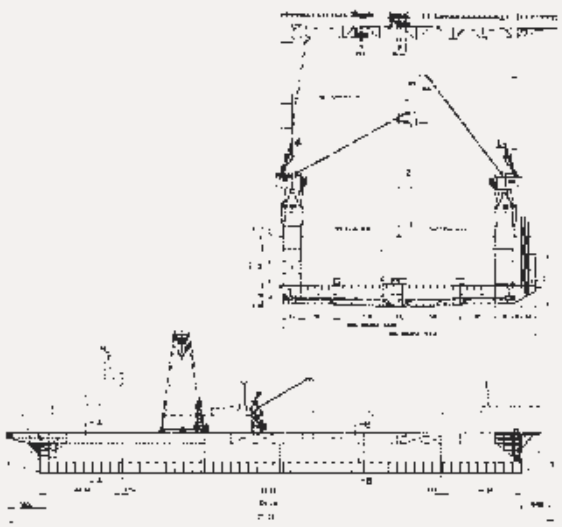
Floating Dock

Builder / Yard No.: **Shipyard TROGIR** / 190
Owner / Flag: Sudoimport / USSR
Designed by: Shipyard Trogir
Delivered: 1985



The floating dock is intended for maintenance and repair of large tankers, lash-carriers and ice-breakers of conventional or nuclear propulsion.
Capacity of electric, steam and air plants and crew provisions allows 15 days independent operations including docked ship.
Three pontoons configuration offers self docking possibility.
Two end pontoons are of detachable type.
34 independent ballast tanks in total.
Accommodation provides necessary spaces and room for crew, workers and docked ship's crew.
Crew: 9 cabins with toilets, 1 mess room, 3 day rooms, galley etc.
Workers: 3 rest rooms, sanitary and dress changing rooms.
Living spaces are air conditioned, sanitary spaces are heated and ventilated.

Classification: USSR Register of Shipping

Length over all (incl. platforms)	311.28 m
Length over pontoons	275.28 m
Breadth at middle pontoon, outside	63.30 m
Breadth of end pontoons, outside	75.30 m
Inside breadth	51.50 m
Height total (incl. side walls)	22,50 m
Depth of pontoon, CL	6.10 m
Height of keel blocks	1.80 m
Draught, loaded	5.30 m
Draught, submerged	19.90 m
Depth above keel block when submerged	12.00 m
Freeboard, top deck, when submerged	2.60 m

Capacities

Loading (lifting) draft 5.3 m	60,000 tons
Ballast water (extra)	12,000 tons
Lifting time	2.5 hours
Permitted loads of pontoon deck:	
longitudinal bulkheads	200 tons/m each
transversal bulkheads	200 tons/m each
uniformly distributed load:	0.7 tons/m^2
concentrated load at girder crossings:	250 tons
vehicle axle load, 4 wheels:	18 tons

- Ballast piping:
  12 x pumps, el. driven, cap. 4,000 m^3/h at 0.9 bar each, all situated in pump rooms.
  34 x butterfly valves, hydr. operated,
  Hydraulic power plant in pump rooms.
- Towing-in equipment:
  2 x pulling cars, 160 kN pull force each
  2 x retarding cars, 140 kN break each
  Remote control from control house.
- Fenders:
  2 x roller rubber type at entrance,
  Keel / side blocks:
  714 pcs, 2,500 kN permitted load each.
- Anchoring/mooring:
  4'' chain cables, total length 200 m,
  8 x capstans, 120 kN pull force at 10 m/min each.
- Cranes:
  1 x gantry type, 2 x 300 kN SWL, lifting height 62 m above keel blocks
  2 x portal type, 100/2 kN SWL, 32 m outreach, each.
- Lifts: 4 x passenger lifts 1 ton SWL each.

Steam plant

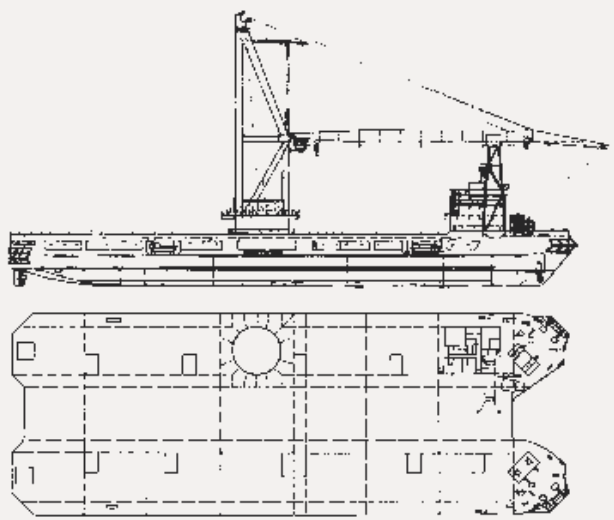
- 1 x boiler, oil fired, 6 bar, 5 t/h steam.

Electric plant

- Off-shore supply connect: 3 x 1,200 kVA, 1 x 1,600 kVA, 1 x 600 kVA,
- One generator set, 850 kVA, D.M. driven,
- One emergency gen. set, 100 kVA, D.M. driven.

Catamaran Crane Ship

12,000 KN



Builder / Yard No.:	**Shipyard 3. MAJ** / 617
Name:	m/s **ISPOLIN**
Owner / Flag:	Sudoimport / USSR
Designed by:	Shipyard 3. MAJ
Delivered:	1989

Classification: USSR Register KM ★ 3 2 I
A2 - Special Crane Ship

Lenght over all	148.70 m
Length btw perp	130.00 m
Breadth maximum	50.00 m
Depth moulded	12.00 m
Draught design	4.35 m
Deadweight, at draught 4.35 m	3,900 t
Gross tonnage	17,500
Propulsion electric motors MCR	2 x 1,600 k W
Electricity generation diesel power plant	4 x 2,000 kW
Trial speed	11 knots

Safety work weather conditions

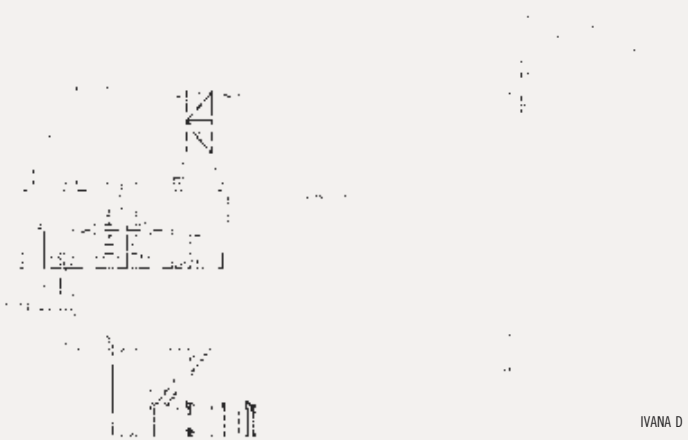
- wind	12 m/sec
- waves h 3% =	2,0 m
Cargo deck area	5,400 m^2
Permitted deck load	50 kN/ m^2
Cruising range	8,500 n.m.
Crew complement	120

Crane

Main hook capacity	2 x 6,000 kN
Aux. hook No. 1 capacity	3,000 kN
Aux. hook No. 2 capacity	300 kN
Main hook outreach (outboard)	30 m
Aux. hook No. 1 outreach (outboard)	50 m
Main hook lifting height	80 m
Aux. hook No. 1 lifting height	66 m
Main hook hoisting speed	3 m/min
Aux. hook No. 1 hoisting speed	6 m/min
Slewing speed	0.2 rpm

The slewing crane of 12,000 kN (abt. 1,220 tons) SWL capacity fitted on catamaran hull vessel is the world's highest capacity crane vessel of such type.
The crane unit is intended for shipment and loading / unloading of heavy offshore structural parts for instance: jackets, foundations etc., as well as for a number of offshore operations and erection of various marine technology units at sea. This huge crane vessel is delivered as a kit set and mounted at the destination indicated by the owner.

Off-shore Platforms



IVANA D

IVANA B

Builder:	**Shipyard VIKTOR LENAC**
Name:	**IVANA A, IVANA B, IVANA D**
Owner:	INAgip
Delivered:	October 1998 to November 2000
Classification:	Croatian Register of Shipping / Croatia

IVANA A

- Is a manned platform with all facilities for production management control either in normal and emergency conditions with a telemetring system for monitoring all platforms within Ivana Gas Field

IVANA B / IVANA D

- Unmanned gas production platform with all facilities for production management control either in normal and emergency conditions being monitored by means of telemetring system from IVANA A platform.

	IVANA B	IVANA D
Foreseen operating life:	20 years	20 years
No. of weels:	3 with double completion	1 with double completion
Average string gas prod.:	70,000 Sm^3/D	80.000 Sm^3/D
Weight:	569 t	332 t
Overall height:	79.6 m	65.5 m
Overal lenght:	15.1 m	11 m
Overall width:	14 m	10 m
Water depth:	41.5 m	41.5 m

Jacket construction

- In situ water depth: 43 m
- Overall height: 48.694 m
- Lower end dim: 21.6 m by 21.6 m
- Upper end dim: 14.103 m by 21.6 m
- Weight: 634 tons
- Legs (main columns) 4 pcs, dia 1,690 m
- Bracings (horizontal and diagonal):
- Mud mats
- Risers 5 pcs, 406.4 mm, 355.6 mm, 88.9 mm, 60.3 mm dia
- Cathodic protection and monitoring system
- Grauting and ballasting system
- Wellhead module
- Barge bumpers
- Boat landing

Living Quarters

- 37 persones in two bed cabins
- Overall Length: 22 m
- Overall Width: 7.2 m
- Overall Height: 11.4 m
- Weight: 375 t
- Helideck: Suitable for ICAO 3 type helicopter

Main units installed on the platforms

- Wellhead system
- Launching trap system
- Vent system (IVANA B.)
- Purge burner system
- Separator system
- Methanol system
- Fuel gas system (IVANA B.)
- Hydraulic power system
- Instrument air system
- Electrical system (IVANA B.)
- Service diesel generator system (IVANA B.)
- Drain system
- Process water filtration system
- Navigation aids system
- Power switchboard (PMCC)
- Telecomunication system (IVANA B.)
- Control and safety system (IVANA B.)
- ESD system

Off-shore Construction

JACKET UNDER CONSTRUCTION

IDA B

MARICA

Builder:	**Shipyard VIKTOR LENAC**
Name:	**MARICA, IDA A, IDA B, IKA B, KATARINA** process modules, **Ida B, Ika B** jackets
Operator:	INAgip
Location:	North Adriatic Sea water depth from 47 m to 70 m
Delivered:	May 2004 to December 2006
Classification:	Croatian Register of Shipping / Croatia

	MARICA	**IDA A**	**IDA B**	**IKA B**	**KATARINA**
Foreseen operating life:	20 years	20 years	20 years	20 years	20 years
No. of prod. wells:	3 dual	1 dual	2 single	2 (1 dual 1single)	3 dual
Average string gas prod:	600,000 Sm^3/d	165,000 Sm^3/d	150,000 Sm^3/d	310,000 Sm^3/d	643,000 Sm^3/d
Weight:	744 t including helideck	123 t	112 t	134 t	750 t
Overall height:	16 m	7.5 m	7.0 m	7.0 m	16 m
Overall length:	18 m	10 m	10 m	10 m	26 m
Overall width:	22 m	10 m	10 m	10 m	29 m
Sea Water depth:	69 m	47 m	53 m	55 m	70 m

- **Ida B, Ika B** jackets monopod type with wellhead modules

	Ida B	**Ika B**
Weight:	350 t	360 t
Height:	59 m	61 m

The jackets are structure with a main column (Monopod) having a diameter ranging from 1800 to 2200 mm) suitable to support an unmanned integrated deck and transferring the loads to three underwater sleeves through which the foundation piles are driven.
The monopod is connected to the sleeves with equilateral triangular trussed structure, with 24 m side in two horizontal plans. Grouting the annulus between the piles and the relevant sleeves makes the connection between the framed structure and the 60" foundation piles.
At the top of the monopod, a wellhead module is installed in order to allow drilling operations from a jack-up rig and subsequently the deck installation. The jacket is provided with one mini boat landing.

- **MARICA / KATARINA** process modules

Mainly unmanned, and temporary manned gas production platforms with all facilities for production management control either in normal and emergency conditions being monitored by means of telemetering system from IVANA A platform.

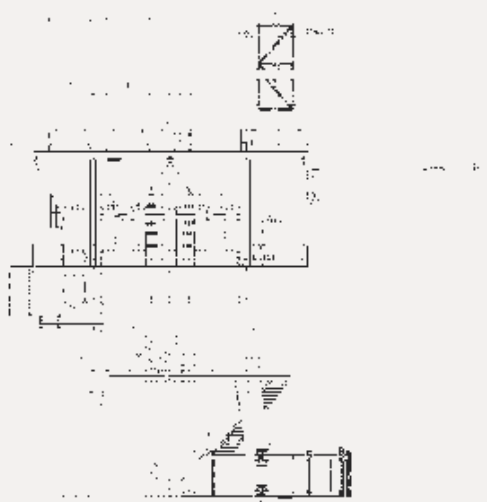
Process modules with living shelter incorporated on MARICA platform:

- Capacity of 6 persons for two weeks autonomy of living
- Helideck: Suitable for ICAO 3 type helicopter

- **IDA A, IDA B, IKA B** process modules

Unmanned gas production platforms with all facilities for production management control either in normal and emergency conditions being monitored by means of telemetring system from IVANA "A" through IKA "A" platform.

Steel Structures for Off-Shore Platform



Builder: **BRODOSPLIT - Naval and Special Vessel Shipyard Ltd.**
Name: **IVANA A, IVANA B, IVANA D**
Owner: INAgip
Delivered: October 1998 to November 2000

Clasification: Croatian Register of shipping / Croatia

IVANA A

Is a manned platform with all facilities for production management either in normal and emergency conditions with a telemetring system for monitoring all platforms within Ivana Gas Field.

Foundation piles:
4 pcs. x 144 m (*f* 1524 mm, thicknes 40-50mm)... 868 tons

IVANA B / IVANA D

Unmanned gas production platform with all facilities for production management control either in normal and emergency conditions being monitored by means of telemetring system from Ivana A platform.

IVANA B

Foundation piles:
3 pcs. x 148 m (*f* 1066,8 mm, thicknes 30-50mm)... 372 tons
Conductors:
4 pcs. x 104 m (*f* 508 mm, thicknes 25,4 mm)... 133 tons

IVANA D

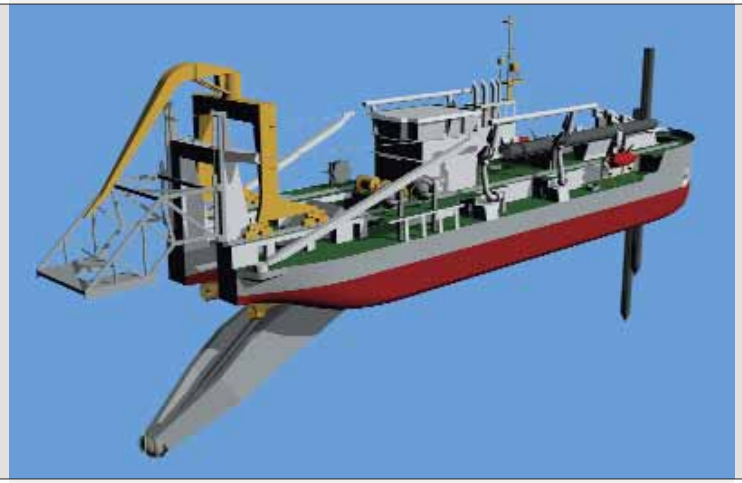
Foundation piles:
4 pcs. x 105 m (*f* 762 mm, thicknes 30mm)... 197 tons

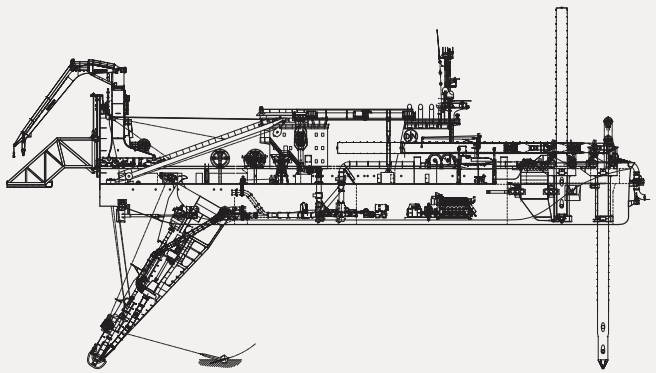
Conductors:
2 pcs. x 110 m (*f* 508 mm, thicknes 25,4 mm)... 35 tons

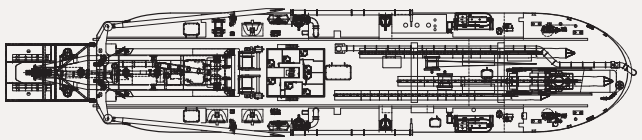
Pipe section for Jacket:
8 pcs - 45 m (*f* 2500/1800 mm, thicknes 25-60 mm)... 110 tons

Cutter Suction Dredger

Builder / Yard No.: **Shipyard ULJANIK** / 480, 481, 484, 485
Owner / Flag: DMM, Luxemburg







Classification:	Bureau Veritas 1 HULL MACH AUT-UMS Dredger Unrestricted Navigation CLEAN SHIP 7+

Length over all	138.50 m
Length btw perp.	110.50 m
Breadth moulded	26.00 m
Depth to maindeck, moulded	8.80 m
Depth to cranedeck, moulded	12.20 m
Draught design	5.50 m
Draught freeboard	5.90 m
Draught scantling	6.00 m
Deadweight at design draught	2,200 t
Deadweight at freeboard draugh	2,680 t
Dredging depth (with 60° angle of cutterladder)	35.0 m
Suction pipe diameter	900 mm
Discharge pipe diameter	900 mm

Main engine:
3 X MAN B & W Diesel A.G.; 6L48/60, 7,200 kW/500 RPM
Trial speed at 7,000 kW, on draught of 5.50 m 13.0 knots

Machinery installations

- 3 diesel driven main AC generator sets, each with a generator power of about 7,200 kW
- 1 diesel driven auxiliary AC generator set, with a generator power of about 1,670 kWe
- 1 diesel driven AC generator set for emergency service, with a generator power of about 250 kW
- 1 electrically driven cutter, with a power of 4,400 kW
- 1 electrically driven dredgepump on the cutterladder, with a power of 4,250 kW
- 2 electrically driven dredgepumps in the pumproom, each with a power of 5,000 kW
- 2 electrically driven side wire winches, each with a power of 550 kW
- 2 electrically driven ladder winches, each with a power of 550 kW
- 2 electrically driven propellers, each with a power of 3,500 kW

Capacities

Tank capacities (bunker tanks):

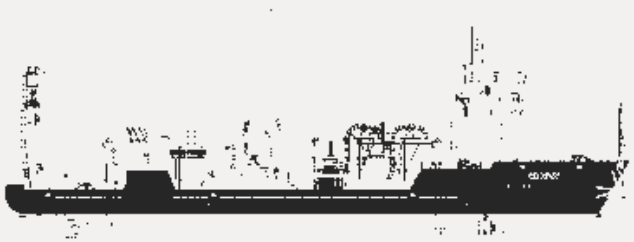
Heavy Fuel Oil	1,250 m^3
Diesel oil	150 m^3
Fresh water	220 m^3
Lubricating oil	50 m^3
Water ballast	920 m^3
Crew Complement:	46 persons

Type and fuction

The twin screw self-propelled cutter suction dredger capable of performing following functions:

a) Capable of dredging compacted sand, stiff clay, rock and similar soils.
b) Capable to dredge on spuds up to a dredging depth of 35.0 m, with the cuttershaft at an angle of 60° with the baseline, and vessel on even keel. The minimum dredging depth is about 6.5 m.
c) Capable to deliver the spoil either to two bargeloading systems (one PS, one SB) into barges, or through a swivel to a floating pipeline.
d) The dredger is equipped with three dredgepumps:
   - one singlewalled dredgepump, electrically driven, installed in the cutterladder.
   - two doublewalled dredgepumps, electrically driven, installed in the pumproom.
e) The dredger is equipped with three identical spuds:
   - one working spud, installed in the spudcarrier.
   - one auxiliary spud.
   - one spare spud.
   Spuds are hoisted/lowered by means of hydraulically driven winches.
   Spuds can be tilted by vessel's own means.
f) The dredger is equipped with an hydraulically moved spudcarrier, with a working stroke of 9 m.
g) A bargemooring system is installed, consisting of four mooring winches, with constant tensioning operation. The hull is reinforced to accommodate a fendering system.
h) An anchorboom installation is fitted for handling the side wire anchors.
i) The maximum "free cutting width" at a dredging depth of 6.5 m, and assuming original spoil level above the waterlevel and no talud, will be about 112.5 m.
j) The self-propelled vessel is a fully seaworthy ship, without any restrictions of sailing area.
k) Each of the twin fixed pitch propellers is driven by an electric motor with speed control by means of a frequency converter.
l) The vessel has an automated engine room, suitable for unattended operation, according to the requirements of Bureau Veritas AUT-UMS and the Authorities.
m) Control of the propulsion, steering installations from the wheelhouse. Dredging installation control for one-man operation from a central control position in the wheelhouse.
n) The main engines are suitable for running on Heavy Fuel Oil.
o) Air conditioned accommodation space above tweendeck level in the aftship and above maindeck level suitable to accommodate 46 persons.
p) One hydraulic travelling deckcrane, 2 x 350 kN.
   One 10 kN hydraulic store crane.

Shallow Draught Cable Layer



Builder / Yard No.:	**Shipyard VIKTOR LENAC** / 128
Name:	c/s **ARCOS**
Owner:	Bohlen & Doyen Group, Germany
Designed by:	VIK-SANDVIK AS, Norway
Flag:	German

Classification:	Germanischer Lloyd

Length over all:	86.00 m
Breadth moulded:	24.40 m
Depth moulded:	5.20 m
Operation draught:	2.90 m
Design draught:	3.30 m
Block coefficient:	0.84
Deadweight:	2,500 DWT
Speed:	12 knots
Bollard Pull:	55 tons
Accommodation:	42 persons
Cable tank capacity:	variable tanks, min.3 x 150 ton, plus 9 x 30ton tanks
Deck cargo capacitiy:	2,500 tons
Deck working area:	1,300 m^2
Deck load:	10/20/150/m^2 (8 Heavy load area)

Propulsion

Diesel gensets:	5 x Cummins KTA38DM-AEM
Instaled power:	4,466 kW
Bow propulsion:	Jastram 2 x 600 kW
Stern propulsion:	Schottel 2 x 1,250 kW

Tank Capacities

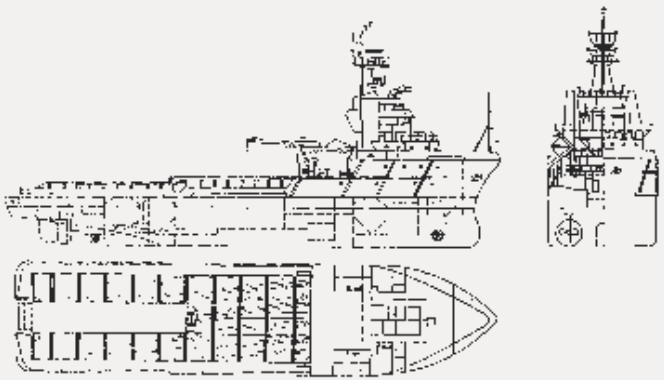
Diesel fuel oil:	approx. 1,050 cum
Lub oil:	approx. 10 cum
Fresh water:	approx. 480 cum
Ballast:	approx. 1,000 cum
Sewage:	approx. 25 cum

Basic functions

Cable installation, maintenance and repair in different water depth from very shallow landing areas to 5,000 metres.
Positioning system: DP2, 4 mooring winches and 2 spuds
Various cable laying equipment: LARS/ROV, Linear cable engines, 60 t A-frame, Plaugh, Cranes etc.

Anchor Handling, Towing Firefighting and Supply Vessel

Builder / Yard No.: **Shipyard TROGIR** / 186, 187, 188, 189
Name: m/s **BRODOSPAS-41**
Owner / Flag: Brodospas / Croatia
Designed by: Shipyard Trogir
Delivered: 1985, 1986



The "BRODOSPAS-41" is intended for various offshore duties and operations for instance: drilling rigs, towing and anchor handling, supply of rigs with fuel, water and other consumables, and firefighting. Two pairs of main engines driving via two gearboxes two CP propulsors and two shaft el. generators giving max. flexibility for different operation modes. CP propellers with turnable nozzles and one stern and one bow side tunnel type thrusters offer excellent manoeuvrability and easy joystick control under extremely rough weather conditions. Crew accommodation 10 single berth cabins and 4 double berth cabins each with private toilet space.
Passengers accommodation: 2 six berth cabins.

Classification:	LRS; W100 A1 UMS, Offshore TUG / Supply Ship
Length over all	66.80 m
Length btw perp.	57.00 m
Breadth moulded	14.60 m
Depth moulded	7.00 m
Draught design / scantling	5.00 m / 5.20 m
Deadweight, at draft 5.00 m	1,190 t
Deadweight, at draft 5.20 m	1,350 t
Gross tonnage	1,632

Main engines

four SEMT PIELSTICK	6PA6L280
MCR	4 x 1,590 kW/900 rpm
Trial speed, 92% MCR draft 5.00 m	16.2 knots
Bollard pull, static, 100% MCR	1,020 kN

Capacities

Cargo: Bulkcement tanks	170 m^3
Deckcargo	800 tons
Deckcargo area	420 m^2
Permitted deck load	5 tons/m^2
Drill/ballast water	688 m^3
Consumption DFO of M.E.	28.5 tons/24hours
Cruising Range, at 80% MCR	9,000 n.m.
Crew complement	14
Passengers:	12

Towing and anchor handling equipment:

- One winch of triple drum/twin chainwheel type, hydr. driven 1,800 kN
- Two winches of tugger type, hydr. driven, pull force 100 kN each
- One triple robe reel drum, hydr. driven, cap. 3 x 1,200 m/64 mm wire rope
- One wire/chain stopper of Karm Fork type, 4" chain
- Two towing pins (hooks) of cap. 250 kN, vert. hydr. operated
- One stern roller of 2,000 x 3,700 mm; max. shock load 3,500 kN
- One windlass of twin type, hydr. driven, 36 mm chain
- Two capstans of pulling force 60 kN each

Cargo Equipment

- Two F.O. transfer pumps cap. 120 m^3/h at 8 bar each
- Two drill water pumps and fire fighting, cap. 120 m^3/h at 8 bar each
- Two portable water pumps cap. 120 m^3/h at 8 bar each
- Two compressors for bulk cement transfer, cap. 14.5 m^3/h at 5.6 bar each
- One deck crane, slowing, telescopic, el. hydr. driven, 20 kN SWL, 10 m outreach

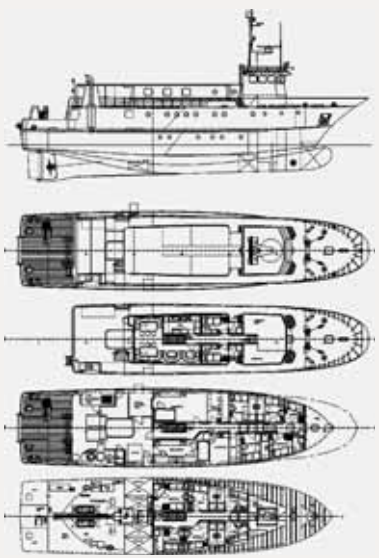
Firefighting equipment

- Two pumps cap. 1,200 m^3/h at 14 bar, el. mot. driven
- Two monitors cap. 20 m^3/min water or 10 m^3/min foam-water each, hydr. remote control
- One foam pump cap. 65 m^3/h at 16 bar
- One water spraying/self protection pump, cap. 400 m^3/h at 7.5 bar

Auxiliary plant

- Two shaft generators, 60 cycles, 1,300 kVA each
- Two el. gen. sets, 60 cycles, 650 kVA D.M. driven each
- One emergency, el. gen., 60 cycles, 110 kVA D.M. driven
- One boiler, oil fired, cap. 96-123 kW

Research Vessel



Builder / Yard No.: **BRODOSPLIT-Naval and special Vessel Shipyard Ltd.** / 513
Owner / Flag: Institute of Oceanography and Fisheries / Croatia
Delivery: 2008

Classification: Croatian Register of Shipping
* 100 A1 3 Research Vessel S, M1 AUT 3

Main Characteristics

Length, over all	36.60 m
Breadth	8.15 m
Depth	4.55 m
Draught	3.04 m
Gross tonnage	329 t

Accommodation

Explorers	17
Crew	7

Primary purpose of this ship is scientific research of sea, mostly in Adriatic Sea.
Ship is equipped for monitoring of sea bottom up to 1000 m depth.

Hull and superstructure are built of shipbuilding steel grade A, welded construction.

One main propulsion engine has been install, 954 kW, driving 5 blades CPP.

Passenger and crew accommodation are air-conditioned.

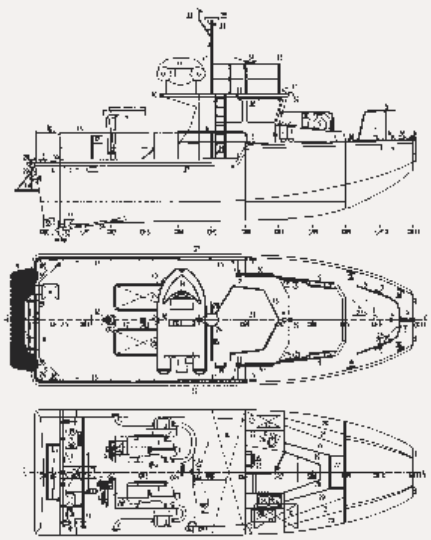
Electric power is provided from 2 diesel generators 1 x 125 kW and 1 x 80 kW.
Radio equipment includes VHFI/ DSC, VHF portable, AIS and NAVTEX.
Navigation equipment consists of: GPS compass, echo sounder, speed log, radar, auto-pilot.

Passenger accommodation includes 8 cabins for explorers and 5 cabins: Galley, mess and 3 scientific labs has been provided.

Oil Spil Recovery Craft

ECO-13

Builder / Yard No.: **Shipyard KRALJEVICA** / 539, 540, 541
Owner / Flag: Ministarstvo zaštite okoliša i prostornog uređenja / Croatia
Designed by: Shipyard Kraljevica / Brodarski Institut, Zagreb
Delivered: 2003, 2004



Main characteristics

Loa	13.10 m
B	4.40 m
Speed max	29 knots
Cruising range	300 Nm at 25 knots

Design Features

The arrangement is based upon a number of considerations including operational requirements, habitability, producibility, and access for personnel, and equipment maintenance. The aluminum hull is divided into five watertight compartments: fore peak, crew compartment, oil spill structural tank, machinery compartment and aft peak. The arrangement of the aft deck was primarily influenced by the housing and handling requirements for a deck crane, booms and skimmer. Location forward from the wheelhouse is used for the fitting of mooring and anchoring equipment. There is also a railing which facilitates easy transfer of boarding party to other craft.

The crew compartment situated in the hull is equipped with four berths, one locker, galley, toilet, shelves and emergency exit through a waterproof deck window. Access to the superstructure is through the athwarthship passage equipped with stairs. The superstructure contains a wheelhouse compartment situated on the port side and an saloon on the starboard. The enclosed wheelhouse bridge, includes full engines instrumentation and alarm, and communication, navigation and electrical equipment. Reverse sloped windows are fitted to reduce internal and external glare and maximize interior volume.

The machinery compartment houses main propulsion engines consisting of two Volvo TAMD 74 C EDC each developing 330 kW at 2600 rpm coupled via flexible couplings to the reverse reduction gearbox IRM 302V-LD equipped with trolling valves, two fuel tanks, hydraulic oil tank, firefighting pump, air compressor, dispersant system, heating unit, and other equipment. The electric system consist of a 24 V DC power generation and 12 V and 24 V DC power distribution systems and a 220 V AC, single phase, distribution system. All loads vital to the operation of the craft and safety of the crew are supplied from the DC power distribution system. The electric main switchboard and general-purpose batteries are located in the superstructure.

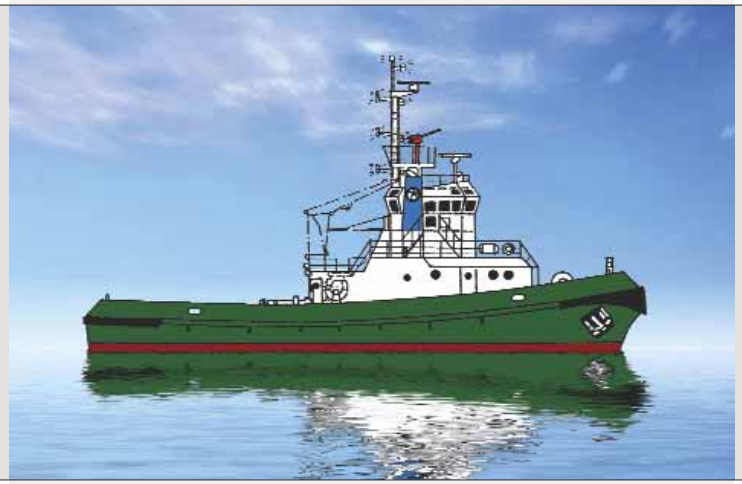
Special Equipment

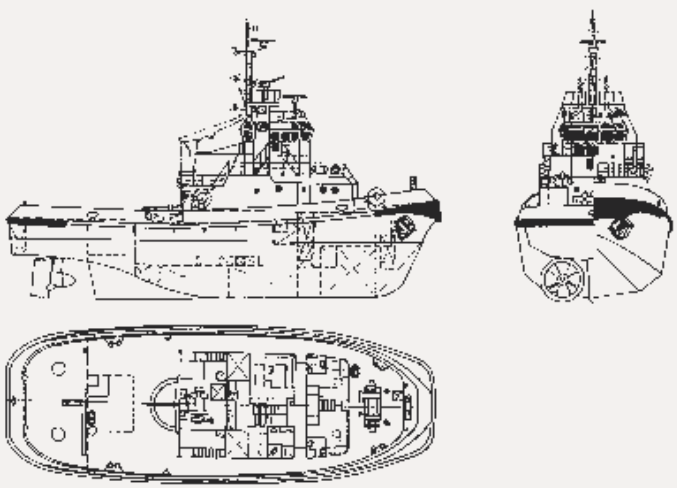
For the purpose of oil spill recovery, the ECO-13 is equipped with: free floating skimmer, oil spill temporary tank, deck crane, oil containment booms, air compressor and dispersant systems (3(. An oil skimmer equipped with a transfer pump is used to recover floating oil from or near the surface of water.

During the operation, skimmer is assisted with a deck crane to be within the sight of the operator that should be able to handle debris found at the spill site, such as plastic bags, aluminum cans, bottles, etc. Oil containment booms are primarily used to deflect oil to prevent that the oil slick hits sensitive areas and for containment of oil for later recovery by a skimmer. The standard ECO-13 booms package include 200 meters of inflatable booms or 400 meters of foam filled buoyancy chamber booms. The oil recovered by the skimmer is pumped into a temporary storage tank. In the case when the temporary tank onboard the ECO-13 is critically, it is suitable to use a floating flexible towable storage tank or other vessels such as barges, small tankers etc. In order to increase the efficiency of storage tank capacity, recovered water can easily be decanted from the storage tank, to be discharged in front of the sweep. In this way, any oil in the decanted water will be recovered again. For removing oil from the sea surface, particularly when mechanical recovery by skimmer is not possible, the ECO-13 is equipped with a spraying dispersant system. The system is equipped with a separate water pump and a dispersant tank and applies a dispersant diluted with water. In order to minimize losses due to wind drift, spraying nozzles are positioned on portable outboard booms situated near the sea surface in working condition. For firefighting purposes the ECO-13 standard equipment includes a firefighting monitor situated on the superstructure deck. Other ECO-13 special equipment, such as debris recovery system could be tailored on customers request.

Multipurpose Towing, Supply and Firefighting Vessel

2,900 kW





Builder / Yard No.: **Shipyard TROGIR** / 197, 198
Owner / Flag: Brodospas, Split / Croatia
Designed by: Shipyard Trogir
Delivered: 1989

The twin screw vessel is intended for various offshore duties and operations such as: long distance towing, harbour assistance, supply of rigs and fire fighting. Each main engine drives one rateable 4-bladed CP propeller in nozzle and one firefighting pump of 300 m³/h cap. via front side power take off coupling. Steel hull with double knuckle form, flat stern, centerline skeg, plate thickness increased 0.5-3.0 mm above class rule requirements is welded throughout.

Classification:	CRS; 100 A1 M1-2-A1-VT
Length over all	30.50 m
Length btw perp	25.40 m
Breadth moulded / max.	10.70 m/11.20 m
Depth moulded	5.30 m
Draught, midship	4.05 m
Draught, aft, max.	4.40 m
Deadweight, at draught 4.05 m	180 tons
Main engine:	2 x Jugoturbina - Pielstick PA 6, MCR 2 x 1,450 kW/900 rpm
Trial speed, at 96.5% MCR and draught of 4.05 m	12.6 knots
Bollard pull, static, 100% MCR	520 kN

Capacities

Diesel fuel oil	abt. 164 m³
Lubrication oil	abt. 2 m³
Potable Water	abt. 73 m³
Foam	abt. 12 m³
Ballast tanks	abt. 35 m³
Segregated water ballast, total:	abt. 15,500 m³
Cruising Range at speed	11.7
knots and 150 tons DFO:	abt. 2,800 n.m
Crew complement	10

Deck Equipment

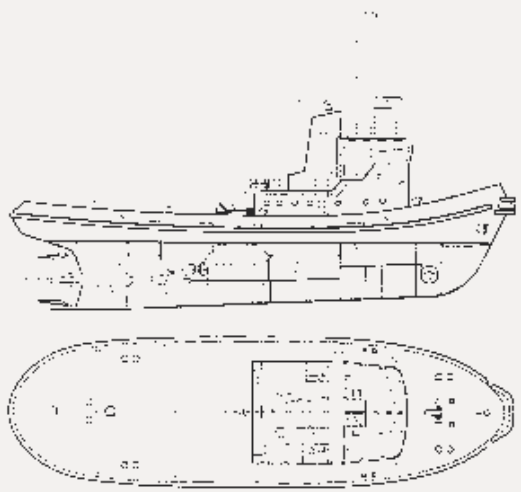
- 1 deck crane of 30/1 kN SWL at 4.5/8.5 m outreach
- 1 comb. windlass - towing drum winch; 80 m dia 96 mm synth. rope, break force 1,000 kN
- 1 capstan aft of 30 kN TWL
- 1 automatic towing winch with drum cap. 250 m dia 44 mm steel wire rope, breakforce (1 st layer) 1,000 kN with remote and local control
- 1 towing hook 600 kN SWL, remote release
- 2 water/foam monitors

Auxiliary plant

- Two el. gen. sets, 140 kVA D.M. driven each
- Two fire fighting pumps, 300 m³/h - 14 bar driven by M.E. each.

Multipurpose Towing, Supply and Firefighting Vessel

2.220 kW



Builder:	**Shipyard KRALJEVICA**
Owner / Flag:	JADRANSKI POMORSKI SERVIS Rijeka / Croatia
Yard No. 436	POLLUX
Yard No. 475	VENUS
Delivered:	1984 / 1988

Classification: HR 100 A 1 M 1 TUG BOAT

Main characteristics

Length over all:	29.85 m
Length btw.perp.	25.65 m
Breadth moulded:	8.00 m
Depth moulded:	4.10 m
Draught, midship	2.45 m
Draught, max.	3.95 m
Engine power:	2,200 KW; at 900 RPM
Type of main engine:	SULZER 12 ASV 25 D
Trial speed at 90 % MCR	13.00 kn
Bollard pull, static, 100% MCR 350 kN	
GT	195
NT	58.38
Crew Complement	10 persons

Capacities

Provisions:	
- Diesel fuel oil	70 t
- Fresh water	20 t
- Miscellaneous	8 t
- Lubrication oil	2.5 t

- 4-bladed CP propeller in nozzle.
- One firefighting pump capacity 120 cu.m./h via front side power take off coupling.
- One bow thruster BRUNVOLL type power 170 KW at 900 RPM.
- Two diesel generator of 50 KW A.C. 3x380 V, 50 Hz, driven each abt. 70 KW and 1500 RPM.
- One port generator of 20 KW power of diesel motor 30 KW at 1500 RPM.
- The vessel has a very good maneouvring property, thanks to CP propeller in an active Kort nozzle, and to a strong bow thruster.

The single screw vessel is intended for various off-shore duties and operations such as: long distance towing, harbour assistance, supply of rigs and fire fighting.

For this purpose, the vessel is equipped with a 50 t self-releasing towing hook, having a constant pulling force of 36 t.