

JWB/cxd/EL-14-214701/0334

9th November, 2015

To Whom it may Concern

Dear Sir/Madam,

**Brief Summary of Sakhalin Energy Investment Company's
Sakhalin II Projects**

Sakhalin Energy Investment Company Ltd (SEIC) was incorporated in 1994 under the laws of Bermuda and operates under the Production Sharing Agreement (PSA) signed between SEIC and the Russian Federation (represented by the RF Government and the Sakhalin Oblast Administration) in 1994 (it was the first PSA signed in Russia).

SEIC is a private company and is not listed on any stock exchange. The company's immediate shareholders are the following entities incorporated under the laws of the Netherlands:

- 50% plus one share – Gazprom Sakhalin Holdings B.V. (whose ultimate parent company is PAO Gazprom, incorporated under the laws of the Russian Federation);
- 27.5% minus one share – Shell Sakhalin Holdings B.V. (whose ultimate parent company is Royal Dutch Shell plc, incorporated under the laws of England and Wales);
- 12.5% - Mitsui Sakhalin Holdings B.V. (whose ultimate parent company is Mitsui & Co. Ltd., incorporated under the laws of Japan); and
- 10% - Diamond Gas Sakhalin B.V. (whose ultimate parent company is Mitsubishi Corporation, incorporated under the laws of Japan).

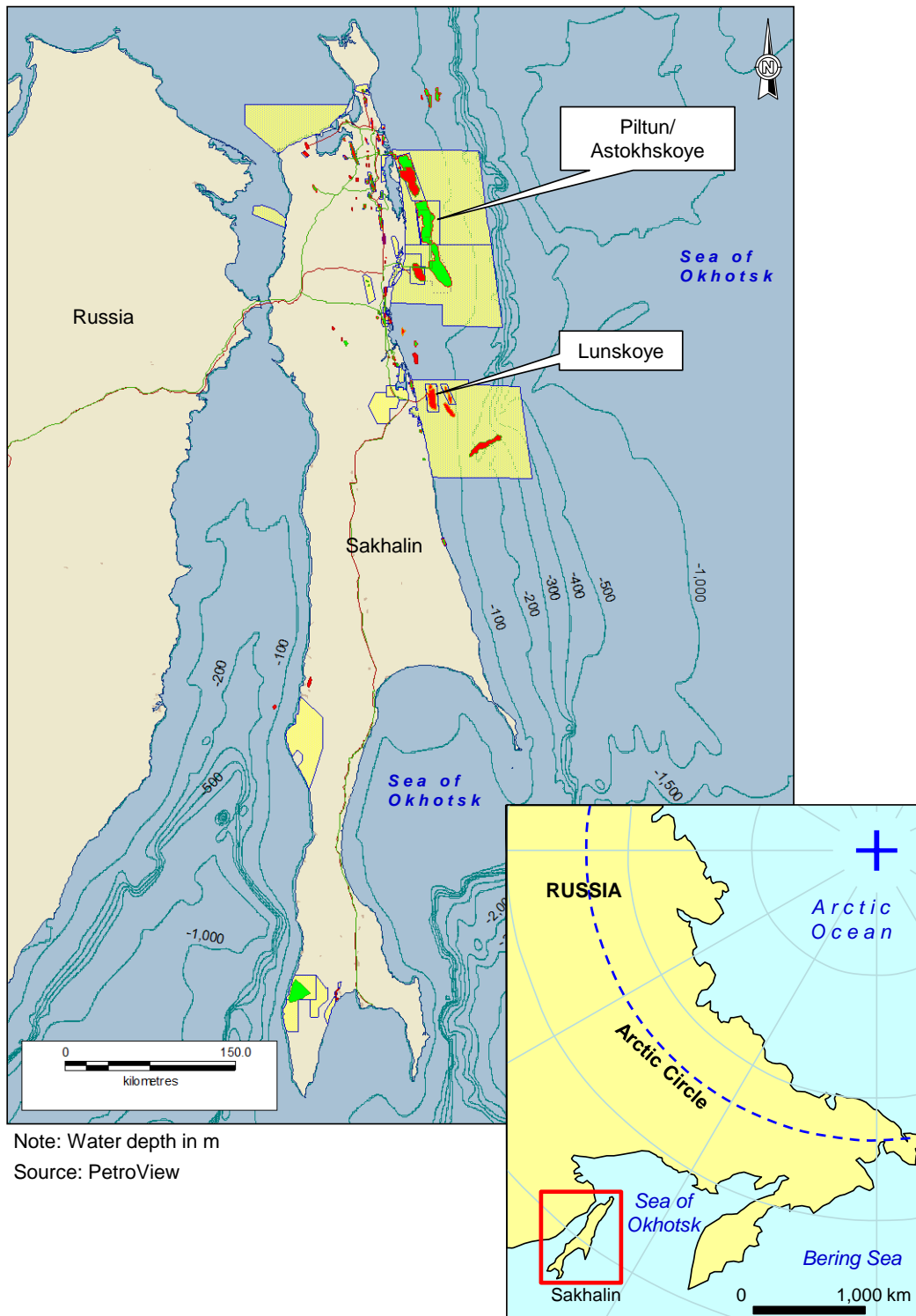
SEIC is the Operator for the Sakhalin II project, which involves the development and the production of oil, gas and condensate from 3 large fields located offshore Sakhalin Island in the far east of Russia (Figure 1): Astokhskoye and Piltun (which together are regarded as a single field called Piltun-Astokhskoye in the Russian classification), and Lunskeye. The fields are:

- Offshore Sakhalin Island in water depths less than 60 m;
- Located approximately 1,500 km south of the Arctic Circle; and
- Producing from conventional sandstone reservoirs with typical properties without stimulation. These reservoirs are clearly not defined as shale.

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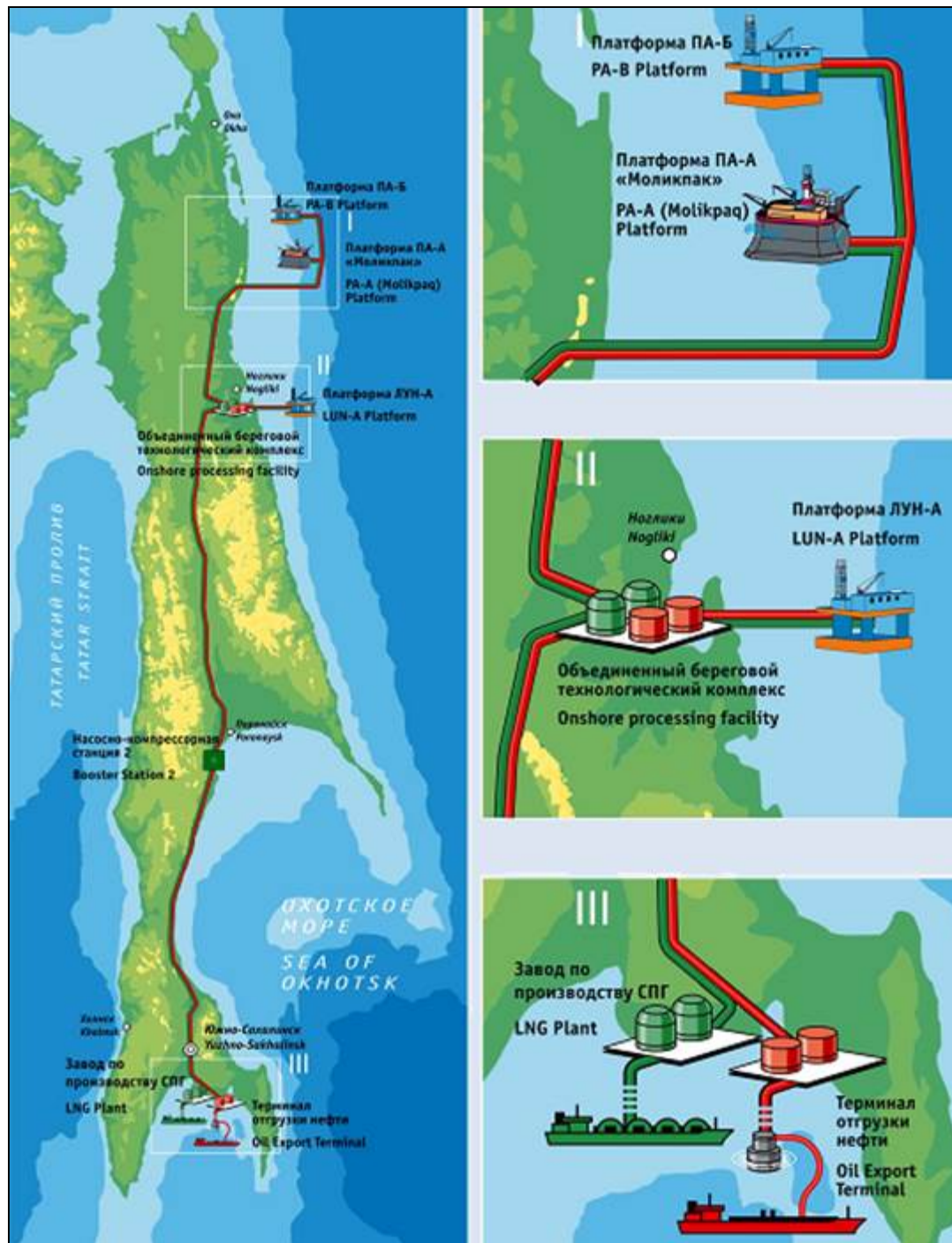
As well as the development of these fields, the project involved the installation of associated infrastructure including the Onshore Processing Facility (OPF), the Oil Export Terminal (OET), a Liquefied Natural Gas (LNG) plant and export terminal, with associated pipelines and other supporting infrastructure (Figure 2).

Figure 1: SEIC Projects Location Map



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Figure 2: Sakhalin II Project Infrastructure



Source: SEIC

The Sakhalin II project is primarily a gas production and LNG sales project. The LNG plant built by SEIC was commissioned in 2009 and was Russia's first LNG export plant. In 2014, SEIC exported 10.6 million tonnes (equivalent to about 15 Bcm of natural gas) of LNG, mostly to Japan and South Korea.

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First oil was sold by SEIC in 1999 and in 2014, the company shipped 41.5 MMBbl of its Sakhalin (formerly called Vityaz) crude oil, mostly to Japan, China and South Korea. The Sakhalin crude is a blend of oil produced from Piltun and Astokhskiye and condensate from Lunskiye, and has a gravity of about 44°API. GCA has been informed by SEIC that, since October, 2014, the Sakhalin blend also contains condensate from Gazprom's Kirinskoye field, located to the east of Lunskiye, which SEIC purchases from Gazprom. This condensate enters the Sakhalin II system via a tie-in to SEIC's onshore oil pipeline approximately 1 km south of the OPF. Once in the pipeline, it mixes with the oil and condensate produced from SEIC's fields and is exported via SEIC's OET.

Kirinskoye is one of three fields in the Kirinsky block, which is part of the Sakhalin III project. The other two fields in the Kirinsky block are Yuzhno-Kirinskoye and Myuginskoye; these are not yet in production, but Yuzhno-Kirinskoye is under development with first production planned for 2018, according to Gazprom's web site. On 7th August, 2015, the USA imposed sanctions on the Yuzhno-Kirinskoye field. Based on information from SEIC and in the public domain, GCA understands that

- SEIC purchases the condensate originating only from the Kirinskoye field;
- The water depth at Kirinskoye is approximately 90 m and the productive reservoirs are conventional in nature (not shales);
- Kirinskoye and Yuzhno-Kirinskoye are two separate fields;
- The Sakhalin II infrastructure is not connected to any of the Yuzhno-Kirinskoye infrastructure; and
- SEIC does not provide any goods, services, support, technology or other controlled items to the Yuzhno-Kirinskoye field.

Brief summaries of SEIC's three fields are given below.

Lunskiye

The Lunskiye field is the primary source of gas for the LNG supply, accounting for about 95% of the gas volumes for the project (the other 5% coming from Piltun and Astokhskiye). It is a multi-reservoir gas condensate field with a thin oil rim. A total of 7 exploration and appraisal wells were drilled and two 3D seismic data sets acquired to define the subsurface structure.

The Lunskiye field has been developed with the installation of a platform, LUN-A, with 27 well slots (Figure 3). It was Russia's first offshore gas production platform. The wells are capable of high rates of gas production and several wells have produced at rates up to 350 MMscfd, though rates have declined slightly as gas production has caused the reservoir pressure to decline.

A total of 12 wells were available for production in 2014 and production averaged 1,640 MMscfd of gas and 41,400 bpd of condensate. The future plan is to drill another 6-8 gas producers. Later in the field life, an onshore compression system will be installed in stages at the OPF to sustain the plateau production period.

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Figure 3: Lunskeye Field LUN-A Platform



Source: SEIC website

Astokhskoye

The Astokhskoye Field lies at the southern end of the elongated Piltun-Astokhskoye anticline, 12-15 km offshore and in water depths of 30-50 m. It comprises multiple oil and gas/condensate reservoirs. The field was discovered in 1986 and has been in commercial production since 1999, although only one layer, the principal oil reservoir, has been developed to date. The field was developed with the Molikpaq (PA-A) platform (Figure 4), a converted drilling rig that was first used offshore Canada. This was installed in 1998/9. Production initially took place only during the ice-free period between May and December each year, with the produced gas being re-injected into the crest of the field. Since completion of the pipeline infrastructure and commissioning of the LNG plant in late 2008, oil and gas production and export have been year-round and gas re-injection has ceased.

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**Figure 4: Astokhskiye Field
PA-A Platform**



Source: SEIC website

During 2014, eleven production wells were active and production from Astokhskiye averaged about 45,200 bopd plus 43 MMscfd of gas. Water injection is used to maintain reservoir pressure. During 2015, a number of the existing wells have been side-tracked and up to 9 new development wells are planned from 2016 onwards.

Piltun

Piltun is in the northern part of the Piltun-Astokhskiye anticline, located offshore north-eastern Sakhalin. Piltun is an 11 km by 5 km asymmetrical anticlinal structure containing a stacked sequence of Late Miocene age, shallow marine, oil and gas bearing reservoirs.

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Piltun was discovered in 1986. The Piltun (PA-B) platform (Figure 5) was installed in 2007 and the initial development focused on the oil rim on the West Flank with the ongoing development drilling of wells from 2008 to 2014. The first oil producer, PB-302, was brought on stream in December, 2008, and further wells were brought on production as completed, with water injection starting in January, 2010.

**Figure 5: Piltun Field
PA-B Platform**



Source: SEIC website

During 2014, there were 10 producing wells and production from Piltun averaged about 28,000 bopd plus 53 MMscfd of gas. A further 5 development wells are planned in 2016-2017. A revised field development plan, which envisages up to 16 additional wells, was submitted to SEIC's shareholders in 2015 and is expected to be submitted for regulatory approval in 2016.

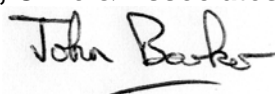
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Further Development

Development drilling and workover activity is in progress on all fields and will continue for several years. The other main future development will be the installation of an onshore compression system (in two stages) for Lunskeye to sustain the plateau gas production period from 2021 onwards. No further exploration activity is currently planned, although there is potential for hydrocarbons to be present in deeper horizons below the Lunskeye and Piltun fields and a study of the technical and commercial feasibility of a deep well at Lunskeye is in progress. These potential deeper reservoirs are also conventional in nature (not shales) and lie in the same general location and water depths as the currently producing reservoirs.

Yours faithfully

Gaffney, Cline & Associates Limited



Dr John Barker

Technical Director, Reservoir Engineering

Glossary of Abbreviations

API	American Petroleum Institute
°API	Degrees API (a measure of oil gravity)
B	Billion
Bcm	Billion cubic metres
bpd	Barrels per day
bopd	Barrels of oil per day
km	Kilometres
LNG	Liquefied natural gas
m	Metres
M	Thousand
MM	Million
MMBbl	Million barrels
MMscfd	Million standard cubic feet per day
OPF	Onshore processing facility
3D	Three dimensional

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