

FIELD SUPERVISION REPORT FOR

541001

TPR  
OR-444

# GLOBEX FAR EAST

PROJECT

## 1996 BASS BASIN 2D MARINE SEISMIC SURVEY

EXPLORATION PERMIT AREA T27/P  
IN THE BASS BASIN

START DATE 23 FEBUARY 1996  
END DATE 13 MARCH 1996

CONTRACTOR  
THE COMMONWEALTH OF AUSTRALIA  
(AUSTRALIAN GEOLOGICAL SURVEY OPERATIONS)

VESSEL - RIG SEISMIC

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#### FIGURES

1. Survey Location
2. Survey Line Diagram

## 1 INTRODUCTION

### 1.1 GENERAL

The Bass Basin 2D marine seismic survey was conducted by GLOBEX FAR EAST in the offshore exploration permit area T27/P. The permit area is located between Southern Victoria and Tasmania in the Bass Basin. Survey operations began on the 24th of February 1996, when the Research Vessel RIG SEISMIC started to deploy streamer and ended on the 13th March 1996, when the survey vessel had recovered streamer and arrived in Portland. This report describes and details the conduct of the survey operations between those dates.



**Figure 1 SURVEY LOCATION**

The survey consisted of 59 pre-plotted seismic lines with a total of approximately 1012 kilometres of full fold sub surface coverage. An extension to line BB96-10 and the addition of an extra lines designated BB96-56, BB96-65, BB96-67, BB96-69 and BB96-71, run outs and early terminations resulted in a final total of 1145.475 kilometres of surface coverage equivalent to 1138.45 kilometres of full fold sub surface coverage.

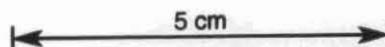
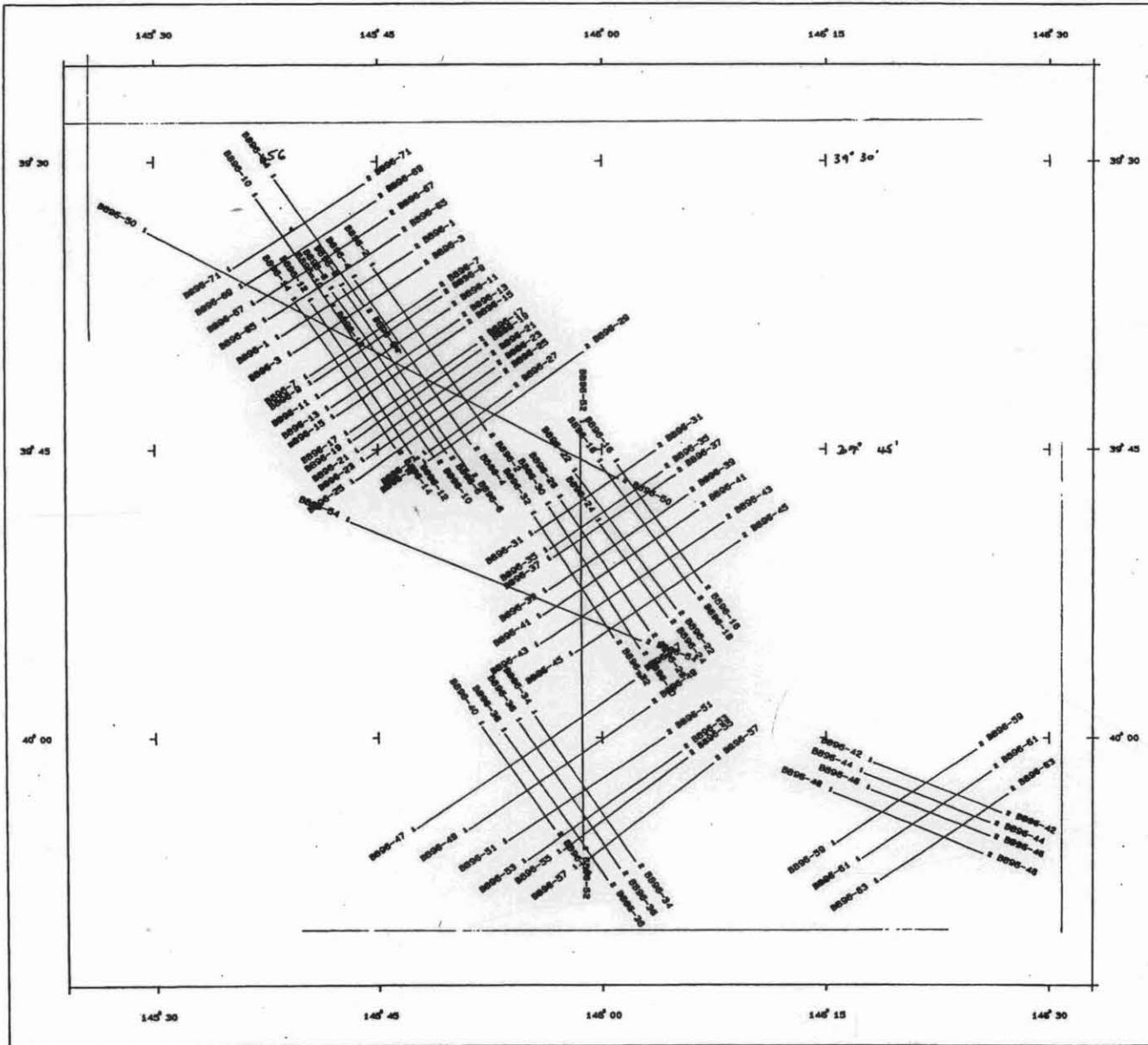


Figure 2 SURVEY LINE DIAGRAM

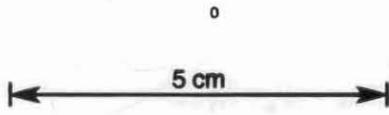
AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION  
EDITION OF 2-MAR-96

SCALE 1:300000.



WORLD GEOCENTRIC SYSTEM 1984  
TRANSVERSE MERCATOR PROJECTION  
ZONE - WIDTH OF 0.0 AND  
ORIGIN OF 0.0 EAST

S170 GLOBEX WITH EXTRA LINES



The COMMONWEALTH OF AUSTRALIA through the AUSTRALIAN GEOLOGICAL SURVEY ORGANISATION (AGSO) was chosen as the contractor to carry out the survey operations and supplied the survey vessel RIG SEISMIC, with crew and equipment for the data acquisition phase of the survey. A GI airgun array of 1800 in<sup>3</sup> volume was employed as the energy source. A 3000 metre 240 trace analogue streamer cable was utilised as the receiver array. Data was recorded to magnetic tape cartridge by the AGSO recording system.

MULTIFIX DGPS system was employed as the primary and secondary navigation System. RACAL Survey provided the MULTIFIX DGPS positioning systems. The on-board system was maintained and operated by AGSO personnel. RACAL maintained the shore based reference stations during the course of the survey but did not have any personnel present on the survey vessel.

AUSTRAL GEOPHYSICAL CONSULTANTS PTY. LTD. were contracted to supervise the data acquisition operations, monitor the data quality and provide a written reports of the operations and events during the survey. Drew Murray was the Austral representative aboard the vessel throughout the survey.

## 1.2 SURVEY PARAMETERS

Recording System . . . . .	MUSIC Digital Acquisition System
Record Length . . . . .	5 seconds
Sample Rate . . . . .	2 milliseconds
Low Cut Filter . . . . .	4Hz/18 dB per octave
High Cut Filter . . . . .	180 Hz/140 dB per octave
Recorded Data Format . . . . .	SEG Y Demux., (Modified)
Recording Medium . . . . .	Tape Cartridge
Streamer Type . . . . .	Transformerless Analogue
Cable Length . . . . .	3000 metres
Number of Groups . . . . .	240
Group Interval . . . . .	12.5 metres
Shotpoint Interval . . . . .	25.0 metres
Nominal Fold . . . . .	60
Operating Depth . . . . .	7 metres ± 1 metre
Energy Source Configuration . . . . .	Single Airgun Array (2 Sub Arrays)
Capacity . . . . .	1800 cubic inches
Operating Pressure . . . . .	1800 psi
Source Depth . . . . .	7 metres
Measured Offset . . . . .	75.00 metres
Primary Navigation System . . . . .	MULTIFIX DGPS
Secondary Navigation System . . . . .	MULTIFIX DGPS

541007

## 1.3 SURVEY STATISTICS

## CUMULATIVE SURVEY STATISTICS

ACTIVITY DESCRIPTION	HOURS	SURVEY %
RECORDING LINE	133.150	28.48%
LINE CHANGE	59.934	12.82%
TRAVEL	59.467	12.72%
WEATHER DOWNTIME	100.666	21.53%
PORT CALL FOR RESUPPLY/CREW CHANGE	22.250	4.76%
STREAMER CONFIGURATION AND DEPLOYMENT	34.200	7.32%
STREAMER DEPLOYMENT	15.884	3.40%
SOURCE DEPLOYMENT	1.284	0.27%
STREAMER RECOVERY	4.631	0.99%
SOURCE RECOVERY	1.184	0.25%
DOWNTIME, STREAMER DAMAGE OR LOSS	6.217	1.33%
DOWNTIME, ENERGY SOURCE FAILURE	2.750	0.59%
DOWNTIME, VESSEL EQUIPMENT FAILURE	23.067	4.93%
UNDEFINED	2.833	0.61%

TOTAL	467.517
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TOTAL KM RECORDED	=	1189.0750
TOTAL PROCESSABLE KM	=	1145.4750
TOTAL CHARGEABLE KM	=	1138.5000
TOTAL SURFACE KM	=	1145.4750
AVERAGE PROCESSABLE KM/DAY	=	58.8030
TOTAL CHARGEABLE HRS	=	100.666
TOTAL WEATHER HOURS	=	100.666
TOTAL RECORDED T27/P 2D KM	=	1189.0750
TOTAL PROCESSABLE T27/P 2D KM	=	1145.4750
TOTAL CHARGEABLE T27/P 2D KM	=	1138.5000
TOTAL COMPLETED T27/P 2D LINES	=	60

## 2 SURVEY SUMMARY

### 2.1 SURVEY DIARY OF EVENTS

23 February 1996

00:00 PORT CALL FOR RESUPPLY/CREW CHANGE  
18:00 TRAVEL

24 February 1996

00:00 TRAVEL  
heading for prospect area  
15:03 STREAMER CONFIGURATION AND DEPLOYMENT

25 February 1996

00:00 STREAMER CONFIGURATION AND DEPLOYMENT  
17:00 STREAMER CONFIGURATION AND DEPLOYMENT  
heading towards line BB96-23  
19:27 LINE# BB96-14 ABORTED-SWELL NOISE OUT OF SPEC  
20:26 WEATHER DOWNTIME  
22:01 RECORDING LINE BB96-14

26 February 1996

00:00 RECORDING LINE BB96-14  
00:05 LINE CHANGE  
01:18 RECORDING LINE BB96-12  
02:44 LINE CHANGE  
04:50 RECORDING LINE BB96-12A  
05:49 LINE CHANGE  
07:57 RECORDING LINE BB96-29  
08:25 WEATHER DOWNTIME  
Line BB96-29 was terminated at shotpoint #1170 due to high levels of swell noise. Streamer was retrieved at this point to try and reballast for the present weather conditions.  
14:55 STREAMER CONFIGURATION AND DEPLOYMENT  
18:10 LINE CHANGE  
Line BB96-29 was terminated at shotpoint 1330 due to high streamer swell noise. Shooting at 55 deg is into the weather when the wind swung around to the south west the resultant chop added to a 2 metre plus swell makes shooting north east south west line difficult.  
18:29 WEATHER DOWNTIME  
Setting guns and streamer to seven metres. It has been ascertained from noise tests that running the streamer at seven metres reduces streamer noise enough to be able to shoot the north west, south east lines.  
19:22 WEATHER DOWNTIME  
guns deployed, running streamer noise tests.  
20:53 WEATHER DOWNTIME  
Run in to line BB96-29 terminated due to high swell noise on the streamer  
21:06 WEATHER DOWNTIME  
21:27 STREAMER CONFIGURATION AND DEPLOYMENT  
The streamer and guns are being moved further back to reduce noise on the front end of the streamer. Checking noise levels in line directions.

## 27 February 1996

00:00 STREAMER DEPLOYMENT  
Checking streamer in line directions.

01:58 TRAVEL

02:10 DOWNTIME, ENERGY SOURCE FAILURE

02:42 TRAVEL

03:12 RECORDING LINE BB96-2

05:27 TRAVEL

06:36 RECORDING LINE BB96-4

09:51 LINE CHANGE

10:03 RECORDING LINE BB96-6

12:30 LINE CHANGE

13:36 RECORDING LINE BB96-8

15:49 LINE CHANGE

16:00 DOWNTIME, ENERGY SOURCE FAILURE

16:48 LINE CHANGE

17:24 RECORDING LINE BB96-29B  
Survey temporarily halted. Vessel has developed a small hole in the hull,  
inspection and repair will take place at the Port of Burnie, Tasmania.

17:26 DOWNTIME, VESSEL EQUIPMENT FAILURE

## 28 February 1996

00:00 DOWNTIME, VESSEL EQUIPMENT FAILURE  
Along side Burnie Tasmania

07:30 DOWNTIME, VESSEL EQUIPMENT FAILURE  
Small hole in hull was repaired and the hull given a check by divers.

16:30 STREAMER DEPLOYMENT

22:29 STREAMER DEPLOYMENT

## 29 February 1996

00:00 STREAMER DEPLOYMENT

01:30 WEATHER DOWNTIME  
Line BB96-3 was attempted at 55deg. swell noise was evident along entire  
streamer. Shooting at 292deg. was tried with the same swell noise being  
evident. The swell noise was also out of spec. at 325 deg.

03:30 WEATHER DOWNTIME  
Heading for line# BB96-16

07:30 DOWNTIME, ENERGY SOURCE FAILURE  
Gun failed on stbd array causing a circle on BB96-16

08:30 LINE CHANGE

09:17 RECORDING LINE BB96-16

10:57 LINE CHANGE

12:05 RECORDING LINE BB96-18

13:55 LINE CHANGE

14:59 RECORDING LINE BB96-22

16:54 LINE CHANGE

17:17 DOWNTIME, ENERGY SOURCE FAILURE

17:42 LINE CHANGE

18:39 RECORDING LINE BB96-24

20:02 LINE CHANGE

21:07 RECORDING LINE BB96-28  
22:58 LINE CHANGE

**1 March 1996**

00:00 RECORDING LINE BB96-30  
02:19 LINE CHANGE  
03:32 RECORDING LINE BB96-32  
05:18 LINE CHANGE  
Line BB96-34 terminated on run in. Wind 25 knots SW, Swell 3M with a 1.5M wave.  
06:20 WEATHER DOWNTIME  
Attempts were made at different headings through out the day with no success. Weather report fax shows two high pressure systems moving in.

**2 March 1996**

00:00 WEATHER DOWNTIME  
Swell 1.5M Wind 20 knots S  
01:00 WEATHER DOWNTIME  
Weight added to head of streamer for better control  
04:30 WEATHER DOWNTIME  
Heading for line BB96-34  
05:26 RECORDING LINE BB96-34  
07:38 LINE CHANGE  
08:41 RECORDING LINE BB96-36  
10:49 LINE CHANGE  
11:50 RECORDING LINE BB96-45  
14:19 LINE CHANGE  
15:28 RECORDING LINE BB96-43  
18:11 LINE CHANGE  
19:06 RECORDING LINE BB96-41  
21:26 TRAVEL  
22:29 RECORDING LINE BB96-39

**3 March 1996**

00:00 RECORDING LINE BB96-39  
00:35 LINE CHANGE  
01:36 RECORDING LINE BB96-37  
03:29 LINE CHANGE  
04:40 RECORDING LINE BB96-35  
06:25 LINE CHANGE  
07:32 RECORDING LINE BB96-31  
09:24 LINE CHANGE  
11:18 RECORDING LINE BB96-29C  
13:39 LINE CHANGE  
14:51 RECORDING LINE BB96-27  
16:13 LINE CHANGE  
17:19 RECORDING LINE BB96-25  
19:33 LINE CHANGE  
20:22 RECORDING LINE BB96-23  
22:02 LINE CHANGE  
23:24 RECORDING LINE BB96-21

## 4 March 1996

00:00 RECORDING LINE BB96-21  
 01:24 LINE CHANGE  
 02:34 RECORDING LINE BB96-19  
 04:34 LINE CHANGE  
 05:43 RECORDING LINE BB96-17  
 07:39 LINE CHANGE  
 08:46 RECORDING LINE BB96-15  
 10:46 LINE CHANGE  
 11:49 RECORDING LINE BB96-13  
 13:49 LINE CHANGE  
 15:01 RECORDING LINE BB96-11  
 17:02 LINE CHANGE  
 18:09 RECORDING LINE BB96-09  
 20:06 LINE CHANGE  
 21:19 RECORDING LINE BB96-07

Line BB96-7 was terminated at shotpoint 1120 due to excessive swell noise. At this point the weather was deteriorating rapidly. With no prospect of shooting, the streamer was retrieved so the tailbouy could be repaired. On retrieval the first bird collar was found to be broken, this explains the problems experienced with the front of the streamer.

21:43 SOURCE RECOVERY  
 21:50 STREAMER RECOVERY  
 22:26 STREAMER RECOVERY

## 5 March 1996

00:00 STREAMER DEPLOYMENT  
 03:45 SOURCE DEPLOYMENT  
 04:13 LINE CHANGE  
 05:57 RECORDING LINE BB96-10  
 09:46 LINE CHANGE  
 Swell increasing. Trying in the direction for line BB96-50  
 10:45 LINE CHANGE  
 Line direction for line 50 to noisy. Heading for line BB96-56  
 12:10 RECORDING LINE BB96-56  
 14:10 LINE CHANGE  
 Noise test at 56deg. out of spec. Turning to try at 180deg. Noise is OK in this direction. heading for line BB96-52.  
 14:57 WEATHER DOWNTIME  
 17:44 RECORDING LINE BB96-52  
 Weather deteriorating  
 22:26 LINE CHANGE  
 23:43 RECORDING LINE BB96-40

## 6 March 1996

00:00 RECORDING LINE BB96-40  
 01:20 LINE CHANGE  
 02:27 RECORDING LINE BB96-38  
 04:40 LINE CHANGE  
 Tried heading of 56deg. noise level mean 41uB. Heading 112deg. noise level 20-15 uB cable at 8M. Heading for line 48 heading of 293deg.

05:30 WEATHER DOWNTIME  
Going into a holding pattern to try and find a shooting direction

10:41 RECORDING LINE BB96-48

12:37 LINE CHANGE

13:46 WEATHER DOWNTIME

19:14 WEATHER DOWNTIME  
Line BB96-46 terminated at shotpoint 1349 due to excessive noise. wind exceeds 40 knots, swell 2 to 3 metres. going into a holding grid to check noise at different line directions.

20:21 WEATHER DOWNTIME

## 7 March 1996

00:00 WEATHER DOWNTIME  
Course 292 deg. Wind SW-W 35 - 40 knots swell 3 - 4 metres

04:20 WEATHER DOWNTIME  
Port and stbd arrays retrieved, streamer at 10 metres.

04:53 WEATHER DOWNTIME  
Course 134 deg. Wind SW - W 30 Knots, swell 2.5 to 3 metres

08:20 WEATHER DOWNTIME  
Course 61 deg. wind and swell same as above

09:15 WEATHER DOWNTIME  
Course 300 deg. wind SW 25 knots, swell 2.5 to 3 metres

11:17 WEATHER DOWNTIME  
Course 290 deg wind SW 20 knots swell SW 2 metres average noise 17uB

13:10 WEATHER DOWNTIME  
Course 110 deg. wind WSW 20 knots swell SW 2.5 metres, Average noise 5uB to 7uB.

16:40 WEATHER DOWNTIME  
All line directions too noisy to shoot. setting guns to 8 metres.

17:08 WEATHER DOWNTIME

18:16 WEATHER DOWNTIME  
Line BB96 42 was shot with streamer set to 8 metres and guns still at 7 metres. Close inspection of noise records taken along the line showed the data to be badly affected by swell noise. Line data will be included in the shipment but tagged not to be processed

20:02 WEATHER DOWNTIME  
Both gun arrays onboard and set to 8 metres

20:27 WEATHER DOWNTIME  
Line BB96-44 aborted on run. Streamer out of control and 20 + uB of noise going into holding pattern. Monitoring noise levels.

22:00 WEATHER DOWNTIME  
Course 55 deg. average noise level 13 uB

23:13 WEATHER DOWNTIME  
Continue holding pattern. Conducting noise tests.

## 8 March 1996

00:00 WEATHER DOWNTIME  
Streamer at 12 metres swell 1.5 metres. wind S.W. 15 knots

00:41 WEATHER DOWNTIME  
Heading 112 deg. noise tests mean 10 - 15 uB streamer at 8 and 7 metres.

03:14 WEATHER DOWNTIME

Streamer at 7 metres. wind W SW at 8 knots swell confused 1.5 metres. Mean noise 15uB.

04:30 WEATHER DOWNTIME  
STREAMER AT 8 METRES. ,GUNS SET TO 8 METRES.

07:38 WEATHER DOWNTIME

07:50 RECORDING LINE BB96-44  
Streamer and guns at 8 metres.

09:34 TRAVEL

10:41 RECORDING LINE BB96-46  
Vessel passing 3 kms. to port. Prop noise on streamer from SP. 1482 to EOL.

12:18 TRAVEL

13:32 RECORDING LINE BB96-42A  
Streamer and guns at 8 metres.

15:19 TRAVEL

17:02 RECORDING LINE BB96-63  
Streamer and guns at 8 metres

18:57 TRAVEL

20:10 RECORDING LINE BB96-61  
Streamer and guns at 8 metres.

22:06 TRAVEL

23:11 RECORDING LINE BB96-59

## 9 March 1996

00:00 RECORDING LINE BB96-59

01:16 SOURCE RECOVERY  
Set gun depths to 7 metres

01:47 SOURCE DEPLOYMENT

02:36 TRAVEL

03:36 RECORDING LINE BB96-57

05:42 TRAVEL

06:50 RECORDING LINE BB96-55

08:39 TRAVEL

09:42 RECORDING LINE BB96-53

11:51 TRAVEL

13:01 RECORDING LINE BB96-51

15:07 TRAVEL

16:12 RECORDING LINE BB96-49

18:36 TRAVEL

20:03 RECORDING LINE BB96-47

22:51 TRAVEL

23:50 RECORDING LINE BB96-54

## 10 March 1996

00:00 RECORDING LINE BB96-54

03:10 LINE CHANGE

04:58 RECORDING LINE BB96-7

06:55 LINE CHANGE

08:18 RECORDING LINE BB96-3

10:15 LINE CHANGE

11:38 RECORDING LINE BB96-1

13:37 LINE CHANGE

14:56 RECORDING LINE BB96-65  
 16:20 DOWNTIME, STREAMER DAMAGE OR LOSS  
 Line BB96-65 was terminated due to the weather conditions, at the same time the streamer had gone out of spec. with three dead channels and a couple of spiking channels. On retrieval the streamer was found to have a shark bite at section active 23. this was replaced and the streamer deployed in deteriorating weather conditions.  
 22:33 TRAVEL  
 Line BB96-65A terminated on run. Swell noise along entire streamer.  
 23:53 WEATHER DOWNTIME  
 Heading on course 298 deg. Going into a holding pattern to find a shooting direction.

## 11 March 1996

00:00 WEATHER DOWNTIME  
 At heading of 307 deg. mean noise was 30 - 40 uB wind was NE at 22 Knots. Swell was 2 metres. from the NE. Heading 113 deg. mean noise levels were 25 - 50 uB. Wind and swell picking up. Wind NE 25 - 30 Knots, Swell NE 2.5 metres. Bird 15 open loop.  
 06:55 WEATHER DOWNTIME  
 Noise levels still high. preparing to pick up streamer to repair bird 15  
 07:40 STREAMER RECOVERY  
 08:45 STREAMER DEPLOYMENT  
 09:55 WEATHER DOWNTIME  
 Weather improving slowly. heading for line BB96-71  
 12:37 RECORDING LINE BB96-71  
 14:35 LINE CHANGE  
 15:52 RECORDING LINE BB96-69  
 17:49 LINE CHANGE  
 18:59 RECORDING LINE BB96-67  
 20:56 LINE CHANGE  
 22:17 RECORDING LINE BB96-65A  
 23:16 LINE CHANGE

## 12 March 1996

00:00 LINE CHANGE  
 01:50 RECORDING LINE BB96-50  
 Completion of prospect.  
 07:32 SOURCE RECOVERY  
 08:05 STREAMER RECOVERY  
 09:28 TRAVEL Man overboard drill  
 11:15 TRAVEL

## 13 March 1996

00:00 TRAVEL  
 05:25 AIR GUN SIGNATURE TESTS  
 08:15 PORT CALL FOR RESUPPLY/CREW CHANGE  
 14:06 ALONG SIDE PORTLAND

## 2.2 OBSERVATIONS

### 2.2.1 VESSEL

The Rig Seismic is purpose built survey vessel, constructed in 1982 by Flekkefjord Shipp & Maskinfabrikk, Norway, then fitted out to the contractor's specifications at the State Dockyards, Newcastle, in 1984. As such the vessel is very sea worthy and although not exclusively used for marine seismic surveys, it is very well suited for the work.

The back deck work areas are adequate in size and well laid out. The gun and cable deck are not at all crowded, even when the energy source is recovered and on board the vessel. Hose bundles for the energy source are stored so as to allow access walkways to the cable deck and this creates multiple, easy access ways to the cable work area. Personnel do not have to walk over the hose bundles to reach the back deck.

The large instrument room easily accommodates all of the seismic and other geophysical instrumentation. There is an enormous amount of bench space and adequate working space for all of the personnel, including any client personnel. An office/drafting room adjacent to the instrument room provides further space for installation and utilisation of any additional systems.

Crew quarters are of a relatively high standard, and are reasonably comfortable. A good indication of this is the fact that no special problems arise from the fact that the seismic crew is made up of both female and male members. The vessel is mechanically sound and all systems were operational. The author would recommend its use on any future 2D surveys.

### 2.2.2 SAFETY

The vessel had an in house AGSO safety audit early February 1996. The only change requested by the auditor was the removal of a bench grinder positioned in a vulnerable position. It is the author's opinion that it would pass most safety surveys with only minor improvements, changes or additions needed. The vessel, being registered in Australia and crewed by personnel from the Australian Maritime Safety Authority, has been maintained to high standards throughout its working life in Australia.

Safety of both the vessel and the personnel is ultimately the responsibility of the Master, but generally the more routine tasks, such as ensuring all equipment remains in a satisfactory operating condition, are handled by the First Mate. Routine safety drills were conducted, involving all available personnel, to ensure that each crew member was aware of his own responsibilities in times of emergency and could carry out those duties confidently and capably.

It was observed by the author that AMA and AGSO, are committed to safety aboard the vessel and in the work ethics of both the seismic and marine crews. There were many safety procedure posters and memorandums displayed around the vessel. All joining personnel, including this author, not completely conversant with the workings of the vessel are given a safety tour. For the majority of the time all crew were observed following the basic safety practices laid down for working internally on the vessel and on the outer decks. For the latter, this included wearing safety boots and work vests on the cable and gun decks. From discussions with personnel aboard, AGSO is seen to be insistent on safety in the work place, and has provided regular training for all of their personnel.

The vessel was well equipped with safety equipment. This includes fire fighting equipment, BA. sets, first aid facilities, etc. There was also a good selection of safety procedure manuals throughout the vessel and posted bills explaining emergency signals, emergency stations and procedure. The first aid boxes were well maintained. All had the basic elements in them such as; ointments, bandaids, eye wash, bandages, cotton buds, etc. General safety equipment such as safety boots, safety glasses, hard hats and work vests was always in evidence on the vessel. It is company policy that safety boots will be worn on deck and in work place areas. The author also observed that work vests were mandatory for personnel working on the cable/gun decks and that this policy was strictly followed. It was also seen that hard hats were standard for anyone working in and around the crane, when in operation.

The standard of the MOB rescue boats and associated launching systems was somewhat below standard and has been for some time. This is not normally a problem when a chase boat is accompanying the survey vessel, but the poor equipment levels in this area should be noted by the client.

### **2.2.3 LOCAL ENVIRONMENT**

Weather conditions for most of the survey were less than perfect with strong winds that shifted around the compass. Swell was significant (as always in this area) and noise levels on the cable were relatively high. During the 8th and 9th of March the weather improved with a corresponding drop in streamer noise levels. Currents in the area were generally found to be negligible.

### **2.2.4 RECORDING SYSTEM-STREAMER CABLE**

The recording instruments and streamer cable worked reliably throughout the survey. There was no loss of production time for any instrument or cable problems. A shark bite late in the afternoon on the 10th of March corresponded with a period of weather down time, this was repaired with out loss of production time. The cable had some bad traces throughout but these were well annotated on all of the contractor's logs and records. At no time did the number of bad groups in the cable exceed the specified bad groups allowed in the contract. Because of the weather conditions it was not possible to run the streamer at the contract specified depth of six (6) metres and after testing depths and shooting directions the streamer was run at seven (7) metres. For all lines shot on the 8th of March, BB96-44, 46, 42A, 63, 61, 59, the streamer was run at eight (8) metres.

### **2.2.5 SOURCE**

One circle was caused by an air leak in gun 4 on the starboard side array. Overall a very good performance for the energy source. The GI gun is very well regarded by the mechanics on board the survey vessel, who rate its reliability and hence performance above that of the sleeve gun.

### **2.2.5 NAVIGATION**

The MULTIFIX and navigation systems used during the survey both performed well. A pre-survey check of the parameter shift and DGPS performance was done at Portland and is detailed as an appendix to this report.

### 2.2.6 PERSONNEL

The personnel on the vessel come from two different companies. The seismic crew is employed by AGSO, while the marine crew is supplied by the Australian Maritime Safety Authority (AMA). The marine crew were all experienced mariners and some had worked on other seismic vessels in the past.

The seismic crew were all experienced and knew their duties and applied themselves with enthusiasm and efficiency to their work. All personnel were very cooperative and brought any deficiencies or abnormalities in the data or equipment to the attention of the author. The data collected was of high quality and should supply a sound basis for the processing and interpretation phase of the survey.

### **3 MISCELLANEOUS**

#### **3.1 WEATHER**

Weather forecasting was received via coastal radio stations on a standard set of radio frequencies. In addition to this forecast a synoptic weather map was received on the ships weather facsimile on an irregular basis (generally 12 hour intervals). This was supplied by the bureau of meteorology on a standard set of facsimile radio frequencies.

#### **3.2 NAVIGATION HAZARDS**

There were no navigation hazards encountered on the survey. The area has a uniform depth of around 75 metres.

#### **3.3 EXTERNAL INTERFERENCE**

During the course of the survey, shipping movements in the area were minimal with only two vessels of any size, the Devonport to Melbourne Ferry and a large bulk carrier, ever approaching the survey area. The Ferry took evasive action and provided no jeopardy to the operations. The bulk carrier ran parallel 3.5 Km to port of line BB96-46. The last 3 Km. of the line had moderate amounts of prop noise on the data.

#### **3.4 COMMUNICATIONS**

Communications were transmitted via the vessel's cellular telephone/fax or Marisat terminal during the course of the survey. At the end of each 24 hour period a full daily report was transmitted by facsimile to the client's office in Dallas.

**4 PERSONNEL****4.1 MARINE CREW**

Master: .....	T. Walters
First Mate: .....	M. Gusterson
Second Mate: .....	J. Weeks
Chief Engineer: .....	J. Scott
Second Engineer: .....	A. Todhunter
Electrical Engineer: .....	I. McCulloch
C.I.R. 48: .....	R. Willis
IR. 46: .....	D. O'Meara
IR. 9: .....	T. Dale
IR. 44: .....	M. Hagner
Chief Cook. 85: .....	H. Dekker
Cook. 84: .....	K. Beu
Catering Attendant. 90: .....	L. Clark
Catering Attendant. 38: .....	T. Strange

**4.2 SEISMIC CREW**

Vessel Manager: .....	H. Miller
QC: .....	M. De Deuge
QC: .....	G. Atkinson
Observer: .....	D. Warren-Smith
Observer: .....	P. Attenborough
Observer: .....	D. Newman
Observer: .....	T. Hunter
Observer: .....	S. Ridgway
Observer: .....	M. Webster
Electronics Tech: .....	S. Thomas
Electronics Tech: .....	W. Wierzbicki
Electronics Tech: .....	M. Schade
Mechanic: .....	B. Dickson
Mechanic: .....	S. Raptis
Mechanic: .....	A. Radley
Mechanic: .....	S. Milnes
Mechanic: .....	M. James

On Board Client Representative .....	Drew D. Murray
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## 5 SURVEY VESSEL

### 5.1 VESSEL SPECIFICATIONS

Name .....	Rig Seismic
Home Port .....	Newcastle NSW
Owner .....	Galerace Limited
Operator .....	Australian Maritime Safety Authority.
Survey Register .....	Det Norske Veritas
Call Sign .....	VMMR
Official Number .....	851492
Length Over All .....	72.5 metres
Beam .....	13.8 metres
Draft .....	6.8 metres
Load Line .....	Det Norske Veritas
Safety equipment .....	Australian Maritime Safety Authority.
Gross Tonnage .....	1545 tonnes
Built .....	Flekkefjord Shipp & Maskinfabrikk, Norway, 1982
Fitted Out .....	State Dockyards, Newcastle, 1984
Main Engine .....	Norma KVMB-12, 2640 HP @ 825 rpm.
Bow Thruster .....	2 x 600 HP, electric driven.
Stern Thruster .....	1 x 600 HP, electric driven.
Generators .....	3 x Caterpillar 482 KVA 1 x Mercedes 56 KVA
Shaft Generator .....	1 x AVK 1000 KVA
Fuel Capacity .....	483 tonnes
Fuel Consumption .....	10 tonnes/24 Hrs
Potable Water .....	108 tonnes
Watermaker Capacity .....	10 tonnes/24 Hrs
Endurance .....	20,000 nm cruising at 13 knots. 13,500 nm conducting seismic survey.
Berths .....	42
Radars .....	Furuno FAR-2832S-7AF Furuno FR-2020
Ship's Fathometer .....	Simrad ED162
Auto Pilot .....	Robertson EP8
Gyro Compass .....	Sperry Mark 37
Helicopter Deck .....	20 Metres diameter
Helicopter Rating .....	Bell 412, Sikorsky 76
Communication .....	Magnavox MX2400 Inmarsat A Terminal, Telephone 1545120, Fax number 1545121 Thrane & Thrane Inmarsat C Terminal, Telex number 450300183 Sailor T1127/R1119 HF Set 2 x Sailor RT143 VHF Sets

## 5.2 VESSEL SAFETY

### 5.2.1 FIRE FIGHTING SYSTEMS

Engine Room	Halon
Compressor Room	Halon
Cable Store	AFFF (Foam)
Cable Reels	AFFF (Foam)
Fire Pumps	2 Main, 1 Emergency
Location	Engine Room and Bow Thruster Room.
Fire Hoses	16 with Jet/Fog Nozzles
Fire Hydrants	16 Distributed throughout vessel.
Fire Extinguishers	2 Nozzles for use with portable AFFF kits
	52 Total
	3 X CO <sub>2</sub> @ 5Kg.
	11 x CO <sub>2</sub> @ 6Kg.
	10 X Dry Powder @ 9Kg.
	12 x Dry Powder @ 12Kg.
	1 x Dry Powder @ 25Kg.
	1 x Dry Powder @ 50Kg.
	10 x Water (Stored Pressure) @ 9Ltr.
	3 x AFFF (Foam) @ 9Ltr.
	1 x AFFF (Foam) @ 50Ltr.
	9 x Portable AFFF (Foam) Base Kits
	1 x Dry Chemical (Metal Fires) 9Kg.
Fire Axes	7
Fire Blankets	3
Fire Fighting Sets	3 Containing
	1 x Safety Line
	1 x Fire Protection Suit
	1 pair each of Boots and Gloves
	1 x Safety Lamp
	1 x Helmet with Neck Shield
	1 x Hammer
	1 x Breathing Apparatus
Detectors	140 smoke/heat/gas located throughout the vessel. In cabins, work, recreation and accommodation areas.
Audible Alarms	24 Bells, 2 Horns distributed around vessel on all decks.
Manual Fire Alarms	17

### 5.2.2 MAN OVERBOARD

Rescue Craft	2 x Toyo inflatable (Zodiac type)
Engine	Johnson 25 hp
Propulsion	Propeller
Launching Technique	By Ship's crane
Life Rings	6 Total, 2 with Smoke Flares
Life Lines	4 Line Throwing Rockets
Search Lights	1 atop bridge, 1 at each life boat.

**5.2.3 EVACUATION**

Life Boats .....	2 x Jorgensen & Vik
Capacity .....	40 persons
Equipment .....	Equipped to SOLAS Standards
Life Rafts .....	4 x 20 man inflatable
	1 x 6 man inflatable on stern
Life Jackets .....	80 adult plus 5 child
Survival Suits .....	3
EPIRB .....	Alden Satfind 406
Pyrotechnics/lifeboat .....	2 x Smoke Floats
	4 x Parachute Flares
	6 x Hand Held Flares

**5.2.4 PERSONAL SAFETY EQUIPMENT**

Safety Boots .....	Supplied
Work Life Vests .....	Adequate quantity supplied.
Safety Harnesses .....	Adequate quantity of safety belts with tag lines supplied
Hard Hats .....	Adequate quantity supplied
Hearing Protectors .....	Adequate quantity supplied

**5.2.5 FIRST AID**

Hospital .....	None
Dispensary .....	On mess deck
First Aid Boxes .....	3 portable and 2 fixed
Stretchers .....	2 (both suitable for medivac situation)
Resuscitation Unit .....	2 (located in dispensary)

**5.2.6 SAFETY DRILLS AND PROCEDURES**

Safety of both vessel and personnel is ultimately the responsibility of the ship's master. Routine tasks such as ensuring all safety equipment is in satisfactory working condition is handled by the first and second mates.

Routine safety drills are performed, involving all available personnel, to ensure that each crew member is aware of their responsibilities in time of emergency, and can carry out those duties confidently and capably. During the period from the 23rd of February to the 13th of March, 1 fire drill, including the testing and use of the breathing units, and one muster was been conducted. As soon as possible after joining the vessel, new personnel are given a safety induction tour which covers the location of emergency equipment, emergency exits, liferafts, lifeboats etc.

## 6 SEISMIC DATA ACQUISITION SYSTEM

The Seismic Data Acquisition System has the following main functions:

- Fires the energy source at a regular interval.
- Collects data from the seismic cable.
- Demultiplexes the data to a form more suitable for processing
- Writes the data to magnetic tape
- Performs quality control on the data and equipment.

### 6.1 MAJOR HARDWARE COMPONENTS

Seismic signal amplifiers  
Analogue-to-Digital converter  
Acquisition computer  
Magnetic tape system

The analogue signal data from the seismic cable are filtered and amplified in AGSO designed and built amplifiers. The amplifiers have computer controlled low and high cut filters and programmable gain amplifiers (PGA). The elliptic high cut filters have the settings controlled by the Nyquist frequency (Nf), the roll off frequency being approximately  $Nf/\sqrt{2}$  at the 3 dB point. Roll off is 140 dB per octave. The cut off frequencies are 0, 90, 180, 360 or 720 Hz. The Butterworth low cut filters can be set at 0, 4, 8, 16 or 32 Hz and have a roll off of 18 dB per octave being at half power at the 3 dB point.

The conversion from analogue to digital is done in a Phoenix A-D converter which can handle up to 256 channels. The conversion is done into an Instantaneous Floating Point (IFP) format which gives a dynamic range of 120 dB. Conversion time for each sample is quoted at 5.8 microseconds.

The acquisition computer is a DEC MicroVAX 4200 running under the VMS operating system. It acquires the digital data from the A-D converter via a high speed parallel interface. Data is collected via direct memory access (DMA). At the end of each acquisition cycle the data is transformed from a sequential sample format into a sequential channel format (demultiplexed). The seismic acquisition computer also collects data from the energy source hydrophones, the seismic cable water breaks, the seismic cable depth and compass controllers and the energy source depth detectors.

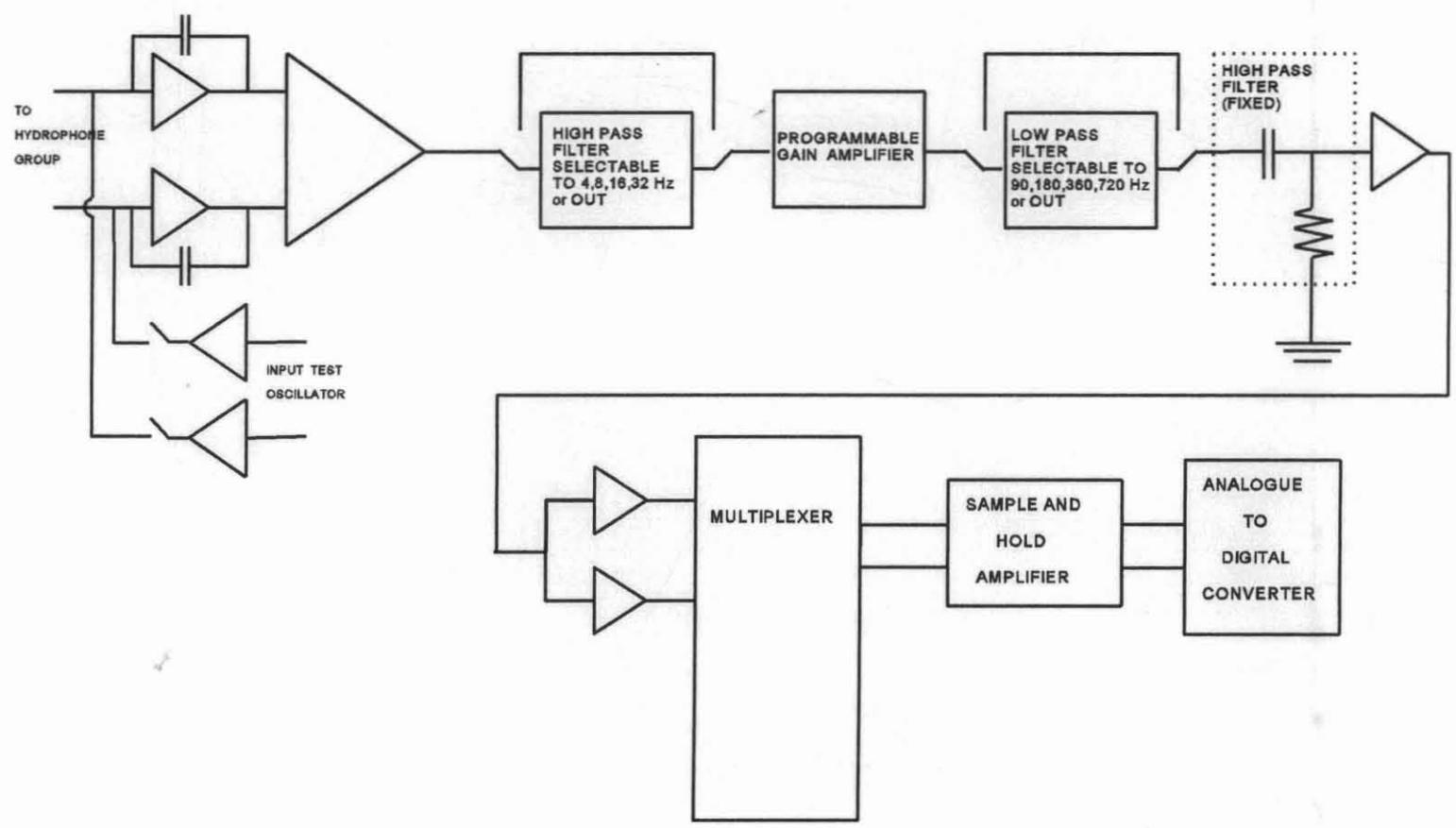
The magnetic tape system uses Emulex (Fujitsu) tape drives to write the data to 3480 magnetic tapes. Data is written to tape in a modified SEG-Y format.

## 6.2 SEISMIC SYSTEM SPECIFICATIONS

All statistical system tests are specified for a minimum of 96 channels and 100 scans.

Sample rate/Maximum channels	4 ms / 256 2 ms / 256 1 ms / 160 ½ ms / 80
Voltage gain	1 x PGA gain (1 - 128)
From pre-amp output	0.1 -0.3% to -1.3% for the average of all channels
From voltage to charge test input (8/180 and 32 Hz test signal)	± 2% max. deviation of any channel from average NB the mean gain of all channels is always < 0.1 but the gain of any single channel may be > 0.1
Noise with zero signal conditions	≤ 35 µV rms, SD ≤ 3 µV rms for a gain of 1 (Typically 29-33 µV with SD = 1 µV) ≤ 36 µV rms, SD ≤ 3 µV rms for a gain of 8 (Typically 30-34 µV with SD = 1 µV) ≤ -20 dB relative to 1 µbar, 6.25m group, gain 8 (system noise adds 0.5% to 1 µbar cable noise) ≤ 150 µV rms, SD ≤ 30 µV rms for gain of 128 maximum on any channel 185 µV. (Typically 115-130 µV with SD = 15-25 µV)
Offset voltages (gain 1-8, no signal applied)	
Maximum range of mean	± 50 µV from setting per C° of temp. change ± 50 µV from setting per week
SD about the mean of all channel offsets	≤ 30 µV for ± 2°C temperature span
Cross feed isolation	≤ -76 dB for single channel (alternate chs. driven) ≤ -79 dB mean of channels (alternate chs. driven)
Non-linearity (set by FPC characteristics)	≤ 0.1% range gain accuracy relative to adjacent ranges ± 1 LSB differential non-linearity on each range ± 1 LSB integral non-linearity on each range
Harmonic distortion	≤ -60 dB
System test signals available	Sine-wave, square wave, impulse (available to both the pre-amplifier inputs and the A/D converter system inputs)

# DATA ACQUISITION SYSTEM BLOCK DIAGRAM



### 6.3 MARINE SEISMIC DATA RECORDING FORMAT

All marine seismic data collected by AGSO is in demultiplexed form, and is recorded in a modified SEG-Y format. The records are written in a format conforming to the report **Recommended Standards for Digital Tape Formats, Geophysics Vol 40, Nr 2 (April 1975) pp 344-352** with the exceptions and variations as noted below.

The first 3200-byte record on the cartridge tape is the Reel Identification Header Part 1, the card image block. This consists of 40 card images of 80 bytes each, and is written in ASCII rather than EBCDIC format.

The next 400-byte record is the Reel Identification Header Part 2, the binary coded block, written in the SEG standard 16/32-bit fixed point format.

The Trace Data Blocks have a 240-byte trace header, also written in standard fixed point format. The header contains extended information on cable depths, and gun array firing times and depths.

#### INSTANTANEOUS FLOATING POINT FORMAT

Trace data values are recorded as binary floating point words of 16 bits length, consisting of a 12-bit mantissa and 4-bit exponent. The format is as follows:



The data word is in nominal two's complement format. The 12-bit mantissa has data bits in Bits 0 to 10 of the word, and sign bit in Bit 15, and is a two's complement binary number. As the gain of the Instantaneous Floating Point converter is binary, the mantissa normally varies between 1024 and 2047, except when the exponent is zero when it can range from 0 to 2047. The exponent value varies between 0 and 9, and can only be a positive number. To maintain compatibility with the general word structure, the exponent is inverted whenever the mantissa is negative. The exponent shows the gain of the binary IFP amplifier. An exponent of 0 represents a gain of 512, while an exponent of 9 represents a gain of 1. An exponent value above 9 is illegal.

The converted integer ranges of the floating point number for each exponent range, and the equivalent voltage values ( for positive values) are:

Exponent	Integer	Volts
0	0 - 2047	0.0 - 0.01953125
1	2048 - 4095	0.01953125 - 0.0390625
2	4096 - 8191	0.0390625 - 0.078125
3	8192 - 16383	0.078125 - 0.15625
4	16384 - 32767	0.15625 - 0.3125
5	32768 - 65535	0.3125 - 0.625
6	65536 - 131071	0.625 - 1.25
7	131072 - 262143	1.25 - 2.5
8	262144 - 524287	2.5 - 5.0
9	524288 - 1048575	5.0 - 10.0

## DEFINITION OF TAPE HEADERS

Binary reel header for SEG-Y format magnetic tapes

WORD	DESCRIPTION	FORMAT
1-2	SURVEY NUMBER	I-32
3-4	LINE NUMBER (only one line per tape)	I-32
5-6	TAPE NUMBER	I-32
7	NUMBER OF SEISMIC TRACES PER SHOT	I-16
8	NUMBER OF AUXILIARY CHANNELS	I-16
9	SAMPLE INTERVAL (microsecs) (for this tape)	I-16
10	SAMPLE INTERVAL (microsecs) (for original recording)	I-16
11	NUMBER SAMPLES PER DATA TRACE (for this tape)	I-16
12	NUMBER SAMPLES PER DATA TRACE (for original recording)	I-16
13	DATA FORMAT CODE 1. floating point (4 bytes) 3. fixed point (2 bytes) ?. floating point (2 bytes)	I-16
14	CDP FOLD	I-16
15	TRACE SORTING 1. as recorded (preset to this)	I-16
16	VERTICAL SUM CODE 1. no sum (preset to this)	I-16
17-26	unassigned	
27	AMPLITUDE RECOVERY METHOD 1. none (preset to this)	I-16
28	MEASUREMENT SYSTEM 1. metres	I-16
29-200	unassigned	

Standard portions of SEG-Y format used by Marine Division

WORD	DESCRIPTION	FORMAT
1-2	TRACE SEQUENCE NO. WITHIN LINE	I-32
3-4	TRACE SEQUENCE NO. ON TAPE	I-32
5-6	FIELD SHOT POINT NUMBER	I-32
7-8	CHANNEL NUMBER WITHIN SHOT	I-32
9-14	unassigned	
15	TRACE IDENTIFICATION CODE *1 - seismic data *2 - dead *3 - dummy 4 - time break 5 - uphole (land only) 6 - sweep 7 - timing *8 - water break	I-16

	*9	- oscillator test	
	*10	- noise test	
	*11	- cable/oscillator test	
	*12	- airgun signature	
	*13	- airgun shuttle sensor	
	*14	- sonobuoy	
	*15	- amplifier test	
	*16	- low cut filter test	
	*17	- high cut filter test	
	*18	- amplifier impulse test	
	*19	- amplifier cross-talk test	
		Note: * indicates implemented in this system	
16	NO. OF VERTICALLY STACKED TRACES		I-16
	(preset to 1)		
17	NO. OF HORIZONTALLY STACKED TRACES		I-16
	(preset to 1)		
18	DATA USE		I-16
	1. production (preset to this)		
	2. test data		
19-20	DISTANCE FROM SOURCE TO RECEIVER		I-32
	(negative value as opposite to travel direction)		
21-22	GROUP DEPTH (negative as below sea level)		I-32
23-24	SURFACE ELEVATION AT SOURCE (preset to 1)		I-32
25-26	SOURCE DEPTH (negative as below sea level)		I-32
27-28	DATUM ELEVATION AT RECEIVER GROUP		I-32
29-30	DATUM ELEVATION AT SOURCE		I-32
31-32	WATER DEPTH AT SOURCE		I-32
33-34	WATER DEPTH AT GROUP		I-32
35	DEPTH SCALAR		I-16
	(preset to -10)		
36	CO-ORDINATE SCALAR		I-16
	(preset to 1)		
37-54	unassigned (see below)		
55	RECORDING DELAY IN (millisecs)		I-16
56-57	unassigned		
58	NUMBER OF SAMPLES IN RECORD		I-16
59	SAMPLE INTERVAL (microsecs)		I-16
60	GAIN TYPE OF FIELD INSTR.		I-16
	1. fixed gain (preset to this)		
	3. floating point gain		
61	TRACE AMPLIFIER GAIN		I-16
62-74	unassigned		
75	LOW-CUT FILTER FREQUENCY		I-16
76	HIGH-CUT FILTER FREQUENCY		I-16
77	LOW-CUT FILTER SLOPE dB/octave		I-16
	(preset at 18 dB/octave)		
78	HIGH-CUT FILTER SLOPE dB/octave		I-16
	(preset at 72 dB/octave)		
79	SHOT INSTANT -year data recorded		I-16
80	SHOT INSTANT -day of year		I-16
81	SHOT INSTANT -hour of day		I-16
82	SHOT INSTANT -minute of hour		I-16

83	SHOT INSTANT -second of minute	I-16
84	TIME BASE CODE	I-16
	1. local	
	2. GMT (preset to this)	
	3. other	
85-90	unassigned	

## Usable words in SEG-Y trace header (non-standard) - April 1993

WORD	DESCRIPTION	FORMAT
37	NUMBER OF SOURCE GUNS	I-16
38	GUN TRIGGER DELAYS FOR "CHANNEL" GUN IN 10ths OF MILLISECS	I-16
39	GUN FIRING DELAYS - TRIGGER DELAYS FOR "CHANNEL" GUN IN 10ths OF MILLISECS	I-16
40	GUN FIRING ERROR FOR "CHANNEL" GUN IN 10ths OF MILLISECS	I-16
41	NUMBER OF CABLE BIRD DEPTH SENSORS	I-16
42	DEPTH OF "CHANNEL" BIRD IN 10ths OF METRE	I-16
43	NUMBER OF CABLE BIRD WING ANGLES	I-16
44	ANGLE OF "CHANNEL" BIRD WING IN 10ths DEGREE	I-16
45	NUMBER OF CABLE COMPASSES	I-16
46	ANGLE OF "CHANNEL" COMPASS IN 10ths DEGREE	I-16
47	NUMBER OF GUN DEPTHS	I-16
48	DEPTH OF "CHANNEL" GUN SENSOR IN 10ths METRE	I-16
91	SHOT INSTANT - fraction of sec (msecs)	I-16
92	INTERVAL FROM LAST SHOT (msecs)	I-16

## 6.4 DME AMPLIFIER SPECIFICATIONS

<b>Pre-amplifier</b>	
Charge sensitivity	$7.4 \times 10^6 \text{ V/C} \pm 1\%$
Low frequency attenuation rate	6 dB/octave or 20 dB/decade
Low corner frequency	3 Hz $\pm 1\%$
Test input sensitivity	$13.5 \times 10^{-9} \text{ C/V} \pm 1\%$
Voltage gain using test input	$0.1 \pm 2\%$
<b>Programmable Gain Amplifier</b>	
Gain range	1 - 128 $\pm 0.1\%$ in binary steps
<b>Fixed low cut (high pass) filter</b>	
Corner Frequency	1 Hz $\pm 10\%$
Attenuation rate	6 dB/octave or 20 dB/decade
Gain	$1.0 \pm 0.1\%$
Passband ripple	0.0 dB
<b>Programmable low cut (high pass) filters</b>	
Corner frequencies	4, 8, 16, 32 Hz
Attenuation at corner frequencies	3 dB $\pm 0.5 \text{ dB}$
Attenuation rate	18 dB/octave or 60 dB/decade
Gain	$0.0 \text{ dB} \pm 0.1 \text{ dB}$
Passband ripple	0.0 dB
<b>Programmable high cut (high pass) filters</b>	
Corner frequencies	90, 180, 360, 720 Hz
Attenuation at corner frequencies	3 dB $\pm 0.5 \text{ dB}$
Gain	$0.0 \text{ dB} \pm 0.1 \text{ dB} -\text{pbr}$
Passband ripple	$0.1 \text{ dB} \pm 0.1 \text{ dB}$
Shape factor	72 dB at $1.4 \times F_c$
Return lobes	less than -80 dB
<b>Differential output</b>	
Gain	$2.0 \pm 0.1\%$
Output impedance	$100 \text{ ohm} \pm 0.1\%$
Output power	$\pm 20 \text{ volts}, \pm 10 \text{ ma}$
Amplifier 3 dB Bandwidth	1 Hz - 20 KHz (without programmable filters)
Common mode rejection	- 40 dB, 3-100 Hz
Distortion	0.1% with 8/180, gain 128, V = 20 volts peak
<b>Noise (maxima)</b>	
Pre-amplifier, Bandwidth 1 kHz,	0.7 $\mu\text{V}$ ref to preamp input
Pre-amp + PLC + PGA, Bandwidth 1 kHz,	1.2 $\mu\text{V}$ ref to PGA input
PHC filter	Bandwidth 1 kHz, 90 Hz      17 $\mu\text{V}$
	Bandwidth 1 kHz, 90 Hz      19 $\mu\text{V}$
	Bandwidth 1 kHz, 90 Hz      21 $\mu\text{V}$
	Bandwidth 1 kHz, 90 Hz      24 $\mu\text{V}$

## 6.5 A/D CONVERTER SPECIFICATIONS

Analogue multiplexer	
Number of differential channels	256
Noise for any channel	$\leq 5 \mu\text{Volts rms over 1 MHz BW}$
Sample and hold amplifier	
Voltage Gain	$0.5 \pm 0.5\%$ (fixed)
Input voltage range	-20 Volts to +20 Volts (differential)
Common mode rejection	$\geq 100 \text{ dB}$ for frequencies $\leq 100 \text{ kHz}$
Integral non-linearity	$\leq 0.025\%$
Offset voltage deviation	$\pm 30 \mu\text{V max. of mean from setting over } \pm 1^\circ\text{C}$
Offset voltage difference	$\pm 10 \mu\text{V max. even to odd channel over } \pm 1^\circ\text{C}$
Floating point converter	
Average rms noise ( $\geq 96$ chs.)	$\leq 17 \mu\text{V}$ ( $\geq 100$ readings)
Average rms noise (single ch.)	$\leq 22 \mu\text{V}$ ( $\geq 100$ readings)
Analogue amplifier format	10 binary gain levels 1-512 connected to a 12-bit mantissa ADC $\approx 95\%$ of mantissa full scale used before gain level is changed
Non-linearity	$\leq 0.1\%$ range gain accuracy rel. to adj. ranges $\pm 1 \text{ LSB differential non-linearity on each range}$ $\pm 1 \text{ LSB integral non-linearity on each range}$
Input voltage range	-10 Volts to +10 Volts (single ended)
Signal induced offset voltage	$\leq [(70 \mu\text{V}/V_p \text{ of applied signal}/^\circ\text{C of ambient temp. change}) + (20 \mu\text{V}/V_p \text{ of applied signal})]$
Offset voltage drift	$\approx 5 \mu\text{V}/^\circ\text{C of ambient temp. change with no signal applied}$
Phoenix converter system	
Voltage gain	0.5 settable on FPC, 0.1% over $\pm 2^\circ\text{C}$
Average rms noise ( $\geq 96$ chs.)	$\leq 28 \mu\text{V}$ ( $\geq 100$ readings) SD $\leq 3 \mu\text{V}$
Offset voltage deviation	$\pm 30 \mu\text{V max. of mean from setting over } \pm 1^\circ\text{C}$
Offset voltage difference	$\pm 10 \mu\text{V max. even to odd channel over } \pm 1^\circ\text{C}$ (SD of ch. offsets $\leq 10 \mu\text{V}$ $\geq 100$ samples/96 ch.)
Cross feed isolation	$> -76 \text{ dB}$ for single channel (alternate chs. driven)
Harmonic distortion	$\leq -60 \text{ dB}$ for signals between 3.5 V and 7.0 V
Acquisition/conversion cycle	5.8 $\mu\text{seconds}$ for a single channel

## 6.6 SOFTWARE OPERATION

The acquisition system is a set of interacting programs that collect and pass data to each other via a large installed shareable image. This allows the Operator to change parameters for tape control, QC control, etc., during acquisition. The actual data flow from acquisition to magnetic tape is handled by three programs. One collects data, another demultiplexes it and a third writes data to magnetic tape. Both input and output data is double buffered which allows the above three operations to be interleaved. Thus data for one shot can be being demultiplexed and written to tape while data from the next shot is being acquired.

A set of secondary programs run as background tasks analysing the data for quality control. RMS and DC offsets are calculated every shot for every channel and displayed on vdu's and/or printers. Cable depths, bird wing angles and compass data are monitored continually. Another set of programs control the energy source.

Shot firing is controlled by the main data acquisition program. Speed and distance along the line is passed to the seismic system by the navigation computer every 10 seconds. A least squares line is fitted to the data and the next required shot point extrapolated from the least squares line. After the shot has been fired a check is made of the error in the previous shot from its expected position. This error is reported each shot. As well as the checks made within the seismic system, quality control software on another computer also checks the shot spacing using a multi-point curve fitting algorithm.

After the acquisition program calculates the next shot point it uses this to calculate the next shot time. The program send a shot pulse to the gun controller at shot instant and starts collecting data. The gun controller fires the guns 60 milliseconds after data recording has begun.

## 6.7 INSTRUMENTATION TESTS

The seismic system on board the vessel is furnished with a comprehensive set of test procedures designed to demonstrate the system's ability to meet performance specifications. The most significant tests are as follows.

- Total system noise
- Amplifier stability
- Gain range steps with variable output
- Gain range steps with constant output
- Dynamic range
- Frequency response
- Channel to channel cross feed
- Harmonic distortion
- Oscillator calibration

All of the tests detailed were carried out on board the vessel at the start of the survey. On the 24th of February the results from a set of instrument tests were examined. The hard copy resulting from these tests was presented by the contractor and no faults or problems were noted.

There were no problems noted in the total system noise. Following this, the gain ranging test with variable output was run. The purpose of this test is to establish that the gain step

accuracy is within specifications such that the signal amplitude of each record is related to that of adjacent records by a factor of two within a tolerance of 0.1%. This was clearly demonstrated to be the case in this test. In the gain ranging test, with constant output, both the gain accuracy of the amplifier and the accuracy of the oscillator amplitude are demonstrated. The results showed that all measured outputs were in very close agreement.

The next test run was the dynamic range response. The objective of this test is to demonstrate that gain switching of the A/D converter system produced acceptable deviations in measured or converted, digital signal output. To achieve this the preamplifier gain and oscillator output amplitude are mutually adjusted to deliver ten separate signal level amplitudes, each of which fall in the middle of each stage of the gain ranging system. Having established from the previous two tests that the pre-amplifier gain and oscillator steps were within specifications the accuracy of the floating point gain stages are thus the only variable. Again all results were well within the stated specifications. A number of power spectrum plots were then generated for the survey filter combinations and sample rate. These clearly demonstrated the pass bands and filter ripple.

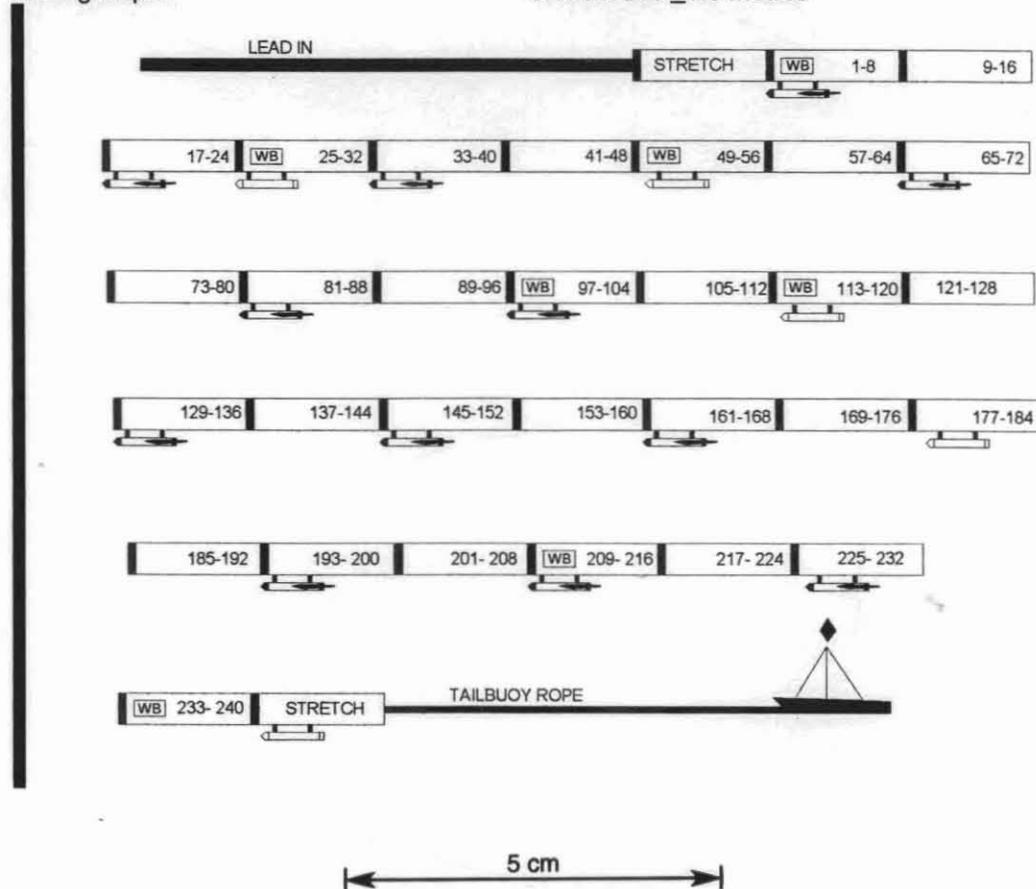
The final sample tests run were the cross feed checks. Both of the records resulted in an analysis demonstrating that all channels were operating within the system specifications. It is interesting to note that the level of cross feed is some 5 dB greater with the odd channels driven than what it is with the even driven.

Supplementary to the full set of instrument tests, a reduced set of tests is run during each line change. The scope of these tests was considered sufficient to give gross indication of any major equipment fault, with the proviso that further test would probably have to be run in order to isolate the exact cause of failure.

7 STREAMER CABLE

7.1 STREAMER CABLE SPECIFICATION

Streamer Type:	Transformerless, Analogue Streamer
Manufacturer:	FJORD Instruments
Length:	3000 metres
Active Section Length:	100 metres
Number of Active Sections:	30
Active Groups:	240 (configured by in-streamer program plugs)
Hydrophones Per Group:	20
Groups Per Section:	8
Group Length:	12.5 metres
Group Interval:	12.5 metres
Hydrophone Sensitivity:	44 V/Bar
Hydrophone Type:	Transformerless Charge Coupled
Manufacturer/Type:	Teledyne T-1
Depth Transducer Type:	N/A (Using cable leveller depths)
Depth Transducer Positions:	N/A (Using cable leveller depths)
Cable Leveller Type:	13 x Syntron RCL-3
Cable Leveller Positions:	Middle of traces: 1, 17, 33, 49, 65, 81, 97, 113, 129, 145, 161, 177, tail stretch
Cable Compass Type:	5 x Syntron RCU-831 Fluxgate Vector Magnetometer - Externally Mounted
Cable Compass Positions:	Middle of traces: 25, 73, 105, 153, 185
Water Break Detectors:	3 x T-1 phones
Water Break Positions:	Middle of traces: 1, 97, 185
Towing Depth:	5.00 metres $\pm$ 1.5 metres



## 7.2 STREAMER CABLE DESCRIPTION

The analogue seismic cable, build by Fjord Instruments, uses the 100 metre active section as the principal building block. The cable delivers a signal that is capacitive coupled to the amplifier system. The nominal group length of each section is 6.25 metres and each group comprises ten Teledyne T1 hydrophones. Groups lengths in multiples of 6.25 metres can be obtained by suitable coupling of the 6.25 metre groups. In this instance the streamer used 24 live sections, configured as 192 x 12.5 metre groups.

## 7.3 STREAMER DEPTH CONTROL

Depth controllers used on the cable throughout the survey were the Syntron model RCL3. The Cable Depth Controller (bird) is a depth control device mounted externally on the marine seismic streamer cable. The assembly is streamlined to minimise flow induced noise generation, and is designed for compatibility with existing mounting hardware and communication coils. The unit is battery powered and non corroding. Communications occur over a single twisted pair transmission line, using traditional inductive coupling techniques. The bird supports a variety of command and data acquisition functions, including the following :-

- (1) setting cable running depth.
- (2) reporting current depth.
- (3) reporting battery usage.
- (4) reporting wing angle.

The depth controller is made of moulded plastic for the body, nose and shank parts, with all stainless steel hardware. Once programmed with an operating depth, the bird operates autonomously to supply sufficient force to control cable depth.

## 8 ENERGY SOURCE

### 8.1 ENERGY SOURCE SPECIFICATIONS

Source Type:	Single 1800 Cubic Inch GI Airgun Array
Airgun Type:	Seismic Systems Inc GI Airgun
Number of Sub-arrays:	2
Number of Guns/Sub-array:	6 Active with no spares
Length of Source Array:	7.5 metres
Inter-Gun Spacing in Array:	2.5m
Width of Source Array:	15 metres
Subarray Cross-Spacing:	N/A
Nominal Air Pressure:	1800 psi $\pm 10\%$
Depth Sensors:	4 per subarray
Near Field Phones:	4 per sub-array / 1 per gun
Number of Active Guns:	8 (4 per sub-array)
Number of Spare Guns:	0 (0 per sub-array)
Compressors:	6 x A-300 300 scfm Price (4 in use, 2 as back-up)
Gun Timing Unit:	AGSO GCM
Timing Variance:	$\pm 2.0$ milliseconds
Aiming Point:	$T_0 + 60.0$ milliseconds
Towing Depth:	7.0 metres $\pm 1.5$ metre

### 8.2 ENERGY SOURCE DESCRIPTION

Two independent energy sources are available on the survey vessel. Two arrays of ten 150 cubic inch HGS sleeve guns each or two arrays of six Seismic Systems GI guns each. The latter was used for this survey.

The energy source is supplied with compressed air at up to 2000 psi, from six Price air compressors. The individual guns in each array are computer controlled to fire at 60 ms from the shot instant ( $T_0$ ). The gun control is via an AGSO designed controller running under the overall control of the seismic data acquisition computer. Data from the return pulse of each gun is analysed and the firing times of each gun adjusted to maintain the firing time within the prescribed limit of the 60 ms from  $T_0$ .

The GI gun is a pneumatic source constructed by combining two independent airguns within the same body casing. The first gun is called the generator, because of its action in "generating" the primary pulse. The second gun is called the injector, because it is used to inject air into the primary bubble of the generator and control the oscillation characteristics.

For this survey the source was operated in GI Mode, with the generator releasing 45 cubic inches and after delay the injector releasing 105 cubic inches. For this configuration the peak to peak output is claimed as 3.2 bar metres for a single GI gun with a peak to bubble ratio of 14.6. No output figures or farfield signature information was available for the array.

## 9 POSITIONING SYSTEMS

### 9.1 POSITIONING SYSTEMS DETAILS

Navigation System:	AGSO DAS - Data Acquisition System
Data Storage:	Andataco 4320NT Cartridge Drives
Primary Navigation:	Racal Multifix I DGPS
Primary Navigation Equipment:	
Receiver:	Trimble 4000DS
Demodulator:	Racal Skyfix Differential Demodulator 2402
Medium:	Racal Inmarsat Satellite Dish
Frequency:	72.475 MHZ
Reference Stations:	Melbourne, Adelaide, Sydney
Secondary Navigation:	Racal Multifix II DGPS
Secondary Navigation Equipment:	
Receiver:	Trimble 4000DS
Demodulator:	Racal Skyfix Differential Demodulator 2402
Medium:	Racal Inmarsat Satellite Dish
Frequency:	82.475 MHZ
Ref Station:	Melbourne, Adelaide, Sydney
Tertiary Navigation:	Doppler Sonar / Gyro
Tertiary Nav Equipment:	Magnavox MX610 / Sperry Mk 37 Gyrocompass
Additional Navigation Equipment:	Raytheon DSN 450 Doppler Sonar Magnavox MX100 GPS
Echo Sounders:	Raytheon CESP I (3.5 kHz and 12 kHz)
Mode of Shooting:	Single Streamer / Single Source / 2D
Shotpoint Interval:	25.00 metres
Nominal Shooting Speed:	5.0 knots
Effective Fold:	4800%
Multifix Operating Platform	486 computer with 4 Mb ram, maths co-processor, VGA display and an 8 Channel Intelligent Digiboard COM/8i.
Operating System	Multifix Ver. 1.3 and 2.0

## 9.2 OFFSETS

The centre-line of the vessel, forward of the main navigation mast, in-line with the forward end of the monkey island, was designated as the NRP Navigation Reference Point, and this was the point that the vessel was steered by. The NRP was positioned 51.2 metres forward of the stern for the survey. All the following offsets are stated with reference to the NRP. The offsets are negative to port and behind the NRP, and positive to starboard and forward of the NRP. Height values are referenced to the mean vessel water-line, and are negative below the water-line and positive above. All distances are in metres based on static measurements.

Offsets Referenced to NRP	Height	Offset	Offset
Centre of Stern at Water-line	+ 00.00	- 51.20	+ 0.00
DGPS Receiver Antenna 1	+ 14.80	- 9.00	+ 1.30
DGPS Receiver Antenna 2	+ 14.80	- 9.00	+ 0.30
Magnavox GPS Antenna	+ 13.80	- 0.20	+ 3.68
Centre of Source Array	- 5.00	- 94.95	+ 0.00
Centre of Near Trace	- 5.00	- 151.20	+ 0.00

Nominal Centre of Source To Centre of Near Trace Distance      56.25metres

## 9.3 MAPPING PARAMETERS

The survey was originally referred to the Australian Geodetic Datum 1984 (AGD84). The differential GPS system was operated in World Geodetic System 1984 (WGS84). The relevant parameters of the datums and the shift are shown below:

	AGD84	WGS84
Semi-Major Axis:	6378160.00m	6378137.00m
Semi Minor Axis:	6356774.00m	6356752.31m
Inverse Flattening:	1/298.25	1/298.257224

Seven-Parameter Datum Shift from AGD84 to WGS84:

$\delta X = -116.00$ metres	$rX = 0.23''$
$\delta Y = -50.47$ metres	$rY = 0.39''$
$\delta Z = +141.69$ metres	$rZ = 0.344''$
	$f = +0.0981$ ppm

Prior to the start of the survey the line end coordinates were transformed from AGD84 to WGS84 independently by both the contractor and the client representative, to verify the calculations.

During the survey GLOBEX requested five lines to be added, 4 lines 15 kilometres long running parallel North West of BB96-1 at a 2 kilometre spacing. Designated BB96-65, 67, 69, 71, and one line 15 kilometres long, running midway between BB96-6 and BB96-4, from its South Eastern end on line BB96-3 to the North West. Designated BB96-56. Onboard software was modified by the AGSO QC so end points for the new lines could be extrapolated from existing line co-ordinates.

#### 9.4 MULTIFIX DGPS DESCRIPTION

MULTIFIX is a multiple reference station, differential GPS mobile user system. A number of GPS reference stations are permanently installed at various locations in the area and data from all of these stations is sent via satellite up-link to the Inmarsat communications satellite system. The advantages of this satellite system are wide area coverage, high data rates and very high data reliability. These features, combined with the robust RTCM 104 DGPS message protocol, provide for a system which is effective over ranges of 2,000 kilometres from the reference stations and which offers positioning accuracies of 5 to 15 metres. Each reference station is linked by Inmarsat to the monitor station in Singapore.

The best way to check the integrity of GPS satellite data is to receive signals at a site (ie. reference station) where the position has been accurately established and compare station to satellite ranges derived from the GPS data with those theoretically expected. At each reference station pseudo range corrections are calculated for each GPS satellite observed and transferred to the control station. The data are checked and monitored for integrity prior to being formatted for transmission via the Inmarsat satellite system. Dedicated lines from the control centre to the Inmarsat uplink system ensure high reliability. The control centre continuously monitors the Inmarsat channel to provide a real-time assessment of the data link operation.

On the user vessel, the differential data stream is received by the ship's own Inmarsat terminal, and by a RACAL 'receive only' terminal. A RACAL Surveys supplied, purpose built, demodulator controls the formatting of the incoming data stream. A decoder is then used to convert the received data from the terminal into the differential GPS message for input to the computer. A MULTIFIX system on board then receives this data which is constantly available, the content of the data being a function of the area of operations. The MULTIFIX system calculates several positions. These positions are calculated using the satellite constellation and the pseudo range corrections common to each reference station. A network position solution using the entire data set is calculated, and this position is passed on to the contractor's navigation system. The operator has the choice of using the network solution or any of the other positions derived for each reference station.

## 10 SURVEY LOGS

## 10.1 SURVEY ACTIVITY LOGS

Time	Activity	Hours	Chg
** Date: 23/02/96			
00:00	PORT CALL FOR RESUPPLY/CREW CHANGE	18.000	
18:00	TRAVEL	6.000	
** Subtotal **		24.000	
** Date: 24/02/96			
00:00	TRAVEL	15.050	
15:03	STREAMER CONFIGURATION AND DEPLOYMENT	8.950	
** Subtotal **		24.000	
** Date: 25/02/96			
00:00	STREAMER CONFIGURATION AND DEPLOYMENT	17.000	
17:00	STREAMER CONFIGURATION AND DEPLOYMENT	2.450	
19:27	LINE# BB96-14 ABORTED-SWELL NOISE OUT OF SPEC	0.983	
20:26	WEATHER DOWNTIME	1.583	Y
22:01	RECORDING LINE BB96-14	1.984	
** Subtotal **		24.000	
** Date: 26/02/96			
00:00	RECORDING LINE BB96-14	0.083	
00:05	LINE CHANGE	1.217	
01:18	RECORDING LINE BB96-12	1.433	
02:44	LINE CHANGE	2.100	
04:50	RECORDING LINE BB96-12A	0.983	
05:49	LINE CHANGE	2.133	
07:57	RECORDING LINE BB96-29	0.467	
08:25	WEATHER DOWNTIME	6.500	Y
14:55	STREAMER CONFIGURATION AND DEPLOYMENT	3.250	
18:10	LINE CHANGE	0.317	
18:29	WEATHER DOWNTIME	0.883	Y
19:22	WEATHER DOWNTIME	1.517	Y
20:53	WEATHER DOWNTIME	0.217	Y
21:06	WEATHER DOWNTIME	0.350	Y
21:27	STREAMER CONFIGURATION AND DEPLOYMENT	2.550	
** Subtotal **		24.000	
** Date: 27/02/96			
00:00	STREAMER DEPLOYMENT	1.967	
01:58	TRAVEL	0.200	
02:10	DOWNTIME, ENERGY SOURCE FAILURE	0.533	
02:42	TRAVEL	0.500	
03:12	RECORDING LINE BB96-2	2.250	
05:27	TRAVEL	1.150	
06:36	RECORDING LINE BB96-4	3.250	
09:51	LINE CHANGE	0.200	
10:03	RECORDING LINE BB96-6	2.450	
12:30	LINE CHANGE	1.100	
13:36	RECORDING LINE BB96-8	2.217	
15:49	LINE CHANGE	0.183	
16:00	DOWNTIME, ENERGY SOURCE FAILURE	0.800	
16:48	LINE CHANGE	0.600	
17:24	RECORDING LINE BB96-29B	0.033	
17:26	DOWNTIME, VESSEL EQUIPMENT FAILURE	6.567	
** Subtotal **		24.000	
** Date: 28/02/96			
00:00	DOWNTIME, VESSEL EQUIPMENT FAILURE	7.500	
07:30	DOWNTIME, VESSEL EQUIPMENT FAILURE	9.000	
16:30	STREAMER DEPLOYMENT	5.983	
22:29	STREAMER DEPLOYMENT	1.517	
** Subtotal **		24.000	

** Date: 29/02/96		
00:00	STREAMER DEPLOYMENT	1.500
01:30	WEATHER DOWNTIME	2.000 Y
03:30	WEATHER DOWNTIME	4.000 Y
07:30	DOWNTIME, ENERGY SOURCE FAILURE	1.000
08:30	LINE CHANGE	0.783
09:17	RECORDING LINE BB96-16	1.667
10:57	LINE CHANGE	1.133
12:05	RECORDING LINE BB96-18	1.833
13:55	LINE CHANGE	1.067
14:59	RECORDING LINE BB96-22	1.917
16:54	LINE CHANGE	0.383
17:17	DOWNTIME, ENERGY SOURCE FAILURE	0.417
17:42	LINE CHANGE	0.950
18:39	RECORDING LINE BB96-24	1.383
20:02	LINE CHANGE	1.083
21:07	RECORDING LINE BB96-28	1.850
22:58	LINE CHANGE	1.034
** Subtotal **		24.000
** Date: 01/03/96		
00:00	RECORDING LINE BB96-30	2.317
02:19	LINE CHANGE	1.217
03:32	RECORDING LINE BB96-32	1.767
05:18	LINE CHANGE	1.033
06:20	WEATHER DOWNTIME	17.666 Y
** Subtotal **		24.000
** Date: 02/03/96		
00:00	WEATHER DOWNTIME	1.000 Y
01:00	WEATHER DOWNTIME	3.500 Y
04:30	WEATHER DOWNTIME	0.933 Y
05:26	RECORDING LINE BB96-34	2.200
07:38	LINE CHANGE	1.050
08:41	RECORDING LINE BB96-36	2.133
10:49	LINE CHANGE	1.017
11:50	RECORDING LINE BB96-45	2.483
14:19	LINE CHANGE	1.150
15:28	RECORDING LINE BB96-43	2.717
18:11	LINE CHANGE	0.917
19:06	RECORDING LINE BB96-41	2.333
21:26	TRAVEL	1.050
22:29	RECORDING LINE BB96-39	1.517
** Subtotal **		24.000
** Date: 03/03/96		
00:00	RECORDING LINE BB96-39	0.583
00:35	LINE CHANGE	1.017
01:36	RECORDING LINE BB96-37	1.883
03:29	LINE CHANGE	1.183
04:40	RECORDING LINE BB96-35	1.750
06:25	LINE CHANGE	1.117
07:32	RECORDING LINE BB96-31	1.867
09:24	LINE CHANGE	1.900
11:18	RECORDING LINE BB96-29C	2.350
13:39	LINE CHANGE	1.200
14:51	RECORDING LINE BB96-27	1.367
16:13	LINE CHANGE	1.100
17:19	RECORDING LINE BB96-25	2.233
19:33	LINE CHANGE	0.817
20:22	RECORDING LINE BB96-23	1.667
22:02	LINE CHANGE	1.367
23:24	RECORDING LINE BB96-21	0.599
** Subtotal **		24.000

** Date: 04/03/96		
00:00	RECORDING LINE BB96-21	1.400
01:24	LINE CHANGE	1.167
02:34	RECORDING LINE BB96-19	2.000
04:34	LINE CHANGE	1.150
05:43	RECORDING LINE BB96-17	1.933
07:39	LINE CHANGE	1.117
08:46	RECORDING LINE BB96-15	2.000
10:46	LINE CHANGE	1.050
11:49	RECORDING LINE BB96-13	2.000
13:49	LINE CHANGE	1.200
15:01	RECORDING LINE BB96-11	2.017
17:02	LINE CHANGE	1.117
18:09	RECORDING LINE BB96-09	1.950
20:06	LINE CHANGE	1.217
21:19	RECORDING LINE BB96-07	0.400
21:43	SOURCE RECOVERY	0.117
21:50	STREAMER RECOVERY	0.600
22:26	STREAMER RECOVERY	1.565
** Subtotal **		24.000
** Date: 05/03/96		
00:00	STREAMER DEPLOYMENT	3.750
03:45	SOURCE DEPLOYMENT	0.467
04:13	LINE CHANGE	1.733
05:57	RECORDING LINE BB96-10	3.817
09:46	LINE CHANGE	0.983
10:45	LINE CHANGE	1.417
12:10	RECORDING LINE BB96-56	2.000
14:10	LINE CHANGE	0.783
14:57	WEATHER DOWNTIME	2.783 Y
17:44	RECORDING LINE BB96-52	4.700
22:26	LINE CHANGE	1.283
23:43	RECORDING LINE BB96-40	0.284
** Subtotal **		24.000
** Date: 06/03/96		
00:00	RECORDING LINE BB96-40	1.333
01:20	LINE CHANGE	1.117
02:27	RECORDING LINE BB96-38	2.217
04:40	LINE CHANGE	0.833
05:30	WEATHER DOWNTIME	5.183 Y
10:41	RECORDING LINE BB96-48	1.933
12:37	LINE CHANGE	1.150
13:46	WEATHER DOWNTIME	5.467 Y
19:14	WEATHER DOWNTIME	1.117 Y
20:21	WEATHER DOWNTIME	3.650 Y
** Subtotal **		24.000
** Date: 07/03/96		
00:00	WEATHER DOWNTIME	4.333 Y
04:20	WEATHER DOWNTIME	0.550 Y
04:53	WEATHER DOWNTIME	3.450 Y
08:20	WEATHER DOWNTIME	0.917 Y
09:15	WEATHER DOWNTIME	2.033 Y
11:17	WEATHER DOWNTIME	1.883 Y
13:10	WEATHER DOWNTIME	3.500 Y
16:40	WEATHER DOWNTIME	0.467 Y
17:08	WEATHER DOWNTIME	1.133 Y
18:16	WEATHER DOWNTIME	1.767 Y
20:02	WEATHER DOWNTIME	0.417 Y
20:27	WEATHER DOWNTIME	1.550 Y
22:00	WEATHER DOWNTIME	1.217 Y
23:13	WEATHER DOWNTIME	0.783 Y
** Subtotal **		24.000

** Date: 08/03/96		
00:00	WEATHER DOWNTIME	0.683 Y
00:41	WEATHER DOWNTIME	2.550 Y
03:14	WEATHER DOWNTIME	1.267 Y
04:30	WEATHER DOWNTIME	3.333 Y
07:50	RECORDING LINE BB96-44	1.733
09:34	TRAVEL	1.117
10:41	RECORDING LINE BB96-46	1.617
12:18	TRAVEL	1.233
13:32	RECORDING LINE BB96-42A	1.783
15:19	TRAVEL	1.717
17:02	RECORDING LINE BB96-63	1.917
18:57	TRAVEL	1.217
20:10	RECORDING LINE BB96-61	1.933
22:06	TRAVEL	1.083
23:11	RECORDING LINE BB96-59	0.817
** Subtotal **		24.000
** Date: 09/03/96		
00:00	RECORDING LINE BB96-59	1.267
01:16	SOURCE RECOVERY	0.517
01:47	SOURCE DEPLOYMENT	0.817
02:36	TRAVEL	1.000
03:36	RECORDING LINE BB96-57	2.100
05:42	TRAVEL	1.133
06:50	RECORDING LINE BB96-55	1.817
08:39	TRAVEL	1.050
09:42	RECORDING LINE BB96-53	2.150
11:51	TRAVEL	1.167
13:01	RECORDING LINE BB96-51	2.100
15:07	TRAVEL	1.083
16:12	RECORDING LINE BB96-49	2.400
18:36	TRAVEL	1.450
20:03	RECORDING LINE BB96-47	2.800
22:51	TRAVEL	0.983
23:50	RECORDING LINE BB96-54	0.166
** Subtotal **		24.000
** Date: 10/03/96		
00:00	RECORDING LINE BB96-54	3.167
03:10	LINE CHANGE	1.800
04:58	RECORDING LINE BB96-7	1.950
06:55	LINE CHANGE	1.383
08:18	RECORDING LINE BB96-3	1.950
10:15	LINE CHANGE	1.383
11:38	RECORDING LINE BB96-1	1.983
13:37	LINE CHANGE	1.317
14:56	RECORDING LINE BB96-65	1.400
16:20	DOWNTIME, STREAMER DAMAGE OR LOSS	6.217 Y
22:33	TRAVEL	1.333
23:53	WEATHER DOWNTIME	0.117 Y
** Subtotal **		24.000
** Date: 11/03/96		
00:00	WEATHER DOWNTIME	6.917 Y
06:55	WEATHER DOWNTIME	0.750 Y
07:40	STREAMER RECOVERY	1.083
08:45	STREAMER DEPLOYMENT	1.167
09:55	WEATHER DOWNTIME	2.700 Y
12:37	RECORDING LINE BB96-71	1.967
14:35	LINE CHANGE	1.283
15:52	RECORDING LINE BB96-69	1.950
17:49	LINE CHANGE	1.167
18:59	RECORDING LINE BB96-67	1.950
20:56	LINE CHANGE	1.350
22:17	RECORDING LINE BB96-65A	0.983
23:16	LINE CHANGE	0.733
** Subtotal **		24.000

** Date: 12/03/96		
00:00	LINE CHANGE	1.833
01:50	RECORDING LINE BB96-50	5.700
07:32	SOURCE RECOVERY	0.550
08:05	STREAMER RECOVERY	1.383
09:28	TRAVEL	1.783
11:15	TRAVEL	12.751
** Subtotal **		24.000
** Date: 13/03/96		
00:00	TRAVEL	5.417
05:25	AIR GUN SIGNATURE TESTS	2.833 Y
08:15	PORT CALL FOR RESUPPLY/CREW CHANGE	4.250
12:30		11.500
** Subtotal **		24.000
*** Total ***		480.000

## 10.2 SURVEY PRODUCTION LOGS

Line	Azm	Overall SP Range	Process SP Range	Process Kilometres	Charge SP Range	Charge Kilometres	Status
** Date 25/02/96							
BB96-14	325	1001-1710	1001-1710	17.7500	1001-1710	17.7500	MSP
** Subtotal **				17.7500		17.7500	
** Date 26/02/96							
BB96-14	325	1711-1743	1711-1743	0.8250	1711-1743	0.8250	COM
BB96-12	145	1001-1517	1001-1517	12.9250	1001-1457	11.4250	TBC
BB96-12A	145	1397-1758	1397-1758	9.0500	1458-1758	7.5250	COM
BB96-29	55	1001-1330	0-0	0.0000	0-0	0.0000	TBR
BB96-29A	55	1001-1330	0-0	0.0000	0-0	0.0000	TBR
** Subtotal **				22.8000		19.7750	
** Date 27/02/96							
BB96-2	325	1001-1825	1001-1825	20.6250	1001-1825	20.6250	COM
BB96-4	145	1001-1837	1001-1837	20.9250	1001-1837	20.9250	COM
BB96-6	325	1001-1917	1001-1917	22.9250	1001-1917	22.9250	COM
BB96-8	145	1001-1826	1001-1826	20.6500	1001-1826	20.6500	COM
BB96-29A	55	1001-1013	0-0	0.0000	0-0	0.0000	TBR
BB96-29B	55	1001-1013	0-0	0.0000	0-0	0.0000	TBR
** Subtotal **				85.1250		85.1250	
** Date 29/02/96							
BB96-16	325	1001-1624	1001-1624	15.6000	1001-1624	15.6000	COM
BB96-18	144	1001-1667	1001-1667	16.6750	1001-1667	16.6750	COM
BB96-22	323	1001-1707	1001-1707	17.6750	1001-1707	17.6750	COM
BB96-24	144	1001-1507	1001-1507	12.6750	1001-1507	12.6750	COM
BB96-28	326	1001-1665	1001-1665	16.6250	1001-1665	16.6250	COM
** Subtotal **				79.2500		79.2500	
** Date 01/03/96							
BB96-30	147	1001-1707	1001-1707	17.6750	1001-1707	17.6750	COM
BB96-32	327	1001-1616	1001-1616	15.4000	1001-1616	15.4000	COM
** Subtotal **				33.0750		33.0750	
** Date 02/03/96							
BB96-34	146	1001-1747	1001-1747	18.6750	1001-1747	18.6750	COM
BB96-36	326	1001-1746	1001-1746	18.6500	1001-1746	18.6500	COM
BB96-45	56	1001-1828	1001-1828	20.7000	1001-1828	20.7000	COM
BB96-43	237	1001-1906	1001-1906	22.6500	1001-1906	22.6500	COM
BB96-41	56	1001-1782	1001-1782	19.5500	1001-1782	19.5500	COM
BB96-39	236	1001-1510	1001-1510	12.7500	1001-1510	12.7500	MSP
** Subtotal **				112.9750		112.9750	
** Date 03/03/96							
BB96-39	236	1511-1708	1511-1708	4.9500	1511-1708	4.9500	COM
BB96-37	56	1001-1628	1001-1628	15.7000	1001-1628	15.7000	COM
BB96-35	235	1001-1589	1001-1589	14.7250	1001-1589	14.7250	COM
BB96-31	56	1001-1623	1001-1623	15.5750	1001-1623	15.5750	COM
BB96-29C	235	1001-1785	1001-1785	19.6250	1001-1785	19.6250	COM
BB96-27	54	1001-1456	1001-1456	11.4000	1001-1456	11.4000	COM
BB96-25	235	1001-1750	1001-1750	18.7500	1001-1750	18.7500	COM
BB96-23	55	1001-1666	1001-1666	16.6500	1001-1666	16.6500	COM
BB96-21	235	1001-1203	1001-1203	5.0750	1001-1203	5.0750	MSP
** Subtotal **				122.4500		122.4500	

** Date 04/03/96							
BB96-21	235	1204-1667	1204-1667	11.6000	1204-1667	11.6000	COM
BB96-19	55	1001-1665	1001-1665	16.6250	1001-1665	16.6250	COM
BB96-17	236	1001-1656	1001-1656	16.4000	1001-1656	16.4000	COM
BB96-15	56	1001-1666	1001-1666	16.6500	1001-1666	16.6500	COM
BB96-13	236	1001-1664	1001-1664	16.6000	1001-1664	16.6000	COM
BB96-11	57	1001-1662	1001-1662	16.5500	1001-1662	16.5500	COM
BB96-09	237	1001-1658	1001-1658	16.4500	1001-1658	16.4500	COM
BB96-07	56	1001-1120	0-0	0.0000	0-0	0.0000	TBR
** Subtotal **							
				110.8750		110.8750	
** Date 05/03/96							
BB96-10	325	1001-2278	1001-2278	31.9500	1001-2278	31.9500	COM
BB96-56	145	1001-1663	1001-1663	16.5750	1001-1663	16.5750	COM
BB96-52	180	1001-2672	1001-2672	41.8000	1001-2672	41.8000	COM
BB96-40	325	1001-1097	1001-1097	2.4250	1001-1097	2.4250	MSP
** Subtotal **							
				92.7500		92.7500	
** Date 06/03/96							
BB96-40	56	1098-1550	1098-1550	11.3250	1098-1550	11.3250	COM
BB96-38	146	1001-1755	1001-1755	18.8750	1001-1755	18.8750	COM
BB96-48	293	1001-1677	1001-1677	16.9250	1001-1677	16.9250	COM
BB96-46	292	1001-1349	0-0	0.0000	0-0	0.0000	TBR
** Subtotal **							
				47.1250		47.1250	
** Date 07/03/96							
BB96-42	292	1001-1589	0-0	0.0000	0-0	0.0000	TBR
** Subtotal **							
				0.0000		0.0000	
** Date 08/03/96							
BB96-44	112	1001-1579	1001-1579	14.4750	1001-1579	14.4750	COM
BB96-46	292	1001-1547	1001-1547	13.6750	1001-1547	13.6750	COM
BB96-42A	112	1001-1589	1001-1589	14.7250	1001-1589	14.7250	COM
BB96-63	236	1001-1656	1001-1656	16.4000	1001-1656	16.4000	COM
BB96-61	55	1001-1662	1001-1662	16.5500	1001-1662	16.5500	COM
BB96-59	235	1001-1280	1001-1280	7.0000	1001-1280	7.0000	MSP
** Subtotal **							
				82.8250		82.8250	
** Date 09/03/96							
BB96-59	235	1281-1706	1281-1706	10.6500	1281-1706	10.6500	COM
BB96-57	232	1001-1716	1001-1716	17.9000	1001-1716	17.9000	COM
BB96-55	53	1001-1661	1001-1661	16.5250	1001-1661	16.5250	COM
BB96-53	234	1001-1787	1001-1787	19.6750	1001-1787	19.6750	COM
BB96-51	56	1001-1784	1001-1784	19.6000	1001-1784	19.6000	COM
BB96-49	235	1001-1903	1001-1903	22.5750	1001-1903	22.5750	COM
BB96-47	55	1001-2073	1001-2073	26.8250	1001-2073	26.8250	COM
BB96-54	292	1001-1061	1001-1061	1.5250	1001-1061	1.5250	MSP
** Subtotal **							
				135.2750		135.2750	
** Date 10/03/96							
BB96-54	292	1061-2266	1061-2266	30.1500	1061-2266	30.1500	COM
BB96-7	56	1001-1661	1001-1661	16.5250	1001-1661	16.5250	COM
BB96-3	237	1001-1662	1001-1662	16.5500	1001-1662	16.5500	COM
BB96-1	57	1001-1669	1001-1669	16.7250	1001-1669	16.7250	COM
BB96-65	237	1001-1467	1001-1467	11.6750	1001-1380	9.5000	TBC
** Subtotal **							
				91.6250		89.4500	

** Date 11/03/96						
BB96-71	57	1001-1666	1001-1666	16.6500	1001-1666	16.6500 COM
BB96-69	237	1001-1667	1001-1667	16.6750	1001-1667	16.6750 COM
BB96-67	57	1001-1667	1001-1667	16.6750	1001-1667	16.6750 COM
BB96-65A	237	1310-1668	1310-1668	8.9750	1381-1668	7.2000 COM
** Subtotal **						
				58.9750		57.2000
** Date 12/03/96						
BB96-50	118	1001-3104	1001-3104	52.6000	1001-3104	52.6000 COM
** Subtotal **						
				52.6000		52.6000
*** Total ***						
				1145.4750		1138.5000

10.3 SURVEY LINE LOGS

Sail Line: BB96-1 Azm: 57 Status: COM Date: 10/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 1  
 Total SP Range: 1001-1669  
 Process Range : 1001-1669  
 Charge Range : 1001-1669  
 Total CMP Km : 16.7250  
 Process CMP Km: 16.7250  
 Charge CMP Km : 16.7250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 11:38	427	72.0 M	ENE 22 KNOTS	5	2.5M	78.1 M
EOL 13:37	433	72.4 M	ENE 25 KNOTS	5-6	1.5M	78.1 M

Streamer Noise (uB) SOL #1 8.6 Feather 0.0S  
 EOL #1 6.5 Feather 0.0S Ave Depth (M): 7 Qual 1:3  
 Bad Grps: channels # 178 and 61 spiking # 179 dead  
 Comments: STREAMER AT 7 METERS. slight swell noise effecting this line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.2 Ave 1.3  
 Active Tailbuoys - Type: DGPS In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-2 Azm: 325 Status: COM Date: 27/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 2  
 Total SP Range: 1001-1825  
 Process Range : 1001-1825  
 Charge Range : 1001-1825  
 Total CMP Km : 20.6250  
 Process CMP Km: 20.6250  
 Charge CMP Km : 20.6250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 03:12	23	77.0 M	12-15KNTS. SW	3	0.5M	82.0 M
EOL 05:27	30	72.8 M	10KNTS. NE	3	0.5M	82.0 M

Streamer Noise (uB) SOL #1 3.7 Feather 1.0P  
 EOL #1 3.8 Feather 0.0S Ave Depth (M): 6 Qual 1:3  
 Bad Grps:  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.7 EOL 1.7 Ave 1.7  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

## 1996 BASS BASIN 2D MARINE SEISMIC SURVEY

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Sail Line: BB96-3 Azm: 237 Status: COM Date: 10/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 3  
 Total SP Range: 1001-1662  
 Process Range : 1001-1662  
 Charge Range : 1001-1662  
 Total CMP Km : 16.5500  
 Process CMP Km: 16.5500  
 Charge CMP Km : 16.5500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 08:18	420	71.7 M	ENE 22 KNOTS	5	2.0M	79.6 M
EOL 10:15	426	73.5 M	ENE 25 KNOTS	5-6	2.5M	79.6 M

Streamer Noise (uB) SOL #1 6.4 Feather 1.0P  
 EOL #1 7.0 Feather 3.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: channels # 178 and 179 spiking  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.0 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-4 Azm: 145 Status: COM Date: 27/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 4  
 Total SP Range: 1001-1837  
 Process Range : 1001-1837  
 Charge Range : 1001-1837  
 Total CMP Km : 20.9250  
 Process CMP Km: 20.9250  
 Charge CMP Km : 20.9250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 06:36	0	73.3 M	12-15KNTS. SW	3	0.5M	79.7 M
EOL 09:50	0	77.6 M	8KNTS. NE	3	0.5M	79.7 M

Streamer Noise (uB) SOL #1 3.5 Feather 1.0P  
 EOL #1 3.8 Feather 0.0P Ave Depth (M): 7 Qual 1:3

Bad Grps:  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.5 EOL 1.4 Ave 1.1  
 Active Tailbuoys - Type: DGPS In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

## 1996 BASS BASIN 2D MARINE SEISMIC SURVEY

Sail Line: BB96-6 Azm: 325 Status: COM Date: 27/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 6  
 Total SP Range: 1001-1917  
 Process Range : 1001-1917  
 Charge Range : 1001-1917  
 Total CMP Km : 22.9250  
 Process CMP Km: 22.9250  
 Charge CMP Km : 22.9250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 10:03	39	79.3 M	8 KNTS. SSW	3	0.5M	81.2 M
EOL 12:30	47	70.8 M	6 KNTS. W	2	0.8M	81.2 M

Streamer Noise (uB) SOL #1 3.2 Feather 2.0S  
 EOL #1 3.5 Feather 2.0P Ave Depth (M): 7 Qual 1:3

## Bad Grps:

## Comments:

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.1 EOL 1.4 Ave 1.2

Active Tailbuoys - Type: DGPS

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

## Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-7 Azm: 56 Status: COM Date: 10/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 7  
 Total SP Range: 1001-1661  
 Process Range : 1001-1661  
 Charge Range : 1001-1661  
 Total CMP Km : 16.5250  
 Process CMP Km: 16.5250  
 Charge CMP Km : 16.5250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 04:58	413	76.5 M	NE 20 KNOTS	4-5	1.0M	78.9 M
EOL 06:55	419	74.4 M	ENE 22 KNOTS	4-5	1.5M	78.9 M

Streamer Noise (uB) SOL #1 5.4 Feather 3.0S  
 EOL #1 6.5 Feather 0.0S Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: STREAMER AT 7 METRES

SOL Source Vol (in3) : #1 1800

Pressure (psi): 1800

Ave Source Depths (M): #1 7

Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.2 EOL 1.4 Ave 1.4

Active Tailbuoys - Type: DGPS

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

## Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-8 Azm: 145 Status: COM Date: 27/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 8  
 Total SP Range: 1001-1826  
 Process Range : 1001-1826  
 Charge Range : 1001-1826  
 Total CMP Km : 20.6500  
 Process CMP Km: 20.6500  
 Charge CMP Km : 20.6500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 13:35	48	70.4 M	6 KNTS. SW	3	1.0M	80.4 M
EOL 15:49	55	78.8 M	15 KNTS. SW	3	0.5M	80.4 M

Streamer Noise (uB) SOL #1 3.5 Feather 3.0P  
 EOL #1 2.8 Feather 2.0P Ave Depth (M): 7 Qual 1:3

Bad Grps:  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.4 EOL 1.4 Ave 1.4  
 Active Tailbuoys - Type: DGPS In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-9 Azm: 237 Status: COM Date: 04/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 09  
 Total SP Range: 1001-1658  
 Process Range : 1001-1658  
 Charge Range : 1001-1658  
 Total CMP Km : 16.4500  
 Process CMP Km: 16.4500  
 Charge CMP Km : 16.4500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 18:09	240	71.8 M	22 KNTS.E	3	1.5M	79.6 M
EOL 20:06	246	75.7 M	22 KNTS.E	3	1.0M	79.6 M

Streamer Noise (uB) SOL #1 3.6 Feather 5.0P  
 EOL #1 3.6 Feather 2.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments: bird #1 coming up to 6 metres during line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.7 EOL 1.1 Ave 1.5  
 Active Tailbuoys - Type: DGPS In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-10 Azm: 325 Status: COM Date: 05/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 10  
 Total SP Range: 1001-2278  
 Process Range : 1001-2278  
 Charge Range : 1001-2278  
 Total CMP Km : 31.9500  
 Process CMP Km: 31.9500  
 Charge CMP Km : 31.9500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 05:57	247	76.9 M	20 KNTS.NE	3	2.0M	80.4 M
EOL 09:46	258	72.2 M	14 KNTS.ENE	3	1.5M	80.4 M

Streamer Noise (uB) SOL #1 3.5 Feather 1.0P  
 EOL #1 3.9 Feather 1.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 140 spiking  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.0 EOL 1.2 Ave 1.2  
 Active Tailbuoys - Type: DGPS In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-11 Azm: 57 Status: COM Date: 04/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 11  
 Total SP Range: 1001-1662  
 Process Range : 1001-1662  
 Charge Range : 1001-1662  
 Total CMP Km : 16.5500  
 Process CMP Km: 16.5500  
 Charge CMP Km : 16.5500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 15:01	233	75.5 M	18 KNTS.SSE	3	0.5M	79.6 M
EOL 17:02	239	72.3 M	22 KNTS.E	3	1.0M	79.6 M

Streamer Noise (uB) SOL #1 2.8 Feather 2.0S  
 EOL #1 3.4 Feather 1.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments: bird #1 coming up to 6 metres during line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.6 EOL 1.6 Ave 1.6  
 Active Tailbuoys - Type: DGPS In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

## 1996 BASS BASIN 2D MARINE SEISMIC SURVEY

Sail Line: BB96-12 Azm: 146 Status: TBC Date: 26/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 12  
 Total SP Range: 1001-1517  
 Process Range : 1001-1517  
 Charge Range : 1001-1517  
 Total CMP Km : 12.9250  
 Process CMP Km: 12.9250  
 Charge CMP Km : 12.9250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 01:18	9	72.3 M	15KNTS. NE	3	1.5M	79.0 M
EOL 02:45	14	77.2 M	15KNTS. NE	3	1.5M	79.0 M

Streamer Noise (uB) SOL #1 3.8 Feather 1.0S  
 EOL #1 5.4 Feather 1.0P Ave Depth (M): 6 Qual 1:3

## Bad Grps:

Comments: line halted at sp#1517 front of streamer out of spec

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 6 Qual #1 4

## Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.4 EOL 1.7 Ave 1.6

Active Tailbuoys - Type: dgps

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-12A Azm: 146 Status: COM Date: 26/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 12A  
 Total SP Range: 1397-1758  
 Process Range : 1397-1758  
 Charge Range : 1397-1758  
 Total CMP Km : 9.0500  
 Process CMP Km: 9.0500  
 Charge CMP Km : 9.0500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 04:50	15	76.1 M	15KNTS. NE	3	1.5M	79.7 M
EOL 05:46	18	77.9 M	09KNTS. E	2	0.5M	79.7 M

Streamer Noise (uB) SOL #1 3.6 Feather 3.0P  
 EOL #1 3.3 Feather 2.0P Ave Depth (M): 6 Qual 1:3

## Bad Grps:

Comments: continuation of line BB96-12

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 6 Qual #1 4

## Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.4 EOL 1.1 Ave 1.2

Active Tailbuoys - Type: dgps

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-13 Azm: 236 Status: COM Date: 04/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 13  
 Total SP Range: 1001-1664  
 Process Range : 1001-1664  
 Charge Range : 1001-1664  
 Total CMP Km : 16.6000  
 Process CMP Km: 16.6000  
 Charge CMP Km : 16.6000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 11:49	226	74.9 M	11 KNTS.E	3	0.5M	80.4 M
EOL 13:49	232	76.3 M	12-15 KNTS.SE	3	0.5M	80.4 M

Streamer Noise (uB) SOL #1 4.8 Feather 3.0P  
 EOL #1 2.5 Feather 1.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments: bird #1 coming up to 6Mt during line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.2 EOL 1.7 Ave 1.5  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-14 Azm: 325 Status: COM Date: 25/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 14  
 Total SP Range: 1001-1743  
 Process Range : 1001-1743  
 Charge Range : 1001-1743  
 Total CMP Km : 18.5750  
 Process CMP Km: 18.5750  
 Charge CMP Km : 18.5750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 22:01	1	76.4 M	15KNTS. NE	3	1.5M	76.7 M
EOL 00:05	7	71.8 M	15KNTS. NE	3	1.5M	76.7 M

Streamer Noise (uB) SOL #1 4.2 Feather -3.0P  
 EOL #1 4.0 Feather 1.0P Ave Depth (M): 6 Qual 1:3

Bad Grps:  
 Comments: midnight shotpoint  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 6 Qual #1 4  
 Dropouts: none  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.0 Ave 1.1  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints : none  
 Segment Edits : none

Sail Line: BB96-15 Azm: 56 Status: COM Date: 04/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 15  
 Total SP Range: 1001-1666  
 Process Range : 1001-1666  
 Charge Range : 1001-1666  
 Total CMP Km : 16.6500  
 Process CMP Km: 16.6500  
 Charge CMP Km : 16.6500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 08:46	219	76.2 M	11 KNTS.E	3	0.5M	78.9 M
EOL 10:46	225	75.0 M	15 KNTS.SW	3	0.5M	78.9 M

Streamer Noise (uB) SOL #1 2.9 Feather 5.0P  
 EOL #1 3.5 Feather 1.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments: bird #1 coming up to 6Mt during line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 2.4 EOL 1.2 Ave 1.8  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-16 Azm: 325 Status: COM Date: 29/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 16  
 Total SP Range: 1001-1624  
 Process Range : 1001-1624  
 Charge Range : 1001-1624  
 Total CMP Km : 15.6000  
 Process CMP Km: 15.6000  
 Charge CMP Km : 15.6000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 09:17	56	79.3 M	18 KNTS. SSW	3	1.5M	81.1 M
EOL 10:57	62	77.2 M	18 KNTS. S-SW	3	1.5M	81.1 M

Streamer Noise (uB) SOL #1 3.9 Feather 1.0S  
 EOL #1 3.4 Feather 1.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: TRACE #58 INT. SPIKES  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.0 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-17 Azm: 236 Status: COM Date: 04/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 17  
 Total SP Range: 1001-1656  
 Process Range : 1001-1656  
 Charge Range : 1001-1656  
 Total CMP Km : 16.4000  
 Process CMP Km: 16.4000  
 Charge CMP Km : 16.4000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 05:43	212	74.2 M	9 KNTS.E	3	0.5M	78.9 M
EOL 07:39	218	76.5 M	11 KNTS.E	3	0.5M	78.9 M

Streamer Noise (uB) SOL #1 3.3 Feather 2.0P  
 EOL #1 2.7 Feather 1.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 62 spiking  
 Comments: bird #1 coming up to 6Mt during line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.9 EOL 1.3 Ave 1.6  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-18 Azm: 144 Status: COM Date: 29/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 18  
 Total SP Range: 1001-1667  
 Process Range : 1001-1667  
 Charge Range : Nil  
 Total CMP Km : 16.6750  
 Process CMP Km: 16.6750  
 Charge CMP Km : Nil

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 12:05	63	77.1 M	12 KNTS. SSW	3	1.5M	80.4 M
EOL 13:55	69	76.4 M	18 KNTS. SW	3	1.0M	80.4 M

Streamer Noise (uB) SOL #1 3.9 Feather 2.0P  
 EOL #1 3.1 Feather 0.0P Ave Depth (M): 7 Qual 1:3

Bad Grps:  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.0 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-19 Azm: 55 Status: COM Date: 04/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 19  
 Total SP Range: 1001-1665  
 Process Range : 1001-1665  
 Charge Range : 1001-1665  
 Total CMP Km : 16.6250  
 Process CMP Km: 16.6250  
 Charge CMP Km : 16.6250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 02:34	205	78.0 M	5 KNTS.S	2	0.5M	79.2 M
EOL 04:34	211	74.6 M	9 KNTS.E	3	0.5M	79.2 M

Streamer Noise (uB) SOL #1 3.9 Feather 1.0S  
 EOL #1 3.5 Feather 2.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments: bird #1 coming up to 6Mt during line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.7 EOL 1.6 Ave 1.7  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-21 Azm: 235 Status: COM Date: 03/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 21  
 Total SP Range: 1001-1667  
 Process Range : 1001-1667  
 Charge Range : 1001-1667  
 Total CMP Km : 16.6750  
 Process CMP Km: 16.6750  
 Charge CMP Km : 16.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 00:00	201	76.3 M	6 KNTS.S	2	0.5M	81.1 M
EOL 01:24	204	77.3 M	5 KNTS.S	2	0.5M	81.1 M

Streamer Noise (uB) SOL #1 3.0 Feather 4.0P  
 EOL #1 3.0 Feather 0.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 219 low amplitude during bol amplitude test  
 Comments: bird #1 coming up to 6Mt during line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.2 EOL 1.1 Ave 1.3  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-22 Azm: 323 Status: COM Date: 29/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 22  
 Total SP Range: 1001-1707  
 Process Range : 1001-1707  
 Charge Range : 1001-1707  
 Total CMP Km : 17.6750  
 Process CMP Km: 17.6750  
 Charge CMP Km : 17.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 14:59	70	76.4 M	20 KNTS. SW	3	0.5M	80.4 M
EOL 16:54	76	76.4 M	23 KNTS. WSW	3	1.5M	80.4 M

Streamer Noise (uB) SOL #1 3.4 Feather 4.0S  
 EOL #1 3.6 Feather 2.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: CH # 58 INTERMITTENT NOISE SPIKES  
 Comments: SP# 1142 to 1201 of line 14mtrs. to port due to a nav spike.  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.6 Ave 1.5  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-23 Azm: 55 Status: COM Date: 03/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 23  
 Total SP Range: 1001-1666  
 Process Range : 1001-1666  
 Charge Range : 1001-1666  
 Total CMP Km : 16.6500  
 Process CMP Km: 16.6500  
 Charge CMP Km : 16.6500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 20:22	191	77.1 M	8 KNTS.S	2	0.5M	78.9 M
EOL 22:02	197	76.7 M	8 KNTS. SSW	2	0.0M	78.9 M

Streamer Noise (uB) SOL #1 2.8 Feather 6.0S  
 EOL #1 2.9 Feather 2.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.1 EOL 1.1 Ave 1.1  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-24 Azm: 144 Status: COM Date: 29/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 24  
 Total SP Range: 1001-1507  
 Process Range : 1001-1507  
 Charge Range : 1001-1507  
 Total CMP Km : 12.6750  
 Process CMP Km: 12.6750  
 Charge CMP Km : 12.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 18:39	77	77.5 M	24 KNTS. SW	4-5	1.5M	80.4 M
EOL 20:02	82	78.1 M	22 KNTS. WSW	4-5	1.5M	80.4 M

Streamer Noise (uB) SOL #1 2.8 Feather 1.0P  
 EOL #1 4.1 Feather 1.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: CH # 58, 35 INTERMITTENT NOISE SPIKES  
 Comments: SP# 1392 to 1507 birds #1, 2, 3, being pushed up by the swell  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4

Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 2.0 EOL 1.1 Ave 1.6  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-25 Azm: 235 Status: COM Date: 03/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 25  
 Total SP Range: 1001-1750  
 Process Range : 1001-1750  
 Charge Range : 1001-1750  
 Total CMP Km : 18.7500  
 Process CMP Km: 18.7500  
 Charge CMP Km : 18.7500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 17:19	183	75.5 M	8 KNTS.S	2	0.5M	79.6 M
EOL 19:33	190	76.3 M	8 KNTS. S	2	0.0M	79.6 M

Streamer Noise (uB) SOL #1 3.1 Feather 3.0P  
 EOL #1 3.0 Feather 2.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4

Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.2 EOL 1.9 Ave 1.6  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-27 Azm: 54 Status: COM Date: 03/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 27  
 Total SP Range: 1001-1456  
 Process Range : 1001-1456  
 Charge Range : 1001-1456  
 Total CMP Km : 11.4000  
 Process CMP Km: 11.4000  
 Charge CMP Km : 11.4000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 14:51	178	76.1 M	5 KNTS.S	3	0.5M	78.9 M
EOL 16:13	182	75.6 M	9 KNTS. SSE	3	0.0M	78.9 M

Streamer Noise (uB) SOL #1 4.4 Feather 2.0P  
 EOL #1 5.3 Feather 0.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 61 spiking  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.0 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-28 Azm: 326 Status: COM Date: 29/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 28  
 Total SP Range: 1001-1665  
 Process Range : 1001-1665  
 Charge Range : 1001-1665  
 Total CMP Km : 16.6250  
 Process CMP Km: 16.6250  
 Charge CMP Km : 16.6250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 21:07	83	78.9 M	26 KNTS. WSW	4-5	1.5M	80.4 M
EOL 22:58	89	78.7 M	22 KNTS. WSW	4-5	1.5M	80.4 M

Streamer Noise (uB) SOL #1 5.3 Feather 4.0S  
 EOL #1 3.6 Feather 2.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: trace #58 intermittent spikes  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.5 EOL 1.0 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-29 Azm: 55 Status: TBR Date: 26/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 29  
 Total SP Range: 1001-1330  
 Process Range : Nil  
 Charge Range : Nil  
 Total CMP Km : 8.2500  
 Process CMP Km: Nil  
 Charge CMP Km : Nil

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 07:57	170	77.2 M	6 KNTS. SW	3	0.5M	79.6 M
EOL 08:25	177	75.8 M	15 KNTS. SW	3	0.5M	79.6 M

Streamer Noise (uB) SOL #1 4.1 Feather 8.0S  
 EOL #1 2.9 Feather 6.0S Ave Depth (M): 7 Qual 1:3

## Bad Grps:

## Comments:

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.0 EOL 1.2 Ave 1.1  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy capsized. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-29A Azm: 55 Status: TBR Date: 26/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 29A  
 Total SP Range: 1001-1330  
 Process Range : Nil  
 Charge Range : Nil  
 Total CMP Km : 8.5750  
 Process CMP Km: Nil  
 Charge CMP Km : Nil

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 18:29	19	78.2 M	13KNTS. SW	3	2.0M	78.2 M
EOL 17:26	22	77.0 M	13KNTS. SW	3	2.0M	77.0 M

Streamer Noise (uB) SOL #1 6.1 Feather 3.0S  
 EOL #1 22.9 Feather 2.0S Ave Depth (M): 6 Qual 1:3

## Bad Grps:

## Comments: LINE TERMINATED SWELL NOISE ON STREAMER

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 6 Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 0.0 EOL 0.0 Ave 0.0  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-29B Azm: 55 Status: TBR Date: 27/02/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 29B  
 Total SP Range: 1001-1013  
 Process Range : Nil  
 Charge Range : Nil  
 Total CMP Km : 0.3250  
 Process CMP Km: Nil  
 Charge CMP Km : Nil

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 17:24	0	0.0 M	LIGHT AIRS	1	0.0M	81.1 M
EOL 17:26	0	0.0 M	SW 5 KNOTS	2	1.0M	81.1 M

Streamer Noise (uB) SOL #1 0.0 Feather 0.0  
 EOL #1 0.0 Feather 0.0 Ave Depth (M): 7 Qual 1:4

Bad Grps:  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 0.0 EOL 0.0 Ave 0.0  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy overturned in rough weather.all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-29C Azm: 235 Status: COM Date: 03/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 29C  
 Total SP Range: 1001-1785  
 Process Range : 1001-1785  
 Charge Range : 1001-1785  
 Total CMP Km : 19.6250  
 Process CMP Km: 19.6250  
 Charge CMP Km : 19.6250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 11:18	0	77.2 M	SW 8 KNOTS	3	0.5M	79.6 M
EOL 13:39	0	78.8 M	S 15 KNOTS	4-5	0.5M	79.6 M

Streamer Noise (uB) SOL #1 4.1 Feather 8.0S  
 EOL #1 2.9 Feather 6.0S Ave Depth (M): 7 Qual 1:4

Bad Grps:  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 0.0 EOL 0.0 Ave 0.0  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy overturned in rough weather.all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-30 Azm: 147 Status: COM Date: 01/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 30  
 Total SP Range: 1001-1707  
 Process Range : 1001-1707  
 Charge Range : 1001-1707  
 Total CMP Km : 17.6750  
 Process CMP Km: 17.6750  
 Charge CMP Km : 17.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 00:00	90	76.8 M	20 KNTS. WSW	4	1.5M	79.6 M
EOL 02:19	96	77.7 M	22 KNTS. SW	4	1.5M	79.6 M

Streamer Noise (uB) SOL #1 3.8 Feather 5.0P  
 EOL #1 14.6 Feather 3.0P Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: Front of cable varied in depth due to sea conditions.

SOL Source Vol (in3) : #1 1800

Pressure (psi): 1800

Ave Source Depths (M): #1 7

Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.3 EOL 2.3 Ave 1.9

Active Tailbuoys - Type: dgps

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-31 Azm: 56 Status: COM Date: 03/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 31  
 Total SP Range: 1001-1623  
 Process Range : 1001-1623  
 Charge Range : 1001-1623  
 Total CMP Km : 15.5750  
 Process CMP Km: 15.5750  
 Charge CMP Km : 15.5750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 07:32	163	77.2 M	8 KNTS. SW	2	0.5 M	79.6 M
EOL 09:24	169	78.1 M	8 KNTS. SW	2	0.5 M	79.6 M

Streamer Noise (uB) SOL #1 3.8 Feather 6.0S  
 EOL #1 2.8 Feather 0.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: channel 58 intermittent spikes

## Comments:

SOL Source Vol (in3) : #1 1800

Pressure (psi): 1800

Ave Source Depths (M): #1 7

Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.4 EOL 1.1 Ave 1.2

Active Tailbuoys - Type: dgps

In Use: #1: N

Nav Qual 4

Compasses: all operational.

Acoustics: n/a

Comments : tailbuoy capsized in the rough weather. all compasses working

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-32 Azm: 327 Status: COM Date: 01/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 32  
 Total SP Range: 1001-1616  
 Process Range : 1001-1616  
 Charge Range : 1001-1616  
 Total CMP Km : 15.4000  
 Process CMP Km: 15.4000  
 Charge CMP Km : 15.4000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 03:32	97	77.0 M	30 KNTS. W	4-5	1.5M	80.4 M
EOL 05:18	102	77.0 M	30 KNTS. NW	4-5	2.5M	80.4 M

Streamer Noise (uB) SOL #1 6.2 Feather 3.0S  
 EOL #1 6.1 Feather 1.0P Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: Front of cable varied in depth due to sea conditions.

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.4 EOL 1.1 Ave 1.3

Active Tailbuoys - Type: dgps

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-34 Azm: 146 Status: COM Date: 02/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 34  
 Total SP Range: 1001-1747  
 Process Range : 1001-1747  
 Charge Range : 1001-1747  
 Total CMP Km : 18.6750  
 Process CMP Km: 18.6750  
 Charge CMP Km : 18.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 05:26	103	76.8 M	12 KNTS. SW	3	1-2M	79.6 M
EOL 07:38	109	78.3 M	14 KNTS. S	3	1-2M	79.6 M

Streamer Noise (uB) SOL #1 2.9 Feather 0.0S  
 EOL #1 2.9 Feather 0.0S Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: Front of cable varied in depth due to sea conditions.

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.2 EOL 1.3 Ave 1.3

Active Tailbuoys - Type: dgps

In Use: #1: N

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy capsized in the rough weather. all compasses working

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-35 Azm: 235 Status: COM Date: 03/03/96

CMP Lines: Source #1 Edit

Streamer #1 - : 35

Total SP Range: 1001-1589

Process Range : 1001-1589

Charge Range : 1001-1589

Total CMP Km : 14.7250

Process CMP Km: 14.7250

Charge CMP Km : 14.7250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 04:40	157	76.3 M	LIGHT AIRS	1	0.0M	81.1 M
EOL 06:25	162	77.3 M	SW 5 KNOTS	2	1.0M	81.1 M

Streamer Noise (uB) SOL #1 3.0 Feather 3.0P  
EOL #1 3.4 Feather 1.0P Ave Depth (M): 7 Qual 1:4

Bad Grps:

Comments: STREAMER AT 7 METERS

SOL Source Vol (in3) : #1 1800

Pressure (psi): 1800

Ave Source Depths (M): #1 7

Qual #1 4

Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.6 EOL 1.8 Ave 1.8

Active Tailbuoys - Type: dgps

In Use: #1: N

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy overturned in rough weather.all compasses operational

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-36 Azm: 326 Status: COM Date: 02/03/96

CMP Lines: Source #1 Edit

Streamer #1 - : 36

Total SP Range: 1001-1746

Process Range : 1001-1746

Charge Range : 1001-1746

Total CMP Km : 18.6500

Process CMP Km: 18.6500

Charge CMP Km : 18.6500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 08:41	110	78.0 M	10 KNTS.S	2	1 M	79.6 M
EOL 10:49	117	77.4 M	12 KNTS. S	2	1 M	79.6 M

Streamer Noise (uB) SOL #1 3.5 Feather 1.0S  
EOL #1 3.1 Feather 0.0S Ave Depth (M): 7 Qual 1:3

Bad Grps:

Comments: Front of cable varied in depth due to sea conditions.

SOL Source Vol (in3) : #1 1800

Pressure (psi): 1800

Ave Source Depths (M): #1 7

Qual #1 4

Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.7 EOL 1.1 Ave 1.4

Active Tailbuoys - Type: dgps

In Use: #1: N

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy capsized in the rough weather. all compasses working

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-37 Azm: 56 Status: COM Date: 03/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 37  
 Total SP Range: 1001-1628  
 Process Range : 1001-1628  
 Charge Range : 1001-1628  
 Total CMP Km : 15.7000  
 Process CMP Km: 15.7000  
 Charge CMP Km : 15.7000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 01:36	150	79.9 M	15 KNTS.SW	3	0.5 M	78.1 M
EOL 03:29	156	76.6 M	LIGHT AIR	1	0.0 M	78.1 M

Streamer Noise (uB) SOL #1 3.9 Feather 0.0S  
 EOL #1 3.3 Feather 0.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: channel 58 intermittent spikes  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.0 EOL 1.6 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational.  
 Acoustics: n/a  
 Comments : tailbuoy capsized in the rough weather. all compasses working  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-38 Azm: 146 Status: COM Date: 06/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 38  
 Total SP Range: 1001-1755  
 Process Range : 1001-1755  
 Charge Range : 1001-1755  
 Total CMP Km : 18.8750  
 Process CMP Km: 18.8750  
 Charge CMP Km : 18.8750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 02:27	288	76.9 M	25 KNTS.NNE	5	0.5M	78.1 M
EOL 04:40	295	80.1 M	18 KNTS.NNE	5	2.0M	78.1 M

Streamer Noise (uB) SOL #1 4.7 Feather 2.0S  
 EOL #1 3.0 Feather 4.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace #s 58, 140. spiking  
 Comments: swell noise affecting front of streamer  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.4 EOL 1.6 Ave 1.5  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-39 Azm: 236 Status: COM Date: 02/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 39  
 Total SP Range: 1001-1708  
 Process Range : 1001-1708  
 Charge Range : 1001-1708  
 Total CMP Km : 17.7000  
 Process CMP Km: 17.7000  
 Charge CMP Km : 17.7000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 22:29	143	78.5 M	8 KNTS.SW	3	0.5 M	79.6 M
EOL 00:35	149	78.3 M	15 KNTS. SW	3	0.5 M	79.6 M

Streamer Noise (uB) SOL #1 5.6 Feather 3.0P  
 EOL #1 3.3 Feather 0.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: channel 58 intermittent spikes  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.4 EOL 1.1 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational.  
 Acoustics: n/a  
 Comments : tailbuoy capsized in the rough weather. all compasses working  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-40 Azm: 325 Status: COM Date: 05/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 40  
 Total SP Range: 1001-1550  
 Process Range : 1001-1550  
 Charge Range : 1001-1550  
 Total CMP Km : 13.7500  
 Process CMP Km: 13.7500  
 Charge CMP Km : 13.7500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 23:43	920	76.7 M	22 KNTS.NNE	5	2.5M	79.6 M
EOL 01:20	1520	79.4 M	25 KNTS.NNE	5	1.5M	79.6 M

Streamer Noise (uB) SOL #1 3.7 Feather 3.0P  
 EOL #1 3.7 Feather 5.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58  
 Comments: swell noise affecting front of streamer  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.2 EOL 1.8 Ave 1.5  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-41 Azm: 56 Status: COM Date: 02/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 41  
 Total SP Range: 1001-1782  
 Process Range : 1001-1782  
 Charge Range : 1001-1782  
 Total CMP Km : 19.5500  
 Process CMP Km: 19.5500  
 Charge CMP Km : 19.5500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 19:06	135	78.8 M	13 KNTS.SW	3	1.0 M	79.6 M
EOL 21:26	142	78.9 M	8 KNTS. SW	3	0.5 M	79.6 M

Streamer Noise (uB) SOL #1 4.8 Feather 4.0S  
 EOL #1 4.6 Feather 2.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: channel 58 intermittent spikes  
 Comments: front of cable varied in depth due to sea conditions.  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.4 EOL 1.4 Ave 1.4  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational.  
 Acoustics: n/a  
 Comments : tailbuoy capsized in the rough weather. all compasses working  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-42A Azm: 112 Status: COM Date: 08/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 42A  
 Total SP Range: 1001-1589  
 Process Range : 1001-1589  
 Charge Range : 1001-1589  
 Total CMP Km : 14.7250  
 Process CMP Km: 14.7250  
 Charge CMP Km : 14.7250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 13:32	325	81.5 M	12 KNTS.S-SE	5	1.0M	78.9 M
EOL 15:19	330	79.3 M	8 KNTS.S	4	0.5M	78.9 M

Streamer Noise (uB) SOL #1 4.9 Feather 6.0S  
 EOL #1 3.4 Feather 2.0S Ave Depth (M): 8 Qual 1:3

Bad Grps:  
 Comments: CH 58 spiking. Swell noise affecting streamer. STREAMER AT 8 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 8 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.1 EOL 1.3 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-43 Azm: 237 Status: COM Date: 02/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 43  
 Total SP Range: 1001-1906  
 Process Range : 1001-1906  
 Charge Range : 1001-1906  
 Total CMP Km : 22.6500  
 Process CMP Km: 22.6500  
 Charge CMP Km : 22.6500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 15:28	126	76.2 M	6 KNTS.SE	2	0.5 M	80.4 M
EOL 18:11	134	77.0 M	14 KNTS. SW	3	1 M	80.4 M

Streamer Noise (uB) SOL #1 4.3 Feather 1.0P  
 EOL #1 4.0 Feather 1.0P Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: Front of cable varied in depth due to sea conditions.

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II

Stations used in fit : syd/melb/adl PDOP SOL 1.4 EOL 1.7 Ave 1.6

Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy capsized in the rough weather. all compasses working

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-44 Azm: 112 Status: COM Date: 08/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 44  
 Total SP Range: 1001-1579  
 Process Range : 1001-1579  
 Charge Range : 1001-1579  
 Total CMP Km : 14.4750  
 Process CMP Km: 14.4750  
 Charge CMP Km : 14.4750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 07:50	313	79.8 M	15 KNTS.S-SW	5	1.5M	79.4 M
EOL 09:34	318	79.7 M	18 KNTS.S-SW	5	1.5M	79.4 M

Streamer Noise (uB) SOL #1 4.1 Feather 3.0S  
 EOL #1 2.8 Feather 1.0P Ave Depth (M): 8 Qual 1:3

## Bad Grps:

Comments: swell noise affecting streamer. STREAMER AT 8 METERS

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 8 Qual #1 4

## Dropouts:

Comments: GUNS AT 8 METERS

Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II

Stations used in fit :Syd/melb/adl PDOP SOL 1.1 EOL 1.4 Ave 1.3

Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy batteries recharging. all compasses operational

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-45 Azm: 56 Status: COM Date: 02/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 45  
 Total SP Range: 1001-1828  
 Process Range : 1001-1828  
 Charge Range : 1001-1828  
 Total CMP Km : 20.7000  
 Process CMP Km: 20.7000  
 Charge CMP Km : 20.7000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 11:50	118	77.8 M	5 KNTS.S	2	1.5 M	79.6 M
EOL 14:19	125	76.9 M	5 KNTS. S	2	1 M	79.6 M

Streamer Noise (uB) SOL #1 4.4 Feather 3.0P  
 EOL #1 3.3 Feather 3.0P Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: Front of cable varied in depth due to sea conditions.

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II

Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.2 Ave 1.3

Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy capsized in the rough weather. all compasses working

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-46 Azm: 292 Status: COM Date: 06/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 46  
 Total SP Range: 1001-1547  
 Process Range : 1001-1547  
 Charge Range : 1001-1547  
 Total CMP Km : 22.4000  
 Process CMP Km: 13.6750  
 Charge CMP Km : 13.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 10:41	319	80.4 M	18 KNTS.S-SW	5	1.5M	81.9 M
EOL 13:18	324	81.5 M	10 KNTS.SE	5	1.0M	81.9 M

Streamer Noise (uB) SOL #1 3.2 Feather 0.0S  
 EOL #1 3.9 Feather 1.0P Ave Depth (M): 8 Qual 1:3

## Bad Grps:

Comments: CH 58 spiking. Swell noise affecting streamer. STREAMER AT 8 METERS

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 8 Qual #1 4

## Dropouts:

## Comments:

Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II

Stations used in fit : syd/melb/adl PDOP SOL 1.9 EOL 1.1 Ave 1.6

Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy batteries recharging. all compasses operational

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-47 Azm: 55 Status: COM Date: 09/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 47  
 Total SP Range: 1001-2073  
 Process Range : 1001-2073  
 Charge Range : 1001-2073  
 Total CMP Km : 26.8250  
 Process CMP Km: 26.8250  
 Charge CMP Km : 26.8250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 20:03	391	77.5 M	N 1 KNOT	2	1.0M	79.6 M
EOL 22:51	400	76.9 M	NNE 12 KNOTS	3	1.0M	79.6 M

Streamer Noise (uB) SOL #1 3.0 Feather 1.0P  
 EOL #1 3.6 Feather 1.0S Ave Depth (M): 7 Qual 1:4

Bad Grps:  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.1 EOL 1.3 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-48 Azm: 293 Status: COM Date: 06/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 48  
 Total SP Range: 1001-1677  
 Process Range : 1001-1677  
 Charge Range : 1001-1677  
 Total CMP Km : 16.9250  
 Process CMP Km: 16.9250  
 Charge CMP Km : 16.9250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 10:41	296	79.4 M	18 KNTS.NE	5	2.0M	79.6 M
EOL 12:37	302	81.0 M	18 KNTS.NE	5	1.0M	79.6 M

Streamer Noise (uB) SOL #1 4.0 Feather 1.0P  
 EOL #1 6.6 Feather 1.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace #s 58, 140. spiking  
 Comments: swell noise affecting front of streamer  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.1 EOL 1.1 Ave 1.1  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-49 Azm: 235 Status: COM Date: 09/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 49  
 Total SP Range: 1001-1903  
 Process Range : 1001-1903  
 Charge Range : 1001-1903  
 Total CMP Km : 22.5750  
 Process CMP Km: 22.5750  
 Charge CMP Km : 22.5750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 16:12	382	80.0 M	LIGHT AIRS	2	1.0M	79.6 M
EOL 18:36	390	76.6 M	H 4 KNOTS	2	1.0M	79.6 M

Streamer Noise (uB) SOL #1 2.8 Feather 3.0P  
 EOL #1 2.8 Feather 2.0S Ave Depth (M): 7 Qual 1:4

## Bad Grps:

Comments: STREAMER AT 7 METERS

SOL Source Vol (in3) : #1 1800

Pressure (psi): 1800

Ave Source Depths (M): #1 7

Qual #1 4

Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.2 EOL 1.6 Ave 1.4

Active Tailbuoys - Type: dgps

In Use: #1: N

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments : tailbuoy batteries recharging. all compasses operational

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-50 Azm: 118 Status: COM Date: 12/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 50  
 Total SP Range: 1001-3104  
 Process Range : 1001-3104  
 Charge Range : 1001-3104  
 Total CMP Km : 52.6000  
 Process CMP Km: 52.6000  
 Charge CMP Km : 52.6000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 01:50	464	70.9 M	NE 15 KNOTS	3	0.5M	78.1 M
EOL 07:32	482	80.0 M	E 10 KNOTS	3	1.0M	78.1 M

Streamer Noise (uB) SOL #1 6.7 Feather 3.0S  
 EOL #1 3.8 Feather 0.0S Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: STREAMER AT 7 METERS. streamer slightly bent during BOL noise test

SOL Source Vol (in3) : #1 1800

Pressure (psi): 1800

Ave Source Depths (M): #1 7

Qual #1 4

Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.6 EOL 1.1 Ave 1.4

Active Tailbuoys - Type: dgps

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-51 Azm: 56 Status: COM Date: 09/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 51  
 Total SP Range: 1001-1784  
 Process Range : 1001-1784  
 Charge Range : 1001-1784  
 Total CMP Km : 19.6000  
 Process CMP Km: 19.6000  
 Charge CMP Km : 19.6000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 13:01	374	79.4 M	NE 5 KNOTS	2	0.5M	78.1 M
EOL 15:07	381	81.9 M	NE 5 KNOTS	2	0.5M	78.1 M

Streamer Noise (uB) SOL #1 2.9 Feather 4.0S  
 EOL #1 3.6 Feather 0.0S Ave Depth (M): 7 Qual 1:4

Bad Grps:  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.5 EOL 0.9 Ave 1.3  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-52 Azm: 180 Status: COM Date: 05/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 52  
 Total SP Range: 1001-2672  
 Process Range : 1001-2672  
 Charge Range : 1001-2672  
 Total CMP Km : 41.8000  
 Process CMP Km: 41.8000  
 Charge CMP Km : 41.8000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 17:44	266	76.9 M	8 KNTS.NE	3	1.5M	80.4 M
EOL 22:26	281	76.5 M	20 KNTS.NNE	3	2.0M	80.4 M

Streamer Noise (uB) SOL #1 3.6 Feather 3.0S  
 EOL #1 6.1 Feather 3.0S Ave Depth (M): 7 Qual 1:3

Bad Grps: trace #s 58 and 151 spiking  
 Comments: swell noise affecting front of streamer from sp 2125 to eol  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.2 EOL 1.1 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-53 Azm: 234 Status: COM Date: 09/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 53  
 Total SP Range: 1001-1787  
 Process Range : 1001-1787  
 Charge Range : 1001-1787  
 Total CMP Km : 19.6750  
 Process CMP Km: 19.6750  
 Charge CMP Km : 19.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 09:42	366	79.9 M	NE 5 KNOTS	2	0.5M	78.9 M
EOL 11:51	373	76.0 M	NE 5 KNOTS	2	0.5M	78.9 M

Streamer Noise (uB) SOL #1 3.2 Feather 1.0P  
 EOL #1 2.8 Feather 0.0P Ave Depth (M): 7 Qual 1:4

Bad Grps: CH. 58 spiking CH 152 low amplitude  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.4 Ave 1.4  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-54 Azm: 292 Status: COM Date: 09/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 54  
 Total SP Range: 1001-2266  
 Process Range : 1001-2266  
 Charge Range : 1001-2266  
 Total CMP Km : 31.6750  
 Process CMP Km: 31.6750  
 Charge CMP Km : 31.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 23:50	401	80.6 M	NNE 10 KNOTS	3	1.0M	78.5 M
EOL 03:10	412	78.5 M	NE 12 KNOTS	4	0.5M	78.5 M

Streamer Noise (uB) SOL #1 3.2 Feather 4.0P  
 EOL #1 3.3 Feather 4.0P Ave Depth (M): 7 Qual 1:3

Bad Grps:  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.1 EOL 1.4 Ave 1.3  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-55 Azm: 53 Status: COM Date: 09/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 55  
 Total SP Range: 1001-1661  
 Process Range : 1001-1661  
 Charge Range : 1001-1661  
 Total CMP Km : 16.5250  
 Process CMP Km: 16.5250  
 Charge CMP Km : 16.5250

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 06:50	359	76.6 M	NE 4 KNOTS	2	1.0M	79.1 M
EOL 08:39	365	81.2 M	NE 4 KNOTS	2	0.5M	79.1 M

Streamer Noise (uB) SOL #1 2.7 Feather 0.0S  
 EOL #1 2.6 Feather 1.0S Ave Depth (M): 7 Qual 1:4

Bad Grps:  
 Comments: STREAMER AT 7 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.3 EOL 1.5 Ave 1.5  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-56 Azm: 145 Status: COM Date: 05/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 56  
 Total SP Range: 1001-1663  
 Process Range : 1001-1663  
 Charge Range : 1001-1663  
 Total CMP Km : 16.5750  
 Process CMP Km: 16.5750  
 Charge CMP Km : 16.5750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 12:10	259	72.7 M	15 KNTS.NE	3	2.0M	78.9 M
EOL 14:10	265	75.3 M	10 KNTS.N	3	1.5M	78.9 M

Streamer Noise (uB) SOL #1 4.1 Feather 4.0S  
 EOL #1 4.5 Feather 1.0P Ave Depth (M): 7 Qual 1:3

Bad Grps: trace # 58 spiking  
 Comments:  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.0 EOL 1.2 Ave 1.2  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-57 Azm: 232 Status: COM Date: 09/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 57  
 Total SP Range: 1001-1716  
 Process Range : 1001-1716  
 Charge Range : 1001-1716  
 Total CMP Km : 17.9000  
 Process CMP Km: 17.9000  
 Charge CMP Km : 17.9000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 03:36	352	80.9 M	LIGHT AIR	2	0.0M	78.9 M
EOL 05:42	358	77.3 M	LIGHT AIR	2	0.0M	78.9 M

Streamer Noise (uB) SOL #1 6.0 Feather 3.0P  
 EOL #1 2.8 Feather 1.0S Ave Depth (M): 7 Qual 1:4

Bad Grps:  
 Comments: end of streamer not straight for bol noise rec. STREAMER AT 8 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4

Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.4 EOL 1.0 Ave 1.3  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-59 Azm: 235 Status: COM Date: 08/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 59  
 Total SP Range: 1001-1706  
 Process Range : 1001-1706  
 Charge Range : 1001-1706  
 Total CMP Km : 17.6500  
 Process CMP Km: 17.6500  
 Charge CMP Km : 17.6500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 23:11	345	80.0 M	LIGHT AIRS	2	0.5M	78.1 M
EOL 01:16	351	81.8 M	LIGHT AIRS	2	RIPPLE	78.1 M

Streamer Noise (uB) SOL #1 2.6 Feather 5.0P  
 EOL #1 3.0 Feather 3.0P Ave Depth (M): 8 Qual 1:4

Bad Grps: Channel #58 spiking  
 Comments: STREAMER AT 8 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 8 Qual #1 4  
 Dropouts:  
 Comments: GUNS AT EIGHT METERS  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.1 EOL 1.7 Ave 1.5  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-61 Azm: 55 Status: COM Date: 08/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 61  
 Total SP Range: 1001-1662  
 Process Range : 1001-1662  
 Charge Range : 1001-1662  
 Total CMP Km : 16.5500  
 Process CMP Km: 16.5500  
 Charge CMP Km : 16.5500

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 20:10	338	76.3 M	7 KNTS.SW	4	0.5M	79.6 M
EOL 22:06	344	77.8 M	9 KNTS.SW	4	0.5M	79.6 M

Streamer Noise (uB) SOL #1 2.6 Feather 2.0S  
 EOL #1 2.7 Feather 1.0S Ave Depth (M): 8 Qual 1:3

Bad Grps: Channel #58 spiking  
 Comments: Swell noise affecting streamer. STREAMER AT 8 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 8 Qual #1 4  
 Dropouts:  
 Comments: GUNS AT EIGHT METERS  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.1 EOL 1.1 Ave 1.1  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-63 Azm: 236 Status: COM Date: 08/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 63  
 Total SP Range: 1001-1656  
 Process Range : 1001-1656  
 Charge Range : 1001-1656  
 Total CMP Km : 16.4000  
 Process CMP Km: 16.4000  
 Charge CMP Km : 16.4000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 17:02	331	77.8 M	7 KNTS.SW	4	1.0M	78.9 M
EOL 18:57	337	77.0 M	9 KNTS.SW	4	0.5M	78.9 M

Streamer Noise (uB) SOL #1 3.4 Feather 2.0S  
 EOL #1 3.1 Feather 2.0S Ave Depth (M): 8 Qual 1:3

Bad Grps: Channels #58 35 spiking  
 Comments: Swell noise affecting streamer. STREAMER AT 8 METERS  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 8 Qual #1 4  
 Dropouts:  
 Comments: GUNS AT 8 MTRS  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.6 EOL 1.9 Ave 1.8  
 Active Tailbuoys - Type: dgps In Use: #1: N Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments : tailbuoy batteries recharging. all compasses operational  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-65 Azm: 237 Status: TBC Date: 10/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 65  
 Total SP Range: 1001-1467  
 Process Range : 1001-1467  
 Charge Range : 1001-1380  
 Total CMP Km : 11.6750  
 Process CMP Km: 11.6750  
 Charge CMP Km : 9.5000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 14:56	434	73.1 M	ENE 20 KNOTS	5	1.0M	77.3 M
EOL 16:20	438	75.4 M	ENE 25 KNOTS	5-6	2.0M	77.3 M

Streamer Noise (uB) SOL #1 6.9 Feather 1.0S  
 EOL #1 11.6 Feather 0.0S Ave Depth (M): 7 Qual 1:3  
 Bad Grps: channels # 178 and 180 spiking # 179 dead  
 Comments: STREAMER AT 7 METERS. swell noise effecting this line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 1.4 EOL 1.6 Ave 1.5  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-65A Azm: 237 Status: COM Date: 11/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 65A  
 Total SP Range: 1310-1668  
 Process Range : 1310-1668  
 Charge Range : 2229-2316  
 Total CMP Km : 8.9750  
 Process CMP Km: 8.9750  
 Charge CMP Km : 2.2000

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 22:17	460	71.7 M	NE 15 KNOTS	4	1.5M	78.1 M
EOL 23:16	463	72.9 M	NE 14 KNOTS	4	1.5M	78.1 M

Streamer Noise (uB) SOL #1 3.7 Feather 1.0S  
 EOL #1 3.9 Feather 1.0S Ave Depth (M): 7 Qual 1:3  
 Bad Grps: channel # 58 spiking  
 Comments: STREAMER AT 7 METERS. moderate swell noise effecting this line  
 SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800  
 Ave Source Depths (M): #1 7 Qual #1 4  
 Dropouts:  
 Comments:  
 Nav Systems - Primary: SKYFIX I Secondary: SKYFIX II  
 Stations used in fit : syd/melb/adl PDOP SOL 2.0 EOL 1.0 Ave 1.9  
 Active Tailbuoys - Type: dgps In Use: #1: Y Nav Qual 4  
 Compasses: all operational  
 Acoustics: n/a  
 Comments :  
 Edited Shotpoints :  
 Segment Edits :

Sail Line: BB96-67 Azm: 57 Status: COM Date: 11/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 67  
 Total SP Range: 1001-1667  
 Process Range : 1001-1667  
 Charge Range : 1001-1667  
 Total CMP Km : 16.6750  
 Process CMP Km: 16.6750  
 Charge CMP Km : 16.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 18:59	453	73.0 M	ENE 17 KNOTS	4	2.0M	78.1 M
EOL 20:56	459	75.3 M	ENE 15 KNOTS	4	1.5M	78.1 M

Streamer Noise (uB) SOL #1 5.5 Feather 1.0P  
 EOL #1 4.7 Feather 1.0S Ave Depth (M): 7 Qual 1:3

## Bad Grps:

Comments: STREAMER AT 7 METERS. moderate swell noise effecting this line

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.2 EOL 1.4 Ave 1.4

Active Tailbuoys - Type: dgps

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments :

Edited Shotpoints :

Segment Edits :

Sail Line: BB96-69 Azm: 237 Status: COM Date: 11/03/96  
 CMP Lines: Source #1 Edit  
 Streamer #1 - : 69  
 Total SP Range: 1001-1667  
 Process Range : 1001-1667  
 Charge Range : 1001-1667  
 Total CMP Km : 16.6750  
 Process CMP Km: 16.6750  
 Charge CMP Km : 16.6750

Time	Tape#	W Depth	Wind Speed/Dir	Sea State	Swell	Offset
SOL 15:52	446	79.7 M	ENE 20 KNOTS	5	1.5M	78.1 M
EOL 17:49	452	74.2 M	ENE 17 KNOTS	4	1.0M	78.1 M

Streamer Noise (uB) SOL #1 0.0 Feather 1.0P  
 EOL #1 0.0 Feather 3.0P Ave Depth (M): 7 Qual 1:3

## Bad Grps: channel # 58 spiking

Comments: STREAMER AT 7 METERS. moderate swell noise effecting this line

SOL Source Vol (in3) : #1 1800 Pressure (psi): 1800

Ave Source Depths (M): #1 7 Qual #1 4

## Dropouts:

Comments:

Nav Systems - Primary: SKYFIX I

Secondary: SKYFIX II

Stations used in fit : syd/melb/adl

PDOP SOL 1.4 EOL 2.0 Ave 1.9

Active Tailbuoys - Type: dgps

In Use: #1: Y

Nav Qual 4

Compasses: all operational

Acoustics: n/a

Comments :

Edited Shotpoints :

Segment Edits :



**APPENDIX A - DGPS PRE-SURVEY STATIC POSITION CHECK**

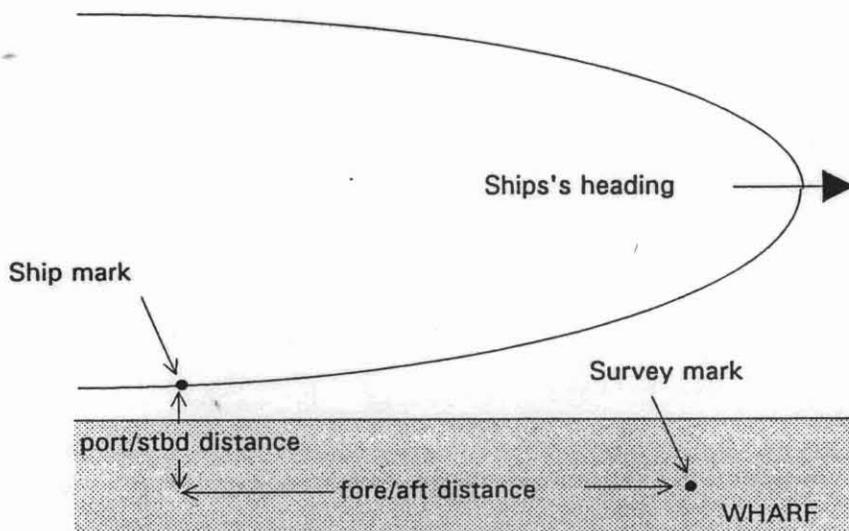
Prior to the mobilisation of the survey vessel from Portland a position verification check was carried out to verify the accuracy of, and transformation data used for, the DGPS system to be used on the survey. A survey mark consisting of a brass pin in concrete with brass plate was installed by the Portland Port Authority in a very close proximity to the location of the survey vessel on Dock #6. The contractor sourced the WGS-84 coordinates for this survey marker from the Portland Port Authority. The diagrams and calculations on the following Three (3) pages show the calculations, geometry and relative locations of the marker and the survey vessel DGPS antennae during the period when DGPS data was being recorded.

Data was recorded and calculations done over a period of four hours. Each comparison produced very reasonable and realistic differences between the calculated and observed positions of the antennae.

## RIG SEISMIC - GPS TIE

Port: PORTLAND  
 Wharf #: 6  
 Survey: 170 Pre / ~~Past~~  
 Date: 23/2/96  
 Time: 11:16 LT 054.0016 GMT  
 By: MD

Survey mark name: PHT 16-80  
 Easting: 553 931.67  
 Northing: 5 755 027.12  
 Zone: 141 (54)



## Distance between ship mark and survey mark

Fore/aft distance: +9.75 (+ 've if survey mark is fore of ship mark, -'ve if its aft of ship mark)  
 Port/stbd distance: +21.30 (+ 've on stbd side of ship)

Ship Heading: 110  
 Ship Draft 4.2 Fore 6.8 Aft

	Latitude	Longitude	
Racal 1 Measured Position:	<u>-38° 20.9617</u>	<u>141° 37.1151</u>	
Racal 1 dGPS Position:	<u>-38° 20.9612</u>	<u>141° 37.1139</u>	
delta minutes:	<u>-0.0005</u>	<u>+0.0012</u>	
delta metres:	<u>-0.93</u>	<u>+1.75</u>	delta distance: <u>2.0m</u>
Racal 2 Measured Position:	<u>-38° 20.9616</u>	<u>141° 37.1144</u>	
Racal 2 dGPS Position:	<u>-38° 20.9616</u>	<u>141° 37.1129</u>	
delta minutes:	<u>0.0000</u>	<u>+0.0015</u>	
delta metres:	<u>0.00</u>	<u>+2.19</u>	delta distance: <u>2.2m</u>

5 cm

541083

SSS.DDD .HHMMSS	Racal 1 lat (radians)	Racal 1 lon (rads-100deg)	Racal 2 lat (radians)	Racal 2 lon (rads-100deg)	Head (deg)
170.054,.001400,	-0.66932243,	0.72638088,	-0.66932249,	0.72638083,	109.0
170.054,.001410,	-0.66932243,	0.72638094,	-0.66932249,	0.72638083,	109.1
170.054,.001420,	-0.66932243,	0.72638088,	-0.66932255,	0.72638088,	109.2
170.054,.001430,	-0.66932249,	0.72638094,	-0.66932255,	0.72638088,	109.2
170.054,.001440,	-0.66932249,	0.72638094,	-0.66932255,	0.72638083,	109.1
170.054,.001450,	-0.66932249,	0.72638088,	-0.66932261,	0.72638077,	108.9
170.054,.001500,	-0.66932249,	0.72638088,	-0.66932261,	0.72638077,	108.8
170.054,.001510,	-0.66932249,	0.72638088,	-0.66932261,	0.72638077,	108.6
170.054,.001520,	-0.66932249,	0.72638088,	-0.66932267,	0.72638077,	108.8
170.054,.001530,	-0.66932249,	0.72638088,	-0.66932267,	0.72638083,	109.2
170.054,.001540,	-0.66932249,	0.72638088,	-0.66932261,	0.72638077,	109.6
170.054,.001550,	-0.66932249,	0.72638100,	-0.66932267,	0.72638077,	109.8
170.054,.001600,	-0.66932249,	0.72638100,	-0.66932261,	0.72638071,	109.8
170.054,.001610,	-0.66932249,	0.72638100,	-0.66932261,	0.72638071,	109.7
170.054,.001620,	-0.66932249,	0.72638100,	-0.66932255,	0.72638065,	109.4
170.054,.001630,	-0.66932249,	0.72638094,	-0.66932261,	0.72638065,	109.0
170.054,.001640,	-0.66932249,	0.72638094,	-0.66932261,	0.72638065,	108.7
170.054,.001650,	-0.66932249,	0.72638094,	-0.66932261,	0.72638059,	108.5
170.054,.001700,	-0.66932249,	0.72638100,	-0.66932267,	0.72638065,	108.5
170.054,.001710,	-0.66932249,	0.72638106,	-0.66932267,	0.72638065,	108.8
170.054,.001720,	-0.66932249,	0.72638112,	-0.66932273,	0.72638071,	108.9
170.054,.001730,	-0.66932249,	0.72638112,	-0.66932273,	0.72638077,	109.0
170.054,.001740,	-0.66932249,	0.72638118,	-0.66932273,	0.72638077,	109.0
170.054,.001750,	-0.66932249,	0.72638112,	-0.66932273,	0.72638071,	108.9
170.054,.001800,	-0.66932249,	0.72638118,	-0.66932273,	0.72638071,	*****