

M/V Geowave Endeavour



TECHNICAL SPECIFICATIONS

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VESSEL SPECIFICATIONS

A. VESSEL DETAILS

VESSEL NAME	M/V GEOWAVE ENDEAVOUR
OWNER	VOLSTAD MARITIME DIS II AS
FLAG	PANAMA
PORT OF REGISTRY	PANAMA
BUILT / REBUILT	2008
CLASS	DNV 1A1, SF, COMF-V(3)C(3), H HELD-SH, RP, E0, CLEAN
CLASS ID N°	27762
IMO OFFICIAL NUMBER	9399521
CALL SIGN	3EJQ7
LENGTH	106.6M
BEAM	26.6M
MAX DRAFT	9.6M
GROSS TONNAGE	11570 TONS
NET TONNAGE	3472 TONS
MAXIMUM LOAD SPEED	16 KNOTS (MAX SPEED)
CRUISING SPEED	16 KNOTS (MAX SPEED)
FUEL CAPACITY	2700CBM IFO
FUEL CONSUMPTION	45CBM PR DAY
LUBRICATING OIL CAPACITY	34M3
ENDURANCE	UNLIMITED, 65 DAYS UNTIL OFFSHORE BUNKERING
RANGE AT CRUISING SPEED	25000NM
SUPPORT VESSEL	MARE VERDE
FRESH WATER	657CBM
FRESH WATER PRODUCTION	40M3
SEWAGE	BIOLOGICAL TREATMENT PLANT
CABLE OIL CAPACITY	3 CUM
ROLL REDUCTION TANKS	3 X PASSIVE ANTIROLL TANKS
WATER BALLAST	2100M3
PROVISION ROOMS	
ENGINES	2 x Wärtsilä 6L32 (3862 BHP)
TOTAL PROPULSION	DIESEL ELECTRIC
PROPELLERS	
AZIMUTH THRUSTER	Wärtsilä LIPS CS1510-250/1510MNR Retractable Azimuth Thruster (2200KW)
BOW THRUSTERS	Wärtsilä LIPS CT275 (2000KW)
STERN THRUSTERS	2 x WÄRTSILÄ LIPS CS2510/2500 WN AZIMUTH. 3.4 MW
GENERATORS	4 x Wärtsilä 9L20 (2119 BHP)
AUXILIARY GENERATOR	-
EMERGENCY GENERATOR	mitsubishi S6B-M(P)TA (369BHP)

ELECTRICAL DISTRIBUTION	
U.P.S.	
BOLLARD PULL	108T,
SEISMIC COMPRESSORS	NEUMANN ESSER
SAFE MANNING CERTIFICATE (MINIMUM)	14

B. COMMUNICATION

COMMUNICATION SYSTEMS	
VHF PORTABLE	2 x Sailor RT5022 VHF DSC 4 x Jotron Tron TR20 HH VHF 1 x Icom IC-M87 MOB VHF 2 x Icom Helicopter VHF Instrument Room: Sailor RT2048
MF/HF RADIO	SAILOR CU5100 MF/HF SSB
INMARSAT A RECEIVERS & NUMBER	-
INMARSAT B RECEIVERS & NUMBER	SAILOR FLEET 77 INMARSAT B, +870 764 854 162/3/4/5
INMARSAT C	SAILOR INMARSAT C, MMSI 372620000
INMARSAT M	-
VSAT RECEIVERS & NUMBER	SeaLink VSAT 256Kb/s, +47 23675370
MARISAT RECEIVERS & NUMBER	-
WEATHER FACSIMILE	Sailor C printer H1252B & Capsat
NAVTEX RECEIVER	NT-2000
SAFETY	??
DATA TRANSFER	256KB/s
EMERGENCY RADIO BEACON (EPIRB)	JOTRON, TRON SX45 (ON BRIDGE)
SHIP/AIR CRAFT RADIO	JOTRON, TRON TR20
RADAR TRANSPONDER	JOTRON 9GHZ

C. NAVIGATION

NAVIGATION SYSTEMS	
RADARS	SAM Chartradar 1100ARPA 3cm SAM ChartRadar 1100ARPA 10cm SAM CHARTRADAR 1100ARPA 10CM
GYRO COMPASS	2 X RAYTHEON ANSCHÜTZ STD 22
AUTOPILOT	Anschütz PilotStar D
SPEED LOG	SAM SPEEDLOG
ECHO SOUNDER	SAM Debeg 4630 50&200KHz Simrad EA600 12,38 & 200KHz
ECDIS	SAM SHARTPILOT 1100
ROBTRACK	Kongsberg C-Joy (seismic track) SAM TrackPilot
TRACKING SYSTEM	SEATRACK 330/220
GPS	VERIPOS ULTRA AND C-NAV
MAGNETIC COMPASS	CASSENS PLATH GMBH, TYPE 11 REFLEKTER KOMPASS
WIND INDICATOR	SHORE CONNECTION, SECREC HMS / CAP 437
AIS	SAAB DEBEG 4100
VOYAGE RECORDER	SAM DEBEG 4300

D. SAFETY

SAFETY EQUIPMENT	
MOBOAT	Springer MP-741
LIFEBOAT	2 x EIDE MARINE/WOLONG 70 PERS
EPIRB	JOTRON, TRON 40S MK II (OUTSIDE ON TOP OF BRIDGE)
LIFE RAFT	4 x Viking BM502M01 35 pers
SURVIVAL SUITS	74 x OSS Immersion Suit
LIVE VESTS	74 x Seamaster Lifejackets + 8 for children
WORK VESTS	X CREWSAVER
LIFE BUOYS	2*LIGHT&SMOKE 6*30M LINE 6*LIGHT
FRC	MP800
SEISMIC WORK BOAT	NORPOWER 25FT

E. FIREFIGHTING EQUIPMENT

FIREFIGHTING EQUIPMENT	
ENGINE ROOM	ULTRAFOG
COMPRESSOR ROOM	ULTRAFOG
INSTRUMENT ROOM	Handheld CO2 & water
GUN SHACK	NIL
HAZCHEM STORAGE	
GALLEY	CO2
ACCOMMODATION	HANHELD CO2, WATER, FOAM, POWDER, FIRE HOSES FOR WATER
TAPE STORE	
STREAMER AREA AND CABLE REPAIR ROOM	ULTRAFOG
PAINT STORE	ULTRA FOG
INCINERATOR	ULTRA FOG
MAIN FOAM PUMP, AFFOAM MIXTURE	Main :Dsc 5kg 112-Mpc2 3L/s. Helideck :Dsc5kg 100-L2 1,7L/s
MAIN FIRE PUMP TYPE/FLOW	2 main, Speck 100-250, 200m ³ /hr
EMERGENCY FIRE PUMP TYPE/FLOW	1 x em; Speck 40-200 A1, 49 m ³ /hr
FIRE DETECTION MONITORING SYSTEM	ELTEK DELTA OP
FIRE BLANKETS	GALLEY & FIRE STATION NR 2 MODEL K75
HELIDECK FIRE PUMPS	MAIN AND EMERGENCY

F. ACCOMMODATION

ARRANGEMENT	
CABIN TYPES	50 SINGLE+10 DOUBLE
TOTAL	60 CABINS(70BUNKS)
BUSINESS CONFERENCE AND TRAINING RM	YES
SAUNA AND FITNESS ROOM	YES

G. HELIDECK

EQUIPMENT & CERTIFICATION	
HELICOPTER DECK RATING	D=20.88 AND T=12.8 (SINGLE ROTOR)
FIRE FIGHTING	UNITOR FIXED FOAM FIRE FIGHTING SYSTEM
NON DIRECTIONAL BEACON	NAUTEL, VECTOR-LP RADIO BEACON TRANSMITTER
SHIP/AIR COMMUNICATION	ICOM
MOTION WEATHER INFO	SHORE CONNECTION, SECREC HMS / CAP437

H. WORKBOAT

TYPE	
MANUFACTURE	NORPOWER 25FT
LENGTH	25FT
BEAM	2.87
DRAUGHT	1.65
WEIGHT	4200KG
ENGINES	CUMMINS 6BT5.9M
WATER JET	GEAR NOGVA AGF 1131
HULL	1557
HYDRAULIC	MB HYDRAULIC AS
BOLLARD PULL	2200KG
FUEL	DIESEL
SPEED	12KTS

SURVEY EQUIPMENT SPECIFICATIONS

I. RECORDING SYSTEM

SYSTEM	
MAX CHANNEL CAPACITY	960 @ 12.5M GROUP SPACING AND 2MS SAMPLE RATE
MAXIMUM AUXILIARY CHANNELS	12 ON SEAL (EXPANDABLE UP TO 60)
MAXIMUM RECORDING LENGTH	99 SECONDS
RECYCLE TIME	

ACQUISITION MODULE	
NUMBER OF SEISMIC CHANNELS	10 x 636
SAMPLE RATES	2 MS
PREAMPLIFIER TYPE	
PREAMPLIFIER GAIN, MAX INPUT SIGNAL	1.6 V RMS @ G1600
EQUIVALENT INPUT NOISE	700NV RMS @G1600
DYNAMIC RANGE	124dB
WORD SIZE	24 BITS
DISTORTION	-105dB
COMMON MODE REJECTION	110dB
CROSSTALK	120dB
RECORDING DELAY	50MS
ANALOG LOW CUT FILTER (ALWAYS ENABLE)	3 Hz @ 6dB/OCTAVE
A/D CONVERTER	24 BIT SIGMA / DELTA

DIGITAL FILTERING	
DIGITAL LOW CUT FILTER	DIGITAL OUT
TOTAL LOW CUT FILTER	3 Hz @ 6dB/OCTAVE
HI CUT FILTER	200 Hz @370dB/OCTAVE LINEAR PHASE

RECORDING SYSTEM	
TAPE SUBSYSTEM	IBM 3592 / 512 TRACK E05 500GBYTE
TAPE FORMAT	SEG D 8058 REV.1 32 BIT IEEE
TAPE DECKS	4 x IBM 3592 / 512 TRACK E05 500GBYTE
TAPE CAPACITY	512 TRACK E05 500GBYTE
RECORDING FORMAT	HARD DISK, IBM 3592
RECORDING TECHNIQUE	ARGUS RAID

QC	

PROCESSOR	GEOTRACE
DISPLAY	GEOTRACE SEISMIC DATA VIEWER
HARD COPY	NONE
PLOTTER	NONE
PRINTER	INKJET EPSON
REAL TIME	GEOTRACE SEISMIC DATA VIEWER
INSTRUMENT PERFORMANCE TEST INCLUDING	DAILY / MONTHLY TEST AS PER SEAL SPEC.

RTQC SYSTEM	
HARDWARE	ARGUS
DATA HANDLING	ARGUS RAID TO TAPE
REAL TIME DISPLAYS	ARGUS / SEAL
AUDIO VISUAL ALARMS	SEAL

J. SEISMIC STREAMER

SYSTEM	
MANUFACTURER	SENTINEL
DEFINED ONBOARD STREAMER STOCK LEVEL	74 SSAS SPARE
NUMBER OF GROUPS PER STREAMER	636
NUMBER OF GROUPS PER SECTION	12
STANDARD GROUP LENGTH	12.5M
OTHER GROUP LENGTH AVAILABLE	6.25M
NUMBER OF HYDROPHONES	8 PER GROUP (CHANNEL)
HYDROPHONES TYPE	SERCEL FLEXIBLE HYDROPHONES
HYDROPHONE CHARACTERISTICS	
GROUP SENSITIVITY	19.73V/BAR @20°C
GROUP CAPACITANCE	278NF ± 10% @ 20°C
VESSEL SEISMIC CABLE CAPACITY CONFIGURATION ALREADY PERFORMED	16 X 8000M, 12.5M CDP BIN WIDTH
BREAKING STRENGTH	170,000 NEWTONS
MAX OPERATING DEPTH	0 - 30M (SURVIVAL DEPTH 250M FOR UP TO 5 DAYS CUMULATIVE)
ACTIVE SECTION LENGTH	150M
FIELD DIGITALIZATION UNIT (FDU)	FDU2F
NEAR-TRACE OFFSETS	225M
DATA TRANSMISSION	BIT STREAM
DOORS/DIVERGING SYSTEM	BARO 410

STREAMER OIL CAPACITIES	
CLEAN TANK	11.5 CUBIC METER
TRANSFER TANK	N/A
DIRTY TANK	7.5 CUBIC METER
CABLE SKIN	N/A
CABLE OIL	ISOPAR

K. ENERGY SOURCE

SOURCE TYPE	
SOURCE VOLUME	4100 x 2
NUMBER OF SUBARRAY	6
NUMBER OF GUNS (MAXIMUM)	60 x BOLT LONG LIFE(20 x 1500LL,40 x 1900LLX TURBO.
SOURCE CONFIGURATION	DUAL
OPERATING PRESSURE	2000PSI
NUMBER OF WINCHES	8
SIZE OF GUNS	40, 70, 100, 150, 250, 300
GUNS PER SUBARRAY	10
ARRAY SIZE OPTIONS	STANDARD WAVEFIELD SELECTION
MAXIMUM OUTPUT IN ARRAY	4650 x 2
PEAK TO BUBBLE RATIO	18.28
LATERAL ARRAY SIZE	TOTAL SOURCE 20M(CLUSTER 1M)
LONGITUDINAL ARRAY SIZE	15M
CHARACTERISTICS OF FIRING CONTROL UNIT	
TYPE, NO. AND LOCATION OF NEAR-FIELD HYDROPHONES	AGH 7100, ONE PER GUNPLATE(6PER SUB-ARRAY)
TYPE, NO. AND LOCATION OF DEPTH SENSORS	AG 33M3, 3 PER SUBARRAY (FRONT, MID AND AFT)
MINIMUM RECYCLE TIME	
COMPRESSORS	3 x NEUMAN & ESSER 2200
TOTAL AIR CAPACITY IN SCFM	6600
NOMINAL SPARE AIR CAPACITY	
TIMING CONTROL	GUNLINK TCU
OPERATING AIR CAPACITY	
GUN SYNCHRONISATION SPECS	2 MS
GUN TIMING RESOLUTION	16 BIT
QUALITY CONTROL	GUNLINK 2000 RTQC DISPLAY
TOW SYSTEM	ODIM BARO 48

L. GUN CONTROLER

GUN CONTROL AND OUTPUT MONITORING SYSTEMS	
MANUFACTURER	SEAMAP GUNLINK 2000
NUMBER OF CHANNELS	UP TO 256 GUNS (128 G – GUNS)
SENSOR AND FIRE COMMAND RESOLUTION	16 BIT MINIMUM
DISPLAY RESOLUTION	TWO MONITORS WITH 1280x1024 RESOLUTION
TIMING ALGORITHM	ZERO CROSSING, LEVEL DETECT, PEAK DETECT OR COMBINATIONS OF ALL THREE.
DISPLAY	2 X SAMSUNG SYNCMASTER 214T
ARRAY SEQUENCING	DUAL FLIP FLOP (PORT FIRES ON EVEN SHOTS)
AUTOFIRE DETECTION	Continuous monitoring by in water electronics for auto-fires and double pops with all event data reported to on BOARD HOST COMPUTER.
OUTPUT	
DATA RECORDING	SEG-D REV1 8058 IEEE FLOATING POINT, MERGED WITH SEISMIC DATA IN ARGUS SYSTEM
SIGNATURE RECORDING	AVAILABLE (SEG-D) REV1
OPERATOR INTERFACE	GUNLINK 2000 GUI

M. STREAMER / SOURCE POSITIONING

CABLE LEVELER WITH DEPTH AND COMPASS	
TYPE	MODEL 5011 COMPASS BIRD
MANUFACTURER	DIGICOURSE
CONTROLLER	I/O SYSTEM POSITIONING CONTROL SYSTEM
CABLE/STREAMER INTERFACE UNIT	SYSTEM 3 PCS LINE INTERFACE UNIT WITH DATA MANAGEMENT UNIT
NUMBER OF COMPASS BIRDS PER CABLE	32
CABLE LEVELER – IN WATER UNIT	MODEL 5011 COMPASS BIRD
OPERATIONAL DEPTH RANGE	0-400FT
DEPTH TRANSDUCER TYPE	INTEGRATED.
DEPTH ACCURACY	+/-0.5FT
LIFT	35LBS@5KTS
BATTERY TYPE	SLB 150
HEADING SENSOR TYPE	DIGICOURSE 321 HEADING SENSOR
HEADING ACCURACY	+/-0.5°

ACOUSTIC SYSTEMS	
MANUFACTURER / SYSTEM NAME	I/O SYSTEM DIGICOURSE / DIGIRANGE 2
TYPE	4013 CMX
COMM. FREQUENCY	50KHZ-100KHZ
MEASUREMENT FREQUENCY	26/28KHZ FSK
TOTAL RANGES	MAXIMUM 1200 RANGES PER SYSTEM @6 SEC. CYCLE TIME
RANGE RESOLUTION	0.05MS
IMMUNITY TO MULTIPATH	RX/TX CHANNELS
POWER SUPPLY/LIFE (STANDARD XSRS UNIT)	CMX 150 LITHIUM BATTERY PACK
POWER SUPPLY/LIFE (XSRS 750 UNIT)	N/A
UNITS ON VESSEL	1
UNITS ON STREAMER	8
UNITS ON SOURCE	1 PER STRING
MAX-MIN RANGE	1200M MAX,
SOUND VELOCITY PROBE	MODEL 7000 VELOCIMETER

TAIL BUOYS	
MANUFACTURER	PARTNERPLAST
TAILBUOY POSITIONING	SEATRACK TAILBUOY TRACKING SYSTEM
ACOUSTIC	STREAMER MOUNTED CMX

RGPS & ACOUSTIC ON GUNS ARRAYS	
MANUFACTURER TYPE RGPS	KONGSBERG SEATRACK 330 GPS TRANSPONDER
NUMBER OF RGPS	1 PER STRING (CAPABILITY: 2 PER STRING)
MANUFACTURER TYPE ACOUSTIC	DIGIRANGE 2 CTX
NUMBER OF TRANSDUCER	1 PER STRING

N. INTEGRATED NAVIGATION SYSTEM

SYSTEM	
PLATFORM	CONCEPT ORCA SYSTEM 1.5.X
COMPUTER	IBM x 3650
OPERATING SYSTEM	RED HAT LINUX
MEMORY MODULES	IBM DS47000/EXP810
DISK CONTROLLER	RAID SYSTEM
DISK DRIVES	16 X 1GB SATA DRIVE
PERIPHERALS	
SERIAL ACQUISITION	THROUGH DATA DISTRIBUTOR / PRTNU
NETWORK	VIRTUAL INTERFACE - ETHERNET
LOGGING FORMATS	UKOOA P190 / P294
LOGGING SUPPORT	BACKUP RAN ON SECONDARY SYSTEM
SHOOTING MODE	TRIGGERED FROM ORCA
NAVIGATION QC	QC NODE / P1 TOOLS
DISPLAY	RAN ON IBM LENOVO M57
PLOTTER	N/A
PERIPHERALS	

RGPS SOFTWARE	
SYSTEM	KONGSBERG SEADIFF 705
OPERATING SYSTEM	DOS

PRIMARY DGPS	
NAME OF SYSTEM	VERIPOS ULTRA
MANUFACTURER	VERIPOS
CONTRACTOR	ISURVEY

VESSEL INSTALLATION	
RECEIVER TYPE	LD2 COMBINED GPS RECEIVER AND L BAND DEMODULATOR
SOFTWARE AND VERSION	VERIFY V.1.07
DIFFERENTIAL CORRECTION TRANSMISSION	VERIPOS RTCM SC104 TYPE 44

SECONDARY DGPS	
NAME SYSTEM	VERIPOS ULTRA
MANUFACTURER	VERIPOS
CONTRACTOR	ISURVEY

VESSEL INSTALLATION	
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RECEIVER TYPE	LD2 COMBINED GPS RECEIVER AND L BAND DEMODULATOR
SOFTWARE AND VERSION	VERIFY V.1.07
DIFFERENTIAL CORRECTION TRANSMISSION	VERIPOS RTCM SC104 TYPE 44

3RD & 4TH DGPS	
SYSTEM	C-NAV
HARDWARE	NAVCOM STARFIRE SF-2050
DIFFERENTIAL CORRECTION TRANSMISSION	

O. ON BOARD BINNING SYSTEM

SYSTEM	
PLATFORM	ORCA 1.5.1 & REFLEX 1.10.2
COMPUTER	IBM X-SERVER 3650 RUNNING
OPERATING SYSTEM	REDHAT LINUX
MEMORY MODULES	
DISK CONTROLLER	
DISK DRIVES	
PERIPHERALS	
DISPLAY	
NETWORK	

P. ON BOARD NAVIGATION PROCESSING

SYSTEM	
COMPUTER	CONCEPT ORCA 1.5.1
OPERATING SYSTEM	REDHAT LINUX
MEMORY MODULES	
DISK CONTROLLER	
DISK DRIVES	
NETWORKS	
PERIPHERALS	
DISPLAY	
LOGGING SUPPORT	
LOGGING FORMATS	UKOAA P2/94

Q. OTHER NAVIGATION EQUIPMENT

SYSTEM	
SOUND VELOCITY ON STREAMER	DIGICOURSE
SOUND VELOCITY PROFILER	TS-DIP SD200
EXPENDABLE PROFILING SYSTEM	
WATER SPEED LOG ON STREAMER	DIGICOURSE
WATER SPEED LOG ON HULL	SAM SPEEDLOG
ECHO SOUNDER	SAM Debeg 4630 50&200KHz Simrad EA600 12,38 & 200KHz
ACOUSTIC CURRENT PROFILER	NORTEK NDP
GYROCOMPASS	Raytheon Anshütz DigitalGyro STD22
GPS COMPASS	SAM SALTLOG DEBEG 4100 & SAAB R4
TRUE HEADING SENSOR	SAM TRACKPILOT 1100

R. ON BOARD SEISMIC PROCESSING

PROCESSING EQUIPMENT	
PROCESSING PLATFORM	GEOTRACE ANSER
NUM OF CPU@FREQUENCY	2000 @ 3.2 GHZ
TOTAL RAM MEMORY	2 GB PER CPU
DISK STORAGE (STAGE)	200 TB
DISK STORAGE (SCRATCH)	N/A
NODE MEDIATOR	DELL POWEREDGE
NODE CONTROL WORKSTATION	2 SGI ORIGIN 350
NODE DATA LOGGER	N/A
NODE TAPE SERVER	N/A
NODE QC	N/A
COMPUTING NODES	DELL POWEREDGE
NETWORK	GIGABIT
ETHERNET LINK TO ARGUS	YES
OPERATING SYSTEM	SGI IRIX 64, CENTOS AND REDHAT LINUX
TAPE DRIVES EXABYTE 8MM DRIVES LTO1 (100/200GB) TAPE DRIVES	4
DATA TRANSMISSION	GIGABIT
PROCESSING SOFTWARE	GEOTRACE ANSER
PROCESSING WORKSTATION	N/A
RTQC	SEISMIC DATA VIEWER
PLOTTER/PRINTER	NO

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.
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S. 2 years survey history

SURVEY HISTORY				
DATE	CLIENT	AREA	2D/3D/4D	PARAMETERS
08-2008	BG	NORTH SEA	3D	10x6000
10-2008	BP LIBYA	LIBYA	3D	10x8000