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## 1. Survey Information and Objectives

The Western Trident was contracted to undertake a 3D Marine Seismic Survey for **Bass Strait Oil Company Limited** in the blocks VIC/P-41, Gippsland Basin, Australia, Client reference Oscar survey GAP04D.

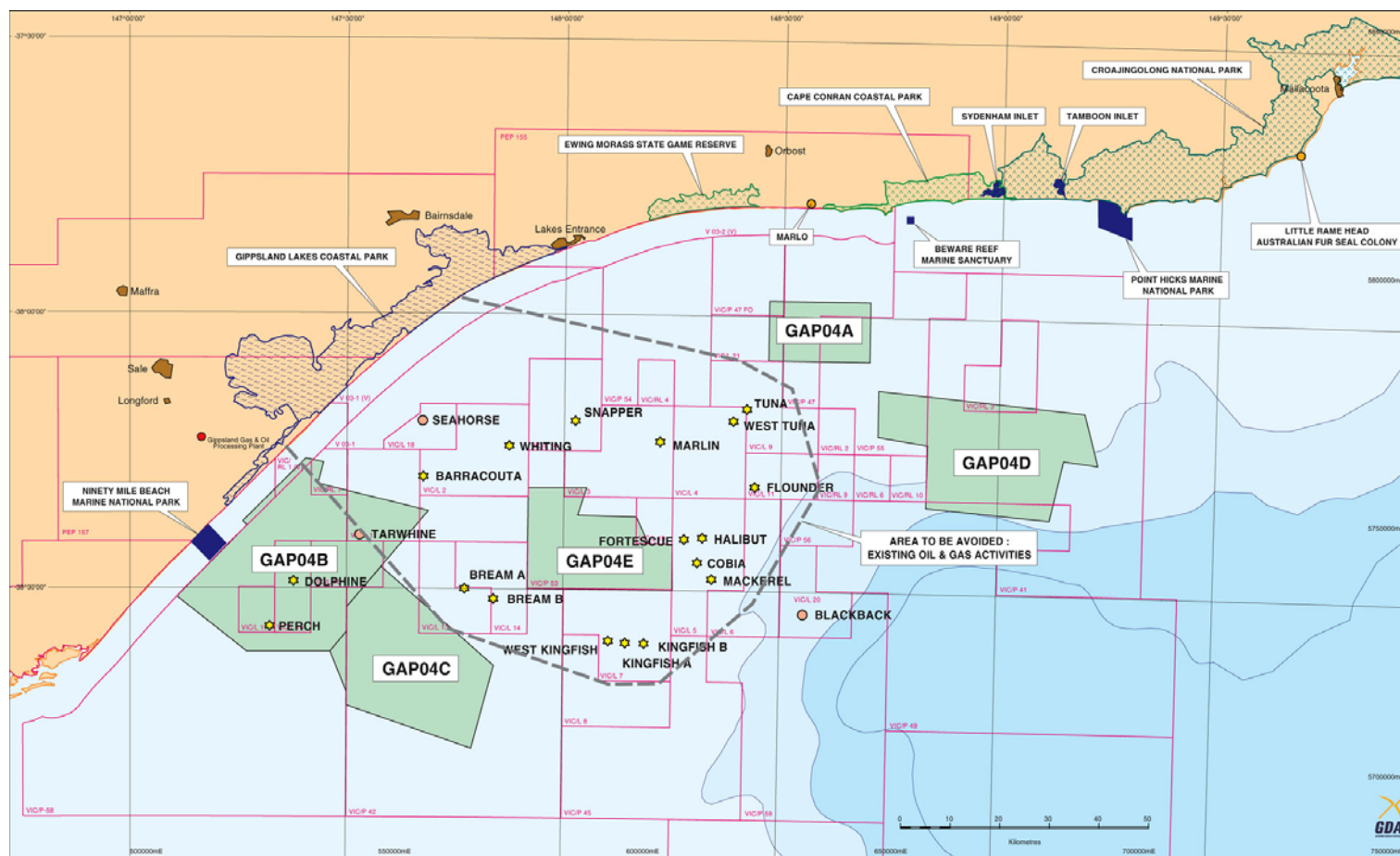
The Western Trident will tow an in-sea configuration comprising of eight streamers, each 4800 m long, at a separation of 100 m and a depth of 8m. The energy source will comprise of dual 3000 cubic inch Sleeve airgun, clustered arrays, towed astern of the vessel at a depth of 7m the energy is released from alternate arrays every 18.75 meters along the pre-plotted survey line. The operating pressure of the energy source was 2000 psi.

The *M/V Western Trident* is a purpose built vessel for seismic operations and is one of the largest vessels in WesternGeco's fleet. She was delivered in November 1999. The vessel has carried out many complex 3D surveys in various locations worldwide. She is capable of towing 12 x 6,000m TMS Sentry Solid streamers with a maximum separation of 1,200m when using the monowings.

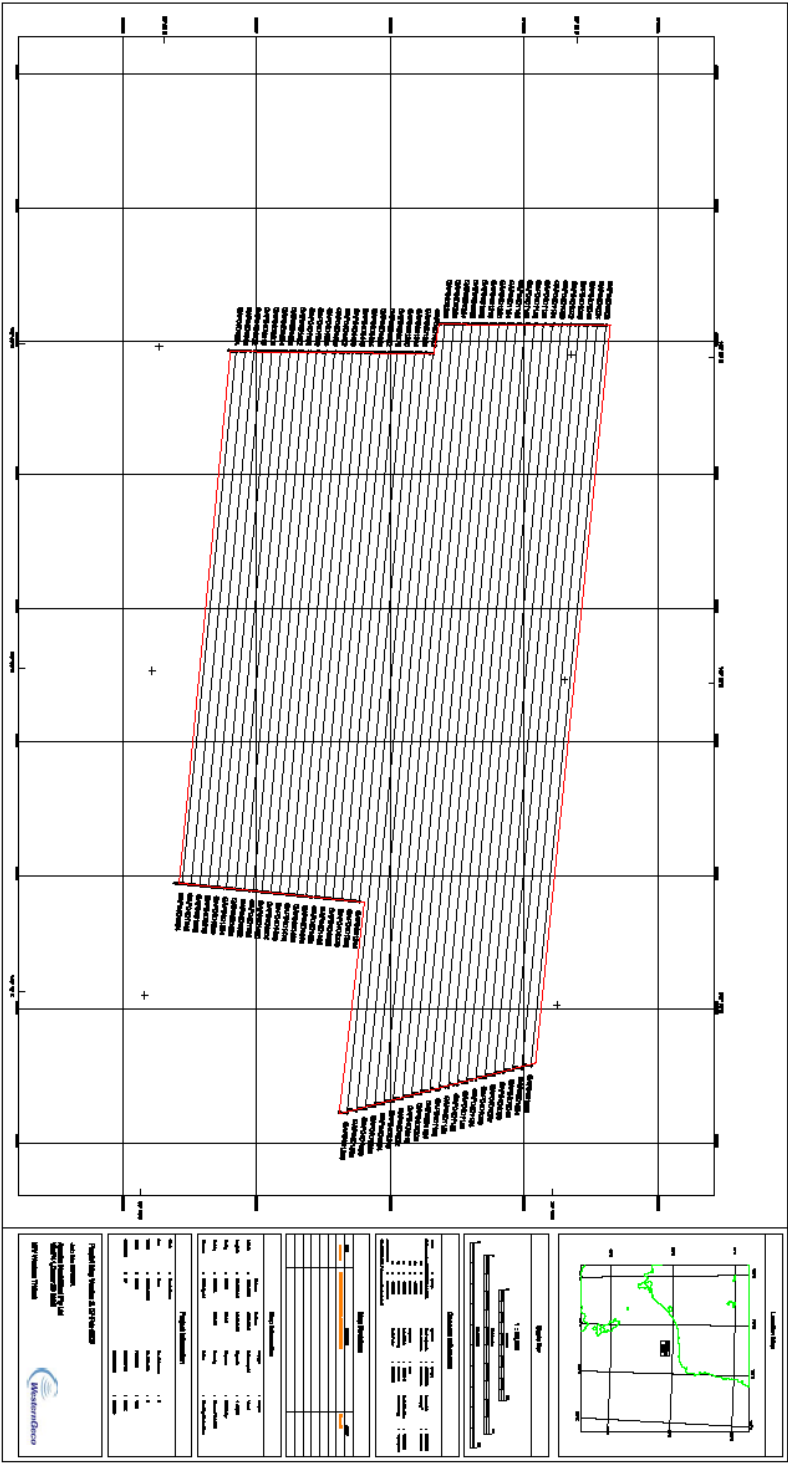
The vessel is built to DNV+1A1 ICE-1A, EO Helideck classification and to the satisfaction of the rules and regulations of SOLAS 1974. International load line requirements are according to international load line convention of 1966.

## Section 1: General Information

### 2. Area Map



3. Program Map



## 4. Job Book



### Seismic Job Book

Version : 7

<b>Job number:</b> 9439	<b>Client:</b> Apache Northwest Pty Ltd	<b>Location:</b> AUS / VIC/P41 OSCAR 3D MSS
<b>Chapter status:</b> Ready for review	<b>Chapter updated:</b> 12-Feb-05	<b>Chapter updated by:</b> kkrishnasamy
<b>Project Geo:</b> Tee Chee Cherng (phone : +60 3 2730 8844, email : cctee@slb.com)		

## Seismic Acquisition Parameters

### General

**Client:** Apache Northwest Pty Ltd  
**Vessel(s):** Western Trident  
**Bid reference:**  
**Job number:** 9439  
**Contract number:**  
**Location:** VIC/P41 OSCAR 3D MSS  
**Country:** Australia  
**Corporation code:** Apache\_Energy  
**Client reference:**  
**Type of survey:** 3D marine streamer  
**Estimated start date:** 26-Feb-05  
**Estimated duration (days):** 27  
**SuperVision required:** Yes

**Project geo:**  
**name:** Tee Chee Cherng  
**email:** cctee@slb.com  
**telephone:** +60 3 2730 8844  
**Nav supervisor:**  
**name:** Kumara Krishnasamy  
**email:** kkrishnasamy@slb.com  
**telephone:** +60 3 2730 8851  
**Sales contact:**  
**name:** Sean Murray  
**email:** smurray2@perth.westerngeco.sl.b.com  
**telephone:** +61 (0)8 9420 4798  
**Vessel manager:**  
**name:** Kiran Tuite  
**email:** tuite1@kuala-lumpur.westerngeco.sl.b.com  
**telephone:** +60 3 2730 8861

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## Seismic Job Book

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## Seismic Acquisition Parameters

## Survey Area

<b>Area (km2):</b>	493.222
<b>Average line length (km):</b>	29.402
<b>Number of saillines:</b>	42
<b>Heading (deg):</b>	95.785
<b>Reciprocal heading (deg):</b>	275.785

## Streamer Parameters

<b>Cable type:</b>	MSX solid streamer
<b>Module type:</b>	MSX
<b>Number of streamers:</b>	8
<b>Group length (m):</b>	17.75
<b>Number of phones per group:</b>	14
<b>Group interval (m):</b>	12.5
<b>Lo-cut analogue response (Hz-dB/Oct):</b>	2.5-6
<b>Hydrophone sensitivity (V/B):</b>	13.8
<b>Pre-amplifier gains (dB or mB full scale):</b>	6
<b>Streamer length (m):</b>	4800.0
<b>Streamer depth (m):</b>	8.0
<b>Streamer separation (m):</b>	100.0
<b>Number of groups per streamer:</b>	384
<b>Requested source to receiver offset (m):</b>	As Near As Possible/150



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## Seismic Acquisition Parameters

## Recording Parameters:

Recording system:	MSX
Recording format:	SegD 8058, Rev 1
Record length (binary sec.):	5.0
Sample rate (ms):	2
Lo-cut recording filter (Hz-dB/Oct):	2-12
Hi-cut recording filter (Hz-dB/Oct):	206-264
Recording system delay (ms):	0
Filter type:	Zero phase

Adjacent trace summation 12.5m to 25m:	No
Record auxiliary channels:	Yes
Offline tape copy required:	Yes

Dual recording/tape copies (Group formed tapes): No



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<b>Nav Supervisor:</b> Kumara Krishnasamy (phone : +60 3 2730 8851, email : kkrishnasamy@slb.com)		

## Positioning Acquisition Parameters

### Acquisition Geodetic Parameters

<b>Work datum:</b>	
<b>Work datum name:</b>	GDA 94
<b>Spheroid name:</b>	GRS80
<b>Semi major axis (m):</b>	6378137.0
<b>Inverse flattening (1/f) (m):</b>	298.257222
<b>Datum Transformation From WGS 84 to Local Datum (Bursa Wolf Convention):</b>	
<b>dX (m):</b>	0.0
<b>dY (m):</b>	0.0
<b>dZ (m):</b>	0.0
<b>rX (arc secs):</b>	0.0
<b>rY (arc secs):</b>	0.0
<b>rZ (arc secs):</b>	0.0
<b>Scale (ppm):</b>	0.0
<b>Projection type:</b>	UTM
<b>Zone:</b>	55S
<b>Central meridian:</b>	147° 0' 0.0" E
<b>Scale factor:</b>	0.9996
<b>False easting (m):</b>	500000
<b>False northing (m):</b>	10000000
<b>Latitude of origin:</b>	0° 0' 0.0" N

### Test Point

<b>Latitude in WGS 84:</b>	38° 14' 11.911" N
<b>Longitude in WGS 84:</b>	148° 59' 38.978" E
<b>Northing in WGS 84:</b>	5766048.38
<b>Easting in WGS84:</b>	674526.2
<b>Latitude in local datum:</b>	38° 14' 11.911" N
<b>Longitude in local datum:</b>	147° 59' 38.978" E
<b>Northing in local projection (m):</b>	5766048.38
<b>Easting in local projection (m):</b>	674526.2





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## Positioning Acquisition Parameters

### Magnetic Variation and Geoidal Height

**Location of prospect centre, latitude:** 38° 14' 11.911" S  
**Location of prospect centre, longitude:** 148° 59' 38.978" E  
**Magnetic variation:**  
**Annual magnetic variation change:**  
**Source of variation data:** IGRF2000  
**Geoidal height data (m):**  
**Source of geoidal height data:** EGM96  
**Date for which values calculated:**

### Vessel Positioning

**Integrated navigation system:** TriNav 2.6  
**Number of independently positioned vessels:** 1



## Seismic Job Book

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## Positioning Acquisition Parameters

## Vessel Positioning

**Vessel name : Western Trident****Primary navigation system**

Vessel position computation system: Cnav  
 RTCM delivery system: Global Monitoring  
 Delivery method: Inmarsat  
 Survey and differential company: C&C Technologies  
 Contact person: Terry Tay , terry.tay@cctechnol.com  
 DGPS reference stations:  
 Via Global network  
 Contact details (in Singapore):  
 Terry Tay  
 Tel: +65 62959738  
 Mob: +65 91276385  
 Email: terry.tay@cctechnol.com  
 (Global 24-hr support):  
 Tel: +1 (337) 261-0660  
 email: cnav.support@cctechnol.com

**Secondary navigation system**

Vessel position computation system: Fugro Multifix 4  
 RTCM delivery system: Global Monitoring XP  
 Delivery method: Inmarsat / Spotbeam  
 Survey and differential company: Fugro Survey  
 Contact person: Avezac, D Rene, rdavezac@FUGRO.com.sg  
 DGPS reference stations:  
 Via Global Monitoring  
 Skyfix NCC In Singapore  
 Tel: +65 6863 0604 (24-hr/365 days per year hotline)  
 Email: skyfix@omnistar.com.sg  
 Starfix NCC in Perth, Australia  
 Tel: +61 89 321 0284, +61 89 322 5295 (24-hr/365 days per year hotline)  
 Email: ncc@fugro.com.au  
 Tel: +65 6863 0604 (24-hr hotline)  
 Email: Skyfix Singapore <skyfix@omnistar.com.sg>

**Tertiary navigation system**

Vessel position computation system: Trinav GPS 2.6

## Section 1: General Information



### Seismic Job Book

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Nav Supervisor: Kumara Krishnasamy (phone : +60 3 2730 8851, email : kkrishnasamy@slb.com)		

## Positioning Acquisition Parameters

RTCM delivery system: Fugro Skyfix  
Delivery method: Inmarsat  
Survey and differential company: Fugro Survey  
Contact person: Singapore Network Control Centre (24hrs) +65 6863 0604  
DGPS reference stations:  
Please use all available Reference stations.  
Skyfix NCC In Singapore  
Tel: +65 6863 0604 (24-hr/365 days per year hotline)  
Email: skyfix@omnistar.com.sg  
Starfix NCC in Perth, Australia  
Tel: +61 89 321 0284, +61 89 322 5295 (24-hr/365 days per year hotline)  
Email: ncc@fugro.com.au  
Tel: +65 6863 0604 (24-hr hotline)  
Email: Skyfix Singapore <skyfix@omnistar.com.sg>

## Section 1: General Information



### Seismic Job Book

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## Source Acquisition Parameters

Source type:	Tuned sleevegun array
Number of source arrays:	2
Alternatively fired sources (flip-flop):	Yes
Source array separation (m):	50.0
Inline stagger required:	No
Shotpoint interval (m):	18.75
Shotpoint interval per source (m):	37.5
Array volume per source (ln3):	3000.0
Operating pressure (psi):	2000
Source depth (m):	7.0
Number of subarrays per source:	4
Subarray separation (m)	6
Number of airguns per subarray:	8
Subarray length (m):	15.1
Gun timing specification (ms):	1.25
Source control system:	SSS
Record nearfields:	Yes
CMS required:	No

Total SCFM required at 4.8 knots:	1420
Timebreak control:	Volume
Specification:	

[https://www.vessel.int.slb.com:181/gpclient/vessels/Western\\_Trident/9439/Acquisition\\_Information/Job\\_Book/v300006SS6mDFSVDrop\\_Out.pdf](https://www.vessel.int.slb.com:181/gpclient/vessels/Western_Trident/9439/Acquisition_Information/Job_Book/v300006SS6mDFSVDrop_Out.pdf)

## 5. Vessel Description

### Maritime Specifications / Particulars

#### Main Particulars

Ships Name	Western Trident
Call Sign	3FE09 (Three, Foxtrot, Echo Zero, Nine)
International Maritime Org. (Imo) No.	9187502
Owner	Seismic Shipping INC
Previous Name	N/A
Flag State & Port Of Registry	Panama, Panama
Panama Official No.	27927-Pext-2
Date Of Build	1-Mar-99
Yard No. And Type Of Vessel	Build 241, Type UT
Yard Built	Ulstein Shipyard, Ulsteinvik, Norway
Date Converted / Power Upgraded	11/2003 Monowing upgrade
Yard Converted	BMV Bergen
Classification Society And Class	DNV, +1A1, EO, HELDK, ICE-C
Class Id No.	20519
Classification Machinery System	PMS, CMS
Class Approved Maintenance System	TM-Master, Windows based
International Safety Management, (Ism) Code Compliance	DNV SMC. Valid until 05-Oct-06
Safe Manning Certificate (Minimum)	No.M3026 (10 crew)

#### Principal Particulars

Gross Tonnage (Grt)	8369
(Grt) National & International	8369
Gross Tonnage (Grt) Suez Canal	8862.6
Net. Reg. Ton (Nrt) Panama Canal	n/a
(Nrt) National & International	2511
Net. Reg. Ton (Nrt) Suez Canal	6913.12
Lightship Displacement	4667
Dead Weight	4568
Length Over All (Loa)	92.50m
Length Between Perpendiculars	80.10m
Breadth (Moulded)	23.00m
Breadth (Extreme)	25.00m
Depth (Moulded)	9.00m
Draft (Max)	7.30m (Summer)
Draft (Mean)	6.40m (Design)
Air Draft (To Highest Antenna)	32.70m (Summer draft)
Helicopter Deck Rating	Sikorsky S-61 / 9.3t Max
Helicopter Deck Diameter (D-Value)	22.80m
Helicopter Deck Markings Standard	CAA / CAP437 / BHAB

## Section 1: General Information

### Capacities And Endurance's

Cable / Towpoints / Subarrays	TMS Solid / 16 Tow Points / 10 Sub arrays
Bollard Pull	142t x 100% power
Fresh Water Capacity	440 M³
Fresh Water Maker Production	2 x 12 tons / 24 Hrs.
Potable Water System	Evaporators, 2 x Alfa Laval De-Salt.
Fuel Capacity, All Tanks Topped	3550 M³
Fuel, Useful For 100 % Consumption	3250 M³
Fuel Type	Gas oil
Fuel Tank Heating	N/A
Lub. Oil, Engine Oil (M³)	30 M³
CYLINDER OIL, HP COMPRESSORS (M³)	7 M³ cylinder oil, 7 M³ screw compressor oil.
CABLE OIL, KEROSENE (Clean/Dirty)	11 M³ clean / 7 M³ dirty
BALLAST, SEA WATER (M³)	3150 M³
Speed, Transit, Max. In Calm Sea	15 Knots
Speed, Transit Economy, Ditto	12 Knots
Consumption Of Fuel , Full Speed	36 M³ / 24 Hrs
Consumption Of Fuel, Economy Speed	26 M³ / 24 Hrs
Operational Endurance	86 Days (+4 days safety)
Endurance Of Fuel During Survey	85 days, operating with 10 streamers
Consumption Of Fuel In Port	3 M³ / 24 Hrs
Safety Equipment Certificate	68 Persons

### Bridge Navigation Equipment

Radar No 1	FURUNO FAR 2835S (s-band)
Radar No 2	FURUNO FAR 2825 (x-band)
Radar No 3	N/A
Ecdis	SIMRAD SPS COS-100
Gyro Compass	SIMRAD RGC 11
Auto Pilot	SIMRAD AP9 Mk3 / SJS500 Joystick/Autotrack System
Gps Receiver	1 x FURUNO GP80 + 1 x TRIMBLE NT300D
Speed Log	BEN ANTHEA Electro. Mag.
Echo Sounder	SKIPPER GDS 101
Radio's, Vhf, Gmdss*, Type 1	3 x SKANTI VHF 1000 DSC
Radio's, Vhf, Gmdss*, Type 2	3 x NAVICO AXIS 250 (portable)
Radio's, Vhf	6 x MOTOROLA GP340 (portable)
Radio's, Uhf	1 x Motorola GM 300
Radio Direction Finder	N/A
Weather Facsimile	FURUNO DFAX-208 Mk2
Navtex Receiver	ICS ELECTRONIC Nav5
Ups, Power Supply To All Gmdss Radio's	FN Electro Converter/Charger with lead acid battery back up.

## Section 1: General Information

### **Communication Equipment, Compliant With Gmdss Requirements**

Radio Station Licence No.	06-11-2003/1 Panama
Class / Corr. Category	A1, A2, A3. GMDSS
Ship / Air Craft Radio	JOTRON TR-6101 (fixed) + Dittel FSG 5
Helicopter Beacon	SAC DS410 (410 KHz. I.D. 'T R I D')
Automatic Identification System (AIS)	
Transmitter / Receiver, Main (Mf)	SKANTI TRP 8251D
Transmitter / Receiver, Reserve (Mf)	N/A
Transmitter / Receiver, Main (Vhf)	3 x SKANTI VHF 1000 DSC
Transmitter / Receiver, Main (Dsc)	SKANTI DSC9000 MF/HF DSC CONTROLLER/RECEIVER
Ais. Automatic Identification System	SKANTI UAIS 2100
Radio, Portable, VHF	6 x MOTOROLA GP340 4 x MOTOROLA GP328
Booster Unit For Portable Radio (Uhf)	N/A
Emergency Radio Beacon (Epirb)	JOTRON TRON 40S 406/121.5 MHz
Radar Transponder	2 x JOTRON TRON SART 9 GHz
Radio, Lifeboat, Vhf	3 x NAVICO AXIS 250 (portable)

### **Satellite Communications**

MMSI Number	357 270 000
Inmarsat Type B	NERA SATURN B. Tel:335 726 910 Fax:335 726 911 Data9600: 335 726 912
Inmarsat Type C	2 x SKANTI CAPSAT 435 726 910 and 920
V-Sat Uk	44-207 576 6870
V-Sat Usa	1-713 296 5370
Telefax Machine	SAME AS V-SAT THEN TRANSFERRED
Internal E-Mail & Pc-Network	Eudora, Ethernet
E-Mail Address To Vessel	<a href="mailto:captain@trident.vessel.int.slb.com">captain@trident.vessel.int.slb.com</a>

### **Safety Equipment Crew**

Lifeboat Type / Capacity/ No. Of Boats	2 x Norsafe 70 Pers each.
Engine, Lifeboat	Sabb type 4L 186 LB
Liferafts Type /Capacity	Viking, 4 x 25 Pers and 2 x 20 Pers.+ 1 MOB raft x 6 Pax
Number Of Life Rafts	6 rafts total. + 1 MOB
Lifejackets Nos.	142 (Seamaster-1983)
Survival Suits, Thermo Insulated	68 (Koppernaes)
Working Suits, Thermo Insulated	30 x 'Mustang' + 10 'Aqua' Dry suits.
Man Overboard Boat (Mob) Type	Norsafe Magnum, 7.5 mtr.
Engine, Mob And Speed Of Boat	Yanmar 4LH-STE 4 Cyl. Turbo. Appr. 25 knots
Waterjet And Gear Drive, Mob	Hamilton 212 water jet, ZF Hurth gear, HSW 630
Work Boats	CMV AND 25 FOOT NORPOWER WORKBOAT
Engine Work Boat And Speed Of Boat	CMV 2 X Mermaid Turbo-Four II engines 20Kn. Norpower NOGVA/CUMMINS type 6BT5.9M 210HP Speed 15Kn

## Section 1: General Information

### Fixed Fire Extinguisher System

Engine Room	Inergen, Zenith Electro. 103 pcs. Bottles w/volume 50 ltr Pressure: 300 bar
Separator Room	N/A
Incinerator Room / Galley Ducting	Inc. Room: Inergen. / Galley: CO <sup>2</sup>
Tape Store	Inergen, Zenith Electro
Cable Store	N/A
Steamer Winch Room	Streamers covered by fixed water fog system.
Helicopter Deck	AFFF 3%. Two Unitor FJM 80 foam monitors
Paint Store	Fixed water fog system.
Chemical Store	N/A
Main Foam Pump, AFFF Foam Mixture	7.5 M <sup>3</sup> /h, 11 Bar, Grundfoss CR8-100/9. 3% mix.
Main Fire Pump	1xAllweiler NB 40-200/01/194, 50 M <sup>3</sup> /h at 7 Bar. 1x Allweiler NAM 80-250/01/208, 170M <sup>3</sup> /h at 8 Bar
Water Spray Pumps For Streamers	2 x Allweiler NAM 125-315/01/326, 240M <sup>3</sup> /h at 5 Bar
Emergency Fire Pump	1xAllweiler NB 40-200/01/189, 40 M <sup>3</sup> /h at 7 Bar.
Fire Detection Monitoring System	1 x SERVOTEKNIK BMS-904

### Hull Outfitting

Anchor	Maker: ABB Zamech Ltd. Type: SPEC 4320 1 x 4340 Kgs + 1 x 4320 Kgs
Windlass	1 x Ulstein Brattvaag BFM 22U.050, low pressure hydraulic (40 Bar)
Mooring Winches	N/A
Capstan No 1	2 x ODIM Type: 3M3117/OCF801 (Gun deck)
Capstan No 2	N/A
Decks Crane 1, Capacity/Reach/Location	1 x Norlift GPFO 250 0814, D-deck Ps, frame 36. Max. lift 8 tons
Decks Crane 2, Capacity/Reach/Location	1 x Norlift GPFO 250 0814, D-deck Stbd, frame 36. Max. lift 8 tons
Decks Crane 3, Capacity/Reach/Location	HYDRALIFT 1, KMCV 1400-6T (10M) RB600.
Decks Crane 4, Capacity/Reach/Location	N/A
Anti Rolling Damping System	Ulstein Passive Stabilisation System Tk.No.8 Roll Reduction Frd 398 M <sup>3</sup> Tk.No.37 Roll Reduction Aft 312 M <sup>3</sup>
Heeling Tanks, Volume And Fuel/Fw/Sw	N/A
BUNKER CONNECTIONS, Locations	1 x forecandledeck centre, frame 117, 2 x main deck Stbd. and port side, frame 57.
BUNKER CONNECTIONS, Type(S)	1 x 4" pipes w. standard flanges on forecandle deck, 2 x 7" with std. flange on main deck. One fitted with 3" camlock female.
BUNKER HOSE Length And Dimension (Loose)	N/A
Crew Accommodation, No Of Bunks	64 bunks
Single Berths Cabins	21
Double Berths Cabins	20
Client Cabins, Single Berths	3
Business Conference And Training Rm	A -deck
Sauna And Fitness Room	A-deck



## Section 1: General Information

### International Oil Pollution Prevention (IOPP) Equipment

Incinerator, Sludge And Waste Oil	Teamtec-Golar, OGS400C, 65 ltr IMO sludge/h. Max 400 ltrs solid waste / charge.
Bilge / Oily Water Separator	World Water Systems, 2500 OCD, 2.5 M³/h, through 15 ppm unit.
Oily Water / Sludge Holding Tanks Cap.	Bilge W.tank: 14 M³. Sludge/waste tk's.: 22 M³
Sewage Disposal Plant	Hamworthy Super Trident, ST6A. Macerate, biological plant w. chem. Dosage facility. Max. flow 15 M³/24 Hrs. BOD5 6 Kg's/ 24 Hrs.
Oil Spill Absorbent / Damage Control	1 x Set Oil Spill Kit inc. sorbent booms/pads, granules & dispersant.

### Machinery Equipment

Air Source, Hp Compressors	3 x LMF 57/138 - 207 - E60, 1 x LMF off-line compressor, V17/5518-E60, 75 cfm.
Air Capacity, Each And Total (Cfm)	3 x 2000 cfm, total 6000 cfm
Hp Compressor Drive Motors	3 x ABB motors, AMA450 L6L BAFMH, 1 MW, voltage / freq. Controlled.
Main Engine Or Electric Prop. Motors	2 x Bergen Diesel BRM9, 5400 BHP each (3975 Kw Ea)
Auxiliary Engines (Generator Drive)	2 x Caterpillar 3516 STD, 1.4 MW each. 440 V, 60 Hz
Redundancy Propulsion, Az-Thruster	N/A
Vessels Total Brake Hp / Kw For Prop.	10800 BHP, 7900 KW.
Main Engines, Power Supply	N/A
Propeller Type, Main Propulsion	2 x 4 blade CPP in nozzle, diam. 4.2 mtr, 125 rpm
PROPELLER And THRUSTER CONTROL	Ulstein-Liaaen electro / hydraulic control.
Propeller Blade, Spare	N/A
Generators / Alternators	2 x A.van Kaick shaft gen's, DSG 114 M1-6W, 440V, 60 Hz, 3000 KVA each
El. Power, Useful, Out From M.S.Board	> 7000 KW
Ups Power To Instrument Room	1 x Siemens UPS Masterguard S5280, 73 KVA, 15 min. battery back-up.
Power Supply Instr.Room Back -Up	1 x Siemens UPS Masterguard S5280, 73 KVA, 15 min. battery back-up.
Emergency & Harbour Gen. Engine	1 x Caterpillar 3406 DITA, 345 KW
Emergency & Harbour Generator	1 x Caterpillar SR4-3450, 315 KW, 440V, 60 Hz
Fuel Back-Up System For Aux. Eng.	N/A
Cooling System For Aux. Engines	Independent FW cooling. 2 x Sondex FW / SW coolers
Bow Thruster	Ulstein-Liaaen 800 TV, 1.1 MW, 440Volt, 60 Hz.
Stern Thruster	N/A
Fresh Water Generator (Fwg)	2 x Alfa Laval De-Salt. 12 T/24hrs each
Boiler, Exhaust Gas & Oil Fired	1 x Pyro E 1130, 406 KW
Steering Gear	2 x Ulstein Tenfjord, type SR662

## Seismic Specifications

### Main Particulars

Streamers	12
Tow Points	16
Sub Arrays	8

### Energy Systems

Gun Controller (Type & Manufacturer)	Source Synchronizer System (SSS), Input/Output
Guns (Manufacturer, Type & Capacities)	Input/Output, Sleeve-gun, type I, 40 cu. in. and type IIB, 55 cu. in. to 150 cu. in.
Nominal Source Pressure	2000 psi
Pressure Release	Electro-magnetic solenoid, inertial poppet and seat
Sensor Return	Inductive coil
Timing Resolution	0.1ms
Source	1 x 750 cu. in. compact sleeve gun source per sub-array, 4 sub-arrays per source (3000 cu.in. each) using dual source configuration
Total Compressor Capacity	6600 SCFM
Compressors (Manufacturer & Capacity)	3 x LMF Compressors
Near Field Phone (Manufacturer & Type)	Input/Output 2933008 or AG Geophysical 800-05
Far Field Phone (Manufacturer & Type)	NA
Depth Indicators	AG Geophysical model AG 3303, 3 per sub-array

### Streamer Systems

Streamer (Manufacturer & Type)	Thompson Marconi, Sentry Solid Streamer
Streamer Deflector Type	Monowing MKI and MKII
Section Breaking Strength (Typical)	60 kN
Typical Towed-streamer Stress	1000-1818 kg
Streamer Capacity (Max)	
Sentry Solid Streamer	72,000m
Streamers vs. Length (Max)	
Sentry Solid Streamer	12 x 6,000m
Streamer Spread (Max spread Configuration)	1100m using Monowing (Presently capable of 900M)
Streamer Control Device (Manufacturer & Type)	DigiCourse, 5011
Recording System (Manufacturer & Type)	Input/Output MSX 24A

## Navigation Systems

Instrument Room Gyrocompass (Manufacturer & Type)	Sperry, MK227
Source Positioning System (Manufacturer & Type)	WesternGeco, Posnet
Global Positioning System (GPS) Receivers (Manufacturer & Type)	1 x Fugro Starfix-Plus, dual frequency 2 x Trimble MS750, dual frequency 2 x Trimble 4000SSE, dual frequency 2 x C-Nav World DGPS.
DGPS QC System (Manufacturer & Type)	TRINAV 2.6
Integrated Navigation System (Manufacturer & Type)	TRINAV 2.6
3-D Quality Control System (Manufacturer & Type)	TRINAV 2.6
3-D Binning System	TRINAV 2.6
Tail Buoy (TB)	
Buoy (Manufacturer & Type)	T98
TB Navigation (Manufacturer & Type)	WesternGeco, Posnet Tailbuoy GPS Unit
Onboard TB Positioning (Manufacturer & Type)	WesternGeco, Posnet
Ultra-short Baseline (USBL) Acoustic Positioning System (Manufacturer & Type)	NA
Acoustic Positioning System (Manufacturer & Type)	Digicourse, System 3
Current Profiler (Manufacturer, Type & Frequency)	RDI, ADCP, 600kHz
Temperature/Salinity Dip Profiler (Manufacturer & Type)	1 x Sippican, Sippican 1 x Valeport, Mk600
Echo Sounder (Manufacturer & Type)	Simrad, EA500
Transducer Frequency & Theoretical Range	1 x 18 kHz to 8100m 1 x 200 kHz to 740m
Transducer Draft	-7.42m

## Recording System

Format	4-byte SEG-D, demultiplexed data
Media	IBM 3590 tape
Device	EMASS Robotic tape library with 4 x 3590 IBM tape drives

## Other Systems

Other Systems	MSX version 2.1 + PDL CRS Continuous Recording System. Allows acquisition to continue to record data if tape drive(s) fail.
Single & Multi-trace Plotter (Manufacturer & Type)	OYO, GS624

### Onboard Seismic Qc

System	SeisView
Software	Omega
Hardware	1 x IBM p Series 640 Model B80 with 4 x processors 8 Gb Ram 54 Gb hard drive

### Onboard Seismic Processing

System	Omega
Software	Omega
Hardware	32 x IBM SP-2 UNIX based super computer nodes 2 x IBM p Series 640 Model B80 servers w/ 5.2 Tbyte hard disk space 22 x 3590 IBM tape drives 5.2 Tbyte total hard disk space EMASS Robotic tape library with 26 x 3590 IBM tape drives OYO GS-636 Thermal Plotter

**Note: Additional system, equipment, hardware and, software information may be available. Please refer to the appropriate specification sheets and/or manuals for more information.**