ASC

AZERBAIJAN
CASPIAN SHIPPING
COMPANY

AKADEMIK TOFIG ISMAYILOV

VESSEL SPECIFICATIONS

ISO

ABS
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Vessel Specifications

General Data

Type	**Diving Support Vessel**
Year built / builder	**1989, "Valmetin Layvateollisuus", Turku, Finland**
Class	**(RMRS) KM ✪ R2 AUT 2 DYNPOS-2 (Dive Support & Multi-Purpose Vessel)**
Flag	**Azerbaijan**
Port of registry	**Baku**
Call sign	**4JIZ**
IMO number	**8521048**

Dimensions

Length Overall	**91.80 m**
Length between PP	**85.00 m**
Moulded depth	**7.20 m**
Moulded breadth	**17.00 m**
Minimum draft	**3.50 m (for transit purpose only)**
Maximum draft	**5.154 m (Caspian Sea S.G. 1.012)**
Freeboard	**1.718 m**
Gross Tonnage	**4298 RT**
Nett tonnage	**1289 NT**
Deadweight	**1284 t**

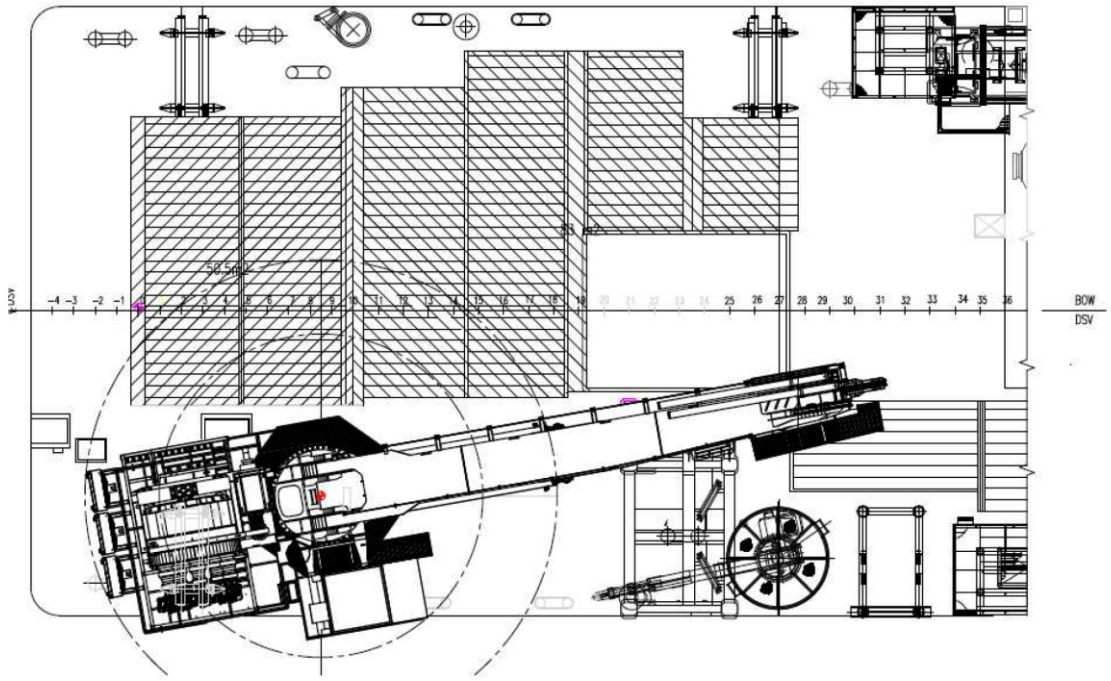
Tank Capacities

Fresh Water	**272 t**
Fuel Oil	**718 m³**
Lub Oil	**28 m³**
Ballast Water	**455 m³**
Interring tank	**580 m³**
Sewage	**16 m³**
Sludge	**13 m³**
Bilge	**13 m³**
Waste oil	**16 m³**

Deck Capacities

Free deck space	**133.4 m²**
Deck load – aft of frame 10 1.25 t/m² total area	**50.5 m²**
Deck load – from frame 20 to frame 27 3.75 t/m² total area	**83 m²**
Deck capacities after ROV platforms installation:	
Deck load – aft of frame 10 1.25 t/m² total area	**50.5 m²**
Deck load – from frame 10 to frame 27, 3.75 t/m² total area	**11 m²**

Vessel Specifications



Main Propulsion & Auxiliaries

4 x Wartsila Main Engines, V asa 12-12 22 HF-C,	**1770 kW (each)**
4 x Alternators driven b y Main Engines, Stomberg,	1779 kW (2135 kVA)
1 x harbor generator, Volvo Penta WCM 361/5,	**451 kW**
1 x Emergency generator, Volvo Penta WCM 345/5E,	**432 kW**
1 x Diving Generator, Volvo Penta WCM 345/5E,	**432 kW**
3 x CPP Tunnel thrusters, KaMeWa TT 2000FE/BMS-CP,	**850 kW (each)**
2 x 360 deg Azimuth Thrusters, Wartsila LCT Fixed pitch propeller	**1500 kW (each)**

Consumption & Endurance

Maximum speed	**12 knots**
Fuel consumption in port	**4 m³/day**
Fuel consumption in transit, economical speed	**15 m³/day**
Fuel consumption in transit maximum speed	**17 m³/day**
Average fuel consumption on DP	**12 m³/day**
Fresh water consumption (average on DP)	**25 t/day**
Fresh water production	**30 t/day**
Endurance DP operation	**30 days**

Navigation Equipment

2 x Gyro, Sperry Marine, Anschutz STD 22 type (Forward and aft bridge)
1 x X band radar, Furuno, FR 2115 type (Forward bridge)
1 x S Band radar, Raytheon Anschutz, NSC25TFT type, (Forward Bridge)
1 x X band radar, Furuno, MU 231-CR type (Aft Bridge)
1 x Echo sounder, Furuno, FE700 type (Forward Bridge)
1 x Echo sounder repeater, Furuno, FE 720 type (Aft Bridge)
1 x Speed log, Furuno, DS 80 type, (Forward Bridge)
1 x Speed log repeater, Furuno, DS 830 type (Aft Bridge)
1 x Magnetic compass, Cassens & Plath (Top deck)
1 x Magnetic compass repeater, Cassens & Plath (Forward Steering console)
1 x A.I.S. Furuno, FA 100 type (Forward Bridge)
1 x Weather fax, Furuno, 208 type (Chart table)
1 x GPS, Furuno, GP 80 (Chart table)
1 x Navtex, Furuno, NX 500 type (Chart table)
1 x Auto pilot, Robertson, AP 9 MK 3 type (Forward Steering Console)

Communication Equipment

GMDSS console, Furuno, RC 500 type, GMDSS Station Fwd Bridge
Main transceiver, Furuno, FS 1562-25 MF/HF type, GMDSS Station Fwd. Bridge
Emergency transceiver, Furuno, DSC 60 MF/HF DSC, GMDSS Station Fwd. Bridge
Radio Telex, Furuno, Telex DP 6 type, GMDSS Station Fwd. Bridge

Vessel Specifications

Lifesaving Appliances	
Davit Launched Life rafts	**2 x 39 Persons capacity**
Life raft	**1 x 16 Persons capacity**
Life Boats	**2 x 68 persons capacity**
Fast Rescue Craft	**1 x 6 persons capacity**
Life Jackets	**243**
Immersion suits	**144**
Lifebuoys with safety lines	**8**
Lifebuoys with lights	**5**
Lifebuoys with light/smoke floats	**2**
Rocket parachutes flares	**28**
Rocket line throwing apparatus	**4**
Survival craft portable radios	**6**
EPIRBS	**2**
SART	**5**
SPHL	**1 x 16 persons capacity**

Lifeboats Specification

Lifeboats, Waterman maker, 68 man each,
9.35 m x 3.26 m x 1.22 m, 25.72 m³
Lifeboat engine, SABB, 2 JHR, 30bhp 1900 rpm.
Lifeboat davit, Schat Davit, 16 EABR,
Lifeboat davit winch, Schat Davit, 2-38-10, SWL 104 kN
Lifeboat davit winch motor, MEZ, XVF160M04, 11 Kw,
3 phase, 660 V, 50 Hz 1445 rpm, 12 A

Life Rafts Specification

Life-raft, Viking, 39DKFS, 39 Persons x 2
Life-raft, Viking, 16DKFS, 16 Persons x 1
Life-raft Davit, Ned-Deck Marine B.V, SCM33 4,0 L QR,
SWL 33 kN

Fast Rescue Craft Specification

Stinger 630 Jet Fast Rescue Boat (Buck/Steyr SE236E40)
Material – Glass Fibre Reinforced laminate
Orange Hull and super structure
Powered by BUKH / STEYR 236 HP engine
Capacity 6 persons (82.5 kg)
Speed 34 Kn with 3 persons, 32 knots with 6 persons
Fuel tank capacity 129 ltrs

Fire Fighting Equipment & Systems

Fire Main Systems:

Engine room portside fwd: Main fire pump #1, Iron pumps A/S, QVK 6/300, Test 12bar, Q-160 m³/h, p51.30kw, 8 bar, 2970r/m. pump motor #1: Bevi, 2D 250 M1-2, 3 Iron pumps A/S 80 V, 95.9 A, 55 kw, 2965 rpm.
Sewage treatment room: Emergency fire pump, QVK 6/300, Test 12 bar, Q-160 m³/h, p51.30 kw 8bar, 2970 r/m; motor: Bevi, 2D 250 M1-2, 380 v, 95.9 A, 55 kw, 2965 rpm
Fire hydrants, Russian, 41 with Russian couplings
Fire hoses, Russian, 2 inch diameter, 41 x 25m x 2" with Russian couplings.
Fire nozzles, Russian, Jet spray 2 inch Russian couplings

CO 2 Smothering System NO1	
Paint Locker, 35m³	**1 x CO2 cylinder size 45.5 kG**
Boiler Room 105 m³	**2 x CO2 cylinder size 45.5 kG**
Emergency generator room 150 m³	**3 x CO2 cylinder size 45.5 kG**
Cargo hold 352 m³	**5 x CO2 cylinder size 45.5 kG**
Azimuth Thruster Room, 390 m³	**5 x CO2 cylinder size 45.5 kG**
Fire pump room, 350 m³	**5 x CO2 cylinder size 45.5 kG**
Chamber equipment and Kelly room, 1550 m³	**19 x CO2 cylinder size 45.5 kG**
Engine room and ECR, 2350 m³	**37 x CO2 cylinder size 45.5kG**

CO 2 Smothering System NO2	
Forecastle store, 350 m³-	**5 x CO2 cylinder size 45.5 kG**
Bow Thrusters room 1, 2, 3, 16 m³ + 55 m³	**1 x CO2 cylinder size 45.5 kG**

CO 2 Smothering System NO3	
Galley Exhaust Ducting, 1.14 m³	**1 x CO2 cylinder size 5 kG**

CO 2 Smothering System NO4	
PS and SB Funnel Casing	**1 x CO2 cylinder size 80.3 kG**

Summary of Fire Fighting Appliances Onboard	
Helideck foam monitors	**3**
Fire Extinguishers 50kg Dry powder (Wheel trolley)	**3**
Fire Extinguishers Dry powder 6 kq	**45**
Fire Extinguishers 5kg Co2	**88**
Fire Extinguishers 9ltr Foam	**30**
Fireman's Outfits	**6**
Self Contained Breathing Apparatus – 30min sets	**17**
Emergency Fire Pump	**1**
Fire Pump 160m³/kg 5bar	**2**
International Shore connection	**1**
Fire Hoses with spray/jet nozzles	**42**
Fire Hydrants	**42**
Portable foam branch and educator	**7**
Fire Blanket	**8**
45Kg Foam Extinguishers	**1**
10 Gallon Foam Extinguisher	**2**
Co2 Extinguisher 20 kq	**1**
Emergency Escape Breathing Device (EEBD)	**24**
Fire Extinguisher 135 ltr Foam (Wheel Trolley)	**1**

Water Fog System

The vessel also has an additional fixed fire extinguishing system. The HI FOG system works on the principal of delivering a high pressure atomised water mist, which extinguishes and provides a high degree of cooling.
This has the added advantages of allowing personnel to remain in the space, and also does not present the risk of equipment damage associated with sprinkler systems. There are discharge nozzles situated over the purifiers and main engines and also in the boiler room. The system consists of a pressurised fresh water tank and upon activation a displacement pump capable of delivering 6 m³/Hr cuts in to maintain the discharge pressure at the heads.

Accommodation

POB max	**104 plus 12 divers in a sat system**
As per minimum manning	**16 crew member**
Marine crew for normal operation	**22 crew member**

There are 13 single, 34 double and 6 four man cabins on board. Hospital, Gymnasium, Mess Room, Conference room, TV room, 1 x client office for 2 people, 1 subcontractor office for 6 people and 1 ship office for 4 people.

Deck Cranes

Sormec Crane

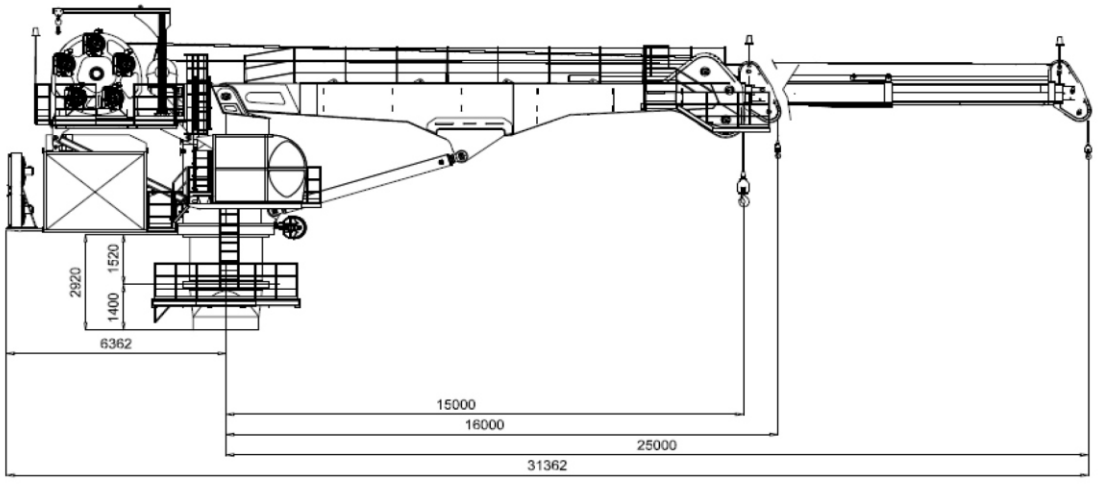
The Sormec crane, model M1600/2S, is a particular crane with a special boom composed with a fix boom part and a telescopic one. Main fixed part of the boom that will guide the main winch its maximum outreach in horizontal position will be of 15 meters. The secondary arm, attached to the main one, with two hydraulic extensions, 5 meters each, will guide the auxiliary winch up to 25 meters outreach.
The crane is designed to work in different sea conditions and certified as man riding.

Main Technical Data

POB max	**104 plus 12 divers in a sat system**
As per minimum manning	**16 crew member**
Marine crew for normal operation	**22 crew member**

Main winch	SWL (t)	R (m)	Dynamic Factor
Harbour condition	50	15	1.15
Offshore	44	15	1.3
Subsea condition	33	15	1.7

Aux.winch (man riding)	SWL (t)	R (m)	Dynamic Factor
Harbour condition	10	25	1.15
Offshore	9	25	1.3
Subsea condition	7	25	1.7



Effer Crane

The auxiliary EFFER knuckle jib crane with a nominal safe working load of 2.0 tonnes is located on the starboard side of the main deck and has subsea capability to 250 metres. This crane is not rated as man riding.

Main Technical Data

Crane model	Effer 65000-3SL
Lifting capacity and working radius	2 tonnes Max 12.23 m, Min 5.93 m
Operating limit	70 heel and 40 trim
Hoist wire specification	12 mm diameter x 300 metres non rotating
Hoist speed	17 – 23 metres / min
Maximum water depth main hoist	Telescopic IN - 270 metres; Telescopic OUT - 265 metres

Pipe Handling Davits

The vessel can be fitted with four REMACUT designed pipe handling davits. Two davits are located along the starboard side other two can be installed on the aft port side and starboard side of the main deck. Each davit has a 20 tonne maximum safe working load. The system consists of a hydraulically activated tilting boom hinged at the bottom, with a hydraulically driven winch drum. These are designed for sub-sea handling of long spools, which would otherwise be unmanageable using the main crane alone.

The drive system is provided with hydraulic motors consisting of a SAMHYRAULIC H1C 55 hydraulic motor, BREVINI gearbox and a pinion installed on the gearbox output shaft, to interface and drive the drum bull gear.
The main drum has 340mts x 34mm of wire with terminating socket and rotating hook.

Mooring and Anchoring

Anchor Winches

There are two Hydraulic Brattvaag model SL50 Anchor winches mounted on the Forecastle, each consisting of:

- Wire drum
- One de-clutch able mooring drum 600mm x 1850mm x 1100mm
- Hand operated coupling and mechanical spooling
- Wire capacity: 1450mtrs x 42mm diameter wire
- One warping end 400mm x 450mm

The Drive system consists of two hydraulic motors Type MG2202 each with control valves giving the winch a range of 3 speeds, depending on the amount of load. Within each speed range the hoisting speed is infinitely controllable from zero to maximum by the control lever. The brake holding load on first wire layer is 100 tones. The vessel is fitted with two high holding power 4 tons Delta Flipper anchors each with 1500mts x 42mm of wire. Both anchors are housed on external anchor racks, located below swivel head fairleads. The nominal holding power of the anchors is 70 tones.

Anchor Winch Performance

First layer when powered by	One pump G18/450	Two Pumps G18/450	Emergency Pump
50t at a speed of	0-13 m/min	0-28 m/min	0-1,2 m/min
25t at a speed of	0-20 m/min	0-42 m/min	0-2,2 m/min
7t at a speed of	0-40 m/min	0-84 m/min	0-5,3 m/min
Slack wire	0-42 m/min	0-86 m/min	0-5,4 m/min
Lowering	0-44 m/min	0-44 m/min	0-5,6 m/min

Deck Capstan

2 Hydraulic Brattvaag capstans are provided at each quarter. type CM4185 cast iron, with warping heads of 450 mm x 450 mm. The motors are M4185/F48 adjusted to 25 bar powered by 1 to 3 pumps type G18/450 A hauling tension of 6 tones is provided, with hauling speeds of 0-18 meters / min.
Mooring of the vessel in port is with polypropylene multi-plait ropes. No wire rope moorings are used.

Ballast System

The dedicated ballast pump can be operated locally at the pump and remotely from the Engine Control Room.

Active roll compensation system:

The vessel is equipped with an Interring system. The system reduces the vessels rolling motion when on station, and thus assisting in position keeping, crane operations, and general project activities.
The system consists of two sets of tanks, A and B – subdivided into 5 individual water tanks – and two air compressors.
The tanks are filled with Fresh water as it is never expected to discharge this water.
The tanks are designated as follows:

- Tank A: Tank No. 215
- Tank B: Tanks 210 / 211 and Tanks 212 / 213

The combined Interring Stabiliser and Anti Heeling system provides the vessel with automatic list correction for fast and undisturbed loading/unloading operations in port and for comfortable roll behaviour at sea.
At sea, the system works as an automatically controlled tank stabiliser on an advantageous energetically principle. The sea state causes the vessel to roll. This roll motion is used to cause an oscillatory athwart ships movement of water in a U shaped tank system and thus a reduction in the roll.

Due to the design of the tanks and the automatic control which keeps the water cyclically blocked by the motion of the ship, the athwart ships movement of the tank water is always tuned to counteract and reduce the roll. Thus the sea state, in making the vessel roll, delivers the necessary energy to reduce the roll. Two modes of roll compensation are provided - a passive mode for short period motion and an active mode for roll periods longer than the natural period.
Note: The use of the Interring system for anti-heeling at sea must be in accordance with the requirements of the relevant section of the ships approved trim and stability manual.

DP System

The DSV is equipped with a Marine Technologies MT Bridgemate Duplex System Mandeville, Louisiana 70471 USA Class 2 redundant dynamic positioning system. The vessel is Dynamic Positioning Class 2.

The position reference systems include:

Two Bandak Mk 14B lightweight taut wires.
Two Simrad HiPAP hydro acoustic reference systems.
Two independent DGPS references.
A Fanbeam Mk 5
RadaScan (Not integrated to DP system)
CyScan
There are three gyros compasses, three MRU's and two wind sensors.

Helideck

Capacity	D = 17
	WT = 7.0 t

The Helideck overall dimension is 17 metres (standard D value). The Helideck is equipped with a fixed foam extinguishing system which includes one remote operated stationary foam monitor and two hand operated fire monitors which service the helideck monkey island area. The foam storage tank has a capacity of 1000 litres. The command post is aft of the helideck, and the following equipment is provided:

- Controls for helideck lighting
- Non-directional aero beacon

Specific Vessel Characteristics

The Akademik Tofig Ismayilov is equipped with a dynamic positioning DP2 system that keeps it at a predetermined position, the accuracy of the system during diving operation is < 7m in sea state 5.
She is multi-purpose vessel, offering the following services:

- Saturation dive support capable of supporting divers up to 230m water depth
- Air dive support for shallow dive work
- Subsea construction
- ROV support

Split Level 12 Man Saturation Dive System:

Saturation decompression chambers comprises of a two chamber arrangement, one triple lock chamber and 1 single lock (DDC1 and DDC2) and the diving bell.

The bell passes through the moon pool which is situated in the after part of the diving area amidships on the centre line of the vessel. The complex has the facility for twelve divers under compression at any one time.
Hyperbaric rescue facilities are provide to evacuate two teams of six divers at differing pressure levels. The bell is handled by an overhead trolley arrangement and deployed through the moon pool. The operating system is designed to handle the bell up to a maximum heave of 3 meters.
The diving bell has a volume of 6 m^3, and is capable of supporting 3 divers. The bell is launched through the moon pool in the bell hanger on the main deck and was made by Norson Power. The launching arrangement is wave damped.

The main bell wire winch is capable of raising the combined mass of the Bell and the cursor in air, lowering them both through the moon pool, leaving the cursor on the stops at the bottom of the cursor rails, deploying and recovering the Bell to and from a maximum depth of 230 MSW, with a wire length of 350 metres.
The self-propelled hyperbaric lifeboat (SPHL) is provided to evacuate the divers under pressure from the deck decompression chambers (DDCs) and maintain all life support functions for twelve divers for 72 hours duration.

The SPHL contains a twin lock decompression chamber which is connected to DDC1 and DDC2 by two transfer trunks. The divers can simultaneously transfer into the SPHL when the decompression chambers are held at different pressure levels. The HRV is launched over the port side of the vessel. The SPHL Chamber can be utilised to decompress the divers, after being recovered onboard a dive vessel or any other vessel carrying a custom built life support package

The SPHL launch system consists of two Davit arms, operated by hydraulic cylinders. A hydraulic winch, mating clamp drives, and a control console are used for launch and recovery when electric power is available from the ships services to supply the hydraulic power pack. A set of accumulators provide the power to the clamps, lifting ram davit cylinders and winch brake release for emergency release. The lifeboat can then be gravity lowered controlled from within the lifeboat. Manual lowering is achieved by means of the control box at the side of the Davit arm to raise the lifeboat from the cradle, extend the davit arms and gravity lower using the centrifugal brake.

Air Dive System:

The Air dive station is a Remacut Hydraulic Gantry System on the Starboard side amidships and consists of two dive baskets one primary and one emergency. When not in use the station is sealed by closing the McGregor watertight door.
The Air Dive Decompression Chamber is located on the Main Deck.
It is a 2 diver, twin lock, with a working depth of up to 100 MSW.
All life support equipment including Medical locks are fitted as standard
In order to reduce the amount of used helium, the vessel is equipped with a gas reclaim system. There are two systems in operation one for the DDC and the other for the divers whilst working on the seabed.

ROV Services:

ROV services on the vessel are provided by "Contractors". The ROV spread is not a permanent part of the vessel, and the vehicle and associated launch and recovery systems, control systems, etc. can be changed during the working life of the vessel.

Machinery, Propulsion & Power Distribution:

The vessel is fitted with a diesel electric propulsion system. The 660 V main switchboard is powered by four diesel generators and comprises of six bus bars segregated by six bus tie breakers allowing various switchboard configurations. In addition to the main 660 V switchboard the vessel is fitted with a 380 V Diving switchboard, a 380 V switchboard, a 220 V switchboard and the 380 V and 220 V emergency switchboards.

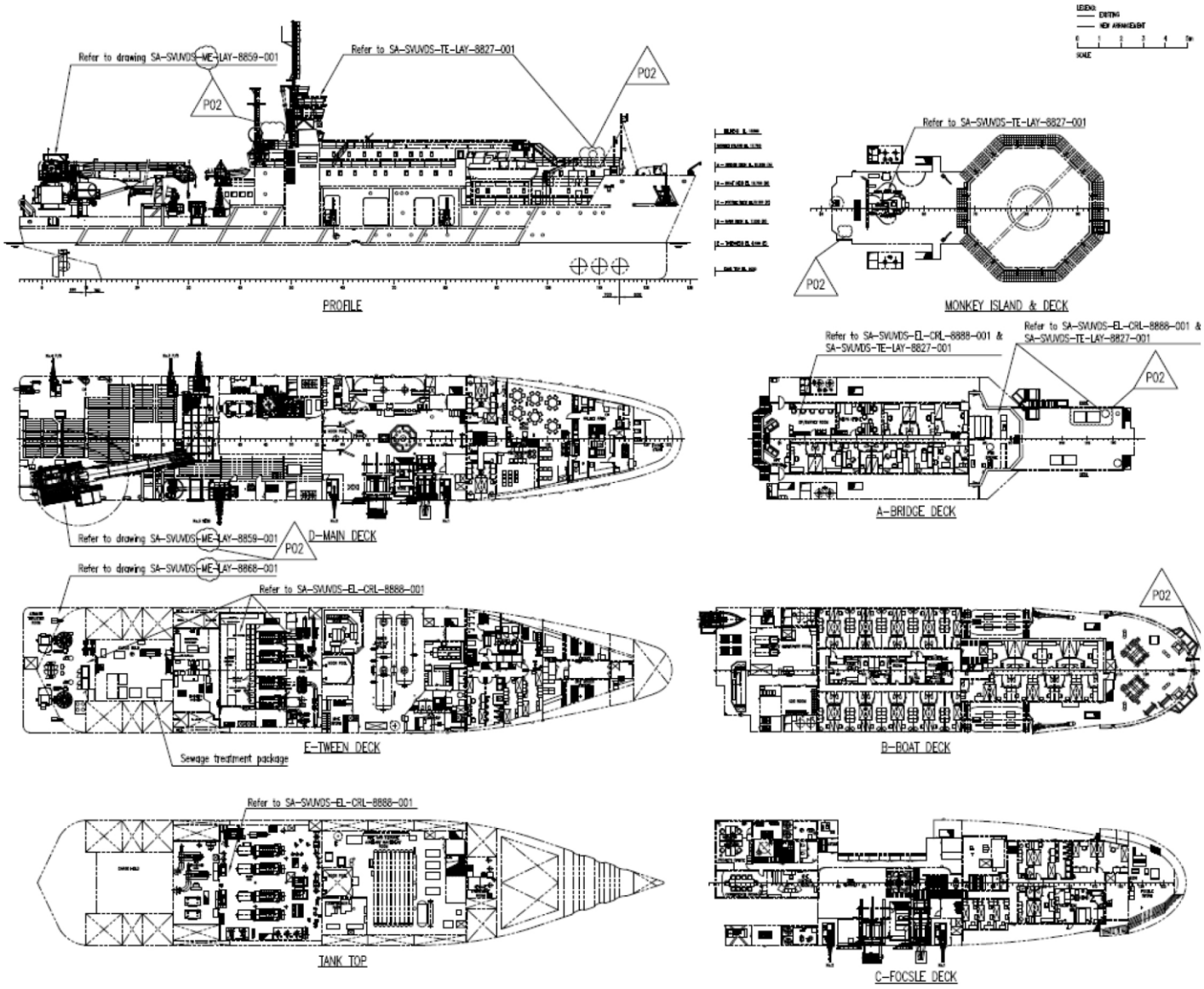
The vessel is equipped with a common Engine Room and an Engine Control Room. The Engine Room comprises of two levels, being E and F deck, were F is the lowest level, (tank top)

The diesel generators and auxiliary systems such as the pumps, separators and harbour generator are located on the tank top. The ECR, fuel oil service tanks, seawater / fresh water coolers and air compressors are located on the upper level (E deck).

A vessel management system (VMS) fitted onboard includes the PMS (power management system) which is installed in the Engine Control Room. Also within the Engine Control Room is the main switchboard, the control desk, including 3 computer based operator stations and three PLC cabinets with interfaces to engines, pumps, transmitters etc. These are powered by independent UPS's.

The main engines are Wärtsilä 12V22HF-C, each driving a 1770 kW (2135kVA) Stromberg alternator. The vessel has three KaMeWa thrusters and two Wärtsila LCT type steerable thrusters; three bow tunnels are pitch thrusters and two stern are fixed pitch azimuth thrusters.

The bow thrusters are type TT 2000F with an output of 858 kW. The azimuth thrusters are type LCT with an output of 1500 kW. All five thruster drive motors are fed from the 660 V switchboard. All thrusters are selectable in the DP control system.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Sewage treatment package
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P02
B-BOAT DECK
Refer to SA-SVUVDS-EL-CRL-8888-001
TANK TOP
C-FOCSLE DECK

Address: Mikayil Useynov street 2, AZ 1003, Baku, Azerbaijan Republic
Phone: (+99412) 404 37 00 | **Fax:** (+99412) 404 38 00
Email: projects@asco.az | **Web:** www.asco.az

Direct Contacts:
Phone: (+99412) 404 37 15; (+99412) 404 37 40