



1. Main Characteristics

1.1. Identification

Name: Argo II
Port of Registry: Panama
IMO Number: 7432109
Class: RINA C - DYNAPOS AT-R, AM-R
supply vessel-special service (cable layer, research ship)

1.2. Builders

Builder: Scheepswert Waterhuizen, B.V. Holland
Built: 1976 - Renovation 2001

1.3. Classification

DP 2 Vessel built for worldwide operations and especially designed for cable laying and repairs, R.O.V. Operations and surveys, fitted with twin CP screws, twin rudder, bow and aft thrusters with extremely good station keeping capability. Built and renovated in 2001 according to the highest standards of RINA Standards as supply vessel - special service (cable layer and research vessel).

1.4. Principal dimensions and performance

Length overall:	65.52 m
Length b.p.:	60.00 m
Beam:	14.02 m
Depth:	5.90 m
Draft:	4.98 m
Gross tonnage:	1,602.00 GT
Net tonnage:	480.00 NT
Deck strength uniform loading:	8.00T/m ²
Max speed:	12.00 knots
Bollard pull:	30.00 T

1.5. Machinery

The vessel is powered by three (3) Iveco Aifo diesel generating sets running on gas oil.

Type:	Iveco Aifo 8210 SRM
Generators:	Stamford 380 KVA each

One (1) Emergency/Harbour Generator.

Type:	General Motors
Generator:	BV71N 200 KVA

Power supply:	440 Volt - 60Hz for general board network 220 Volt - 60Hz for user supplies
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1.6. Propulsion

Main propulsion:

Two (2) Diesel engines MAK 6M 452 AK - 2 x 1,600 BHP continuous output fitted with two (2) variable pitch Hundested Propellers.

Bow Thrusters:

One (1) Ulstein thruster with controlled pitch propeller (450 HP output) driven by a General Motors diesel engine.

Four (4) ThrustMaster fixed pitch hydraulic thrusters (275 HP output each) driven by two (2) Iveco Aifo diesel engines.

Stern Thrusters:

Four (4) ThrustMaster fixed pitch hydraulic thrusters (275 HP output each) driven by two (2) Iveco Aifo diesel engines.

1.7. Speed and Fuel Consumption

Speed:	
Maximum:	12.00 knots
Economical:	10.00 knots

Consumption:	
At max. speed:	9.00 T
At economical speed:	7.50 T
Idle at port:	1.50 T

1.8. Cargo Capacity

1.8.1. Deck Capacity

Clear deck area:	460.20 m ²
Clear deck length:	35.40 m
Clear deck breadth:	13.00 m
Deck strength:	8.00 T/m ²
Max deck load:	1,000.00 T

1.8.1. Cargo Hold Capacity

Dimensions of Cargo Hold L: 7m x W: 6m x H: 3,5m

1.8.2. Tank Capacity

Fuel oil:	648.80 m ³
Drill water:	1,070.40 m ³
Potable water:	39.20 m ³

1.8.3. Refrigerated Storage Capacity

Deep freeze:	16.00m ³ at -25 C°
Cool room:	10.00 m ³ at + 3 C°
Provision stores:	50.00 m ³

1.8.3. Cargo Pumps

Fuel oil:	1x103.00 m ³ /hr at 70.00 m head
Drill water:	1x100.00 m ³ /hr at 70.00 m head
Potable water:	1x100.00 m ³ /hr at 70.00 m head

1.9. Accommodation

Single bed cabins:	12
Double bed cabins:	14
Hospital:	1
Total number of bunks:	41

1.10. Heating and Ventilation

Vessel fully air conditioned for hot and cold climates.

1.11. Wheelhouse

Panoramic view and full control on working deck area.
Controls of the propellers, thrusters and D.P. at the forward and aft consoles.

1.12. Communication System

Fully equipped with SAILOR GMDSS System including:

Inmarcat C (with GPS), Watch receiver DSC, Telex DSC, Radiotelephone, FAX, Two (2) VHF DSC, Two (2) VHF, Three (3) GMDSS Emergency portable VHF, EPIRB, Two (2) SART, Lifeboat radio (MARINETA), NAVTEX

1.13. Navigation Equipment

- 2 Gyro compasses C-Plath Navigat X MK1
- 1 Magnetic Compass
- 1 Radar X-band Furuno FAR 2825 3cm
- 1 Radar Kodon MD-3604
- 1 Echo Sounder Elac LAZ 5000
- 1 Echo Sounder Kodon CVS-106
- 1 Racal Skyfix spot System
- 2 Wind sensors : Gill instruments Ultrasonic wind detector
- 1 Auto Pilot Robertson AP9MK3
- 2 Seatex MRU H
- 1 GPS Garmin 120
- 1 DGPS Leica MX 9400N
- 1 DGPS TrimbleAgGPS 132
- 1 Navtex Receiver Furuno NX-500

1.14. LSA Equipment

One (1) rescue boat WATERCRAFT for six (6) persons.

Six (6) EuroVinil life rafts (three (3) on each side) of total capacity hundred fifty (150) persons.

1.15. Capstain - Windlass

Forward:

Hydraulic anchor windlass "Brattvaag" 15.00 T pull.

Two (2) 1,360.00 kg bow anchors.

One (1) 1,360.00 kg spare anchor.

Aft:

Two (2) single windlasses.

1.16. Lifting Apparatus

Type:

A-Frame - The Engineering Business

Aft Crane - Sormec M330/35

Fore Crane - Scarab SRW 40-33

Lifting Capacity:

40.00 T - all angles

6.8 T / 25.00 m, 20 T / 11.50 m

2.00 T / 14.00 m, 6.50 T / 2.50 m

2. Bridge Equipment

- Satellite Navigation
- Echo Sounder ELAC and Furuno
- ARPA Radar Furuno
- Portable Survival Transceivers
- Watch Radar Furuno
- Electronic Fog Bell and Gong System
- Fire Detection System Autronica
- Signal and Navigation Equipment Control
- Engine Control and Monitoring System Autronica
- Weather Fax Furuno
- VHF Transceivers
- Wind Measuring System
- Public Address System
- Satellite Communications
- Radio Equipment

3. D.P. System Description

The vessels heading and position can be controlled by either the manual system installed by the manufacturers of the individual systems or by the integrated SDP 21 system supplied by Kongsberg Simrad.

The manual system provides control over the three (3) different propulsion systems of the vessel: the bow, the stern and the main propellers. In combination, effective maneuvering of the vessels can be easily achieved.

In addition the D.P. system can take control of the vessels eleven (11) thrusters and rudders and via a dual redundant reference system that is installed onboard and with the aid of the mathematical model of the vessel that has been installed into the system, can achieve excellent station keeping performance.

The D.P. system comprises of the following equipment.

Main Computer:	Kongsberg Simrad DPC 21 dual processor
Operating Consoles:	Two (2) Kongsberg Simrad SDP-OS One (1) portable KS SDP-OT
Reference System:	Two (2) Differential GPS One (1) Bandok LTW-1 Taut Wire System (300.00m. length)
Underwater Positioning Sensors:	One (1) KS HiPAP 500 Two (2) Seatex MRU Units Two (2) C-Plath Gyro Compasses Two (2) Gill Instruments Wind Sensors

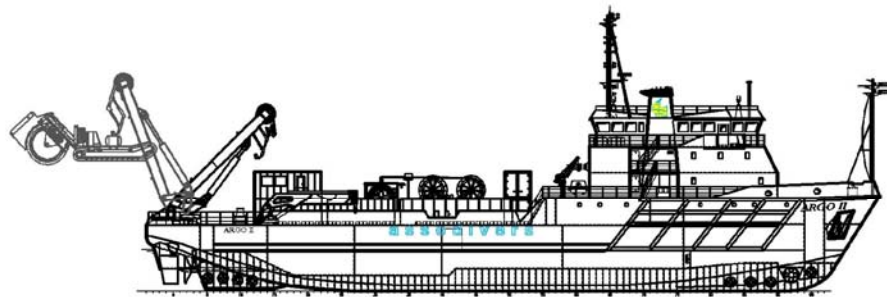
The complete Dynamic Positioning System is developed and tested in such a way as to incorporate a detailed mathematical model of the vessel in different states of loading into the D.P. computer. Therefore the computer with the aid of the sensors can calculate the environmental forces acting on the vessel in real time.

Then depending on the command for movement from the operator, the D.P. computer calculates the necessary force needed from each thruster individually so as to bring the vessel in the desired state. During the movement of the vessel the computer runs an F.M.E.A (Failure Mode and Effect Analysis) so as to predict the effect of a single point failure on the system on the station keeping ability of the vessel. In the case that such a failure will result in a loss of position or heading control, an error is generated indicating a possible solution. The system is fully redundant and therefore when on full operational mode, a single point failure will not result to loss of position.

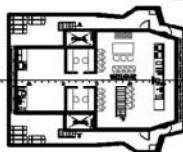
The vessel can be operated either from the fore or the aft of the bridge, or from the portable console that can be hooked up in three (3) different points on the vessel (forward port and stbd and on the after end of the vessel).

Changeover arrangements from the manual to the D.P. system are installed on the forward bridge and proper instructions and checklists are followed.

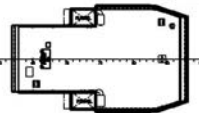
4. General Arrangement Layout



BRIDGE DECK



WHEELHOUSE TOP



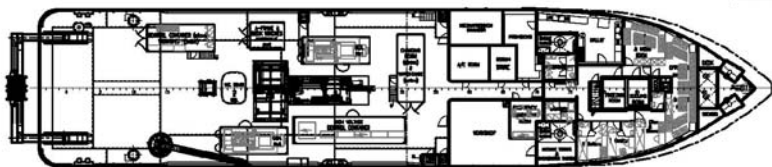
BOAT DECK



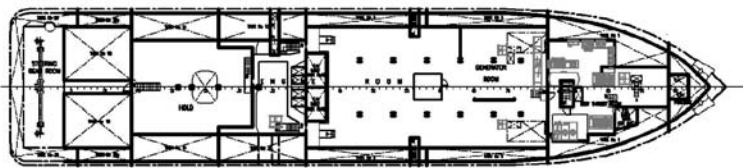
FORECASTLE DECK



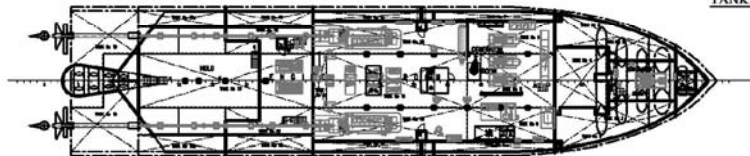
MAIN DECK



TWEENDECK




TANK TOP



PRINCIPAL DIMENSIONS

LENGTH O.A.	65,52 m
LENGTH B.P.	60,00 m
BREADTH	11,00 m
DEPTH to Main Deck	5,90 m
DEPTH to Tween Deck	3,45 m
DRAUGHT	4,98 m
SERVICE SPEED	13,20 Kn
FRAME SPACING	0,40 m

 DIM. PAPADIMITRIOU NAVAL ARCHITECT & MARINE ENGINEER 110, SOFIA ST. 11527 ATHENS, GREECE	m/v "ARGO II" 81.68978	
	JUN. 2004	GENERAL ARRANGEMENT
R.I.N.A.		12 L