DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

IN THE MATTER OF AN ARBITRATION UNDER CHAPTER ELEVEN OF THE NORTH AMERICAN FREE TRADE AGREEMENT AND THE UNCITRAL ARBITRATION RULES (1976)

-between-

THE ESTATE OF THEODORE DAVID EINARSSON, HAROLD PAUL EINARSSON, RUSSELL JOHN EINARSSON, and GEOPHYSICAL SERVICE INCORPORATED

("Claimants")

-and-

THE GOVERNMENT OF CANADA

("Respondent")

ICSID CASE NO. UNCT/20/6

EXPERT REPORT OF VICTOR ANCIRA OF TROIKA USA

CER-07

STIKEMAN ELLIOTT LLP
Barristers & Solicitors
4200 Bankers Hall West
888 - 3rd Street S.W.
Calgary, AB T2P 5C5 Canada
P: (403) 266 9064
E: mlemmens@stikeman.com

Matti Lemmens
Vincent Lanctôt-Fortier
Marianne Bastille-Parent
Counsel for Harold Paul Einarsson in his own capacity and as personal representative of the Estate of Theodore David Einarsson, Russell John Einarsson and Geophysical Service Incorporated

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

TABLE OF CONTENTS

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

I BACKGROUND AND QUALIFICATIONS

1. I, Victor Ancira of Cypress, TX and citizen of the United States of America, have more than 27 years of experience in the seismic industry with a particular emphasis in seismic data management. I hold a Bachelor of Business Administration (B.B.A.) from the University of Houston Downtown.

2. From 1986 to 2000 I held various positions with Tape Technology, Inc, Petroleum Exploration Computer Consultants, and CGG. In these roles I worked extensively with super majors, independents, national oil companies, and national data repositories in seismic data management consulting, systems design, installation, and training as well as project management. Customers included Mobil Oil, Arco, Amoco, British Gas, BP Alaska, UPRC, Oryx, Occidental Petroleum, Vastar Resources, Repsol, Soekor (Pty) Limited, and Exxon. As an example, I completed a consulting project for the Venezuelan Institute Of Oil Technology (Intevep), on behalf of Petroleos de Venezuela S.A (PDVSA). The project scope was to assess and provide recommendations for best practices and streamlining processes and procedures used in seismic data management projects being performed at the Maraven, Lagoven, and Corpoven, the operational subsidiaries of PDVSA.

3. From 2000 to 2010 I was employed by LTX Corporation and held the roles of Field Service Engineer and Digital Applications Manager supporting LTX customers such as Texas Instruments and ST Microelectronics. LTX Corporation manufactured, sold, and supported Automatic Test Equipment (ATE) in the semiconductor manufacturing industry.

4. From 2010 to 2013 I was employed at Kestrel Integrated Data Management (KIDM) as Operations Manager. In this role I was responsible for all aspects of operations including production and quality. KIDM customers included Noble Energy, Anadarko, Kelman Data

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

Management, ExxonMobil, Schlumberger, and the Directorate General of Hydrocarbons – India.

5. From 2013 to 2016 I was employed at Landmark Software/Halliburton as the Global Practice Manager – Cloud and Hosting Services and Manager – Cloud Operations. In these roles I was responsible for setting the direction and developing best practices for Landmark Cloud and Hosting Services, managing Global technical resources in support of global and regional Cloud and Hosting Services projects, and working with the Landmark Cloud Strategist and the Research and Development team to set the direction and strategy for Landmark's Cloud related business and offerings. Customers included PGS, Energy XXI, Cobalt, and Halliburton among others.

6. From 2016 to the present my current position is VP and Operations Director at Troika International Limited (Troika). In this role I have overall responsibility for software development of Troika's Data Management Software Suite and other associated software applications. Customers include Shell, Halliburton, Wintershall DEA, Directorate General of Hydrocarbons India, Schlumberger, ConocoPhillips, Petroleum Commission Ghana, ETAP Tunisia, SEI, TGS (TGS proper as well as Spectrum and WGP both of whom TGS acquired) among others. I also provide onsite user training and project consulting. Successful user training and project consulting programs completed in Houston, Dallas, Noida India, Buenos Aires Argentina, and London England.

7. I have been an Active Member of the Society of Exploration Geophysicists (SEG) since 2010. I have served three terms as the Vice Chair and two terms as the Chair of the SEG Technical Standards Committee (TSC). The TSC serves as a forum for discussion of geophysical developments in which standards for acquisition and processing of

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

geophysical data need to be identified or improved. The TSC develops the required standards in support of the geophysical community. Examples of these standards are SEGY Rev. 0, SEGY Rev. 1, SEGY Rev. 2, SEGY Rev. 2.1, SEGD Rev. 0, SEGD Rev. 1, SEGD Rev. 2, SEGD Rev. 2.1, SEGD Rev. 3.0, and SEGD Rev. 3.1 among many others.

A. Prior Relationship

8. Neither Troika International Limited nor I have any prior relationship with any party to this arbitration case. The Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) twice in the past contacted Troika requesting quotations for software purchases but these opportunities never closed and a commercial relationship never materialized.

B. Purpose of this Report

9. The purpose of this report is to provide a valuation of the GSI Multi-Client (MC) library. I have been asked to approach this valuation as if the GSI data was not made public. In this report, I will not be addressing loss of personal income, shareholder equity, or any other matters other than the valuation of the GSI MC library.

II THE GSI MULTI-CLIENT LIBRARY

10. The GSI Multi-Client library consists of seismic (field and processed), gravity, and magnetic data. The data was acquired from 1971 through 2009. Most of the data has been processed through Pre-Stack Time Migration (PSTM). GSI maintained gathers and velocity files for all PSTM data to license as a separate product. All processed data is on two sets of DLT tapes in two discrete storage locations. An extensive inventory of paper/mylar and other printed media of seismic sections exists in the thousands of items that are all cataloged in a secure storage facility.

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

11. The majority of the seismic data is 2D and 3D marine data. The 2D/3D breakdown is 85% marine 2D and 15% marine 3D. The only land data are the Mackenzie Delta (quasi land/marsh/shallow water), Fort Liard, and Mackenzie Valley surveys.[1]

12. The table below provides a breakdown of seismic, gravity, magnetic, and gravity/magnetic data in the GSI MC library.

Area	2D/ 3D	Land/ Marine	Seismic Kms	sq. kms	gravity kms	magnetic kms	grav & mag kms
MACKENZIE BASIN AND FORT LIARD REGION	2D	land/ marine	244				
MACKENZIE DELTA	2D	land/ marine	1,851				
BEAUFORT SEA AND AMAULIGAK AREA:							
BEAUFORT_AMULIGAK 2D TOTAL	2D	marine	36,222		390		
AMAULIGAK 1986 3D	3D	marine	3,564	800			
AMAULIGAK 1990 - 3D	3D	marine	2,686	556			
HIGH ARCTIC AND BANKS ISLAND	2D	marine	10,492				
BAFFIN BAY REGION	2D	marine	14,908				
LABRADOR REGION	2D	marine	56,246		29,008	24,746	
EAST COAST	2D	marine	24,742			2,609	7,055
OFFSHORE NEWFOUNDLAND:							
NEWFOUNDLAND 2D TOTAL	2D	marine	70,617		16,942		1,848
JEANNE D'ARC 3D 1985	3D	marine	10,187	2,035			
ORPHAN BASIN 2003 3D	3D	marine	13,200				
WESTERN NEWFOUNDLAND 3D 2008	3D	marine	2,600	598	4,141	2,989	
OFFSHORE NOVA SCOTIA:							
NOVA SCOTIA 2D TOTAL	2D	marine	33,886		1,024	1,001	
ONONDAGA 1983 3D	3D	marine	848	78			
MAMOU 3D 2003	3D	marine	12,386	740			
GULF OF ST LAWRENCE	2D	marine	377				
GREAT LAKES	2D	marine	788				
Total 2D			**250,372**				
Total 3D			**45,470**	**4,807**			

[1] Information provided by GSI.

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

Area	2D/ 3D	Land/ Marine	Seismic Kms	sq. kms	gravity kms	magnetic kms	grav & mag kms
Total Gravity			**51,506**				
Total Magnetic			**31,345**				
Total Grav & Mag			**8,903**				

Data provided by GSI.

13. As shown in the table above the majority of the GSI MC library is 2D and it is not the most recent data. Even so, the data has value by virtue of potential reprocessing. In a 2007 CSEG Recorder article, Michael Enachescu showed in Figure 8 a 2D line that was acquired in 1984-85 and reprocessed in 2006 and stated, "Data was reprocessed in 2006 by Arcis, with great improvement in overall quality, proving how valuable older digital field data is for exploration and research."[2]

14. In addition to reprocessing, operators will often look at 2D data, if it is available, before investing in 3D acquisition programs. According to Crown Exploration "A 2-D seismic survey works well for imaging major structures."[3] Imaging a major structure may pinpoint where a 3D survey should be carried out.

B. Valuation of the GSI Multiclient Library

15. The valuation of the library will be looked at from the replacement cost of the library with data acquired at the present time including processing. There were several attempts to collect market information regarding current market lease rates of MC data in the same regions where GSI has data but there was not enough information available at the time of the generation of this report to be able to value the library from a lease revenue point of

---

[2] **C-366,** Figure 8 Page 49 CSEG Recorder - Digital Seismic Dilemma, Ownership and Copyright of Offshore Data - Michael Enachescu

[3] **C-367,** Crown Exploration - EKT Interactive: Oil and Gas Exploration Types of Seismic Surveys blog post. Accessible at: https://www.crownexploration.com/Blogs/ekt-interactive-oil-and-gas-exploration-types-of-seismic-surveys

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

view. Attempts to obtain Information were made by contacting Katalyst SeismicZone, PGS, and TGS via email and phone.

16. A sample of the GSI MC data was reviewed using Troika International's QuickView application.[4] The data was found to be readable with all of the information needed to load the data into geoscience software written in the trace headers and documented in the textual headers of the SEGY files. Section views were displayed and appear as expected for seismic data. The data has the necessary information in the textual headers as well as the trace headers to allow for further processing.

C. Replacement Cost

17. As stated previously, GSI acquired data in the 1971-2009 timeframe. The cost of acquisition for this data was between $700 and $800 million US dollars (USD) based on information provided by GSI. These numbers included all field costs but excluded data processing. Data processing was an additional $61.6 to $70.4 million USD based on information provided by GSI. No additional investment was made in the GSI MC library after 2015.

18. If the data was to be valued today, it could be argued that the data should be valued at the amount that was paid to acquire it originally plus the cost of any data processing. If that were the case, the valuation would be in the range of $761.6 to $870.4 million USD.

19. This method is flawed in that it does not account for the amount of competition in the prime regions that GSI has MC data, primarily offshore Labrador/Newfoundland and offshore

[4] **C-368,** Troika QuickView SEGY Viewer. Application is available at https://troika-int.com/solutions/segy_quickview/

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

Nova Scotia from companies such as TGS[5] (who acquired Spectrum, PGS, etc.), PGS[6], Katalyst Data Management[7], and WesternGeco[8].There are some frontier areas where there is not much coverage other than the GSI data. This was verified by looking at PGS, TGS, and Katalyst SeismicZone online portals.

20. A more reasonable approach would be to look at the cost of replacing the data with new acquisition. In determining overall costs for either a 2D or 3D marine survey the following items are considered but this list is not exhaustive: vessel day rate, mobilization/demobilization, crew costs, standby time, etc. For example, a 2010 3D survey was acquired and processed for a total cost of $25 million USD.[9] A 2020 3D marine acquisition and processing project for 1,000 km^2 was completed for a total cost including processing of between $14 to $16 million USD.[10] This was an all-in number that included the costs mentioned earlier plus the costs for processing. Using the $16 million USD number allows for a slightly higher mobilization cost and additional impact study costs as well as potential labor requirements from regulators. For 3D, the replacement cost would be $76.9 million USD including processing costs.

21. 2D marine acquisition costs range from $1,200-$2,500 per line km. The number of $1,850 per line km was used. Mobilization ranges from $2 million USD to $4 million USD. As a number of these surveys are in remote frontier areas a $3 million USD mobilization

---

5 **C-369**, TGS Canada MC Data Screen Capture. Accessible at https://www.tgs.com/seismic/multi-client/north-america/canada

6 **C-370**, PGS Canada MC Data Screen Capture. Accessible at https://www.pgs.com/data-library/map/nsa/?lat=48.81566514211909&long=-49.19865698002605&zoom=3

7 **C-371,** Katalyst Data Management Canada MC Data Screen Capture. Accessible at https://www.seismiczone.com/data/#

8 **C-372,** SLB/WesternGeco Canada MC Data Screen Capture. Accessible at https://experience.arcgis.com/experience/fe9757110f4e47cf9063f23601cd5ee9?views=

9 **C-373**, The Nature of the Firm in the Oil Industry: International Oil Companies in Global Business - Basak Beyazay Book Excerpt

10 **C-374,** 3-D Seismic Survey Data Acquisition Over Entire Etame Marin Block Completed - https://energyindustryreview.com/oil-gas/3-d-seismic-survey-data-acquisition-over-entire-etame-marin-block-completed/

DocuSign Envelope ID: 039CC8FF-F724-4148-8B90-FDC61026B434

number will be used. A 2015 acquisition proposal from Seabird for a GSI Gulf of St. Lawrence seismic program[11] as well as current budgetary pricing from Seabird formed the foundation of the estimated 2D acquisition costs. The replacement cost for 2D marine data is $716,744,000 USD which includes processing.

22. Based on these numbers it would cost a total of $ 793,644,000 USD to replace the entire GSI library with currently acquired data and processing.

III CONCLUSION

23. I make this witness statement and expert report in support of the Claimants' claim in this proceeding and for no other purposes.

24. I swear this expert report in English.

Signed at Cypress, TX on May 3 2024

DocuSigned by:
Victor Ancira
B6BFCA2C7CE54BD...

Victor Ancira
VP

[11] **C-375,** Seabird Exploration – Proposal for 2D Seismic Program – Gulf of St. Lawrence Canada – Seabirdss