CG52

CAMBRIDGE GULF EXPLORATION NL

Combined Surrender Mineral Exploration Report

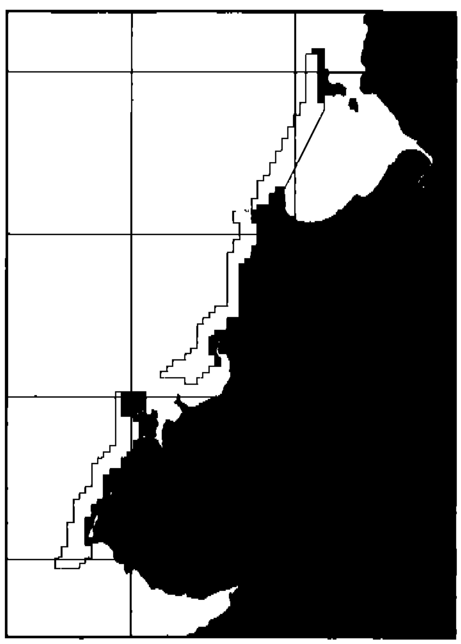
Part of EL 8291 and EL 8292

for the period 10 December 1993 to 9 December 1995

Report Lodged under Section 32(b)(i)

of the

Northern Territory Mining Act



Tenements	1:250 000 Map Ref
EL8291	Pearce 19/1
EL8292	Dombey 13/5
	Ford 13/2

Tenement Holder

Cambridge Gulf Exploration NL
ACN 059 458 374
Level 4, Southshore Piazza
81-83 The Esplanade
P.O. Box 740
South Perth WA 6151

Report compiled by:
Ms Sue Warren, Marine Geologist

Report Date: 9 August 1996

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1. INTRODUCTION

Cambridge Gulf Exploration NL applied for EL8291 and EL8292 on 7 July 1993. The tenements were granted on 10 December 1993 and cover an area of 148 and 255 graticules respectively (476 and 821 square kilometres) (refer to Figures 1-1 and 1-2). EL8291 and 8292 cover the area of Northern Territory coastal waters from the baseline to the three nautical mile limit, extending from Pearce Point along the coast to north of North Peron Island in the mouth of Anson Bay, excluding Anson Bay and Hyland Bay (Figure 1-3).

These two tenements, along with Mineral Exploration Licences NT-3-MEL and NT-4-MEL, are referred to as the Daly Prospect.

The area covered by EL8291 lies on the 1:250 000 sheet Pearce 19/1 and the area covered by EL8292 lies on the 1:250 000 sheets Dombey 13/5 and Ford 13/2.

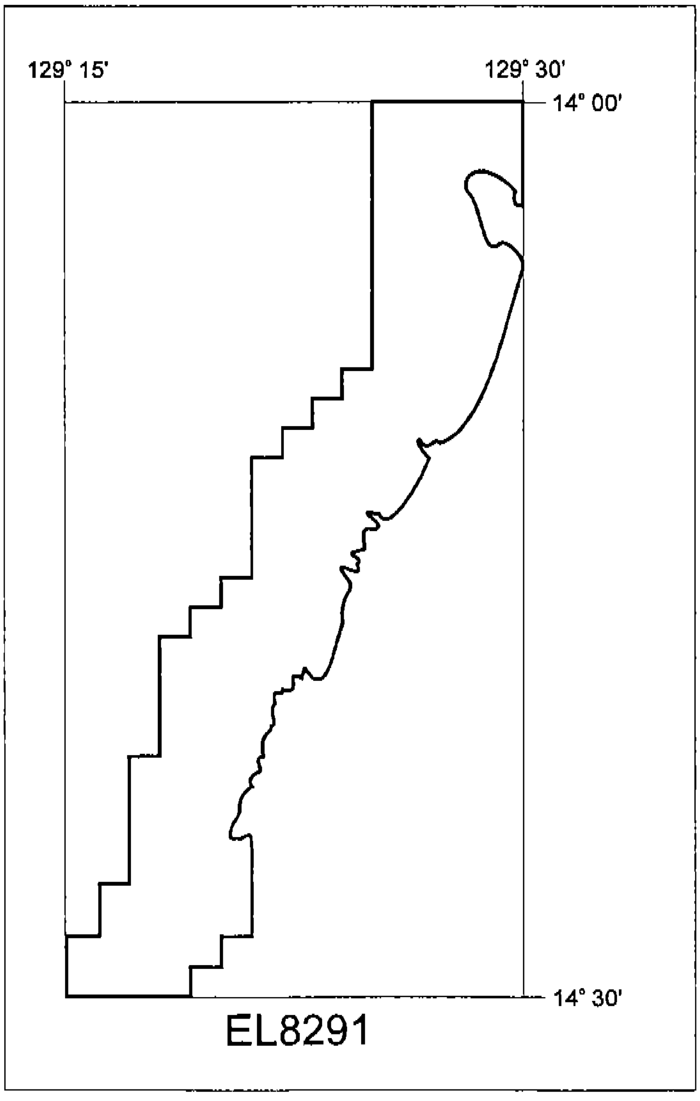


Figure 1-1 EL8291 graticular layout as granted by the Northern Territory Department of Mines and Energy on 10 December 1993.

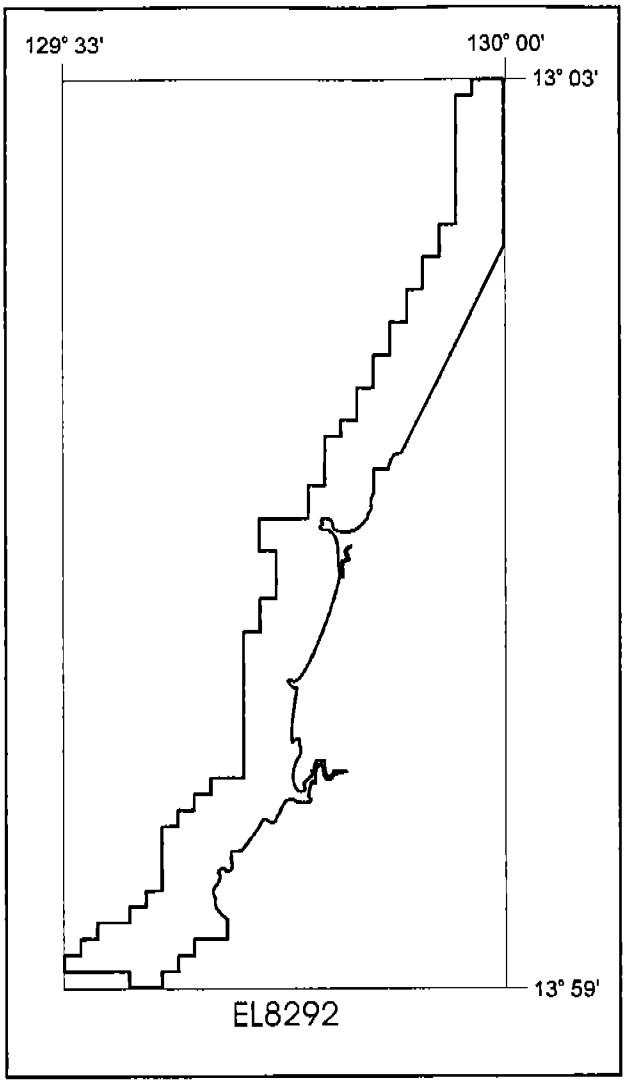


Figure 1-2 EL8292 graticular layout as granted by the Northern Territory Department of Mines and Energy on 10 December 1993.

On 9 December 1995 EL8291 and EL 8292 were each due for a fifty percent reduction under Sections 26 and 27 of the Northern Territory Mining Act. On 5 December 1995 an application was made to the Department of Mines and Energy for a partial waiver from the 50% reduction on both tenements. In the application 52 blocks were offered for surrender from EL8291 and 64 blocks were offered for surrender from EL8292.

On 30 November 1995 Cambridge Gulf Exploration requested combined reporting for the surrender (final) report for the surrendered blocks from EL8291 and 8292. The Company also requested an extension of time to lodge the surrender report so that all interpretation and analysis of data collected in the surrendered area might be included. In a letter dated 13 December 1995, approval was given for a combined surrender report. Approval was also given for lodgement of the final report on 9 August 1996 with the lodgement of a summary report (outlining work carried out in the surrendered area and an indication of the nature of the interpretation to be carried out) by 9 February 1996.

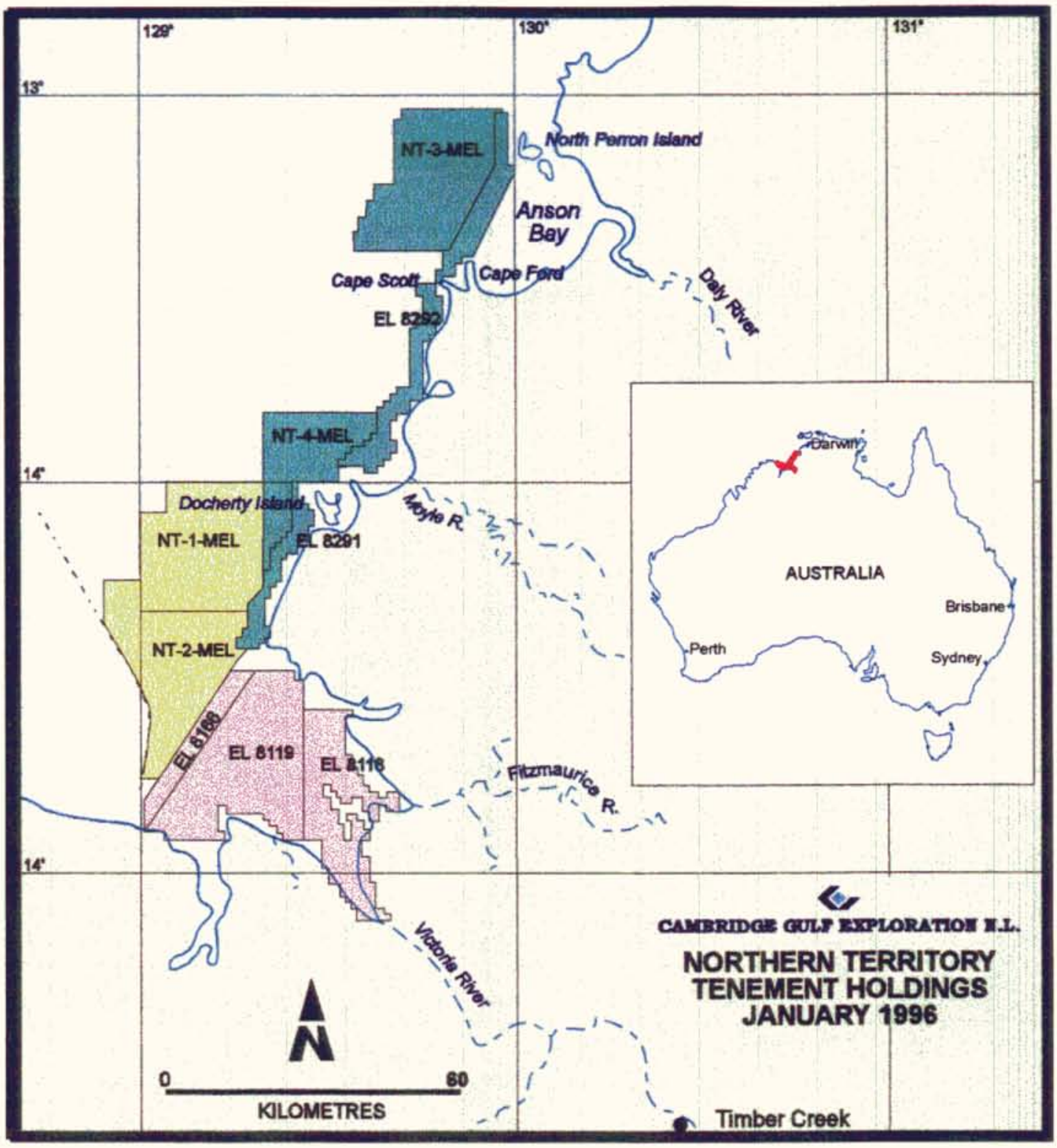


Figure 1-3 Location of EL8291 and EL8292.

The summary surrender report was lodged on 6 February 1996. On 26 February the partial waiver of the fifty percent surrender was approved. The partial waiver allowed CGE to retain 96 blocks in EL8291 and 191 blocks in EL8292.

This report constitutes the final partial surrender report for the blocks surrendered on 9 December 1995.

In EL8291 and EL8292, Cambridge Gulf Exploration NL is exploring for alluvial diamonds and related heavy minerals.

2. LOCATION OF AREAS SURRENDERED

2.1 EL8291

Thirty-five percent (or 52 graticules) of EL8291 were surrendered on 9 December 1995. A detailed list of those graticules is provided in Table 2-1, and in Figure 2-1 the surrendered area is highlighted with respect to the original boundaries of EL8291.

Table 2-1 EL8291 - Description of surrendered graticules.

Map	Easting	Northing	Number of Blocks
Pearce 19/1	31	66, 65, 64, 63, 62	5
	32	63, 62, 61, 60	4
	33	60, 59	2
	34	60, 59, 58, 57, 56, 55	6
	35	58, 57, 56, 55, 54	5
	36	54	1
	37	53, 52, 44, 43, 42, 41	6
	38	52, 51, 44, 43, 42, 41	6
	39	51, 50, 49, 45, 44, 43, 42, 41	8
	40	49, 48, 47, 46, 45, 44, 43, 42, 41	9
Total			52

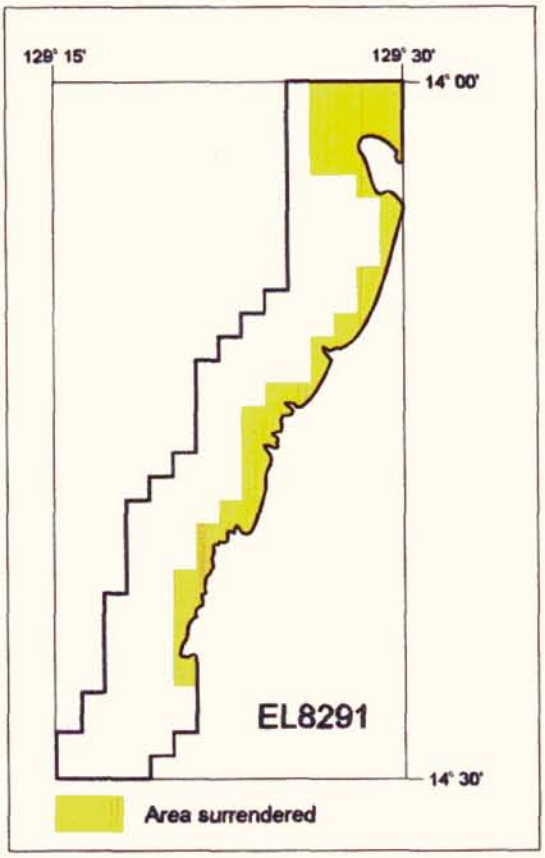


Figure 2-1 EL8291 graticular layout showing area surrendered.

2.2 EL8292

Twenty-five percent (or 64 graticules) of EL8292 were surrendered on 5 December 1995. A detailed list of those graticules is provided in Table 2-2, and in Figure 2-2 the surrendered area is highlighted with respect to the original boundaries of EL8292.

Table 2-2 EL8292 - Description of surrendered graticules.

Map	Easting	Northing	Number of Blocks
Dombey 13/5	18	69	1
	19	69	1
	22	64, 63, 62	3
	23	66, 65, 64, 63, 62, 61	6
	24	61	1
	25	60, 59	2
	26	59	1
	27	58, 57, 56, 55, 54, 53, 52, 51, 50	9
	28	58, 57, 56, 55, 54, 51, 50, 49	8
	29	57, 56, 49, 48, 47, 42, 41	7
	30	57, 56, 47, 46, 45, 44, 43, 42	
Ford 13/2	30	70	1
	31	70	1
	32	70, 69, 68	3
	33	67,	1
	34	67	1
	39	44	1
	40	52, 51, 50, 49, 48, 47, 46, 45, 44	9
Total			64

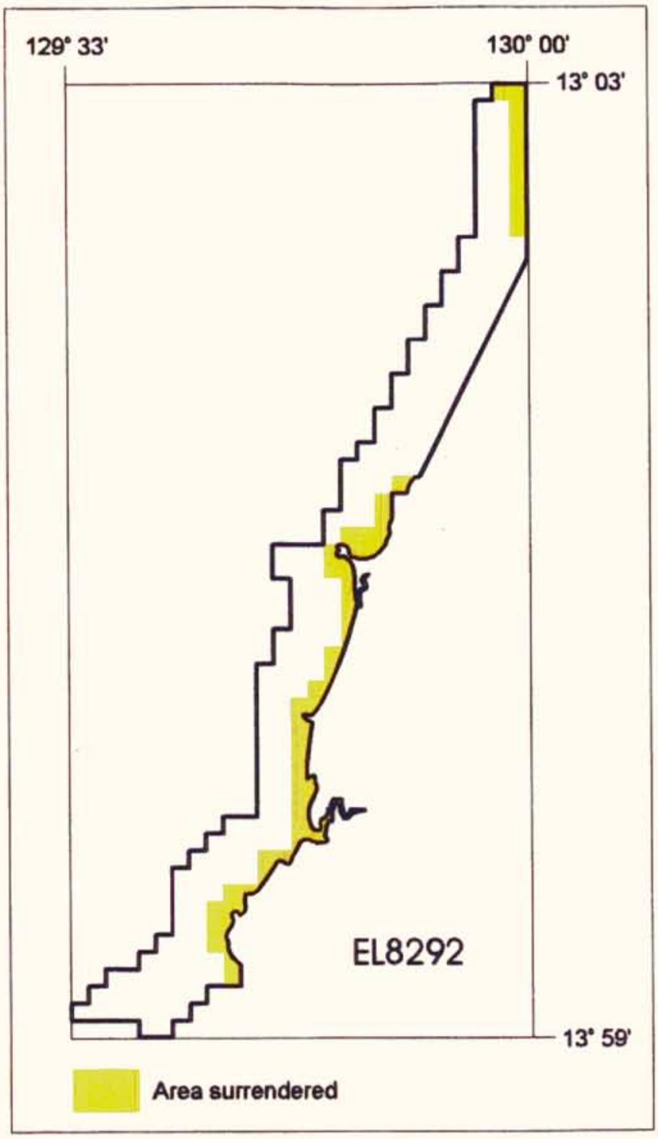


Figure 2-2 EL8292 graticular layout showing area surrendered.

3. EXPLORATION ACTIVITIES

3.1 Introduction

Two high resolution seismic surveys were undertaken in ELs 8291 and 8292; the first in March 1994 and the second in October 1995. The March 1994 data was post-processed in France in February 1995, and in March and April of that year that data was interpreted by Mr J. Lean, CGE's consultant geophysicist. In the first quarter of 1996 the 1994 data was reinterpreted by Mr Lean with the October 1995 data.

Small portions of the survey lines from the 1994 and 1995 surveys were run over surrendered blocks in EL8291. No lines or part lines were run over surrendered blocks in EL8292. Table 3-1 provides a summary of the lines and fixes for EL8291.

Table 3-1 Summary of the lines and fixes in surrendered blocks from the 1994 and 1995 surveys.

SURVEY	TENEMENT	LINE NUMBER	START FIX	END FIX
March 1994	8291	V100	5835	5840
		V85	9500	9560
October 1995	8291	V1050-1A	13085	13134
		VTL15	4900	4935

The portions of the original analogue records from lines run over the surrendered blocks (and summarised in Table 3-1) accompany this report, as agreed in a meeting with the Northern Territory Department of Mines and Energy on 15 April 1994. The analogue records provided are summarised in Table 3-2.

Table 3-2 Summary of the portions of the analogue records submitted with this report.

SURVEY	TENEMENT	LINE NUMBER	ANALOGUE RECORD
March 1994	8291	V100	Real Time, Replay, Processed
		V85	Real Time, Replay
October 1995	8291	V1050-1A	Real Time, Processed, X-Star, Sidescan
		VTL15	Real Time, Processed, Sidescan

Note: Real Time, Replay and Processed refer to seismic boomer records, X-Star to seismic chirp records, and sidescan to sidescan sonar records.

The digital seismic data for the 1994 survey was provided to the Department of Minerals and Energy on "Exabyte" tape on 7 September 1994, and the data from the October 1995 survey was provided on

11 April 1996. The exabyte tapes contain data from outside the surrendered blocks and from other tenements surveyed. This data remains confidential and only the data from the fixes summarised in Table 3-1 may be released to open file. Figure 3-1 provides the plots of the portions of the lines that were run in the surrendered blocks with the end fixes annotated.

3.2 March 1994 Geophysical Survey

Cambridge Gulf Exploration conducted a high resolution shallow seismic reflection survey in March 1994. The survey contract was undertaken by Fugro Surveys Pty Ltd, using the survey vessel "Miclyn Cove" chartered from Total Marine Services Pty Ltd.

A detailed description of the equipment used and procedures followed is given below. The general instrumentation layout on the survey vessel and instrumentation flowsheets are provided in Appendix 1.

3.2.1 Equipment and Personnel

Positioning and Navigation

The positioning system used for the survey was the Oceanics MN8 Differential Global Positional System (DGPS) which provides real time differential GPS positioning using differential corrections received via the Inmarsat A/B channel. The MN8 system is based around a PC which incorporates a NovAtel GPS card capable of measuring pseudo ranges from up to 10 satellites simultaneously.

The differential corrections received at the Inmarsat dome are applied to the pseudo ranges measured at the vessel's GPS antenna, for common satellites, and a weighted least squares position solution is computed. The position solution is computed and displayed on the WGS 84 spheroid. The MN8 system provides a variety of QC parameters such as, correction ages, individual range residuals, position standard deviations, and Dilution of Precision (DOP) values, which allow the user to monitor system performance. The primary reference station used was Broome, with backup corrections available from Darwin and Dampier. The system computes DGPS positions based on each available reference station and continually displays delta East and North of these solutions compared to that of the primary station. The Saturn 3S dome used to receive differential corrections is approximately 1.5m in diameter and was mounted on a pedestal aft of the vessel's bridge. To obtain a reflection free path for the GPS signals the actual NovAtel GPS antenna was fixed to a short pole and clamped at the top of the vessel's mast.

PCNav is a software package suite based on an IBM compatible personal computer with a minimum configuration of an 80386 processor with a maths co processor, VGA graphics and hard disk. The

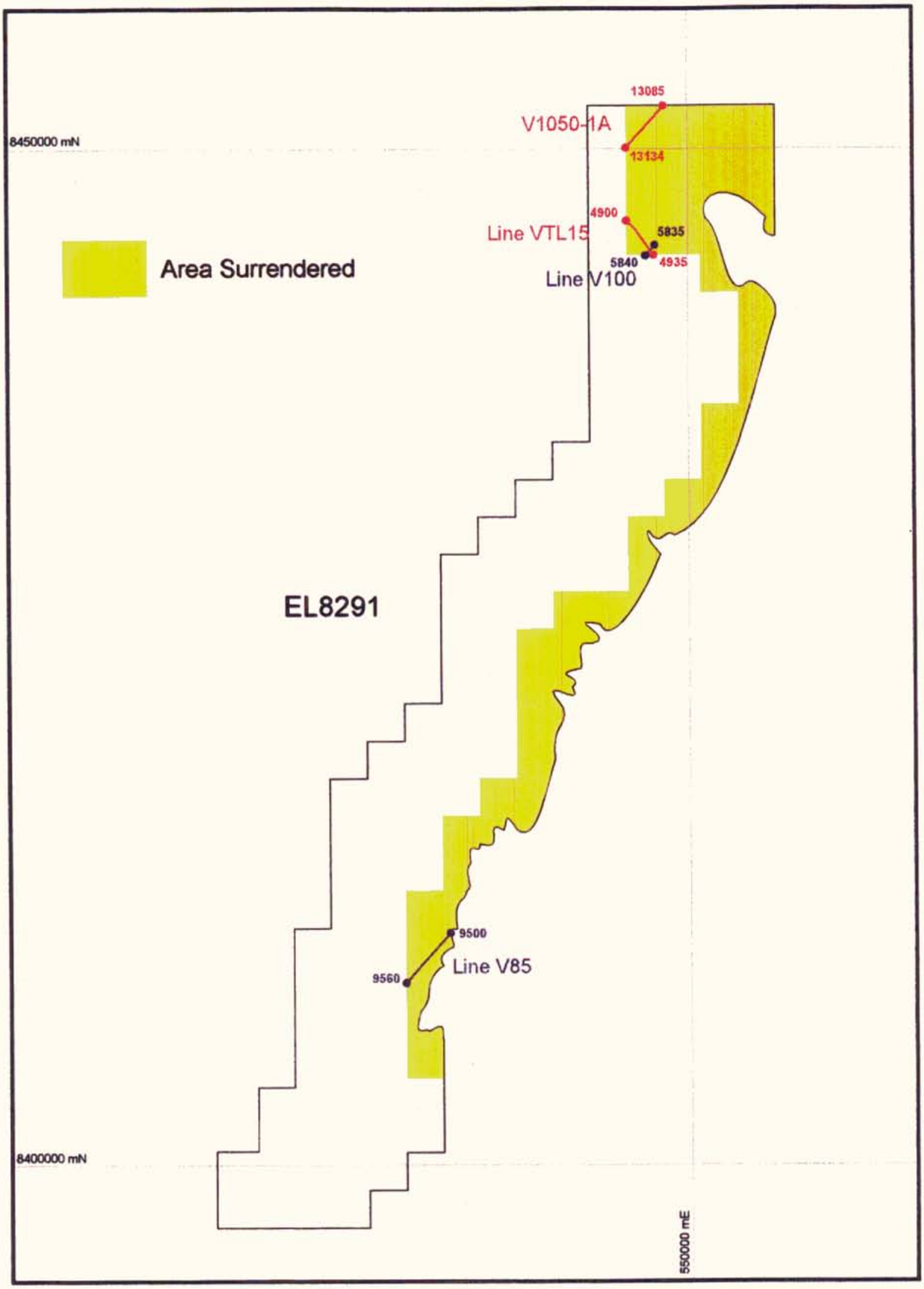


Figure 3-1 The plot of the portions of the survey lines run over EL8291 in the March 1994 (blue) and October 1995 (red) surveys.

package is designed to collect hydrographic information for marine applications. Interfacing to various navigation systems is either directly, via the PC serial card, or through a Qubit Q2780 series interface box. Data from echosounders and gyros can also be input via the interface box.

PCNav allows a maximum of eight LOPs from a Range/Range system and will compute vessel position and quality of fix using the Variation of Coordinates Least Square calculation technique. The software will also accept two LOPs in the form of a range and bearing or coordinates from a GPS receiver. The calculated position is then displayed on a graphics screen relative to defined runlines, waypoints, centreline files and databases. Position and depth data can be output to a printer and are logged to the computer hard disk for subsequent processing. The key features of the system are:

- Realtime updates
- Simultaneous high resolution sounding at 10/sec
- Remote helmsman's Colour graphic display
- Colour graphic display
- Extensive offline calculation packages
- Uses centrelines, runlines, waypoints and databases
- Baseline crossings and *in situ* calibration routines
- Full logging of essential data or all raw data
- Individual weighting of LOPs
- Fixed memory filter and acoustic range gate
- Display of vessel shape
- Mouse or keyboard driven
- Input of runline, centreline and waypoint libraries
- Display of databases, coastline and feature files
- Online interface facility
- Fast reboot system
- Digital or graphic display for all navigation
- Multiple navigation systems

The navigation computer system comprised:

2x Fujitech 486 personal computers (one spare)

2x NEC Multisync 3D Video Monitors, one for the helmsman's display (one spare)

2x NEC Pinwriter 3200 printers (one spare)

2x Digiboard serial interface (one spare) for interfacing the PCNav computer to the DGPS, echo sounder and fix box

2x Video splatters (one spare) to separate the video signal to the helmsman's monitor

1x Fugro Fix Box for transmitting fix marks generated by the PCNav computer to the echo sounder, side scan sonar and EPC recorders

Cabling and power supplies as required.

Hydrography

The echo sounder system comprised:

1x Atlas Deso 25 Survey Echo Sounder

1x Atlas Deso 20 Survey Echo Sounder

1x 33 kHz transducer

Spares, cabling and power supplies as required.

The 22 kHz transducer was mounted in a streamlined aluminium housing fixed to an over-the-side demountable bracket on the starboard side of the ship. The transducer pole was pivoted on this bracket allowing it to be lifted out of the water for steaming and during bad weather. Soundings were digitised by the Deso 25 and output to the PCNav computer via a serial interface.

Sub-bottom Profiling System

The sub-bottom profiling system comprised the following components:

- Power supplies and sound sources
  - 2x EG& Model 232 Power Supplies (1 spare)
  - 1x EG&G Model 231 Triggered Capacitor Bank
  - 1x EG&G Model 230 Uniboom Sound Source and Catamaran
  - 1x Geopulse Power Supply/Capacitor Bank
  - 1x Geopulse Boomer Sound Source plus spare boomer plate
  - 1x Multielectrode Spark array
- Signal processing units
  - 1x Geopulse Receiver/Signal Processor
  - 1x Krohnhite Bandpass Filter
  - 1x TSS TVG Amplifier
  - 1x TSS Swell Filter
- Hydrophone arrays
  - 1x Elics 24 Channel Hydrophone array with the following specifications:

    No. of Channels 24

Phones/Group	3
Phone Spacing	0.3m
Group Spacing	2m
Amplifier	1 per channel 48 dB gain

1x Geopulse single channel array with 20 phones (backup unit)

1x EG&G Model 265 single channel array with 8 phones (backup unit)

- Recording/processing system (24 Channel)

  1x Elics Delph 24 seismic recording/processing system
  1x IPC 610 Computer
  1x 400 Mb hard disk
  1x AU 32 mother board
  1x MV 32 acquisition daughter boards
  1x TIGA graphics board
  1x Exabyte 8505 cartridge tape recorder
  1x Delph 24 processor package, dongle and cables
  1x Philips 17" high resolution monitor
  1x OYO GS612 plotter with versetec driver board, cables and spares

- PC TIG computer (NEC 386)

  To generate key pulses to trigger a fix box at regular distance intervals.

- PC TIG computer (NEC386)

  1x EPC 3200S Graphic Recorder
  1x EPC 4603 Graphic Recorder

  Also OYO GS612 plotter used as single channel plotter

- Off-Line processing system

  1x Tang 486 computer c/w with:
  1x 100 Mb hard disk
  1x TIGA graphics board
  1x AU32 board
  1x MV 32 board
  1x Dongle and software
  1x High resolution monitor
  1x Exabyte cartridge tape recorder with SCSI board
  1x OYO GS612 plotter with driver board

Appendix 1 provides the geophysical equipment configuration during acquisition of 24 channel seismic data. Energy to trigger the boomer sound source is supplied either by the Geopulse Power Supply or the EG&G 232 Power supply and EG&G 231 Triggered Capacitor Bank. Key pulses from the PCTIG Computer are sent through a fix box at regular distance intervals (in this survey every one metre) to the Delph 24 system which sends pulses to discharge the high voltage (3500 volts DC) electrical energy in the power supply/trigger banks, to the boomer towed astern of the survey vessel. This causes the boomer plate to pulse and generate seismic energy, which is transmitted down into the seabed and underlying strata. Seismic signals reflected from the seabed and underlying sediment and consolidated rock layers are detected by the 24 channel hydrographic array also towed astern of the survey vessel. These are transmitted to the Elics Delph 24 acquisition system where all 24 channels are recorded in unprocessed form. When recording in "control" mode on the Delph 24 system, the signals received by all 24 channels at each shot are displayed on the high resolution monitor to provide quality control of the data. The signals from on channel of the hydrographic array were output for recording on a graphic recorder or an OYO plotter.

Navigation and Bathymetric Data Processing and Plotting System

The off line PC Map plotting system comprising the following components was installed on the vessel for the survey:

1x	TANG 486 computer
1x	Monitor
1x	HP Draft master plotter
2x	Colorado tape backup units (250Mb)

Survey Vessel

The "Miclyn Cove" was supplied by Total Marine Services Pty Ltd. The vessel is a 900 BHP twin screw survey utility ship, with a overall length of 33.5 metres, a breadth of 7.78 metres and maximum draft of 3.89 metres. Survey equipment was installed in a survey room aft of the bridge, with a clear view of the after deck.

The hydrographic array was towed suspended from a rope attached to the A frame, on the port side of the vessel with the boomer sound source also towed astern of the port quarter of the vessel. The seismic power supplies and capacitor banks were installed in a specially built container on the port side of the after deck. Appendix 1 provides an equipment offset diagram showing the position of the DGPS antenna and the geophysical equipment.

Personnel

The following personnel were involved in the survey:

Mr John Ringis:	Party Chief/Geophysicist
Mr Paul Caswell:	Surveyor
Mr Nigel Smith:	Engineer
Mr David Khoo:	Geophysicist
Mr Trevor Brougham:	Surveyor
Mr Neville Laney:	Engineer
Mr Adrian Sarolea:	Data Processor
Mr Bruno Marsset:	Elics Engineer (up to 1130 on 4 March 1994)
Mr Christian Palud:	Elics Engineer (for full survey)

Cambridge Gulf Exploration NL were represented by Mr John Graindorge

3.2.2 Calibration of the Equipment

DGPS Positioning System

To confirm the correct operation of the MN8 DGPS system a static calibration prior to the vessel sailing to site was carried out. The method used was to survey a position of the GPS antenna on the vessel alongside at Wyndham jetty using local survey points, and compare the calculated position with that given by the onboard MN8 DGPS.

A co-ordinate point (BM A112) on Wyndham jetty was identified from a description supplied by the Department of Marine and Harbours. A theodolite and EDM device were set up over this point and backsight taken to a Department of Land and Administration survey station (WYN 14) located at Mt Albany behind Wyndham Port Town. An additional point on the jetty was surveyed to enable a range and bearing measurement to be made to prisms mounted at the base of the GPS antenna. A series of three measurements were made between 1750-1800 hours on 27th February 1994 and MN8 DGPS positions were logged simultaneously. The DGPS observations were made using differential corrections from the reference station at Broome. The following mean difference between the calculated and observed position was derived:

C-0 Easting	-1.7m
C-0 Northing	-1.5m

These results confirmed the positioning integrity for the MN8 DGPS to within the expected accuracy of +/- 3 to 5 metres. Station summary diagrams of the control points used for the calibration are included in Appendix 2.

Gyro Compass

The SG Brown 1000A Gyro Compass was installed in the survey room and set up to concur with the vessel's gyro compass. A calibration was then carried out by comparing the observed reading with the known bearing of Wyndham jetty. The jetty bearing obtained from Department of Marine and Harbours information was 10°47' (grid) and this was confirmed with theodolite checks undertaken during calibration of the DGPS.

Offset measurements from the jetty to the centre of the vessel, forward and aft, were made to correct the observed gyro reading onboard for comparison with the known bearing. These observations were carried out at 1830 hours on the 27th February 1994 and the gyro compass wasfound to be reading 0.6 degrees high. A correction value of -0.6 degrees was input to the navigation computer to provide a real time correction to the interfaced gyro compass reading.

Echosounder

Calibration of the Deso 25 Echo Sounder was by the bar check method. A round disc was suspended below the overside mounted transducer at known depths and the sounder calibrated for vessel draft and speed of sound in water. The results obtained were as follows:

1720 hours 7/3/94	Draft 2.90m	Speed of Sound in water: 1547 m/s
1000 hours 11/3/94	Draft 2.80m	Speed of Sound in water: 1547 m/s
1125 hours 16/3/94	Draft 2.70m	Speed of Sound in water: 1547 m/s
0540 hours 18/3/94	Draft 2.70m	Speed of Sound in water: 1547 m/s

These calibrated values were set up on the Deso 25 so that calibrated depths were passed to the navigation computer.

Sub-bottom Profiling System

During mobilisation the boomer sound sources, power supplies, triggered capacitor bank, Geopulse receiver/signal processor, single channel hydrographic arrays and graphic recorders were assembled and tested, both on the deck and in the water. This verified operation of all components and confirmed that the signature of the boomer pulse was sharp and free of reverberation.

Proper operation of the Delph 24 acquisition computer and software was confirmed through playback of previously recorded data prior to and during mobilisation. Proper operation of all 24 channels of the 24 channel hydrographic array was confirmed through a "tap set" on the deck during mobilisation. After deployment of the towed boomer sound source and the 24 channel hydrographic array, the Delph 24 acquisition system was set to "Control" mode and gain settings on all 24 channel were individually set to optimum levels.

The key pulse from the PCTIG computer to the fix box and Delph 24 system was connected and it was confirmed that the system was triggering the boomer sound source at regular one metre intervals. The 24 channel data was recorded onto the computer hard disk which was down loaded to tape at regular intervals. During acquisition, the data recording was split into individual files for security reasons. Each file covered approximately 7.25 kilometres of seismic data. The process of closing a file and opening the next file resulted in the loss of 150 to 400 metres of data.

3.2.3 Survey Operations

Navigation

The position of the GPS antenna in EGS 84 co-ordinates computed by the Oceanics MN8 DGPS was passed to the PCNav computer once a second. This position was then transformed from the WGS 84 spheroid using the following geodetic parameters:

Datum Shifts EGS 84 - ANS

DX	+116.00	RX	0.230"	Scale 0.0983ppm
DY	+50.47	RY	0.390"	
DZ	-141.69	RZ	0.344"	

Spheroid:	Australian National Spheroid
Datum:	AGD 84
Projection:	UTM
Central Meridian:	129° East

A scaled outline of the Miclyn Cove was displayed on the navigation monitor. The position of the various sensors was tracked by computing offsets from the GPS antenna using the interfaced gyro heading. An additional monitor, provided for the helmsman, allowed the vessel to be navigated relative to the required survey lines. During the running of a survey line, the display indicated distance along the line and offset port or starboard of the tracked offset. A "snail trail" provided a history of vessel movement along the line. The averaged speed and course were also displayed. On completion of the line, a set of a runline statistics were produced as a summary of navigation quality and off-track distance during the line. Runline co-ordinates were entered to a runline library for easy selection within PCNav.

Position data was logged every 50 metres along the survey lines and every fifth fix was output to a printer. All fix data and intermediate echosounder depths were recorded to the PCNav hard disc for later backup and processing. At every fix a contact closure was generated to enable the echosounder and EPC recorders to be marked for subsequent correlation of the analogue records with position data.

Additionally, an ASCII string containing fix number, seismic source, Eastings and Northings was output at each fix to the Elics Delph 24 computer to be superimposed on the processed sub-bottom record. A second ASCII string, containing vessel speed only, was output from PCNav to an offline computer. This PC, running a programme called PCTIG, was used to generate a time pulse for firing the seismic source at a distance interval of one metre. Runline logs were completed for each line. These detailed the line name, direction, start and end of line times, and fix numbers.

Throughout the survey, the performance of the MN8 DGPS was monitored using the QC facilities available to the operator. Differential corrections were received at average "age" of 6-8 seconds. On occasions where tracking on the satellite was lost, the dish was rotated to the correct azimuth and differential corrections quickly restored. A minimum of five satellites were available at all times for positioning and PDOP values of less than 3.0 were observed.

Sub-bottom Profiling System

During recording of the 24 channel seismic reflection profile data, the boomer sound source was towed 20 metres aft of the port quarter of the vessel and 10 metres ahead of the 24 channel hydrographic array. Boomer power output was varied from 200 to 300 joules during the survey, depending on the sub-bottom geological conditions and signal strengths observed on the single channel records as the survey was run. Power output was also reduced during periods when following currents caused the ship's speed to increase above four knots, thereby increasing the boomer firing rate above a safe level for 300 joule operation. The boomer sound source was fired at one metre intervals by key pulses generated by the PCTIG computer and transmitted to the Delph 24 system via the fix box.

The Geopulse boomer was used as the seismic sound source from the beginning of the survey up to 1915 hours on 16 March 1994. Thereafter, until the end of the survey, the EG&G 230 boomer was used as the seismic sound source. The Geopulse power supply unit was used from the start of the survey to 0811 hours on 2 March 1994 and the EG&G 232 power supply/EG&G 231 triggered capacitor bank thereafter until the end of the survey.

Signals from channel number six of the Elics 24 channel hydrographic array were recorded on either the EPC 3200S graphic recorder or the OYO GS 612 plotter to provide complete single channel sub-bottom profiler coverage along all survey lines. The Delph 24 channel acquisition system was operated in "control" mode which displays the output form all 24 channels of the hydrographic array for each boomer "shot" on the high resolution monitor. This enabled continuous monitoring of data quality (signal to noise ratio) for all individual channels, as required.

The 24 channel data was recorded in Elics format directly to the hard disk of the Elics Delph 24 acquisition computer. When that disk was nearly full the recorded data was down loaded to Exabyte tape. The ship circled while this was done.

3.2.4 Data Reduction

Navigation

Position fixing and echosounder data were recorded on 3.5" floppy disk to enable post processing, the majority of which was done on board the survey vessel during the survey. The package used was the Fugro PC Map software, which enables track plots to be drawn for the required offset point for different towed systems. The geodetic parameters used for the track plots were:

Spheroid:	Australian National Spheroid
Semi major Axis:	6 378 160m
Inverse Flattening:	298.25
Datum:	AGD 84
Projection:	Australian Map Grid
Central Meridian (cm)	129° East
False Easting:	500 000
False Northing:	10 000 000
Scale Factor on CM:	0.9996
Latitude of Origin:	0°

Echosounding system

To reduce logged soundings for the effects of tide, the simplified harmonic method of tidal prediction was used to obtain a series of predicted tides for the selected tide stations. Harmonic constituents were abstracted from the Australian National Tide Tables. Daily tidal files were produced which contained the tidal height at ten minute intervals. Predictions derived in time zone GMT + 0930 hours were amended to be compatible with the data logged in Western Standard Time (WST). These files were used by PC Map to correct the measured depths and produce plots of corrected bathymetry along tracks. The tide station at Pearce Point (Tidal Station 63160) was used for reduction of data to the lowest astronomical tide (LAT)

3.3 Processing of the 1994 Seismic Data

The 1994 seismic data was recorded digitally using the Delph 24 software marketed by Elics of Paris, France. The digital data format is an in-house format and therefore only readable by the Delph 24 software. Subsequent to the completion of the survey, numerous attempts were made to translate the data to a SEG Y format readable by a third party. Attempts were also made to get the digital data processed by two local oil and gas seismic processing contractors. Sample data from the survey were processed after great difficulties by the contractors but failed to improve the existing data. It was also found that systematic processing of all the data by these contractors would be cost prohibitive.

It took some eight months, from April to November 1994, before the Company was satisfied that the best and most cost effective processing available was using the Delph 24 software. Systematic processing was undertaken and completed in February 1995.

Initial processing was achieved by Common Depth Point (CDP) stacking of channels 1 to 12 using the parameters of streamer geometry and of the general layout of the acquisition equipment. At a later stage 24 channel CDP files were compiled from a selected number of lines.

3.3.1 Bandpass Filters

In the processing, these filters define the cut-off frequency of the high pass filter and the low-pass filter. The high-pass filter attenuates the spectral component of the signal below the cut-off frequency. The high-pass filter was set at 240 to 300 HZ during processing. Similarly, the low-pass filter attenuates the spectral components of the signal above the cut-off frequency and was set at 1500 to 1800 HZ.

3.3.2 Automatic Gain Control ("AGC")

The AGC processing offers improved visualisation of seismic signals by compensating for variations in the signal envelope by different means. By experimentation on various profiles, it was found that the best results were obtained by using exponential or linear adaptations. For the 24 channel CDP stack profiles an exponential adaptation was selected with equal sensitisation (rise time) and desensitisation (fall time) between 13 and 60 milliseconds; the window width was 5 milliseconds. For the 12 channel CDP stack profiles a linear adaptation was selected with rise and fall times of 20 milliseconds and a window width of 1.3 milliseconds.

3.3.3 Swell Filter

Several attempts were made to process the data with the swell filter, but this was not successful because the bang box signal was multiple and not sharp enough.

3.3.4 Time Varying Filter (TVF)

This option allows a bandpass filter (combination of high and low-pass filters) to be applied to the signal. It is applied between the seabed and the end of recording time.

This processing was also tried on the data but found to be less effective than the bandpass filters (see 3.3.1).

3.3.5 Predictive Deconvolution

This option allows seabed multiple to be attenuated and, as it requires knowledge of the seabed position, it must be used together with the swell filter. Predictive deconvolution was attempted on both the 12 and 24 channel CDP stacks with the following parameters:

- length of signature: 0.5 millisecond
- length of processing window: 0.5 millisecond
- filter coefficient: 3
- position of multiple: variable from trace to trace

Predictive deconvolution was not successful because of the signal quality (see 3.3.3) and, generally, did not significantly attenuate the seabed multiples.

3.3.6 Horizontal Stacking

In the 24 channel CDP stack processing, a horizontal stacking of 2 channels was applied to attenuate the noise interference, particularly in the deeper part of the profile.

3.3.7 Common Depth Point Stacking

When the CDP stacked profiles were prepared, velocity and mute functions were defined using the real time single channel profiles produced during acquisition. The velocity function was generally defined at:

- 1500 metres per second at the top of recording, to
- 1600 metres per second some 40 milliseconds below seabed, to
- 1700 metres per second some 80 to 100 milliseconds below seabed, to
- 1900 metres per second some 120 to 140 milliseconds below seabed.

It should be noted that a number of velocity functions were defined for each traverse. The mute function was generally defined to enhance the top part of the profile with the nearest geophones (channels 1 to 5/7), and the deeper reflectors with the furthest geophones (channels 8 to 24). An example is given in Figure 3-2.

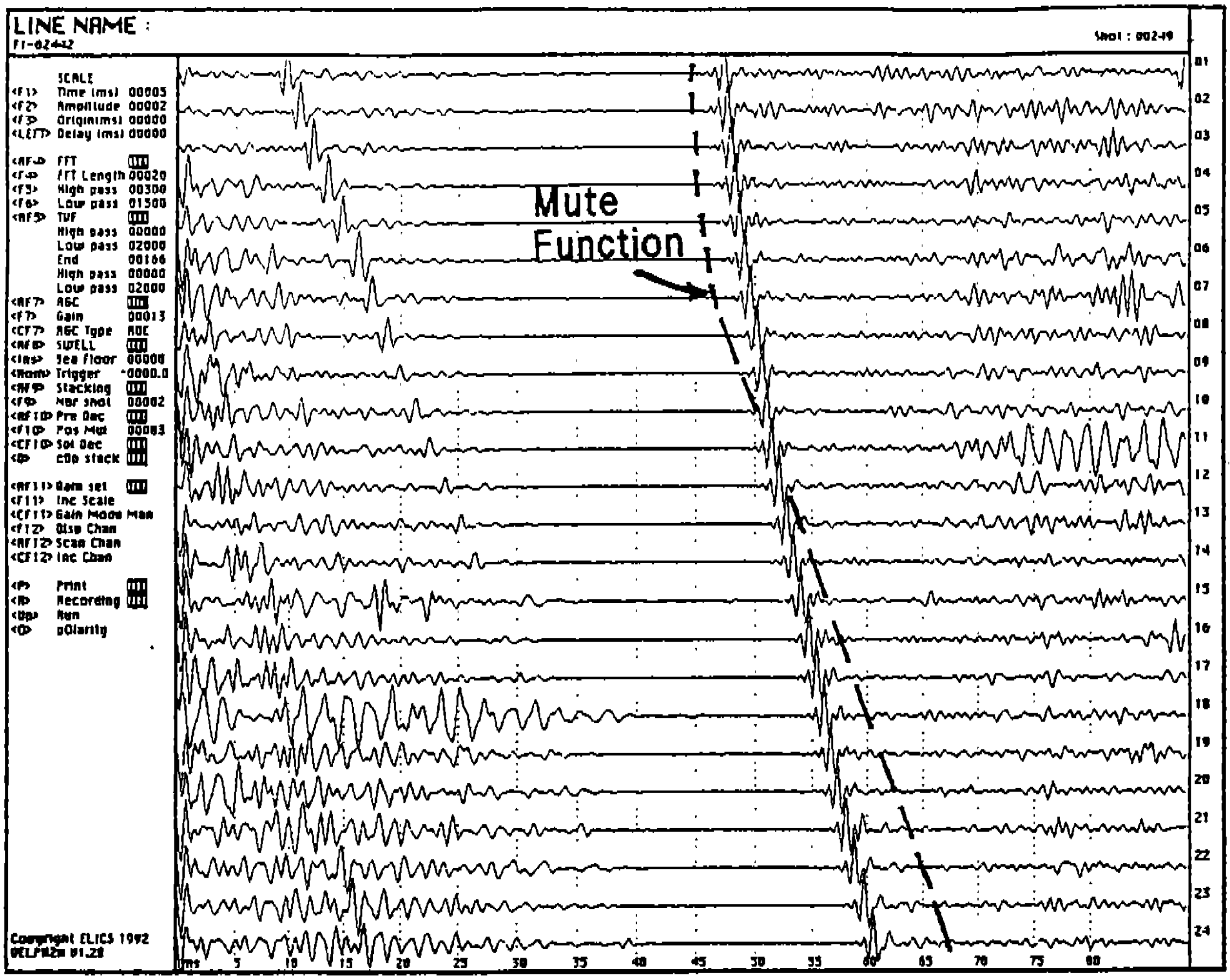


Figure 3-2 Illustration of the mute function used in processing the 24 channel digital seismic data

3.4 Processing Data Interpretation

It should be appreciated that both the seismic data processing and the interpretation were undertaken on the whole seismic survey regardless of tenement boundaries, and not on a tenement basis as required by the reporting regulations.

The data interpretation is done in four steps:

- the seabed is digitised from the real time single channel profile;
- the processed profiles are interpreted on a hard copy;

- the interpretation is digitised;
- the digitised data is reduced, validated and modelled using mining software.

3.5 Interpretation of the 1994 Seismic Data

Earlier regional reconnaissance surveys and preliminary interpretation of the seismic data indicated that depositional environments and mechanisms may have existed and operated in the Joseph Bonaparte Gulf which could lead to concentrations of alluvial diamonds shed from primary sources in the Kimberley region which drains into the Gulf.

The aims of the interpretation were to assess the nature and distribution of the unconsolidated sediment sequences overlying bedrock in EL8291, to identify environments of deposition with resource potential, and to define these sequences and environments to enable mapping, quantitative modelling, analysis and bulk sampling.

3.5.1 Interpretation Procedure and Map Compilation

The data used in the interpretation comprised:

- post-processed 12-channel Common Depth Point (CDP) stacked seismic records (main interpretation medium);
- real time single channel seismic monitor records (checks);
- a number of post-processed 24-channel CDP stacked seismic records (checks);
- analogue sidescan sonar records (used for limited checks).

Detailed seismic interpretation comprised:

1. An initial examination of data.
2. Formulation of a preliminary conceptual model (major divisions within the inferred sediment sequence and significant local environment types or target zones within divisions).
3. Colour-coding of these divisions and zones; and tracing of these features on copies of the seismic records for subsequent digitisation, contour mapping and modelling.

As a result of the interpretation no targets were identified from the small portions of seismic data acquired in the surrendered blocks.

3.6 October 1994 Geophysical Survey

Between 14 October and 1 November 1995 a survey comprising hydrographic, shallow marine single channel seismic profiling and sidescan sonar was completed over EL8291 and 8292. The survey was carried out by RACAL Survey Australia Limited on board the MV Miclyn Achiever. Mr John Lean, CGE's consultant geophysicist, was on board to ensure that the quality of data was of the highest order possible, within the framework of the CGE/RACAL contract, and for the intended purpose of the data. The survey covered all tenements held by CGE in the Joseph Bonaparte Gulf and the lines run over EL8291 and 8292 were contiguous with the running of lines over adjacent tenements.

3.6.1 Aims of the Geophysical Survey

The leases had previously been investigated, and indications were that depositional environments and mechanisms may have existed and operated in these areas which could have led to concentrations of alluvial diamonds.

The overall objective of the survey was, therefore, to obtain data enabling detailed quantitative assessment of the shallow geology in the leases, i.e. the nature and distribution of the unconsolidated sediments overlying bedrock.

3.6.2 Personnel

The personnel provided by RACAL to carry out the required data acquisition on a 24 hour/day basis were :

Party Chief/Surveyor	G. Davies
Surveyor	J. Tighe
Geophysicist	D. Bergersen
Electronics Engineers	L. Etheridge, P. W. Chan

3.6.3 Methods, Equipment and Operational Parameters

Navigation

RACAL provided Skyfix and Landstar as primary and secondary Differential Global Positioning Systems (DGPS) to position the vessel. These used the Inmarsat and OPTUS satellite systems respectively for transfer of differential corrections from reference stations at Broome, Dampier, Darwin and Ujang Pan to the vessel.

Manual (rotary switched) changeover to the secondary system was possible if problems were encountered with the primary system. On-board systems comprised antennae, demodulators, Trimble DL 4000 GPS Receiver, S.G. Brown SG1000 Gyro Compass, and PCs running RACAL's GNS-400 general navigation and Multifix (multiple DGPS reference station) QC software.

The navigation system logged positions and displayed the vessel's track to the helmsman, as well as transmitting positions via serial cables to the boomer and chirp seismic systems, at an update rate of one second throughout the survey.

Incrementally numbered position fixes were distributed for marking of analogue recorders (echosounder, sidescan sonar and seismic) and logging with digital seismic data, at intervals of 30 seconds (about 60 metres) along lines throughout the survey. Boomer records were marked with a short tic only, near the zero timing line, until revised software was received via modem on 18 October. Automatic annotation of analogue records was successful except for the boomer record, which was manually annotated every ten fixes. Positions logged by GNS comprised GPS Antenna position and echo sounder transducer position (Datum). Other positions are related to Datum by the following approximate offsets, measured positive (starboard, forward):

- Echosounder (Datum) (0.0m, 0.0m)
- GPS Antenna (-5.4m, 18.6m)
- Sidescan towpoint (stern) (-4.0m, -14.3m)
- Boomer catamaran (2.0m, -30.0m)
- Hydrophone array (-12.0m, -26.0m)
- Boomer reflection point (-5.0m, -28.0m)
- Chirp towfish (-12.5m, 0.0m)

The position of the sidescan sonar towfish requires calculation using the stern position and the cable layback noted in the survey log books and on the analogue records.

An equipment offset diagram provided by RACAL is given in Appendix 3.

Bathymetric Mapping

A Krupp-Atlas Deso 20 dual frequency echosounder and TSS 335B Motion Sensor were employed to produce analogue bathymetric records and acquire digital bathymetric data along all survey lines. The sounder was interfaced to GNS-400 for data transmission and reception of annotation strings. For all work in ELs 8291 and 8292 the 33kHz transducer was turned off to eliminate interference with the sonar system.

Prior to the start of profiling, the sounder was calibrated for the average speed of sound in the water column, and for the draft of the vessel. The former was determined at 1541 m/sec using an Applied Microsystems Velocimeter lowered to a depth of 30 metres below sea level. This velocity was then set on the sounder in order to make a draft correction by the "bar check" method, with the bar suspended on a chain five metres below sea level. Velocity probes and bar checks were repeated in each Prospect, and average velocities of 1541-1543 m/sec were measured.

Sidescan Sonar Mapping

Analogue sidescan data were acquired with a Klein 595 dual channel system comprising transceiver/thermal recorder and towfish operated at 100kHz. The towfish was attached to a steel armoured cable and was deployed by hydraulic winch from a stern-mounted sheave block. The cable was measured and marked by tape, and "cable out" in metres from centre-stern was hand annotated at each alteration on both analogue records and navigator's log sheet. Cable out varied from five metres to 100 metres depending on water depth, in an attempt to maintain a towfish height of 10-30 metres above the seabed. The most common layback for the water depths encountered was 30 metres, with the most common towfish height being 15 metres.

After experimentation at survey speed in the variable water depths expected throughout the survey, a slant range scale of 100 metres port and starboard was set on the analogue display, to provide optimum geological information about seabed materials. Seabed tracking and slant-range rectification were tested and worked well in deeper water, but tracking failed in shallow water where the towfish was hauled in closer to the propeller wash and wave noise. Since extreme variations in water depth were expected, this would result in a disjointed record, jumping in and out of rectified "mapping" mode, and unrectified records were therefore obtained for consistency throughout the survey.

A "ship's speed" of 3.5 knots (input manually to control chart speed) was found to produce optimum records for geological interpretation, at scales of approximately 1:500 across track and 1:560 along track (i.e. minimal scale distortion).

Seismic Reflection Profiling - Boomer System

For the primary system, the seismic energy source comprised an E.G. & G. Model 232A Power Supply and E.G. & G. Model 231 Triggered Capacitor Bank, capable of output energy levels of 100-1000 Joules/pulse. The sound source employed was a catamaran-mounted E.G. & G. Model 230-1 Uniboom towed approximately 12 metres from the starboard quarter, just outside the vessel's wake. An energy level of 300 Joules/pulse and shot interval of 450 msec were chosen, representing a safe duty cycle for the boomer plate over an extended survey, but capable of reasonable penetration and resolution in a range of geological environments. Key pulses initiating source discharge and digital recording were transmitted by coaxial cable from an optically isolated pulse generator with thumbwheel selection of output period.

Seismic signals were received by an E.G. & G. Model 265 single channel hydrophone array (8 elements in series at 40 centimetre spacings) towed 16 metres behind a two metre boom off the port quarter, just outside the vessel's wake. Under average towing conditions, the source-receiver separation is estimated at 15 metres, and the coordinates of the seismic reflection point relative to Datum are estimated at (-5 metres, -28 metres).

The hydrophone preamplifier was directly input to an analogue anti-alias filter forming part of a Micromine ENSIN PC-based digital seismic data acquisition system. In real time the ENSIN provided:

- scrolling VDU display (colour/ variable intensity/ adjustable delay and vertical display scale);
- seabed tracking;
- Time Varying Gain (TVG) and swell filtering tied to the tracked seabed;
- trace stacking; and
- output of data via a SCSI interface to a Goulton thermal plotter.

Data were digitised at a sample rate of 9.92 kHz and written directly to four millimetre two gigabyte DAT tape in Elics file format or, when necessary, recorded to hard disk and subsequently transferred to DAT.

Parameters used in recording were :

Shot interval	450 msec
Record Length	258 msec
Recording Delay	0 msec
Display Window	200 msec
Display Delay	0 msec
Digital Filter	495-4457 Hz bandpass
Polarity	Negative
Stacking	2 adjacent traces

Seabed tracking	ON				
TVG: TIED to seabed	Gain	at 0	msec	10	dB (seabed)
		10		10	
		20		100	
		30		900	
		40		1000	
		50		2000	
		250		4000	
		700		6000	
Swell Filter	ON (Filter length 26 traces)				
Deconvolution	OFF				
Printer speed	100 lines/inch				

Seismic Reflection Profiling - Chirp System

In order to improve seismic information at shallow depth, a secondary system (E.G. & G. X-Star chirp) was run concurrently with the boomer. This comprised an on-board power amplifier controlled by X-Star software, installed on a Sparc II workstation operating under Unix, and a Model 216S towfish containing a five kiloWatt transducer (transmitter) and two 0.5 metre line array receivers. The towfish was tethered from a Hiab crane and deployed two metres off the port side at a depth of approximately three metres below sea level.

A pulse was selected from a limited range of pre-designed pulse shapes. This was input to the power amplifier which generated capacitive discharge in such a way that the acoustic frequencies generated at the transducer were swept over the designed range with every output pulse, i.e. a broadband "chirp" output rather than a monotonic output produced by pinger systems from similar transducers. The pulse selected was 20 msec in length, with a bandwidth of 2-10 kHz, overlapping and extending that of the boomer system (0.5-5 kHz). Although the output pulse is long, the received signals are processed in real time with a matched correlation filter to produce high resolution records on video display and an Alden thermal plotter, with backup to two gigabyte Exabyte tape directly in SEGY format (after correlation processing).

Real-time processing options include seabed tracking, swell filtering, heave compensation (weighted trace-to-trace averaging of seabed arrival times), TVG, display zoom (fixed time scale but with x 2 and x 0.5 zoom), variable A/D delay and display delay (water column removal), and plotter gain. Plotter records are scaled in metres below the towed transducer, supposedly at the selected velocity or velocities of propagation. This operator control of velocity was not achieved however, and default velocities of 1500m/sec were retained.

Video display and plotter records include a continuous graph of seabed reflection coefficient in dB, which can be calibrated as a real time indication of the hardness of seabed materials.

For this survey, a pulse rate of eight per second was chosen (internally generated and asynchronous with other systems), but a maximum record length of 100 msec (3200 samples at 32kHz) is allowed for processing and recording to Exabyte. The display window appeared fixed at 1448 samples mapped to 724 pixels (unless in zoom mode), representing 45.25 msec two-way time. The printed record shows frequent tic marks at five metre depth intervals (one way depth below towfish) or 6.67 msec two-way time per division (40.0 msecs over six divisions) calculated using the default velocity of 1500 m/sec.

Because of the expanded vertical scale, frequent changes were made in display delay, which were not in discrete steps but were variable due to the trackball/slider bar operation of the system. A plotter rate of six traces per second was used for a horizontal record scale close to that of the boomer records.

3.6.4 System Performance And Data Quality

Navigation

Overall, positional/navigational stability and accuracy during the survey were excellent. Whenever observed, scatter plots and displayed variation appeared better than five metres, usually between one and three metres. On one occasion however, the Landstar system failed to produce solutions for a few minutes, before manual switchover to Skyfix.

Steering was tracked at the Datum position, and throughout most of the survey the Datum position was held within a +/- 25 metre corridor around proposed lines, except where sudden tidal effects were encountered. At times "crabbing" occurred due to cross-currents, and "feathering" angles up to the order of 40° between course-made-good and towed sensor orientations were experienced. "Crabbing" had no effect on the intrinsic data quality of individual systems, or positional accuracy of sensors, due to the use of the Gyro in computation of offset coordinates. Potential problems are in merging of bathymetric and seismic data for computation of reduced levels in areas of steep seabed relief, and in any detailed plotting of sidescan sonar data. Line-by-line statistics can be generated offline but this was only done as a random sample.

Bathymetric Mapping

Dual frequency (33/210kHz) operation of the Deso 20 sounder was initially employed. However, the 33kHz transmission was disabled during survey as this signal added spurious noise to the sidescan sonar records. The 210kHz system performed without problem, as did the heave compensator.

Sidescan Sonar Mapping

In areas of shallow water, seabed tracking was unstable due to excess water noise, and unrectified records were produced throughout the survey. Record quality was excellent, except where shallow water prevented optimum towfish elevation and increased the amplitude of the sea surface reflection. Records show clear bedforms, texture and reflectivity variations which should give good correlations with surface sampling.

Boomer System

Seismic energy components performed extremely well with minimal but well timed servicing. The towing configuration provided consistent, relatively low noise levels, and no physical interference and minimal acoustic interference was experienced with the sidescan system. In shallow water, the large source-receiver separation will lead to overestimates of depth, and non-linear corrections to digitised arrival times may be required.

Boomer data of high quality were obtained throughout the investigation areas. Primary reflections were observed at times up to 120 msec, with subsurface penetration of up to 80 msec (about 70 metres). However, detailed interpretation of lithologies will be difficult at reflection times later than the first seabed multiple, whether this be 10 metres or 70 metres below the seabed. Near-surface gas-rich sediments occur in parts of the survey area, and little or no detail of underlying units can be expected from these areas.

High resolution (about one metre) between reflectors was observed when surface sediment units appeared thick and fine grained, but a "ringing" effect occurred which seemed to be related to the presence of denser sediments at the seabed. This reduced resolution and masked some near surface detail, especially where dips of internal bedding are low.

Resolution is a function of source output, the filtering properties of the sediments, and the receiver system response. Resolution was improved in the early part of the survey by a reduction in the early time gain of the TVG amplifier, and use of a more gentle gain slope from seabed to maximum gain.

Analogue records were treated as the primary interpretation medium, but data may benefit from *predictive deconvolution* for the suppression of multiple reflections, *and spiking deconvolution* for improvement in resolution. In addition, SEG-Y data will be available for third party post-processing if required, provided the SEG-Y format is fully transportable.

A consequence of the use of real-time analogue records was the need to ensure that swell filtering was carried out with due care. While swell filtering may not be necessary to enable trace-to-trace correlation of a widespread reflector in low swell conditions, or where compressed time scales are used, it is considered a high priority in the production of expanded scale records required for stratigraphic interpretation. For such interpretation, the character of the record between reflectors is as important as the continuity of the main reflectors, and the clarity of this fine detail depends on sufficient high frequency content and on good swell filtering.

Automatic seabed tracking is the key to filtering, and this in turn depends on a good signal/noise ratio at the seabed arrival time. Strong direct arrivals or excessive water noise can cause the filter to "lose lock" on the seabed, resulting in unfiltered data which can be further corrupted due to the finite time constant of the filter during readjustment.

For the vast majority of the survey, swell filtering maintained seabed lock. However, loss of seabed tracking occurred on a number of lines (sometimes for very short periods or where subsurface reflectors remained clear without filtering), but sometimes where interpretability suffered.

Chirp System

No problems were experienced with energy source (power amplifier), towfish, transducers, video monitor, or Alden thermal plotter during the survey.

Chirp data of high quality were obtained wherever geology permitted. The style of record is markedly different from impulsive source records such as from the boomer, but not dissimilar to pinger records with both positive and negative print polarity. Typical penetration figures quoted by the X-Star manual are up to five metres in sand and 15 metres in mud, and these figures appear to have been achieved. Primary reflections were observed corresponding to subsurface penetration of up to 20 metres at 1500 metres per second (i.e. approximately 27 msec two-way time below seabed) in what are inferred to be Recent fine-grained channel deposits. In many places however an underlying unit either at similar depths or in outcrop, appears without subsurface reflectors, i.e. causes either high absorption or reflection of energy and allows little (one to five metres) transmission.

Seabed multiples will mask very few primary reflections since water depths usually exceed depths of penetration. The first seabed multiple occurs at twice the seabed depth plus three metres (depth of transducer). However, an event occurs approximately three metres shallower, whose origin could not be confirmed but which may be a multiple reflection from the hull of the vessel.

A weak event can often be seen approximately one metre below seabed, which parallels the seabed even over steep sand waves, and is thought to be spurious (probably an artefact of imperfect matched correlation filtering - i.e. the chirp equivalent of a "ringing" impulsive source). There is some indication that this imperfect filtering also holds down amplitudes within the first three metres below seabed, and an apparent gain step results which does not correspond to the shape of the TVG used during the survey. Care should be taken in interpreting weak or vague reflectors at this three metres depth below seabed.

Very high resolution (approximately 0.1 - 0.2 metres) between reflectors was implied by the thickness of the seabed reflection event, and was observed in thinly bedded surface sediments which appeared fine grained. This "best resolution" is tempered by the existence of the spurious event one metre below seabed, which could theoretically interfere with primary reflections at this depth.

X-Star's heave compensation facility, as for TVG amplification, is based on seabed tracking (seabed is detected when amplitudes first exceed a graphically set threshold). In addition, the user selects a percentage link between traces which acts like a time constant or weighted smoothing factor, i.e. 99% indicates the seabed arrival time should be weighted heavily in favour of the seabed arrival time of the last trace. This system worked effectively even when weather conditions (one to two metre swell and wind chop) produced poor boomer data, except that boomer interference sometimes exceeded the threshold within the width of the detection window and caused tracking to jump into the water column, requiring a manual reset.

3.6.5 Interpretation

Post processing and interpretation of the seismic data acquired in October 1995 was undertaken in the first quarter of 1996, and was carried out in association with the interpretation that was completed in May 1995 on data acquired in 1994 (Section 3.5) using the same methodology. No targets were identified in any of the part lines run over surrendered blocks in EL8291.

4. EXPENDITURE STATEMENT

Expenditure related to the exploration work completed in the surrendered blocks of exploration licences 8291 and 8292 between 10 December 1993 and 9 December 1995 is set out in Tables 4-1 and 4-2. Please note that these costs are based on a percentage of the total expenditure for the exploration licences for the reporting period, i.e. 35% for 8291 and 25% for 8292.

Table 4-1 Expenditure details for the surrendered graticules from EL8291 for the period 10 December 1993 to 9 December 1995

To 9 December 1994	
Survey Contractors	$13,061
Supervision and preliminary data handling	$712
Ancillary costs for seismic (data copying)	$1,632
Labour - Report writing and data interpretation	$1,018
Head Office Overhead (15%)	$2,463
Sub-Total	**$18,886**
To 10 December 1995	
Acquisition of 1995 seismic data	$1,409
Consultants	$5,740
Equipment and Plant Hire	$1,530
Experimentation with large diameter drilling works	$33,793
Legal fees for contract negotiations	$2,288
Mobilisation of the processing plant for the large diameter drill barge Java Constructor	$35,285
Preliminary environmental research	$265
Reproduction, maps and publications	$55
Data processing and interpretation of 1994 seismic data	$1,841
Transport and travel	$748
Technical staff salaries	$7098
Office Overheads (20%	$18,010
Sub-total	$90,052
TOTAL	$108,938

Table 4-2 Expenditure details for the surrendered graticules of EL8292 for the period December 1993 to 9 December 1995

To 9 December 1994	
Survey Contractors	$9,330
Supervision and preliminary data handling	$841
Ancillary costs for seismic (data copying)	$1,946
Head Office Overhead (15%)	$1,817
Sub-Total	**$13,934**
To 10 December 1995	
Acquisition of 1995 seismic data	$8,053
Consultants	$6,266
Equipment and Plant Hire	$1,749
Experimentation with large diameter drilling works	$24,276
Legal fees for contract negotiations	$1,236
Mobilisation of the processing plant for the large diameter drill barge Java Constructor	$25,147
Preliminary environmental research	$362
Reproduction, maps and publications	$57
Data processing and interpretation of 1994 seismic data	$1,228
Transport and travel	$843
Technical staff salaries	$8,450
Office Overheads (20%	$15,534
Sub-total	**$93,201**
TOTAL	**$107,135**

It should be noted that Cambridge Gulf Exploration NL allocated a proportion of the costs involved in the research, development and testing of a suitable bulk sampling method, for use on all its tenements, to EL8291 and EL8292. The costs for the 1995 bulk sampling programme have been included in that years expenditure and a dollar value apportioned to both exploration licences on the basis of the area of the tenement as a percentage of the total area of tenements held by CGE. Due to environmental conditions outside of the control of the Company, the 1995 drilling programme was brought to a halt before drilling works could commence in the Company's Northern Territory tenements.

The costs of research, mobilisation and experimentation have been included in the total expenditure as they reflect a fair and just representation of the level of commitment and investment in ensuring a valid and successful exploration programme.

5. ENVIRONMENTAL CONSIDERATIONS

High resolution seismic, hydrographic and sidescan sonar surveys were the only activities carried out by CGE in its exploration of the surrendered graticules in EL8291 and EL8292. The Northern Territory Department of Mines and Energy were notified of each survey, as required, and all conditions set were adhered to. The exploration carried out did not involve any surface disturbance of the surrendered area or surrounds. There were no impacts whatsoever on the immediate environment and its surrounds as a consequence of CGE's exploration activities.

6. CONCLUSION

EL8291 and 8292 cover the area of Northern Territory coastal waters from the baseline to the three nautical mile limit, extending from Pearce Point along the coast to north of North Peron Island in the mouth of Anson Bay, excluding Anson Bay and Hyland Bay.

A partial waiver from the 50% reduction on both tenements was applied for and approved: 52 blocks were surrendered from EL8291 and 64 blocks were surrendered from EL8292.

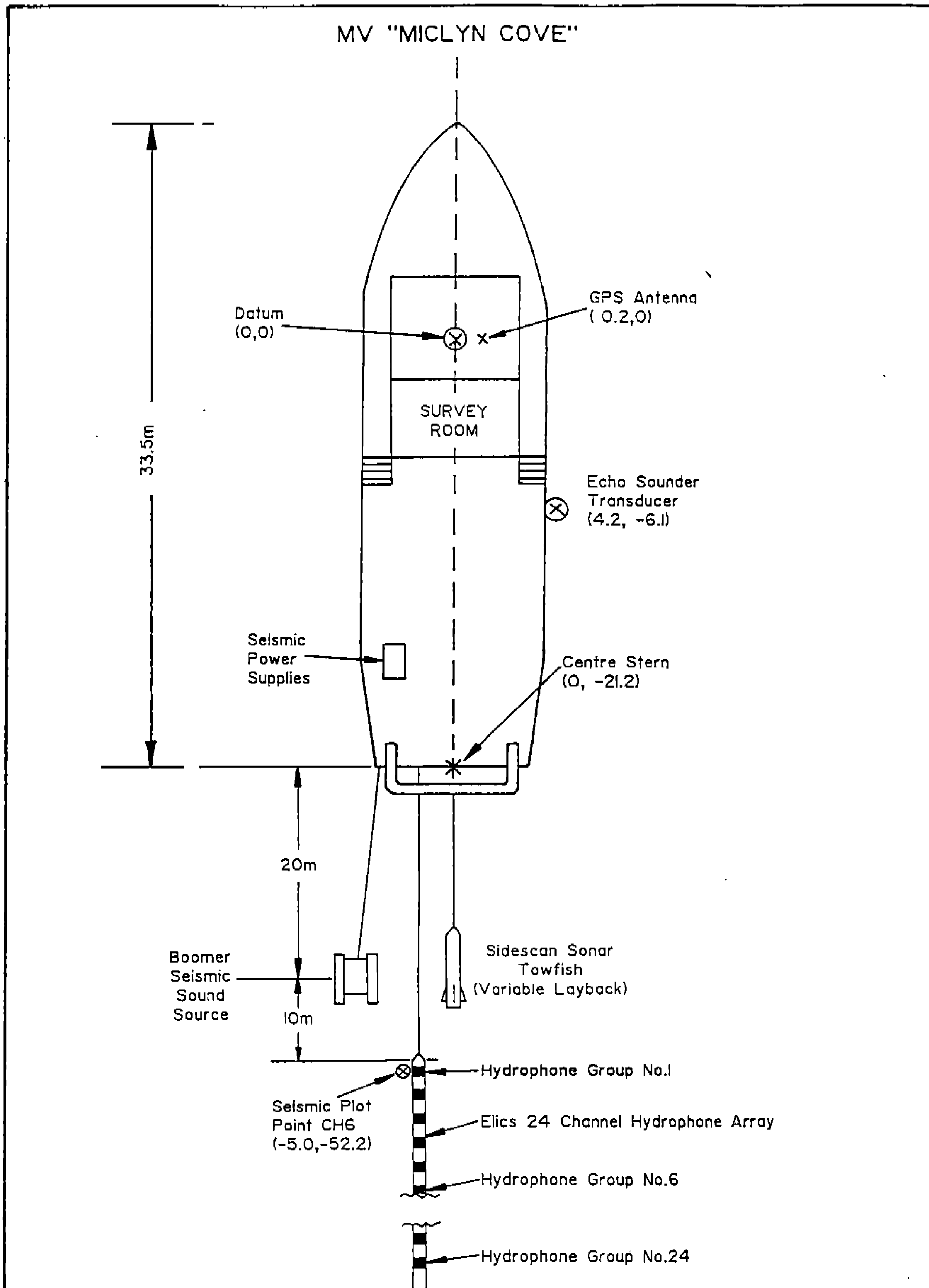
In a letter dated 13 December 1995, approval was given for a combined surrender report. Approval was also given for lodgement of the final report on 9 August 1996 with the lodgement of a summary report to be made by 9 February 1996.

In the surrendered portion of EL8291, two high resolution seismic surveys were undertaken (March 1994 and October 1995). Hydrographic (bathymetric) data were collected in both surveys and sidescan sonar data in the 1995 survey. Small portions of four lines were run over EL8291; two lines in each of the two surveys. No lines or part lines were run over any of the surrendered blocks in EL8292.

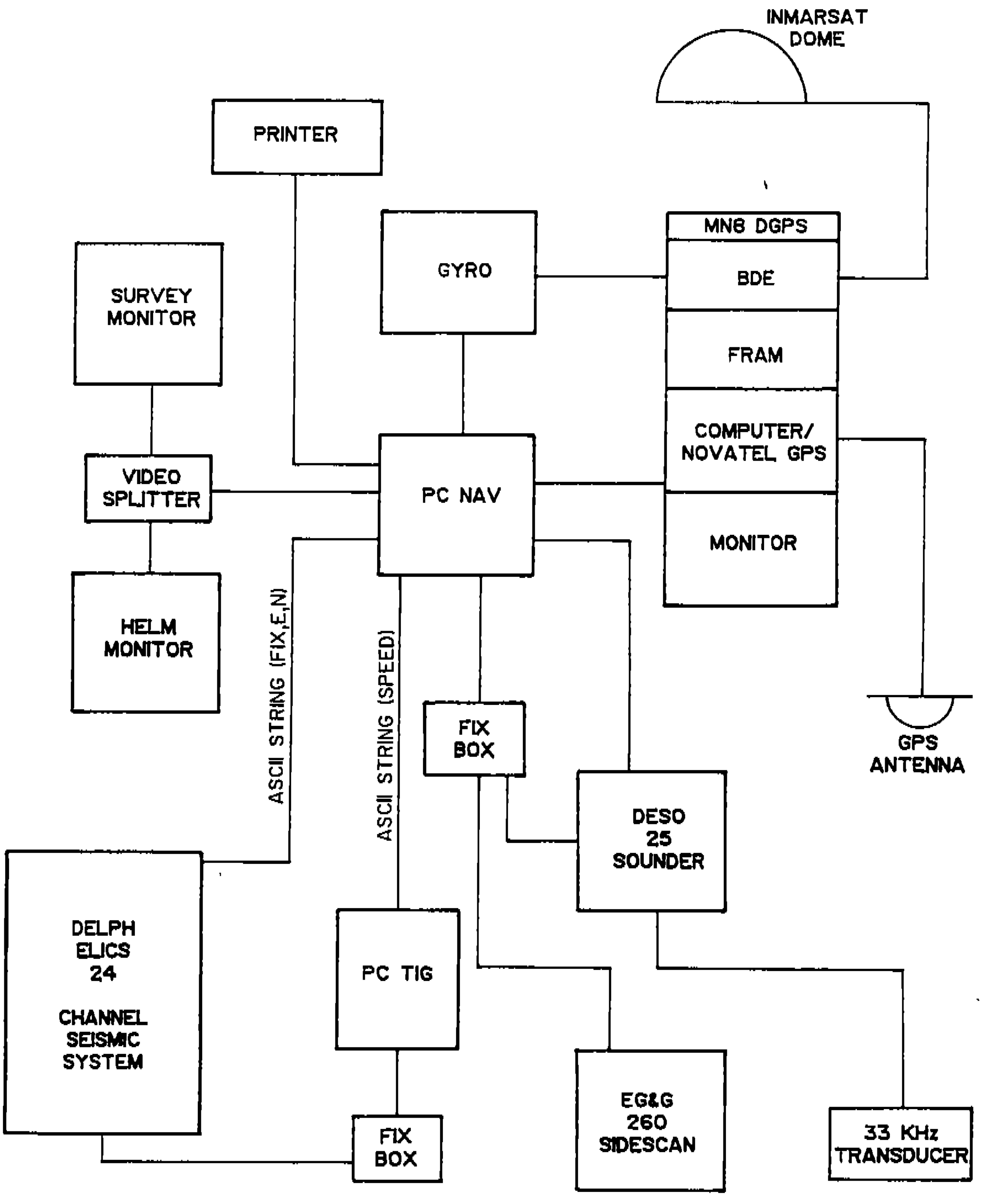
In February 1995 post processing was undertaken on the 1994 seismic data, and in May and June of that year interpretation of the data was completed. Subsequently, computer modelling of the digitised interpretation was carried out. Between January and July 1996 post-processing and interpretation of the October 1995 data was undertaken. No targets were identified in the blocks surrendered from ELs 8291 and 8292. These blocks are surrendered on the basis that they are non-prospective for marine alluvial diamonds and the location of some blocks in shallow water makes further exploration unviable.

It should be noted that no invasive, *in situ* or sampling work was undertaken by CGE during its exploration of the surrendered blocks of exploration licences 8291 and 8292 between 10 December 1993 and 9 December 1995.

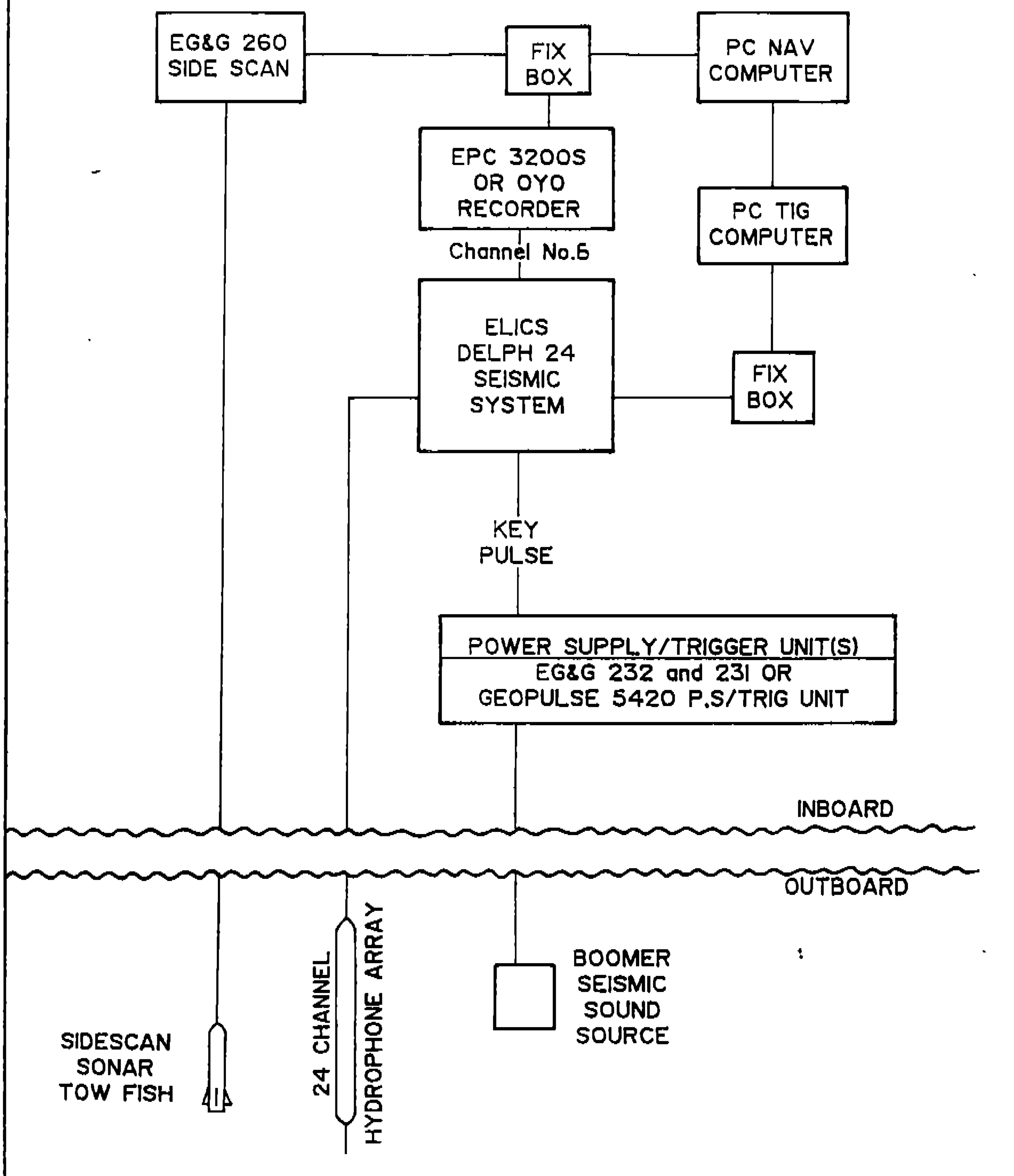
Appendix 1 Vessel Offsets for the "Miclyn Cove" 1994 Geophysical Survey



VESSEL OFFSETS - MICLYN COVE



NAVIGATION EQUIPMENT CONFIGURATION



GEOPHYSICAL EQUIPMENT CONFIGURATION

Appendix 2 Station Summary Diagrams of Control Points March 1994 Survey

STANDARD SURVEY MARKS ACT, 1924

S.S.M. No. WYNDHAM 14

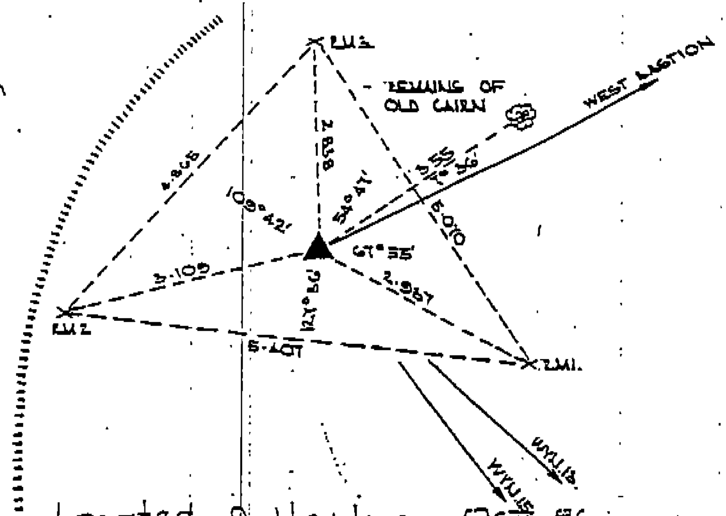
NUMERICAL VALUES ON THIS SUMMARY ARE NOT MAINTAINED. FOR CURRENT VALUES REFER TO GESMAR COMPUTER PRINTOUT.

DEPARTMENT OF LANDS AND SURVEYS
PERTH, WESTERN AUSTRALIA

STANDARD SURVEY MARK SUMMARY

Standard Survey Mark set in concrete ~~with concrete hatch cover~~ AT G.L. Stamped. WYN 14

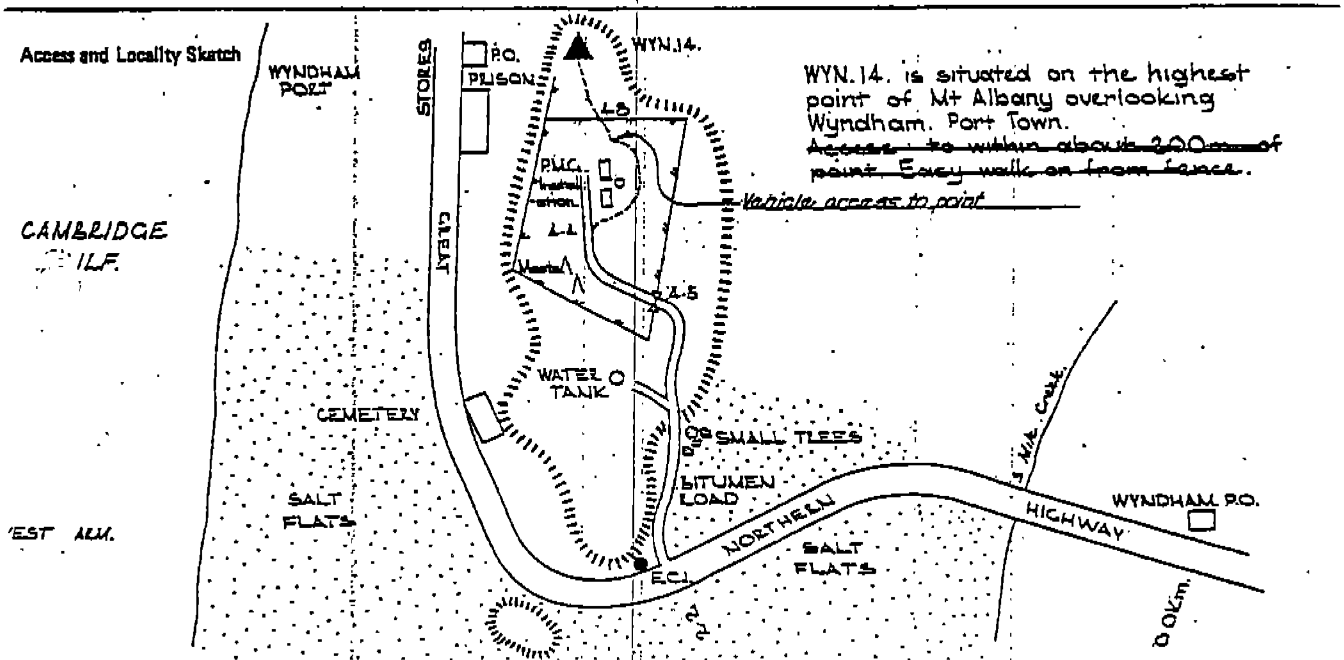
RMs are steel spikes set in concrete at ground level.



Reference Marks

Located D. Hardman Oct 86

Access and Locality Sketch



WYN.14. is situated on the highest point of Mt Albany overlooking Wyndham. Port Town.
~~Access: to within about 200m of point. Easy walk on from fence.~~

Vehicle access to point

R.L.(S.S.M.) 147.551 m R.L.(E.R.M.) .... m ABOVE A.H.D. 1971 (M.S.L.) Level Reference: G.S. 37/74/6

Reference Books: G.S. 37/74/1 Cadastral Connection: C. YORATH - 3 Drawn H. OOSTERBAAN

Established by: LANDS & SURVEYS DEPT Date: 25-10-76 Surveyor: C.J. YORATH

Certified free of transcription errors: [signature] Date: 5.5.77 Approved by: .... Date: ....

AUSTRALIAN GEODETIC DATUM 1:10000 Map Sheet: WYNDHAM REGIONAL Photo No. 5217 Run No. 1

SECTION WYNSSMS

PUBLIC WORKS DEPARTMENT

PERMANENT SURVEY STATION SUMMARY

STATION	R.L.
Tidal BM A 112	5.942

DATUM Australian Height Datum
Australian Geodetic Datum

RL = 10.136m per ISLW.

REF. MAP 1:100000 - 4537, Cambridge Gulf Chart. ~~P.W.D. WD.45100-D32-14~~ LOCALITY Wyndham Jetty

LEVELLING STANDARD 2nd Order ESTABLISHED FROM Admty BM, TG BM.

FIELD/LEVEL BOOKS 27166 CALC. BOOK

ESTABLISHED BY R.G. Parks DATE Jul 1973

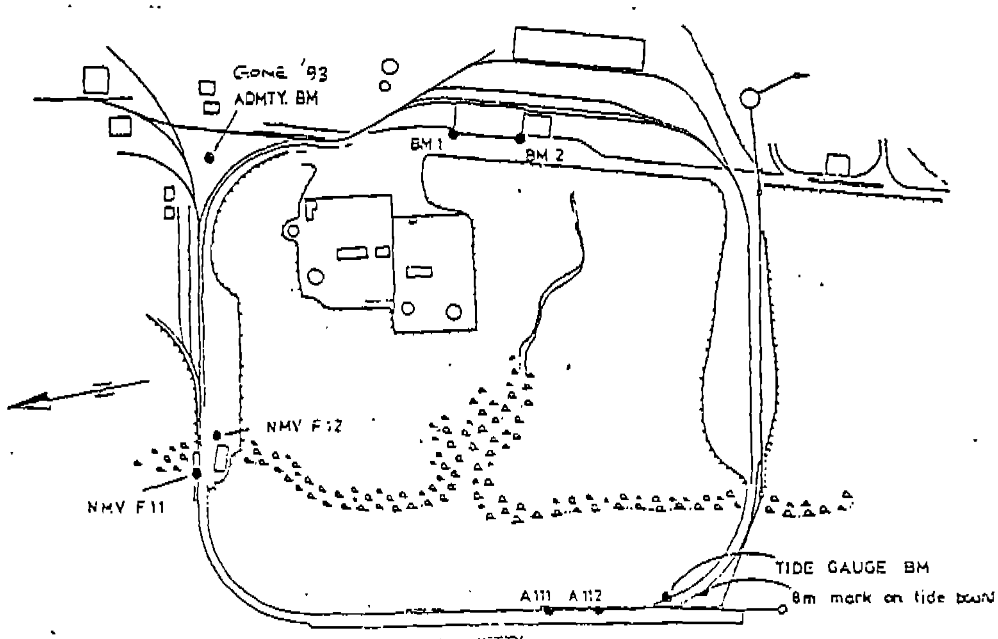
Rectangular Coordinates in Metres Australian Map Grid AGD 84

Latitude S	Longitude E	Zone	Order
15° 27′ 15.45″	128° 05′ 59.32″		
Easting	**Northing**	**Convergence**	
403426.588	8291213.237	0° 14′ 23.61″	0.999715

Grid Bearing = Adj. Azimuth + Convergence

To	Adj. Azimuth	Adj. Length	Order
THE KNOLL	62° 21′ 05.06″	1687.208	
WYN 14 (SSM)	165° 50′ 28.88″	1197.197	
BERTH FACE	10° 47′ GRID BRG.		

DESCRIPTION AND LOCATION OF STATION PWD brass plaque set in concrete wharf - located above pier No. 62 approx 0.35m west of eastern edge of wharf - stamped A 112.



30.9.93

RECORDED INFORMATION EXAMINED BY [signature] DATE 7 Feb 78

Appendix 3 Vessel Offsets for the Miclyn Achiever for the October 1995 Survey

APPENDIX A

M.V. MICLYN ACHIEVER

(NOT TO SCALE)