

FLOATING NUCLEAR BARGES

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5/19/2018

1. INTRODUCTION



Figure 1. Floating nuclear barge Akademik Lomonosov [1].

As Russia is forced to push further north into the Arctic in the search for oil and gas, it needs electricity in far-flung locations. To meet electricity needs in developing the oil resources in remote Arctic regions and eastern Siberia, Russia's Rosatom built a floating nuclear power station at Saint Petersburg: the Akademik Lomonosov [1].

Rosatom is setting a trend for medium-capacity mobile nuclear facilities. The 144-by-30-metre or 472-by-98-foot barge holds two reactors with two 35 MWth nuclear reactors, similar to those used to power nuclear icebreakers.

From Murmansk where it was fueled, it is towed in to the port of Pevek in the autonomous Chukotka region in Russia's extreme northeast. The barge can produce enough electricity to power a town of 200,000 residents, far more than the 5,000 live in Russia's northernmost town.

Low-capacity, mobile power plants can be used in the Russian Arctic where large amounts of electricity are not needed and the construction of conventional power stations would be

complicated and costly. The alternatives are coal, gas and diesel. But diesel is very costly, while the gas needs to be delivered as Liquefied Natural Gas (LNG). Such units would supply electricity and heat to the most remote regions, supporting also growth and sustainable development. Such floating reactors can save 50,000 tonnes of carbon dioxide emissions per year.

The Akademik Lomonosov is meant to replace an ageing nuclear reactor and a coal-fired power plant which are both located in Chukotka. The plant meets the same safety rules as nuclear icebreakers and submarines.

Rosatom hopes to build more such barges and to find Asian clients in need of power in remote regions, giving the examples of Indonesia and Philippines. China is also building a floating nuclear power plant.

REFERENCE

1. Andrea Palasciano, "World's first floating nuclear barge to power Russia's Arctic Oil Drive," Digital Journal, May 19, 2018.