

# 26<sup>th</sup> World Gas Conference

1 – 5 June 2015, Paris, France



## ***PGCD.1 Remote LNG***

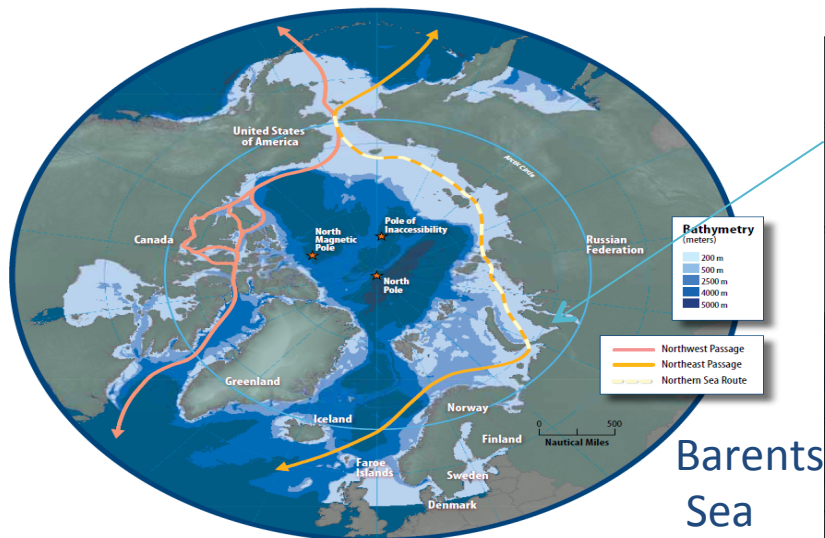
The Ice-Breaking LNG Carrier for Yamal LNG

Frederic HANNON - TOTAL

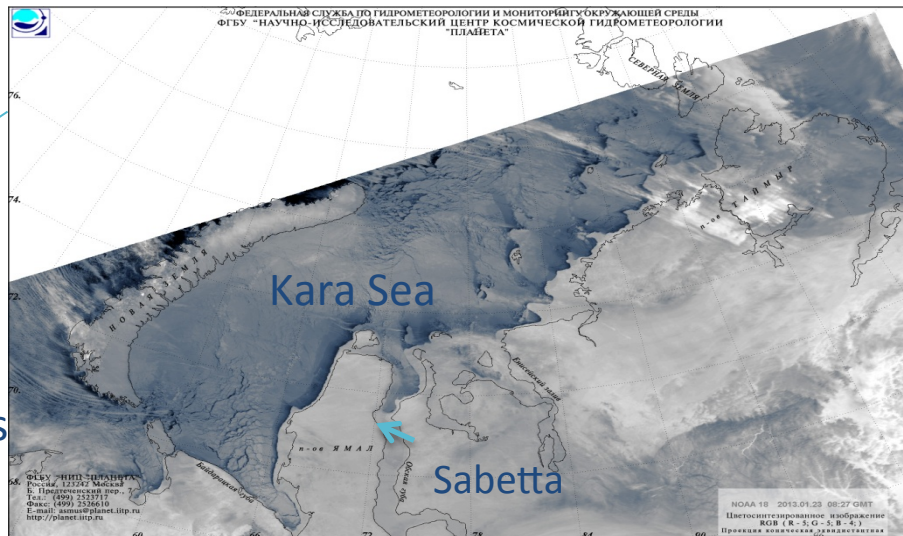
Andrey KALININ / Pierre GIBOIN – YAMAL SPG



# The Ice-Breaking LNG Carrier for YAMAL LNG



Map 2.1 The Arctic marine area. Source: AMSA



Barents  
Sea

Sabetta

The Northern Sea Route

The Yamal Peninsula

The background

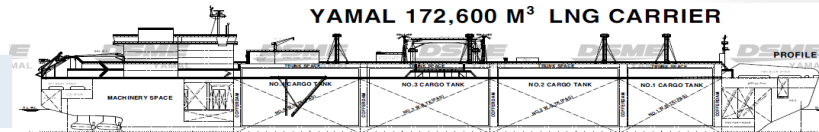
# The Ice-Breaking LNG Carrier for YAMAL LNG



	2010	2011	2012	2013
Total Volume of Transit Cargo, t	111 000	820 789	1 261 545	1 355 897
Total Number of Transit Voyages	4 (2 of them in ballast)	34 (10 of them in ballast)	46 (13 of them in ballast)	71 (22 of them in ballast)



**Question : To be or not to be independent from Ice-Breakers ?**



Astern first in hard ice condition

Ahead first in open water and light ice condition

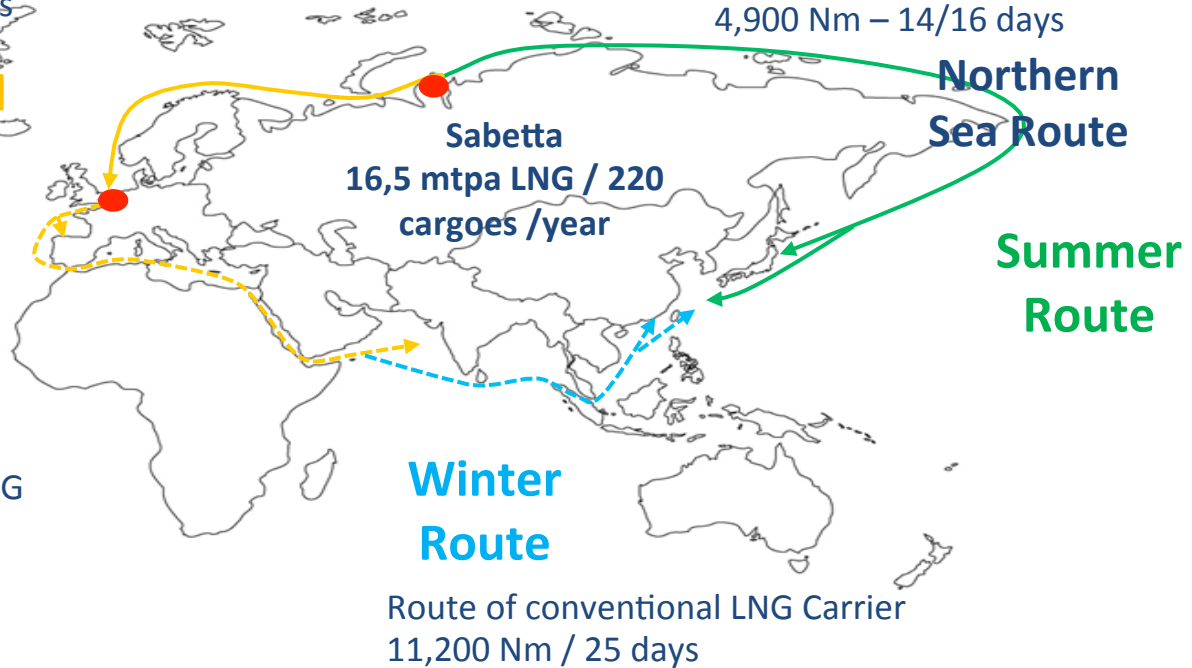
# The Ice-Breaking LNG Carrier for YAMAL LNG

**Westbound** : annual ice  
Average ice extension : 830  
Nmiles / 2,900 Nm – 7/9 days

**Eastbound** : pluri-annual ice  
Average ice extension 2,100 Nm /  
4,900 Nm – 14/16 days

**Year Round  
Route**

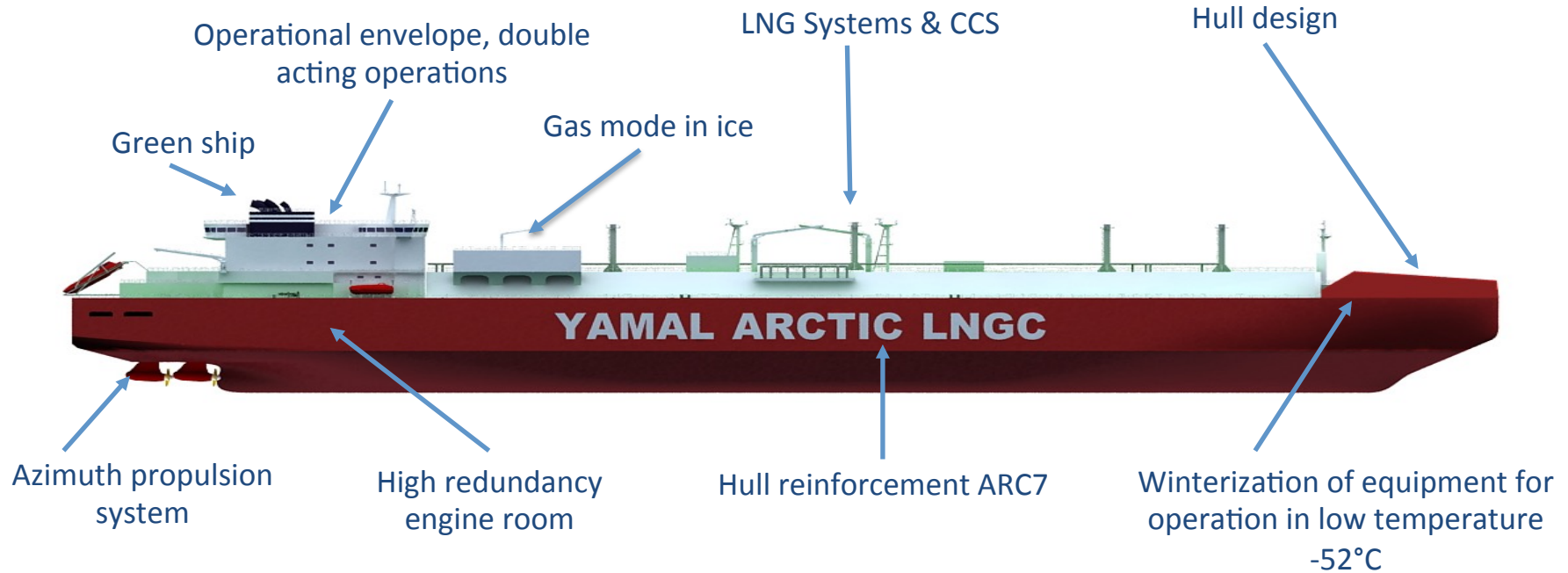
**Trans-shipment  
Terminal**



- Ice class ship # 15 Arc 7 LNG Carriers
- - - Conventional ship # 11-12 LNG Carriers

## The Shipping Scheme of the Project

# The Ice-Breaking LNG Carrier for YAMAL LNG



**Main Particulars** : LOA : 300 m / B : 50 m / Draft : 12 m

172,600 m<sup>3</sup> Cargo Capacity / BOR : 0.13%/vol/day / 45 MW propulsion power

Membrane type – Dual Class : Bureau Veritas / Russian Maritime Register of Shipping

# The Ice-Breaking LNG Carrier for YAMAL LNG

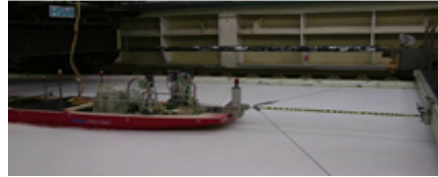
Computer Design and Model Tests for Optimizing Hull and Propulsion



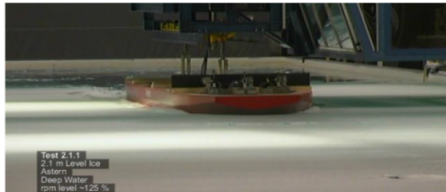
Several Propulsion Concepts



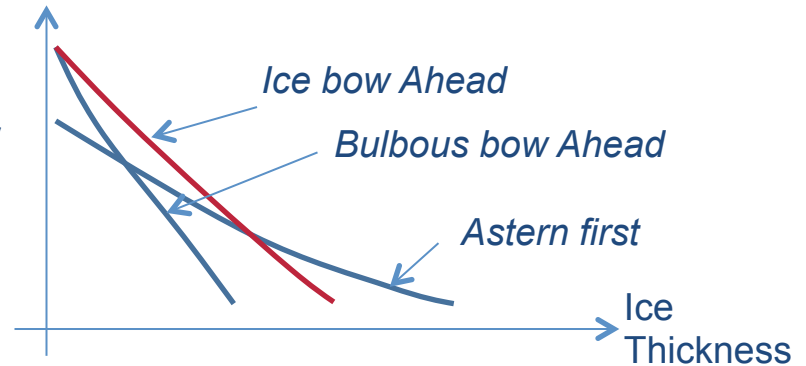
Several Bow Concepts



Several Testing Facilities /  
Several Ice and Open  
Water Tests



Speed in Ice



# The Ice-Breaking LNG Carrier for YAMAL LNG



**Arc7 LNG Carrier Vessel #1 is under construction at Shipyard (South Korea)**

- **Slot Reservation Agreement with Shipyard** : July 2013
- **Shipbuilding Contract** : February 2014
- **Keel laying** : 23d March 2015
- **Sea Trials /Gas Trials /Ice Trials / Delivery of ship**: 2016



# The Ice-Breaking LNG Carrier for YAMAL LNG

The ship will be the first ice-breaking LNG Carrier, designed to be independent from Ice Breakers assistance, to achieve a safe, sustainable, reliable, and cost effective maritime transportation along the Northern Sea Route year-round



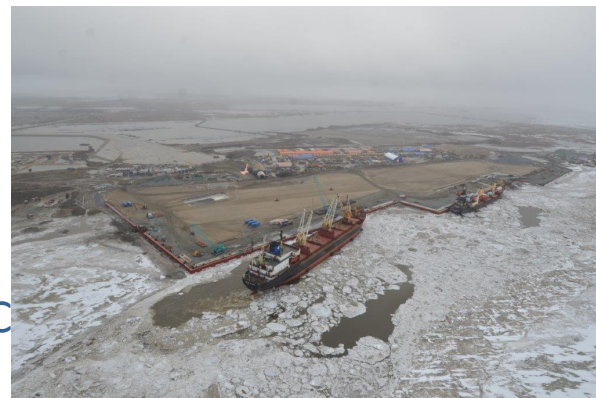
Bear in mind the invitation date for the Ice Trials in Kara Sea, as you are invited ...



# Some Postcards of Sabetta Site



For more information  
Please visit NOVATEK, CNPC  
and TOTAL booths



Атомный ледокол Таймыр в порту Сабетта

