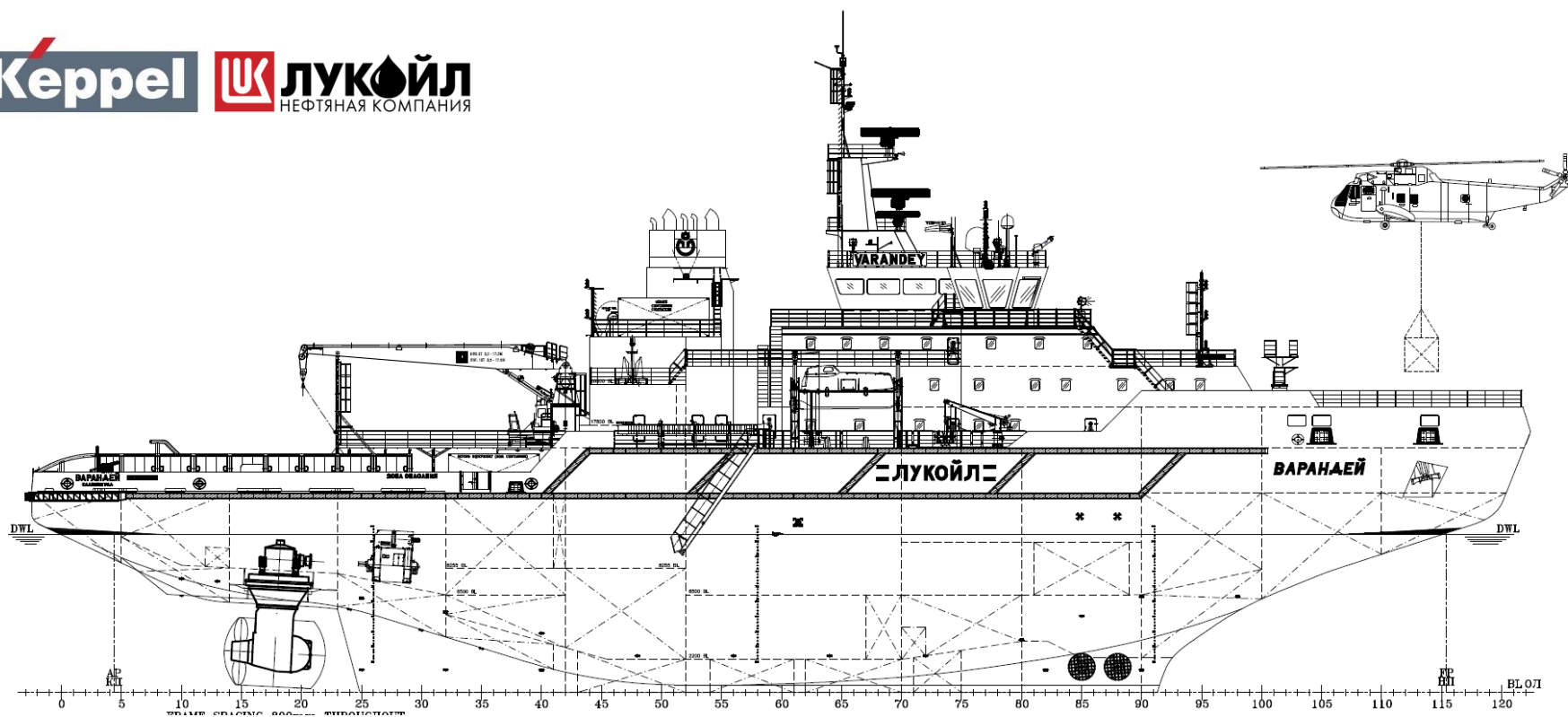


Arctic Offshore Icebreaker "Varandey"

Varandey is an Arctic offshore icebreaker owned by Lukoil Kaliningrad. It is the larger of the two multipurpose vessels ILS designed to assist tanker traffic at the Arctic oil terminal in Varandey, in the Pechora Sea. In addition to icebreaking and ice management, *Varandey* and his partner take care of the transportation of the terminal's equipment and personnel, and operate in the terminal area for fire-fighting, oil and chemical recovery, and rescue and emergency towing readiness.

Varandey is a very strong ship: propelled by a total of 16.8 MW of propulsion power, it is able to break a 1.7 meter solid ice with a 20 cm layer of snow on top. The hull shape of the vessel, together with Steerprop's azimuthing thrusters, guarantees the vessel good maneuverability in the ice, which is of paramount importance in assisting other vessels. Azimuthing thrusters are also important to *Varandey's* ability to perform ice management and dismantle the huge ice formations that are typical of the area.

Varandey, built by Singapore-based shipyard Keppel, is the first ever icebreaker built in Asia.



Class notation

RMRS KM ★ LL7 [2] A1 Icebreaker Tug

Flag

Russian Federation

Operational profile

Icebreaking
Ice management
Fire fighting
Search and rescue
Emergency towing
Oil & chemical recovery
Offshore supply
Personnel transport

ILS Commissions

Conceptual + contract design
Basic design
Model tests
Full scale ice trials

MAIN CHARACTERISTICS

Principal dimensions

Length oa	100.0 m
Breadth mld	21.7 m
Depth mld	13.3 m
Draft max	10.5 m
Deadweight	4 463 t
GT	7 338 t

Crew complement

28 persons

Performance

Service speed	15.0 kn
Icebreaking capability	3 kn / 1.7 m level ice + 20 cm snow cover
Operation conditions	+30°C to -40°C
Type of fuel	Heavy fuel oil & diesel fuel oil

Propulsion System

Main generator engines	4 x Wärtsilä 12V32, 5 760 kW @ 720 rpm
Main alternators	4 x 6 500 kVA @ 720 rpm, 6 600 V / 60 Hz
Propulsion motor	2 x 8 400kW, 0-660 rpm
Auxiliary generator	1 x Volvo D49A MS, 936 ekW, 440V/3ph/60Hz
Emergency generator	x Volvo D12-Aux, 320 ekW, 440V/3ph/60Hz
Azimuthing thrusters	Steerprop SPO 4.5 ARC, 2 x 8 400 kW



The Varandey fixed offshore ice-resistant oil terminal (FOIROT) is located at a 22 km distance from the coastline. It is connected to an onshore tank battery via two subsurface oil pipelines.

The terminal's two stand-by vessels *Varandey* and *Toboy* prepare the loading site for the terminal before the tankers arrive - they break the ice in their path and blow the resulting ice floes and crushed ice away with their thrusters. Ice floes are broken by ships either by the weight of their hulls or by milling with their propellers. During loading, vessels help tankers maintain their position in the midst of drifting masses of ice.

Towing and anchor handling equipment

Hydraulic towing winch 1 x Kongsberg 65t@10.5m/min with 1 000 m of 76 mm dia wire

Aft deck and deck equipment

Deck area / load 500 m²/500 t
 Deck strength 5t/m² uniformly distributed load
 Mooring/anchor winch 2 x 11.9t@9m/min
 Tugger winch 2 x 10t@15m/min
 Storage winch 1 x 10t@15m/min with 1 000 m of 76 mm dia wire
 Deck crane 1 x TTS type GP 380 10t@17.5m
 Provision store crane 1 x TTS type GPT 80 1.0t@20m

Tank capacities

Heavy fuel oil 2 100 m³
 Diesel fuel oil 300 m³
 Freshwater 100 m³
 Ballast water 2 700 m³
 Dispersant 20 m³
 Foam tank 30 m³
 Recovered oil 500 m³

Fire-fighting and oil recovery

Fifi 1 system 2 x 1200m³/h@12bar water/foam monitors, curtain type water spray and oil dispersant system
 Work boat 1 x 9.65 m boom handling boat

Radio equipment

GMDSS Area A4
 1 x Capsat Fleet 77

Navigation equipment

1 x Speed log
 2 x Gyro compass
 1 x Autopilot
 1 x Voyage data recorder
 1 x ECDIS
 1 x UAIS
 1 x Ship security alert
 1 x Joystick control system
 2 x DGPS

