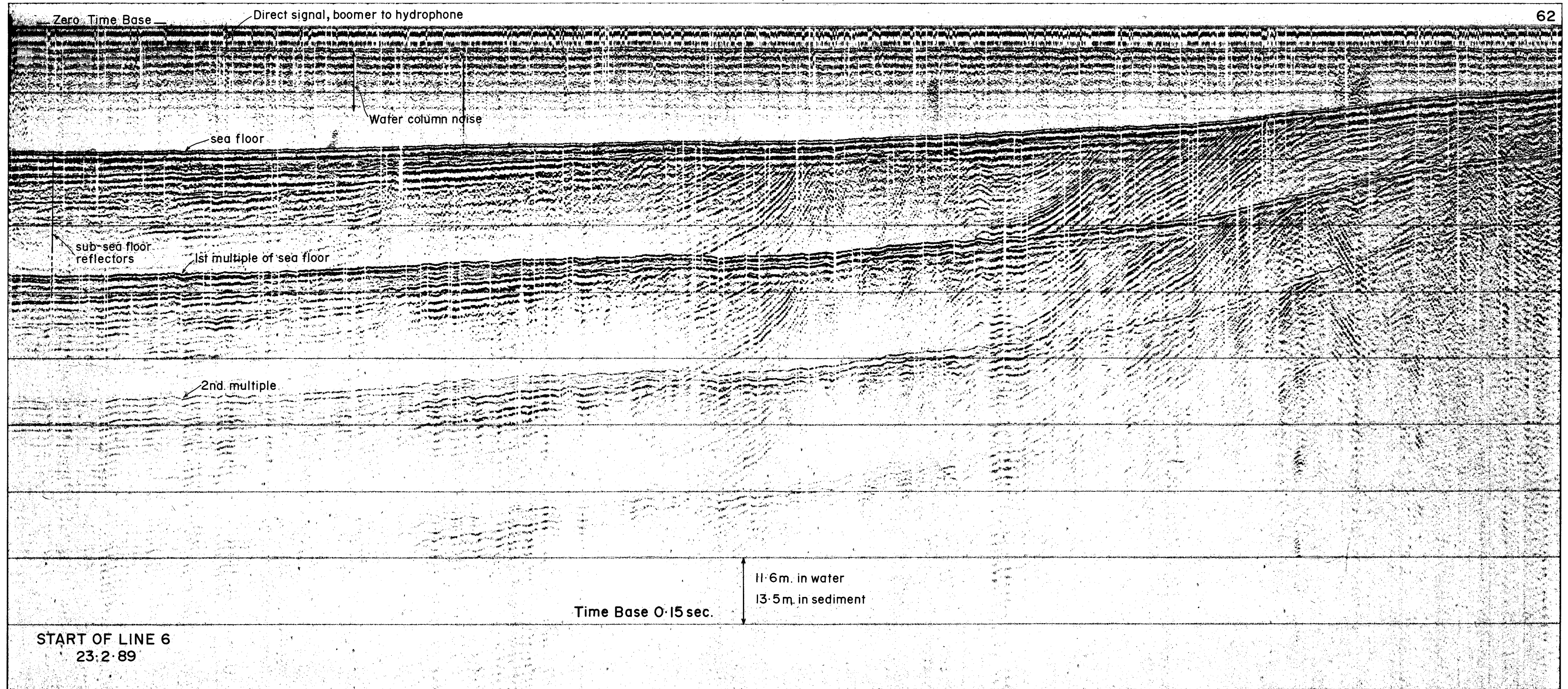


Fig. 5

<p>DEPARTMENT OF MINES AND ENERGY SOUTH AUSTRALIA</p> <p>GULF ST VINCENT SEISMIC REPORT - 1989</p> <p>EXAMPLE OF SEISMIC RECORD PART OF TRANSECT 6</p>	COMPILED A. Belperio	13.2.90 C.D.O. DATE
	DRAWN J. Gray	SCALE As shown
	DATE Jan. 1990	PLAN NUMBER 90 - 10
	CHECKED <i>[Signature]</i>	

**N.B. Transect Plans 90-15 to 90-25
are currently missing.**