MSV Nordica

Vessel specification

ARCTIA

ARCTIA OFFSHORE – POWER AT SEA

Globally unique multipurpose icebreakers Fennica and Nordica are well-equipped and suited for demanding offshore work which requires a high degree of manouverability and accuracy. Both are excellent vessels for ice management tasks in polar areas.

Arctia Offshore's experience is not limited to the North Sea, Arctic Ocean or other polar regions. Vessels sailing under the Arctia's flag have also worked in the Gulf of Mexico, West Africa and in the Mediterranean Sea.

Our expertise is founded on experienced staff and specialised vessels. These two enable us to offer first class services to our customers.

Arctia Offshore is a part of Arctia Group, a specialised shipping company offering icebreaking, ice management, offshore services and marine construction using multipurpose icebreakers and conventional icebreakers. We also offer oil-spill and harbour icebreaking services.

Arctia fleet consists of

- 2 oil-recovery icebreakers
- 4 conventional icebreakers
- 2 multipurpose icebreakers

MSV NORDICA
SHORT VESSEL DESCRIPTION

Nordica is a multifunctional vessel based on a modified icebreaker design with diesel-electric propulsion. The vessel is specially designed for a wide range of offshore related work.

The vessel is designed to carry out offshore installation tasks and may be equipped for laying pipes, cables and umbilicals. The optional 160T SWL crane is well suited for deploying trenching machines and ploughs. Her great bollard pull and strong winches make Nordica ideal for ploughing operations and towing.

ICEBREAKING

Nordica is a part of Arctia Group icebreaker fleet, one of the most powerful in the world. Icebreaking services include ice management, assistance, towing, securing vessel traffic safety, and traffic control for vessels proceeding in icy conditions.

Nordica's icebreaking capability is excellent. The 15 MW diesel generators produce power for two Aquamaster azimuth-thrusters to make the vessel easily manoeuvrable. Nordica is excellent for DP work, all kinds of marine operations and for towing merchant vessels in harsh icy conditions.

VESSEL DETAILS

IMO No.	9056985
Call Sign	OJAE
MMSI	230 275 000
Type of Vessel	Ice Breaker & Multipurpose Support
Flag State	Finland
Port of Registry	Helsinki
Owners	Arctia Offshore
Built	1994
Lightweight	7.935 T
Deadweight (approx.)	4.800 T
Displacement	12.800 T
Gross tonnage	9392 T
LOA	116 m
LWL	96.7 m
Breadth Moulded	26.0 m
Depth Moulded	12.5 m
Draught (Scantling)	8.4 m
Airdraft	38.4 m

CLASSIFICATION

DNV	1A1 POLAR10 Icebreaker Tug Supply Vessel SF HELDK EPR EØ DYNPOS-AUTR

HELIDECK

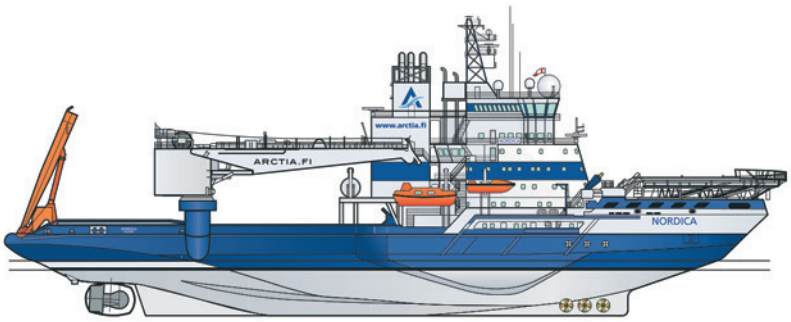
Helideck ´D´Value	22 m / 12.8 T year 2012
Rated	Sikorsky S92
HMS	Vaisala HMS
Weather station	Vaisala AWS 430

CAPACITIES AND CONSUMABLES

Fuel Oil (Dual Fuel)	1690 m^3 HFO / DO
	817 m^3 DO
Lubricating Oil	85 m^3
Fresh Water	400 m^3
Water Ballast	2200 m^3
F.W. Making Capability	25 T / day

CONSUMABLES, 8.4 M DRAUGHT:

Type of Fuel (Dual Fuel)	HFO / DO
Fuel Consumption, 13 knots	abt. 42 T / day
Fuel Consumption, 11 knots	abt. 30 T / day
Fuel Consumption, DP	abt. 15 T / day
Duration, 13 knots	abt. 45 days
Duration, 11 knots	abt. 67 days



Nordica

PROPULSION

Power	16 V 32 / 6000 kW Wärtsilä Vasa x 2
	12 V 32 / 4500 kW Wärtsilä Vasa x 2
Propeller Type	Azimut, fixed pitch, variable rpm
Nozzle Fitted	2 pcs (for aquamasters)
El.Prop Motor	2 pcs ABB
Type	2 pcs ABB, upgraded 2015
Rating	Both rated at 7500 kW

BOW THRUSTERS

Number	3
Make	Brunvoll
Type	FU-80 LTC-2250
Power	1150 kW
Propeller Type	Variable Pitch

SWITCHBOARDS

Make	ABB distribution
Type	6.3 kV prod. 6989C S001
Transformers	2 x 2000 kva 6300 / 400 V 50 Hz +
	1250 kva 6300 / 400 V 50 Hz

ENVIROMENTAL

SCR Catalysators X 4 Mainengine
Urea tank capacity: 100 m3

GENERATORS (MAIN)

Number	4
Make	ABB Strömberg Drives
Type	2 x HSG 1120 MP8 2 x HSG 900 LR8
Rating	8.314 kVA / 6.3 kV / 750 rpm
	6.235 kVA / 6.3 kV / 750 rpm

GENERATORS (HARBOUR SET)

Number	1
Make	Wärtsilä
Type	VASA 4R22/26
Rating	710 kW / 1000 rpm
Generator	
Type	ALPC 500 AG
Rating	840 kVA / 400V

GENERATORS (EMERGENCY)

Number	1
Make	Caterpillar
Type	3412
Rating	300kW / 1500 rpm / 400 v / 50 Hz

BOLLARD PULL

Bollard pull / Aquamaster	234 T

ROLL REDUCTION

INTERING Upgraded 2016

Antiheeling / Stabilizer / Ice-Heeling	720 m^3

ARCTIA

DYNAMIC POSITIONING

The vessel is equipped with a Kongsberg K-POS DP-22 dynamic positioning system.

The vessel also has an integrated redundant joystick control system. Classification is DNV under the DynPos AUTR class (Dynamic Positioning with Automatic Redundancy). This includes the DP system itself and its power supply plus the vessel's general switchboard and emergency power supply and the mode operation, both in normal and warning / alarm states.

DP –AND AUTOMATION HARDWARE

Type (DP)	Kongsberg K-POS DP-22 (upgraded 2009)
Operator stations (OS)	2 pcs
Dual redundant controller	1 pc (one cabinet with separated controllers)
Redundant joystick (cJoy)	1 pc (with own independent cJoy -controller)
Process/field stations (FS)	8 pcs (for thrusters and power/propulsion plant)
Network Distribtion Units	6 pcs
Type (Automation)	Kongsberg K-Chief (Installed 2009)
Operator Stations	5 pcs

Automation / K-Chief stations are part of the K-POS –system
DP History station

REFERENCE SYSTEMS / EQUIPMENTS

The DP -system is supported by the following reference systems:

Hydro acoustic	1 pc Kongsberg HiPaP 501
Tautwire	1 pc Kongsberg LTW MK15/B
Satellite positioning	2 pcs Kongsberg DPS -type receivers High Precision corrections possible for both receivers
Fanbeam	1 pc Fanbeam optional
MRU Units	3 pcs Kongsberg Seatex
Gyros	MRU2 / MRU5 for DP and MRU-H for HMS
Anemometer	3 pcs Ixsea Octans (Fiber Optic Gyros)
	2 pcs GILL Ultrasonic wind sensors

MAIN OPERATING MODES

Joystick Mode	Manual Positioning using the three-axis joystick
Mixed Joystick / Auto Mode	Selecting any of the three degrees of vessel movement, as manual and / or auto
Auto Position	Mode Station keeping at selected heading and position
Follow Target Mode	Automatic following of moving target
Auto Track (low speed) Mode	Track keeping in low speed
Auto Track (high speed) Mode	Track keeping in medium or high speed
Alongships External Force	Manual input of force in tonnes by the joystick is used e.g. towing and cable laying

Compensation by Joystick
Autopilot-mode

BRIDGE EQUIPMENT

THE VESSEL'S INTEGRATED NAVIGATION SYSTEM IS EQUIPPED WITH

- Multi-Sensor radar and positioning system
- Type approved Dual ECDIS system

SYSTEM PROVIDES

- Flexible route planning, steering and monitoring
- Continuous calculations of own position and display on ECDIS
- Continuous target tracking by radars and AIS
- Continuous target presentation by ECDIS

EXTERNAL COMMUNICATION SYSTEM

COMPRISING

GMDSS	A4 radio station
Telenor SEALINK 2 on Dual Band	
Fleet77	
Fleet Broadband	
Iridium	
Aviation VHF	2 fixed 4 portables

SEARCHLIGHT

The following Xenon remote controlled search lights are provided:
2 x 3000 W (BOW)
2 x 1600 W (BOW)
1 x 1000 W(AFT)

INTERNAL COMMUNICATION SYSTEM

AUTOMATIC TELEPHONE SYSTEM

The telephone system consists of automatic exchange and phone sets. In addition to the land lines there are mobile cellular and ship's satellite communication system connected to the PABX. All cabins fitted with telephones.

10 pcs outside telephone lines available for Project / Client
Radio / TV cable network
Radio / TV cable network receives terrestrial radio / TV broadcasts as well as satellite broadcasts, which are further distributed to the ship's cable network and TV sets.

DATA NET (CLIENT)

The Data Network is a cat. 5 10 / 100 TX Ethernet.
The network is connected to the Norsat KU band communication system onboard.
(May change between projects)

THE NETWORK HAS OUTLETS ON THE FOLLOWING LOCATIONS ONBOARD

Bridge	
Operation Center	4th Bridge deck
Conference Room	2nd deck
Owners cabins	
Aft Deck	
Hospital	2nd Bridge deck

ARCTIA

DECK LAYOUT

Shark Jaw	2 pcs (adapters 38 mm 86 mm 95 mm)
Karmoy pins	2 pcs
Air on Deck	16 connecting points, 300 m3 / h, 7 bar
Air Receiver	1000 l
Sea Water	4 connecting points, 40 m3 / h, 7 bar
Fresh Water	1 connecting point, 30 m3 / h, 4 bar

ELECTRICITY ON DECK

Power Outlets 400 V (± 10%) / 50 Hz

1 pc	1600 A	Bolt connection
2 pcs	630 A	Bolt connection
1 pcs	400 A	Bolt connection
4 pcs	250 A	Plug connection
8 pcs	125 A	Bolt connection
4 pcs	63 A	Plug connection

Power Outlets 230 V (± 5%) / 50 Hz

8 pcs	16 A	Plug connection

DECK CRANES

MAIN CRANE

Manufacturer	HYDRALIFT ASA
Main Hook	160 T / 9 m radius
	30 T / 32 m radius
	5 T / 38 m radius
	Active Heave Compensated
Secondary Hook	80 T / 9 m radius
	32 T / 32 m radius
Wire Length	650 m
Working depth	max single fall 1100 m / 80 T
	max double fall 550 m / 160 T
Wire Size	32 mm
Aux Hook	10 T / 33 m radius
Wire Length	60 m
Working depth	60 m

SECONDARY CRANE (OPTIONAL)

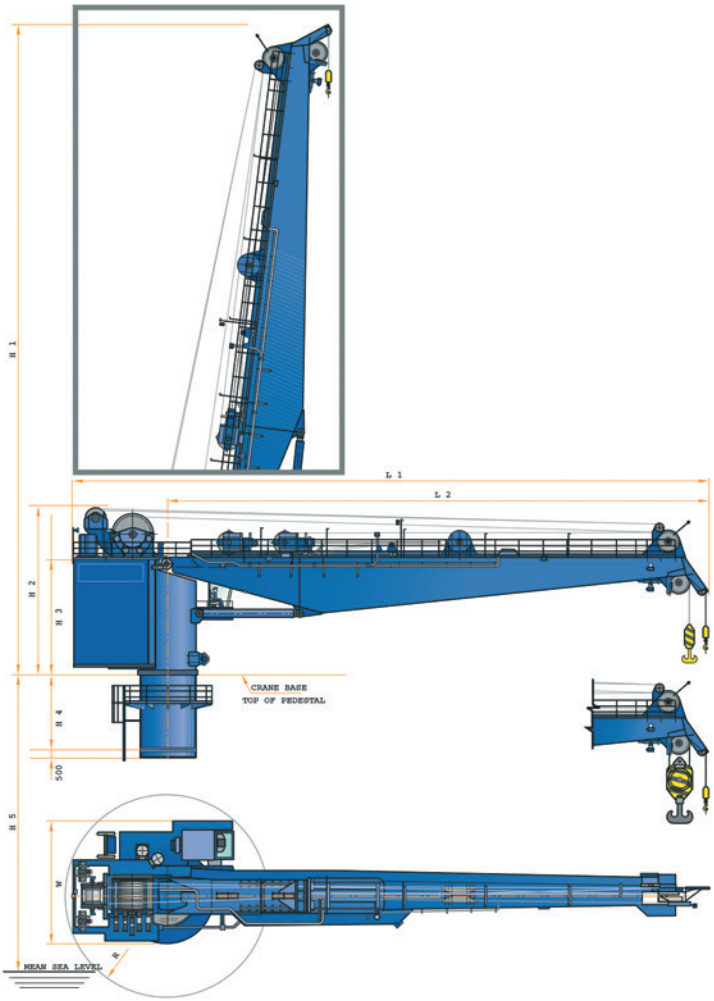
Manufacturer	Melcal: year 20 15
Main hook	5T/25m /Shipboard, 3T/25m /Offshore
Wire Length	65 m
Wire Size	18 mm
Manride, Billy Pugh	1,5T/25m

A- FRAME (OPTIONAL)

Safe Working Load	120 T
Clearance between legs	12 m
Hook height	15 m
Working Depth / appx.	300 m

MAIN DIMENSIONS (MAIN CRANE)

Overall length	L1	39 000 mm
Boom length	L2	33 680 mm
Overal width	W	7 426 mm
Tail radius	R	6 242 mm
Overall height from top of pedestal max	H1	39 670 mm
Height to top of king	H2	10 180 mm
Crane base to center line of boom bearing	H3	6 842 mm
Height of pedestal		4 700 mm
(HL supply)	H4	+500 mm
Height of crane base above mean sea level	LAT H5	10 500 mm
Boom angle in parked position	1	0 °
Boom angle in operation		
Lower min	2	0 °
Upper max	3	83,13 °
Main Wire length	1320 m	



ARCTIA

WINCHING CAPACITIES

DECK LOADING

Deck Area	approx. 1045m^2
Capacity	10T / m2 (Defined loading area)

ANCHOR HANDLING DRUM	First Layer	Outmost Layer
	1084 mm	2030 mm
Maker	Aquamaster-Rauma	
Type	TAW 3000 / 3000E	
Drive	Electric, 2 DC motors each 225 kW	
Pay out / in speed	Stepless from 0 to max speed	
Cable lifters	2, for 84 mm Ø stud link chain, 1 on each drum	
A) At low gear		
stalling pull 2 min	3750 kN	1765 kN
Nominal load S1	3000 kN	1412 kN
At speed	0-8 m / min	0-17 m / min
Maximum Speed	18 m / min	38 m / min
At load	1325 kN	623 kN
Safety Clutch	66 m / min	140 m / min
Max speed	2.1 knots	4.5 knots
B) At high gear		
stalling pull 2 min	1656 kN	779 kN
Nominal load S1	1325 kN	623 kN
At speed	0-18 m / min	0-38 m / min
Maximum Speed	40 m / min	85 m / min
At load	585 kN	275 kN
Safety Clutch	148 m / min	314 m / min
Max speed	4.7 knots	10 knots
C) Band Brake		
static holding load	4500 kN	2118 kN

TOWING

TOWING

In auto-tension mode or with brake engaged
Interfaced to DP, wire 1500m, d= 77mm

TOWING DRUM	First Layer	Outmost Layer
	1283 mm	2577 mm
A) At low gear		
stalling pull	3750 kN	1867 kN
Nominal load S1	3000 kN	1495 kN
At speed	0-8 m / min	0-16 m / min
Maximum Speed	18 m / min	36 m / min
At load	1325 kN	660 kN
Safety Clutch	66 m / min	133 m / min
Max speed	2.1 knots	4.3 knots
B) At high gear		
stalling pull 2 min	1656 kN	824 kN
Nominal load S1	1325 kN	660 kN
At speed	0-18 m / min	0-36 m / min
Maximum Speed	40 m / min	80 m / min
At load	585 kN	291 kN
Safety Clutch	148 m / min	296 m / min
Max speed	4.7 knots	9.6 knots
C) Band Brake		
static holding load	4500 kN	2240 kN

ARCTIA

DETAILS BELIEVED TO BE CORRECT BUT NOT GUARANTEED.

ACCOMMODATION

Total Accommodation	75 persons incl. crew (normally 48 client beds)

Day Room / Mess for client:

Day Room	5th Bridge deck
Messroom and cafeteria	Upper deck
Laundry Room	2nd deck (+ Laundry stations on different decks)
Gym	1st Bridge deck
Sauna	2nd deck
Kiosk	Upper deck
Operation Center	4th Bridge deck
Saloon Room	5th Bridge deck
Client Offi ce / Conference Room	1 x 20 m2 Office 2nd deck
Reception (deck offi ce)	Upper deck
Hospital	2nd Bridge deck

SURVEY FACILITIES

The MSV NORDICA has no permanent ROV system on board, but it does have the capability for an ROV system should the project require it.

MANNING

Master	1
Chief Officer / DPO	1
First Officer / DPO	1
Second Officer / DPO jr.	2
Chief Engineer	1
1st Engineer	2
Electrical Engineer	1
Electrician	1
Boatswain	1
Deck Repairman	2
Engine Repairman	2
Motorman	1
Cook Steward	1
1st Cook	2
2nd Cook	2
Catering Assistants	3
Crane tech.	1
Crane ops.	2
Total Marine Crew	21-25 persons depending on projects.

LIFE SAVING, FIREALARM AND RESCUE EQUIPMENT

Lifeboats	2 pcs, 82 persons each	
Type	Waterman 3 71	
Dimensions	L 9.35 m / B 3.26 m / draught 1.22 m	
Weight including Equipment	4730 kg	
Engine	Sabb N 4.295	
Regulation	NMD	
Lifeboat Davit	Davit int.type D-NP.120	
FRB Boat	1 pc, 6 persons, S-side Boomeranger	
Type	Fr RBD C-600 year 2012	
Dimensions	L 6.05 m / B 2.45 m	
Engine	Steyer MO164M40 / 163 hp	
Speed	32 knots	
Regulation	Solas	
FRB Boat Davit	Vest Davit PLR-3600	
Liferafts	8 x 25 persons	
Type	Viking Life -saving	
Life raft Davit	1 pcs	Davit D-RB.21
Fire Alarm system	1 pc	Consilium year 2016
Rescue boat	1 pc, 6 persons, P-side, Zodiac	
Type	RIBO 450, year 2015, Solas approved	
Dimensions	L 4,50m / B 1,90m	
Engine	Yanmar D27 diesel outboardmotor	
Combined boat/raft	DavidGlobal David	

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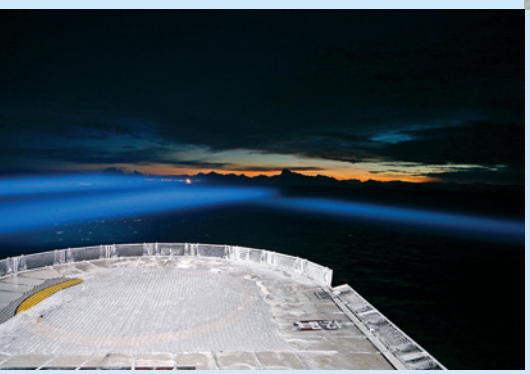

Power at Sea

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