NATIONAL ENERGY BOARD

IN THE MATTER OF the *National Energy Board Act,* R.S.C. 1985, c. N-7, as amended;

AND IN THE MATTER OF an Application by Orca LNG Ltd. for a licence pursuant to section 117 of the *National Energy Board Act* authorizing the export of liquefied natural gas.

TO: Secretary of the Board
National Energy Board
517 Tenth Avenue S.W.
Calgary, Alberta
T2R 0A8

ORCA LNG LTD.
APPLICATION FOR A LICENCE TO EXPORT LIQUEFIED NATURAL GAS

4 September 2014

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I APPLICATION

1. Orca LNG Ltd. ("Orca" or "Applicant") hereby applies to the National Energy Board ("NEB" or "Board") pursuant to section 117 of the *National Energy Board Act* ("*NEB Act*") for a licence authorizing the export of liquefied natural gas ("LNG") of up to 33 10^9m^3 per year expressed as a gaseous quantity, subject to the Annual Tolerance requested below, for a term of 25 years ("Licence"), on the following terms and conditions:

• Term:	A period of 25 years commencing on the date of first export under the Licence;
• Annual Quantity:	Subject to the Annual Tolerance, the quantity of natural gas that may be exported in any consecutive 12-month period would be 33 10^9m^3 (1,169 billion cubic feet ("Bcf")), which corresponds to approximately 24 million tonnes per annum ("MTPA") of LNG;
• Annual Tolerance:	The quantity of natural gas that may be exported in any 12-month period may exceed the annual maximum quantity by 15%;
• Term Quantity:	During the term of the Licence, the maximum quantity of natural gas that maybe exported, adjusted for ramp-up volumes at the start of the term and adding the tolerance, shall not exceed 901 10^9m^3 (31.8 Tcf), which corresponds to approximately 654 MT of LNG;
• Export Point:	The point of export from Canada would be at the outlet of the loading arm of a proposed natural gas liquefaction terminal which is anticipated to be in the vicinity of Prince Rupert, British Columbia, Canada; and
• Early Expiration:	Unless otherwise authorized by the Board, the term of the Licence shall expire 10 years from the date of Governor-in-Council approval of the issuance of the Licence if exports pursuant to the Licence have not commenced on or before that date, or the Board otherwise directs.

A spreadsheet setting out the annual and term quantities of applied-for gas and those quantities adjusted to take account of the ramp-up volumes at the start of the term and adding the requested tolerance is attached as **APPENDIX A - SPREADSHEET OF GAS VOLUMES OUT OF TERMINAL AS APPLIED-FOR AND AS ADJUSTED FOR TOLERANCE AND RAMP-UP.**

2. This application takes into account the Board's role under section 118 of the *NEB Act*, which provides:

> 118. On an application for a licence to export oil or gas, the Board shall satisfy itself that the quantity of oil or gas to be exported does not exceed the surplus remaining after due allowance has been made for the reasonably foreseeable requirements for use in Canada, having regard to the trends in the discovery of oil or gas in Canada;

3. The application also takes into account recent Letter Decisions issued by the Board to approve licences for the export of LNG and the Board's *Interim Memorandum of Guidance Concerning Oil and Gas Export Applications and Gas Import Applications under Part VI of the National Energy Board Act*, issued by the Board on July 11, 2012. As a result, the Applicant requests relief from information requirements set out in the following, except to the extent those requirements have been addressed by this application:

    - Section 12 of the *National Energy Board Act Part VI (Oil and Gas) Regulations* ("Part VI Regulations"); and

    - Guide Q of the Board's Filing Manual.

4. Appendix B and Appendix C, submitted with this application, demonstrate that the quantity of gas to be exported by the Applicant does not exceed the surplus remaining after due allowance has been made for the reasonably foreseeable requirements for use in Canada, having regard to the trends in the discovery of gas in Canada.

II OVERVIEW OF PROJECT

A. Terminal

5. The Applicant is developing the Orca Energy Hub as a gas gathering and liquefaction facility to export LNG.

6. The Applicant proposes to develop a natural gas liquefaction terminal comprised of natural gas liquefaction facilities, LNG storage facilities, marine loading facilities, and all ancillary facilities ("LNG Terminal"). The LNG Terminal will be located on the west coast of British Columbia. Prospective sites for the LNG Terminal are currently being assessed in the vicinity of Prince Rupert, British Columbia. The LNG Terminal will be designed to take delivery of gas, condition, liquefy and store it for export to markets outside of Canada (collectively, the "Project").

7. The Project is planned to consist of 6 Floating Liquefaction Storage and Offloading ("FLNG") vessels, permanently moored near-shore as they become available and are placed into operation. Each FLNG vessel is expected to have liquefaction capabilities, LNG storage capacity of 250,000 cubic metres, and be able to deliver LNG to off-taking LNG carriers by utilizing a ship-to-ship process. Each vessel will be able to liquefy approximately 4 - 5 MTPA of LNG.

8. Construction of the LNG Terminal will include establishment of a moored in-place terminal facility to serve the FLNG vessels, possibly an on-shore facility and other facilities as needed, as well as the construction and installation of the FLNG vessels to be used for the on-site liquefaction and exportation of LNG. Exports are expected to commence in 2019, initially with one vessel and increase as the construction of FLNG vessels is completed and they commence operation.

9. The requested annual tolerance is required to account for variable conditions such as, but not limited to, necessary maintenance downtime, changes in gas specifications, ambient temperature changes and scheduling of cargoes.

B. Applicant

10. The Applicant, Orca LNG Ltd., is a Canadian company formed under the laws of and registered to do business in British Columbia, Canada. The LNG Terminal will be operated by an affiliate of Orca LNG Ltd.

11. The Project will be developed under the Applicant's oversight, with other participants taking financial positions in terminal facilities, pipelines, FLNG units, gas supply, off-take agreements, upstream investments and marine LNG Transport vessels. Orca is currently in discussions with prospective project participants along the LNG value chain. Confidentiality agreements prohibit disclosure of identities and the terms being negotiated.

C. Source of Gas to be Exported

12. The Applicant is assessing various natural gas supply options to meet the Licence quantity. The primary source of natural gas supply is expected to be from the Western Canadian Sedimentary Basin ("WCSB"). It is well know that the gas resource base of the WCSB, particularly as regards unconventional gas, is very large. Given the integrated nature of the North American gas markets and pipeline network, gas supply could also potentially come from other Canadian or North American basins, directly or by displacement, over the life of the LNG Terminal.

13. Options for natural gas supply may include, but are not limited to, a combination of the acquisition of proprietary natural gas resources, third party resources, purchases at market hubs, gas supply exchanges, and upstream joint ventures.

D. Transportation

14. Several possible pipeline options are being considered to deliver gas to the LNG Terminal. These options include existing systems, expansions, new third-party systems, and new proprietary systems. In addition to assessing proprietary pipeline options, the Applicant has entered into discussions with several pipeline companies regarding services for delivery of gas to the Orca Energy Hub and/or the construction of a dedicated pipeline. The discussions are either in the very early stages or subject to confidentiality agreements that do not allow for disclosure of the parties.

III. FORECAST NATURAL GAS SUPPLIES AND GAS REQUIREMENTS OVER THE LICENCE TERM

15. The Applicant retained Ziff Energy, a Division of HSB Solomon Associates LLC ("Ziff Energy") to provide:

    - A description of gas supplies, including Canadian gas supply, expected to be available to the Canadian market (including underlying assumptions) over the requested Licence term; and

    - A description of expected gas requirements (demand) for Canada (including underlying assumptions) over the requested Licence term.

16. Ziff Energy's report, entitled *Long Term Natural Gas Supply and Demand Forecast to 2050 for Orca LNG LTD.* ("Natural Gas Supply and Demand Forecast") provides an independent quantitative forecast assessment of North American, Canadian, and WCSB supply and demand to 2050. It is attached as **APPENDIX B – ZIFF ENERGY REPORT: NATURAL GAS SUPPLY AND DEMAND FORECAST**.

17. Ziff Energy concludes that the proposed export of LNG by the Applicant will not cause Canadians any difficulty in meeting their natural gas requirements at fair market prices over the forecast period. The other main conclusions of the Natural Gas Supply and Demand Forecast concerning demand, supply, and market dynamics during the forecast period include:

    - North American and Western Canadian gas resources are robust and continue to grow with the development of horizontal drilling and multi-stage fracture technologies;

    - North American and Western Canadian gas supply is not constrained to meet projected base demand, including NEB-approved LNG exports and incremental demand from the Project during the forecast period;

    - There is an abundance of low-cost natural gas resource available in North American and Canadian shale-gas plays and unconventional-gas plays;

    - Western Canada has productive natural gas potential in excess of projected demand during the forecast period, having regard to trends in the identification of gas resources, particularly unconventional gas, and in the development of cost-competitive production from those resources as a result of technological advances;

    - Western Canada has potential natural gas supply in excess of projected demand, including NEB- approved LNG exports, and incremental demand from the Project during the forecast period;

    - Canadian gas supply is expected to grow to 36 Bcf/d (38 PJ/d) in 2050, up from 13 Bcf/d (14 PJ/d) in 2013, as new gas supplies more than offset declines of higher-cost conventional gas. In 2013, Western Canada was the source of 99% of Canadian gas supply;

- Western Canadian natural gas is facing competition and significant displacement in traditional markets, including in Eastern Canada, from low-cost United States Lower 48 gas;

- The North American market is highly liquid, open, and efficient;

- Despite declining Western Canadian gas production since 2001, Canadian gas markets have been adequately supplied and this trend is forecast to continue; these markets are a component of the integrated North American market;

- North American gas demand growth will be driven primarily by gas-fired electrical generation, Canadian oil sands gas demand, and LNG export liquefaction;

- Canadian gas demand growth is expected to be driven principally by a switch away from coal-fired power generation, gas for growing oil sands production, and LNG liquefaction;

- Canadian gas demand is expected to increase at an average of 3.9% per year during the forecast period and will comprise a larger component of North American demand, increasing market share to 28% in 2050 from 11% in 2013;

- The market impact from the proposed Project will be muted by the abundance of low-cost gas resource available in Western Canada and United States Lower 48;

- The incremental price impact of the Project on AECO natural gas prices over the forecast period will average 0.27 USD/Mcf or 9.53 USD/million m^3;

- Natural gas markets will continue to function during the forecast period with natural gas buyers and sellers establishing fair market prices based on supply and demand fundamentals.

18. The Applicant asked Ziff Energy to prepare a Canadian demand sensitivity analysis (Section 9.2 of the Natural Gas Supply and Demand Forecast) and discuss the impact on the conclusions made in the Natural Gas Supply and Demand Forecast. Ziff Energy concluded that a 20 percent increase in gas demand in 2050 would not change the overall conclusions of the Natural Gas Supply and Demand Forecast.

IV IMPLICATIONS OF THE PROPOSED EXPORT VOLUMES ON THE ABILITY OF CANADIANS TO MEET THEIR GAS REQUIREMENTS AND ASSESSMENT OF SURPLUS

19. The Applicant retained Mr. Roland Priddle ("Mr. Priddle") to provide:

- A description of the implications of the proposed export volumes on the ability of Canadians to meet their gas requirements;
- A sensitivity analysis; and
- An assessment of whether this gas is surplus to reasonably foreseeable Canadian requirements.

20. Mr. Priddle's report, entitled *A Description of the implications on the ability of Canadians to meet their natural gas requirements and an Assessment of whether this gas is surplus to reasonably foreseeable Canadian requirements* ("Description of Implications and Assessment of Surplus") provides an independent qualitative assessment of the proposed export volumes on the ability of Canadians to meet their gas requirements. It is attached as **APPENDIX C – PRIDDLE REPORT: DESCRIPTION OF IMPLICATIONS AND ASSESSMENT OF SURPLUS**.

21. The conclusions of Mr. Priddle's Description of Implications and Assessment of Surplus are:

- The Board's confidence in Canadian and North American gas market functioning has been well placed, continental production has expanded and Canadians have continued to be able to meet their gas requirements in an entirely satisfactory manner at prevailing market prices;
- There are no policy or regulatory barriers to the functioning of the market, that almost all the continent's gas resources are physically linked to market hubs where prices are formed and liquidity is created, there is industry cooperation to ensure standardization of international transactions and some corporate activities are organized on a continental basis. The integrated market, the existence of which has long been recognized by the Board, is highly competitive;
- That gas markets will adjust responsive to price signals affecting supply and demand, as they have done for decades. Orca's exports if permitted would not have any implications in these areas that negatively affect the ability of Canadians to meet their gas requirements;
- The exports proposed by Orca will not significantly affect the ability of Canadians to meet their gas requirements. They will be met from Canadian, United States and possibly on a seasonal basis from overseas import sources, at prices determined in a large, growing, efficient, competitive, flexible, liquid, integrated North American market offering unparalleled transparency of prices and other commercial elements;

- Canadians will have multiple alternative supplier options and the Board will continue to monitor energy and gas supply situations to keep the market and itself informed about and alert to the implications of adjustments resulting from the operation of energy markets;
- There are no foreseeable plausible sensitivity cases that could invalidate the description of implications and the Assessment of surplus;
- The marketplace's commercial, policy and regulatory underpinnings are not likely to be affected by Orca's proposed exports so the market will continue to be fully functioning and well able to meet Canadians gas requirements in full at market prices;
- Trends in the discovery of gas in Canada, and for that matter in North America as a whole, are positive and prospectively will remain so for any foreseeable future; and

22. Mr. Priddle concluded from his Surplus Assessment that the quantity of gas applied to be exported by Orca in liquefied form, namely 33 $10^9 m^3$ or approximately 1,169 Bcf annually for a term of 25 years commencing in about 2019, plus allowance for the requested annual tolerance, does not exceed the surplus remaining after due allowance has been made for the reasonably foreseeable requirements for use in Canada having regard to the trends in the discovery of gas in Canada.

V SURPLUS EVALUATION CONCLUSION

23. The reports and assessments of Ziff Energy and Mr. Priddle support the conclusion that, qualitatively and quantitatively, the quantity of gas proposed for export by the Applicant does not exceed the surplus remaining after due allowance has been made for the reasonably foreseeable requirements for use in Canada, having regards to the trends in the discovery of gas in Canada.

VI RELIEF REQUESTED

24. The Applicant respectfully requests:

(a) Pursuant to Section 117 of the *NEB Act*, a Licence authorizing the export of liquefied natural gas from Canada, in the vicinity of Prince Rupert, British Columbia, on the following terms and conditions:

- Term: A period of 25 years commencing on the date of first export under the Licence;
- Annual Quantity: Subject to the Annual Tolerance, the quantity of natural gas that may be exported in any consecutive 12-month period would be 33 $10^9 m^3$, which corresponds to approximately 24 MTPA of LNG;
- Annual Tolerance: The quantity of natural gas that may be exported in any 12-

month period may exceed the annual maximum quantity by 15%;

- Term Quantity: During the term of the Licence, the maximum quantity of natural gas that maybe exported, adjusted for ramp-up volumes at the start of the term and adding the tolerance, shall not exceed 901 $10^9 m^3$, which corresponds to approximately 654 MT of LNG;

- Export Point: The point of export of LNG from Canada would be at the outlet of the loading arm of a proposed natural gas liquefaction terminal which is anticipated to be in the vicinity of Prince Rupert, British Columbia, Canada; and

- Early Expiration: Unless otherwise authorized by the Board, the term of the Licence shall expire 10 years from the date of Governor-in-Council approval of the issuance of the Licence if exports pursuant to the Licence have not commenced on or before that date.

(b) Relief from the information requirements set out in section 12 of the Part VI Regulations, except to the extent those requirements are specifically addressed in this application;

(c) Relief from the information requirements set out in Guide Q of the Board's Filing Manual, except to the extent those requirements are specifically addressed in this application;

(d) Such further or other related relief, in addition to or in lieu of that applied for, as to the Board may seem just and proper, to the same extent as if the application had been for such related relief.

All of which is respectfully submitted this 4th day of September 2014

Orca LNG Ltd.
by its counsel, Stikeman Elliott LLP

Keith F. Miller

Communications respecting this application should be directed to:

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Appendices

APPENDIX A – SPREADSHEET OF GAS VOLUMES OUT OF TERMINAL AS APPLIED-FOR AND AS ADJUSTED FOR TOLERANCE AND RAMP-UP

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