

## *M/V Oceanic Champion*



<b>SHIP DESIGN:</b>	<b>V&amp;S Seismic Exploration</b>	<b>MAIN DIMENSION</b>	
<b>SHIP NAME:</b>	<b>Oceanic Champion</b>	<b>Length O.A:</b>	<b>106,92 M</b>
		<b>Length P.P:</b>	<b>97,3 M</b>
		<b>Beam:</b>	<b>22,40 M</b>
<b>CLASSIFICATION:</b>	<b>DNV GL</b>	<b>Gross Tonnage:</b>	<b>9,405 GT</b>
		<b>Draft:</b>	<b>6,68 M</b>
<b>BUILDER:</b>	<b>Th. Hellesøy Skipsbyggeri</b>	<b>PERFORMANCE</b>	
	<b>(Hull number: 127)</b>	<b>Max Speed</b>	<b>16,5 knots</b>
<b>BUILT:</b>	<b>1994</b>	<b>Economic Speed</b>	<b>11,2 Knots</b>
<b>MAJOR CONVERSION:</b>	<b>2007 Fitjar Yard Norway</b>		
	<b>2012 Baatbygg Norway</b>	<b>OWNER:</b>	<b>Oceanic Champion AS</b>
<b>PORT OF REISTRY:</b>	<b>Bergen</b>	<b>MANAGER:</b>	<b>VESTLAND MANAGEMENT AS</b>
<b>FLAG:</b>	<b>NIS</b>		<b>N-5384 TORANGSVÅG</b>
<b>IMO-NUMBER:</b>	<b>9085211</b>		
<b>CALL SIGN:</b>	<b>LAJQ6</b>		

## MARITIME SPECIFICATION

### PROPULSION SYSTEM

Main Engines 2 x Rolls Royce Bergen Diesel,  
B32 40L9PF-2 CD, 2 x 4500kW

Aux Engines 1 x Wärtsilä VASA 6R32E KW, 2340 kW  
2 x Wärtsilä NOHAB 8V25 KW, 2x 1840

Bow Thruster Azimuth Thruster – Brunvoll 800 kW

Tun Thruster Brunvoll 745 kW

Propellers 2 x Kamewa CP-AI,

Dual propulsion with alternative hybrid mode by electric drives as alternative propulsion, or as Boost.

### FUEL

Fuel capacity 3494 cu.m at 100% filling

FW Maker Alfa Laval EVA and ENVA Reverse Osmosis.

Water capacity 290 tons, Water consumption 15m<sup>3</sup>/day

Sewage Treatment Plant DVZ-SKA-50 "Biomaster"

Incinerator Team tech OGS 200 C

### Fuel consumption (estimated)

Towing 12 streamers 40 tons per 24 h

Dual Source 4,5 knots 13 – 16 tons per 24h

Transit economy speed 20 tons per 24h

### SEISMIC COMPRESSORS

Seismic Compr. 3 x NEA 57 1100KW, 2000 cfm 2000psi

Capacity per unit/Delivery Rate: 2,000 cfm

Source operating pressure: 2000psi

### CAPACITY

Fuel capacity 3494 cu.m at 100% filling

FW Maker Prod. Alfa Laval EVA and ENVA Reverse Osmosis.

Water capacity 290 tons

### NAVIGATION

GPS receiver GPS Furuno & DGPS

Radars Furuno FAR2137S (3cm) Furuno FAR2117S (10cm)

Gyro-Compass Simrad GC80 x 2, SG Brown Meridian Surveyor,  
Kongsberg Seatex Seapath 200

Auto Pilot System Robertson AP9 MK II Autopilot  
Kongsberg C-Joy OT

ECDIS Furuno Telchart full ECDIS

Echo Sounder Furuno Navigational FE-700 0-800m.  
Simrad EA 600 seismic 12, 38, 200kHz. 0 - 15000m

Current Meter Nortek ADP 1MHz

Speed Log/Doppler Sonar Furuno Doppler speed log DS-80 or FE-700

### Communications Equipment

SSB make / model Furuno FS-2570

VHF/UHF Fixed Furuno VHF FM-8500 x 2  
Furuno VHF FM-8000 x 1  
Furuno VHF FM-7000 x 1  
Motorola UHF x 2 (1 x instr.room)  
Sailor VHF RT 2048 (instr.room)

VHF frequencies Full compliance

EPIRB Jotron Tron 40s and Jotron tron 40sx

Marisat Nera Fleet 77 Inm B, + 870 7646 83283

Vsat / Norsat VSAT Seatel Model 9707-70

Flow Rate of the Satellite Data Link 256 k Bits / second  
Telephone +47 5140 65 80

### CRAFTS

Mob Springer Maritime Partner MP-800  
Location: / launching method: Port Side  
Expected response time: 3-5 mins  
Maximum speed: 35 knots

Work Boat Jemar 30ft  
Size / capacity: 30 feet  
Location: / launching method: Stbd Side Davit  
Maximum speed: 23 knots

Life boats 2 x Schat harding / 60 persons each

### DECK EQUIPMENT

Deck Cranes 1 x SWL 10t 16m,  
1 x SWL 10t 13m,  
1 x SWL 3.5 t 16m

### HELIDECK

Helideck Cap437, BSL D 5-1, HCA  
Weight: 12.8 tones  
Dimensions: 22m

Helicopter Homing Beacon: TS1 B Radio Holland

Weather Monitoring HMS Shore Connection (Helicopter station)

### ACCOMMODATION

Accommodation 50 cabins, 60 Berths

Common areas 2 x Lounges

Mess Room 36 seats

Offices 5

Gym With Shower, Sauna and Change Room

Conferense 3 including Heli Lounge

### Maximum Draft of in-Water Equipment

(Lead-in/Gun Umbilical)  
Depends on towing configuration.  
6 streamers = N/A  
8 streamers/100 m strmr sep = 35m  
10 streamers/ 75 m strmr sep = 25m  
10 streamers/100 m strmr sep = 55m  
(These figures also depend on rigging of the Barovane, type of lead-in (Hairy fairing or Skinny), streamer separation, extra floats etc These figures are typical for the current equipment when going straight. The lead-ins in an inner turn will be 1.75 times deeper than indicated)

### Turning Radius with Specified Streamer Configuration

10 x 8000 x 100m = 4000 - 4400 m  
10 x 6000 x 100m = 3600 - 4200 m  
8 x 6000 x 100m = 3000 - 3600 m  
4 x 4000 x 100m = N/A

## SEISMIC SPECIFICATION

### ENERGY SOURCE,

Type	G-Gun II Sercel
Maximum No. of sub-arrays	6
No of sub-arrays per source	3
Max volume per sub-array	Client configurable (Typical: 1040, 1470)
Typical volume per source	Standard 4480 cuin, 3260 cuin and 2240 cuin, configurable
Chambers (Size of guns)	50-380 cu in
Clusters, 2-gun	7 Typically
Source Separation	50m typically
No dep transd/sens.in array	AGH-33M3; In current configuration-9 per array (3 per string )
No air pres. transd in array	AGH-33M4
No. of Near field hydrophones at each gun or cluster	AGH-7001C, 1 per gun or gun cluster
No of Devices for Source Geometry (deflectors, booms, etc)	2 x Baro 48 for overall spread, gun geometry maintained using sliders off lead-ins.
Source support system (i.e. floats)	18" FTF (Sausage float)
Source length x width of propos array	Client configurable
Minimum Sub-array separation:	Approx 10 or 8m
Max.dual array separation capability:	100m (Depending on Streamer sep)
Minimum offset from vessel stern:	Not applicable
Maximum offset from vessel stern:	500m
Deflector (Barovane)	BARO 48

### GUN CONTROLER

Gun Control	2 x Gunlink 4000
Manufacturer	Seamap
NFH recording	Seamap Gunlink, SEG D
Controller type	In sea & onboard electronic
No of Channels	96 Guns
Timing resolution (also called Source controller timing accuracy OR Sensor & Fire Command Resolution):	0.1ms ie 100uS
Tuning Contract of Guns (also called Gun Timing Specification OR Gun Synchronisation):	+/- 1.5 ms typically

Time/Firing Delay ( milliseconds)	
Start of Record to Source Detonation:	50 msec prior to Time 0
Max.RecordingRecycle Time:	0 sec
Fire time pick method:	Zero crossing, level detect, peak detect
Display	Status , Gun Sensor, NearField , Timing
Output	Gun Status , Errors, Alarms ,Statistics
Autofire Detection	Threshold method
Depth and pressure sensors	Yes
Navigation interface	GCS90 standard
MOB interface	Yes
Operating system	Linux w/RT extension
User Interface	Graphical
Self diagnosis	Yes

### ON BOARD BINNING SYSTEM

Offline Binning System:	Sercel SeaPro Bin
Software/Version	Ver 3.4
Hardware	HP DL380G7

### ON BOARD NAVIGATION PROCESSING

Onboard navigation processing system: Concept Systems NRT/Sprint  
Recording format and media: P2/94, IBM 3592, DVD, CD

### RECORDING SYSTEM

Recording Instrumentation	Sercel 428
Tape format (e.g. SEG-D 8048):	SEG D
Recording format	8058
Maximum no. of data channels:	960 per streamer at 12.5m at 2 ms
Maximum Number of Channels (2ms)	12000 per CMX (HW for 6000 ch)
Channel numbering convention	Channel 1 at head of streamer
No. of auxiliary channels:	12
Maximum Number of Aux. Channels	12
Number of traces/record	Varies with streamer length, typically one every 12.5m
Sampling	¼, 1/2 , 1, 2, 4ms
Record Length	4 – 12 s and continuous recording available (Setup dependant)
Type of digital filters	All these are available.
(zero, linear or min. phase)	Linear is used mainly
Lo-Cut Filter Type	Analog, Digital linear or min phase
Available Low-Cut Filters	3 Hz 6dB/Oct Digital 2.5–15 Hz in 0.1 Hz increments.
Hi-Cut Filter Type	Digital linear or min phase
Available High-Cut Filters	8N_Lin (standard) or 8N_Min phase
Anti-alias filters	200 Hz @ 2ms sample rate
Recording filter delay:	0 - digitally zeroed
Filter type (phase):	Linear or minimum
Preamp Gain options(underline typical)	1600mV input scale = 0 dB gain(standard) 400mV input scale = 12 dB gain
Dynamic Range	120 dB
Equivalent Input Noise	200-700 nV rms
DC Offset	0
Distortion	-105dB
Common Mode Rejection	110 dB
Internal Crossfeed Isolation	120 dB crosstalk
Recording media tape deck:	IBM 3592 Magnetic tape drive
Computer System	HP Z400
No. of tape decks:	2
Max. vessel speed for 12.5m SP interval:	5.0 knots – With 5 second Record Length
Plotter:	Isys 24 Inch Plotter

### ON BOARD SEISMIC PROCESSING

Processing Platform	Dell PowerEdge C6100 and R610
Number of Batch Nodes	14
Num of CPU@frequency/per node	2x hexa cores 2.6 GHz Intel Xeon X5650
Total RAM Memory per node	36 GB per processing node.
Disk Scratch per Node	2.7 TB
Node Tape Server	4 Nodes PowerEdge R610
Node Mediator	4 Mediators Dell Power Edge R610
Disk Storage (stage)	2 Storages for a Total of 310 TB
Network	Gigabit Network, 10 Gig to storage.
Ethernet Link To Segd	Gigabit Network
Operating System	CGGV 5
Tape Drives	8 * IBM 3592 Tape Drives
Data Transmission	kbps - VSAT
Processing Software	Geovation
Processing Workstation	4 HP Z400 Workstations with 30" screens
RTQC	Geovation
Plotter/Printer	Isys 24" thermal plotter

### INTEGRATED NAVIGATION SYSTEM

Integrated navigation	Sercel Seapro Nav
Hardware	HP DL380G7
Navigation QC	Concept Systems Sprint
Hardware	HP DL380G7

Online binning system:	SeaPro Bin
Hardware	HP DL380G7
Network Analysis Software:	FGPS P1Tools

## STREAMER / SOURCE POSITIONING

Depth controllers - type/manufacturer/model: Sercel Nautilus steerable units  
 Bird Controller: Sercel Nautilus software  
 No. & spacing of depth controllers on cable:  
 Every 300m or less  
 No. & spacing of depth transducers on cable:  
 Every 300m or less  
 Cable Depth Transducer Accuracy: 0.1 m

Compasses - type / manufacturer / model: Digicourse 5011  
 Age range of compass depth calibrations: About every 6 months  
 Compass re-calibration period: Lifetime  
 No. of compasses carried: 230 in use + 30 spares  
 Compass Accuracy 0.15 degree

Tail buoy system - type / manufacturer: Partnerplast 800 litre  
 Number of tailbuoys (including spares): 1 per streamer (14 total)  
 Streamer Recovery System - type / manufacturer: OYO SRD 500S

### Head / Terminator Modules

HAU (Head Auxiliary unit) = Measures the streamer tension by means of a strain gauge. TAPU (Tail Acquisition & Power Unit) = Feeds Back the Transmission pairs, it also supplies 40 VDC, 30W (0.75 A Max) to the Tailbuoy

### Electronic / Connector Modules

LAUM (Line Acquisition Unit Module) performs management of 60 seismic channels, power supply of the FDUs in the Streamer (+/- 24 VDC), frame control, data routing & data filtering & compression.

Acoustic systems - make/ model: Nautilus Node Acoustic  
 Expected Accuracy: Range accuracy: 0.7m @ 1500m/s  
 Number of nodes in network(s): Depends on streamer length, 1 node every 300m  
 Software version: V 3.0  
 Central Frequency: EHF 67 KHz,  
 Concurrent ranges: 5 channels, 2 KHz each  
 Ranging Accuracy: Typical 0.5 – 1m (Resolution 22 mm)  
 Units on Source: 1 per gun string  
 Units - Streamer: 1 per Nautilus node, maximum 40/streamer  
 Tail-buoys: 1  
 Sound Velocity Probe: 3 in total spread

GPS receivers for rGPS (Shipboard & in-water):  
 System: Seamap Buoylink Ex RTK  
 Sources: Ex Gun pods, 2 per sub-array, RS422 telemetry  
 HeadBuoys: Ex Gun pods, one per float typically 6 floats. RS422  
 Tailbuoys: Ex TB pod, 1 per tailbuoy, 900MHz radio telemetry  
 Software: Buoylink RtkNav R36 4.0o  
 Hardware: Ex master RF module, 2U PC

The float and gun array surface navigation positioning was provided by the Buoylink rGPS system. The in-sea units incorporated a GPS receiver and interfacing for direct data transmission of the raw satellite pseudo-range data transmitted either by wired telemetry or by UHF radio.  
 On board the vessel, the raw pseudo range data and phase measurement from each remote unit is matched with simultaneously received data at the vessel's GPS receiver to compute a vector describing the location of the float unit relative to the vessel.

Telemetry Link Front (Gun), Float(s): RS422 wired telemetry  
 Telemetry Link Tailbuoys: 5W Freewave 900 MHz TDMA

## PROCESSING CAPABILITY

THE PROCESSING POWER IS ADEQUATE FOR COMPREHENSIVE ACQUISITION QC AND FULL PRE-STACK PROCESSING WITH FAST TRACK NMO/STACK OR FINAL DMO/STACK AND POST STACK MIGRATION.

## SEISMIC STREAMER

Streamer Equipment: Sercel Seal 24-bit, Sentinel 2Hz  
 Number of active streamers: 12 x 8 km currently available (14 x 8km possible)  
 Max. deployed: 112km possible  
 Streamer Skin: Polyurethane  
 Age of streamer(s): 2011  
 Buoyancy: Internal foam  
 Section Diameter: 59.5mm  
 No live groups per section: 12  
 No& length of active sections: Depends on streamer length required, 150 m  
 Front inactive section length: 1 x 17.5m Radial Stretch 3 x 1m SNS  
 Active section length: 150m  
 Tail inactive section length: 50m  
 No& length stretch sections: See above  
 No& length of lead ins: 1 per streamer, 1500m  
 Max Separation per Steamer: Depends on number of streamers, 50, 75, 100, 125 and 150 m  
 Maximum Streamer Spread: 1500m  
 No live groups per elect. Mod 60 (For typical 12.5m group interval, 1 LAUM is required for every five 150m section ie 750m)  
 Amplitude resolution: 24-bit  
 Type of hydrophones: SFH Sercel Flexible Hydrophone  
 No hydrophones per group: 8  
 Group length: 12.5m  
 Group interval: 12.5 (25m with trace summing)  
 No of Groups per Streamer: 1 group every 12.5m (Max 960)  
 Type and Location of Water-break Hydrophones:  
 2 located in the HESA with an option for overlap phones  
 Location of Communication Coils for Depth Controllers:  
 2 per section – 25m from head and 125m from head  
 Hydrophone sensitivity:  
 Hydrophone group sensitivity: 19.73 V/bar @ 20 deg C  
 Physical and Mechanical: Characteristics Take up to 1000dN each.  
 Max Operating Depth of 50m, max survival rating of up to 150m depth. Acceleration cancelling.  
 Voltage - or charge-coupled: Voltage

## OTHER NAVIGATION EQUIPMENT

Bathymetry  
 Seismic Vessel Echo Sounder: Kongsberg EA600  
 Transducers, Frequencies: 12 kHz, 38kHz and 200 kHz  
 Depth / range: 5 – 15000 m  
 CTD/DTS (Depth/Temperature/Salinity): SAIV AS STP/CTD Sound Velocity Probe, SD204 – 2000 m range  
 Vessel current meter: Nortek 1 MHz ADP ver 1.33  
 Current meter depth range: 6-25m;  
 Gravity & Magnetics (if required): Gravi Subcontracted - either ZLS fluid damped dynamic or LaCoste & Romberg model 'S'