



R/V Rig Seismic

AGSO Marine Operations

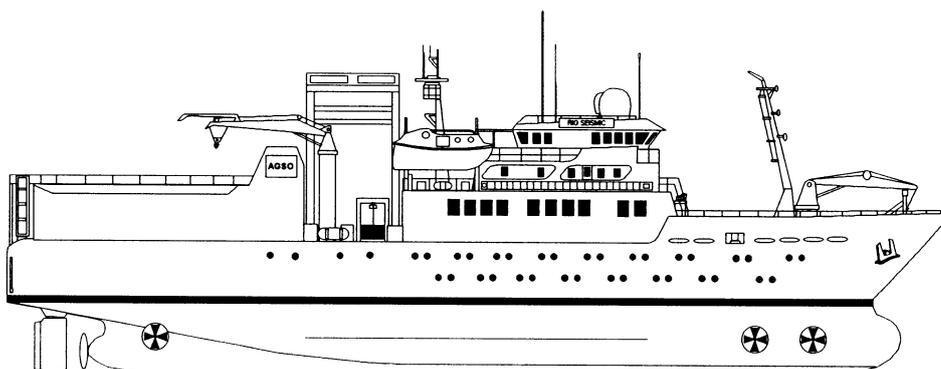
PARAMETER REPORT

Survey 180

**1997 Heard Island/Kerguelen Plateau 2
MARINE SEISMIC SURVEY**

28th February - 16th April

**Line Sequences
180/101 to 180/1001**



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GENERAL PARAMETERS

General

Client: Australian Geological Survey Organisation.
 Survey Name: Heard Island/Kerguelen Plateau 2
 Survey Area: Kerguelen Plateau
 Survey Vessel: R/V Rig Seismic
 Survey Number: 180
 Type of Survey: 2D marine seismic reflection

Navigation

Navigation System: AGSO DAS Navigation System
 Primary Navigation: Racal Multifix 2 DGPS
 Secondary Navigation: Racal Multifix 1 DGPS
 Shot Point Interval: 50.00 metres
 Nominal Fold: 3000%
 Magnetic Variation: 50-70W° (IGRF)
 Speed of Sound in Water: 1500 m/s (assumed value)

Recording

Recording Instruments: AGSO MUSIC Seismic Recording System
 Recording Media: High Density IBM 3480 Tape Cartridge
 Recording Format: Demultiplexed (AGSO modified) SEG-Y
 Record Length: 16 seconds
 Sample Rate: 4 milliseconds
 Low Cut Filter/Slope: 5 Hz at 12 dB/Octave,
 High Cut Filter/Slope: 205.9 Hz at > 130 dB/Octave
 Delay From Rec Start To Gun Timebreak: 116 msec
 Total Recorded Channels: 252

seismic channels	001-240:	240
water-break channels	241-243:	3
gun hydrophone channels	244-251:	8

sonobuoy channel	252	1
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Streamer

Streamer Type:	Single Digital Streamer
Active Streamer Length:	3000 Metre
Active Streamer Groups:	240
Group Interval:	12.5 metres
Streamer Depth:	12-14 metres

Energy Source

Energy Source:	Single High Pressure Air Point Source Array
Energy Source Type:	Sleeve Guns
Total Volume:	3000 cubic inches
Nominal Pressure:	2000 psi
Total Number of Guns:	2 arrays of 10 (of 16) guns
Energy Source Depth:	10.0 metres

Line Names/Numbers

All survey lines were named as per the client's requirements. Lines were named KP-J, K, L, M, N, O, P and T.

Lines were also allocated a sequential line number of the form 101-1001 in the order that the lines were shot.

Shotpoint Numbering, Run Out and Overlaps

All prime lines were started from shot point 1001 regardless of the shooting direction. The end of each line included run-out to ensure full fold coverage to the end of each pre-plot line.

The run-in to each line was 5000 metres or greater to ensure the seismic streamer was straight at start of line.

LINE CO-ORDINATES

WGS84 Co-ordinate Survey 180 Heard Island/Kerguelen Plateau 2D Seismic Survey
 Co-ordinates supplied to Canberra were in the WGS 84 datum.

DIAGRAMS

SEISMIC RECORDING SYSTEM

Instrument Type:	MUSIC Recording System
Manufacturer:	AGSO
Serial Number:	150964
Total Recorded Channels:	252
Seismic Data Channels:	240
Recorded Auxiliary Channels:	12
Channels 241 - 243	Water-Break Phones
Channels 244 - 251	Gun Hydrophones
Channel 252	Sonobuoy Channel
Streamer Front Channel Number:	1
Sample Interval:	4 milliseconds
Record Length:	16.0 seconds
Recording Medium:	High Density IBM 3480 Magnetic Tape Cartridge
Recording Format:	Demultiplexed (AGSO modified) SEG-Y
Recording Density/Speed:	37871 bpi 18 Track / 39.37 ips (1000mm/second)
Recording Polarity:	Pressure increase = negative number on tape
External Header Format:	N/A
A/D Range:	± 7.2 Volts, A/D input limited to ±4.0 volts
Delay From Start of Record to Gun Timebreak:	116 msec - streamer seismic channels 116 msec - gun hydrophone channels

SEISMIC STREAMER

Streamer Type:	Century Mux II Digital Streamer
Manufacturer:	Hydro Science Incorporated
Number of Streamers:	1
Length:	3000 metres
Active Section Length:	100 metres
Number of Active Sections:	30
Active Groups:	240
Hydrophones Per Group:	16
Groups Per Section:	8

DIAGRAMS

Group Length:	12.5 metres
Group Interval:	12.5 metres
Hydrophone Sensitivity:	112 V/Bar Nominal
Hydrophone Type:	Multidyne Type 7A
Depth Transducer Type:	N/A (Using cable leveller depths)
Depth Transducer Positions:	N/A (Using cable leveller depths)
Cable Leveller Type:	16 x Digicourse 5000 series bird
Cable Leveller Positions:	1, 17, 33, 49, 65, 81, 97, 113, 129, 145, 161, 177, 193, 209, 225, and after 240
Cable Compass Type:	5 Digicourse 5000 series optically encoded magnetic compass units
Cable Compass Positions:	Centre of Groups 1, 65, 145, 193, and after 240
Water Break Detectors:	Multidyne Type 7A
Water Break Positions:	3.75 metres behind Group 1
Towing Depth:	12.0 metres \pm 2.0 metres

SEISMIC ENERGY SOURCE

Source Type:	Single 3000 Cubic Inch sleeve Airgun Array
Airgun Type:	Sleeve Airgun
Number of Gun Strings:	2
Number of Guns/String:	10 (16) active
Length of Source Array:	12.5 metres
Gun Spacing:	0.5m
Width of Source Array:	18 metres
Nominal Air Pressure:	2000 psi \pm 200 psi
Depth Sensors:	none
Depth Sensor Positions:	N/A
Gun Hydrophones:	8 (4 per string / 1 per gun group)
Number of Active Guns:	20 (10 per gun string)
Number of Spare Guns:	12
Compressors:	6 x A-300 300 scfm Price Compressors (4 in use, 2 as back-up)

DIAGRAMS

Gun Timing Unit:	AGSO GCM
Timing Limit:	± 2.0 milliseconds
Point At Which Source Was Aimed To Fire After First Scan On Tape (Timebreak):	Fixed at 116 milliseconds
Towing Depth:	10.0 metres
Towing Depth Tolerance:	± 1.0 metre

NAVIGATION AND POSITIONING

Navigation System:	AGSO DAS - Data Acquisition System
Primary Navigation:	Racal Multifix 1 Differential Global Positioning System
Primary Nav Equipment:	
GPS Receiver:	Trimble 4000DS
Differential Receiver:	Racal Skyfix Satellite Differential Demodulator 2402
Antenna:	Racal M-dome
Frequency:	75.80MHz
Ref Stations	Perth Cape Town Dampier Broome Darwin
Secondary Navigation:	Racal Multifix 2 Differential Global Positioning System
Secondary Nav Equipment:	
GPS Receiver:	Trimble 4000DS
Differential Receiver:	Racal Skyfix Satellite Differential Demodulator 2402
Antenna:	AGSO Inmarsat-A Satellite Dish
Frequency:	75.800 Mhz
Ref Stations:	Cape Town Perth Dampier Broome
Tertiary Navigation:	Magnavox MX100 Doppler Sonar / Gyro
Tertiary Nav Equipment:	Doppler Sonar / Gyro / Sperry Mk 37 Gyrocompass
Additional Navigation Equipment:	Raytheon DSN 450 Doppler Sonar Magnavox MX100 GPS
Fathometer:	Primary: Raytheon CESP 12.5 kHz Secondary: Raytheon CESP 3.5 kHz

DIAGRAMS

Gravity:	Bodenseewerk Geosystem KSS-31 Marine Gravity Meter
Magnetics:	Geometrics Magnetometer
Mode of Shooting:	Single Streamer / Single Source / 2D
Shot point Interval:	50.0 metres
Nominal Shooting Speed:	5.0 knots
Effective Fold:	3000%
Magnetic Variation:	50-70° West (IGRF)
Gyro Compass Correction:	2.0 Degrees
Speed of Sound in Water:	1500 m/s (assumed value)

GEODETIC PARAMETERS

The following parameters were used for all positioning data, survey coordinates and line coordinates during the survey. The line coordinates were provided on the WGS 84 datum. All computations by the on board navigation software throughout the survey were performed on the WGS 84 datum.

Projection Details

Projection:	Universal Mercator
Central Meridian:	N/A
Latitude of Origin:	0°
False Northing:	N/A
False Easting:	N/A
Scale Factor on CM:	N/A

Satellite Datum Spheroid Details

Spheroid Name:	World Geodetic System 1984 (WGS 84)
Datum Name:	World Geodetic System 1984 (WGS 84)
Semi-major axis:	6378137.000 Metres
Inverse Flattening:	298.257223563

Reference: *The Australian Geodetic Datum Technical Manual. Special Publication 10, National Mapping Council Canberra, Australia. ISBN 0 642 515 476*

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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 Navigation Reference Point (NRP), and for navigation purposes,

DIAGRAMS

this was the point that the vessel was steered by. The NRP was positioned 51.2 metres forward of the stern for the duration of 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 measurements are in metres.

<u>Offsets Referenced to NRP</u>	<u>Height</u>	<u>Offset</u>	<u>Offset</u>	<u>Lines</u>
Above (+) Below (-)		Fwd (+) Aft (-)	Stbd (+) Port (-)	
Centre of Stern at Water-line	+ 00.0	- 51.2	+ 0.0	All lines
Multifix 1 GPS Antenna	+ 15.0	- 5.3	- 5.6	All lines
Multifix 2 GPS Antenna	+ 15.0	- 6.3	- 5.4	All lines
Magnavox GPS Antenna	+ 15.0	- 7.75	- 4.95	All lines
Centre of Source Array	- 7.0	- 92.45	+ 0.0	All lines
Centre of Near Trace	- 8.0 - 9.0	- 162.6 - 162.6	+ 0.0 + 0.0	All lines All lines

VESSEL

Name:	R/V Rig Seismic
Radio Call Sign:	VMMR
Owner:	Galerace Limited
Year Built:	1982
Registration:	Research Vessel
Home Port:	Newcastle, New South Wales
Official Number:	851492
Length:	72.5 metres
Beam:	13.8 metres
Draft:	6.8 metres
Gross Tonnage:	1595 tonnes
Nett Tonnage:	421 tonnes
Displacement Tonnage:	3000 tonnes
Main Engines:	Bergen Type Norma KVMB-12 - 2640 HP / 825 rpm
Auxiliary Engines/Generators:	3 x Caterpillar - 564 HP / 482 KVA 1 x Mercedes - 78 HP / 56 KVA 1 x GEC Dynamic Positioning System
Shaft Generator:	AVK 1000 KVA - 440 V / 60 Hz

DIAGRAMS

Side Thrusters: 2 forward, 1 aft, each 600 HP

Cruising Speed: 10 knots

Maximum Speed: 13 knots

Propellers: 1 x Variable Pitch

Gyro Compass: Sperry Mk 37

Fuel Capacity: 556080 litres

Fresh Water Capacity: 107.98 tonnes

Water Maker: 10 tonnes per day

Endurance: 20,000 nautical miles at 13 knots
13,500 nautical miles at 5 knots

Contact Numbers:

Inmarsat: (0011) 872 1545120 (Phone / Telex)

(0015) 872 1545121 (Fax / Data)

Mobile: 018 898 200 (Phone)

018 620 515 (Phone)

018 632 656 (Fax)

Satellite Mobile: 0145 110516 (Phone)

Radar: Furuno FAR-2832S 10 cm (ARPA)
Furuno FR-2020 3 cm

Communications: Inmarsat C
Sailor MF Radio
2 x VHF fixed antenna radios
4 x VHF hand-held radios
12 x Motorola UHF hand-held radios
Aircraft radio
27 MHz citizen's band radio
Bridge mobile telephone
Inmarsat A (2 identification numbers)
OPTUS sat phone
3 x General use mobile phones
Facsimile

Helicopter Deck: Rear-mounted
Markings as per AGA 7 General Conditions
Certified during daytime operations for:
Bell 412 , Sikorsky 76, Hughes 500, Squirrel

Accommodation: 36 single berth cabins
3 double berth cabins
42 persons total (40 at sea)

Hospital: 1 berth

DIAGRAMS

Life Boats: 2 x enclosed 40 man motor driven lifeboats

Life Rafts: 4 x 20 man inflatable
1 x 6 man inflatable

