

**IN THE MATTER OF
NATIONAL ENERGY BOARD**

**Hearing Order OH-001-2014
Trans Mountain Pipeline ULC
Application for the Trans Mountain Expansion Project**

AFFIDAVIT OF STEPHEN N. FEKETE

I, **Stephen N. Fekete**, of Calgary, in the Province of Alberta,


AFFIRM AND SAY AS FOLLOWS:

1. I am the Managing Director in the Calgary office of the consulting firm, IHS Global Canada Limited (“IHS”). I have experience in consulting on supply and market issues related to crude oil pipelines in North America. My curriculum vitae is attached as **Exhibit A**.
2. The written evidence set out in the table under paragraph 3 below was prepared by Steven Kelly, on behalf of Trans Mountain Pipeline ULC, who is the applicant in National Energy Board hearing OH-001-2014 (the “Hearing”) for the Trans Mountain Expansion Project. I have reviewed this written evidence and determined that it is accurate to the best of my knowledge and belief.
3. Steven Kelly is no longer employed by IHS and is unable to adopt evidence for the purposes of the Hearing. In his place, I have assumed direction over IHS’ role as expert for Trans Mountain for the purposes of the Hearing and hereby adopt the following evidence:

Exhibit No.	Evidence	Date filed
B1-5 (Appendix A)	Trans Mountain Expansion Project - Direct Written Evidence of Steven J. Kelly	12/16/2013
N/A	1.02 Reply to Economic Costs and Benefits of TMX for BC and Metro Vancouver (Goodman and Rowan Report)	08/20/2015
N/A	1.12 Reply to the Public Interest Evaluation of the Trans Mountain Expansion Project	08/20/2015

and all information requests pertaining to the above document.

AFFIRMED BEFORE ME
at Calgary, AB this 19th day of August, 2015.



Stephen N. Fekete



Jaclyn Johnson
A Notary Public or Commissioner for Oaths
in and for the Province of Alberta

JACLYN S. JOHNSON
Barrister & Solicitor
A Commissioner for Oaths
in and for Alberta

This is EXHIBIT "A" referred to in the
Affidavit of **Stephen N. Fekete**, affirmed
before me this 19th day of August, 2015



Jaclyn Johnson
A Notary Public and Commissioner for Oaths
in and for the Province of Alberta

JACLYN S. JOHNSON
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A Commissioner for Oaths
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RESUME OF PROFESSIONAL QUALIFICATIONS

STEPHEN N. FEKETE

EDUCATION

B.Sc. in Chemical Engineering from the University of Texas, 1988.

M.B.A. (Finance) from the University of Houston, 1996.

PROFESSIONAL ASSOCIATIONS

Association of Professional Engineers and Geoscientists of Alberta (APEGA).

CURRENT POSITION

Managing Director in the Calgary office of the consulting firm of IHS Global Canada Limited.

WORK EXPERIENCE

Prior to joining the legacy Purvin & Gertz' Houston office in 1997, Mr. Fekete worked for Lyondell Petrochemical Company and Lyondell-CITGO Refining Company from 1989-1997 and for Clark Refining and Marketing, Inc. for a short time in 1997. At Lyondell, Mr. Fekete gained broad refinery process engineering experience before moving into a short-term planning and economics position in 1995. In his role as a process engineer, Mr. Fekete had day-to-day interface with operations and maintenance personnel to optimize and troubleshoot specific refinery processes; prioritization of maintenance items; identification and mitigation of reliability issues through development of supporting economics; and assistance with unit turnaround planning. In the economics and planning department, Mr. Fekete was responsible for developing and presenting weekly and monthly economics packages which included crude selection; gasoline blending strategies; and recommendations to maximize refinery profit. Other responsibilities included providing capital feasibility and profitability analysis for a wide variety of proposed refinery projects and coordination of interplant agreements. At Clark, Mr. Fekete worked in a long-range planning role and was responsible for developing a monthly productivity analysis and project support utilizing a commercial linear program package. In both his planning and economics roles at Lyondell and Clark, Mr. Fekete gained extensive experience in the development and application of linear program models (AspenTech PIMS) to refinery operations.

Mr. Fekete has been involved in a variety of refining and crude oil market studies including refinery valuations and synergy analysis, crude oil pipeline quality bank development, refinery feasibility and optimization studies. Mr. Fekete was transferred to the Calgary office in 2004, where he has managed a wide variety of domestic and international assignments related to the crude oil and refining markets, including leading PGI's North American quality bank practice.

REPRESENTATIVE MAJOR PROJECT EXPERIENCE

CRUDE OIL AND PRODUCT MARKET STUDIES

- **Crude Oil & Refining Outlook** - Mr. Fekete was the primary author of this service following transfer to the Calgary office in 2004 and through 2009. The service provided in



depth analysis of the supply/demand balance for Canadian crudes, and equilibrium pricing relationships between benchmark crudes. Mr. Fekete was responsible for ongoing monitoring of U.S. Midwest petroleum product markets, including supply/demand balances, pricing and refining margins. The service was integrated with other offerings following acquisition of Purvin & Gertz by IHS in 2011.

- **Crude Oil Quality Banks (Global, North America, Latin America)** - Mr. Fekete leads the firm's Americas Quality Bank practice, with a focus on development and administration of quality banks in North America and Latin America. Mr. Fekete has developed quality banks for several existing and proposed crude oil pipelines. Developed supporting statistical analysis and demonstrated suitability of method by comparison to alternative methodologies. Outlined procedural requirements for inclusion in a crude oil quality bank agreement between the owners. Mr. Fekete has managed the administration of several USGC crude oil quality banks and is the quality bank advisor for a major pipeline in Latin America.
- **Crude Oil Valuation (Canada)** - For a major Canadian producer, performed a crude oil valuation and market study for a modified heavy bitumen crude oil. Utilized legacy Purvin & Gertz crude oil methodology and refinery screening criteria to identify potential price premia for upgraded oil, and market size.
- **Crude Oil Valuation (Canada)** - For a major Canadian producer, performed a crude oil valuation and market study for a synthetic crude oil stream. Considered multiple market regions, and comparison to other competitive synthetic crude oils. Utilized legacy Purvin & Gertz crude oil methodology and refinery screening criteria to identify potential price premia for upgraded oil, and market size.
- **Crude Oil Valuation (Latin America)** - For a major Latin American producer, performed a crude oil valuation and market study for a modified heavy crude stream. Considered multiple market regions, and comparison to other competitive synthetic crude oils. Utilized legacy Purvin & Gertz crude oil methodology and refinery screening criteria to identify potential price premia for upgraded oil, and market size.
- **Quality Pooling Initiative for a Major Export Pipeline** - IHS was engaged by the operator of a major export pipeline system, on behalf of the producer/shipper community. Mr. Fekete was the Project Manager for the assignment. The project required IHS to evaluate options for pooling the crude oils produced in Western Canada, to achieve capacity increases on the system. The analysis required IHS to interview shippers as input to a process of establishing appropriate grouping of crude oils, based on their characteristics, origin and production method.
- **Canadian Crude Oil Market Studies (Canada)** - For numerous assignments, have prepared a market study and developed price forecast for Canadian heavy crude oils and a wide variety of proposed synthetic crude oils. An analysis of refinery capacity to process various synthetic crude oils and heavy crude was developed, and used to determine market-clearing points based on projected supply.
- **Heavy Sour Crude Oil Market Studies (Latin America)** - As part of several Offering Memorandums, developed market studies of Venezuelan heavy sour crude oil imports into the United States. An analysis was performed to identify heavy sour crude oil processing

capacity to determine how much heavy sour Venezuelan crude oil could be diverted away from designated customers. Determined the discounts required for existing refineries to process heavy sour crude oil from alternative sources and the discounts required for refiners to invest in additional processing equipment.

- **Crude Oil Market Studies (Global)** - Performed a variety of crude oil market study for crude oils produced in North America, Africa, Asia, and the North Sea. Unique properties of the crude oils were identified and market discounts were developed as a result of unique properties. Developed a price forecast for the study crude oils based on refinery value technique. Provided values based on alternative valuation techniques which could be used as a proxy for the more complex refined products value method. Techniques and values were to be used by the client in negotiations with large producer / pipeline operator in the area.
- **Market Study for Export Pipeline Project** - IHS was engaged by the sponsor of a major proposed West-to-East pipeline, to provide evaluation of market potential and crude valuation in market regions accessible to the project. Mr. Fekete was a key contributor to the analysis. The analysis considered the range of oil sands crudes that may be transported by the pipeline, and required identification of suitable benchmark crudes as well as valuations of Western Canadian crude oils against these benchmark grades.
- **Petroleum Coke** - Performed a number of studies concerning the outlook for petroleum coke supply/demand, regulatory impacts, and trade flow.

MERGER AND ACQUISITION ASSISTANCE

- **Orinoco Belt Project** - Mr. Fekete was part of the technical due diligence team for a successful bid for a portion of an Orinoco Belt project in Venezuela. Mr. Fekete was responsible for reviewing downstream aspects of the project including a review of the Development Plan including a review of technology, capital and operating cost, transportation plans, as well as a review of other upgrader's currently in operation in Venezuela. Mr. Fekete also prepared a market review for the proposed upgrader product including supply/demand balances for heavy sour crude oil and synthetic crude oil product. In addition, Mr. Fekete provided a price forecast of the upgraded product into the primary USGC market as well as alternative markets in Asia.
- **European Refinery Valuation and Technical Due Diligence** - Performed a technical due diligence and valuation for several different European refinery acquisitions (buyers side). Assignments included developed a discounted cash flow analysis based on forecast product supply/demand balances and product pricing in the region, developing operating scenarios and corresponding capital requirements to meet future product specifications, review of operations and maintenance records, and interviews with site personnel. Refinery LP models were developed as well as LP case review as provided by the seller.
- **European Petrochemical Facility Due Diligence** - As a team leader, performed a technical due diligence of 8 different petrochemical facilities as part of a larger confirmatory due diligence process for a large international commodity chemical company. The scope of review included review of plant operations, cost analysis and

competitive benchmarking, maintenance and inspection practices, as well as 3rd party arrangements and carve-out issues.

- **West Coast Refinery Valuation And Due Diligence** - Performed a valuation of a USWC refining and marketing operation for a potential buyer. The valuation analysis involved extensive due diligence of the refinery's historic financial performance; modeling of the refinery to allow projection of refinery charges and yields accounting for future changes in product specifications; review of maintenance practices and inspection records; and generation of a pricing forecast for the refinery based on location and product disposition. In addition, sensitivity cases were developed by varying capital and specification requirements to meet CARB Phase III gasoline in order to develop a range of value for the refinery operation.
- **US Mid-Continent Refinery Valuation And Due Diligence** - Performed a valuation and due diligence of a refinery merger. Developed a matrix of ownership split for an array of discount rates and sensitivity cases with the emphasis on valuing each refinery fairly relative to the other. The valuation analysis involved extensive due diligence of each refinery's historic financial performance; LP modeling of each refinery to allow projection of refinery charges and yields to account for future changes in product specifications; review of maintenance practices and inspection records; review of operating and capital costs; and generation of a pricing forecast for each refinery based on location and product disposition.
- **Arms-Length Refinery Valuations** - Performed arms-length valuations of numerous refining facilities. Using publicly available data to establish refinery configurations and crude oil feedslate, an LP and operating cost model was developed for each refinery. Feedstock and product pricing was developed based on geographic location and the value of the refinery determined using a discounted cash flow technique.
- **Refinery Merger Post-Audit Study** - Performed a post-audit of a refinery merger to determine the discrepancies in actual performance versus forecast performance. Identified and quantified the elements of the discrepancy for operating cost and refinery performance including on-stream efficiency and product yield, and market environment.

STRATEGY, OPTIMIZATION AND SYNERGY ANALYSIS

- **Jubail Master Plan** - In cooperation with an industrial/city planning consultancy and CMAI, developed the industrial outlook for a Master Plan Update for the Royal Commission of Jubail and Yanbu. PGI developed a feedstock basis from which CMAI developed the most likely industrial development based on supply/demand forecasts, feedstock availability and pricing outlook. Mr. Fekete managed the assignment for PGI/CMAI and was the firm's primary point of contact for the assignment.
- **Refinery Upgrading Study** - Performed a bottom of the barrel feasibility study for a Caribbean refining and marketing company. The refinery AspenTech PIMS model was heavily utilized throughout the study with additional model structure added and modified as required to screen potential upgrading projects. Once a short-list of feasible projects was determined, further analysis and modeling was performed using licensor data to enhance the projected yield set. For the final options selected, a full set of economics

was prepared and a sensitivity analysis was performed using a Monte Carlo simulation technique.

- **Low Sulfur Fuels Feasibility Studies** - Prepared feasibility studies for several clients to determine the optimal capital strategy to produce low sulfur fuels. As part of the study, opportunities for alternative crude oils were considered along with capital expenditure requirements to determine the highest NPV project. LP analysis using both the Purvin & Gertz LP model as well as AspenTech PIMS were used extensively for these studies.
- **Refinery Optimization Study** - Performed a pre-startup optimization study for a Caribbean refinery. The study included reviewing process unit performance, maintenance practices, asset utilization, and a review of the economic tools used by the refinery. Recommendations were made on alternative asset utilization, identified processes to assist in optimization of refinery process units, and provided an overview of economic tools available in the market.
- **Tunisian Refinery Feasibility Study** - Performed a project feasibility study of a proposed refinery in Tunisia. Developed multiple process scenarios, capital requirements, and financial return and sensitivities for a total of 6 study cases.

OTHER REPRESENTATIVE ASSIGNMENTS

- **Expert Witness, Crude Quality** - Mr. Fekete testified as an expert witness in arbitration as a result of unexpected qualities in a crude oil cargo. Mr. Fekete testified regarding historical norms and expectations for the particular crude oil, the market environment during the time of the crude oil sale, and the expectation of anticipated crude quality between a buyer and seller.
- **Independent Engineer, Grass Roots Refinery Project** - Represented the financial community as part of a Purvin & Gertz team which acted as the independent engineer for a large Gulf Coast refinery expansion. Reviewed and developed an opinion on all aspects of the project including crude oil supply agreements, inter-company agreements, project capital and timeline, project economics, technology selection, and existing agreements with third parties.
- **Independent Engineer, Debt Refinancing** - Acted as the independent engineer for a debt refinancing for a large US Gulf Coast refinery on two (2) occasions. Scope included reviewing charges and yields projections, operating cost, capital projects, crude and product contracts, environmental compliance, and maintenance practices. As part of the process, a financial model was prepared which was released to potential purchasers of the debt.
- **Replacement Cost Valuation** - Performed a replacement cost valuation of several lube oil refineries for insurance value purposes. This analysis included a complete breakdown of processing units, packaging equipment, and off-site areas.